

RTN 4-26179

**Former Barnstable County Fire Training
Academy Site**

Barnstable, MA

April 2023

**IMMEDIATE RESPONSE ACTION STATUS &
REMEDIAL MONITORING REPORT NO. 64 &
INTERIM PHASE II CSA STATUS REPORT**



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Prepared by: BETA GROUP, INC.
Prepared for: Barnstable County

April 2023

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1.0 INTRODUCTION

BETA Group Inc. (BETA) has prepared this Immediate Response Action (IRA) Status and Remedial Monitoring Report (RMR) No. 64 that addresses a release of hazardous materials related to fire-fighting foams and attributed to the former Barnstable County Fire and Rescue Training facility located at 155 South Flint Rock Road in Barnstable, Massachusetts (the FTA or facility). This document has been prepared on behalf of Barnstable County. It is being submitted to the Massachusetts Department of Environmental Protection (MassDEP) – Bureau of Waste Site Cleanup (BWSC) in response to the detection of elevated concentrations of per- and polyfluoroalkyl substances (PFAS), including perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), in soil and groundwater at the facility and in adjacent areas, in particular to the east and southeast of the facility. This report documents IRA activities at the Site for the period of July 2022 to December 2022. IRA Status and RMR Report No. 64 presents the operational status and performance sampling results for the groundwater pumping and treatment systems at the Site during the reporting period. In addition, this status report describes the activities and results of Site-wide groundwater monitoring conducted in July 2022 and November 2022.

In response to a request from MassDEP, this report also includes in Section 7.0 preliminary information on the Phase II Comprehensive Site Assessment (CSA) activities conducted during the period of June 2022 through December 2022. Phase II CSA activities summarized in Section 7.0 include:

- shallow soil sampling to the east and southeast of the FTA,
- sediment sampling along transects across Flintrock Pond,
- piezometer installation at select locations within Flintrock Pond,
- monitoring well installation in selected areas on and adjacent to the FTA and west of Flintrock Pond,
- groundwater screening for PFAS south and southeast of the FTA and Flintrock Pond, and
- sampling groundwater from new Phase II CSA monitoring wells west of Flintrock Pond for PFAS analysis.

Phase II CSA activities are ongoing and will be discussed in detail in the Phase II CSA report.

This (IRA) Status and Remedial Monitoring Report (RMR) No. 64 is being submitted to MassDEP as an attachment to the BWSC 105 Immediate Response Action (IRA) and BWSC 105A and 105B IRA Remedial Monitoring Report Transmittal Forms. Due to the inclusion of Interim Phase II CSA information in this report, this report is also being submitted to MassDEP as an attachment to the BWSC 108 Comprehensive Response Action Transmittal Form. Completed copies of these forms prior to electronic signature are included in **Appendix A**.

As current owners of the FTA, Barnstable County, as represented by the Barnstable County Board of Regional Commissioners, have been named as the Potentially Responsible Party (PRP) for this release. The contact person for the Disposal Site and release is:

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BETA is performing MCP Response Actions on behalf of the Barnstable County Commissioners. The Licensed Site Professional (LSP) overseeing Response Actions for this release is:

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2.0 GENERAL DISPOSAL SITE INFORMATION

2.1 PROPERTY AND SITE DESCRIPTION

The former Barnstable County Fire and Rescue Training FTA (FTA or facility) is located on South Flint Rock Road in the Town of Barnstable. It appears on the United States Geological Survey (USGS) Topographic Quadrangle – Hyannis, Massachusetts -**Figure 1 – Site Location** map, prepared from a portion of the referenced USGS Topographic Quadrangle map. The Site is currently zoned for industrial use.

For the purposes of this and future MCP submittals, the property on which the FTA is located will be referred to as the FTA or facility. FTA or facility will also refer to the remaining or former structures, the land, and the former functions of the FTA.

In accordance with the MCP definition, where contamination attributable to the PFAS releases associated with firefighting foams and training on the FTA have come to be located will be referred to as the Disposal Site or Site.

Following the completion of the capping and select demolition project in November 2021, the 6.2-acre FTA is improved by one primary building, the former fire training building (with former classrooms, administrative offices, and two apparatus bays) and several additional structures including a wood frame former classroom building (now used for storage), two fabric Quonset hut sheds used for storage, a small concrete building housing one groundwater treatment system, a shipping container housing the second groundwater treatment system, and a small concrete block storage shed. Refer to **Figure 2 – Site Plan Detail**. All former live fire training structures and props have been demolished and/or removed from the Site. The FTA is secured by chain link fencing and a locked gate.

The FTA is listed on the Town of Barnstable Assessor's on-line records as Map 313, Lot 007. The FTA had been used for public safety training since the 1950's. The FTA was first constructed on land donated to the Town of Barnstable by the Cobb Trust in 1955. The current owner-of-record is the County of Barnstable, who acquired the facility from the Town of Barnstable in 1983 by deed recorded June 3, 1983, Barnstable Registry of Deeds, Book 3759, Page 39. Utilities servicing the FTA include municipal water, an underground septic system, aboveground electricity, and telecommunications.

The FTA was formerly used for public safety training by fire departments and fire districts from throughout Barnstable County, fire departments outside of Barnstable County, and other public and private institutions. Live fire training using firefighting foams, including aqueous film forming foams (AFFF), was conducted at the FTA for decades by fire districts and departments that used their own foam brought to the FTA in the apparatus of the organization participating in the training. Foam training exercises at the FTA ceased in 2009 according to FTA officials. Water training activities ceased in June 2019.

Land surrounding the FTA is primarily undeveloped, wooded land within public water supply protection areas. Flintrock Pond occupies approximately 6 acres directly to the west of the FTA. Several public water supply wells and their related facilities are located to the east, southeast, and west of the FTA.

At this time, the preliminary MCP Disposal Site (the Site) associated with RTN 4-26179 is considered to comprise approximately the majority of the FTA, the westerly adjacent Flintrock Pond, and a large woodland area to the southeast of the FTA, approaching Mary Dunn Pond.

The southeastern portion of the Site includes land owned by the Town of Barnstable, which is crossed by two electric power transmission lines running presumably within easements. Private industrial properties and related structures are located approximately 500 to 1,000 feet south of the Site. The Barnstable Municipal Airport is located to the west (runway 15 – 33) and south of the Site and the FTA.

The nearest residential properties are located approximately ¼ mile to the north of the Site. Based on 2010 U.S. Census data, the residential population located within a ½ mile radius of the Site is estimated to be less than 150 people. There are no known Institutions located within 500 feet of the Site. The municipal well pumping facilities referenced above (not part of the FTA) are not staffed full-time.

2.2 LATITUDE AND LONGITUDE / UNIVERSAL TRANSVERSE MERCATOR'S

The coordinates for the Site are shown below. For simplicity, these coordinates are for the southerly end of the FTA.

<u>Latitude/Longitude</u>	Latitude: 41° 40' 41.53"N
	Longitude: 70° 17' 7.82"E
<u>UTM Coordinates</u>	Easting: 393,002
	Northing: 4,614,847

2.3 MASSDEP METHOD 1 CATEGORIES

2.3.1 GROUND WATER CATEGORY

As noted, the Site is located within a Zone II Public Water Supply Protection Area and a Medium-Yield Sole Source Aquifer.

Therefore, MCP Method 1 Ground Water Category 1 (GW-1) applies to the Site. Groundwater at the FTA facility itself Site is also categorized as Method 1 GW-2 because groundwater has been measured at depths less than 15 feet below grade and an occupied building is located within the FTA facility.

All ground waters within the Commonwealth are considered a potential source of discharge to surface waters and shall be categorized, at a minimum, as Method 1 GW-3. Therefore, the applicable Method 1 Ground Water Categories for the Site are GW-1, GW-2, and GW-3.

2.3.2 SOIL CATEGORY

Soil categorization is based upon the type of human receptor and three potential exposure criteria: frequency of use, intensity of use, and accessibility of soil. The FTA portion of the Site is occupied by a former fire and rescue training facility. Based on the nature of the facility, children are assumed to be "not present." Adults who work at the site as staff members are assumed to be present at "high frequency" based on the MCP definition. However, since training ceased at the FTA, only limited staff are currently assigned to the former FTA – see below. Other County personnel periodically visit the facility, but only reportedly for short periods of time; therefore, their presence is considered to "low frequency." Recent Phase II CSA activities have identified soil near to, but outside of the fenced FTA compound with levels of PFAS 6 compounds above applicable MCP risk standards. This soil is adjacent to South Flint Rock Road or in wooded areas immediately east and south of the FTA fence line. Since these areas are undeveloped but unfenced, children and adults may be present at low frequencies.

Impacted soils have been identified in unpaved areas within the FTA, wooded areas outside the fence, and beneath recently paved areas at depths ranging from near the surface to approximately 15 feet below the ground surface. Therefore, impacted soils at the FTA are considered “accessible” (remaining unpaved areas) and “potentially accessible” (paved areas or deeper soil).

Only groundwater impacts at significant depths below the ground surface have been identified at the remainder of the Site (outside of the FTA or at distances greater than 50 feet from the fence line), which consists of undeveloped, industrially zoned land, a portion of a utility easement, and three unmanned public water supply well stations.

Intensity of use in regard to soil disturbance by adults at the Site may be conservatively considered to be “high” because the area of impact at the FTA could potentially be disturbed during FTA facility maintenance activities. However, the previously applied high use designation applied primarily to former on-Site training activities, which were of relatively short duration but with high intensity. Current exterior FTA facility activities are only maintenance-related and are similar in terms of duration to previous uses [maintenance of equipment is performed inside the remaining main building.] However, current maintenance activities are only of low intensity. Intensity of use by children only applies to incidental “use” of the areas on the shoulder of Flint Rock Road near the FTA or to the wooded areas within approximately 50 feet of the fence line. Based on these locations, intensity of use for children would be considered “low.”

Based on all of the factors described above, for current Site uses, soils at the Site are categorized as Soil Category S-2. The applicable Soil Categories for current Site uses have been identified as S-2/GW-1, S-2/GW-2, and S-2/GW-3.

The applicable Soil Categories for unrestricted future Site uses are S-1/GW-1, S-1/GW-2, and S-1/GW-3.

3.0 DISPOSAL SITE HISTORY AND OVERVIEW

The Site has historically been the subject of four MassDEP RTNs: 4-190, 4-11707, 4-20021, and 4-26179. This IRA, RMR, and Interim Phase II CSA Status Report is being submitted for RTN 4-26179 only. The original RTN, 4-190, is being managed separately; closure has been achieved for the remaining two RTNs.

3.1 RELEASE HISTORY AND DESCRIPTION - RTN 4-26179 (PFAS RELEASE)

UCMR3 Drinking Water Testing

In May 2012, USEPA issued their final rule “Revisions to the Unregulated Contaminant Monitoring Rule (UCMR3) for Public Water Systems,” which was a national sampling mandate for “emerging contaminants” in public water supplies. The required sampling list included several PFAS compounds, including but not limited to PFOS and PFOA. In November 2013, samples were collected from the Mary Dunn public water supply wells MD-1, MD-2, and MD-3 (see section 3.4 for additional information on these wells) and analyzed for PFAS.

At the time of the testing, the US EPA Provisional Health Advisory (HA) was 0.20 micrograms per liter (µg/L) for PFOS. Analytical results revealed evidence of PFOS contamination in all three wells sampled. MD-1 and MD-2 were temporarily removed from service. MD-3 was apparently not in use at that time. A treatment system that utilizes granular activated carbon (GAC) was later implemented for MD-1 and MD-

2 [July 2015] by the Hyannis Water Supply Division (HWSD) of Barnstable Department of Public Works. In 2016, GAC treatment was also implemented for MD-3. [See below].

In November 2013, Barnstable County personnel also collected soil and groundwater samples from the FTA property, located approximately 1,000 feet west of the Mary Dunn wells, and submitted them for laboratory analysis of PFAS. Groundwater analytical results revealed that FTA groundwater was impacted by PFOS. MassDEP was subsequently notified.

Voluntary Groundwater Pumping and Treatment and Site Assessment

As a voluntary measure, Barnstable County refurbished the former perchlorate pump and treat system located at the FTA to help remediate and contain the PFOS apparently migrating from the facility. The groundwater pumping and treatment system (GWPTS) was re-started using granular activated carbon (GAC) in the former, re-purposed perchlorate treatment vessels in July 2015. The system utilizes a groundwater recovery well, PRW-4, located approximately 800 feet southeast of the FTA. The groundwater treatment system (GWTS) itself is located in a structure on the FTA grounds.

In August 2015, Barnstable County funded a more detailed hydrogeological assessment, continued implementation of the groundwater pump and treat system to capture PFOS upgradient of the Mary Dunn wells, and additional assessment and immediate response actions. The Cape Cod Commission evaluated subsurface soil and groundwater conditions at the FTA facility as part of the assessment activities. The soil results indicated a broad area of PFOS contamination throughout the subsurface. The highest PFOS concentrations were detected near the southwestern corner of the FTA, a location subsequently referred to as the Hot Spot. Groundwater analytical results from the 2015 assessment revealed PFOS contamination ranging from less than 0.070 µg/L (the US EPA HA from 2016 to 2019) to over 4.0 µg/L. The groundwater samples were collected from monitoring wells across the area between the FTA and the Mary Dunn wells. Like the soil results, the highest PFOS concentrations were detected near the southwestern corner of the FTA. PFOS was also detected in soil at the FTA and in surface water and sediment within the adjacent Flintrock Pond.

In May 2016, US EPA revised/lowered its HA for PFAS from 0.20 µg/L of PFOS and PFOA to 0.070 µg/L for either compound or the total of the two. EPA noted that the HA was for drinking water exposures only.

Notice of Responsibility

In response to the lowered HA PFAS concentrations and the assessment conducted at the FTA, on August 4, 2016, MassDEP issued a Notice of Responsibility (NOR) to Barnstable County. As summarized in the NOR, based on the detected PFAS concentrations in soil and groundwater at the FTA and the inferred groundwater flow direction being to the east and southeast (toward the Mary Dunn wells), MassDEP determined that the releases of PFAS from the use of AFFF at the FTA is a source of PFAS detected in the Mary Dunn wells. The NOR required submittal of an Immediate Response Action (IRA) Plan no later than September 15, 2016. MassDEP requested that the Site owner evaluate potential Imminent Hazards relative to downgradient public and private water supply wells. MassDEP indicated that this evaluation should include identification of all nearby public and private water supply wells, review of any existing analytical data for those wells, and sampling and analysis of any nearby wells that have not been sampled for PFAS. MassDEP also stated that the IRA Plan should include measures to prevent, eliminate, and/or abate any hazards associated with the consumption of drinking water impacted by PFAS above the HA level of 0.070 µg/L. MassDEP also required, as part of IRA activities, the reduction of the mass of PFAS at the FTA and the concentrations of PFAS in groundwater migrating from the FTA facility, such as excavating the soil Hot Spot and expanding the existing groundwater treatment system to decrease the mass of PFAS in groundwater.

IRA Plan

On September 27, 2016, on behalf of Barnstable County, the Cape Cod Commission submitted an IRA Plan to MassDEP to address the PFOS/PFOA impacts. The IRA Plan included an evaluation of imminent hazards to downgradient public and private water supplies, a Hot Spot removal plan, and plans for an interim expansion of the existing groundwater pump and treatment system.

The proposed IRA to address the soil Hot Spot was to excavate up to 200 cubic yards from a 400 square foot area for off-Site disposal. The Hot Spot soil was removed in January 2017, reducing the primary source of PFOS contamination leaching into groundwater. However, post-removal grading and settling of the backfill in the Hot Spot area left it prone to infiltration of runoff from the southern portion of the FTA.

Between December 2016 and February 2018, the Cape Cod Commission submitted monthly IRA Status and Remedial Monitoring Reports (RMRs) to MassDEP for the PFAS release. The RMRs addressed the FTA GWPTS, which was recovering and treating approximately 20,000 to 50,000 gallons per day (gpd) of groundwater from well PRW-4 at that time. The Site groundwater pump and treat system was intended to reduce PFAS concentrations in the aquifer before it reached the Mary Dunn municipal wells and treatment systems. Refer to Section 3.2 for additional information.

The Mary Dunn wells are equipped with GAC treatment systems to remove PFAS. The Mary Dunn wells as the well as the GAC treatment systems are operated by SUEZ North America under contract with the HWSD. The GAC treatment of the Mary Dunn wells is actively preventing a potential Imminent Hazard to the Hyannis community by removing the PFAS compounds from the water supply. A Settlement Agreement between the Town of Barnstable and Barnstable County requires the County to fund a portion of the costs for operating the Mary Dunn wells treatment systems as well as a portion of the capital costs to install the GAC systems. Timely exchange of pumping and performance data related to the treatment of the Mary Dunn well water supplies to verify effectiveness of the IRA is noted in the Settlement Agreement between the parties.

On behalf of Barnstable County, BETA submitted monthly IRA Status reports and RMRs from March 2018 through January 2022. Status reports are now filed on a six-month basis. As detailed in recent IRA Status and RMR reports, including this report, groundwater monitoring data for locations across the Disposal Site confirm that elevated PFAS concentrations are still present in Site groundwater.

Analytical data from select monitoring wells indicate that PFAS concentrations in groundwater sampled in the former Hot Spot area have significantly decreased following the Phase 1 stormwater improvements repair of the cap under the June 28, 2018 IRA Plan Modification); however, there have been some recent increases in PFAS concentrations southeast of the former Hot Spot. PFAS concentrations remain stable in groundwater sampled from wells east of the FTA; and PFAS concentrations remain elevated in groundwater sampled from within the area southeast of the FTA between the facility and the Mary Dunn wells. See Section 6.7 for the most recent (July and November 2022) groundwater monitoring data.

3.2 GROUNDWATER PUMP AND TREAT SYSTEMS

MCP response actions were conducted in the early 1990s and 2000s to address first petroleum releases and later the detection of perchlorate. To remediate and control migration from the petroleum and perchlorate releases, in 1998 and 2007, respectively, response actions included the installation, upgrade, and/or renovation of a GWPTS (recovery well and treatment system) at the Site. The 2007 renovation was to treat a perchlorate release detected at the Site. The perchlorate release was abated and closed under the MCP, and the GWPTS was decommissioned.

In July 2015, the decommissioned GWTS was renovated again and re-started to help remediate and contain the PFAS migration from the FTA; see below. The operational GWPTS was later noted in the NOR issued by MassDEP in August 2016 as part of the on-going IRAs. The NOR also requested that Barnstable County install additional recovery wells or increase the groundwater recovery rate to increase PFAS removal; see discussion of GWTS# 2 below. The approximate locations of key components of the GWPTS that are located on the FTA are shown on **Figure 2 – Site Plan Detail**. The location of the operating recovery well, PRW-4, and the approximate route of the force mains (two, 2-inch polyethylene pipes) are shown on **Figure 3 – Site Plan**.

Refer to Section 4.1 for additional general information and Sections 5.1 and 5.2 for specific operational and performance monitoring results for this IRA and RMR reporting period.

GWTS # 1

In July 2015, the primary influent/recovery well pump installed in recovery well PRW-4 was repaired, a new variable frequency drive (VFD) unit pump was installed in the treatment system, and all accompanying electrical components were evaluated and repaired. The system was restarted in July 2015 upon the installation of 1500 pounds (lbs.) of aqueous phase GAC (Filtrisorb 400 virgin GAC) into each of the two existing Siemens treatment vessels. The “capture zone” of PRW-4 was reportedly estimated to be 200 ft. at 40 gallons per minute (gpm). Groundwater is pumped from recovery well PRW-4 through two, 2-inch dia. HDPE, eight-hundred-foot force mains to the treatment building on the FTA; see Figures 2 and 3.

The groundwater is discharged to an equalization tank, then filtered through a 5 or –10-micron size bag filter and pumped through two GAC vessels in series. The treated groundwater is discharged by gravity to several large recharge chambers in a north-central location of the FTA, upgradient of the recovery well and approximately cross-gradient of the highest levels of PFAS contamination detected at the FTA property. See Fig. 2 for the location of the recharge basins. As appropriate to prevent breakthrough of the PFAS6 compounds, the GAC is periodically changed out.

GWTS # 2

As noted, the NOR also requested that Barnstable County increase the groundwater recovery and treatment rate to increase PFAS removal from the aquifer. In November 2019, a second, supplemental treatment system was installed, designated as GWTS#2, to treat water from the existing recovery well and better use its extraction capacity. One of the two force mains was re-piped and connected via hose and hard piping to GWTS#2. The system is contained in a mobile structure (former shipping container) and is designed to treat PFAS-impacted groundwater by GAC adsorption at a target flow rate of approximately 30 gpm.

Since the inception of treatment for PFAS in 2015 through 2021, the spent GAC was collected by the supplier, Calgon Carbon Corp. (Calgon), during the changeout procedure and transported to their facility for thermal regeneration or destruction. For the 2022 carbon changeout, Carbon Filtration Systems (CFS) was the chosen vendor to supply new GAC from a different supplier, changeout the GAC, and transport the spent GAC to the GAC supplier’s facility for thermal regeneration; see section 6.5. As noted above, the FTA GWPTS uses virgin, coal-based GAC that has been specified for removal of PFAS compounds. Prior to 2022, the GAC was supplied by Calgon, although it was typically changed out by CFS, as the local vendor. The GAC currently in use is supplied by NORIT Americas, Inc. See section 6.5 for updated information.

Currently, Groundwater Treatment Technologies, LLC (GWTT) is contracted by Barnstable County to provide O&M of the GWTS, including but not limited to bag filter checks and replacements, VFD pump monitoring, carbon vessel backwashing, and GAC replacement oversight.

Additionally, BETA collects monthly samples for PFAS from both systems to check their treatment performance (See section 5.0).

Monthly monitoring of GWTS #2 after the changeout of GAC in July 2021 indicated early breakthrough of PFAS through the primary GAC vessel and elevated PFAS levels in the Midpoint samples in the months following. However, with the exception of the August 2021 sample, the PFAS 6 concentrations in the GWTS #2 Effluent sample were very low (< 2 ng/l) until January 2022.

Due to PFAS breakthrough GWTS #2 was shut down in February 2022. It remained off-line until October 2022 due to procurement and funding constraints for replacement of the GAC. In July and August 2022 Barnstable County was able to formerly engage an appropriate vendor CFS to perform the carbon change-out that is required. Refer to Sections 5.2 and 5.3 for more detailed information.

3.3 PHASE I INITIAL SITE INVESTIGATION AND TIER CLASSIFICATION

In May 2018, a Phase I Initial Site Investigation (ISI) Report and Tier Classification Submittal was submitted to MassDEP by BETA (formerly Nover-Armstrong Associates) on behalf of Barnstable County for the RTN 4-26179 release. The Phase I ISI confirmed that the primary contaminant of concern is PFOS and, to a lesser extent, PFOA. Based on the compiled Phase I Initial Site Investigation data, BETA opined in the Phase I report that continuation of the IRA activities and additional assessment and, potentially, additional remedial Response Actions are warranted at the Disposal Site.

A Phase II Comprehensive Site Assessment Conceptual Scope of Work (SOW) was submitted with the Phase I ISI outlining the scope, nature of investigation, and sample programs proposed to characterize the risk of harm posed to health, safety, public welfare, and the environment (for regulatory closure). The Phase II SOW proposed additional remedial and/or response actions such as continued monitoring of the Site groundwater conditions, potential soil removal or modifications to the existing groundwater treatment system to be implemented in the near future. At a later date, MassDEP indicated that a formal Phase II Comprehensive Site Assessment SOW was required to replace the Conceptual SOW.

A Tier Classification was submitted to MassDEP concurrently with the Phase I Report. Based on the need to continue remedial actions as IRAs under the current IRA Plan, and on the continuing need to abate a potential Imminent Hazard condition related to impacts to public water supplies, the RTN 4-26179 release was classified as Tier I.

3.4 ENVIRONMENTAL SETTING AND SENSITIVE RECEPTORS

As shown on the Massachusetts GIS Priority Resources (21E) mapping (**Figure 4**) the Site is located within a Zone II Public Water Supply Protection Area and a Medium-Yield Sole Source Aquifer. The FTA is situated to the west and most likely upgradient of the Mary Dunn public water supply wells 1, 2, and 3 (MD 1, MD-2, and MD-3) under pumping conditions. Mary Dunn Wells 1, 2, and 3, owned by the Town of Barnstable through the Hyannis Water Supply Division (HWSD) of the Barnstable Department of Public Works (DPW), are located within the Disposal Site boundary due to the detections of PFAS in the groundwater at those wells. There are no known private potable water wells located within 500 feet of the Site.

Mary Dunn Well 3 (MD-3), which is the nearest public water supply well to the facility, has been documented to pump at an average rate of 380 to 450 gallons per minute (gpm) it is located approximately 1,000 feet east of the FTA. Mary Dunn Wells 1 and 2 (MD-1 and MD-2) are located approximately 1600 feet and 1700 feet, respectively, southeast of the FTA. These wells have been reported to have been pumped at rates of 400 gpm each. Airport Well 1, also owned by HWSD, is located further to the southeast of the Site, south of Mary Dunn Pond.

Two other public water supply wells, identified as Barnstable Fire District (BFD) wells BFD-2 and BFD-5, are located to the west and most likely upgradient of the Site. The BFD wells are operated by Barnstable Fire District Water Department.

According to the USGS Topographic Quadrangle – Hyannis, Massachusetts, elevations at the Site are approximately 30 to 50 feet above mean sea level (MSL). Topography of the Site can be categorized as generally level with slight to moderate slopes downward to the west and southeast, toward Flintrock Pond and Mary Dunn Pond, respectively. However, this describes the general trend of the area. The FTA itself is relatively flat, most likely graded for the original construction of the facility, with the exception of sloping areas downward to the west in the vicinity of Flintrock Pond and to the north and southeast towards adjacent wooded areas. The wooded areas of the Site to the east and southeast of the FTA are characterized as typical hilly topography of the mid-Cape with its widely varying terrain. The Site is punctuated with small depressions, some intermittently filled with water, typical of the post-glacial terrain.

The nearest surface water bodies to the Site are Flintrock Pond and an unnamed pond; Flintrock Pond is located west adjacent to the FTA and the unnamed pond is located northeast of the FTA (as depicted in **Figures 2 and 3**). A portion of Flintrock Pond is located within the preliminary MCP Disposal Site Boundary based on the detection of PFAS in sediment and surface water. There are no streams or wetlands located at the Site.

3.5 FLINTROCK POND ASSESSMENTS

Per the *Order of Conditions: Special Conditions of Approval (SE3-5606)*, Item 17, the Town of Barnstable Conservation Commission required “new testing results for PFAS in Flintrock Pond.” From November 2019 to October 2020, BETA has conducted surface water and sediment sampling at Flintrock Pond. Potentially significant concentrations of the total summed of the five PFAS chemicals (PFOS, PFOA, PFNA, PFHxS, and PFHpA) were documented in the pond sediments and surface water. No MassDEP or US EPA regulatory standards or guidelines for sediment and surface water are available for comparison; however, the concentrations are elevated compared to current MCP Method 1 soil risk standards. Later compilations of the PFAS data include the sixth PFAS compound regulated under the MCP, Perfluorodecanoic Acid (PFDA). See Table 5A – Summary of Previous Sediment PFAS Analytical Data, attached.

Concentrations of PFAS documented within Flintrock Pond sediments are dominated by the PFOS and PFHxS compounds and vary significantly across the Pond. Refer to the previously completed IRA Status Reports submitted to MassDEP for more detailed information on the assessments previously conducted of Flintrock Pond.

In response to Commission’s input and to meet MCP requirements, a comprehensive assessment program for the pond is being implemented during the Phase II CSA. See Section 7.4.1 for a summary of the more recent extensive Phase II CSA assessment of Flintrock Pond.

3.6 SAMPLING AND ANALYSIS FOR PFAS

Prior to October 2022, BETA submitted all aqueous and/or soil samples to Bureau Veritas Laboratories (BV Labs) (formerly Maxxam Analytical) BV Labs is an accredited laboratory located in Mississauga, Ontario that has performed the PFAS analyses for all samples collected from the Disposal Site since the assessment for PFAS impacts began. Aqueous samples were analyzed for PFAS via USEPA Method 537.1 modified under BV laboratory standard operating procedure CAM SOP 0894. Soil or sediment samples were analyzed for PFAS via BV standard operating procedure CAM SOP 0894 based on the ASTM D7968-17 solvent extraction and Liquid chromatography/dual mass spectrometry (LC/MS/MS) analytical methods.

BV Labs reported the concentrations of 23 PFAS compounds from aqueous and soil samples with laboratory detection limits as low as 2.0 ng/L (0.002 µg/L). However, for the purposes of achieving the low laboratory detection limits to compare the results to the MCP GW-1 Standard of 20 ng/L for the monthly performance samples collected from the treatment systems, BV Labs was only able to report 21 PFAS compounds; two of the fluorotelomers are not reported.

In July 2022, BETA, on behalf of the County, solicited quotes from multiple laboratories for new contract pricing for PFAS analysis. Based on the quotes received, the County awarded a contract to Pace Analytical (Pace) (formerly Con-test Analytical Laboratory) in September 2022. Since October 2022, Pace has performed the analyses for PFAS of all samples from the FTA Site using Isotope Dilution-based methods, their internal SOPs (SOP 454 PFAS for aqueous sample analysis and SOP 466 PFAS for solid sample analysis). Pace reports the concentrations of 34 PFAS compounds from aqueous and solid samples with laboratory detection limits as low as 0.44 ng/L (0.00044 µg/L).

Upon receipt of a laboratory report, BETA reviews the concentration data as well as the laboratory case narrative and quality assurance report. BETA summarizes and tabulates the analytical results of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA) based on the MassDEP MCP PFAS risk standards (December 2019). BETA presents the tabulated data and includes the laboratory analytical reports (or Certificates of Analysis) for the reporting period in the IRA Status and RMR reports; the summary data tables, and laboratory analytical reports are included as attachments to these reports.

3.7 PUBLIC INVOLVEMENT

In January 2019, a petition from a group of residents of Barnstable and Hyannis, MA was received, requesting that the Site be designated a Public Involvement Plan (PIP) Site. In response, Barnstable County designated the Site as a PIP site and began PIP activities in accordance with 310 CMR 40.01404. Notification of the Site Designation and the initial public meeting was provided to all petitioners and the Town of Barnstable officials in writing in February 2019. On May 2, 2019, a public meeting was held, and the Draft Public Involvement Plan (PIP) was presented and distributed. Public comments (as they relate to the response actions implemented for the release of PFAS at the Site and are in accordance with 310 CMR 40.01404) were incorporated into the final Plan, which was finalized on June 27, 2019.

3.8 PUBLIC COMMENT DRAFT PHASE II COMPREHENSIVE SITE ASSESSMENT SCOPE OF WORK

As noted earlier, MassDEP indicated that a formal Phase II Comprehensive Site Assessment (CSA) SOW was required for the RTN 4-26179 PFAS Release Site. On July 16, 2021, a Public Comment Draft Phase II Comprehensive Site Assessment (CSA) Scope of Work was submitted via eDEP and made available for public comment. The Draft Phase II CSA SOW described the comprehensive assessment activities proposed to meet the Phase II objectives at 310 CMR 40.0833. A Public Information Meeting was held virtually on August 18, 2021. Public comments were accepted on the Draft Phase II CSA SOW until August 26, 2021. Several sets of public comments were received. The significantly revised and expanded final Phase II CSA SOW was submitted to MassDEP on March 23, 2022. The public comments received on the Draft Phase II CSA Scope of Work were addressed and incorporated into the final Phase II CSA Scope of Work, as appropriate and feasible.

3.9 PUBLIC INVOLVEMENT – FINAL PHASE II SCOPE OF WORK AND PROJECT UPDATE

On June 9, 2022, a virtual public meeting was held to present the implementation of the Final Phase II CAS SOW, to provide an update on the capping and demolition project of the former FTA, and to provide an

update of the groundwater conditions across the site. Questions and comments were taken at the end of the meeting.

4.0 PREVIOUSLY COMPLETED IRA ACTIVITIES

Since the submittal of the IRA Plan in September 2016, remedial response actions and assessment activities have continued to address the PFAS impacts at the Site.

This section summarizes previously completed and continuing IRA response actions at the Site. Details regarding these IRA response actions can be found in previous IRA Status submittals. Details of IRA activities during the current reporting period are presented in Section 5.0.

4.1 CONTINUING OPERATION & MAINTENANCE OF GWTS

4.1.1 GROUNDWATER RECOVERY AND TREATMENT FOR PFAS - BACKGROUND

As noted previously, Barnstable County and the Cape Cod Commission implemented response actions to refurbish and re-start a decommissioned groundwater pump and treatment system at the Site in 2015. Details regarding the refurbishment and initial operation of this pump and treatment system were included in the September 2016 IRA Plan. Cape Cod Commission oversaw and documented the GWPTS performance on behalf of Barnstable County from July 2015 through February 2018. The Cape Cod Commission also conducted groundwater monitoring and oversaw operation and maintenance of the recovery well, PRW-4. The refurbished treatment system remains in operation, although it has experienced unscheduled shutdowns due to equipment breakdowns. Following the mobilization and start-up of a second groundwater treatment system in November 2019 (see Section 4.1.3), the system refurbished in 2015 has been referred to as GWTS #1, or the primary system in MCP filings.

Monthly performance monitoring samples have been collected since GWTS #1 startup in July 2015, from the influent (PRW-4), midpoint, and effluent sample locations. Since November 2019, performance samples have been collected monthly from both GWTS # 1 and GWTS #2.

Periodic monitoring of the system is required to maintain operation of the VFD and recovery well pump including carbon exchanges, regular backwashing of the carbon vessels, force mains cleanouts, and replacement of the recovery well pumps. This work is currently performed by a wastewater treatment system operator, Groundwater Treatment and Technology (GWTT), under contract to the County. Since November 2019, GWTT maintains and operates both GWTS#1 and GWTS#2 systems.

IRA activities related to the operation and maintenance of the GWPTS conducted during earlier reporting periods have been described in detail in previously completed IRA Status Reports submitted to MassDEP. Refer to those submittals for complete information. The previously submitted documents are available on the MassDEP Sites Database; refer to the following link to access these reports.

<https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0026179>.

On behalf of Barnstable County, BETA submitted monthly IRA remedial monitoring reports and status reports summarizing pump and treat system operations for the respective reporting period between March 2018 and January 2022. Since January 2022 IRA remedial monitoring reports and status reports have been submitted every six months. These submittals have included running, summary data of the PFAS analytical data from the monthly system samples and the respective laboratory analytical reports. As noted previously, the laboratory reports for monthly GWTS performance monitoring provide the

results for 21 to 34 PFAS compounds (depending on laboratory) in order to allow for lower laboratory reporting limits.

4.1.2 HEALTH ADVISORIES AND REGULATORY STANDARDS USED FOR COMPARISON

During the initial two years of the GWPTS operation (July 2016 through June 2018), the USEPA revised Health Advisory (HA) of 0.070 µg/L for two PFAS chemicals, Perfluorooctanoic acid (PFOA) and Perfluorooctanesulfonic acid (PFOS), was used for comparison to the analytical results of GWPTS performance samples. The HA (revised downward to 0.070 µg/L in July 2016) applied to each compound individually or for the total concentration of the two (PFOS and PFOA). Subsequently, MassDEP adopted the USEPA HA. The USEPA considers its HA to still be in effect. However, for MCP purposes it has been superseded by MassDEP guidelines and regulatory actions.

On June 11, 2018, MassDEP's Office of Research and Standards (ORS) issued an updated ORS Guideline/HA that applied to the individual concentrations, or the total summed of five PFAS chemicals: PFOS, PFOA, Perfluorononanoic Acid (PFNA), Perfluorohexanesulfonic Acid (PFHxS), and Perfluoroheptanoic Acid (PFHpA). From June 11, 2018, until December 2019, individual concentrations of any of these five compounds or the total concentrations of all were compared to the MassDEP ORS HA of 0.070 µg/L.

On April 19, 2019, MassDEP released the Public Comment Draft of proposed revisions to the MCP, which included proposed Method 1 groundwater risk standards for the five PFAS compounds, plus an additional PFAS compound, Perfluorodecanoic Acid (PFDA). A Method 1 GW-1 risk standard of 0.020 µg/L was proposed for the individual concentrations of any of these six compounds or the total concentrations of all six. In December 2019, MassDEP published final MCP Method 1 risk standards for the PFAS6 compounds with an effective implementation date of December 27, 2019. From May 2019 through the current reporting period, tabulated treatment system analytical results have been compared to the six regulated PFAS compounds. The final MCP PFAS risk standards for groundwater include the 6 PFAS compounds of concern (PFAS6) listed above and the 0.020 µg/L¹ which is the GW-1 numerical risk standard for each compound or for the total of the PFAS6. These MCP risk standards are included in all relevant tables in the monthly and quarterly monitoring reports.

Except where noted (due to older data), total PFAS concentrations reported and discussed in this report are the sum of concentrations of the PFAS6 compounds included in the final MCP risk standards of December 27, 2019.

4.1.3 IMPLEMENTATION OF GROUNDWATER TREATMENT SYSTEM No. 2

In November 2019, the County procured (rented) and started a second treatment system, GWTS #2, in an effort to increase the treatment capacity of groundwater available hydraulically from PRW-4. As a result, groundwater conveyed from PRW-4 was split and re-piped to both GWTS #1 and GWTS #2. Therefore, although there are two treatment systems, they both treat water from one source, recovery well PRW-4. Collectively, the recovery well and the two treatment systems are referred to as the groundwater pump and treatment system (GWPTS).

¹ Concentrations of PFAS are presented in the data tables of this report in nanograms per liter (ng/L), also referred to as parts per trillion (ppt) and are reported by the laboratory in those units. However, the published MCP Method GW-1 numerical risk standards for PFAS compounds (PFOS, PFOA, PFNA, PFHpA, PFHxS, and PFDA) are presented in micrograms per liter (µg/L), also referred to as parts per billion (ppb). In the relevant sections of this report, results are shown in both units.

4.2 HOT SPOT SOIL REMOVAL

Barnstable County and the Cape Cod Commission oversaw the excavation of 200 cubic yards of PFAS impacted soils from the former “Hot Spot” area (a 400 square foot area) for off-Site disposal in January 2017. Details regarding the Hot Spot soil removal were included in the January 2017 IRA Status Report.

4.3 HOT SPOT AREA CAPPING

From December 2018 through February 2019, Barnstable County implemented the regrading and temporary capping of the southwest corner of the FTA, including the former Hot Spot area, with related stormwater controls, termed the Phase I Stormwater Management Improvements/IRA Plan Modification. Additional details regarding the Phase I Stormwater Management Improvements were included in the February 2019 Reporting Period IRA Status No. 27 Report.

4.4 SITE WIDE CAPPING AND SELECT BUILDING DEMOLITION

In response to a directive from MassDEP, an IRA Plan Modification was finalized in December 2019 for Sitewide capping and stormwater improvements. In 2020 to 2021, final design was completed for capping of the majority of the former Fire Training Academy and the demolition of former live-fire training buildings and all training props at the Site. The plans were submitted for approval to the Town of Barnstable via a Notice of Intent in February 2020. Final design approval and an Order of Conditions was obtained in November 2020 and January 2021 respectively. IRA Plan Modification No. 3 was also finalized in June 2021 to formalize the inclusion of selected building demolition into the project.

The County received public bids for the project in April 2021. The capping project was awarded in July 2021. Construction began in August 2021 and was substantially completed in October 2021. The former live fire training buildings and other fire training props and features were demolished and disposed of off-Site. Approximately 650 tons of PFAS contaminated demolition debris and materials associated with these structures were transported to and disposed at the US Ecology / Wayne Disposal, Inc. disposal facility in Belleville, MI in September 2021. Approximately 59,000 square feet (SF) of unpaved portions of the FTA were capped with 3.5-inches of hot mix asphalt pavement following installation of a stormwater management system and regrading of the facility. Additional details, photographic documentation of the completed cap, and waste disposal documentation were provided in IRA Status Report No. 60 for the November 2021 reporting period.

5.0 IRA ACTIVITIES CONDUCTED JULY 2022 TO DECEMBER 2022

5.1 CURRENT OPERATION & MAINTENANCE OF GWTS SYSTEMS

During the July to December 2022 reporting period, the primary treatment system (GWTS #1) was in operation approximately 164 days and secondary system (GWTS #2) was in operation for approximately 79 days. During the current reporting period, the recovery well and both treatment systems incurred several scheduled and unscheduled shutdowns.

In August and September, GWTS #1 was shut down for scheduled GAC changeouts, carbon vessel replacements, and recovery well (PRW-4) cleaning and maintenance. GWTS #1 was down for 8 days, August 17, 2022 to August 25, 2022, for GAC changeout and GAC vessel replacement, as well for 7 days, September 20, 2022 to September 27, 2022, for scheduled recovery well cleaning. However, the

shutdown was intended to be shorter but had to be extended for unscheduled replacement of the recovery well pump. In addition, an unscheduled shutdown occurred in July; see Section 5.2.2.

GWTS #2 was shut down for a significant portion of the current reporting period. The system was shut down on February 18, 2022 (previous reporting period), as a result of breakthrough observed during the previous monthly reporting period (January 2022). Groundwater that was flowing into GWTS #2 was routed into GWTS #1 while GWTS #2 waited for a carbon changeout. However, the shutdown had to be extended for a long time period in order to renew the contract for rental of the system and due to the observation of internal damage in one of the system's GAC vessels. Re-start was attempted in September 2022; however, on the day that GWTS #2 was scheduled to be re-started, internal piping in one vessel was observed to have broken off, rendering it inoperable. See Sections 5.3.2 and 5.5 for more information. On October 14, 2022, after replacement GAC vessels had been installed and virgin carbon added, GWTS #2 was restarted. With both systems in operation, water was once again split between the 2 systems.

Between July and December 2022, GWTS #1 was sampled 6 times (once per month) and GWTS #2 was sampled a total of 3 times (October, November, and December 2022).

5.2 REMEDIAL MONITORING REPORT – GWTS #1

5.2.1 GWTS #1 SYSTEM MONITORING RESULTS

As noted, system samples were collected from the Influent (PRW-4), Midpoint, and Effluent ports monthly – on July 27, 2022, August 30, 2022, September 20, 2022, October 25, 2022, November 30, 2022, and December 22, 2022. July, August, and September samples were submitted to Bureau Veritas Laboratories (formerly Maxxam Analytics) of Mississauga, Ontario (Bureau Veritas) for the laboratory analysis of Total PFAS via USEPA Method 537.1m. For the analysis of the treatment system performance samples, Bureau Veritas uses a low-level detection variant of the US EPA 537M to achieve the lowest method detection limits (MDLs) and reportable detection limits (RDLs) to allow for comparison to the MCP Method 1 GW-1 risk standards. This method provides RDLs in the range of 2 to 4 ng/L and MDLs below 1 ng/L for the list of PFAS analytes reported by the laboratory. Bureau Veritas reports the results for 21 PFAS compounds, including two (2) PFAS precursor fluorotelomers. Details are presented in the laboratory report.

October, November, and December 2022 samples were submitted to PACE analytical (formerly Contest) of East Longmeadow, MA for the laboratory analysis of Total PFAS via their internal SOP 454 PFAS, isotope dilution-based method for aqueous sample analysis. Pace reports the concentrations of 34 PFAS compounds from aqueous with laboratory detection limits as low as 0.44 ng/L (0.00044 µg/L). Details are presented in the laboratory report.

Refer to the attached **Table 1A**, for a summary of the GWTS #1 PFAS analytical data. The complete laboratory reports are included in **Appendix B**.

Influent / PRW-4 Data

Recovery well PRW-4 is the source of the Influent groundwater. The individual concentrations of the six Massachusetts regulated PFAS (PFAS6) compounds in the Influent (PRW-4) samples for each monthly sampling round are listed on Table 1A. The sum of the six Massachusetts regulated PFAS (PFAS6) concentrations in the Influent (PRW-4) samples for each monthly sampling round were:

- 680 ng/L - July 27, 2022
- 469 ng/L - August 30, 2022
- 548 ng/L - September 20, 2022
- 555 ng/L - October 25, 2022

- 602 ng/L - November 30, 2022
- 710 ng/L - December 22, 2022

The monthly totals are well above the GW-1 risk standards. During the July to December 2022 reporting period, four of the six regulated PFAS compounds (PFOS, PFOA, PFHxS and PFHpA) were detected in the Influent/PRW-04 samples at concentrations exceeding the MCP GW-1 risk standard (20 ng/L/0.020 µg/l); PFDA and PFNA were detected at concentrations below the MCP GW-1 standard. Based on the splitting of flow from PRW-4 to both groundwater treatment systems, the Influent analytical results apply to GWTS #2, as well as GWTS #1 (this is applicable only to the October to December 2022 sampling rounds in this reporting period due GWTS #2 being shut down from February 2022 to October 2022,). **Figure 5**, attached, depicts the concentration trends observed in groundwater at the extraction well PRW-4, as measured as the Influent to the groundwater treatment systems. Due to the nature of the laboratory data reported from 2015 until December 2019, this graph depicts the total concentration of the PFOS and PFOA compounds only. Following a downward trend from December 2020 through July 2021, the total PFAS6 concentrations in the Influent/PRW-4 samples have been relatively consistent in the range of approximately 500 to 700 ng/L.

Midpoint Data

The PFAS6 compounds were detected at concentrations above the laboratory reporting limits in the July 2022 Midpoint sample -see Table 1A. The same four PFAS compounds detected at elevated concentrations in the Influent were detected at concentrations exceeding the MCP GW-1 risk standard (20 ng/L/0.020 µg/l), while PFNA and PFDA were detected at concentrations below the MCP GW-1 standard. Following receipt of the July 2022 performance sample results, a changeout of the GAC was scheduled and conducted on August 17, 2022 – see below. Following the changeout, PFAS6 concentrations were below laboratory reporting limits with one exception in the December 2022 Mid-Point sample. The sum of the PFAS6 compounds in the monthly Midpoint samples were:

- 390 ng/L - July 27, 2022
- BRL - August 30, 2022
- BRL - September 20, 2022
- BRL - October 25, 2022
- BRL - November 30, 2022, and
- 8.3 ng/L – December 22, 2022.

As noted, the July 2022 Midpoint PFAS6 concentrations were above the GW-1 risk standards, indicating PFAS breakthrough of GAC vessel #1. Once BETA received the laboratory results, system #1 was shut down on August 17, 2022 for a carbon changeout (as well as a major refit), as described in Sections 5.2.2 and 5.5; it was restarted on August 25, 2022. The December 2022 result was above laboratory detection limit for PFOS, but below MCP GW-1 risk standard; all other compounds were below reporting limits,.

Effluent Data

PFOS was the only PFAS6 compound detected in an Effluent sample during the reporting period. PFOS was detected but at concentrations below the MCP GW-1 standard in the August and December 2022 monthly samples only. Refer to Table 1A and the complete laboratory reports in **Appendix B** for the concentrations of the remaining unregulated PFAS compounds as well as the laboratory RDLs and MDLs.

5.2.2 GWTS #1 OPERATIONAL DETAILS

The attached **Table 2A** presents the GWTS #1 performance data. Early in July 2022 an unscheduled shutdown of GWTS #1 occurred. As noted on Table 2A, when system checks were conducted on July 5,

2022, it was noted that the recovery well pump was not operating and the water in the equalization tank was low. The county mobilized an electrician to the site, and it was determined that it was a faulty time delay. Once the necessary repairs were made, the system was returned to operation on July 5, 2022. It could not be determined exactly how long the pump was not operating, but it was operational during the last system check conducted on June 30, 2022. It has been assumed that the system may have been down for the 5 day period between June 30, 2022 and July 5, 2022.

Shutdowns

A scheduled shutdown of GWTS #1 was initiated on August 17, 2022 for major maintenance and upgrades, including changeout of the GAC. A complete changeout of the GAC was scheduled in two separate steps in coordination with the decommissioning, removal, and replacement of both GAC vessels in GWTS #1. The original steel vessels, converted to use GAC in 2015, had deteriorated to the point where it was determined that it was necessary to fully replace both units. Following installation of two replacement rental vessels, supplied by Carbon Filtration Systems of Johnston, RI, 1,500 pounds of virgin, coal-based GAC was placed in each vessel and hydrated. Following a period of hydration, GWTS #1 was re-started on August 25, 2022. System #1 was again shutdown, indirectly, from September 20, 2022 to September 27, 2022 for maintenance and redevelopment of the recovery well (PRW-4) and well pump replacement, as described in detail in Sections 5.5 and 5.6 below. Therefore, the system was in operation approximately 164 days during the July 2022 to December 2022 reporting period.

Estimated Influent Flow Rates

The combined estimated, instantaneous Influent flow rates (for GWTS #1 July 2022 to December 2022 and for GWTS #2 part of October 2022 to December 2022) ranged from approximately 16.4 gpm to 56.9 gpm (these are approximate monthly averages for the combined instantaneous flow rates). Due to the method used to estimate the instantaneous influent flow rate (timing of rise of groundwater in the GWTS #1 Equalization Tank with both force mains discharging to it), the values noted above and shown on **Table 2A** in the Combined Instantaneous Estimated Flow Rate column apply to both systems, with the exception of February 2022-October 2022 when GWTS #2 was off-line, and all Influent flow went to GWTS #1.

Therefore, during the normal mode of operation, with the flow from each force main flowing to only one system, it is assumed that roughly 50% of the instantaneous influent rates stated above actually flows to GWTS #1 for treatment. Those values are shown on **Table 2A** in the Estimated Instantaneous Flow Rate column.

As shown on **Table 2A**, during July, August, September, and a portion of October 2022 all recovered groundwater was routed into GWTS #1 rather than being split between the 2 systems; Table 2A values reflect that special circumstance. The Instantaneous Influent Flow Rates are indicative of the output of PRW-4 and conveyance capacity of the influent force mains from the well to the treatment system.

Groundwater Volume Treated and Average Flow Rate

For the July 2022 to December 2022 reporting periods, the overall (average) system flow rates and gallons of groundwater treated are based on the Effluent flow meter/totalizer readings reported for system #1. The monthly total gallons of groundwater treated during the July 2022 to December 2022 ranged from approximately 0.407 million gallons (August 2022) to 0.690 million gallons (September 2022) with monthly average effluent flow rates that ranged from of 12.5 gpm to 20.0 gpm. The total gallons treated by GWTS #1 for the July to December 2022 reporting period was approximately 3.5 million gallons.

Based on the approximate gallons treated and total influent concentrations of PFAS each month a total of approximately 0.0098 kilograms of PFAS were estimated to have been removed from the groundwater

by GWTS #1 during the July to December 2022 reporting period. Results for each month are provided on **Table 2A**.

5.3 REMEDIAL MONITORING REPORT – GWTS #2

5.3.1 GWTS # 2 MONITORING RESULTS

As previously mentioned, GWTS#2 was brought back on-line in October 2022, after a GAC changeout and carbon vessel replacement. BETA collected performance samples from GWTS #2 system on October 25, 2022, November 30, 2022, and December 22, 2022. Samples collected from the Midpoint, and Effluent ports were submitted to PACE analytical for the laboratory analysis of Total PFAS via their internal SOP 454 PFAS for aqueous sample analysis. As noted above, recovery well PRW-4 is the source of the Influent groundwater to both groundwater treatment systems. Therefore, the Influent analytical results for GWTS #1 discussed in Section 5.2.1 apply to GWTS #2, as well.

The attached **Table 1B** summarizes the GWTS #2 PFAS analytical data. The complete laboratory report is attached in **Appendix B**.

As previously mentioned, the tabulated treatment system analytical results from GWTS #2 are reported and compared to the PFAS6 compounds and their respective MCP Method 1 GW-1 Standards; see discussion in Section 5.2.1 above.

Midpoint Data

Two of the PFAS6 compounds, PFOS and PFHxS, were detected at concentrations above the laboratory reporting limits in the December 2022 Midpoint sample; however, these concentrations were still below the MCP GW-1 risk standard (20 ng/L/0.020 µg/l) -see Table 1B. The remaining results were below laboratory reporting limits. The sum of the PFAS6 compounds in the October-December 2022 monthly Midpoint samples were:

- BRL - October 25, 2022
- BRL - November 30, 2022, and
- 10.7 ng/L – December 22, 2022.

The December 2022 result may have been due to the lack of GWTT's ability to backwash the carbon vessels, due to lack of temporary tank storage space.

Effluent Data

The PFAS6 compounds in the Effluent samples were not detected at concentrations above the laboratory reporting limits in the three monthly samples. Refer to Table 1A and the complete laboratory reports in **Appendix B** for the concentrations of the remaining unregulated PFAS compounds as well as the laboratory RDLs and MDLs.

5.3.2 GWTS #2 OPERATIONAL DETAILS

The attached **Table 2B** summarizes the GWTS #2 performance details. The system had been taken off-line on February 18, 2022, as a result of breakthrough observed during the previous monthly reporting period (January 2022) and had remained off until the system was restarted on October 14, 2022. The system was operational for approximately 79 days during the July to December 2022 reporting period.

Estimated Influent Flow Rates

As described in previous sections, during the normal mode of operation, with the flow from each force main flowing to only one system, it is assumed that roughly 50% of the instantaneous influent rates

discussed above for GWTS #1 *actually* flow to GWTS #2 for treatment. Based on that assumption, for the July to December 2022 reporting periods, the calculated average estimated instantaneous flow rate for GWTS #2 ranged from approximately 18.6 gpm to 28.4 gpm.

Groundwater Volume Treated and Average Flow Rate

The overall (average) system flow rate and gallons of groundwater treated were based on the Effluent Flow Rate/net totalizer readings reported for the system by the GWTT; approximately 1.49 million gallons of groundwater were estimated to be treated during the operational time for GWTS #2 for this reporting period, with approximate Average Effluent Flow Rates ranging from 10.8 gpm to 15.2 gpm.

Based on approximately 1.49 million gallons treated, approximately 0.0036 kilograms of PFAS were estimated to have been removed from the groundwater by GWTS #2 during this abbreviated operational reporting period.

5.4 REMEDIAL MONITORING REPORT SUMMARY

During the July to December 2022 reporting period, treatment system GWTS #1 was in operation for all or portions of 164 days. GWTS #2 was in operation for all or portions of 79 days. The overall (average) system flow rate and gallons of groundwater treated, based on the available Effluent flow totalizer readings for both systems, was approximately 4.99 million gallons.

Figure 5 depicts the concentration trends observed in groundwater at the extraction well PRW-4, as measured as the Influent to the groundwater treatment systems. Due to the nature of the laboratory data reported from 2015 until December 2019, this graph depicts the total concentration of the PFOS and PFOA compounds only. Following a spike in concentrations in mid-2019, PFOS and PFOA concentrations have generally decreased, or have remained relatively stable at PRW-4. Following a downward trend from December 2020 through July 2021, the total PFAS6 concentrations in the Influent/PRW-4 samples have been relatively consistent in the range of approximately 500 to 700 ng/L. The detected concentrations in the Influent samples remain elevated relative to the GW-1 risk standards.

The completed BWSC 105 Immediate Response Action (IRA) and BWSC 105A and 105B IRA Remedial Monitoring Report Transmittal Forms, except for electronic signature, are included in **Appendix A**.

5.5 SYSTEM #1 AND SYSTEM #2 CARBON CHANGEOUT AND VESSEL REPLACEMENT

On August 17, 2022, both systems were shut down for changeout of the granular activated carbon (GAC) within both system's carbon vessels. Carbon Filtration Systems (CFS) was contracted by the County to supply virgin GAC, complete removal of the spent GAC in the four (4) separate carbon steel vessels, transfer of 1,500 pounds of new GAC into each vessel, transportation of new and spent GAC, and regeneration or disposal of the spent GAC. CFS vacuumed the spent GAC out of the 4 on-site vessels on August 17, 2022.

The removal of the spent GAC was also the necessary first step in the replacement of the steel vessels housing the GAC in GWTS #1. Leaking had been observed for some time from permanent fittings on the bottom of one GAC vessel in System #1, the general conditions of the units was deteriorating, and the internal water distribution and collection piping/screens within the vessels were suspected of allowing GAC to migrate and restrict flow. The County, BETA and GWTT had determined that repairs to the vessels were not feasible, and that replacement was required before complete failure occurred. The County, with the assistance of BETA, had procured the long-term rental of two new steel pressure vessels with a capacity of more than 1,500 pounds of GAC each and capable of up to 45 to 55 GPM flow rates.

On August 18, 2022, the County removed the two empty GAC vessels from System #1. CFS returned to the Site on August 22, 2022, to install new rental GAC vessels in System #1 and fill the vessels with virgin GAC. The carbon was hydrated with water and System #1 was started on August 27, 2022.

August 18, 2022, System #2 vessels were inspected by GWTT and observed to still contain some packed carbon at the bottom of the vessels. CFS returned on August 22, 2022, to vacuum remaining carbon out of the System #2 vessels. However, damage was observed at the bottom of the lead GAC vessel – the water collection screens and piping at the bottom had separated from the tank making the unit unusable. Due to the damage to vessel #1 (which could not be repaired in place) GWTT determined that the vessels needed to be replaced. In the previous reporting period, the county had determined that the contract for the rental and O&M of GWTS #2 had expired and had to be re-procured. The re-bidding and award of the new contract proceeded through August and September 2022. A new contract for rental and O&M of GWTS #2 was awarded to GWTT, allowing for restoration of the system, and re-starting of groundwater treatment in that system, after replacement of the damaged GAC vessels. New rental vessels were installed by GWTT on October 6, 2022. CFS returned to the Site to transfer the virgin GAC (stored on-Site) into the vessels. BETA was on Site to oversee the transfer and hydrate the GAC with water. System #2 was restarted on October 14, 2022.

5.6 RECOVERY WELL MAINTANENCE

As part of system maintenance, the recovery well and force mains to the treatment buildings need periodic cleaning. Maher Services, Inc, (Maher) of North Reading, MA, was contracted by the Barnstable County to provide recovery well development services of PRW-4. On September 20, 2022, Maher mobilized to PRW-4 where the well was predeveloped by pumping and surging to remove material that accumulated in the well. The well pump was removed for cleaning and inspection. Pantomite PM 77 (NSF approved for drinking water wells) was added to the well and then discharged to the surface. Muriatic acid (HCl) was also added to the well and the acidified groundwater was pumped through the force mains and allowed to sit for approximately 48 hrs. Upon inspection by Maher, the well pump was plugged and worn, and was deemed inoperable. A new well pump was ordered and installed by Maher. The system was restarted on September 27, 2023.

5.7 QUARTERLY & ANNUAL GROUNDWATER MONITORING

Groundwater monitoring activities related to the documented PFAS Release on Site have been ongoing since November 2013. BETA, formerly Nover-Armstrong Associates, was contracted by Barnstable County to provide LSP and environmental services in April 2018 and has conducted groundwater monitoring activities since June 2018.

In November 2018, BETA proposed a long-term monitoring sampling plan for Site-wide groundwater monitoring on a quarterly and annual basis. Following discussion, MassDEP approved of the sampling plan that included sampling of twelve (12) wells during three quarterly sampling events and sampling an additional eight (8) wells (total of twenty (20) during the annual sampling round.

A copy of the plan can be found in previous IRA Status report submittals, including IRA Status Report and RMR No. 35 for the October 2019 reporting period. Additional monitoring points are added to either the quarterly or annual sampling round, as warranted to meet specific objectives or provide additional coverage.

BETA has conducted quarterly groundwater assessments since January 2019 under the approved program. The January 2019 event was selected as the original annual monitoring program for 2019 utilizing the selected 20 monitoring wells. However, it was decided later to move the annual monitoring

round up to October 2019, and to add several wells to the sampling program. Since that time, the expanded annual list of monitoring wells has been sampled in October or November.

5.7.1 JULY 2022 SITE-WIDE QUARTERLY GROUNDWATER SAMPLING

From July 27 to 28, 2022, BETA conducted a quarterly groundwater monitoring event based on the MassDEP approved sampling plan. A total of 14 monitoring wells were sampled for the laboratory analysis of total PFAS by BV Labs using EPA Method 537.1 Modified. On those dates the following monitoring wells were sampled: PFW-1, PFW-2, PFW-5, OW-8A, PC-1, PC-6A, PC-16d, PC-28, PC-30, PC-34S, PC-39, MW-3S, MW-12S, and MW-22. **Figure 2** and **Figure 3** depict the sampling locations.

In addition, one duplicate sample (from PC-1) and two equipment rinsate samples were submitted for PFAS analysis for quality control purposes. Results for the duplicate sample were consistent with the results from the background sample. Rinsate samples revealed results below laboratory detection limits.

Monitoring wells located within the immediate vicinity of the FTA property were gauged prior to sampling. Groundwater gauging data and groundwater elevation data are included in **Table 3**, appended; see Section 5.8.

5.7.2 NOVEMBER 2022 SITE-WIDE ANNUAL GROUNDWATER SAMPLING

On November 9, 10, and 11, 2022, BETA conducted an annual groundwater monitoring event based on the MassDEP approved sampling plan. A total of 23 monitoring wells were sampled for the laboratory analysis of total PFAS by Pace Analytical using Isotope Dilution via their internal SOPs (SOP 454 PFAS for aqueous sample analysis). On those dates the following monitoring wells were sampled: HSW-6, PFW-1, PFW-2, PFW-5, OW-8A, PC-1, PC-6A, PC-11, PC-14, PC-16d, PC-18, PC-28, PC-29, PC-30, PC-34S, PC-36S, PC-38, PC-39, MW-3S, MW-13, MW-23, MW-35i, and HW-1D. **Figure 2** and **Figure 3** depict sampling locations. Due to some monitoring wells having low groundwater levels, some of the annual monitoring wells normally sampled had to be substituted with a different well. Both MW-12S and MW-22 were dry; therefore, MW-13 and MW-23 were sampled in their place. Both of those wells were last sampled in July and May of 2021, respectively. PC-29, and MW-13 had no available recent data for comparison. Also, it should be noted that the sample submitted for MW-3s was mistakenly labeled as MW-3 on the laboratory chain of custody as well as on the laboratory report. The analytical results of that sample were inserted into the (correct) sample MW-3s tabulation in Table 4.

In addition, two laboratory requested matrix spike/ matrix spike duplicates (MS/MSDs), one duplicate sample (from PFW-1), and three equipment rinsate samples were submitted for PFAS analysis for quality control purposes. Results for the duplicate sample were consistent with the results from the background sample. All three rinsate samples revealed results below laboratory reporting limits.

Due to high PFAS concentrations in some samples, relative to the acceptable calibration range of Pace's analytical instrumentation, the laboratory had to re-run numerous samples with some requiring multiple dilutions. Pace qualified some of the dilutions as being run outside of the recommended hold time for the analysis. BETA does not believe that the laboratory qualifiers affect the usability of the data due to the elevated concentrations reported, relative to MCP risk standards, and the relative consistency of the final results compared to previous sampling rounds. Monitoring wells located within the immediate vicinity of the FTA property were gauged prior to sampling. Groundwater gauging data and groundwater elevation data are included in **Table 3**, appended.

5.7.3 JULY AND NOVEMBER 2022 QUARTERLY AND ANNUAL GROUNDWATER MONITORING

Monitoring wells HSW-1, HSW-6, PFW-1, PFW-2, PFW-5, OW-8A are located on the FTA property; HSW-1 and HSW-6 is located within the former Hot Spot remediation area and PFW-1 and PFW-2 are located

downgradient of the former Hot Spot remediation area. PFW-5 and OW-8 are located cross-gradient of the Hot Spot area on the FTA property but are downgradient of the north basins where treated groundwater is recharged.

Monitoring wells PC-34S, PC-36S, PC-38, and PC-39 are located immediately south of the FTA property.

The downgradient monitoring wells (MW-12S, MW-22, PC-1, PC-11, and PC-6A), located between the FTA and the recovery well (PRW-4), were selected based on previous results to evaluate current conditions within the main PFAS plume or between the FTA and Mary Dunn Well #3.

Monitoring wells PC-14, PC-16d, PC-18, PC-28, PC-30, MW-35i, and HW-1D are located in the probable downgradient direction from recovery well PRW-4. Monitoring well HW-1D is also located immediately north of Mary Dunn Pond.

The PFAS analytical data for the July and November 2022 sampling rounds are included in **Table 4A**. Copies of the laboratory reports/certificates of analysis for the July and November sampling events are included in **Appendix C**. As previously discussed, effective December 27, 2019, MCP groundwater risk standards for 6 PFAS compounds, (PFOS, PFOA, PFHpA, PFNA, PFHxS, and PFDA) apply to the Site with a GW-1 risk standard of 20 ng/l for the total and/or any single compound. These risk standards are included on **Table 4A**. The laboratory reports in Appendix C present all analytical results for all reported PFAS compounds, including quality control samples, and lists the laboratory detection and reporting limits. For reference purposes, historic PFAS groundwater analytical data, i.e., for monitoring wells that have not been sampled for several years, are included in **Table 4B**, attached.

Individual concentrations of (one or more) regulated PFAS6 compounds or total concentrations of the PFAS6 detected in all samples collected during the July and November 2022 sampling events were above the MCP GW-1 risk standards, except for the PC-38 samples. As noted, the results for the additional unregulated PFAS compounds reported by the laboratory are included in the laboratory reports in Appendix C.

Table 4A and 4B summarizes the sampling dates and PFAS6 concentrations detected during all sampling events at the Site. Laboratory reports for sampling events prior to this reporting period were included with previously submitted status reports. Overall, PFAS concentrations detected in groundwater during the July and November 2022 groundwater assessments are similar to historic ranges. Although the total PFAS6 concentrations documented in groundwater are significantly above the current, applicable MCP Method 1 risk standards, concentrations have trended towards a significant decrease in some areas of the Site since PFAS assessment activities started in 2015, especially in the Hot Spot/ Phase 1 cap area. In other downgradient areas, PFAS 6 concentrations have been relatively stable. Exceptions to the general trend are discussed below.

Figures 6 through 9, attached and discussed below, are graphical presentations of total (sum of) PFAS6 concentrations for selected monitoring wells in representative locations across the Disposal Site. It should be noted that the graphs depict discrete periodic sampling events at varying intervals from initial sampling in April 2015 and at quarterly intervals (typically) since January 2019. In addition, due to the range of PFAS concentrations, the graphs have different scales on the vertical axes for PFAS concentrations.

Figure 6 depicts the concentration trends observed in groundwater at monitoring well PFW-1. PFW-1 is located in the northeast of the FTA, approximately 120 feet downgradient of the former Hot Spot IRA soil removal area. Phase I stormwater improvements, which included installing an impermeable cap over the former Hot Spot removal area and adjacent areas and diverting stormwater, were implemented during the winter of 2018/2019. Following that implementation, PFAS concentrations generally decreased significantly through May 2020 and remained relatively steady but variable around an average PFAS 6

total concentration of approximately 6,000 ng/L, elevated levels relative to the GW-1 risk standards. A slight increase in concentrations was observed beginning in the July 2021 sampling event and remained relatively stable through April 2022. However, in July 2022 sampling event, detected PFAS 6 concentrations increased by almost 100% (to 12,237 ng/L) over the April 2022 analytical results and then dropped slightly in the November sampling event to 10,142 ng/L. The reasons for this increase are not known at this time but will continue to be evaluated. The former live fire training buildings were demolished in relatively close proximity to PFW-1 in August and September 2021. During building demolition, water was used for dust control. Attempts were made to control the volume of water used but dust suppression was important. The area (including around PFW-1) was regraded and paved with hot mixed asphalt shortly after. Given the close proximity, groundwater impacts at PFW-1 would have been expected soon after building demolition but did not occur.

Figure 7 depicts the concentration trends observed in groundwater at monitoring well OW-8. During the current reporting period, PFAS 6 concentrations were significantly lower than April 2022 results, but similar to results in January 2022. In summary, PFAS 6 concentrations on OW-8 have been highly variable since October 2020 for unknown reasons. A significant downward trend of PFAS6 concentrations was observed in groundwater at monitoring well OW-8A, through the October 2020 quarterly sampling event; since October 2020 concentration trends have varied widely. A noticeable increase in PFAS6 concentrations from the October 2020 to the January 2021 sampling event was observed; subsequently, PFAS6 concentrations in OW-8A were detected at least 700 ng/L less than concentrations observed from January 2021 to July 2021. A significant spike in PFAS6 concentrations was again detected in the November 3, 2021 sample. Although the cause of these fluctuations is not known, it is BETA's opinion that variable precipitation amounts and / or variable rates of treated water recharge to the west of the monitoring well may be influencing the concentration shifts. Lower concentration amounts may be attributed to lower-than-average precipitation rates. The concentration spike observed in the November 2021 event may be attributed to significantly increased precipitation that fell in September 2021 (before paving was completed) or possibly to disruption related to Site demolition and capping. Increased recharge volumes may result in mounding groundwater coming into contact with more soil with entrained PFAS. The PFAS6 concentrations in the January 2022 sample decreased significantly to within the previously observed range, which may or may not be attributable to the completion of the cap in early November 2021. The April 2022 sampling indicated a significant increase in PFAS6 concentrations compared to the January 2022 results. The July and November 2022 PFAS 6 concentrations reveal a significant decrease compared to the January and April 2022 results.

Figure 8 depicts the concentration trends observed in groundwater at monitoring wells MW-12 and MW-22, which are located between the FTA and recovery well PRW-4, but along a more northerly line towards Mary Dunn Well No. 3. PFAS concentrations documented in wells MW-12 and MW-22 have continued to exhibit relatively stable concentrations; however, there have been some large variations in detected concentrations (reasons unknown) in previous reporting periods. Groundwater at MW-22S, approximately 225 feet northeast of MW-12S and further from the FTA, exhibits PFAS6 concentrations that are typically approximately 30 percent of those at MW-12S. The PFAS6 concentrations at MW-22S are still well above MCP GW-1 risk standards.

Due to the MW-12S and MW-22S being dry in the November 2022 annual sampling round, no results are depicted on Figure 8 for the November 2022 annual sampling round. MW-13 and MW-23 were chosen as replacement sampling locations, but their results are not depicted on the figure. MW-13 is located approximately 80 feet north of MW-12S and MW-23, approximately 80 feet northeast of MW-22S; see Figure 3. MW-23 had last been sampled in July 2021 with a sum of PFAS6 compounds of 1,534 ng/L; November 2022 results indicate a sum of PFAS6 compounds of 443 ng/L, so a significant decrease. MW-

had last been sampled in July 2021 with a sum of PFAS6 compounds below laboratory reporting limits; November 2022 results indicate a sum of PFAS6 compounds of 346 ng/L, which is a significant increase.

Figures 9A, 9B, 9C and 9D depict PFAS6 concentration trends in monitoring wells PC-6A, PC-11, PC-28, and PC-30 respectively. PFAS concentrations documented in wells located farther southeast and downgradient of the FTA, specifically PC-6A, PC-11, PC-28, PC-16D, and PC-30, have long-term variable trends.

PC-6A (**Figure 9A**) shows variable concentrations. Concentrations observed since the spring of 2019 were relatively stable with a relative decreasing trend through July 2021. An upward trend was noted between July 2012 and April 2022 results. However, in the July and November 2022 sampling events, the concentrations have been trending downward. Overall, PC-6A appears to show a pattern, since early 2021 of PFAS6 concentrations elevated well above 1,000 ng/L during the typically wetter / higher groundwater months of the year, with levels falling well below 1,000 ng/L during drier months (July and November).

As depicted on **Figure 9B**, groundwater concentrations at PC-11 have been relatively stable since significantly decreasing after October 2020, although PFAS6 concentrations have been regularly increasing and decreasing over a range of 700 to 1,200 ng/L. PC-11 is located directly between the south end of the FTA and recovery well PRW-4. Conversely in comparison to PC-6A concentrations, PC-11 appears to show a pattern, since early 2021, of PFAS6 concentrations above 3,000 ng/L (approximately) during the typically drier / lower groundwater months of the year, with levels falling well below 3,000 ng/L during wetter (typically) months (January and April).

Groundwater concentrations at PC-28 are depicted on **Figure 9C**; PC-28 is located greater than 500 feet east, southeast and downgradient of recovery well PRW-4. PFAS 6 concentrations were significantly higher in October 2020 and January 2021 than previously detected. In May 2021, November 2021, January 2022 and July 2022 samples detected PFAS6 concentrations trended around 1,000 ng/L. PFAS6 concentrations were significantly lower in the July 2021 sample and increased above 1,000 ng/L again in the April 2022 and November 2022 samples.

Figure 9D depicts PFAS6 concentration trends in monitoring well PC-30, located approximately 170 feet east - southeast and downgradient of recovery well PRW-4. As shown on Figure 9D, since February 2020, PFAS6 concentrations at PC-30 have exhibited an overall decreasing trend; however, the concentrations have varied up and down approximately 200 to 300 ng/L between sampling events. A small increase was noted in the November 2022 sampling event.

Monitoring well PC-38, the furthest east - southeast location sampled during this quarterly monitoring event, exhibited PFAS6 concentrations slightly above the laboratory reporting limits but below applicable Method 1 GW-1 standards. PC-38 is located approximately 1,300 feet southeast of the southeast corner of the FTA facility. Groundwater sampled from PC-38 since April 2017 has only had a few detectable PFAS6 concentrations documented.

PFAS6 concentrations detected in the PC-39 location, located approximately 400 feet west, northwest of PC-38 and 500 feet south-southeast of the southeast corner of the FTA facility, have exhibited a distinct downward trend since 2020. However, PFAS6 concentrations detected in the July and November 2022 sampling rounds were well above the applicable Method 1 GW-1 standards at 198 ng/L and 183.4 ng/L, respectively.

The remaining monitoring wells sampled showed either consistent results to former monitoring events and/or slight variable concentrations.

Selected previous Status Reports have included approximate plume maps utilizing interpolations of the sum of the six regulated PFAS compounds detected in the quarterly or annual sampling events. However,

reviewers have pointed out that analytical results from the Mary Dunn wells should be included, where relevant. In addition, the Phase II CSA is generating additional groundwater data (groundwater screening data and limited new monitoring well data) that may also be relevant, but is not yet in a comparable form. Lastly, an additional survey with improved locational accuracy is planned for the groundwater measuring and sampling points. Due to these factors, a plume map has not been included with this status report. In future IRA Status Reports and other relevant MCP submittals, PFAS6 groundwater plume mapping will be updated if feasible with updated data from all relevant monitoring wells in the study area and municipal wells, if data are available.

Based on a review of the analytical results compiled in Table 4A for the July and November 2022 sampling events, the following general conclusions regarding the PFAS6 groundwater plume can be made:

- The highest concentrations within the PFAS contaminant plume are in the southeast corner of the FTA (at PFW-1) southeast and in close proximity to the FTA.
- High PFAS6 concentrations have also been detected south and in close proximity to the FTA and Flintrock Pond, as indicated by the PC-35S results.
- Elevated PFAS6 concentrations relative to GW-1 risk standards are noted in the vicinity of PRW-4, but these concentrations have been relatively stable.
- Elevated PFAS6 concentrations are noted to the east and southeast (downgradient) of the recovery well PRW-4, and in some locations, these concentrations are increasing.
- The lowest concentrations (below the Method 1 GW-1 standards) are on the southeastern edge of the plume, as indicated by the PC-38 results. However, initial Phase II CSA groundwater screening results (see Section 7.3) indicate that there may be more widespread PFAS6 impacts to groundwater towards the southeast at locations further from the FTA than PC-38.

5.8 SITE-WIDE GROUNDWATER GAUGING AND ELEVATION SURVEY

BETA gauged depth to groundwater in the monitoring wells located on and within 100 feet of the FTA and in selected monitoring wells east and southeast of the FTA on July 27, 2022, October 25, 2022, and November 8, 2022. **Table 3** presents a tabulated summary of the seasonal groundwater elevation data (from 2018-2022) for selected monitoring points across the Disposal Site. A limited number of monitoring wells were gauged during these events in this reporting period. During the next IRA and interim Phase II CSA reporting period, an expanded list of monitoring wells across the extensive well-field were gauged. In addition, a more accurate survey of key monitoring points is being procured. These data will provide updated groundwater elevation data to support increased understanding of groundwater flow directions. For these reasons, a groundwater contour map has not been included with this status report. Future status reports, as well as interim Phase II CSA update reports will include updated groundwater elevation data and contour maps.

Groundwater flow has historically been inferred to be to the south-southeasterly from the former FTA. A review of the limited July and November 2022 data indicate a continuation of the historic pattern; however, there may be different flow conditions in some areas on and east of the FTA.

6.0 IRA EVALUATION

In accordance with the MCP, this section presents evaluations of potential IRA conditions at the Site.

6.1 ASSESSMENT FOR SUBSTANTIAL RELEASE MIGRATION (SRM)

Due to the groundwater data indicating that PFAS has migrated more than 200 feet downgradient and has been detected in a public water supply well and surface water body, the Site meets the criteria for a Condition of Substantial Release Migration (SRM), as defined by 310 CMR 40.0006.

6.2 IDENTIFICATION OF CRITICAL EXPOSURE PATHWAYS (CEP)

No Critical Exposure Pathways, as defined by 310 CMR 40.0006, currently exist at the Disposal Site.

6.3 IMMINENT HAZARD (IH) EVALUATION

Based on the concentrations of PFOS exceeding the USEPA HA level in the Mary Dunn wells in 2013, the Cape Cod Commission identified the presence of an Imminent Hazard (IH) condition pursuant to 310 CMR 40.0321(2)(c). Raw groundwater produced by the Mary Dunn wells contains PFAS 6 concentrations in excess of Massachusetts Maximum Contaminant Levels (MMCL) for public drinking water supplies. GAC treatment of the Mary Dunn wells was subsequently implemented by the Hyannis Water Supply Division (HWSD) of the Barnstable Public Works Department.

The GAC treatment of the Mary Dunn Wells is assumed to be actively preventing a potential Imminent Hazard to the Hyannis community by removing the PFAS6 compounds from the water supply. Monitoring the PFAS treatment of the output of the Mary Dunn Wells is the responsibility of the HWSD. The Mary Dunn wells are monitored on a regular basis to ensure that exposure to humans is less than the USEPA HA, the MassDEP MCP GW-1 standards effective on December 27, 2019 and the final MMCL standard. MassDEP finalized the MMCLs for PFAS in January 2021; the final MMCL for PFAS in drinking water is 20 ng/l and applies to the sum or individual concentrations of the 6 regulated PFAS compounds.

6.4 ASSESSMENT OF NEED FOR IMMEDIATE RESPONSE ACTIONS (IRA)

The operation of the on-Site groundwater pumping and treatment system to reduce PFAS concentrations downgradient of the FTA will continue as an IRA. Continuation of assessment IRAs is warranted but limited to quarterly monitoring of the groundwater at the Site. Comprehensive assessment of Site conditions has transitioned to the Phase II CSA. The Site-wide assessment is proceeding under the Phase II Comprehensive Site Assessment (CSA) Scope of Work (SOW) submitted to MassDEP on March 23, 2022. Additional technologies to treat / remove PFAS from soil and groundwater at the FTA will be evaluated at a later time as part of the MCP Phase III evaluation of remedial alternatives.

In addition, planned expansion of groundwater extraction and treatment, as mandated by MassDEP, was described conceptually in the final December 2019 IRA Plan Modification. The final design and implementation of that component of the IRA Plan Modification is currently being evaluated in terms of feasibility of implementation as an IRA and potential overlap and duplication with MCP Phase III and Phase IV (remedy implementation) work to be conducted immediately following the completion of the Phase II CSA.

7.0 PHASE II CSA PROGRESS UPDATE

7.1 SUMMARY OF PHASE II CSA SCOPE OF WORK

As noted, BETA submitted a Phase II Comprehensive Site Assessment (CSA) Scope of Work (SOW) to MassDEP in March 2022 on behalf of Barnstable County. Phase II CSA SOW detailed multiple comprehensive Site assessment tasks that are currently focusing on addressing several data gaps across the Site. The identified data gaps include:

- i. Potential PFAS groundwater impacts at large distances to the south and southeast of the FTA source area and to the west of Flintrock Pond;
- ii. soil impacts at and in close proximity to the FTA itself;
- iii. contaminant conditions in Flintrock Pond, Mary Dunn Pond and a small unnamed water body/wetland northeast of the FTA.

The planned assessment activities outlined in the Phase II CSA SOW involved expanded groundwater assessment to further characterize the identified PFAS plume, numerical modeling of groundwater flow, evaluation of site-specific PFAS fate and transport characteristics, pond assessments and further shallow and vadose zone soil assessment.

Phase II CSA activities are currently on-going and are tentatively expected to be completed in 2024. Significant progress has been made to the program. Phase II CSA activities conducted to date are summarized below in Sections 4.2 to 4.4.

7.2 FLINTROCK POND ASSESSMENT

Bathymetry Survey

BETA coordinated with Steele Associates Marine Consultants, LLC to conduct a bathymetric survey and mapping of Flintrock Pond on May 3rd, 2022. The survey was conducted using appropriate scanning technology and resulted in a map of the pond bottom with elevations and horizontal locations presented based on the Massachusetts State Plan grid system and the NAV88 USGS datum. The figure depicting the survey results, Sheet 1, Single Beam Bathymetric Survey, is included as **Appendix F**.

The bathymetry survey determined the depth of Flintrock Pond to be relatively shallow in the north and central areas of the pond with a single deeper area to the south. The depth of Flintrock Pond at the time of survey ranged from approximately 1-11 feet below the pond surface. The pond water surface elevation was measured at 28.4 feet on the day of the survey. Water depth in Flintrock Pond has been observed to vary significantly seasonally.

Sediment Assessment and Sampling

Prior to the Phase II CSA, several smaller rounds of sediment sampling in Flintrock Pond had been conducted. For reference purposes, the analytical results of earlier sampling events are included in attached **Table 5A - Summary of Pre-Phase II CSA Sediment PFAS Analytical Results**. The approximate locations of the pre-Phase II CSA sampling locations are shown on **Figure 10 – Flintrock Pond Sampling Locations**, attached. The earliest of these sampling events were conducted prior to current practices regarding PFAS sampling methods. The locations of some of the earlier samples are also less precise than those shown for later samples. However, the data collected prior to the Phase II CSA are considered important for general reference. The data collected after the issuance of MassDEP's guidance on sampling for PFAS (2018 and later) are considered representative and useable for MCP purposes.

The overall objectives of the Phase II CSA Flintrock sediment sampling program are to develop representative data on PFAS concentrations in the upper portions of the sediment across the entire pond (to supplement the previous rounds of sampling and analyses), to support ecological risk assessment of the pond, and to support future evaluation of remedial options for the pond media. Based on these objectives and the available information on the pond, the Phase II CSA focused on: assessment of the upper layer of the sediment, which is typically the biologically active layer; the horizontal extent of PFAS impacts across the pond; and increasing the basic knowledge about the pond bottom.

Sediment samples were collected from Flintrock Pond during several phases from July 27, 2022 to August 24, 2022. Several additional samples were collected in November 2022; see the discussion below under Porewater Assessment and Sampling. The sediment assessment program consisted of collecting samples every 50 feet along two transects (approximately 1,100 feet in total) across Flintrock Pond (east to west and north to south). Figure 10 – Flintrock Pond Sampling Locations depicts all sample locations and the transects.

The sediment samples were primarily collected using a petite ponar dredge attached to a length of rope. The petite ponar dredge was dropped into the water and allowed to settle on top of the sediment. A spring activated closing mechanism was then activated to obtain a discrete sediment sample. In shallow areas of Flintrock Pond, a trowel was used to directly obtain sediment samples. At one location, identified as SB-FRP, direct-push drilling techniques were used to collect a core sample. Attempts were also made using auger-style sediment samplers to collect sediment samples. However, due to the soft and loose character of the sediment, the auger sediment samplers were not effective at retaining the sample and this method was discontinued. All sampling devices were decontaminated using an Alconox solution and PFAS-free water (provided by the laboratory) after each use.

A total of 25 sediment samples were collected throughout Flintrock Pond. These samples are identified as FRP-101 – FRP-122, Sed-X and FRP-DUP. The soil core samples, SB-FRP 0-1' and SB-FRP 1-2', were collected on the eastern edge of Flintrock Pond's shoreline. Each sample was submitted for Bureau Veritas Laboratory for analysis of PFAS via ASTM Method D7968-17a m. Select samples were also analyzed for total iron, total organic carbon (TOC), pH, conductivity, and ORP. The total iron, TOC, pH, conductivity and ORP samples will be used in the future to determine potential correlations with PFAS concentrations.

Table 5B - Summary of Phase II CSA Sediment PFAS Analytical Results summarizes the current Flintrock Pond sediment analytical results. PFAS concentrations are presented as the sum of six PFAS compounds (PFAS6) regulated by MassDEP. The analytical results revealed detectable concentrations of PFAS6 in all samples with the exception of FRP-107 and FRP-108. PFAS6 concentrations ranged from 4.1 micrograms per kilogram ($\mu\text{g}/\text{kg}$) to 403.4 $\mu\text{g}/\text{kg}$, with higher concentrations being found at the deepest section of Flintrock pond where sediment depths are greater. Please note that the laboratory detection limits were up to ten times higher for samples FRP-107 and FRP-108 compared to others. Therefore, low concentrations of PFAS6 may not have been able to be detected at these locations.

Quality Assurance / Quality Control (QA/QC) samples including field duplicates and equipment blanks were collected in accordance with EPA protocols. Refer to Table 5B for details.

Sediment – General Characteristics

Approximate Thickness of Sediment

The approximate measurement of thickness of sediment was based on penetrating the sediment from the boat with a 10-foot long, 1-in. diameter PVC or steel pipe probe with an open bottom. The top of

sediment could not be reached in water depth > 10 feet with the available measuring tool. Therefore, sediment thickness could not be gauged at locations where water depth was greater than 10 feet on the days of probing. The probe was pushed through the sediment by hand until greater resistance on what was perceived to be more granular soil was detected. Although the change in strata from relatively soft sediment to underlying soil with a granular texture and increased resistance was often easy to detect, it is highly likely that the organic, silty sediment is actually intermixed with granular soil at the bottom of the sediment over an unknown thickness. The measurement method is approximate only.

In moderate to deep areas of the pond (approximately 3 to 12 feet deep) the top of sediment typically exhibited so little strength that initial resistance to a probe or pipe sleeve inserted into the sediment was barely perceptible. Therefore, the top of the sediment / depth of water column was difficult to detect and measure accurately.

The approximate total thickness of sediment in large areas of the pond, generally within deeper water, was equal to or greater than 4 feet. In some locations, sediment thickness was measured at approximately 6 feet.

Observations of General Sediment Quality

Based on the approximate measurements of the sediment across the pond and the observations during sampling, the sediment generally appears to have little to no shear or compressive strength in the upper feet and would be considered very soft. At the majority of locations, the sediment collected in the dredge was characterized as muck, with low solids/high water content and a large percentage of dark brown organic material with some varying amounts of silt.

General Chemistry Characteristics of Phase II Sediment Samples

As part of the normal PFAS analysis, which reports results adjusted to a dry weight basis, percent solids were reported for all PFAS sediment samples – see Table 5B. Percent solids were generally very low (to be expected) in the range of 5% to 6% in sediment samples taken from moderate to “deep” depths of the pond. Samples collected from nearer to shore and shallower depths exhibited highly variable percent solids – see Table 5B and Figure 10.

The laboratory results for the general chemical characteristics of selected sediment samples are included on Table 5B. Total organic carbon (TOC) ranged from a low of 5,500 mg/kg (sample SB-FRP-1-2') to 355,000 mg/kg (approximately 35% by weight) in FRP-115. The majority of the 15 samples analyzed for TOC contained 228,000 to 327,000 mg/kg TOC (approximately 23 to 33 % by weight), indicative of the high organic content to be expected in pond sediment with the macro-characteristics observed.

The samples were slightly acidic (pH range of 5.35 to 6.25 SUs) in general.

ORP values for the sediment samples analyzed ranged from 174 mV to 344 mV indicating mildly oxidizing conditions.

Surface Water Assessment and Sampling

Due to the hydrophobic and hydrophilic nature of PFAS, the assessment of the pond's water column was performed by collecting water samples at the surface and at a slightly deeper depth at specific sampling locations. On August 17, 2022 surface water samples were collected from the central portion of Flintrock Pond by placing sample bottles into the pond and allowing it to fill. A total of 4 surface water samples identified as SW-401 – SW-404 were collected and submitted to Bureau Veritas Laboratory for analysis of PFAS using EPA Method 537.1. Surface water sample locations are depicted on Figure 10.

Surface water analytical results are presented on **Table 6A - Summary of Phase II CSA Flintrock Pond Surface Water PFAS Analytical Data**, attached. PFAS6 was detected in all surface water samples ranging from 479.7 ng/L to 493.9 ng/L.

Prior to Phase II CSA, several smaller rounds of sediment sampling in Flintrock Pond had been conducted. For reference purposes, the analytical results of earlier sampling events are included in attached **Table 6B - Summary of Historic Surface Water PFAS Analytical Data**. The approximate locations of the pre-Phase II CSA sampling locations are included on Figure 10. The historic data are considered important for general reference. The data collected after the issuance of MassDEP's guidance on sampling for PFAS (2018 and later) are considered representative and useable for MCP purposes.

Porewater Assessment and Sampling

Attempts to collect sediment for later separation and analysis of the porewater (only) for PFAS was initially conducted at Flintrock Pond using a modified push-point groundwater sampler. The modified push-point sampler consisted of a 1-foot section of 0.02-inch slotted PVC well screen and plug threaded to a length of PVC well casing. A sampling flange was secured to the PVC casing 1 foot above the well screen to limit surface water intrusion while the sampler was inserted into the sediment.

The modified push-point sampler was inserted into the sediment at a depth where the well screen was approximately 1-2 feet below the top of the sediment. High-density polyethylene (HDPE) tubing was then placed down the sampler in order to withdraw a porewater sample using a peristaltic pump. However, this porewater sampling method did not produce sufficient volumes of porewater for sample collection. Upon further investigation, it was determined that the fine sediments had thoroughly clogged the well screen to the point where no porewater could pass. As a result, no porewater samples were collected.

BETA returned on November 8, 2022 to indirectly obtain porewater samples by collecting sediment sample cores for separation at the laboratory. This method involved extracting a core of sediment from the pond using a modified PVC coring tube. Special care was taken to limit surface water intrusion into the core sample by placing a cap at the end of the coring tube while it was lowered through the water column. Once the coring tube was embedded into the sediment, the cap was removed in order to collect the core sample. In total, three sediment cores were collected from the central and southern portions of the Flintrock pond from locations with significant sediment thickness. These samples are identified as PW-1, PW-2 and PW-3 and were collected from approximate locations. The modified coring tube was decontaminated after each using an Alconox solution and rinsed with PFAS-free water provided by the laboratory.

The sediment cores were then placed into appropriate containers provided by the laboratory and submitted to Pace Analytical for analysis of PFAS. While under the custody of the laboratory, the core samples were to be centrifuged to separate water from the pore spaces of the sediment. However, Pace Analytical later notified BETA that centrifugation could not recover enough porewater to allow analysis of the water by their aqueous sample SOP (SOP 454). The requirement to use non-glass centrifuge tubes limited the energy and speed of centrifuging that could be applied, and the sediment would not yield sufficient porewater to allow proper analysis for PFAS. Pace Analytical then ran the samples as a solid using Pace's SOP 466-PFAS without notifying BETA. Therefore, the PW-1 through PW-3 samples represent deeper sediment samples.

Analytical results for the PW-1 through PW-3 samples are included on Table 5B. Review of the analytical results revealed PFAS6 concentrations ranging from 19 ug/kg at PW-1 up to 41 ug/kg at PW-2. The PFAS6

concentrations are comprised of PFOS only at PW-1 and PW-3. PW-2 PFAS6 concentrations comprise both PFOS and PFNA. No other regulation PFAS compounds were detected in the samples. Considering that the PW samples were collected from locations with significant depths of sediment, at depths below the top of the sediment layer, and the relatively low concentrations of PFAS detected, the results may indicate significant differences in PFAS concentrations with depth in the sediment column at some locations.

7.3 EXPANDED GROUNDWATER ASSESSMENT

Groundwater Screening

Groundwater screening methods of sample collection have been noted by the US Environmental Protection Agency (EPA) as cost effective and efficient means to develop wide-area groundwater data and guide plume assessment. It involves driving a specialized slotted sampling tool into the groundwater table to extract a groundwater sample. Samples are then collected with a peristaltic pump or manually using dedicated high-density polyethylene (HDPE) tubing equipped with a foot valve. Following the collection of the groundwater samples, the tool is removed without a permanent monitoring well installation.

The objective of the on-going Phase II CSA groundwater screening program is to further characterize the extent of the PFAS groundwater plume at large distances from the former FTA. In August 2022 and October 2022, BETA conducted the first round of groundwater screening investigations on selected parcels of land adjacent to Flintrock Pond and the former FTA. During this reporting period, the groundwater screening locations have been focused on underassessed areas immediately south and southeast of Flintrock Pond and the former FTA. BETA is using the data generated to guide additional assessment and determine locations for monitoring well installations for long-term assessment of the approximate extent of per- and poly-fluoroalkyl substances (PFAS) impacts.

Eleven (11) groundwater screening points, GWS-1 through GWS-11, were completed as of December 2022. Refer to the attached **Figure 11B – Phase II Sampling Locations** (page two of the combined Figure 11A and 11B) for the groundwater screening locations. At most locations, BETA collected a shallow groundwater sample approximately 5 feet into the groundwater table and a deeper sample approximately 20 feet into the groundwater table. At certain locations deeper groundwater samples could not be collected due to the sampling tool becoming clogged with fine sand and silt. Groundwater was generally encountered at depths ranging from 26 to 40 feet bgs during groundwater screening activities.

Groundwater screening analytical results are summarized on **Table 7 – Summary of Initial Groundwater Screening Analytical Results**, attached. PFAS analytical results are reported as the sum of six PFAS regulated by MassDEP (PFAS6). The laboratory reports are included in **Appendix G**.

Analytical results revealed concentrations of PFAS6 at GWS-4, GWS-5, GW-7, GW-8, and GWS-11 that exceeded MassDEP Method 1 GW-1 Risk Standards. The highest concentrations were found in shallow groundwater samples GWS-4-S (1,678 ng/l) and GWS-5 (1,027 ng/l), located approximately 100 feet and 50 feet southeast of Flintrock Pond, respectively. PFAS6 concentrations from GWS-7 and GWS-8, located approximately 160 feet south of GWS-4 and GWS-5, were found to range between 24.2 ng/L to 49.6 ng/L. GWS-11, located approximately 600 feet south, southeast of the former FTA, had a PFAS6 concentration of 437.6 ng/L in the shallow sample and 541 ng/L in the deeper sample. Comparison of PFAS6 concentrations between the shallow and deep samples at the initial groundwater screening locations indicate that they vary depending on the location but are generally similar. However, significantly lower PFAS6 concentrations were found in the deep groundwater sample GWS-4-D (7.5 ng/L) as compared to the shallow result, noted above.

PFAS6 was not found above Method 1 GW-1 Risk Standards at the GWS-1, GWS-2, GWS-3, GWS-6, GWS-9, or GWS-10 groundwater screening points. Deep groundwater samples at these locations were found to have a slightly higher PFAS6 concentrations compared to shallow groundwater samples. At select locations, PFAS6 was only detectable in the deeper groundwater sample.

Preliminary groundwater screening results indicate PFAS6 concentrations in groundwater above Method 1 GW-1 Risk Standards at distances of up to 600 feet south southeast of the former FTA in areas east and southeast of Flintrock Pond. The lowest PFAS6 concentrations were found to the southwest of Flintrock Pond, a potentially hydrogeologically upgradient area relative to the former FTA.

Expanded Monitoring Well Installation & Groundwater Sampling and Analysis – West of Flintrock Pond

From September 27, 2022 to September 29, 2022, five monitoring wells (MW-307S, MW-307D, MW-308S, MW-308D and MW-309) were installed to the west of Flintrock Pond in an attempt to assess PFAS6 impacts to groundwater adjacent to Flintrock Pond and the former FTA. All five monitoring wells are located on the property referenced as Barnstable Assessor's Parcel ID: 313005B00, which is owned by the Barnstable Fire District (BFD). Refer to **Figure 11A** for the new monitoring well locations. The BFD Water Department owns and operates two production drinking water wells on the parcel, No. 2, and No. 5, also referred to as Station No. 2 and Station No. 5. These wells are located to the west of Figure 11A.

Monitoring wells were installed by Maher Drilling using direct-push drilling techniques under BETA and Bristol Engineering oversight. At MW-307 and MW-308, the monitoring wells were installed as couplets consisting of a shallow (MW-307S & MW-308S) and deep well (MW-307D & MW-308D). MW-309 was installed as deep monitoring well only. An existing monitoring well, WS-101, is available to assess shallow groundwater in that location. Refer to **Appendix E – Soil Boring & Monitoring Well Logs** for details. Following installation, the deep monitoring wells were developed by pulsing a diaphragm pump to remove fines and improve hydraulic connection; the shallow (water table) wells were developed using a peristaltic pump.

Shallow soils encountered during monitoring well installation generally consisted of tan to orange-brown fine to medium sands with varying amounts of gravel and little silt. At deeper depths, soil profile transitioned to more sorted medium and coarse sands. Groundwater was encountered between 10 and 16 feet below the ground surface during monitoring well installation.

On November 9th and 11th, 2022 six groundwater samples were collected the five newly installed monitoring wells and existing shallow monitoring well WS-101 using low-flow groundwater sampling methods. All six samples were submitted to Pace Analytical (formerly Contest) of East Longmeadow, MA for the laboratory analysis of Total PFAS Isotope Dilution via their internal SOP 454 - PFAS for aqueous samples.

Groundwater analytical data for the BFD parcel monitoring points are summarized in **Table 10 – Summary of PFAS Analytical Results in Groundwater – Barnstable Fire District Parcel**, attached. The laboratory report is included in Appendix G. PFAS analytical results are reported as the sum of six PFAS regulated by MassDEP (PFAS6). Review of the analytical results revealed PFAS6 concentrations ranging from below laboratory reporting limits at MW-307D up to 15.6 ng/L at MW-309. The deeper groundwater samples exhibited higher PFAS6 concentrations than shallow samples at two locations, including the highest PFAS6 total at MW-309 located in close proximity to Flintrock Pond. However, the detected PFAS6

concentrations west of Flintrock Pond are below the MCP Method 1 GW-1 Standards and equal Massachusetts MCL for drinking water.

Monitoring Well Installation – Former FTA

From August 18, 2022 to October 4, 2022 BETA supervised the installation of eight shallow monitoring wells identified as MW-301, MW-302, MW-303, MW-304, MW-305, MW-306, MW-310 and MW-311 on the FTA facility or on surrounding adjacent properties in close proximity to the FTA. Refer to Figures 11A and 11B for monitoring well locations. All monitoring wells were installed by Bronson Drilling using direct-push techniques under BETA oversight. Soils observed during monitoring well installation consisted of tan, brown and orange-brown fine to medium sands with varying amounts of coarse sand to fine gravel. Groundwater was encountered between 10 and 14 feet below the ground surface at the majority of the monitoring wells. Refer to Appendix E.

At selected monitoring well locations, a shallow and vadose zone soil sample was collected for laboratory analysis. In total, fourteen soil samples were submitted to Pace Analytical for PFAS using ASTM Method D533M (the Pace Analytical SOP). The analytical results, included on **Table 9**, revealed detectable concentrations of PFAS6 in nine of the fourteen samples submitted for analysis. Six of nine soil samples with detectable PFAS6 concentrations also exceeded their individual Method 1 S-1/GW-1 Standard. The individual exceedances were dominated by PFOS but also included PFOA, PFHpA and/or PFHxS. Soil samples with PFOS exceedances included MW-302 12-14' (2.4 µg/kg), MW-303 0-2' (2.6 µg/kg), MW-305 0-2' (33 µg/kg), MW-304 0-4" (11 µg/kg) and MW-310 0-6" (4.5 µg/kg). PFHxS exceedances were found in samples MW-305 0-2' (7.8 µg/kg), MW-305 12-14' (0.35 µg/kg) and MW-304 (1.9 µg/kg). PFOA, PFHpA and PFHxS concentrations greater than applicable Method 1 S-1/GW-1 risk standards were reported in the surficial soil sample, MW-304 0-4". Overall, the majority of PFAS6 exceedances were limited to shallow soil samples with the exception of the deeper vadose zone sample at MW-302.

Several other non-PFAS6 compounds were reported by the laboratory including Perfluorooctanoic acid (PRPeA), Perfluorohexanoic acid (PFHxA), perfluorooctane sulfonamide (PFOSA) and perfluorooctanoic acid (PFHpA). The reported concentrations ranged from 0.17 µg/kg up to 0.57 µg/kg. In addition, 8:2 Fluorotelomer sulfonic acid (8:2FTS A) was detected at MW-304 12' (0.59 µg/kg) as well as 6:2 fluorotelomer sulfonic acid (6:2 FTS A) at MW-302 12-14' (0.50 µg/kg), respectively.

7.4 SHALLOW SOIL ASSESSMENT

On October 3, 2022 and October 4, 2022, BETA personnel collected multiple shallow soil samples using hand tools or machine borings along six approximately 50-foot transects, beginning at the fence-line and moving farther away from the FTA. Sample locations along each transect consisted of 0 feet (adjacent), 10 feet, 25 feet, and 50 feet intervals from the fence line. Each interval was also sampled at depths ranging from forest mat to 10 feet bgs depending on the location. **Table 11** below summarizes the soil samples collected. The locations of the shallow soil samples are shown on **Figures 11A and 11B – Phase II Sampling Locations**.

Table 11 – Summary of Soil Sampling Locations Along Perimeter of the FTA

Sample ID	Distance from Fence Line	Sample Depths				
		Forest Matter	0-3"	16-20"	5'	10'
Transect A - South						
SS-101	Adjacent		x	x		
SS-102	10'	x	x	x	x	x
SS-103	25'		x	x		
SS-104	50'		x	x		
Transect B - South						
SS-105	Adjacent	x	x	x		
SS-106	10'		x	x	x	x
SS-107	25'		x	x		
SS-108	50'		x	x		
Transect C - Southeast						
SS-109	Adjacent		x	x		
SS-110	10'	x	x	x	x	x
SS-111	25'		x	x		
SS-112	50'		x	x		
Transect D – Southeast						
SS-113	Adjacent		x	x		
SS-114	10'	x	x	x	x	x
SS-115	25'		X	x		
SS-116	50'		X	x		
Transect E- Northeast						
SS-117	Adjacent		x	x		
SS-118	10'	x	x	x	x	x
SS-119	25'		x	x		
SS-120	50'		x	x		
Transect F – Northeast						
SS-121	Adjacent		x	x		
SS-122	10'	x	x	x	x	x
SS-123	25'		x	x		
SS-124	50'		x	x		

Note: X indicates that a sample was collected at the corresponding depth. Green highlighted samples were not submitted for laboratory analysis – see text.

Soil samples collected from locations 10 feet from the east and south fence lines (see Table 11 for the list of these locations) were collected using direct-push drilling techniques. Soil samples collected from locations adjacent to, 25 feet from, and/or 50 feet from the east fence line were collected by hand using trowels and shovels. At these locations, the forest mat layer was typically removed to access shallow soils below; at selected locations shown on Table 11 the forest mat layer was collected for laboratory analysis. A trowel was then used to collect a soil sample from 0-3 inches below the forest mat layer. Following the collection of the 0-3 inch sample, a shovel was used to remove additional soil to reach the next sample depth interval. A trowel was then used to collect soil samples from 16-20 inches below the forest mat.

Prior to the collection of each sample, the trowel was decontaminated using an Alconox solution and rinsed with PFAS-free water provided by the laboratory.

A total of 59 samples were collected from and submitted for laboratory analysis for PFAS via ASTM Method D533M (a Pace Analytical SOP using an isotope dilution quantification method). Samples collected at 0-3" were also analyzed for total iron and total organic carbon (TOC); these results will be used in the future to determine potential correlations with PFAS concentrations. See **Table 12 - Summary Phase II CSA PFAS Analytical Data in Shallow Soil**, attached.

The analytical results revealed reportable concentrations of PFAS6 in all SS-100 series soil samples with the exception of SS-104 (16"-20"), SS-106 (10'), SS-108 (16"-20"), SS-118 (10'), and SS-122 (10'). Total PFAS6 concentrations ranged from 0.56 micrograms per kilogram (µg/kg) to 207.9 µg/kg. One or more PFAS6 concentrations exceeded applicable MCP S-1/GW-1 risk standards in every 0-3" bgs sample collected except at the SS-113 sampling location. However, at the SS-113 location, the 16-20" bgs sample exhibited elevated concentrations of five of the six PFAS6 compounds. At all sample locations where soil borings were advanced to 10 feet bgs (at the sampling locations approximately 10 feet from the fence lines) one or more PFAS6 concentrations exceeded applicable MCP S-1/GW-1 risk standards in every 5 foot bgs sample collected and in five out of six 10-foot bg samples collected. The higher concentrations were observed at points adjacent to the fence and 10 feet from the fence line along all sampling transects. The highest overall concentrations were observed on the southeast perimeter of the fence line along Transects C and D.

At Transect C sample SS-109 (adjacent to the fence), the highest levels of total PFAS6 were observed at 16-20" bgs (207.9 µg/kg). At SS-110 (10 feet southeast of SS-109), highest PFAS concentrations were observed at 0-3" bgs (103.6 µg/kg), with decreasing concentrations the farther below ground the samples were taken (69.48 µg/kg at 16-20" to 2.48 µg/kg at 10'). The next highest concentrations of PFAS6 were also observed off the southeast perimeter at Transect D with SS-113 having a similar pattern, with highest concentration (199.9 µg/kg) seen at 16"-20" bgs and decreasing concentrations detected the farther below ground surface and from the fence line the samples were taken. The laboratory reported a range of 0.48 µg/kg to 23 µg/kg of non-PFAS6 compounds detected in one or more of the 59 soil samples analyzed. Of the three fluorotelomers reported in the analytical method, none were detected in a majority of soil samples. 8:2 Fluorotelomer sulfonic acid (8:2FTS A) was reported from ND to 3.2µg/kg in some samples and 6:2 Fluorotelomer sulfonic acid (6:2FTS A) was reported from ND to 3.1 µg/kg. 4:2 Fluorotelomer sulfonic acid (4:2FTS A) was not detected in any of the samples submitted for laboratory analysis.

Of significant note, in the three samples collected 50 feet from the fence line that were submitted for laboratory analysis (SS-104 and SS-108 south of the south fence and SS-112 southeast of the east fence), one or more PFAS6 concentrations exceeded applicable MCP S-1/GW-1 risk standards at one or more depths. At Transects D, E and F in the farthest samples submitted (25 feet from the fence at Transect D and 10 feet east of the fence in Transects E and F) one or more PFAS6 concentrations exceeded applicable MCP S-1/GW-1 risk standards at one or more depths. This indicates that the horizontal extent of soil impacts from PFAS6 has not been identified. Additional shallow soil sampling is warranted. Supplemental soil sampling will be conducted in the future.

8.0 PUBLIC NOTIFICATIONS

Copies of public notification letters regarding the IRA activities conducted during the current reporting period sent to officials of the Town of Barnstable in accordance with MCP 310 CMR 40.1403(3) (a) requirements are included as **Appendix D**. Per the Public Involvement Plan for the Site, email, and written notifications regarding the submittal of this IRA Status Report and Interim Phase II CSA Update Report to MassDEP and the availability of the report for review on the MassDEP Searchable Sites database portal and at the Site repository (Hyannis Public Library) will be sent to those listed on the PIP Mailing List.

TABLES

Table 1A - Summary of Groundwater Pump and Treatment System Total PFAs Analytical Data - GWTS #1
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	INFLUENT (PRW-4)						MIDPOINT						EFFLUENT					
USEPA Method 537.1m or PACE SOP 454	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)
MCP Method 1 GW-1 Standard ³	20 ng/L						20 ng/L						20 ng/L					
SAMPLE DATE																		
4/1/2015	760	60	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
7/17/2015	5600	460	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
8/4/2015	5900	550	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
9/30/2015	17000	840	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
10/15/2015	9900	560	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<9.4)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A	9.4	BRL (<5.8)	-- ^A	-- ^A	-- ^A	-- ^A
11/12/2015	9000	BRL (<2000)	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)		-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
1/6/2016	7600	260	-- ^A	-- ^A	-- ^A	-- ^A	120	75	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
1/21/2016	5200	160	-- ^A	-- ^A	-- ^A	-- ^A	270	16	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
2/3/2016	3500	140	-- ^A	-- ^A	-- ^A	-- ^A	540	26	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
2/17/2016	4500	140	-- ^A	-- ^A	-- ^A	-- ^A	520	24	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
3/8/2016	3700	140	-- ^A	-- ^A	-- ^A	-- ^A	420	19	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
3/23/2016	5000	150	-- ^A	-- ^A	-- ^A	-- ^A	650	39	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
4/14/2016	4800	140	-- ^A	-- ^A	-- ^A	-- ^A	610	26	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
4/28/2016	6300	BRL (<200)	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<20)	BRL (<20)	-- ^A	-- ^A	-- ^A	-- ^A
5/12/2016	6800	BRL (<200)	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<20)	BRL (<20)	-- ^A	-- ^A	-- ^A	-- ^A
5/25/2016	6900	BRL (<210)	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
6/16/2016	7800	160	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
7/6/2016	7600	270	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	10	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
8/11/2016	13000	160	-- ^A	-- ^A	-- ^A	-- ^A	1600	54	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
Carbon change conducted after sample collection on 08/11/16.																		
8/18/2016	9500	210	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
9/8/2016	9500	190	-- ^A	-- ^A	-- ^A	-- ^A	8.5	5.3	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
9/8/2016	9500	190	-- ^A	-- ^A	-- ^A	-- ^A	8.5	5.3	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
10/6/2016	17000	250	-- ^A	-- ^A	-- ^A	-- ^A	110	8.3	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
10/20/2016	7200	130	-- ^A	-- ^A	-- ^A	-- ^A	1000	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
11/3/2016	7900	110	-- ^A	-- ^A	-- ^A	-- ^A	13.8	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
11/17/2016	5400	99	-- ^A	-- ^A	-- ^A	-- ^A	1200	NA	-- ^A	-- ^A	-- ^A	-- ^A	17	NA	-- ^A	-- ^A	-- ^A	-- ^A
12/1/2016	5300	100	-- ^A	-- ^A	-- ^A	-- ^A	400	14	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
12/14/2016	5700	95	-- ^A	-- ^A	-- ^A	-- ^A	82	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A	8.1	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
1/4/2017	4900	95	-- ^A	-- ^A	-- ^A	-- ^A	360	15	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<3.3)	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
2/16/2017	2800	88	-- ^A	-- ^A	-- ^A	-- ^A	1000	39	-- ^A	-- ^A	-- ^A	-- ^A	25	BRL (<5.3)	-- ^A	-- ^A	-- ^A	-- ^A
3/1/2017	3700	120	-- ^A	-- ^A	-- ^A	-- ^A	1400	47	-- ^A	-- ^A	-- ^A	-- ^A	150	6.5	-- ^A	-- ^A	-- ^A	-- ^A
3/23/2017	3800	87	-- ^A	-- ^A	-- ^A	-- ^A	2000	71	-- ^A	-- ^A	-- ^A	-- ^A	160	9.5	-- ^A	-- ^A	-- ^A	-- ^A
5/3/2017	2400	86	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.6)	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A
Carbon change conducted on 04/13/17.																		
4/19/2017	3200	110	-- ^A	-- ^A	-- ^A	-- ^A	160	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.6)	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A
5/18/2017	3000	110	-- ^A	-- ^A	-- ^A	-- ^A	570	32	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.6)	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A
6/1/2017	3200	110	-- ^A	-- ^A	-- ^A	-- ^A	730	33	-- ^A	-- ^A	-- ^A	-- ^A	4.1	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A
6/27/2017	2600	99	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	210	15	-- ^A	-- ^A	-- ^A	-- ^A
7/18/2017	3500	97	-- ^A	-- ^A	-- ^A	-- ^A	2300	72	-- ^A	-- ^A	-- ^A	-- ^A	49	25	-- ^A	-- ^A	-- ^A	-- ^A
Carbon change conducted on 8/09/17																		

SAMPLE ID	INFLUENT (PRW-4)						MIDPOINT						EFFLUENT					
USEPA Method 537.1m or PACE SOP 454	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)
MCP Method 1 GW-1 Standard ³	20 ng/L						20 ng/L						20 ng/L					
SAMPLE DATE																		
8/16/2017	3000	110	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.3)	BRL (<4.1)	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.3)	BRL (<4.1)	-- ^A	-- ^A	-- ^A	-- ^A
8/28/2017	2900	100	-- ^A	-- ^A	-- ^A	-- ^A	27	BRL (<20)	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A
10/2/2017	3200	85	-- ^A	-- ^A	-- ^A	-- ^A	510	25	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.6)	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A
10/12/2017	4500	110	-- ^A	-- ^A	-- ^A	-- ^A	960	29	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<2.6)	BRL (<4.6)	-- ^A	-- ^A	-- ^A	-- ^A
11/9/2017	2400	77	-- ^A	-- ^A	-- ^A	-- ^A	--	--	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<6.0)	BRL (<3.3)	-- ^A	-- ^A	-- ^A	-- ^A
11/20/2017	2000	64	-- ^A	-- ^A	-- ^A	-- ^A	520	15	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<6.0)	BRL (<3.3)	-- ^A	-- ^A	-- ^A	-- ^A
12/7/2017	1600	64	-- ^A	-- ^A	-- ^A	-- ^A	780	34	-- ^A	-- ^A	-- ^A	-- ^A	11	BRL (<3.3)	-- ^A	-- ^A	-- ^A	-- ^A
2/5/2018	2100	27	-- ^A	-- ^A	-- ^A	-- ^A	390	13	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<6.0)	BRL (<3.3)	-- ^A	-- ^A	-- ^A	-- ^A
2/14/2018	2100	30	-- ^A	-- ^A	-- ^A	-- ^A	850	27	-- ^A	-- ^A	-- ^A	-- ^A	11	BRL (<3.3)	-- ^A	-- ^A	-- ^A	-- ^A
System shutdown on 2/14/18 due to transfer pump failure; system restart on 4/9/18.																		
4/9/2018	2,600	79	-- ^A	-- ^A	-- ^A	-- ^A	990	25	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<20)	BRL (<20)	-- ^A	-- ^A	-- ^A	-- ^A
4/13/2018	3100	62	-- ^A	-- ^A	-- ^A	-- ^A	1500	35	-- ^A	-- ^A	-- ^A	-- ^A	30	BRL (<33)	-- ^A	-- ^A	-- ^A	-- ^A
5/9/2018	1800	73	-- ^A	-- ^A	-- ^A	-- ^A	490	26	-- ^A	-- ^A	-- ^A	-- ^A	BRL (<6.0)	BRL (<33)	-- ^A	-- ^A	-- ^A	-- ^A
System shutdown on 5/9/18 after sampling collection due to carbon breakthrough and influent pump alarm fail.																		
Carbon change conducted on 06/05/18; system restarted on 06/07/18.																		
6/14/2018	2800	120	79	540	110	-- ^A	200	9.4	BRL (<8.7)	38	11	-- ^A	BRL (<6.0)	BRL (<3.3)	BRL (<8.7)	BRL (<5.6)	BRL (<7.4)	-- ^A
7/13/2018	2400	100	73	600	90	-- ^A	1100	44	27	24	35	-- ^A	BRL (<20)	BRL (<20)	BRL (<20)	BRL (<20)	BRL (<20)	-- ^A
8/7/2018	2900	95	73	460	86	-- ^A	630	31	22	130	34	-- ^A	27	5.3	BRL (<8.7)	9.1	BRL (<7.4)	-- ^A
9/27/2018	4300	69	50	360	190	-- ^A	3600	69	49	330	65	-- ^A	81	BRL (<3.3)	BRL (<8.7)	14	BRL (<7.4)	-- ^A
Carbon change conducted on 09/28/18; system restarted on 10/01/18.																		
10/30/2018	2800	65	46	320	71	-- ^A	100	6	8.7	16	78	-- ^A	BRL (<6.0)	BRL (<3.3)	BRL (<8.7)	BRL (<5.6)	BRL (<7.4)	-- ^A
11/16/2018	2900	62	50	290	77	-- ^A	460	24	19	94	26	-- ^A	BRL (<6.0)	BRL (<3.3)	BRL (<8.7)	BRL (<5.6)	BRL (<7.4)	-- ^A
12/14/2018	1900	62	49	300	70	-- ^A	1200	40	30	180	45	-- ^A	BRL (<6.0)	BRL (<3.3)	BRL (<8.7)	BRL (<5.6)	BRL (<7.4)	-- ^A
1/10/2019	2400	84	68	410	96	-- ^A	2200	71	54	360	82	-- ^A	21	BRL (<3.3)	BRL (<8.7)	BRL (<5.6)	BRL (<7.4)	-- ^A
Carbon change conducted on 2/4/19; system restarted on 2/5/19.																		
2/15/2019	4600	130	120	550	110	-- ^A	560	14	14	62	14	-- ^A	BRL (<6.0)	BRL (<3.3)	BRL (<8.7)	BRL (<6.2)	BRL (<7.4)	-- ^A
3/11/2019	5600	120	120	520	98	-- ^A	63	BRL(<3.3)	BRL (<4.9)	BRL (<5.6)	BRL (<7.1)	-- ^A	BRL (<6.0)	BRL (<3.3)	BRL (<4.9)	BRL (<5.6)	BRL (<7.1)	-- ^A
Iron sediments pumped out of influent tank and transfer pump associated piping - 3/29/2019. Replaced VFD.																		
4/9/2019	6600	140	180	580	99	-- ^A	400	7.4	9.9	31	BRL (<7.1)	-- ^A	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	-- ^A
5/21/2019	2500	83	59	290	100	8.6	3400	72	69	260	7.8	12	BRL (<12)	BRL (<7.4)	BRL(<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
Carbon change conducted on 06/13/19; system restarted on 06/14/19.																		
6/27/2019	8400	86	120	340	68	26	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
7/29/2019	9500	78	100	290	72	16	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
8/22/2019	8300	64	100	260	63	20	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
9/26/2019	4900	65	82	220	64	21	64	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
10/30/2019	3800	63	85	230	72	19	51	BRL (<7.4)	BRL (<4.9)	5.9	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
11/12/2019	4200	53	85	200	59	15	120	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
12/17/2019	1500	43	51	180	54	10	530	16	17	63	22	4.5	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
Carbon change conducted on 12/23/19; system restarted on 12/26/19.																		
1/17/2020	2200	57	60	220	69	13	11	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
2/13/2020	3100	74	66	310	92	17	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
3/3/2020	3300	72	64	300	81	14	7.4	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)	0.60	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)
4/28/2020	1900	52	42	210	56	42	86	2.7	2.2	10	3.4	0.51	BRL (<0.43)	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)
5/21/2020	1800	46	40	200	50	11	110	3.5	2.9	12	3.9	0.8	BRL (<0.43)	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)
6/24/2020	1400	41	41	160	49	19	64	3.3	2.7	15	5.4	1.4	3.30	0.94	0.84	0.83	1.2	BRL (<0.64)
7/28/2020	1700	44	43	200	52	12	130	3.4	3	13	3.9	0.96	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)

SAMPLE ID	INFLUENT (PRW-4)						MIDPOINT						EFFLUENT					
USEPA Method 537.1m or PACE SOP 454	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)
MCP Method 1 GW-1 Standard ³	20 ng/L						20 ng/L						20 ng/L					
SAMPLE DATE																		
Carbon change conducted on 08/12/2020; system restarted on 08/14/2020.																		
8/27/2020	1400	42	38	170	48	9	0.92	BRL (<0.49)	BRL (<0.8)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
9/23/2020	2000	46	50	200	57	14	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
10/20/2020	2300	49	50	230	63	15	1.1	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	0.54	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
11/24/2020	2300	59	43	240	71	18	14	1	BRL (<2.0)	2.1	1.3	BRL (<2.0)	10	0.94	BRL (<2.0)	1.9	1.2	BRL (<2.0)
12/21/2020	1400	51	42	200	60	9	220	7.4	5.1	28	9.3	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
1/27/2021	1000	47	36	170	49	7.7	280	13	11	47	15	2.2	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
2/23/2021	2300	67	54	290	80	14	98	7.1	5.9	8.4	3.1	1.6	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
3/12/2021	1100	54	43	210	57	11	370	18	15	69	20	3.2	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
4/21/2021	690	28	25	100	32	7.6	290	14	13	54	17	3.7	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
5/20/2021	970	32	38	130	37	10	560	19	20	72	21	6.2	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
7/1/2021	680	22	27	90	26	8.2	620	21	25	80	24	7.5	190	6.5	8.0	24	7.9	2.7
Carbon change conducted on 07/06/2021; system restarted on 07/09/2021.																		
7/23/2021	720	26	29	95	30	9.3	50	1.2	1.2	3.2	0.88	BRL (<2.0)	19	BRL (<2.0)	BRL (<2.0)	1.7	BRL (<2.0)	BRL (<2.0)
8/25/2021	570	14	17	79	24	BRL (<3.9)	BRL (<5.7)	BRL (<5.0)	BRL (<5.0)	BRL (<4.4)	BRL (<6.7)	BRL (<3.9)	BRL (<5.7)	BRL (<5.0)	BRL (<5.0)	BRL (<4.4)	BRL (<6.7)	BRL (<3.9)
9/20/2021	480	19	19	90	28	5.1	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
11/2/2021	560	19	21	90	30	6.2	1.5	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
11/17/2021	640	21	22	97	34	6.9	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
12/16/2021	570	19	20	92	30	6.4	200	8.6	8.4	43	15	2.4	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
1/25/2022	600	23	20	110	37	5.5	250	12	9.5	56	21	2.4	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
2/24/2022	610	29	19	130	39	4.1	620	26	17	110	33	3.4	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
3/22/2022	630	33	22	130	41	4.4	110	7.4	5	24	9.2	1.2	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
4/21/2022	490	23	20	110	38	4.9	280	13	11	65	22	2.8	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
5/26/2022	420	23	17	100	36	4.7	17	1.3	0.92	4.2	2.2	BRL (<0.64)	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
6/21/2022	430	23	19	110	35	4.8	110	7.5	6.1	30	12	1.8	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
7/27/2022	440	29	18	140	48	4.5	230	20	11	92	34	2.9	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)

SAMPLE ID	INFLUENT (PRW-4)						MIDPOINT						EFFLUENT					
USEPA Method 537.1m or PACE SOP 454	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)
MCP Method 1 GW-1 Standard ³	20 ng/L						20 ng/L						20 ng/L					
SAMPLE DATE																		
Carbon change conducted on 08/17/2022; new vessels installed; system restarted on 08/25/2020.																		
8/30/2022	290	24	13	100	38	3.7	BRL (<0.47)	BRL (<0.41)	BRL (<0.35)	BRL (<0.28)	BRL (<0.28)	BRL (<0.29)	0.6	BRL (<0.41)	BRL (<0.35)	BRL (<0.28)	BRL (<0.28)	BRL (<0.29)
9/20/2022	360	22	15	110	38	3	BRL (<0.47)	BRL (<0.41)	BRL (<0.35)	BRL (<0.28)	BRL (<0.28)	BRL (<0.29)	BRL (<0.47)	BRL (<0.41)	BRL (<0.35)	BRL (<0.28)	BRL (<0.28)	BRL (<0.29)
10/25/2022	350	25	19	120	37	3.9	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)
11/30/2022	410	23	19	110	36	4.1	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.7)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)
12/22/2022	520	21	19	110	36	4.1	8.3	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	7.5	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)

Notes:

- Concentrations presented in ng/L - nanograms per Liter - parts per trillion
- * - Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applied to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
- On December 13, 2019, MassDEP published the newly established clean up standards for PFAS in soil and groundwater. These standards were effective as of December 27, 2019 and apply to the total sum of six PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA; the new standard is 20 ng/L or parts per trillion (ppt). Concentrations of the six PFAS compounds presented in the table were not compared to the new MassDEP standards until the January 2020 monthly system sample collection, which is after the effective date of December 27, 2019.
- ^A: Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented prior to 06.11.18. The USEPA Health Advisory only applies to the PFOS and PFOA compounds.
Concentrations of PFNA, PFHxS, and PFHpA were not presented/tabulated until after the MassDEP ORS Guideline was in effect on 06.11.18.
- ^B: Concentrations of the PFAS compound, PFDA, were not presented prior to the May 2019 sampling period. On April 19, 2019, MassDEP presented a draft of proposed risk standards for PFAS that included a sixth, PFAS compound, PFDA.
- BRL - Below Laboratory Reporting Limits; reporting limit shown in parentheses.
- Concentrations in **bold** exceed applicable MassDEP ORS Guideline and/or the MCP Method 1 GW-1 groundwater risk standard.
- PFOS - Perfluorooctanesulfonic acid
- PFOA - Perfluorooctanoic Acid
- PFNA - Perfluorononanoic Acid
- PFHxS - Perfluorohexanesulfonic Acid
- PFHpA - Perfluoroheptanoic Acid
- PFDA - Perfluorodecanoic Acid
- NA - Concentration data not available

Table 1B - Summary of Groundwater Pump and Treatment System Total PFAS Analytical Data -GWTS #2
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	INFLUENT (PRW-4)						MIDPOINT						EFFLUENT					
USEPA Method 537.1m or PACE SOP 454	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFNA (ng/L)	PFHxS (ng/L)	PFHpA (ng/L)	PFDA (ng/L)
MCP Method 1 GW-1 Standard ¹⁵	20 ng/L						20 ng/L						20 ng/L					
SAMPLE DATE																		
System Startup on 11/11/19.																		
11/12/2019	4200	53	85	200	59	15	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
11/15/2019	--	--	--	--	--	--	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
11/19/2019	--	--	--	--	--	--	BRL (<5.2)	44	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	42	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
12/17/2019 ¹⁶	1500	43	51	180	54	10	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
1/17/2020	2200	57	60	220	69	13	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
2/13/2020	3100	74	66	310	92	17	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)	BRL (<5.2)	BRL (<7.4)	BRL (<4.9)	BRL (<5.2)	BRL (<7.1)	BRL (<4.1)
3/3/2020	3300	72	64	300	81	14	5.6	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)	BRL (<0.43)	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)
4/28/2020	1900	52	42	210	56	42	64	2.2	1.7	9.7	3.0	0.27	0.47	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)
5/21/2020	1800	46	40	200	50	11	76	2.8	2.0	10	3.6	0.52	BRL (<0.43)	BRL (<0.23)	BRL (<0.48)	BRL (<0.33)	BRL (<0.37)	BRL (<0.18)
6/24/2020	1400	41	41	160	49	19	39	2.9	2.3	12	4.3	1.1	0.84	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
7/28/2020	1700	44	43	200	52	12	84	3.8	3.3	17	5.7	0.76	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
8/27/2020	1400	42	38	170	48	9	6.1	BRL (<0.49)	BRL (<0.80)	1.2	0.61	BRL (<0.64)	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
9/23/2020	2000	46	50	200	57	14	18	0.79	0.86	2.4	1.3	BRL (<0.64)	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)
10/20/2020	2300	49	50	230	63	15	7.5	0.64	BRL (<2.0)	1.4	1.0	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
11/24/2020	2300	59	43	240	71	18	120	3.2	2.4	17	5.0	0.92	1.5	0.52	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
12/21/2020	1400	51	42	200	60	9.0	190	7.5	5.2	23	9.3	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
1/27/2021	1000	47	36	170	49	7.7	190	11	7.3	37	13	1.5	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
2/23/2021	2300	67	54	290	80	14	52	3.5	2.4	12	4.7	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
3/12/2021	1100	54	43	210	57	11	370	18	15	70	22	3.3	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
4/21/2021	690	28	25	100	32	7.6	120	7	5.3	22	9.3	1.7	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
4/21/2021	690	28	25	100	32	7.6	120	7	5.3	22	9.3	1.7	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
5/20/2021	970	32	38	130	37	10	BRL (<0.43)	BRL (<0.49)	BRL (<0.80)	BRL (<0.53)	BRL (<0.51)	BRL (<0.64)	42	3.1	2.4	9.1	4.9	BRL (<0.64)
System performance samples were not collected for the June 2021 Reporting Period because the System was shutdown as a result of breakthrough observed during the previous reporting period (May 2021).																		
Carbon change conducted on 07/06/2021; system restarted on 07/09/2021.																		
7/23/2021	720	26	29	95	30	9.3	310	11	12	39	13	4.5	BRL (<2.0)	0.51	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
8/25/2021	570	14	17	79	24	BRL (<3.9)	530	14	16	80	21	BRL (<3.9)	25	BRL (<5.0)	BRL (<5.1)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
9/20/2021	480	19	19	90	28	5.1	530	19	22	91	28	6.7	1.6	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
11/2/2021	560	19	21	90	30	6.2	540	17	19	85	28	6.2	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
11/17/2021	640	21	22	97	34	6.9	2.5	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	0.88	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)
12/16/2021	570	19	20	92	30	6.4	1.3	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	BRL (<2.0)	1	0.53	BRL (<2.0)	BRL (<2.0)	0.9	BRL (<2.0)
1/25/2022	600	23	20	110	37	5.5	530	21	19	110	34	4.6	550	22	18	110	36	4.8
System performance samples were not collected for the February 2022 Reporting Period because the System was shutdown (2/18/22) as a result of breakthrough observed during the previous reporting period (January 2022).																		
System #2 was shutdown from February 2022 through October 2022 for contract renewal and replacement of damaged vessel.																		
10/25/2022	350	25	19	120	37	3.9	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)
11/30/2022	410	23	19	110	36	4.1	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	BRL (<1.9)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)
12/22/2022	520	21	19	110	36	4.1	8.8	BRL (<1.7)	BRL (<1.7)	1.9	BRL (<1.7)	BRL (<1.7)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)	BRL (<1.8)

Notes:

- Concentrations presented in ng/L - nanograms per Liter - parts per trillion
- MassDEP's Office of Research and Standards (ORS) expanded upon the USEPA's Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
- Concentrations of the PFAS compound, PFDA, are presented based on the April 19, 2019, MassDEP draft of new/proposed groundwater standards for PFAS that includes a sixth, PFAS compound, PFDA. However the concentration of PFDA is not included in total PFAS removal calculations.
- BRL - Below Laboratory Reporting Limits; reporting limit shown in parentheses.
- Concentrations in **bold** exceed applicable MassDEP ORS Guideline
- PFOS - Perfluorooctanesulfonic Acid
- PFOA - Perfluorooctanoic Acid
- PFNA - Perfluorononanoic Acid
- PFHxS - Perfluorohexanesulfonic Acid
- PFHpA - Perfluoroheptanoic Acid
- PFDA - Perfluorodecanoic Acid
- : Concentration data not available and/or sample was not collected on that date.
- Per MCP Regulations, the system was sampled one day, three days, and seven (7) days following the initial week of startup (11/11/19).
- On December 13, 2019, MassDEP published the newly established clean up standards for PFAS in soil and groundwater. These standards were effective as of December 27, 2019 and apply to the total sum of six PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA. Concentrations of the six PFAS compounds presented in the table were not compared to the new MassDEP standards until the January 2020 monthly system sample collection.
- The December monthly sample was collected from the system's effluent stream on 12/17/2019 following the receipt of the laboratory results from the 11/19/2019 sampling event on 12/16/2019. The effluent was resampled again to ensure significant breakthrough was not occurring from the secondary carbon vessel.

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 1 (GWTS #1)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Quarter	System Configuration	Minimum Flow Rate Difference (gpm)		Permitted Change (Adjusted) Difference (gpm)		Permitted Change (Adjusted) Difference (gpm)		g/s Adjusted Flow Rate (gpm)	Estimated Intermediate Flow Rate (gpm)	Day System Operating	Adjusted Flow Rate (gpm)	Intermediate Flow Rate (gpm)	Violation (ft/s)	Comments	Estimated Total Flow Rate (gpm)	System Operating on Schedule	System Saturated	Comments
			Pre	Post	Group #1	Group #2	Group #1	Group #2											
6/1/2018	Q2	Yes	75	NA	NA	NA	75	NA	NA	NA	0	---	---	---	0.001	Yes	Yes	Conducted system pressure checks after rain.	
6/1/2018	Q2	Yes	75	NA	NA	NA	77	NA	2.07	---	---	---	---	---	0.001	Yes	Yes	Changed 1 bag filter (S) and conducted system pressure checks.	
6/1/2018	Q2	Yes	76	NA	NA	NA	76	NA	2.76	64.0	NA	2	---	---	0.001	Yes	Yes	High well pump is operating at high flow, high flow filter is triggering pump shut off. It turned off filter is manually in hand and returned at 10:35. Conducted system pressure checks after rain.	
6/1/2018	Q2	Yes	NA	NA	NA	NA	75	75	2.29	46.0	NA	3	---	---	0.002	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	NA	NA	NA	NA	75	74	2.80	43.0	NA	3	---	---	0.003	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	NA	NA	NA	NA	74	74	2.83	43.0	NA	3	---	---	0.003	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	63	NA	NA	NA	75	NA	NA	NA	10	---	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	NA	75	NA	NA	75	75	3.07	26.0	NA	11	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	62	76	NA	NA	77	76	3.18	36.5	NA	14	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	74	NA	NA	NA	NA	NA	3.18	36.5	NA	15	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	74	NA	NA	NA	NA	NA	3.20	37.0	NA	16	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	63	NA	NA	NA	NA	NA	3.27	36.4	NA	17	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	NA	75	NA	NA	75	75	3.42	36.4	NA	18	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	67	72	NA	NA	75	72	3.53	37.0	NA	19	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
Totals - April 2018										65.0	NA	21.00	---	---	0.004	---	---	---	
6/1/2018	Q2	Yes	63	NA	NA	NA	75	NA	NA	NA	0.00	---	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/2/2018	Q2	Yes	NA	75	NA	NA	NA	NA	3.67	33.0	NA	2	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/2/2018	Q2	Yes	62	52	NA	NA	NA	NA	3.18	36.5	NA	2	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	56	63	NA	NA	NA	NA	3.43	37.7	NA	6	---	---	0.003	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	NA	75	NA	NA	NA	NA	3.68	33.0	NA	2	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	56	63	NA	NA	NA	NA	3.68	33.0	NA	7	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut off. High flow filter is triggering pump shut off.	
6/1/2018	Q2	Yes	58	54	NA	NA	NA	NA	3.68	34.4	NA	6	---	---	0.004	Yes	Yes	Transfer water to Area 6, double checked back to filter, high flow filter is triggering pump shut	

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 1 (GWTS #1)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

[illegible]

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 1 (DWTS 1)
Barnstable County Fire and Rescue Training Academy
155 Fleet Beach Road, Barnstable, MA
01914-0017

Date	Operator	System Operating on Initial	Adjusting bag filter differential pressure (psi)		Pre-Filter Checkpoint Differential Pressure (psi)				K ¹ Adjust Tank (psi)	Estimated Accumulated Flow Rate (gpm)	Estimated Accumulated Flow Rate (gpm)	Days System Operating	Initial Effluent (ppm)	Instantaneous Effluent Rate (ppm)	Total Solids (ppm)	Net Gallons Treated	Average Effluent Rate (gpm)	Residual Tank (psi)	System Operating on Supplement	System Sampled	Comments
			Pre	Post	Single P1	Single P2	Single P3	Single P4													
8/14/2020	GWTT	Yes	--	--	33	3	16	16	4.43	19.9	9.5	4	--	88.00	170161	21552	4.5	0.000	Yes	No	Conducted system checks and changed bag filters twice due to excess iron oxide precipitate carry over from accumulation in EC tank. Adjusted VFD to 25Hz.
8/15/2020	GWTT	Yes	--	--	27	15	12	27	5.58	19.1	9.6	7	--	81.00	170361	46076	9.4	0.001	Yes	No	Conducted system checks and changed bag filters. flushed out right glass on the EC tank.
8/16/2020	GWTT	Yes	--	--	27	15	12	28	5.52	19.4	9.4	10	--	76.00	170561	41322	9.6	0.001	Yes	No	Conducted system checks and changed bag filters twice due to iron oxide accumulation in the EC tank, tank needs to be emptied. System shutdown on 8/16/2020 for carbon changes.
gpm																					
8/16/2020	GWTT	Yes	--	--	--	18	8	8.96	17.9	8.9	12	--	44.00	170761	37976	12.3	0.001	Yes	No	No	Backwash system after carbon changes. Conducted system checks and changed bag filters. Adjusted VFD to 30Hz.
8/17/2020	GWTT	Yes	--	--	38	5	5	9	7.00	17.5	8.9	13	--	68.00	170961	42577	12.3	0.002	Yes	No	Conducted system checks and changed bag filters twice.
8/18/2020	GWTT	No	--	--	17	5	5	9	7.07	17.5	8.7	15	--	64.00	171161	45776	10.5	0.002	Yes	No	Conducted system checks and changed bag filters twice. Transfer pump off an arrival due to high level alarm in EC tank.
8/19/2020	GWTT	Yes	--	--	38	7	7	11	7.08	19.5	7.7	15	--	64.00	171361	42420	9.2	0.002	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	7	10	11	7.43	19.5	8.5	16	--	60.00	171561	43551	9.7	0.002	Yes	No	Conducted system checks and changed bag filters. System sampled on 8/21/2020. Iron sediment vacuumed pumped out from the EC tank on 8/27/2020.
8/19/2020	GWTT	Yes	--	--	38	7	9	13	7.87	19.0	8.0	19	--	60.00	171761	45721	11.5	0.003	Yes	No	Conducted system checks and changed bag filters.
Total - August 2020 ¹⁴															36.7	41894	9.9	0.000			
8/19/2020	GWTT	Yes	--	--	38	7	9	13	8.76	19.4	8.4	4	--	60.00	171961	47594	9.6	0.001	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	10	9	15	8.86	17.9	8.9	8	--	60.00	172161	47863	8.3	0.001	Yes	No	Conducted system checks and changed bag filters. Increased VFD to 28Hz.
8/19/2020	GWTT	Yes	--	--	38	10	9	15	8.46	16.7	8.9	11	--	60.00	172361	20850	6.9	0.001	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	15	10	9	5	9.33	15.1	8.9	15	--	60.00	172561	37248	4.5	0.001	Yes	No	Conducted system checks and changed bag filters. Backwashed primary carbon vessel.
8/19/2020	GWTT	Yes	--	--	27	5	7	9	8.55	15.1	8.9	15	--	60.00	172761	27782	5.8	0.001	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	10	4	7	10.28	16.9	8.9	15	--	60.00	172961	27579	4.8	0.001	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	2	5	3	5	10.53	9.8	8.9	15	--	60.00	173161	22382	3.8	0.001	Yes	No	Conducted system checks and changed bag filters. System samples collected on September 21, 2020.
8/19/2020	GWTT	Yes	--	--	2	6	2	7	10.28	10.1	8.9	15	--	60.00	173361	10953	2.5	0.001	Yes	No	Conducted system checks and changed bag filters.
Total - September 2020 ¹⁴															44.5	41848	5.8	0.000			
8/19/2020	GWTT	Yes	--	--	2	5	3	5	10.43	9.4	8.9	1	--	60.00	173561	8796	3.1	0.00009	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	7	5	10	10.77	9.4	8.9	1	--	60.00	173761	30371	7.0	0.00046	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	27	9	10	16	10.90	8.5	8.7	15	--	50.00	173977	76237	4.8	0.00114	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	10	10	16	10.93	8.4	8.9	15	--	60.00	174177	26781	4.2	0.0011	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	10	10	16	10.93	7.5	8.9	15	--	60.00	174377	36750	8.3	0.00112	Yes	Yes	Conducted system checks and changed bag filters. System sampled on 10/5/2020.
8/19/2020	GWTT	Yes	--	--	17	10	12	15	10.05	6.8	8.4	15	--	60.00	174580	36750	6.4	0.00189	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	38	10	10	16	10.98	4.4	8.5	15	--	50.00	174780	21639	5.9	0.00197	Yes	No	Conducted system checks and changed bag filters.
8/19/2020	GWTT	Yes	--	--	15	12	10	14	10.20	5.8	7.9	15	--	60.00	174981	21362	5.7	0.00149	Yes	No	Conducted system checks and changed bag filters.
Total - October 2020 ¹⁴															7.8	9.4	5.8	0.000			
11/10/2020	GWTT	Yes	--	--	38	12	10	13	10.87	5.2	7.7	2	--	60.00	180361	11275	2.6	0.00008	Yes	No	Conducted system checks and changed bag filters.
11/10/2020	GWTT	Yes	--	--	8	12	8	14	10.84	4.9	5.5	8	--	60.00	180561	8486	1.5	0.00013	Yes	No	Conducted system checks and changed bag filters.
11/10/2020	GWTT	Yes	--	--	38	12	12	16	10.80	6.1	8.5	9	--	50.00	180761	20832	4.7	0.00052	Yes	No	Conducted system checks and changed bag filters.
11/10/2020	GWTT	No	--	--	--	--	--	--	--	--	--	12	--	--	180361	8582	1.5	--	--	No	GWTT observed an effluent flow coming into the EC tank. GWTT inspected the electrical components at PWR-4 and reset the power. After power reset, electrical current was at 77 A and power tripped and shut off. GWTT operator suggest the pump has locked up or the motor has failed. GWTT shut down both systems.
System Shutdown due to pump failure at recovery well PWR-4 pump replaced on 11/20/2020.																					
11/10/2020	GWTT	Yes	--	--	--	--	--	--	--	--	--	14	--	50.00	180467	2882	2.0	0.00039	Yes	Yes	Following the replacement of the well pump at PWR-4 on 11/20/2020, GWTT restarted both systems, adjusted the transfer pump flow from 38 Hz, changed the bag filter twice.
11/10/2020	GWTT	Yes	--	--	15	10	10	17	10.91	6.0	10.1	15	--	50.00	180668	13073	3.1	0.00076	Yes	Yes	Following the replacement of the well pump at PWR-4 on 11/20/2020, GWTT restarted both systems, adjusted the transfer pump flow from 38 Hz, changed the bag filter twice.
Total - November 2020 ¹⁴															44.9	40977	5.4	0.000			
11/10/2020	GWTT	Yes	--	--	15	10	13	17	10.97	10.1	10.8	1	--	50.00	180768	14800	4.7	0.00058	Yes	No	Conducted system checks and changed bag filters. Transfer pump off on arrival due to high level in EC tank.
11/10/2020	GWTT	Yes	--	--	--	--	--	--	--	--	--	12	--	50.00	180968	81854	10.1	0.00085	Yes	No	System shutdown briefly to vacuum out the exterior tanks, both EC tanks, bag filters, and drums. Conducted system checks and changed bag filters.
11/10/2020	GWTT	Yes	--	--	49	16	16	27	1.86	40.0	10.1	7	--	40.00	181038	115278	10.0	0.00135	Yes	No	Conducted system checks and changed bag filters.
11/10/2020	GWTT	Yes	--	--	17	10	6	9	1.85	40.1	10.1	11	--	50.00	181168	128439	18.8	0.00139	Yes	No	Conducted system checks and changed bag filters. Backwashed the primary carbon vessel. Adjusted VFD from 38 Hz to 32 Hz to maintain maximum contact time through carbon vessels.
11/10/2020	GWTT	Yes	--	--	25	5	8	10	1.90	40.6	10.1	15	--	40.00	181268	128415	18.8	0.00171	Yes	No	Conducted system checks and changed bag filters.
11/10/2020	GWTT	Yes	--	--	20	10	10	18	1.87	40.5	10.1	18	--	40.00	181318	128111	18.2	0.00051	Yes	No	Conducted system checks and changed bag filters. Increased transfer pump speed from 32 Hz to 35 Hz.
11/10/2020	GWTT	Yes	--	--	--	--	--	--	--	--	--	15	--	--	181468	128715	22.8	0.00040	Yes	Yes	Conducted system checks and changed bag filters. Increased transfer pump speed from 32 Hz to 35 Hz.
11/10/2020	GWTT	Yes	--	--	34	12	18	17	2.13	57.4	10.7	24	--	50.00	181538	16710	15.9	0.00027	Yes	No	Conducted system checks and changed bag filters. Increased transfer pump speed from 35 Hz to 38 Hz.
11/10/2020	GWTT	Yes	--	--	38	16	15	8	2.10	62.1	10.1	24	--	50.00	181638	128415	22.8	0.00047	Yes	No	Conducted system checks and changed bag filters. Conducted backwash of the primary carbon vessel, and reduced the speed on the transfer pump from 38 Hz to 32 Hz.
Total - December 2020 ¹⁴															26.9	30120	16.5	0.006			
1/14/2021	GWTT	Yes	--	--	34	10	14	18	2.48	47.4	10.7	4	--	40.00	182178	122342	17.8	0.00013	Yes	No	Conducted system checks and changed bag filters. Increased the speed on the transfer pump from 32 to 38 Hz.
1/14/2021	GWTT	Yes	--	--	40	10	12	27	2.79	46.8	10.4	4	--	40.00	182361	122323	22.6	0.00008	Yes	No	Conducted system checks and changed bag filters. Increased the speed on the transfer pump from 32 to 40 Hz.
1/14/2021	GWTT	Yes	--	--	40	10	12	18	2.83	43.7	10.4	8	--	60.00	182461	124227	21.6	0.00124	Yes	No	Conducted system checks and changed bag filters.
1/14/2021	GWTT	Yes	--	--	40	10	16	18	2.84	34.3	17.1	11	--	60.00	182561	87380	10.2	0.00119	Yes	No	Conducted system checks and changed bag filters.
1/14/2021	GWTT	Yes	--	--	40	10	3	8	2.85	36.4	18.4	15	--	47.00	182611	16332	16.8	0.00180	Yes	No	Conducted system checks and changed bag filters. conducted backwash of the primary carbon vessel, reduced discharge flow.
1/14/2021	GWTT	Yes	--	--	38	14	18	22	2.78	48.0	10.8	15	--	40.00	182777	77425	18.0	0.00231	Yes	No	Conducted system checks, changed bag filters twice, and increased VFD on transfer pump from 40 Hz to 42 Hz.
1/14/2021	GWTT	Yes	--	--	40	10	12	15	2.88	47.4	10.7	15	--	50.00	182880	148633	25.5	0.00480	Yes	No	Conducted system checks, changed bag filters, and reduced the VFD on the transfer pump from 42 Hz to 40 Hz.
1/14/2021	GWTT	Yes	--	--	40	10	15	25	3.40	31.3	19.4	15	--	40.00	182938	80238	10.7	0.00380	Yes	No	Conducted system checks, changed bag filters.
1/14/2021	GWTT	Yes	--	--	42	12	15	28	3.46	31.8	19.4	15	--	40.00	183087	120463	10.0	0.00394	Yes	Yes	Conducted system checks, changed bag filters. System sampled on 1/28/2021.
Total - January 2021 ¹⁴															49.0	49151	21.0	0.005			
1/17/2021	GWTT	Yes	--	--	42	12	15	30	4.46	26.1	19.2	2	--	40.00	183146	120571	17.9	0.00055	Yes	No	Conducted system checks and changed bag filters. Transfer pump VFD set to 40 Hz.
1/17/2021	GWTT	Yes	--	--	42	17	17	15	5.00	25.1	19.4	5	--	40.00	183238	16789	15.5	0.00118	Yes	No	Conducted system checks and changed bag filters.
1/17/2021	GWTT	Yes	--	--	42	17	18	15	4.46	19.0	19.5	8	--	40.00	183342	64633	15.0	0.00183	Yes	No	Conducted system checks and changed bag filters.
1/17/2021	GWTT	Yes	--	--	44	16	18	18	4.55	19.9	19.0	12	--	41.00	1834475	74633	13.0	0.00239	Yes	No	Conducted system checks and changed bag filters.
1/																					

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 1 (GWTS #2, Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator	System Operating on Date	Inflow (kg) and Outflow (kg) of Charge (kg)		Proximal Differential Pressure (psi)		Distal Differential Pressure (psi)		4" Inflow (kg) and Outflow (kg)		Reactor	Hot System Operating	Inflow (kg) and Outflow (kg) of Fuel (kg)	Inflow (kg) and Outflow (kg) of Fuel (kg)	Reactor	Noted Issues	Average Effluent Flow Rate (kg/hr)	Estimated Fuel Mass Reacted (kg)	System Operating as Designed	System Samples	Comments							
			Pre	Post	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Stage 6																		
11/01/2021	GHRT	Yes	---	---	32	22	21	24	24.2	8.9	6.9	4	---	30.00	1340026	2752	4.0	0.0003	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	31	23	24	24	24.58	8.4	4.2	7	---	30.00	1340031	14789	3.4	0.0003	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	31	23	27	32	2.87	45.7	21.4	10	---	30.00	1340033	24880	5.8	0.0008	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	37	23	30	37	2.80	48.9	21.4	14	---	30.00	1340032	40217	6.0	0.0006	Yes	No	Conducted system checks and changed flow filters. Adjusted VFD on transfer pump from 36 Hz to 48 Hz.							
11/01/2021	GHRT	Yes	---	---	31	31	38	34	8.20	49.4	26.1	21	---	30.00	1340033	73878	7.3	0.0002	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	34	30	29	35	8.25	47.7	18.8	20	---	30.00	1340045	47755	10.9	0.0003	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	34	30	30	35	7.73	50.0	16.1	28	---	30.00	1340039	54451	12.8	0.0029	Yes	No	Conducted system checks and changed flow filters and backwashed primary carbon vessel.							
Totals - May 2021																					36.9	15.4	15	36.9	344496	7.0	0.0015	
11/01/2021	GHRT	Yes	---	---	36	35	32	37	8.60	26.5	10.4	4	---	30.00	1340039	135759	15.5	0.0003	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	30	32	37	33	4.86	21.5	10.5	8	---	30.00	1371046	132731	20.0	0.0006	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	22	35	35	37	4.64	26.4	10.2	13	---	30.00	1340049	72869	36.9	0.0006	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	35	25	32	39	4.77	25.7	10.8	16	---	30.00	1340049	175884	15.3	0.0014	Yes	No	Conducted system checks and changed flow filters. Adjusted VFD on transfer pump from 36 Hz to 48 Hz.							
11/01/2021	GHRT	Yes	---	---	31	26	34	30	8.63	31.7	16.9	15	---	30.00	1340071	115443	10.0	0.0046	Yes	No	Conducted system checks and changed flow filters. Adjusted VFD to 48 Hz, zone wiring, High Effluent flow rate observed at 30 gpm. Build up of iron scale on bottom of EC2 tank after the flow filter and secondary LAC vessel is getting fouled with iron scale.							
11/01/2021	GHRT	Yes	---	---	42	40	36	38	14.00	36.0	17.0	25	---	30.00	1340068	105828	18.3	0.0013	Yes	No	Conducted system checks and changed flow filters, pumped the contents from GHRT42 tank into GHRT30, to pre-treat/charge remaining water.							
11/01/2021	GHRT	Yes	---	---	34	36	30	36	8.97	36.9	15.4	18	---	30.00	1340070	70382	17.2	0.0024	Yes	No	Conducted system checks and changed flow filters.							
Totals - June 2021																					36.6	16.1	18	36.6	510496	21.3	0.0009	
11/01/2021	GHRT	Yes	---	---	36	36	30	36	8.35	28.5	16.8	5	---	30.00	1371038	87438	25.6	0.0008	Yes	No	Conducted system checks and changed flow filters.							
11/01/2021	GHRT	Yes	---	---	30	---	18	---	---	---	---	5	---	---	1380													

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 1 (GWTS #1)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator	System Operator's Approval	Adjust Bag After Additional Process (mg)		Pre-filter changed (effluent flow rate)		Pre-filter changed (effluent flow rate)		4" effluent flow rate (GPM)	Estimated effluent flow rate (GPM)	Relief	Days System Operating	Inlet Effluent Flow Rate (GPM)	Inlet Effluent Flow Rate (PPM)	Analyzer		Estimated Total PPM Annual Avg	System Operating as Designed	System Saturated	Comments
			Pre	Post	Stage 1	Stage 2	Stage 1	Stage 2							Violation (SD)	Not Satisfactory				
3/1/2001	CHT	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	No	--	Repair was returned to the Site on 2/1/2002. CHTT and Cauts personnel installed heaters inside the system to defrost/thaw the frozen components for the system.
3/1/2001	CHT	No	--	--	46	6	26	16	2.02	46.6	20.4	1	30.00	1040205	32251	25.2	0.00011	Yes	No	Repaired system after freeze conditions, no damage observed. Conducted system checks and changed bag filters.
3/1/2001	CHT	No	--	--	45	12	26	26	0.40	46.2	20.3	4	31.00	1040004	70105	36.2	0.00026	Yes	No	Conducted system checks and changed bag filter twice.
3/1/2001	CHT	Yes	--	--	45	34	26	30	2.76	45.9	20.0	8	30.00	1039904	83276	34.4	0.00046	Yes	No	Conducted system checks and changed bag filters. Backwashed primary carbon vessel - suggested that carbon carry over is present. From the primary vessel for the secondary vessel. 2
3/1/2001	CHT	Yes	--	--	45	12	14	17	0.20	42.0	20.3	11	31.00	1040706	14261	15.5	0.00007	Yes	No	Conducted system checks and changed bag filters.
3/1/2001	CHT	Yes	--	--	45	13	17	20	2.33	43.8	20.8	15	30.00	1039709	95274	15.7	0.00005	Yes	No	Conducted system checks and changed bag filters. CHTTSG shut down waiting for a Carbon Changeout, 48 effluent water was directed through CHTTSGS 400's.
3/1/2001	CHT	Yes	--	--	44	12	26	17	9.22	38.1	36.3	39	30.00	1040009	100603	17.4	0.00027	Yes	Yes	Conducted system checks and changed bag filters. Backwashed secondary carbon vessel. System sampled 5/26/02
3/1/2001	CHT	Yes	--	--	44	9	14	24	6.43	36.7	35.7	25	30.00	1040007	117728	12.6	0.00016	Yes	No	Conducted system checks and changed bag filters. Increased VSD to 42Hz.
Totals February 2002										46.6	20.0	26	30.0		106557	15.5	0.00015			
4/1/2001	CHT	Yes	--	--	50	13	26	30	1.66	33.4	20.4	4	30.00	1042007	87762	15.2	0.00023	Yes	No	Conducted system checks and changed bag filters. Backwashed primary carbon vessel.
5/1/2001	CHT	Yes	--	--	49	7	15	17	5.47	35.9	20.9	7	34.00	1042003	73233	17.4	0.00047	Yes	No	Conducted system checks and changed bag filters.
6/1/2001	CHT	Yes	--	--	50	16	26	26	1.47	33.4	20.4	10	30.00	1040005	82061	16.7	0.00017	Yes	No	Conducted system checks and changed bag filters. Backwashed secondary carbon vessel.
6/1/2001	CHT	Yes	--	--	50	8	12	14	1.90	31.0	20.2	14	30.00	1041703	92239	16.7	0.00006	Yes	No	Conducted system checks and changed bag filters.
6/1/2001	CHT	Yes	--	--	50	10	25	28	9.72	30.9	20.0	14	30.00	1041706	90909	17.2	0.00019	Yes	No	Conducted system checks and changed bag filters. Adjust VSD.
6/1/2001	CHT	Yes	--	--	50	10	26	26	4.80	33.5	20.3	21	30.00	1041905	99275	23.0	0.00015	Yes	No	Conducted system checks and changed bag filters. Backwashed primary carbon vessel. System sampled 8/22/02.
6/1/2001	CHT	Yes	--	--	54	14	26	26	6.37	38.1	20.1	24	30.00	1040008	108644	25.2	0.00022	Yes	No	Conducted system checks and changed bag filters. Pump out backwash tank through treatment system.
6/1/2001	CHT	Yes	--	--	53	20	26	30	5.17	25.7	20.7	28	30.00	1040001	119426	24.2	0.00010	Yes	No	Conducted system checks and changed bag filters.
Totals March 2002										39.9	20.3	21	30.0		78649	17.6	0.0002			
4/1/2001	CHT	Yes	--	--	51	12	12	14	1.46	34.9	20.9	1	30.00	1040407	123422	21.4	0.00008	Yes	No	Conducted system checks and changed bag filters.
4/1/2001	CHT	Yes	--	--	48	26	13	16	6.72	18.2	19.2	4	20.00	1171108	80064	18.7	0.00029	Yes	No	Conducted system checks and changed bag filters.
4/1/2001	CHT	Yes	--	--	48															

Table 2A - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 1 (GWTS #1)
Barnstable County Fire and Rescue Training Academy
155 Fleet Beach Road, Barnstable, MA
01914-0029

Date	Operator	System Operating on Arrival	Influent bag filter differential pressure (psi)		Pre-Filter Checkpoint Differential Pressure (psi)		Post-Filter Checkpoint Differential Pressure (psi)		4" Influent Tank (psi)	INFLUENT		Post System Operating	EFFLUENT		Total Chlorine (ppm)	Net Chlorine Treated	Average Effluent Total Hardness (mg/L)	Estimated Total Phos Removal (kg)	System Operating on Departure	System Sampled	Comments	
			Pre	Post	Single P1	Single P2	Single P3	Single P4		Combined Estimated Instantaneous Influent Flow Rate (GPM)	Estimated Instantaneous Effluent Flow Rate (GPM)		Instantaneous Effluent Flow Rate (GPM)	Instantaneous Effluent Flow Rate (GPM)								
9/30/2023	GWTT	Yes	--	--	43	38	9	13	0.61	03.6	03.6	2	--	38.00	2883780	120702	22.5	0.00017	Yes	No	Conducted system checks and changed bag filters. Backwash primary carbon vessel, pump down backwash tank.	
9/30/2023	GWTT	Yes	--	--	38	38	15	15	0.07	00.3	00.3	4	--	37.00	2300370	117643	23.9	0.00005	Yes	No	Conducted system checks and changed bag filters.	
9/30/2023	GWTT	Yes	--	--	37	30	16	20	0.07	00.1	00.1	9	--	36.00	2088660	108849	23.9	0.00001	Yes	No	Conducted system checks and changed bag filters.	
9/30/2023	GWTT	Yes	--	--	46	36	16.5	20	0.03	00.4	00.4	12	--	41.00	2088660	10888	13.7	0.00003	Yes	No	Conducted system checks and changed bag filters. Backwash primary carbon vessel.	
9/30/2023	GWTT	Yes	--	--	45	35	16	14	0.06	00.3	00.3	14	--	36.00	2088670	83021	15.5	0.00005	Yes	No	Conducted system checks and changed bag filters. Decant green tank.	
9/30/2023	GWTT	Yes	--	--	40	32	15	15	0.07	00.9	00.9	10	--	35.00	2040440	94001	21.9	0.00010	Yes	Yes	Conducted system checks and changed bag filters. System sampled.	
System shutdown 9/30/2023. Replace well pump, conduct acid treatment to well and main line. System restarted 9/31/23																						
9/30/2023	GWTT	No	--	--	--	--	--	--	0.0	0.0	0.0	20	--	37.00	2088701	14071	3.0	0.00023	Yes	No	Conducted system checks, changed bag filters multiple times, flush sludge out of sightglass on holding tank. Flush acid from recovery well pipe into outside edge tank and dispose. Add stock acid to reuse bin.	
9/30/2023	GWTT	Yes	--	--	47	33	13	14	2.15	17.0	17.0	23	--	34.00	2942087	44672	10.3	0.00001	Yes	No	Conducted system checks and changed bag filters.	
Totals - September 2023																						
9/30/2023	GWTT	Yes	--	--	47	33	15	20	2.13	17.4	17.4	3	--	34.00	2940220	12003	12.2	0.00014	Yes	No	Conducted system checks and changed bag filters. Pump down green tank.	
9/30/2023	GWTT	Yes	--	--	44	34	14	18	2.12	17.9	17.9	7	--	35.00	2070313	84702	14.7	0.00040	Yes	No	Conducted system checks and changed bag filters.	
9/30/2023	GWTT	Yes	--	--	44	30	15	20	Not Reported	Not Reported	Not Reported	13	--	35.00	2980386	84324	14.6	0.00002	Yes	No	Conducted system checks and changed bag filters. EC/ML level alarm kept coming on, couldn't take 4" influent reading. System #2 restarted.	
9/30/2023	GWTT	Yes	--	--	43	30	12	15	0.15	07.0	06.9	10	--	36.00	2980387	93014	21.1	0.00013	Yes	No	Conducted system checks and changed bag filters. Start system # 2	
9/30/2023	GWTT	Yes	--	--	40	27	15	18	2.13	17.5	20.8	10	--	35.00	2330380	72342	13.1	0.00006	Yes	No	Conducted system checks and changed bag filters.	
9/30/2023	GWTT	Yes	--	--	44	36	16	20	2.00	16.7	17.8	24	--	36.00	2987998	83004	18.8	0.00010	Yes	No	Conducted system checks and changed bag filters.	
9/30/2023	GWTT	Yes	--	--	43	33	16	19	2.05	16.6	16.9	24	--	35.00	2330380	71022	16.5	0.00012	Yes	No	Conducted system checks and changed bag filters.	
9/30/2023	GWTT	Yes	--	--	43	34	12	17	1.08	16.9	16.9	24	--	36.00	2330380	82403	10.8	0.00017	Yes	Yes	Conducted system checks and changed bag filters. Tighten carbon vessel covers. System Sampled 10.25.22	
9/30/2023	GWTT	Yes	--	--	38	35	12	16	2.40	11.0	20.1	31	--	35.00	2330384	83641	16.1	0.00016	Yes	No	Conducted system checks and changed bag filters. High level alarm light not turning on but still shutting off.	
Totals - October 2023																						
10/1/2023	GWTT	Yes	--	--	42	34	15	19	2.42	10.7	21.3	4	--	36.00	23378010	79400	13.8	0.00021	Yes	No	Conducted system checks and changed bag filters.	
10/1/2023	GWTT	Yes	--	--	23	25	13	16	2.30	13.3	20.4	7	--	36.00	2340010	40004	9.4	0.00025	Yes	No	Conducted system checks and changed bag filters.	
10/1/2023	GWTT	Yes	--	--	39	31	14	14	2.47	49.7	24.8	13	--	40.00	2340011	60001	10.4	0.00044	Yes	No	Conducted system checks and changed bag filters. Flush iron sludge from site glass.	
10/1/2023	GWTT	Yes	--	--	34	27	14	20	2.40	49.0	24.3	10	--	36.00	2337810	70900	12.4	0.00077	Yes	No	Conducted system checks and changed bag filters. Flushed levels in discharge threaded plug.	
10/1/2023	GWTT	Yes	--	--	38	27	16	20	2.54	49.4	24.2	10	--	38.00	2340015	70901	17.7	0.00023	Yes	No	Conducted system checks and changed bag filters.	
10/1/2023	GWTT	Yes	--	--	39	30	17	21	2.40	49.4	20.4	24	--	36.00	2337809	70004	10.2	0.00047	Yes	No	Conducted system checks and changed bag filters. Flush iron sludge from site glass.	
10/1/2023	GWTT	Yes	--	--	35	35	16	20	2.72	45.1	23.3	26	--	36.00	2338815	94300	16.4	0.00017	Yes	No	Conducted system checks and changed bag filters. Flush iron sludge from site glass.	
10/1/2023	GWTT	Yes	--	--	35	36	16	20	2.76	45.1	23.3	26	--	36.00	2338880	58901	13.6	0.00047	Yes	Yes	Conducted system checks and changed bag filters. System sampled 10.20.23.	
Totals - November 2023																						
10/2/2023	GWTT	Yes	--	--	42	37	17	21	2.78	46.0	22.0	2	--	36.00	2338810	82401	10.8	0.00008	Yes	No	Conducted system checks and changed bag filters.	
10/2/2023	GWTT	Yes	--	--	34	36	18	21	2.80	43.8	20.9	1	--	36.00	2338720	58001	12.6	0.00026	Yes	No	Conducted system checks and changed bag filters.	
10/2/2023	GWTT	Yes	--	--	31	39	19	22	4.00	40.4	20.4	4	--	29.00	2338649	78024	13.6	0.00047	Yes	No	Conducted system checks and changed bag filters.	
10/2/2023	GWTT	Yes	--	--	34	38	18	21	4.48	40.4	20.2	12	--	39.00	2333981	41000	10.4	0.00048	Yes	No	Conducted system checks and changed bag filters.	
10/2/2023	GWTT	Yes	--	--	39	30	19	22	3.80	47.2	18.4	14	--	36.00	2338888	83602	15.6	0.00006	Yes	No	Conducted system checks and changed bag filters. Flush site glass.	
10/2/2023	GWTT	Yes	--	--	23	39	20	23	5.52	34.9	17.4	10	--	29.00	2338877	62300	15.6	0.00016	Yes	No	Conducted system checks and changed bag filters.	
10/2/2023	GWTT	Yes	--	--	27	30	24	24	6.79	33.0	16.0	10	--	36.00	2337807	46700	10.9	0.00010	Yes	Yes	Conducted system checks and changed bag filters. System samples collected on 10/2/23.	
10/2/2023	GWTT	Yes	--	--	34	30	20	24	5.70	33.1	16.4	27	--	36.00	2338865	86400	12.0	0.00025	Yes	No	Conducted system checks and changed bag filters.	
10/2/2023	GWTT	Yes	--	--	31	30	20	22	4.00	33.1	16.1	30	--	38.00	2338704	44000	14.8	0.00071	Yes	No	Conducted system checks and changed bag filters. Flush site glass.	
Totals - December 2023																						

1. GC - Groundwater Engineering, LLC

2. Prior to November 2023, the instantaneous influent (IWI) and effluent (ETI) flow rates are calculated based on the cross-sectional volume per vertical inch of the influent tank and measured/observed (MW) into or sharing (ETI) of the tank. The diameter of the influent tank is approximately 78 inches. The cross-sectional volume of the tank is approximately 13.1 cubic feet per vertical linear foot. Therefore the flow rate calculation factor is approximately 122.3 gallons per 1-inch. Since 10/1/2023 (Following the replacement of the effluent tanks), CWI (or flow rates from P#6-4) are calculated based on an approximation. This Combined instantaneous flow rate represents the combined flow within both flow main pipes from recovery well P#6-4 and since the average of CWI/ETI on 10/1/23, approximately 50% of the Combined instantaneous Influent Flow Rate represents the instantaneous Influent Flow Rate of GWTS#1.

3. Prior to November 2023 the total mass of P#6 removed is calculated based on the calculated effluent flow rate, the number of days the system has been operating, and the average total influent P#6 concentration for the month. Since November 2023, the total mass of P#6 removed is calculated based on the effluent flow rate.

4. N/A or -- Not Reported

5. N/A - Not Reported

6. As of April 1, 2024, the system's O&M data reporting was changed to include the real-time readings from the bag filter unit's pressure gauges before and after the bag filters are changed/replaced, if applicable.

7. Prior to November 2023, the average influent flow rate could not reliably be calculated (measured) from September to onset of October due to a blockage in the site glass on the EC tank from accumulated iron oxide precipitates in the bottom of the tank. The iron-oxide precipitates were removed from the EC tank on Oct. 28, 2023.

8. Following the operation of the new flow main and the installation of GWTS#1 on November 1, 2023, instantaneous effluent flow rates are estimated by approximating 50% of the Combined instantaneous Influent Flow rate values.

9. The instantaneous Effluent Flow Rate is calculated as the instantaneous Influent Flow Rate multiplied by the system's effluent-to-influent flow ratio. The effluent-to-influent flow ratio is calculated as the average of CWI/ETI on 10/1/23, approximately 50% of the Combined instantaneous Influent Flow Rate.

10. The Average Effluent Flow rate is calculated from the net gallons (Total Gallons Treated) divided from the system's effluent-to-influent flow ratio and days that the system was in operation.

11. Prior to Nov. 1, 2020, calculated average effluent flow rates and the average instantaneous effluent flow rates were calculated based on the reported real-time readings. The reported flow main readings on the effluent discharge piping were not reliable at flow rates less than 40 GPM.

12. Therefore the data are shared to indicate that they are approximations only and for this reason the July through October data are also considered approximations.

13. As of September 2023, the "CWIT" (flow) flow rate is left to right (the Average instantaneous Influent Flow Rate, Total Days of System Operation, Average instantaneous Effluent Flow Rate, Total Days of Operation, Average instantaneous Effluent Flow Rate, and Estimated P#6 Removed for the respective monthly reporting period.

Running average values shown for the effluent flow rate. Prior to November 7, 2023, totals shown (from left to right) included the Average instantaneous Influent Flow Rate, Total Days of Operation, Average instantaneous Effluent Flow Rate, and Estimated P#6 Removed for the respective monthly reporting period.

14. The calculated total Gallons Treated and Average Effluent Flow Rates are based on real-time readings from each monitoring data and the totals are representative of the monthly flow reporting period. The average effluent flow rates calculated from the first monitoring data are based on measurements from the last monitoring date of the previous reporting period.

15. February 16, 2023 GWTS#1 was shut down waiting for a Carbon Changeout, all water was routed through GWTS #4. The estimated instantaneous Influent Flow Rate was not divided between the 2 systems and therefore matches the Combined instantaneous Estimated Influent Flow Rate.

Table 28 - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 2 (GWTS #2)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator ¹	System Operating on Arrival	Days System Operating	Transfer Pump Pres. (psi)	Pre-Filter Changeout Differential Pressure (psi) ²			Post-Filter Changeout Differential Pressure (psi)		Carbon Vessels Pre-change out (psi)		Carbon Vessels Post-change out (psi)		Instantaneous Estimated INFLUENT ⁷	EFFLUENT				Estimated Total PFAs Removal (kg)	System Operating on Departure	System Sampled	Comments
				Gauge: P1	Gauge: P2	Gauge: P3	Gauge: P2	Gauge: P3	Gauge: P4	Gauge: P5	Gauge: P4	Gauge: P5	Flow Rate (GPM) ^{4,6}	Totalizer (gal)	Instant. Flow Rate (GPM) ⁴	Net Gallons Treated ⁴	Average Effluent Flow Rate (GPM) ⁴					
11/11/2019	GWTT	Yes	1	38	0	0	0	0	<2	0	2	2	12.56	416900	32.00	0.0	--	0.00032	Yes	No	Influent flow stream from PRW-4 split and started system #2. Conducted system checks, changed bag filters after initial flush.	
11/15/2019	GWTT	Yes	4	40	24	2	5	2	2	2	2	2	34.00	451645	34.00	34745.0	8.043	0.0008	Yes	Yes	Conducted system pressure checks and changed the bag filters. System shutdown temporarily to calculate influent flow rate at GWTPS #1. Collected system startup samples on 11/12/19 and 11/15/19.	
11/18/2019	GWTT	Yes	7	--	32	2	6	6	2	2	4	4	44.00	491280	33.00	39635.0	9.175	0.0016	Yes	No	Conducted system pressure checks and changed the bag filters. System shutdown temporarily to calculate influent flow rate at GWTPS #1.	
11/22/2019	GWTT	Yes	11	40	31	4	7	7	4	4	6	5	12.50	545022	34.00	57742.0	10.025	0.0028	Yes	No	Conducted system pressure checks and changed the bag filters. System shutdown temporarily to calculate influent flow rate at GWTPS #1. Collected system startup samples on 11/19/19.	
11/25/2019	GWTT	Yes	14	40	15	6	7	7	4	5	5	6	12.50	594623	33.00	45601.0	10.556	0.0037	Yes	No	Conducted system pressure checks and changed the bag filters.	
11/29/2019	GWTT	Yes	18	40	18	6	8	8	3	3	4	4	NR	649150	34.00	54527.0	9.466	0.0043	Yes	No	Conducted system pressure checks and changed the bag filters.	
Totals - November 2019 ^{4,5,6}				19									23.11		33	232250	8.49	0.0040				
12/2/2019	BETA	Yes	2		--	--	--	--	--	--	--	--	--	686500	--	37350.0	8.6	--	No	Yes	System shutdown at 10:00 for force main de-scale process; system locked out and tagged out.	
12/4/2019	BETA	No	2	40	--	--	7	7	--	--	4	4	22.70	686700	30.00	200.0	0.07	0.00000	Yes	No	System restarted at 12:12 upon finishing the de-scale purging process and restarted PRW-4.	
12/6/2019	GWTT	No	4	35	--	--	14	13	--	--	10	8	25.0	707866	47.00	21166.0	7.35	0.00029	Yes	No	System off upon arrival and bag filters were completed clogged with iron sediments. Bag filters had to be changed after 20 minutes of operation. GWTT observed a high amount of solids floating in the EQ tank and pumped down the EQ tank and observed significant iron sediment sludge on the bottom of the tank. GWTT notified BETA that they would raise the floats in EQ tank to help lessen the agitation of the sludge and carryover into the bag filters. System was on high level alarm and continued to shutoff of PRW-4, which shut off system #1 due to significant iron oxide sediment accumulation in EQ tank.	
12/9/2019	GWTT	Yes	7	37	39	8	16	16	7	5	14	8	25.0	813065	46.00	105199.0	24.35	0.00171	Yes	No	Conducted system checks, changed bag filters. Raising floats in EQ tank has not affected the iron sediment at the bottom.	
12/13/2019	GWTT	Yes	11	38	43	11	21	20	10	5	18	7	25.0	943807	42.00	130742.0	22.70	0.00250	Yes	No	Conducted system checks, changed bag filters.	
12/16/2019	GWTT	Yes	14	45	43	13	23	22	10	3	21	5	25.0	1049390	41.00	105583.0	24.44	0.00343	Yes	No	Conducted system checks, changed bag filters, EQ tank "High Level" alarm triggered.	
12/20/2019	GWTT	Yes	18	42	33	14	20	20	10	4	18	6.00	25.0	1148998	43.00	99608.0	17.29	0.00312	Yes	No	Conducted system checks and changed the bag filters. System shutdown temporarily for pump out of iron oxide sediment accumulation in EQ tank.	
12/23/2019	GWTT	Yes	21	--	--	--	--	--	--	--	--	--	--	1209649	NR	60651.0	14.04	0.00296	Yes	No	System shutdown at 08:00 for carbon changeout conducted on System #1.	
12/26/2019	GWTT	Yes	22	38	30	15	19	19	14	6	18	7	24.2	1209820	42.00	171.0	0.04	0.00001	Yes	No	System restarted at 09:30 AM following carbon changeout conducted on System #1. Conducted system checks and changed bag filters.	
12/30/2019	GWTT	Yes	26	38	38	13	22	22	12	5	20	7	24.00	1320824	40.00	111004.0	19.27	0.00503	Yes	No	Conducted system pressure checks and changed the bag filters. Reset pump control floats in EQ tank back to original depths (following the removal of iron sediments at bottom of the tank).	
Totals - December 2019 ^{4,5,6}				27									24.49		41	671674	17.3	0.005				
1/3/2020	GWTT	Yes	3	43	35	13	20	20	10	4	18	6	--	1422315	42.00	101491.0	17.6	0.00076	Yes	No	Conducted system checks, changed bag filters.	
1/6/2020	GWTT	Yes	6	40	27	15	19	19	11	5	16	8	20.98	1507290	43.00	84975.0	19.7	0.00169	Yes	No	Conducted system checks, changed bag filters.	
1/10/2020	GWTT	Yes	10	38	29	15	19	19	13	5	17	6	20.42	1602935	43.00	95645.0	16.6	0.00237	Yes	No	Conducted system checks, changed bag filters.	
1/13/2020	GWTT	Yes	13	38	26	16	19	19	18	6	6	8	18.28	1674840	41.00	71905.0	16.6	0.00309	Yes	No	Conducted system checks, changed bag filters.	
1/17/2020	GWTT	Yes	17	--	28	16	20	20	15	6	18	7	16.94	1750933	41.00	76093.0	13.2	0.00321	Yes	No	Conducted system checks, changed bag filters.	
1/20/2020	GWTT	Yes	20	38	25	16	11	11	15	6	18	7	15.44	1808630	48.00	57697.0	13.4	0.00382	Yes	No	Conducted system checks, changed bag filters. Backwashed primary LGAC vessel.	
1/24/2020	GWTT	Yes	24	35	19	9	11.5	11.5	6	7	8	8	11.93	1872940	48.00	64310.0	11.2	0.00383	Yes	No	Conducted system checks, changed bag filters.	
1/24/2020	GWTT	Yes	24	35	19	9	11.5	11.5	6	7	8	8	10.65	1872940	48.00	0.0	#DIV/0!					
1/27/2020	GWTT	Yes	27	35	16	10	12	11	7	7	9	8.00	10.65	1915785	46.00	42845.0	9.9	0.00383	Yes	No	Conducted system checks, changed bag filters, pumped backwash water through system's influent stream.	
1/31/2020	GWTT	Yes	31	36	18	10	12	12	9	8	8	7	9.01	1962050	--	46265.0	8.0	0.00356	Yes	No	Conducted system checks, changed bag filters.	
Totals - January 2020 ^{4,5,6}				31			2/22/1900						14.92		44	641226	14.4	0.004				
2/4/2020	GWTT	Yes	4	2	18	10	12	12	9	8	8	7	7.66	2000333	46.00	38283	6.6	0.00053	Yes	No	Conducted system checks, changed bag filters.	
2/7/2020	GWTT	Yes	7	36	14	11	12	11	8	7	8	6	7.75	2023878	46.00	23545	5.5	0.00076	Yes	No	Conducted system checks, changed bag filters.	
2/11/2020	GWTT	Yes	11	35	14	12	13	13	9	8	10	8	5.53	2049888	47.00	26010	4.5	0.00099	Yes	No	Conducted system checks, changed bag filters.	
2/13/2020	GWTT	Yes	13	36	13	12	14	13	10	8	10	8	4.97	2060169	46.00	10281	3.6	0.00093	Yes	Yes	Conducted system checks, changed bag filters. Pumped backwash water from GWTS #1 through system.	
2/18/2020	GWTT	Yes	18	36	15	12	13	14	9	8	9	8	3.68	2081950	57.00	21781	3.0	0.00109	Yes	Yes	Conducted system checks, changed bag filters.	
2/21/2020	GWTT	Yes	21	36	15	13	14	13	10	8	10	8	2.70	2094054	48.00	12104	2.8	0.00117	Yes	Yes	Conducted system checks, changed bag filters.	
2/24/2020	GWTT	Yes	24	37	43	5	16	16	2	2	13	7	23.11	2108080	47.00	14026	3.2	0.00156	Yes	Yes	Conducted system checks, changed bag filters. Bag filters packed with significant iron-oxide sediments, influent flow rate into EQ tank significantly increased; slug of iron must have broke through. Had to change bag filters twice.	
2/26/2020	GWTT	Yes	26	36	43	6	16	15	6	2	16	8	23.56	2134241	45.00	26161	9.1	0.00472	Yes	Yes	Conducted system checks and changed bag filters.	
2/28/2020	GWTT	Yes	28	36	44	5	21	20	5	2	18	7	24.02	2168295	42.00	34054	11.8	0.00661	Yes	Yes	Conducted system checks, changed bag filters. Approximately 6 inch of iron-oxide sludge has accumulated on bottom of EQ tank; control float switches were raised to reduce disruption of settled sludge.	
Totals - February 2020 ^{4,5,6}				29									11.44		47	206245	4.9	0.003				
3/2/2020	GWTT	Yes	2	36	35	10	15	15	9	5	10	11	21.6	2249000	48.00	80705	18.7	0.00078	Yes	Yes	Conducted system checks, changed bag filters. Backwashed primary LGAC vessel, vacuumed the iron-oxide sludge out of the EQ tank, and into 55-gal drums on site; water from the drum can be decanted back through the system. System sampled on 3/3/2020.	
3/6/2020	GWTT	Yes	6	37	25	10	16	15	8	8	12	10	20.4	2315739	47.00	66739	11.6	0.00145	Yes	No	Conducted system checks, changed bag filters. System shutdown temporarily to pump backwash water from exterior totes through system.	
3/9/2020	GWTT	Yes	9	37	30	9	16	16	7	6.5	14	10	20.4	2366315	44.00	50576	11.7	0.00220	Yes	No	Conducted system checks, changed bag filters.	
3/13/2020	GWTT	Yes	13	38	37	9	20	20	8	5	18	10	18.9	2476035	42.00	109720	19.0	0.00518	Yes	No	Conducted system checks, changed bag filters.	
3/16/2020	GWTT	Yes	16	38	29	15	20	20	12	8	18	10	16.3	2544838	41.00	68823	15.9	0.00533	Yes	No	Conducted system checks, changed bag filters.	
3/20/2020	GWTT	Yes	20	38	28	17	19	19	10	7	17	10	17.0	2615618	41.00	70760	12.3	0.00514	Yes	No	Conducted system checks, changed bag filters. Observed significant iron-oxide accumulation in EQ tank.	
3/23/2020	GWTT	Yes	23	38	26	16	21	20	14	8.5	18	10	20.4	2636761	41.00	21143	4.9	0.00235	Yes	No	Conducted system checks, changed bag filters.	
3/26/2020	GWTT	Yes	26	38	29	14	20	19	14	8.5	18	10	20.4	2663514	41.00	26753	6.2	0.00337	Yes	No	Conducted system checks, changed bag filters.	
3/30/2020	GWTT	Yes	30	46	44	5	24	24	2	1	20	9	18.8	2721065	37.00	57551	10.0	0.00627	Yes	No	Conducted system checks, changed bag filters.	
Totals - March 2020 ^{4,5,6}				31									19.37		42	552770	12.4	0.00549				
4/2/2020	GWTT	Yes	2	42	42	13	24	23	10	3	21	5	20.8	2768543	27.00	47478	11.0	0.00028	Yes	No	Conducted system checks, changed bag filters, and slowed down the effluent discharge flow rate to reduce carry over of significant iron sludge into the bag filters.	
4/6/2020	GWTT	Yes	6	42.5	42	12	27	27	10	3	25	6	19.7	2833368	25.00	64825	11.3	0.00085	Yes	No	Conducted system checks and changed bag filters.	
4/9/2020	GWTT	Yes	8.5	39	--	--	9	8	7	6.5	7	6.5	17.7	2903750	39.00	70382	16.3	0.00174	Yes	No	System shutdown for 2-4 hours at 7am for vac out of EQ holding tank and backwash of primary carbon vessel. Conducted system checks and changed bag filters.	
4/13/2020	GWTT	Yes	12.5	39	24.5	7	10	9	4	5	8	6.0	15.6	3004475	38.00	100725	17.5	0.00275	Yes	No	Conducted system checks and changed bag filters. Lowered transfer pump "off control" float in EQ holding tank to allow longer run time and less cycling.	
4/16/2020	GWTT	Yes	15.5	40	20.8	8	11	10	7	6	8	6.0	14.2	3074510	36.00	70035	16.2	0.00316	Yes	No	Conducted system checks and changed bag filters, pumped backwash water from exterior totes into (system #2) holding tank.	
4/20/2020	GWTT	Yes	19.5	40	25	8	11	10	6	5	9	6.0	12.3	3156813	37.00	82303	14.3	0.00350	Yes	No	Conducted system checks and changed bag filters. Lowered transfer pump "off control" float in EQ holding tank to allow longer run time and less cycling.	
4/24/2020	GWTT	Yes	23.5	42	26	10	15	14	7	5	10	6.0	11.7	3225480	33.00	68667	11.9	0.00352	Yes	No	Conducted system checks and changed bag filters.	
4/27/2020	GWTT	Yes	26.5	40	21	12	15	14	10	6	12	6.0	9.6	3271810	33.00	46330	10.7	0.00357	Yes	Yes	Conducted system checks and changed bag filters. Collected system samples on 4/28/2020.	
Totals - April 2020 ^{4,5,6}				29.5									15.2		34	550745	13.0	0.00481				

Table 28 - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 2 (GWTS #2)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator ¹	System Operating on Arrival	Days System Operating	Transfer Pump Pres. (psi)	Pre-Filter Changeout Differential Pressure (psi) ²			Post-Filter Changeout Differential Pressure (psi)			Carbon Vessels Pre-change out (psi)		Carbon Vessels Post-change out (psi)		Instantaneous Estimated INFLUENT ⁷	EFFLUENT				Estimated Total PFAs Removal (kg)	System Operating on Departure	System Sampled	Comments
				Gauge: P1	Gauge: P2	Gauge: P3	Gauge: P2	Gauge: P3	Gauge: P4	Gauge: P5	Gauge: P4	Gauge: P5	Flow Rate (GPM) ^{4,6}	Totalizer (gal)	Instant. Flow Rate (GPM) ⁴	Net Gallons Treated ⁴	Average Effluent Flow Rate (GPM) ⁵						
5/1/2020	GWTT	Yes	1	47	43	9	22	22			8	3	20	5.0	16.3	3320934	32.00	49114	8.5	0.00310	Yes	No	Conducted system checks and changed bag filters twice during visit, system on idle upon arrival due to high level.
5/5/2020	GWTT	Yes	5	42	42	12	26	26			10	3	23	5.0	18.0	3359082	25.00	38158	6.6	0.00241	Yes	No	Conducted system checks and changed bag filters twice; influent flow rate has spiked but has caused a large influx of iron sediments.
5/8/2020	GWTT	Yes	8	42	35	13	22	22			10	4	20	6.0	18.1	3426824	34.00	67742	15.7	0.00570	Yes	No	Conducted system checks and changed bag filters.
5/11/2020	GWTT	Yes	11	42	25	16	22	22			14	5	20	6.0	16.5	3485100	32.00	58276	13.5	0.00490	Yes	No	Conducted system checks and changed bag filters. Pumped down green exterior tote holding backwash water from system #1.
5/15/2020	GWTT	Yes	15	39	35	17	8.5	8			16	4	7	6.0	12.8	3562051	38.00	76951	13.4	0.00485	Yes	No	Conducted system checks and changed bag filters. Backwashed primary LGAC vessel.
5/18/2020	GWTT	Yes	18	39	16	8	9	9			6	6	7	6.0	13.3	3614934	39.00	52883	12.2	0.00445	Yes	Yes	Conducted system checks and changed bag filters. Pumped down green exterior tote holding backwash water from S.15.20 through System #2. System sampled on 5/21/2020.
5/22/2020	GWTT	Yes	22	42	24	7	10	10			4	4	7	6.0	12.0	3682536	36.00	67602	11.7	0.00426	Yes	No	Conducted system checks and changed bag filters.
5/26/2020	GWTT	Yes	26	41	44	4	17	16			0	0	14	5.0	14.8	3735642	34.00	53106	9.2	0.00335	Yes	No	Conducted system checks and changed bag filters twice.
5/29/2020	GWTT	Yes	29	40	44	4	21	19			4	1	15	4.0	14.8	3785810	34.00	50168	11.6	0.00422	Yes	No	Conducted system checks and changed bag filters twice.
Totals - May 2020 ^{3,8}				31											15.2		33.8	514000	11.5	0.00418			
6/2/2020	GWTT	Yes	2	43	42	8	23	23			8	3	21	5.0	14.4	3832928	32.00	47118	8.2	0.00235	Yes	No	Conducted system checks and changed bag filters, primary carbon vessel needs to be backwashed.
6/5/2020	GWTT	Yes	5	40	35	9	13	13			2	2	10	5.0	17.7	3887828	35.00	54900	12.7	0.00366	Yes	No	Conducted system checks and changed bag filters.
6/8/2020	GWTT	Yes	9	40	21	10	7.5	7			8	5	6	5.0	15.9	3922210	35.00	34382	6.0	0.00172	Yes	No	Conducted system checks and changed bag filters. Bakcwashed primary LGAC vessel, pumped down outside holding tank through system before backwashing carbon vessel.
6/12/2020	GWTT	Yes	12	40	21	10	7.5	7			8	5	6	5.0	14.9	3970210	35.00	48000	11.1	0.00320	Yes	No	Conducted system checks and changed bag filters.
6/16/2020	GWTT	Yes	16	41	23	8	10	10			6	5	8	6.0	13.1	4029179	36.00	58969	10.2	0.00295	Yes	No	Conducted system checks and changed bag filters. Pumped backwash water from exterior holding totes through system.
6/19/2020	GWTT	Yes	19	40	21	10	7.5	7			8	5	6	5.0	12.3	4069514	38.00	40335	9.3	0.00269	Yes	No	Conducted system checks and changed bag filters.
6/22/2020	GWTT	Yes	22	41	14	10	11	11			9	5	9	5.0	10.7	4102439	37.00	32925	7.6	0.00219	Yes	No	Conducted system checks and changed bag filters.
6/25/2020	GWTT	Yes	25	42	16	12	10	10			8	4	5	5.0	10.9	4128010	35.00	25571	5.9	0.00170	Yes	No	Conducted system checks and changed bag filters.
6/29/2020	GWTT	Yes	29	40	16	9	10	10			8	5	9	5.0	11.9	4154842	35.00	26832	4.7	0.00134	Yes	No	Conducted system checks and changed bag filters.
Totals - June 2020 ⁷				30											13.5		35.3	369032	8.5	0.00238			
7/2/2020	GWTT	Yes	2	42	43	4	12	11			0	0	10	5.0	13.3	4173048	34.00	18206	4.2	0.00146	Yes	No	Conducted system checks and changed bag filters.
7/6/2020	GWTT	Yes	6	42	37	8	16.5	16			7	3	14	5.0	12.3	4243300	34.00	70252	12.2	0.00423	Yes	No	Conducted system checks and changed bag filters.
7/9/2020	GWTT	Yes	9	43	42	8	23	23			8	3	21	5.0	12.3	4279505	31.00	36205	8.4	0.00291	Yes	No	Conducted system checks and changed bag filters.
7/12/2020	GWTT	Yes	12	47	47	18	18	18			7	3	16	5.0	11.6	4329440	32.00	49935	11.6	0.00401	Yes	No	Conducted system checks and changed bag filters.
7/16/2020	GWTT	Yes	16	42	25	13	16.5	16			12	5	14	7.0	10.2	4374349	33.00	44909	7.8	0.00271	Yes	No	Conducted system checks and changed bag filters.
7/20/2020	GWTT	Yes	20	40	34	12	7.5	7			10	3	6	5.0	9.3	4435010	40.00	60661	10.5	0.00365	Yes	No	Conducted system checks and changed bag filters. Pumped backwash water from System #1 through system and then backwashed primary LGAC vessel.
7/24/2020	GWTT	Yes	24	40	37	4	9.5	9			2	2	8	6.0	8.5	4493135	40.00	58125	10.1	0.00350	Yes	No	Changed bag filters and pumped excess backwash water through system.
7/27/2020	GWTT	Yes	27	41	43	6	13	12			2	0	10	5.0	8.2	4521639	38.00	28504	6.6	0.00229	Yes	No	Conducted system checks and changed bag filters twice due to iron-oxide accumulation in the EQ tank.
7/30/2020	GWTT	Yes	30	41	32	7	14	13			6	3	10	5.0	9.0	4585515	37.00	63876	14.8	0.00513	Yes	No	Conducted system checks; the system is receiving more water (influent) than GWTS#1, operator assumes it's related to the build up of iron in the force main piping.
Totals - July 2020 ^{3,8}				31											10.5		35.4	430673	9.6	0.00335			
8/4/2020	GWTT	No	4	41	41	7	17	16			5	3	14	5.5	9.5	4669181	38.00	83666	11.6	0.00336	Yes	No	System down on arrival due to split/rupture of 2 inch hard hose connecting the transfer pump to the bag filters. Hose was replaced and system restarted on 8/4/2020. Conducted system checks and changed bag filters.
8/7/2020	GWTT	Yes	7	41	18	14	16	15			12	6	12	6.0	9.6	4686019	34.00	16838	3.9	0.00113	Yes	No	Conducted system checks and changed bag filters.
8/10/2020	GWTT	Yes	10	40.5	16.5	14	15	14			11	5	12	6.0	9.4	4701138	31.00	15119	3.5	0.00101	Yes	No	Conducted system checks and changed bag filters. System shutdown on 8/12/2020 for carbon changeout.
8/14/2020	GWTT	Yes	12	40	--	--	15	14			--	--	10.5	6.0	8.8	4714722	41.00	13584	2.4	0.00068	Yes	No	Restarted system after carbon changeout. Conducted system checks and changed bag filters.
8/17/2020	GWTT	Yes	15	40	16.5	13.5	15	14			10	6	12	6.0	8.8	4732036	41.00	17514	4.0	0.00116	Yes	No	Conducted system checks and changed bag filters.
8/20/2020	GWTT	Yes	18	44	22	12	15	14			10	5	12	6.0	8.7	4744901	40.00	12865	3.0	0.00086	Yes	No	Conducted system checks and changed bag filters.
8/24/2020	GWTT	Yes	22	41	19	13	15	14			10	5	12	6.0	7.7	4774135	40.00	29234	5.1	0.00147	Yes	No	Conducted system checks and changed bag filters.
8/28/2020	GWTT	Yes	26	30	18	14	25	23			10	5	20	12.0	8.3	4793800	40.00	19665	3.4	0.00099	Yes	No	Conducted system checks and changed bag filters. System sampled on 8/27/2020 and iron sediment vacuum removed from EQ tank on 8/27/2020.
8/31/2020	GWTT	Yes	29	40	20	12	14	12			8	6	10	7.0	8.0	4807524	42.00	13724	3.2	0.00092	Yes	No	Conducted system checks and changed bag filters.
Totals - August 2020 ^{3,8}				29											8.7		38.6	222009	5.3	0.00144			
9/4/2020	GWTT	Yes	4	40	15	12	13	13			8	6	10	6.0	6.3	4821810	42.00	14286	2.5	0.00099	Yes	No	Conducted system checks and changed bag filters.
9/8/2020	GWTT	Yes	8	40	45	4	9	8			0	0	6	6.0	8.9	4834498	38.00	12688	2.2	0.00088	Yes	No	Conducted system checks and changed bag filters.
9/11/2020	GWTT	Yes	11	44	16	6	9	7			5	5	6	5.0	7.1	4866725	38.00	32227	7.5	0.00299	Yes	No	Conducted system checks and changed bag filters.
9/15/2020	GWTT	Yes	15	42	19	7	8	7			6	5	6	8.0	6.6	4907555	38.00	40830	7.1	0.00284	Yes	No	Conducted system checks and changed bag filters.
9/18/2020	GWTT	Yes	18	42	9.5	27	8	7			6	5	6	5.0	5.5	4937021	37.00	29466	6.8	0.00273	Yes	No	Conducted system checks and changed bag filters.
9/21/2020	GWTT	Yes	21	35	14	8	9	9			6	5	6	5.0	5.4	4963941	37.00	26920	6.2	0.00250	Yes	No	Conducted system checks and changed bag filters.
9/25/2020	GWTT	Yes	25	45	21	7	8	7			4	4	4	5.0	4.9	4999400	35.00	35459	6.2	0.00247	Yes	No	Conducted system checks and changed bag filters.
9/28/2020	GWTT	Yes	28	43	43	3	10	10			8	5	8	5.0	5.0	5032229	35.00	32829	7.6	0.00304	Yes	No	Conducted system checks and changed bag filters.
Totals - September 2020 ^{3,8}				30											6.2		37.5	224705	5.2	0.00202			
10/2/2020	GWTT	Yes	2	43	28	6	9	8			5	4	7	5.0	4.5	5076447	34.00	44218	7.7	0.00352	Yes	No	Conducted system checks and changed bag filters.
10/5/2020	GWTT	Yes	5	40	15	12	13	13			8	6	10	6.0	4.8	5088882	35.00	12435	2.9	0.00132	Yes	No	Conducted system checks and changed bag filters.
10/8/2020	GWTT	Yes	8	42	10	9	9	9			6	5	6	5.0	4.8	5097900	35.00	9018	2.1	0.00096	Yes	No	Conducted system checks and changed bag filters.
10/13/2020	GWTT	Yes	13	42	11	9	10	9			7	5	7	5.0	4.7	5107054	35.00	9154	1.3	0.00058	Yes	No	Conducted system checks and changed bag filters.
10/16/2020	GWTT	Yes	16	42	10	8	8	8			4	6	4	4.0	4.2	5117300	35.00	10246	2.4	0.00109	Yes	No	Conducted system checks and changed bag filters.
10/19/2020	GWTT	Yes														5124608	35.00	7308	1.7	0.00077	Yes	No	Conducted system checks and changed bag filters.
10/23/2020	GWTT	Yes	23	42	10	9	9	9			7	6	4	6.0	3.4	5127608	35.00	3000	0.5	0.00024	Yes	No	Conducted system checks and changed bag filters.
10/26/2020	GWTT	Yes	26	42	10.5	9	10	9.5			7	6	8	6.0	3.2	5129753	34.00	2145	0.5	0.00023	Yes	No	Conducted system checks and changed bag filters.
10/30/2020	GWTT	Yes	30	42	14	10	10	9			7	6	8	6.0	2.9	5142555	34.00	12802	2.2	0.00102	Yes	No	Conducted system checks and changed bag filters.
Totals - October 2020 ^{3,8}				31											4.1		34.7	110326	2.5	0.00113			
11/2/2020	GWTT	Yes	2	42	19	8	10	10			6	5	8	6.0	2.7	5155575	34.00	13020	3.0	0.00139	Yes	No	Conducted system checks and changed bag filters.
11/6/2020	GWTT																						

Table 28 - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 2 (GWTS #2)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator ¹	System Operating on Arrival	Days System Operating	Transfer Pump Pres. (psi)	Pre-Filter Changeout Differential Pressure (psi) ²			Post-Filter Changeout Differential Pressure (psi)			Carbon Vessels Pre-change out (psi)		Carbon Vessels Post-change out (psi)		Instantaneous Estimated INFLUENT ⁷	EFFLUENT				Estimated Total PFAs Removal (kg)	System Operating on Departure	System Sampled	Comments
				Gauge: P1	Gauge: P2	Gauge: P3	Gauge: P2	Gauge: P3	Gauge: P4	Gauge: P5	Gauge: P4	Gauge: P5	Flow Rate (GPM) ^{4,6}	Totalizer (Gal)	Instant. Flow Rate (GPM) ⁴	Net Gallons Treated ⁴	Average Effluent Flow Rate (GPM) ⁴						
12/1/2020	GWTT	Yes	1	44	44	4	13.5	13	2	3	10	5.5	32.8	5219532	32.00	24352	4.2	0.00126	Yes	No	Conducted system checks and changed bag filters twice.		
12/3/2020	GWTT	Yes	3	43	--	--	--	8	7.5	--	--	6	6.0	31.4	5286833	36.00	67301	23.4	0.00697	Yes	No	Conducted system checks, Global on site to vacuum out the EQ tank, backwash primary GAC vessel.	
12/7/2020	GWTT	Yes	7	43	41	5	10	10	2	2	8	6.0	32.5	5390190	33.00	103357	17.9	0.00535	Yes	No	Conducted system checks and changed bag filters twice. Pumped backwash water through system.		
12/11/2020	GWTT	Yes	11	44	42	8	14	14	6	3	10	6.0	33.1	5483045	33.00	92855	16.1	0.00481	Yes	No	Conducted system checks and changed bag filters.		
12/15/2020	GWTT	Yes	15	45	45	10	18	18	9	5	15	5.0	31.4	5578819	34.00	95774	16.6	0.00496	Yes	No	Conducted system checks and changed bag filters. High level alarm in INF tank was active on arrival. Bag filters were impacted with iron.		
12/18/2020	GWTT	Yes	18	45	39	18	25	25	16	4	18	7.0	32.8	5670557	28.00	91738	21.2	0.00633	Yes	No	Conducted system checks and changed bag filters. Increased flow rate through system.		
12/21/2020	GWTT	Yes	21	41	38	8	20	20	6	4	16	8.0	--	5765668	41.00	95111	22.0	0.00656	Yes	Yes	Conducted system checks and changed bag filters.		
12/24/2020	GWTT	Yes	24	48	41	16	26	26	14	3	22	7.0	28.7	5859505	38.00	93837	21.7	0.00648	Yes	No	Conducted system checks and changed bag filters. High level alarm in INF tank was active on arrival. Bag filters were impacted with iron.		
12/28/2020	GWTT	Yes	28	45	41	23	31	31	20	4	25	6.0	26.3	5975018	38.00	115513	20.1	0.00598	Yes	No	Conducted system checks and changed bag filters.		
Totals - December 2020 ^{1,3,5}				31									31.1		34.8	779838	17.5	0.005					
1/1/2021	GWTT	Yes	1	48	42	22	33	33	20	3	30	5.0	23.7	6095850	26.00	94832	16.5	0.00365	Yes	No	Conducted system checks and changed bag filters.		
1/4/2021	GWTT	Yes	4	46	37	28	27	27	16	5	24	6.0	22.4	6159356	33.00	89506	20.7	0.00459	Yes	No	Conducted system checks and changed bag filters.		
1/8/2021	GWTT	Yes	8	48	40	18	30	30	18	2	24	5.0	21.6	6265900	30.00	106544	18.5	0.00410	Yes	No	Conducted system checks and changed bag filters.		
1/11/2021	GWTT	Yes	11	42	26	26	25	24	22	6	22	7.0	17.1	6343500	30.00	77600	18.0	0.00398	Yes	No	Conducted system checks and changed bag filters. Took bag filter unit #3330 offline.		
1/15/2021	GWTT	Yes	15	45	43	28	33	33	16	3	30	5.0	18.3	6425570	38.00	82070	14.2	0.00316	Yes	No	Conducted system checks and changed bag filters. Bag filter housing from unit #3330 was replaced.		
1/18/2021	GWTT	Yes	18	44	42	16	8	8	13	3	9	9.0	22.0	6480181	32.00	54611	12.6	0.00280	Yes	No	Conducted system checks and changed bag filters. Pumped backwash water from GWTS #1 through system, then backwashed the primary carbon vessel. Bag filter housing from unit #3330 was replaced.		
1/22/2021	GWTT	Yes	22	43	28	10	11	11	7	5	8	6.0	18.7	6561869	32.00	81679	14.2	0.00314	Yes	No	Conducted system checks and changed bag filters. Pumped contents of backwash from GWTS#1 through system.		
1/25/2021	GWTT	Yes	25	43	26	12	16	16	9	5	12	6.0	15.6	6619040	29.00	57180	13.2	0.00293	Yes	No	Conducted system checks and changed bag filters.		
1/29/2021	GWTT	Yes	29	44	28	14	19	19	10	5	16	6.0	15.9	6683438	27.00	64398	11.2	0.00248	Yes	No	Conducted system checks and changed bag filters.		
Totals - January 2021 ^{1,3,5}				31									19.5		30.8	708420	15.9	0.004					
2/2/2021	GWTT	Yes	2	44	26	16	14	14	15	6	10	5.0	13.2	6736550	30.00	53112	9.2	0.00438	Yes	No	Conducted system checks and changed bag filters.		
2/5/2021	GWTT	Yes	5	44	24	16	19	19	13	5	16	6.0	11.6	6770434	30.00	33884	7.8	0.00372	Yes	No	Conducted system checks and changed bag filters.		
2/8/2021	GWTT	Yes	8	44	25	18	21	21	16	6	18	6.0	9.5	6800133	27.00	29699	6.9	0.00326	Yes	No	Conducted system checks and changed bag filters.		
2/12/2021	GWTT	Yes	12	44	28	17	21	21	14	5	18	6.0	10.0	6834311	26.00	34178	5.9	0.00282	Yes	No	Conducted system checks and changed bag filters.		
2/19/2021	GWTT	Yes	19	44	23	20	21	21	17	6	18	6.0	6.3	6876800	26.00	42489	4.2	0.00200	Yes	No	Conducted system checks and changed bag filters.		
2/22/2021	GWTT	Yes	22	--	30	12	--	--	7	4	--	--	5.7	6889638	11.00	12838	3.0	0.00141	No	Yes	Conducted system checks and changed bag filters. System shutdown on departure due to significant iron fouling in the EQ tank and in primary carbon vessel. GWTT and BETA decided to shut down GWTS #2 until a pump out of the tanks can be completed to reduce additional iron sedimentation in the carbon vessels. System was sampled on 2/23/2021.		
Totals - February 2021 ^{1,3,5}				22									10.9		25.0	206200	6.5	0.002					
3/1/2021	GWTT	No	--	--	--	--	--	--	--	--	--	--	--	6889715	--	--	--	--	--	--	--	System off.	
3/5/2021	GWTT	No	--	--	--	--	--	--	--	--	--	--	--	6889715	--	--	--	--	--	--	--	Settled water from EQ tank pumped into System #1. Blue lay flat hose was replaced with hard hose at influent manifold.	
3/8/2021	GWTT	No	--	--	--	--	--	--	--	--	--	--	--	6889715	--	--	--	--	--	--	--	Flushed influent line into System #1.	
3/12/2021	GWTT	No	1	42	8	7	6	6	4	3	4	3.0	24.2	6892375	36.00	2660	0.5	0.00012	Yes	Yes	Global Cycle on site to vacuum iron oxide sediments from the EQ tank, bag filter housings, and exterior totes. Both carbon vessels backwashed. Restarted system, conducted system checks, changed bag filters twice.		
3/15/2021	GWTT	Yes	3	43	42	8	12	12	6	3	12	4.0	19.5	6978828	30.00	86453	20.0	0.00499	Yes	No	Conducted system checks and changed bag filters.		
3/19/2021	GWTT	Yes	7	44	42	28	27	27	16	4	23	4.0	19.7	7074315	30.00	95487	16.6	0.00414	Yes	No	Conducted system checks and changed bag filters.		
3/22/2021	GWTT	Yes	10	44	42	18	28	28	16	3	28	4.0	18.0	7129300	30.00	54985	12.7	0.00318	Yes	No	Conducted system checks and changed bag filters.		
3/26/2021	GWTT	Yes	14	43	42	18	8	8	16	2	5	5.0	16.9	7197740	31.00	68440	11.9	0.00297	Yes	No	Conducted system checks and changed bag filters twice. Backwashed primary LGAC vessel. Reduced discharge to 30 GPM to reduce the amount of iron sludge carry over into LGAC vessels.		
3/30/2021	GWTT	Yes	18	44	42	14	13	13	5	3	10	5.0	15.6	7286339	28.00	88599	15.4	0.00384	Yes	No	Conducted system checks and changed bag filters.		
Totals - March 2021 ^{1,3,5}				19									17.9		30.8	396624	14.5	0.002					
4/2/2021	GWTT	Yes	2	44	41	13	21	21	10	3	18	5.0	15.8	7350578	25.00	64239	14.9	0.00222	Yes	No	Conducted system checks and changed bag filters.		
4/6/2021	GWTT	Yes	6	45	43	12	25	25	10	2	22	4.0	14.8	7400768	22.00	50190	8.7	0.00130	Yes	No	Conducted system checks and changed bag filters.		
4/9/2021	GWTT	Yes	9	46	42	15	9	9	12	3	6	6.5	14.5	7451550	23.00	50782	11.8	0.00176	Yes	No	Conducted system checks, changed bag filters, and backwashed primary carbon vessel.		
4/13/2021	GWTT	Yes	13	46	34	9	12	12	7	4	10	6.0	12.6	7536033	21.00	84483	14.7	0.00219	Yes	Yes	Conducted system checks and changed bag filters.		
4/15/2021	GWTT	Yes	15	45	20	10	14	14	8	5	12	8.0	11.2	7576369	24.00	40336	14.0	0.00209	Yes	No	Conducted system checks and changed bag filters.		
4/19/2021	GWTT	Yes	19	46	30	10	16	16	8	4	14	6.0	9.5	7645588	20.00	69219	12.0	0.00179	Yes	No	Conducted system checks and changed bag filters.		
4/23/2021	GWTT	Yes	23	46	31	10	16	16	8	4	13	6.0	8.1	7706867	19.00	61279	10.6	0.00159	Yes	No	Conducted system checks and changed bag filters.		
4/27/2021	GWTT	Yes	27	47	28	23	18	18	10	5	17	6.0	6.9	7759389	18.00	52522	9.1	0.00136	Yes	No	Conducted system checks and changed bag filters.		
4/30/2021	GWTT	Yes	30	46	23	15	17	17	12	5	14	6.0	6.1	7793537	19.00	34148	7.9	0.00118	Yes	No	Conducted system checks and changed bag filters.		
Totals - April 2021 ^{1,3,5}				30									11.1		21.2	507198	11.7	0.002					
5/4/2021	GWTT	Yes	4	46	25	15	8	8	12	5	7	6.0	4.9	7831797	21.00	38260	6.6	0.00117	Yes	No	Conducted system checks and changed bag filters. Backwashed primary LGAC vessel.		
5/7/2021	GWTT	Yes	7	46	25	15	9	9	8	8	7	7.0	4.2	7855288	23.00	23491	5.4	0.00112	Yes	No	Conducted system checks and changed bag filters.		
5/10/2021	GWTT	Yes	10	44	36	4	13	13	2	2	10	9.0	21.4	7874795	29.00	19507	4.5	0.00093	Yes	No	Conducted system checks, changed bag filters, increased discharge/effluent flow rate.		
5/14/2021	GWTT	Yes	14	46	43	6	40	7	4	3	12	8.0	21.9	7923831	26.00	49036	8.5	0.00175	Yes	Yes	Conducted system checks and changed bag filters twice		
5/17/2021	GWTT	Yes	17	46	41	9	18	17	7	4	14	6.0	--	7968545	25.00	44714	10.4	0.00213	Yes	Yes	Conducted system checks and changed bag filters twice		
5/21/2021	GWTT	Yes	21	50	43	10	20	19	8	2	18	7.0	20.3	8017370	24.00	93539	16.2	0.00334	Yes	No	Conducted system checks and changed bag filters.		
5/25/2021	GWTT	No	25	50	41	15	22	22	12	3	20	6.0	18.8	8094614	20.00	77244	13.4	0.00276	Yes	No	Conducted system checks and changed bag filters. System in high pressure alarm on arrival due to iron fouling of bag filters.		
5/28/2021	GWTT	Yes	28	50	41	15	24	24	13	3	21	6.0	16.5	8156940	25.00	62326	14.4	0.00297	Yes	No	Conducted system checks and changed bag filters. Backwashed primary LGAC vessel.		
Totals - May 2021 ^{1,3,5}				31									15.4		24.1	408117	9.1	0.002					
System Shutdown on June 3, 2021 due to carbon breakthrough observed in the secondary/effluent LGAC vessel. The system remained shut off for the full month of June 2021.																							
Totals - June 2021				2									--		--	--	--	--	--				
7/6/2021	GWTT	Yes	0	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	No	--	Carbon changeout of both vessels conducted, system left off to allow LGAC to hydrate.		
7/9/2021	GWTT	Yes	1	42	--	--	10	10	--	--	8.0	8.0	14.8	8298811	33.00	141871	32.8	0.00505	Yes	No	System restarted after carbon changeout. Readjusted flows and pressures, bag filters changed twice during restart.		
7/13/2021	GWTT	Yes	4	44	35	5	13	13	4	4	9	7.0	12.3	8371245	31.00	72434	12.6	0.00193	Yes	No	Conducted system checks, changed bag filters.		
7/16/2021	GWTT	Yes	7	46	43	6	40	7	4	3	12	8.0	--	8416060	26.00	44815	10.4	0.00160	Yes	No	Conducted system checks and changed bag filters.		
7/20/2021	GWTT	Yes	11	44	22	8	10	10	6	5	8	6.0	9.6	8468368	2								

Table 28 - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 2 (GWTS #2)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator ¹	System Operating on Arrival	Days System Operating	Transfer Pump Pres. (psi)	Pre-Filter Changeout Differential Pressure (psi) ²		Post-Filter Changeout Differential Pressure (psi)		Carbon Vessels Pre-change out (psi)		Carbon Vessels Post-change out (psi)		Instantaneous Estimated INFLUENT ⁷	EFFLUENT				Estimated Total PFAs Removal (kg)	System Operating on Departure	System Sampled	Comments
				Gauge: P1	Gauge: P2	Gauge: P3	Gauge: P2	Gauge: P3	Gauge: P4	Gauge: P5	Gauge: P4	Gauge: P5	Flow Rate (GPM) ^{4,6}	Totalizer (Gal)	Instant. Flow Rate (GPM) ⁵	Net Gallons Treated ⁴	Average Effluent Flow Rate (GPM) ⁵				
9/3/2021	GWTT	Yes	3	46	24	7	10	10	5	5	8	8	12.0	9123034	27	58414	10.1	0.00011	Yes	No	Conducted system checks, changed bag filters.
9/7/2021	GWTT	Yes	7	46	31	10	14	14	7	8	11.0	10.0	12.6	9184007	27.00	60973	10.6	0.00026	Yes	No	Conducted system checks, changed bag filters, pumped backwash water from GWTS#1 through system.
9/10/2021	GWTT	Yes	10	46	24	11	14	14	10	10	12	12.0	9.9	9224854	25.00	40847	9.5	0.00033	Yes	No	Conducted system checks, changed bag filters.
9/14/2021	GWTT	Yes	14	46	24	11	14	14	10	10	12	12.0	8.5	9272468	24.00	47614	8.3	0.00040	Yes	No	Conducted system checks, changed bag filters.
9/17/2021	GWTT	Yes	17	48	24	12	15	15	8	9	13	13.0	10.5	9297187	24.00	24719	5.7	0.00034	Yes	No	Conducted system checks and changed bag filters.
9/20/2021	GWTT	Yes	20	48	14	11	12	12	10	9	10	10.0	10.6	9311469	26.00	14282	3.3	0.00023	Yes	Yes	Conducted system checks and changed bag filters.
9/24/2021	GWTT	Yes	24	46	--	--	10	10	--	--	8	7.0	8.8	9331227	27.00	19758	3.4	0.00029	Yes	No	Conducted system checks and changed bag filters.
9/27/2021	GWTT	Yes	27	46	10	10	10	10	8	8	8	8.0	8.2	9342333	27.00	11106	2.6	0.00024	Yes	No	Conducted system checks and changed bag filters.
Totals - September 2021 ^{4,10}				30									10.1	25.9	277713	6.4	0.001				
10/1/2021	GWTT	Yes	1	46	10	10	10	10	8	8	8	8	7.8	9355201	27	12868	2.2	0.00001	Yes	No	Conducted system checks, changed bag filters.
10/5/2021	GWTT	Yes	5	46	10	10	10	10	8	8	8.0	8.0	8.0	9363138	27	7937	1.4	0.00003	No	No	Conducted system checks, changed bag filters. System shutdown due to influx of iron oxide sediment overloading the bag filters.
10/8/2021	GWTT	No	6	46	24	11	14	14	10	10	12	12.0	9.2	9365050	25.00	1912	0.4	0.00001	Yes	No	Restarted system, conducted system checks, changed bag filters twice.
10/12/2021	GWTT	Yes	10	48	42	12	25	23	11	11	20	20.0	9.5	9405023	20.00	39973	6.9	0.00028	Yes	No	Conducted system checks, changed bag filters. System in high level alarm on arrival.
10/15/2021	GWTT	Yes	13	49	41	15	28	28	14	15	24	25.0	9.6	9445540	18.00	40517	9.4	0.00048	Yes	No	Conducted system checks, changed bag filters twice due to high flux of iron sediments.
10/19/2021	GWTT	Yes	17	48	43	17	28	28	16	16	26	26.0	8.9	9497110	18.00	51570	9.0	0.00060	Yes	No	Conducted system checks, changed bag filters twice due to high flux of iron sediments and swapped force main piping to reduce iron flux into system.
10/22/2021	GWTT	Yes	20	47	15	10	--	--	--	--	16	15.0	8.7	9516542	24.00	19432	4.5	0.00036	Yes	No	Conducted system checks, changed bag filters and backwashed secondary LGAC vessel.
10/26/2021	GWTT	Yes	24	46	19	17	10	10	15	15	7	7.0	8.5	9539918	27.00	23376	4.1	0.00039	Yes	No	Conducted system checks, changed bag filters. Slightly increased discharge flow rate. Pumped backwash water through system.
10/29/2021	GWTT	Yes	27	46	12	11	11	11	8	8	9	9.0	6.8	9554825	26.00	14907	3.5	0.00037	Yes	No	Conducted system checks and changed bag filters.
Totals - October 2021 ^{4,10}				29									6.8	23.6	212492	5.1	0.0006				
11/2/2021	GWTT	Yes	2	46	13	12	11	11	10	10	10	9	6.3	9566990	27	12165	2.1	0.00029	Yes	No	Conducted system checks, changed bag filters.
11/5/2021	GWTT	Yes	5	38	12	11	12	12	10	10	10.0	10.0	6.0	9574635	26	7645	1.8	0.00025	No	No	Conducted system checks, changed bag filters and replaced broken pressure gauge on transfer pump.
11/8/2021	GWTT	No	8	40	35	8	15	15	8	9	14	13.0	6.2	9612590	25.00	37955	8.8	0.00122	Yes	No	Conducted system checks, changed bag filters twice.
11/12/2021	GWTT	Yes	12	44	37	12	22	22	10	10	20	20.0	5.9	9659581	20.00	46991	8.2	0.00113	Yes	No	Conducted system checks, changed bag filters. System in high level alarm on arrival.
11/15/2021	GWTT	Yes	15	42	43	11	10	10	10	11	7	6.0	6.1	9691324	18.00	31743	7.3	0.00102	Yes	No	Conducted system checks, changed bag filters twice. Backwashed both primary and secondary carbon vessels.
11/22/2021	GWTT	Yes	18	43	--	--	8	8	--	--	6	7.0	28.9	9717710	21.00	26386	2.6	0.00036	Yes	No	System shutdown for maintenance and redevelopment on PRW-4 and force main on 11/17/2021- system restarted on 11/22/2021. GWTT flushed 2,500 gallons from the force mains (PRW-4) prior to system restart. Bag filters changed twice, significant iron sediment still coming through in the influent.
11/26/2021	GWTT	Yes	22	48	45	5	12	12	4	6	10	11.0	31.1	9748840	21.00	31130	5.4	0.00075	Yes	No	Conducted system checks and changed bag filters.
11/30/2021	GWTT	Yes	26	46	35	17	22	22	15	16	20	20.0	28.9	9817965	24.00	69125	12.0	0.00167	Yes	No	Conducted system checks and changed bag filters, increased flow through transfer pump in response to cycling high level alarm (increased influent rates).
Totals - November 2021 ^{4,10}				26									14.9	22.8	263140	7.0	0.001				
12/3/2021	GWTT	Yes	3	43	42	21	30	30	24	24	24	8	30.1	9870995	20	53030	12.3	0.00153	Yes	No	Conducted system checks, changed bag filters.
12/7/2021	GWTT	Yes	7	44	42	27	36	36	25	26	34.0	35.0	29.9	9939134	15	68139	11.8	0.00148	No	No	Conducted system checks, changed bag filters
12/9/2021	GWTT	Yes	9	42	42	29	28	24	22	26	22	22.0	29.4	9973745	25.00	34611	12.0	0.00150	Yes	No	Conducted system checks, changed bag filters, Global Cycle conducted a pump out
12/13/2021	GWTT	Yes	13	38	34	15	20	20	14	16	17	17.0	30.1	10076138	25.00	104393	18.1	0.00226	Yes	No	Conducted system checks, changed bag filters, and backwashed primary carbon vessel and increased discharge flow rate.
12/16/2021	GWTT	Yes	16	38	43	7	19	19	4	5	16	13.0	30.4	10153382	25.00	75244	17.4	0.00217	Yes	Yes	Conducted system checks, changed bag filters.
12/20/2021	GWTT	Yes	20	47	43	11	21	21	18	12	12.0	5.0	28.7	10246532	32	93150	16.2	0.00202	Yes	No	Conducted system checks, changed bag filters.
12/23/2021	GWTT	Yes	23	40	44	9	22	22	6	4	19.0	12.0	28.0	10314095	31	67563	15.6	0.00195	Yes	No	Conducted system checks, changed bag filters.
12/28/2021	GWTT	Yes	28	39	43	10	22	22	7	4	21.0	10.0	28.3	10409055	29	94960	13.2	0.00165	Yes	No	Conducted system checks, changed bag filters, pumped backwash water through system.
12/31/2021	GWTT	Yes	31	35	23	11	9	9	9	6	6.0	7.0	28.1	10459586	37	50531	11.7	0.00146	Yes	No	Conducted system checks, changed bag filters. Primary carbon vessel backwashed.
Totals - December 2021 ^{4,10}				31									29.4	26.6	641621	14.4	0.002				
1/4/2022	GWTT	Yes	4	46	41	6	14	14	4	4	12	10	26.8	10523955	34	64369	11.2	0.00150	Yes	No	Conducted system checks, changed bag filters.
1/10/2022	GWTT	Yes	10	37	45	5	11	11	3	3	10.0	10.0	25.3	10586232	35	62277	7.2	0.00097	No	No	Conducted system checks, changed bag filters twice. Pumped backwash water from GWTS #1 through system.
1/14/2022	GWTT	Yes	14	37	44	2	14	13	0	0	10	11.0	26.4	10648575	36.00	62343	10.8	0.00146	Yes	No	Conducted system checks, changed bag filters.
1/18/2022	GWTT	Yes	18	36	45	2	14	14	0	0	12	12.0	24.2	10690606	34.00	42031	7.3	0.00098	Yes	No	Conducted system checks, changed bag filters twice.
1/21/2022	GWTT	Yes	21	37	45	4	13	13	0	2	10	12.0	23.9	10729831	25.00	39225	9.1	0.00122	Yes	No	Conducted system checks, changed bag filters.
1/24/2022	GWTT	Yes	24	36	43	4	14	14	0	0	11	11.0	23.0	10792092	35.00	62261	14.4	0.00194	Yes	Yes	Conducted system checks, changed bag filters twice. System sampled on 1/25/2022.
1/28/2022	GWTT	Yes	28	36	45	3	15	15	0	0	10.0	11.0	22.5	10838454	33	46362	8.0	0.00108	No	No	Conducted system checks, changed bag filters.
1/31/2022	GWTT	Yes	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	No	No	Upon arrival, system was shutdown due to loss of power from snow storm on 1/29/2022. Heat was off and system was frozen. Attempts were made to drain water from the pumps and associated piping, but everything was frozen.
Totals - January 2022 ^{4,10}				29									24.6	33.1	378968	9.1	0.0011				
2/1/2022	GWTT	No	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	No	No	Power was restored to the Site on 2/1/2022, GWTT and County personnel installed heaters inside the system to defrost/thaw the frozen components for system restart. GWTT observed a burst pipe in the back flow components of the bag filters units from the transfer pump.
2/4/2022	GWTT	Yes	1	36	22	12	13	13	8	9	10.0	12.0	23.4	10863650	36	25196	17.5	0.00208	Yes	No	Conducted system checks, changed bag filters twice. Replaced transfer pump housing and associated back flow piping and effluent manifold.
2/7/2022	GWTT	No	4	34	25	10	13	13	7	8	10	10.0	23.1	10903412	37	39762	9.2	0.00110	Yes	No	Conducted system checks, changed bag filters. Tripped breaker caused bag filter /transfer pump to not work properly. Breaker was reset.
2/11/2022	GWTT	Yes	8	34	25	10	12	12	6	7	8	9.0	22.0	10940222	36	36810	6.4	0.00076	Yes	No	Conducted system checks, changed bag filters and increased influent flow rate into system.
2/14/2022	GWTT	Yes	11	35	40	5	12	12	1	4	9	10.0	21.1	10999120	37	58898	13.6	0.00162	Yes	No	changed bag filters, pump down outside tank.
2/18/2022	GWTT	Yes	15	--	--	--	--	--	--	--	--	--	18.9	11087310	--	88190	15.3	0.00182	No	No	Shut system down, waiting for carbon change.
Totals - February 2022 ^{4,10}				15									20.8	36.5	248856	11.5	0.001				
10/14/2022	GWTT	Yes	1	34	--	--	7	7	--	--	4.0	2.0	28.5	11089444	38	2134	0.0	0.00000	Yes	No	Restart system, fresh carbon.
10/18/2022	GWTT	Yes	5	35	23	6	8	8	5	5	6	6.0	28.8	11162219	39	72775	12.6	0.00150	Yes	No	Conducted system checks, changed bag filters.
10/21/2022	GWTT	Yes	8	35	30	6	9	9	5	4	7	6.0	27.8	11242964	37	80745	18.7	0.00223	Yes	No	Conducted system checks, changed bag filters. Troubleshoot system leaks
10/24/2022	GWTT	Yes	11	37	45	8	13	13	6	2	10	6.0	29.9	11313284	37	70520	16.3	0.00194	Yes	No	Conducted system check, changed bag filters, fix system leaks
10/28/2022	GWTT	Yes	15	37	45	9	14	14	7	2	12	7.0	29.9	11374550	36	61266	10.6	0.00127	Yes	Yes	Conducted system check, changed bag filters, tightened carbon vessels covers slightly. System Sampled 10.25.22
10/31/2022	GWTT	Yes	18	38	43	10	15	15	8	2	14	2.0	29.4	11444035	35	69485	16.1	0.00192	Yes	No	Conducted system check, changed bag filters twice.
Totals - October 2022 ^{4,10}				18									28.4	37.0	356725	13.8	0.001				

Table 2B - Summary of Groundwater Pump and Treatment System Operating and Maintenance Data - System No. 2 (GWTS #2)
Barnstable County Fire and Rescue Training Academy
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Date	Operator ¹	System Operating on Arrival	Days System Operating	Transfer Pump Pres. (psi)	Pre-Filter Changeout Differential Pressure (psi) ²		Post-Filter Changeout Differential Pressure (psi)		Carbon Vessels Pre-change out (psi)		Carbon Vessels Post-change out (psi)		Instantaneous Estimated INFLUENT ⁷	EFFLUENT				Estimated Total PFAs Removal (kg)	System Operating on Departure	System Sampled	Comments
				Gauge: P1	Gauge: P2	Gauge: P3	Gauge: P2	Gauge: P3	Gauge: P4	Gauge: P5	Gauge: P4	Gauge: P5		Totalizer (gal)	Instant. Flow Rate (GPM) ⁴	Net Gallons Treated ⁴	Average Effluent Flow Rate (GPM) ⁵				
11/4/2022	GWTT	Yes	4	36	43	13	14	14	12	6	12.0	8.0	25.3	11525639	35	81604	14.2	0.00169	Yes	No	Conducted system checks, changed bag filters.
11/7/2022	GWTT	Yes	7	36	45	10	15	15	8	6	14	8.0	26.6	11568450	33	42811	9.9	0.00118	Yes	No	Conducted system checks, changed bag filters twice.
11/11/2022	GWTT	Yes	11	36	46	8	13	14	7	6	12	8.0	24.8	11624279	35	55829	9.7	0.00115	Yes	No	Conducted system checks, changed bag filters twice.
11/15/2022	GWTT	Yes	15	36	45	10	14	14	10	6	12	8.0	24.5	11707510	35	83231	14.4	0.00172	Yes	No	Conducted system checks, changed bag filters twice.
11/18/2022	GWTT	Yes	18	42	38	12	16	16	9	6	15	8.0	24.2	11788225	34	80715	18.7	0.00223	Yes	No	Conducted system checks, changed bag filters.
11/21/2022	GWTT	Yes	21	36	39	15	16	16	13	7	14	8.0	23.4	11873254	33	85029	19.7	0.00234	Yes	No	Conducted system checks, changed bag filters twice.
11/25/2022	GWTT	Yes	25	44	43	14	19	19	10	6	18	8.0	22.5	11971614	32	98360	17.1	0.00203	Yes	No	Conducted system check, changed bag filters.
11/28/2022	GWTT	Yes	28	38	43	14	20	20	11	6	16	8.0	22.3	12034170	30	62556	14.5	0.00172	Yes	Yes	Conducted system check, changed bag filters. System sampled 11.30.22.
Totals - November 2022 ^{6,10}				30									24.2	33.2	465720	10.8	0.001				
12/2/2022	GWTT	Yes	2	38	44	14	22	22	11	6	20.0	8.0	22.0	12101180	29	67010	11.6	0.00139	Yes	No	Conducted system checks, changed bag filters. Lubricated bag filter o-rings.
12/5/2022	GWTT	Yes	5	38	43	13	21	21	8	6	16	9.0	20.9	12165056	31	63876	14.8	0.00176	Yes	No	Conducted system checks, changed bag filters.
12/9/2022	GWTT	Yes	9	38	44	14	20	20	11	6	16	8.0	20.4	12252009	32	86953	15.1	0.00180	Yes	No	Conducted system checks, changed bag filters.
12/12/2022	GWTT	Yes	12	39	48	14	18	18	8	5	18	8.0	20.2	12300520	30	48511	11.2	0.00134	Yes	No	Conducted system checks, changed bag filters.
12/16/2022	GWTT	Yes	16	38	41	17	21	21	11	6	20	8.0	18.6	12397999	27	97479	16.9	0.00202	Yes	No	Conducted system checks, changed bag filters.
12/19/2022	GWTT	Yes	19	38	39	17	21	21	12	6	18	8.0	17.4	12472484	29	74485	17.2	0.00205	Yes	No	Conducted system checks, changed bag filters.
12/22/2022	GWTT	Yes	22	38	39	14	19	19	12	6	16	8.0	16.5	12546180	30	73696	17.1	0.00203	Yes	Yes	Conducted system checks, changed bag filters.System sampled 12.22.22
12/27/2022	GWTT	Yes	27	39	45	13	21	21	15	6	18	7.0	16.6	12641561	28	95381	13.2	0.00158	Yes	No	Conducted system checks, changed bag filters.
12/30/2022	GWTT	Yes	30	39	36	16	22	22	15	6	20	7.5	15.3	12711250	30	69689	16.1	0.00192	Yes	No	Conducted system checks, changed bag filters twice.
Totals - December 2022 ^{6,10}				31									18.6	29.6	677080	15.2	0.002				

1. GWTT - Groundwater Treatment Technologies
2. Pressure readings before filter bag changeout or if no changeout was done.
3. Influent flow is an instantaneous estimate of the flow rate from the submersible Well Pump at PRW-4.
4. During monthly reporting periods the net gallons are calculated from previous effluent totalizer readings. (Difference between the current totalizer reading - the last dated totalizer reading).
5. The Average effluent flow rate is calculated from the net gallons obtained from the system's effluent totalizer flow meter and days that the system was in operation.
6. The "Totals" shown (from left to right) include the, Total Days of System Operation, Average Instantaneous Influent Flow Rate, Average Instantaneous Effluent Flow Rate, Total Gallons Treated, Average Net Effluent Flow Rate, and Estimated PFAS Removed for the respective monthly reporting period.
7. Instantaneous influent flow rates are estimated by approximating 50% of the influent flow rate values calculated from GWPTS #1 [See Table 2A].
8. Instantaneous effluent flow rate estimated by stopwatch at totalizer meter.
9. Flow calculated based on gallons marking on EQ tank. Estimated flow rate = 25 GPM [i.e. flow is calculated based on an in-situ observation of flow into the EQ tank, and 100 gallons of groundwater flows into the EQ tank for a 4 minute duration].
10. The monthly totals represent the monthly IBA reporting period and the average effluent flow rates calculated from the first monitoring date are based on measurements from the last monitoring date of the previous reporting period.

Table 3 - Groundwater Elevation and Gauging Date 2018-2022
Former Barnstable County Fire Rescue Training Academy
RTN 4-26179

[illegible]

Table 3 - Groundwater Elevation and Gauging Date 2018-2022
Former Barnstable County Fire Rescue Training Academy
RTN 4-26179

PC-34S	East of FRP ¹²	37.512	--	--	--	--	9.32	7.05	6.94	9.62	12.62	10.93	10.6	12.42	12.01	10.9	9.86	11.51	13.78	13.16	--	--	--	--	28.192	30.462	30.572	27.892	24.892	26.582	26.912	25.092	25.502	26.612	27.652	26.002	23.732	24.352	
PC-34D	East of FRP ¹²	38.278	--	--	--	--	9.84	7.79	6.21	8.89	12.35	11.64	11.32	12.97	11.4	10.9	-	12.23	13.06	12.91	--	--	--	--	28.438	30.488	32.068	29.388	25.928	26.638	26.958	25.308	26.878	27.378	--	26.048	25.218	25.368	
PC-35S	East of FRP ¹²	37.544	--	--	6.42	7.26	9.26	7.2	6.35	9.08	12.12	11.07	10.8	12.42	11.51	10.75	-	11.67	13.23	13.06	--	--	31.124	30.284	28.284	30.344	31.194	28.464	25.424	26.474	26.744	25.124	26.034	26.794	--	25.874	24.314	24.484	
PC-35D	East of FRP ¹²	38.201	--	--	--	--	9.62	7.55	6.73	9.41	12.35	11.43	11.11	12.77	11.87	11.47	-	12.04	13.56	13.41	--	--	--	--	28.581	30.651	31.471	28.791	25.851	26.771	27.091	25.431	26.331	26.731	--	26.161	24.641	24.791	
PC-36S	SE	46.163	--	16.7	--	--	18.15	--	--	--	20.45	--	--	--	20.13	---	---	---	--	21.81	--	29.463	--	--	28.013	--	--	--	25.713	--	--	--	26.033	--	--	--	--	24.353	
PC-36D	SE	46.008	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
PC-37	Academy - NW corner	33.732	--	4.0	2.48	3.33	4.94	3.05	2.24	5.03	7.72	6.95	6.69	8.42	7.33	6.71	5.27	7.69	9.1	8.91	--	29.7	31.3	30.4	28.792	30.682	31.492	28.702	26.012	26.782	27.042	25.312	26.402	27.022	28.462	26.042	24.632	24.822	
PC-38	DG-SE	58.266	--	--	--	--	32.28	--	29.28	32.07	34.5	34.15	--	35.06	--	33.6	-	-	--	35.79	--	--	--	--	25.986	--	28.986	26.196	23.766	24.116	--	23.206	--	24.666	--	--	--	22.476	
PC-39	DG-SE	55.511	--	--	--	--	--	25.89	--	--	--	--	--	--	30.1	30	-	-	--	31.73	--	--	--	--	--	29.621	--	--	--	--	--	--	25.41	25.51	--	--	--	23.781	
HW-1D	Mary Dunn Pond (DG)	30.685	--	4.22	--	--	6.07	--	--	--	8.2	--	--	--	7.8	---	---	---	--	9.3	--	26.5	--	--	24.62	--	--	--	22.49	--	--	--	22.89	--	--	--	--	21.39	
HW-1S	Mary Dunn Pond (DG)	30.095	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--		
W-5	Not Located	NS	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
PRW-1	Recovery Well -FMR	57.488	--	--	--	--	--	--	--	--	--	--	--	--	--	-	-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
PRW-2	Recovery Well -FMR	39.782	--	--	--	--	--	--	--	--	--	--	--	--	--	-	-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
PRW-3	Recovery Well -FMR	42.769	--	--	--	--	--	--	--	--	--	--	--	--	--	-	-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
PRW-4	Recovery Well -ON	57.639	--	--	--	--	--	--	--	--	--	--	--	--	--	-	-	-	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
RW-1	Recovery Well- OFF	44.815	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
TW80-9	West of FP Pond	36.594	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WH-2D	Mary Dunn Pond (DG)	33.263	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WH-2S	Mary Dunn Pond (DG)	33.17	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
WS-101	West of FRP	36.529	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	10.89	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	25.639	
Pond	Pond Edge ⁵	NE	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	29.23	26.142	--	--	--	--	--	--	--	--	--	--	
Pond Gauge ³	Flintrock Pond	30.97	--	--	4.5	3.8	--	4.35	--	--	--	--	--	--	--	--	--	--	--	--	--	35.47	34.77	--	35.32	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Notes:
1. '-': Indicates monitoring well has not been surveyed and/or is not gauged regularly.
2. DG: Downgradient
3. All monitoring wells located on the Academy property were surveyed in 2018.
4. Monitoring wells located off Academy property were surveyed in 2007 by Cape Cod Commission.
5. Pond Gauge was installed in April 2019.
6. NS- Not Surveyed; unable to locate, not deemed a viable well.
7. NA- Not Available; survey data is unavailable as it's being re-evaluated.
8. Well IDs and Location displayed in gray indicate the well has been abandoned or destroyed.
9. The Pond Edge elevation was collected during a simple survey on 7/27/2020 of Flintrock Pond water's edge. Monitoring well PRW-4 was utilized as a benchmark.
10. Well IDs in Gray font are considered destroyed and/or not viable for sampling.
11. Groundwater level measured from top of riser
12. Flintrock Pond

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	HSW-6/HS-2(a)																	
SCREEN DEPTH (FEET)																				
WELL DIAMETER (INCHES)			2																	
WELL STATUS			Viable																	
SAMPLING DATE			1/21/2016	3/30/2016	8/11/2016	4/10/2017	7/27/2017	11/17/2017	2/9/2018	6/26/2018	1/9/2019	10/28/2019	7/28/2020	10/20/2020	1/26/2021	5/20/2021	7/28/2021	11/2/2021	1/25/2022	11/9/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)																				
PFOS	70	20	77,000	320,000	41,000	28,000	21,000	45,000	25,000	950	1,300	3,600	2,300	5,700	2,800	2,700	1,500	1,900	1,600	1,700
PFOA	70	20	--	--	--	660	--	320	160	15	94	79	80	48	320	180	45	550	170	160
PFNA	NE	20	--	--	--	--	--	--	--	BRL (<87)	26	46	40	52	35	47	57	65	46	150
PFHxS	NE	20	--	--	--	--	--	--	--	26	140	310	350	71	1,400	440	100	2,500	410	350
PFHpA	NE	20	--	--	--	--	--	--	--	15	66	100	69	56	640	150	49	870	160	200
PFDA	NE	20	--	--	--	--	--	--	--	--	--	30	18	23	21	19	13	12	7	19
TOTAL Σ6 PFAS	70	20	77,000	320,000	41,000	28,660	21,000	45,320	25,160	1,006	1,626	4,165	2,857	5,950	5,216	3,536	1,764	5,897	2,393	2,579

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	HSW-1/HS-1(a)												
SCREEN DEPTH (FEET)															
WELL DIAMETER (INCHES)			2												
WELL STATUS			Viable												
SAMPLING DATE			1/21/2016	8/11/2016	4/10/2017	7/27/2017	11/17/2017	2/9/2018	1/9/2019	4/23/2019	7/22/2019	10/28/2019	2/18/2020	5/11/2020	11/2/2021
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)															
PFOS	70	20	110,000	56,000	38,000	24,000	25,000	13,000	1,800	2,000	1,100	1,800	740	1,300	1,800
PFOA	70	20	--	--	1,000	350	1,300	320	840	100	64	46	36	100	470
PFNA	NE	20	--	--	--	--	--	--	43	65	43	33	22	57	46
PFHxS	NE	20	--	--	--	--	--	--	1,700	300	170	150	66	300	1,600
PFHpA	NE	20	--	--	--	--	--	--	510	67	52	43	32	63	430
PFDA	NE	20	--	--	--	--	--	--	--	55	19	13	9.1	37	12
TOTAL Σ6 PFAS	70	20	110,000	56,000	39,000	24,350	26,300	13,320	4,893	2,587	1,448	2,085	905	1,857	4,358

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PFW-1																							
SCREEN DEPTH (FEET)																										
WELL DIAMETER (INCHES)			2																							
WELL STATUS			Viable																							
SAMPLING DATE			4/1/2015	10/7/2015	3/8/2016	3/30/2016	8/11/2016	4/10/2017	2/9/2018	6/26/2018	1/9/2019	4/23/2019	7/22/2019	10/28/2019	2/18/2020	5/11/2020	7/28/2020	10/20/2020	1/26/2021	5/20/2021	7/28/2021	11/2/2021	1/25/2022	4/21/2022	7/27/2022	11/9/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	
PFAS (Method 537.1m or PACE SOP 454)																										
PFOS	70	20	8,400	60,000	7,000	56,000	3,500	4,100	8,100	76,000	38,000	20,000	24,000	16,000	22,000	6,000	5,200	4,000	3,400	3,100	3,300	3,900	4,400	4,500	7,600	7,100
PFOA	70	20	360	800	--	--	--	--	470	1,500	160	300	560	130	220	250	210	110	150	160	330	170	270	260	540	500
PFNA	NE	20	--	--	--	--	--	--	--	3,900	330	360	210	570	230	94	110	80	94	66	50	69	120	74	99	170
PFHxS	NE	20	--	--	--	--	--	--	--	7,400	960	1,500	4,800	910	1,000	890	820	450	750	750	2,500	870	1,000	1,500	3,300	2,000
PFHpA	NE	20	--	--	--	--	--	--	--	610	140	290	500	150	200	220	160	82	200	250	440	190	390	350	660	330
PFDA	NE	20	--	--	--	--	--	--	--	--	--	110	160	120	200	81	89	37	69	45	28	54	36	36	38	42
TOTAL Σ6 PFAS	70	20	8,760	60,800	7,000	56000	3500	4,100	8,570	89,410	39,590	22,560	30,230	17,880	23,850	7,535	6,589	4,759	4,663	4,371	6,648	5,253	6,216	6,720	12,237	10,142

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PFW-2																		
SCREEN DEPTH (FEET)																					
WELL DIAMETER (INCHES)			2																		
WELL STATUS			Viable																		
SAMPLING DATE			4/1/2015	6/18/2015	10/27/2015	1/21/2016	3/30/2016	8/11/2016	12/8/2016	4/10/2017	7/27/2017	11/17/2017	2/9/2018	1/9/2019	10/28/2019	5/11/2020	10/20/2020	11/2/2021	4/21/2022	7/27/2022	11/9/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)																					
PFOS	70	20	220,000	200,000	32,000	39,000	120,000	65,000	13,000	17,000	73,000	25,000	32,000	5,200	2,100	690	1,700	1,200	630	2,600	1,900
PFOA	70	20	5200	BRL(<800)	--	1,100	2,100	--	--	970	910	400	400	720	74	48	30	170	620	190	110
PFNA	NE	20	--	--	--	--	--	--	--	--	--	--	--	110	64	39	52	32	64	140	86
PFHxS	NE	20	--	--	--	--	--	--	--	--	--	--	--	1,800	230	140	71	650	940	470	310
PFHpA	NE	20	--	--	--	--	--	--	--	--	--	--	--	470	68	45	31	270	250	130	180
PFDA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	27	14	23	4	6.8	15.0	27
TOTAL Σ6 PFAS	70	20	225,200	200,000	32,000	40,100	122,100	65,000	13,000	17,970	73,910	25,400	32,400	8,300	2,563	976	1,907	2,326	2,511	3,545	2,613

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PFW-5																	
SCREEN DEPTH (FEET)																				
WELL DIAMETER (INCHES)			2																	
WELL STATUS			Viable																	
SAMPLING DATE			3/31/2015	4/11/2017	1/9/2019	4/23/2019	7/22/2019	10/28/2019	2/18/2020	5/11/2020	7/28/2020	10/20/2020	1/26/2021	5/19/2020	7/28/2021	11/2/2021	1/25/2022	4/21/2022	7/27/2022	11/9/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)																				
PFOS	70	20	2,700	2,100	1,100	1,900	1,600	2,400	1,000	1,200	980	1,500	1,200	1,200	3,100	370	370	1,000	1,100	2,700
PFOA	70	20	250	170	64	150	120	26	88	120	100	120	84	120	180	89	150	73	14	24
PFNA	NE	20	--	--	BRL (<8.7)	25	16	BRL (<4.9)	11	22	15	29	32	27	15	12	8.6	40.0	5.5	5.5
PFHxS	NE	20	--	--	240	680	630	260	360	720	610	420	310	790	1,100	560	1,300	340	67	500
PFHpA	NE	20	--	--	30	82	54	22	56	66	44	60	80	110	160	76	240	45	9.2	20
PFDA	NE	20	--	--	--	12	11	BRL (<4.1)	10	13	11	16	5	7	7	BRL (<3.9)	5.4	11.0	13.0	7.8
TOTAL Σ6 PFAS	70	20	2,950	2,270	1,434	2,849	2,431	2,708	1,525	2,141	1,760	2,145	1,711	2,254	4,562	1,107	2,074	1,509	1,209	3,257

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	OW-8A																					FS-1SA	
SCREEN DEPTH (FEET)																									
WELL DIAMETER (INCHES)			2																						
WELL STATUS			Viable																					Viable	
SAMPLING DATE			11/22/2013	6/3/2014	4/11/2017	8/16/2017	6/26/2018	1/9/2019	4/23/2019	7/22/2019	10/28/2019	2/18/2020	5/11/2020	7/28/2020	10/20/2020	1/26/2021	5/19/2021	7/28/2021	11/3/2021	1/25/2022	4/21/2022	7/27/2022	11/9/2022	6/16/2016	5/19/2021
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	
PFAS (Method 537.1m or PACE SOP 454)																									
PFOS	70	20	2,700	8,600	1,700	770	2,800	990	880	780	220	650	150	170	40	230	120	11	520	120	1,200	130	76	1,700	12
PFOA	70	20	430	1,000	2,000	120	65	420	66	55	130	62	18	12	BRL (<5.0)	290	120	7	720	11	260	16	13	550	BRL (5.0)
PFNA	NE	20	--	--	--	--	310	150	120	78	10	110	12	11	BRL (<5.1)	120	250	BRL (<5.1)	70	BRL (<5.1)	100	20	BRL (<1.9)	--	BRL (<5.1)
PFHxS	NE	20	--	--	--	--	250	890	140	100	750	190	77	30	11	760	330	23	3,100	39	620	45	70	--	BRL (<4.4)
PFHpA	NE	20	--	--	--	--	43	210	40	26	190	35	8.9	7.4	BRL (<6.7)	150	66	BRL (<6.7)	360	12	130	12	10	--	BRL (<6.7)
PFDA	NE	20	--	--	--	--	--	--	15	18	14	17	3.6	10	BRL (<3.9)	BRL (<2.0)	3.9	BRL (<3.9)	BRL (<3.9)	BRL (<3.9)	15.0	BRL (<3.9)	BRL (<1.9)	--	BRL (<3.9)
TOTAL Σ6 PFAS	70	20	3,130	9,600	3,700	890	3,468	2,660	1,261	1,057	1,314	1,064	270	240	51	1,550	890	41	4,770	182	2,325	223	169	2,250	12

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PFW-6					MW-3S					MW-21S	MW-12i	MW-12S																	
SCREEN DEPTH (FEET)																																
WELL DIAMETER (INCHES)			2																													
WELL STATUS			Destroyed					Viable					Destroyed	Viable	Viable																	
SAMPLING DATE			4/1/2015	3/8/2016	4/18/2016	1/9/2019	10/10/2020	6/3/2014	8/18/2016	11/3/2021	4/21/2022	7/27/2022	11/9/2022 ¹⁸	5/19/2021	4/24/2017	8/20/2014	4/1/2015	6/26/2018	1/11/2019	4/23/2019	7/23/2019	10/29/2019	2/19/2020	5/12/2020	7/29/2020	10/21/2020	1/27/2021	5/20/2021	11/2/2021	1/25/2022	4/20/2022	7/28/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	
PFAS (Method 537.1m or PACE SOP 454)																																
PFOS	70	20	3,400	2,400	850	1,500	810	4,900	1,900	1,400	1,300	1,600	4,200	1,100	490	2,500	4,800	3,000	2,700	2,800	2,800	2,300	3,100	3,500	2,900	3,900	2,300	360	1,400	950	1,700	1,500
PFOA	70	20	350	470	19	400	70	530	690	360	330	470	890	310	36	400	470	280	650	920	250	380	580	280	220	280	230	46	150	100	170	350
PFNA	NE	20	--	--	--	140	63	--	--	36	64	68	110	31	--	--	--	56	64	92	87	80	78	86	51	51	28	6	27	27	18	17
PFHxS	NE	20	--	--	--	1,100	150	--	--	1,800	1,100	1,200	1,600	620	--	--	--	1,200	1,500	1,700	880	1,300	1,200	1,100	900	93	630	170	670	390	830	900
PFHpA	NE	20	--	--	--	220	170	--	--	210	160	190	530	110	--	--	--	130	490	440	170	310	390	140	120	110	74	14	73	63	75	100
PFDA	NE	20	--	--	--	--	3.9	--	--	BRL (<3.9)	7	10	8.3	11	--	--	--	--	--	16	11	10	7.5	23	18	13	21	BRL (<3.9)	BRL (<3.9)	4.7	BRL (<6.4)	7.5
TOTAL Σ6 PFAS	70	20	3,750	2,870	869	3,360	1,267	5,430	2,590	3,806	2,961	3,538	7,338	2182	526	2,900	5,270	4,666	5,404	5,968	4,198	4,380	5,356	5,129	4,209	4,447	3,283	596	2,320	1,535	2,793	2,875

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE- Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	MW-13		MW-22																MW-23		MW-201			
SCREEN DEPTH (FEET)																										
WELL DIAMETER (INCHES)																										
WELL STATUS			Viable		Viable																Viable		Viable			
SAMPLING DATE			7/29/2021	11/10/2022	6/3/2014	4/1/2015	6/26/2018	1/11/2019	4/23/2019	7/23/2019	10/29/2019	2/19/2020	5/12/2020	7/29/2020	10/21/20020	1/27/2021	5/20/2021	11/2/2021	1/25/2022	4/20/2022	7/28/2022	7/29/2021	11/10/2022	5/19/2021	11/9/2022	
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)																										
PFOS	70	20	BRL(<0.020)	200	4,900	600	320	350	320	410	510	460	380	790	680	470	2,300	340	430	35	480	1,100	89	230	18	
PFOA	70	20	BRL(<0.020)	17	530	90	30	140	160	190	150	230	120	92	160	250	150	83	94	3.3	77.0	76	120	14	BRL (<1.9)	
PFNA	NE	20	BRL(<0.020)	4.5	--	--	9	BRL (<8.7)	81	7.6	8.3	5	10	14	14	7	24	BRL (<5.1)	5.7	3.3	8.7	BRL (<20)	4.9	19	BRL (<1.9)	
PFHxS	NE	20	BRL(<0.020)	95	--	--	130	680	600	520	690	540	330	360	740	800	570	220	280	18	370	260	180	84	15	
PFHpA	NE	20	BRL(<0.020)	30	--	--	13	69	49	33	61	38	32	27	100	88	65	13	21	1	20	98	49	24	BRL (<1.9)	
PFDA	NE	20	BRL(<0.020)	BRL (<1.9)	--	--	--	--	BRL (<4.1)	BRL (<4.1)	BRL (<4.1)	BRL (<4.1)	1	5	5	1	15	BRL (<3.9)	<3.9	<0.64	<3.9	BRL (<20)	BRL (<1.9)	BRL (<3.9)	BRL (<1.9)	
TOTAL Σ6 PFAS	70	20	0	346.5	5,430	690	502	1,239	1,210	1,161	1,419	1,273	873	1,288	1,699	1,616	3,124	656	831	60	956	1,534	443	371	33	

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-6A																		
SCREEN DEPTH (FEET)																					
WELL DIAMETER (INCHES)			2																		
WELL STATUS			Viable																		
SAMPLING DATE			3/9/2016	4/27/2017	6/26/2018	1/10/2019	4/24/2019	7/23/2019	10/29/2019	2/19/2020	5/12/2020	7/29/2020	10/21/2020	1/27/2021	5/20/2021	7/28/2021	11/1/2021	1/26/2022	4/20/2022	7/28/2022	11/10/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)																					
PFOS	70	20	1,300	3,200	1,300	1,800	1,900	940	1,100	1,600	86	1,300	920	1,100	920	500	550	760	1,100	730	470
PFOA	70	20	110	150	60	30	68	33	62	67	4.1	37	28	35	31	14	22	29	34	26	30
PFNA	NE	20	--	--	55	25	60	36	48	65	3.8	44	44	58	45	23	32	41	72	42	47
PFHxS	NE	20	--	--	300	190	310	150	290	180	23	99	71	83	72	49	59	62	83	62	72
PFHpA	NE	20	--	--	75	37	83	45	86	71	9	43	37	43	42	24	32	39	40	33	47
PFDA	NE	20					10	BRL (<4.1)	7.4	5.9	0.7	11	12	12	11	3.9	10	10	16	11	12
TOTAL Σ6 PFAS	70	20	1,410	3,350	1,790	2,082	2,431	1,204	1,593	1,989	127	1,534	1,112	1,331	1,121	614	705	941	1,345	904	678

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-11																				PC-14				
SCREEN DEPTH (FEET)																											
WELL DIAMETER (INCHES)																											
WELL STATUS			Viable																				Viable				
SAMPLING DATE			4/2/2015	5/12/2016	4/24/2017	2/6/2018	6/26/2018	1/10/2019	4/24/2019	7/23/2019	10/29/2019	2/19/2020	5/12/2020	7/29/2020	10/21/2020	1/27/2021	5/19/2021	7/28/2021	11/1/2021	1/26/2022	4/20/2022	11/10/2022	8/20/2014	3/30/2016	4/28/2017	11/2/2021	11/11/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	
PFAS (Method 537.1m or PACE SOP 454)																											
PFOS	70	20	4,400	32,000	3,600	4,000	9,600	14,000	200,000	68,000	22,000	18,000	12,000	9,500	7,200	2,700	2,100	2,400	2,900	1,900	1,600	2,300	550	2,100	1,600	700	700
PFOA	70	20	550	430	250	180	250	410	640	BRL (<240)	150	290	140	130	150	78	59	74	58	40	70	120	40	250	160	26	76
PFNA	NE	20	--	--	--	--	230	190	1,700	540	320	140	130	110	100	74	69	61	78	63	88	82	--	--	--	37	69
PFHxS	NE	20	--	--	--	--	1,500	1,500	2,400	1,200	800	1,300	720	610	640	250	170	320	270	160	240	620	--	--	--	92	160
PFHpA	NE	20	--	--	--	--	200	310	210	BRL (<210)	160	210	140	130	160	92	65	75	88	60	87	210	--	--	--	43	62
PFDA	NE	20	--	--	--	--	--	--	450	BRL (<260)	73	69	56	55	52	69	32	31	21	18	20	22	--	--	--	BRL (<3.9)	7.3
TOTAL Σ6 PFAS	70	20	4950	32430	3850	4180	11,780	16,410	205,400	69,740	23,503	20,009	13,186	10,535	8,302	3,263	2,495	2,961	3,415	2,241	2,105	3,354	590	2,350	1,760	898	1,074

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-16d																			
SCREEN DEPTH (FEET)																						
WELL DIAMETER (INCHES)																						
WELL STATUS			Viable																			
SAMPLING DATE			4/2/2015	10/7/2015	2/6/2018	6/26/2018	1/10/2019	4/24/2019	7/23/2019	10/29/2019	2/19/2020	5/12/2020	7/28/2020	10/21/2020	1/27/2021	5/20/2021	7/28/2021	11/1/2021	1/26/2022	4/202022	7/28/2022	11/10/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L		
PFAS (Method 537.1m or PACE SOP 454)																						
PFOS	70	20	700	560	980	1,900	1,600	2,000	1,400	1,300	1,600	1,200	930	1,900	690	1,200	460	250	300	580	1,300	1,700
PFOA	70	20	70	84	64	150	9.3	140	33	75	130	57	99	99	46	70	18	8.9	18	38	130	89
PFNA	NE	20	--	--	--	100	BRL (<8.7)	110	36	79	110	63	49	62	48	83	23	8.9	26	45	70	59
PFHxS	NE	20	--	--	--	670	60	520	270	220	360	170	260	280	110	16	72	49	55	160	680	360
PFHpA	NE	20	--	--	--	170	13	140	74	80	92	61	68	63	54	47	15	9	25	42	88	71
PFDA	NE	20	--	--	--	--	--	8.7	BRL (<4.1)	7.2	7.2	8.5	11	11	5	9	6	BRL (<3.9)	BRL (<3.9)	4.2	10.0	11.0
TOTAL Σ6 PFAS	70	20	770	644	1044	2,990	1,682	2,919	1,813	1,761	2,299	1,560	1,417	2,415	953	1,425	594	326	424	869	2,278	2,290

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-17			PC-18								
SCREEN DEPTH (FEET)														
WELL DIAMETER (INCHES)														
WELL STATUS			Viable			Viable								
SAMPLING DATE			8/20/2014	10/7/2015	2/6/2018	6/17/2015	10/7/2015	4/27/2017	2/6/2018	1/10/2019	10/29/2019	10/21/2020	11/1/2021	11/10/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	
PFAS (Method 537.1m or PACE SOP 454)														
PFOS	70	20	140	230	140	1,200	900	580	890	1,500	1,500	330	290	140
PFOA	70	20	BRL	24	17	110	590	--	70	110	75	18	6.3	8.2
PFNA	NE	20	--	--	--	--	--	--	--	130	79	20	10	12
PFHxS	NE	20	--	--	--	--	--	--	--	540	220	57	59	32
PFHpA	NE	20	--	--	--	--	--	--	--	140	80	21	20	18
PFDA	NE	20	--	--	--	--	--	--	--	--	7.2	6.8	BRL (<3.9)	2.2
TOTAL Σ6 PFAS	70	20	140	254	157	1310	1490	580	960	2420	1,961	453	385	212

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-28																	
SCREEN DEPTH (FEET)																				
WELL DIAMETER (INCHES)																				
WELL STATUS			Viable																	
SAMPLING DATE			3/9/2016	4/28/2017	1/10/2019	4/24/2019	7/23/2019	10/28/2019	2/19/2020	5/12/2020	7/29/2020	10/21/2020	1/27/2021	5/20/2021	7/28/2021	11/3/2021	1/26/2022	4/20/2022	7/28/2022	11/10/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)																				
PFOA	70	20	400	770	38	18	82	270	270	430	200	1,100	1,200	820	100	730	670	1,200	550	960
PFOA	70	20	27	61	BRL (<3.3)	BRL (<7.4)	190	12	BRL (<7.4)	18	12	65	48	22	38	16	26	34	30	56
PFNA	NE	20	--	--	BRL(<8.7)	BRL (<4.9)	BRL (<4.9)	9	BRL (<4.9)	15	10	49	61	33	45	23	28	59	45	82
PFHxS	NE	20	--	--	17	15	30	94	72	120	71	230	170	110	120	85	83	95	75	130
PFHpA	NE	20	--	--	20	24	25	33	23	41	30	89	66	45	53	43	51	47	40	75
PFDA	NE	20	--	--	--	BRL (<4.1)	BRL (<4.1)	BRL (<4.1)	BRL (<4.1)	2.2	BRL (<4.1)	8	10	6	9	BRL (<3.9)	7.5	14.0	9.0	15.0
TOTAL Σ6 PFAS	70	20	427	831	75	57	327	418	365	626	323	1,541	1,555	1,036	365	897	865.5	1,449.0	749.0	1,318.0

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-30																					
SCREEN DEPTH (FEET)																								
WELL DIAMETER (INCHES)																								
WELL STATUS			Viable																					
SAMPLING DATE			3/9/2016	4/27/2017	2/6/2018	6/26/2018	1/10/2019	4/24/2019	7/23/2019	10/29/2019	2/19/2020	5/12/2020	7/29/2020	10/21/2020	1/27/2021	5/20/2021	7/28/2021	11/1/2021	1/26/2022	4/20/2022	7/28/2022	11/10/2022		
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L				
PFAS (Method 537.1m or PACE SOP 454)																								
PFOS	70	20	980	2,500	1,900	1,600	2,200	1,200	4,300	960	1,200	880	1,100	850	580	540	450	720	480	340	180	340		
PFOA	70	20	88	--	98	99	85	85	79	55	130	45	38	32	48	26	21	30	25	23	16	21		
PFNA	NE	20	--	--	--	80	88	100	100	61	74	45	57	40	24	40	BRL (<5.1)		51	34	23	19	43	
PFHxS	NE	20	--	--	--	510	390	340	300	220	210	180	120	100	76	64	68	96	72	63	43	59		
PFHpA	NE	20	--	--	--	130	110	110	96	71	87	80	48	47	47	40	34	43	35	33	25	29		
PFDA	NE	20	--	--	--	--	--	12	BRL (<4.1)		6	5.9	8.2	7.7	6.2	5.3	5.2	4.9	BRL (<3.9)		6.4	4.7	4.8	5.3
TOTAL Σ6 PFAS	70	20	1068	2500	1998	2,419	2,873	1,847	4,875	1,373	1,707	1,238	1,371	1,075	780	715	578	940	652	487	288	497		

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-345					PC-365					PC-38											
SCREEN DEPTH (FEET)																								
WELL DIAMETER (INCHES)																								
WELL STATUS			Viable					Viable					Viable											
SAMPLING DATE			4/14/2016	11/2/2021	4/21/2022	7/27/2022	11/9/2022	4/14/2016	1/11/2019	10/29/2019	10/22/2020	11/3/2021	11/10/2022	4/24/2017	10/29/2019	5/12/2020	7/28/2020	10/21/2020	1/27/2021	5/20/2021	7/28/2021	11/1/2021	1/26/2022	11/10/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	
PFAS (Method 537.1m or PACE SOP 454)																								
PFOS	70	20	1,300	1,300	580	710	1,300	35	64	1,200	700	640	760	BRL (<2.6)	BRL (<5.2)	4.5	BRL (<5.2)	BRL (<5.7)	3	BRL (<5.7)	BRL (<5.7)	BRL (<5.7)	BRL (<5.7)	5.5
PFOA	70	20	72	74	65	69	80	BRL (<5.3)	BRL (<3.3)	54	36	32	37	BRL (<4.6)	BRL (<7.4)	BRL (<0.23)	BRL (<7.4)	BRL (<5.0)	BRL (<2.0)	BRL (<5.0)	BRL (<5.0)	BRL (<5.0)	BRL (<5.0)	BRL (<2.0)
PFNA	NE	20	--	150	100	130	140	--	BRL (<8.7)	80	57	71	120	--	BRL (<4.9)	BRL (<0.48)	BRL (<4.9)	BRL (<5.1)	BRL (<2.0)	BRL (<5.1)	BRL (<5.1)	BRL (<5.1)	BRL (<5.1)	BRL (<2.0)
PFHxS	NE	20	--	160	140	140	130	--	38	120	79	73	90	--	6	2.2	BRL (<5.2)	BRL (<4.4)	2	BRL (<4.4)	BRL (<4.4)	BRL (<4.4)	BRL (<4.4)	BRL (<2.0)
PFHpA	NE	20	--	87	77	74	98	--	BRL (<7.4)	62	42	38	49	--	BRL (<7.1)	BRL (<0.37)	BRL (<7.1)	BRL (<6.7)	BRL (<2.0)	BRL (<6.7)	BRL (<6.7)	BRL (<6.7)	BRL (<6.7)	BRL (<2.0)
PFDA	NE	20	--	7.8	7.2	8.6	16	--	--	11	11	11	13	--	BRL (<4.1)	BRL (<0.18)	BRL (<4.1)	BRL (<3.9)	BRL (<2.0)	BRL (<3.9)	BRL (<3.9)	BRL (<3.9)	BRL (<3.9)	BRL (<2.0)
TOTAL Σ6 PFAS	70	20	1372	1,779	969	1,132	1,764	35	102	1,527	925	865	1,069	BRL	6.1	6.7	BRL	BRL	4.3	BRL	BRL	BRL	BRL	5.5

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.
2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.
3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.
4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.
5. BRL - Below Laboratory Detection Limits
6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard
8. PFOS - Perfluorooctanesulfonate
9. PFOA - Perfluorooctanoic Acid
10. PFNA - Perfluorononanoic Acid
11. PFHxS - Perfluorohexanesulfonic Acid
12. PFHpA - Perfluoroheptanoic Acid
13. PFDA - Perfluorodecanoic Acid
14. NA - Concentration data not available
15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.
16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.
17. NE - Not Established
18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4A - Summary of Long Term Monitoring Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW- 1 Standards ⁴	PC-39					PC-29	HW-1D ¹⁶					
SCREEN DEPTH (FEET)														
WELL DIAMETER (INCHES)														
WELL STATUS			Viable					Viable	Viable					
SAMPLING DATE			4/24/2017	2/19/2020	11/2/2021	7/28/2022	11/10/2022	11/10/2022	5/3/2017	1/10/2019	10/28/2019	10/21/2020	11/3/2021	11/11/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or PACE SOP 454)														
PFOs	70	20	1,200	820	140	180	160	2.4	25	BRL (<6)	BRL (<5.2)	BRL (<5.7)	BRL (<5.7)	17
PFOA	70	20	46	28	BRL (<5.0)	BRL (<5.0)	2.2	BRL (<1.8)	8	BRL (<3.3)	BRL (<7.4)	BRL (<5.0)	BRL (<5.0)	BRL (<1.9)
PFNA	NE	20	--	61	6.9	6.0	5.2	BRL (<1.8)	--	BRL (<8.7)	BRL (<4.9)	BRL (<5.1)	BRL (<5.1)	BRL (<1.9)
PFHxS	NE	20	--	100	4.9	12.0	12	3.6	--	BRL (<5.6)	BRL (<5.2)	BRL (<4.4)	BRL (<4.4)	37
PFHpA	NE	20	--	28	BRL (<6.7)	BRL (<6.7)	4	BRL (<1.8)	--	BRL (<7.4)	BRL (<7.1)	BRL (<6.7)	BRL (<6.7)	BRL (<1.9)
PFDA	NE	20	--	BRL (<4.1)	BRL (<3.9)	BRL (<3.9)	BRL (<1.8)	BRL (<1.8)	--	--	BRL (<4.1)	BRL (<3.9)	BRL (<3.9)	BRL (<1.9)
TOTAL Σ6 PFAS	70	20	1,246	1037	151.8	198	183.4	6	33	BRL	BRL	BRL	BRL	54

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in **bold** exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

18. Due to labeling error MW-3S was labeled as MW-3 on the laboratory report and COC in the November 2022.

Table 4B- Summary of Historic Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW-1 Standards ⁴	HS-1 ¹⁵		HS-6 ¹⁵	HS-2 ¹⁵	HS-2S ¹⁵		PFW-3			PFW-4	OW-2A	OW-2S	OW-2D	FS-1	RW-1		PC-2		PC-3		PC-4	
SCREEN DEPTH (FEET)																								
WELL DIAMETER (INCHES)									2			2							2		2		2	
WELL STATUS			Abandoned		Abandoned	Abandoned	Abandoned		Viable			Viable	Not Viable	Not Viable	Not Viable	Not Viable	OFF		Viable		Damaged - Not Viable		Destroyed	
SAMPLING DATE			8/11/2016	12/8/2016	8/11/2016	7/27/2017	8/18/2016	5/3/2017	4/1/2015	10/15/2015	4/18/2017	4/1/2015	6/3/2014	4/14/2016	4/14/2016	4/11/2017	4/1/2015	4/11/2017	6/17/2015	4/24/2017	8/20/2014	6/17/2015	6/17/2015	3/8/2016
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.2)																								
PFO	70	20	56,000	36,000	41,000	21,000	300	150	2,700	3,800	3,400	3,300	1,300	2,400	6	1,700	2,300	1,000	3,800	2,200	3,100	4,700	2,200	4,600
PFOA	70	20	460	1,800	450	370	BRL (<5.3)	8.2	140	170	230	420	150	250	BRL (<5.3)	730	240	58	220	110	180	200	79	160
PFNA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFHxS	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFHpA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFDA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--						
TOTAL Σ 6 PFAS	70	20	56,460	37,800	41,450	21,370	300	158	2,840	3,970	3,630	3,720	1,450	2,650	6	2,430	2,540	1,058	4,020	2,310	3,280	4,900	2,279	4,760

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data." Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (--) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in bold exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE- Not Established

Table 4B- Summary of Historic Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW-1 Standards ⁴	PC-7					PC-8					PC-9									PC-10	
SCREEN DEPTH (FEET)																							
WELL DIAMETER (INCHES)			2					2														2	
WELL STATUS			Damaged - Not Viable					Damaged - Not Viable					Damaged - Not Viable									Viable	
SAMPLING DATE			4/2/2015	6/17/2015	10/7/2015	3/8/2016	4/27/2017	6/17/2015	10/7/2015	3/8/2016	4/24/2017	2/6/2018	4/1/2015	10/7/2015	3/9/2016	3/30/2016	4/28/2017	1/10/2019	10/30/2019	10/21/2020	4/6/2015	4/28/2017	
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L		
PFAS (Method 537.2)																							
PFOS	70	20	17,000	500	700	1,700	2,900	15,000	500	1,600	36,000	1,000	580	510	5,300	8,100	280	1,700	2,300	1,400	790	560	
PFOA	70	20	3,500	27	98	140	130	2,800	370	97	--	71	30	40	1,200	1,600	31	64	100	66	50	67	
PFNA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	53	90	88	--	--		
PFHxS	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	360	420	200	--	--		
PFHpA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	81	120	77	--	--		
PFDA	NE	20							--	--	--	--	--	--	--	--	--	15	11	--	--		
TOTAL Σ 6 PFAS	70	20	20,500	527	798	1,840	3,030	17800	870	1697	36000	1071	610	550	6500	9700	311	2258	3045	1,842	840	627	

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (-) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in bold exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE- Not Established

Table 4B- Summary of Historic Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW-1 Standards ⁴	PC-12			PC-13		PC-15			PC-19				PC-20D	PC-21D	PC-22		PC-23D	PC-24		PC-25
SCREEN DEPTH (FEET)																						
WELL DIAMETER (INCHES)																						
WELL STATUS			Viable			Viable		Destroyed - Not Viable			Damaged - Not Viable				Not Viable	Viable	Viable		Viable	Viable		Viable
SAMPLING DATE			6/17/2015	5/12/2016	4/26/2017	6/17/2015	4/24/2017	4/2/2015	4/28/2017	10/30/2019	4/2/2015	3/30/2016	4/27/2017	10/30/2019	3/9/2016	3/9/2016	4/2/2015	4/28/2017	6/17/2015	3/30/2016	4/28/2017	6/17/2015
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.2)																						
PFOS	70	20	1,300	1,700	1,600	2,400	2,800	1,300	780	970	3,300	1,600	2,000	1,900	3,200	230	1,200	1,400	1,000	420	320	2,300
PFOA	70	20	140	150	150	280	170	100	80	55	260	120	290	170	200	19	100	170	73	22	33	260
PFNA	NE	20	--	--	--	--	--	--	--	52	--	--	--	130	--	--	--	--	--	--	--	--
PFHxS	NE	20	--	--	--	--	--	--	--	290	--	--	--	450	--	--	--	--	--	--	--	--
PFHpA	NE	20	--	--	--	--	--	--	--	77	--	--	--	95	--	--	--	--	--	--	--	--
PFDA	NE	20	--	--	--	--	--	--	--	4.9	--	--	--	14	--	--	--	--	--	--	--	--
TOTAL Σ 6 PFAS	70	20	1440	1850	1750	2680	2,970	1,400	860	1,449	3560	1720	2290	2759	3,400	249	1300	1,570	1073	442	353	2,560

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (-) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in bold exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

Table 4B- Summary of Historic Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW-1 Standards ⁴	PC-26				PC-29	PC-31		PC-32		PC-33		PC-34D		PC-35S	PC-35D		PC-36D		PC-37
SCREEN DEPTH (FEET)																					
WELL DIAMETER (INCHES)																					
WELL STATUS			Viable				Viable	Viable		Viable		Viable		Viable		Viable	Viable		Viable		Viable
SAMPLING DATE			6/17/2015	10/8/2015	3/8/2016	4/24/2017	4/28/2017	3/8/2016	4/27/2017	3/30/2016	4/27/2017	3/30/2016	4/27/2017	4/14/2016	4/28/2017	4/14/2016	4/14/2016	4/28/2017	4/14/2016	4/24/2017	4/10/2017
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.2)																					
PFOS	70	20	1,000	1,900	1,200	380	1,400	1,200	12,000	1,200	960	2,700	2,100	1,400	1,500	1,700	2,000	1,700	3,100	2,500	45
PFOA	70	20	210	190	98	21	BRL (<4.6)	110	160	130	54	250	210	150	130	130	140	97	150	120	BRL (<20)
PFNA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFHxS	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFHpA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
PFDA	NE	20	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
TOTAL Σ 6 PFAS	70	20	1,210	2,090	1,298	401	1400	1310	12160	1330	1014	2950	2310	1550	1630	1830	2140	1797	3250	2620	45

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (-) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in bold exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE- Not Established

Table 4B- Summary of Historic Groundwater PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW-1 Standards ⁴	MW-1			MW-3D	SBV-3	MW-6		MW-7	MW-10		MW-13	MW-15	MW-15D	MW-19I
SCREEN DEPTH (FEET)																
WELL DIAMETER (INCHES)																
WELL STATUS			Viable			Viable	Viable	Viable		Viable	Viable		Viable	Viable	Viable	Not Viable
SAMPLING DATE			11/22/2013	6/3/2014	4/28/2017	8/18/2016	11/22/2013	4/1/2015	4/25/2017	11/22/2013	11/22/2013	4/18/2016	7/29/2021	4/24/2017	4/2/2015	8/20/2014
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.2)																
PFOS	70	20	3,900	4,400	2,600	98	1,100	5,700	2,400	3,100	2,000	1,700	BRL (<0.020)	19	60	BRL
PFOA	70	20	320	880	290	10	350	510	140	580	670	440	BRL (<0.020)	27	60	BRL
PFNA	NE	20	--	--	--	--	--	--	--	--	--	--	BRL (<0.020)	--	--	--
PFHxS	NE	20	--	--	--	--	--	--	--	--	--	--	BRL (<0.020)	--	--	--
PFHpA	NE	20	--	--	--	--	--	--	--	--	--	--	BRL (<0.020)	--	--	--
PFDA	NE	20	--	--	--	--	--	--	--	--	--	--	BRL (<0.020)	--	--	--
TOTAL Σ 6 PFAS	70	20	4,220	5,280	2,890	108	1,450	6,210	2,540	3,680	2,670	2,140	0	46	120	0

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (-) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in bold exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

Table 4B- Summary of Historic Groundwater PFAS Analytical Data

Former Barnstable Country Fire and Rescue Training Academy

155 S. Flint Rock Road, Barnstable, MA

RTN 4-26179

SAMPLE ID	USEPA ^{1,2} HEALTH ADVISORY	Method 1 GW-1 Standards ⁴	MW-28S	MW-30	MW-31	MW-32	MW-36D	MW-37	MW-37D	MW-99i			HW-2S
SCREEN DEPTH (FEET)													
WELL DIAMETER (INCHES)													
WELL STATUS			Viable	Viable	Viable	Not Viable	Viable	Viable	Viable	Not Viable			
SAMPLING DATE			4/1/2015	4/1/2015	8/18/2016	5/3/2017	4/6/2015	4/26/2017	4/2/2015	4/6/2015	4/26/2017	10/29/2019	5/3/2017
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.2)													
PFOA	70	20	2,100	1,400	3,200	240	140	77	60	730	240	630	15
PFNA	70	20	90	130	170	36	<20	77	90	70	18	50	8.2
PFHxS	NE	20	--	--	--	--	--	--	--	--	--	58	--
PFHpA	NE	20	--	--	--	--	--	--	--	--	--	340	--
PFDA	NE	20	--	--	--	--	--	--	--	--	--	46	--
TOTAL Σ 6 PFAS	70	20	2,190	1,530	3,370	276	140	154	150	800	258	1,130	23.2

Notes:

1. Prior to June 11, 2018, the USEPA established the EPA Health Advisory for two PFAS chemicals, PFOA and PFOS, which was 70 ng/L. Subsequently, MassDEP's Office of Research and Standards (ORS) expanded on this Health Advisory and created the ORS Guideline that applies to the total summed of five PFAS chemicals, PFOS, PFOA, PFNA, PFHxS, and PFHpA, effective June 11, 2018.

2. The USEPA and MassDEP ORS Guideline applies to five PFAS chemicals of concern (PFOS, PFOA, PFNA, PFHpA, and PFHxS) individually as well as the sum of the five PFAS of concern.

3. The complete PFAS concentration data set collected from PRW-4 is detailed in the data table titled "Summary of Groundwater Pump and Treatment System PFOS/PFOA Analytical Data. Data presented herein is summarized and data was selected based on quarterly sampling events.

4. (-) Concentrations of the three additional PFAS chemicals, PFNA, PFHxS, and PFHpA were not presented until after the MassDEP ORS Guideline was in effect on 06.11.18. PFAS concentrations were regulated by the USEPA Health Advisory prior to 6.11.18. Concentrations of PFDA were not presented prior to April 19, 2019. MassDEP released drafted Method 1 groundwater risk standards for PFAS on April 19, 2019 that applies to the total sum and individual concentrations of six PFAS compounds (PFOS, PFOA, PFNA, PFHxS, PFHpA, and PFDA), which is 20 ng/L. These drafted groundwater standards were finalized and became effective on December 27, 2019.

5. BRL - Below Laboratory Detection Limits

6. Concentrations presented in ng/L - nanograms per Liter - parts per trillion

7. Concentrations in bold exceed applicable Health Advisory Limit or Method 1 GW-1 Standard

8. PFOS - Perfluorooctanesulfonate

9. PFOA - Perfluorooctanoic Acid

10. PFNA - Perfluorononanoic Acid

11. PFHxS - Perfluorohexanesulfonic Acid

12. PFHpA - Perfluoroheptanoic Acid

13. PFDA - Perfluorodecanoic Acid

14. NA - Concentration data not available

15. Monitoring well HS-1, HS-2, HS-2S, and HS-6 were destroyed or removed during soil removal activities in January 2017 as part of an Immediate Response Action Plan. The well was replaced with HSW-1/HS-1a as post-exacavation activities.

16. Monitoring well HW-1D is a downgradient well located on the north side of Mary Dunn Pond.

17. NE - Not Established

Table SA - Summary of Historic Previous Sediment PFAS Analytical Data
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	SED-1	SED-101	SED-2	SED-201	SED-3	SED-301	SED-4	SED-401	SED-5	SED-501	SED-6	SED-7A	SED-7B	SED-8A
LAB SAMPLE ID	IIN737	JHR500	IIN738	JHR501	IIN739	JHR502	IIN740	JHR503	IIN741	JHR504	IIN742	NY175	NY176	NY177
SAMPLE DATE	11/16/2018	3/27/2019	11/16/2018	3/27/2019	11/16/2018	3/27/2019	11/16/2018	3/27/2019	11/16/2018	3/27/2019	11/16/2018	10/20/2020	10/20/2020	10/20/2020
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Per- and polyfluoroalkyl substances (PFAS)														
Perfluorooctanesulfonic acid (PFOS)	12	13	90	67	170	150	49	78	120	72	280	2.7	130	180
Perfluoro-n-Octanoic Acid (PFOA)	(<0.5)	(<0.320)	(<2.500)	(<0.800)	(<5)	(<1.6)	0.87	(<0.320)	(<2.5)	(<1.6)	(<5)	(<0.20)	0.98	9.3
Perfluoroheptanoic Acid (PFHpA)	0.480	(<0.360)	(<1.900)	(<0.900)	4.4	(<1.8)	0.63	(<0.360)	(<1.9)	(<1.8)	5.1	(<0.17)	0.70	6.5
Perfluorohexane Sulfonate (PFHxS)	0.730	0.760	2.8	2.4	7.2	4.8	7.6	6.20	2.9	3.0	10	(<0.30)	3.9	15
Perfluorononanoic Acid (PFNA)	0.620	0.390	3.1	2.3	8.6	3.5	1.1	3.90	3.1	2.5	11	(<0.27)	4.3	14
Perfluorodecanoic acid (PFDA) ⁶	(<0.560)	(<.620)	(<2.8)	(<1.6)	6.1	(<3.1)	1.4	(<0.620)	(<2.8)	(<3.1)	6.3	(<0.24)	3.7	8.0
Sum of MA- 6 Regulated PFAs	13.83	14.15	95.9	71.7	196	158	61	88	126	78	312	3	144	233

Notes: (Applicable to all pages within table)

1. (<500) - Below Laboratory Detection Limit shown in parentheses.
2. µg/kg - micrograms per kilograms (parts per billion-ppb).
3. Field Duplicate - Duplicate Sediment Sample Collected at SED-2 and SED-501 location.
4. Field Duplicate and Rinsate Blank samples were collected as quality control samples as required by the PFAS Analytical Methods.
5. NR - Not Reported. Sediment samples collected in 2015 were collected by The Cape Cod Commission and the prior to June 2018, documentation of additional PFAS analytes (other than PFOS and PFOA) was not required.
6. The MassDEP Office of Research and Standards (ORS) conducted research in 2018 (ORS, 2018a) concluding that the PFAS compounds of interest should extend to additional PFAS compounds that are closely related structurally or toxicologically. Therefore, based on the structural similarity and data indicating a long serum half-life, MassDEP finalized their PFAS regulations on December 27, 2019 which included regulations for PFDA.
7. There is no official or draft MassDEP standards for contaminants in sediments.

Table SA - Summary of Historic Previou
Barnstable County Fire & Rescue Trainin
155 South Flint Rock Road, Barnstable, |
RTN 4-26179

SAMPLE ID	SED-8B	Pond 1S	Pond 1D	Pond 2S	Pond 2D	Pond 3	Pond South	Pond North	Pond Delta	Field Duplicate ⁴		Rinsate Blank ⁴	
LAB SAMPLE ID	JHR504	--	--	--	--	--	--	--	--	IIN746	JHR507	JHR506	IIN743
SAMPLE DATE	10/20/2020	6/18/2015	6/18/2015	6/18/2015	6/18/2015	6/18/2015	3/24/2015	3/24/2015	3/24/2015	11/16/2018	3/27/2019	3/27/2019	11/16/2018
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	ng/L	ng/L
Per- and polyfluoroalkyl substances (PF													
Perfluorooctanesulfonic acid (PFOS)	4.0	19	23	11	34	9	1,100	1,000	41	110	89	<5.2	<6.0
Perfluoro-n-Octanoic Acid (PFOA)	<0.20	0.2	0.2	BRL (<0.1)	400	BRL (<0.1)	BRL (<50)	BRL (<50)	BRL (<10)	<2.5	<0.8	<7.4	<8.7
Perfluoroheptanoic Acid (PFHpA)	<0.17	NR	NR	NR	NR	NR	NR	NR	NR	<1.9	<0.9	<7.1	<7.4
Perfluorohexane Sulfonate (PFHxS)	<0.30	NR	NR	NR	NR	NR	NR	NR	NR	2.7	4.1	<5.2	<5.6
Perfluorononanoic Acid (PFNA)	<0.27	NR	NR	NR	NR	NR	NR	NR	NR	4.1	3.4	<4.9	<3.3
Perfluorodecanoic acid (PFDA) ⁶	<0.24	NR	NR	NR	NR	NR	NR	NR	NR	<2.8	<1.6	<4.1	<6.1
Sum of MA- 6 Regulated PFAs	4	19	23	11	434	9	1,100	1,000	41	117	97	ND	ND

- Notes: (Applicable to all pages within tat
- 1. (<500) - Below Laboratory Detection
 - 2. µg/kg - micrograms per kilograms (p
 - 3. Field Duplicate - Duplicate Sediment
 - 4. Field Duplicate and Rinsate Blank san
 - 5. NR - Not Reported. Sediment samples documentation of additional PFAS an
 - 6. The MassDEP Office of Research and PFAS compounds of interest should Therefore, based on the structural si on December 27, 2019 which include
 - 7. There is no official or draft MassDEI

Table 5B - Summary of Analytical Phase II CSA
 Flintrock Pond Sediment PFAS Analytical Data
 Barnstable County Fire & Rescue Training
 Academy
 155 South Flint Rock Road, Barnstable, MA
 RTN 4-26179

SAMPLE ID	SED-X	SB-FRP 0-1'	SB-FRP 1-2'	FRP-109	FRP-101	FRP-102	FRP-103	FRP-104	FRP-105	FRP-106	FRP-107	FRP-108	FRP-110	FRP-111	FRP-112	FRP-113
SAMPLE DATE	7/27/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/18/2022	8/17/2022	8/17/2022	8/17/2022	8/18/2022	8/18/2022	8/24/2022	8/24/2022	8/24/2022
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Per- and polyfluoroalkyl substances (PFAS)																
Perfluorooctanesulfonic acid (PFOS)	100	26	18	270	92	36	4.1	25	95	140	BRL(<27)	BRL(<54)	100	310	240	350
Perfluoro-n-Octanoic Acid (PFOA)	4.7	0.21	BRL(<0.20)	BRL(<4.0)	2.9	0.78	BRL(<0.20)	BRL(<0.60)	BRL(<2.0)	BRL(<4.0)	BRL(<20)	BRL(<40)	BRL(<40)	4.9	4.1	3.5
Perfluoroheptanoic Acid (PFHpA)	4.6	BRL(<0.17)	BRL(<0.17)	BRL(<3.4)	1.3	BRL(<0.34)	BRL(<0.17)	BRL(<0.51)	BRL(<1.7)	BRL(<3.4)	BRL(<17)	BRL(<34)	BRL(<34)	BRL(<3.4)	BRL(<3.4)	BRL(<3.4)
Perfluorohexane Sulfonate (PFHxS)	9.6	0.59	BRL(<0.30)	BRL(<6.0)	11	3.0	BRL(<0.30)	BRL(<0.90)	BRL(<3.0)	BRL(<6.0)	BRL(<30)	BRL(<60)	BRL(<60)	8.7	8.7	7.9
Perfluorononanoic Acid (PFNA)	14	1.4	1.1	BRL(<5.4)	7.1	7.6	BRL(<0.27)	BRL(<0.81)	BRL(<2.7)	BRL(<5.4)	BRL(<27)	BRL(<54)	BRL(<54)	10	9.4	11
Perfluorodecanoic acid (PFDA) ⁶	BRL(<4.8)	0.59	BRL(<0.24)	BRL(<4.8)	4.7	0.64	BRL(<0.24)	BRL(<0.72)	BRL(<2.4)	BRL(<4.8)	BRL(<24)	BRL(<48)	BRL(<48)	4.1	3.9	3.2
Sum of MA- 6 Regulated PFAs	133	28.79	19.1	270	119	48.02	4.1	25	95	140	0	0	100	337.7	266.1	375.6
Wet Chemistry																
Total Iron (ug/g or mg/kg)	***	620	3400	4500	***	***	***	***	***	***	***	***	***	5,000	3,670	2,640
TOC (mg/kg)	***	24000	5500	310000	***	***	***	***	***	***	***	***	***	253,000	303,000	308,000
pH (S.U.)	***	***	***	***	***	***	***	***	***	***	145	290	***	5.73	5.94	6.17
Conductivity (umhos/cm)	***	***	***	***	***	***	***	***	***	***	***	***	***	73	73	40
ORP (mv)	***	***	***	***	***	***	***	***	***	***	***	***	***	174	283	328
% Solids	6	74	81	5	43	61	72	42	13	5	14	6	5	5	5	5

Notes: (Applicable to all pages within table)
 1. (<500) - Below Laboratory Detection Limit shown in parentheses.
 2. µg/kg - micrograms per kilograms (parts per billion-ppb).
 3. The MassDEP Office of Research and Standards (ORS) conducted research in 2018 (ORS, 2018a) concluding that the PFAS compounds of interest should extend to additional PFAS compounds that are closely related structurally or toxicologically. Therefore, based on the structural similarity and data indicating a long serum half-life, MassDEP finalized their PFAS regulations
 4. **There is no official or draft MassDEP**

Table 5B - Summary of Analytical Phase II CSA
 Flintrock Pond Sediment PFAS Analytical Data
 Barnstable County Fire & Rescue Training
 Academy
 155 South Flint Rock Road, Barnstable, MA
 RTN 4-26179

SAMPLE ID	FRP-114	FRP-115	FRP-116	FRP-117	FRP-118	FRP-119	FRP-120	FRP-121	FRP-122	FRP-DUP	PW-1	PW-2	PW-3
SAMPLE DATE	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	8/24/2022	11/8/2022	11/8/2022	11/8/2022
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
Per- and polyfluoroalkyl substances (PFAS)													
Perfluorooctanesulfonic acid (PFOS)	26	200	110	260	370	230	460	390	240	170	19	33	37
Perfluoro-n-Octanoic Acid (PFOA)	1.2	BRL(<3.4)	4.5	4.0	3.8	5.4	4.9	BRL(<4.0)	BRL(<4.0)	BRL(<4.0)	BRL(<4.9)	BRL(<6.5)	BRL(<9.6)
Perfluoroheptanoic Acid (PFHpA)	BRL(<0.85)	BRL(<3.4)	4.1	BRL(<3.4)	BRL(<3.4)	4.2	BRL(<3.4)	BRL(<3.4)	BRL(<3.4)	BRL(<3.4)	BRL(<4.9)	BRL(<6.5)	BRL(<9.6)
Perfluorohexane Sulfonate (PFHxS)	1.4	4.8	5.0	7.6	9.2	9.4	11	6.4	BRL(<6.0)	BRL(<6.0)	BRL(<4.9)	BRL(<6.5)	BRL(<9.6)
Perfluorononanoic Acid (PFNA)	2	6.0	8.0	9.1	12	11	12	7.0	BRL(<5.4)	BRL(<5.4)	BRL(<4.9)	8.0	BRL(<9.6)
Perfluorodecanoic acid (PFDA) ⁶	0.88	2.8	2.9	3.7	3.4	5	4.1	BRL(<4.8)	BRL(<4.8)	BRL(<4.8)	BRL(<4.9)	BRL(<6.5)	BRL(<9.6)
Sum of MA- 6 Regulated PFAs	31.48	213.6	134.5	284.4	398.4	265	492	403.4	240	170	19	67	37
Wet Chemistry													
Total Iron (ug/g or mg/kg)	1,870	3,370	2,550	6,190	3,930	4,610	5,920	5,320	3,300	----	----	----	----
TOC (mg/kg)	281,000	355,000	327,000	290,000	286,000	279,000	269,000	261,000	228,000	----	----	----	----
pH (S.U.)	5.35	5.99	6	6.25	6.23	5.9	6.19	6.12	6.21	----	----	----	----
Conductivity (umhos/cm)	89	50	58	65	59	67	64	70	57	----	----	----	----
ORP (mv)	336	344	333	321	319	316	306	297	299	----	----	----	----
% Solids	24	6	5	5	5	4	5	5	5	----	----	----	----

Notes: (Applicable to all pages within table)
 1. (<500) - Below Laboratory Detection Limit shown in parentheses.
 2. µg/kg - micrograms per kilograms (parts per billion-ppb).
 3. The MassDEP Office of Research and Standards (ORS) conducted research in 2018 (ORS, 2018a) concluding that the PFAS compounds of interest should extend to additional PFAS compounds that are closely related structurally or toxicologically. Therefore, based on the structural similarity and data indicating a long serum half-life, MassDEP finalized their PFAS regulations
 4. **There is no official or draft MassDEP**

Table 6A - Summary of Phase II CSA Flintrock Pond Surface Water Analytical Data
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	SW-401 (FRP-107)	SW-402 (FRP-107)	SW-403	SW-404
Sampling Date	8/17/2022	8/17/2022	8/17/2022	8/17/2022
Units	ng/L	ng/L	ng/L	ng/L
Per- and polyfluoroalkyl substances (PFAS)				
Perfluorooctane Sulfonate (PFOS)	250	250	250	240
Perfluoro-n-Octanoic Acid (PFOA)	47	46	46	46
Perfluoroheptanoic Acid (PFHpA)	69	69	68	68
Perfluorohexane Sulfonate (PFHxS)	70	70	68	68
Perfluorononanoic Acid (PFNA)	50	51	48	50
Perfluorodecanoic acid (PFDA) ⁹	7.9	7.5	7.7	7.7
Sum of MA- 6 Regulated PFAs	493.9	493.5	487.7	479.7

Notes:

1. ng/L - nanograms per liter; parts per trillion (ppt).
2. **MassDEP and the USEPA do not have standards established for PFAS in surface water.**
3. However, on April 19, 2019 MassDEP unofficially released draft Surface Water Target Values for the PFOA and PFOS compounds. MassDEP stated that the literature is insufficient to establish chemical-specific surface water concentrations for the remaining four PFAS compounds (only, not PFHpA, PFHxS, PFNA, or PFDA).

Table 6B - Summary of Historic Flintrock Pond Surface Water Analytical Data
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	Pond S1	Pond D1	SW-201 ⁴	SW-301 ⁴	SW-401S ⁵	SW-401D ⁵	SW-501S	SW-501D	Overland Runoff ⁶	Reagent Blank ⁷
Sampling Date	6/18/2015	6/18/2015	11/16/2018	3/27/2019	10/28/2019	10/28/2019	10/20/2020	10/20/2020	11/16/2018	11/16/2018
Units	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
Per- and polyfluoroalkyl substances (PFAS)										
Perfluorooctane Sulfonate (PFOS)	2500	2400	400	270	560	330	300	260	(<6.0)	(<6.0)
Perfluoro-n-Octanoic Acid (PFOA)	140	160	44	26	32	30	38	36	(<3.3)	(<3.3)
Perfluoroheptanoic Acid (PFHpA)	180	170	62	37	47	46	52	51	(<7.4)	(<7.4)
Perfluorohexane Sulfonate (PFHxS)	550	560	110	63	74	74	69	67	(<5.6)	(<5.6)
Perfluorononanoic Acid (PFNA)	94	95	52	33	63	44	46	44	(<8.7)	(<8.7)
Perfluorodecanoic acid (PFDA) ⁹	(<20)	(<20)	8.5	(<4.1)	10.0	5.9	8.1	7.0	(<6.1)	(<6.1)

Notes:

1. (<5.6) - Below Laboratory Detection Limit, shown in parentheses.
2. ng/L - nanograms per liter; parts per trillion (ppt).
3. NE - Not Established.
4. The surface water samples, "SW-201" and "SW-301," were collected from Flintrock Pond approximately 50 feet from the shoreline and about approximately 6-8 inches below the surface in windy conditions.
5. The surface water samples, "SW-401S" and "SW-401D" were collected from Flintrock Pond approximately 100 feet from the shoreline and at approximately 6 inches and 12 inches below the surface respectively.
6. The sample, "Overland Runoff", was precipitation runoff observed and collected from the downward sloping driveway near the shed adjacent to the Pond's shoreline.
7. Reagent Blank sample is a quality control sample required by the PFAS analytical methods.
8. The surface water samples "SW-501S" and "SW-501D" were collected from Flintrock Pond approximately 100 feet from the shoreline and at approximately 6 inches and 36 inches below the surface respectively.
9. The MassDEP Office of Research and Standards (ORS) conducted research in 2018 (ORS, 2018a) concluding that the PFAS compounds of interest should extend to additional PFAS compounds that are closely related structurally or toxicologically. Therefore, based on the structural similarity and data indicating a long serum half-life, MassDEP finalized their PFAS regulations on December 27, 2019 which included regulations for PFDA.
10. **MassDEP and the USEPA do not have standards established for PFAS in surface water.**
However, on April 19, 2019 MassDEP unofficially released draft Surface Water Target Values for the PFOA and PFOS compounds. MassDEP stated that the literature is insufficient to establish chemical-specific surface water concentrations for the remaining four PFAS compounds (only, not PFHpA, PFHxS, PFNA, or PFDA).

Table 7 - Summary of Initial Groundwater Screening Analytical Results
Former Barnstable Country Fire and Rescue Training Academy & Site
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	Method 1 GW-1 Standards ¹	GWS-1-S	GWS-1-D	GWS-2-S	GWS-2-D	GWS-3-S	GWS-3-D	GWS-4-S	GW-4-D	GWS-5	GW-6-S	GW-6-D	GWS-7-S	GWS-7-D	GWS-8-S	GWS-8-D	GWS-9-S	GWS-9-D	GWS-10-S	GWS-10-D	GWS-11-S	GWS-11-D	EB-1	EB-3	EB-2
SCREEN DEPTH (FEET)		31	41	31	46	39	54	34-37'	49-52'	32-35'	36-38'	51-53'	38-40'	53-55'	45-48'	60-63'	36-38'	51-53'	40-42'	55-57'	31-33'	46-48'	N/A	N/A	N/A
WELL DIAMETER (INCHES)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WELL STATUS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAMPLING DATE		8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	10/4/2022	10/4/2022	10/4/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/4/2022	10/4/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	8/11/2022	10/4/2022	10/5/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m or SOP 454 PFAS)																									
PFOS	20	BRL(<0.43)	3.1	BRL(<0.43)	4.5	BRL(<0.43)	1.7	1300	7.5	760	BRL(<4.1)	5.6	8.7	15	22	37	BRL(<1.8)	4.2	BRL(<4.2)	7.8	300	460	BRL(<0.43)	BRL(<1.8)	BRL(<1.9)
PFOA	20	1.3	0.7	0.55	0.66	0.84	1	64	BRL(<4.1)	27	BRL(<4.1)	BRL(<4.2)	20	9.2	BRL(<4.1)	BRL(<4.1)	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	6.7	16	15	BRL(<0.49)	BRL(<1.8)	BRL(<1.9)
PFNA	20	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	110	BRL(<4.1)	69	BRL(<4.1)	BRL(<4.2)	BRL(<4.2)	BRL(<4.1)	BRL(<4.1)	BRL(<4.1)	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	19	21	BRL(<0.80)	BRL(<1.8)	BRL(<1.9)
PFHxS	20	1	1.1	0.86	4.5	0.75	1.2	120	BRL(<4.1)	110	BRL(<4.1)	BRL(<4.2)	BRL(<4.2)	BRL(<4.1)	4.3	7.7	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	72	31	BRL(<0.53)	BRL(<1.8)	BRL(<1.9)
PFHpA	20	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	72	BRL(<4.1)	35	BRL(<4.1)	BRL(<4.2)	BRL(<4.2)	BRL(<4.1)	BRL(<4.1)	4.9	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	24	14	BRL(<0.51)	BRL(<1.8)	BRL(<1.9)
PFDA	20	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	12	BRL(<4.1)	26	BRL(<4.1)	BRL(<4.2)	7	BRL(<4.1)	BRL(<4.1)	BRL(<4.1)	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	6.6	BRL(<4.1)	BRL(<0.64)	BRL(<1.8)	BRL(<1.9)
TOTAL PFAS6	20	2.3	4.9	1.41	9.66	1.59	3.9	1678	7.5	1027	0	5.6	35.7	24.2	26.3	49.6	0	4.2	0	14.5	437.6	541	BRL	BRL	BRL

Notes:
1. Current Massachusetts Contingency Plan GW-1 Risk Stands, finalized on 12.27.2019 and Massachusetts maximum contaminant level

2. BRL - Below Laboratory Detection Limits
3. Concentrations presented in ng/L - nanograms per liter - parts per trillion
4. Concentrations in **bold** exceed applicable MCP Method 1 GW-1 Standard
5. PFOS - Perfluorooctanesulfonic Acid
6. PFOA - Perfluorooctanoic Acid
6. PFNA - Perfluorononanoic Acid
7. PFHxS - Perfluorohexanesulfonic Acid
8. PFHpA - Perfluoroheptanoic Acid
9. PFDA - Perfluorodecanoic Acid
10. EB = Equipment Rinsate Blank
11. EB obtained from groundwater sampling tool/screen after decontamination at end of day

Table 8 - Summary of Phase II CSA Groundwater Screening Results
Former Barnstable Country Fire and Rescue Training Academy & Site
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	Method 1 GW-1 Standards ¹	GWS-1-S	GWS-1-D	GWS-2-S	GWS-2-D	GWS-3-S	GWS-3-D	GWS-4-S	GW-4-D	GWS-5	GW-6-S	GW-6-D	GWS-7-S	GWS-7-D	GWS-8-S	GWS-8-D	GWS-9-S	GWS-9-D	GWS-10-S	GWS-10-D	GWS-11-S	GWS-11-D
SCREEN DEPTH (FEET)		31	41	31	46	39	54	34-37'	49-52'	32-35'	36-38'	51-53'	38-40'	53-55'	45-48'	60-63'	36-38'	51-53'	40-42'	55-57'	31-33'	46-48'
WELL DIAMETER (INCHES)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WELL STATUS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAMPLING DATE		8/11/2022	8/11/2022	8/11/2022	8/11/2022	8/12/2022	8/12/2022	10/4/2022	10/4/2022	10/4/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/4/2022	10/4/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022	10/5/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m/ SOP 454 PFAS)																						
PFOS	20	BRL(<0.43)	3.1	BRL(<0.43)	4.5	BRL(<0.43)	1.7	1300	7.5	760	BRL(<4.1)	#VALUE!	8.7	15	22	37	BRL(<1.8)	4.2	BRL(<4.2)	7.8	300	460
PFOA	20	1.3	0.7	0.55	0.66	0.84	1	64	BRL(<4.1)	27	BRL(<4.1)	BRL(<4.2)	20	9.2	BRL(<4.1)	BRL(<4.1)	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	6.7	16	15
PFNA	20	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	BRL(<0.80)	110	BRL(<4.1)	69	BRL(<4.1)	BRL(<4.2)	BRL(<4.2)	BRL(<4.1)	BRL(<4.1)	BRL(<4.1)	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	19	21
PFHxS	20	1	1.1	0.86	4.5	0.75	1.2	120	BRL(<4.1)	110	BRL(<4.1)	BRL(<4.2)	BRL(<4.2)	BRL(<4.1)	4.3	7.7	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	72	31
PFHpA	20	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	BRL(<0.51)	72	BRL(<4.1)	35	BRL(<4.1)	BRL(<4.2)	BRL(<4.2)	BRL(<4.1)	BRL(<4.1)	4.9	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	24	14
PFDA	20	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	BRL(<0.64)	12	BRL(<4.1)	26	BRL(<4.1)	BRL(<4.2)	7	BRL(<4.1)	BRL(<4.1)	BRL(<4.1)	BRL(<1.8)	BRL(<4.1)	BRL(<4.2)	BRL(<4.1)	6.6	BRL(<4.1)
TOTAL PFAS6	20	2.3	4.9	1.41	9.66	1.59	3.9	1678	7.5	1027	0	#VALUE!	35.7	24.2	26.3	49.6	0	4.2	0	14.5	437.6	541

Notes:

1. Current Massachusetts Contingency Plan GW-1 Risk Stands, finalized on 12.27.2019 and Massachusetts maximum contaminant level
2. BRL - Below Laboratory Detection Limits
3. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
4. Concentrations in **bold** exceed applicable MCP Method 1 GW-1 Standard
5. PFOS - Perfluorooctanesulfonic acid
6. PFOA - Perfluorooctanoic acid
6. PFNA - Perfluorononanoic acid
7. PFHxS - Perfluorohexanesulfonic acid
8. PFHpA - Perfluoroheptanoic Acid
9. PFDA - Perfluorodecanoic Acid
10. EB = Equipment Rinsate Blank
11. EB obtained from Groundwater sampling tool/screen after decontamination at end of day

Table 8 - Summary of Phase II CSA Groundwater Screening
Former Barnstable Country Fire and Rescue Training Area
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	Method 1 GW-1 Standards ¹	GWS-12-S	GWS-12-D	GWS-13-S	GWS-13-D	GWS-14-S	GWS-14-D	GWS-15-S	GWS-15-D	GWS-16-S	GWS-16-D	GWS-17-S	GWS-17-D	GWS-18-S	GWS-18-D	GWS-19-S	GWS-19-D	GWS-20-S	GWS-20-D
SCREEN DEPTH (FEET)		23	40	22	37	35	50	35	50	35	50	22	37	26	40	26	41	35	50
WELL DIAMETER (INCHES)		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
WELL STATUS		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAMPLING DATE		1/9/2023	1/9/2023	1/9/2023	1/9/2023	1/9/2023	1/9/2023	1/9/2023	1/9/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023	1/10/2023
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m/ SOP 454 PFAS)																			
PFOS	20	BRL(<10)	14	BRL(<10)	BRL(<10)	BRL(<10)	680	BRL(<10)	330	5.5	12	9	28	80	53	4.9	41	BRL(<4.1)	5.7
PFOA	20	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	36	BRL(<10)	19	11	13	BRL(<4.0)	14	42	13	230	29	BRL(<4.1)	BRL(<4.1)
PFNA	20	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<9.9)	BRL(<4.0)	BRL(<4.0)	BRL(<4.0)	BRL(<4.0)	BRL(<4.1)	BRL(<4.0)	18	4	BRL(<4.1)	BRL(<4.1)
PFHxS	20	BRL(<10)	11	BRL(<10)	BRL(<10)	BRL(<10)	200	BRL(<10)	45	9.5	9.5	4	19	73	26	13	21	BRL(<4.1)	BRL(<4.1)
PFHpA	20	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	21	BRL(<10)	BRL(<9.9)	15	20	BRL(<4.0)	16	42	13	390	39	BRL(<4.1)	BRL(<4.1)
PFDA	20	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<10)	BRL(<9.9)	BRL(<4.0)	BRL(<4.0)	BRL(<4.0)	BRL(<4.0)	BRL(<4.1)	BRL(<4.0)	BRL(<4.1)	BRL(<4.0)	BRL(<4.1)	BRL(<4.1)
TOTAL PFAS6	20	BRL	25	BRL	BRL	BRL	937	BRL	394	41	54.5	13	77	237	105	655.9	134	BRL	5.7

Notes:

1. Current Massachusetts Contingency Plan GW-1 Risk Stands, final
2. BRL - Below Laboratory Detection Limits
3. Concentrations presented in ng/L - nanograms per Liter - parts per
4. Concentrations in **bold** exceed applicable MCP Method 1 GW-1 SI
5. PFOS - Perfluorooctanesulfonic acid
6. PFOA - Perfluorooctanoic acid
6. PFNA - Perfluorononanoic acid
7. PFHxS - Perfluorohexanesulfonic acid
8. PFHpA - Perfluoroheptanoic Acid
9. PFDA - Perfluorodecanoic Acid
10. EB = Equipment Rinsate Blank
11. EB obtained from Groundwater sampling tool/screen after decont

Table 8 - Summary of Phase II CSA Groundwater Screenir
Former Barnstable Country Fire and Rescue Training Aca
155 S. Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	Method 1 GW-1 Standards ¹	GWS-16-D Filtrate	GWS-20-D Filtrate	EB-1	EB-3	EB-2	EB-1	EB-2
SCREEN DEPTH (FEET)		50	50	N/A	N/A	N/A	N/A	N/A
WELL DIAMETER (INCHES)		N/A	N/A	N/A	N/A	N/A	N/A	N/A
WELL STATUS		N/A	N/A	N/A	N/A	N/A	N/A	N/A
SAMPLING DATE		1/10/2023	1/10/2023	8/11/2022	10/4/2022	10/5/2022	1/9/2023	1/10/2023
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Method 537.1m/ SOP 454 PFAS)								
PFOS	20	BRL(<4.0)	BRL(<4.1)	BRL(<0.43)	BRL(<1.8)	BRL(<1.9)	BRL(<1.9)	BRL(<1.7)
PFOA	20	16	BRL(<4.1)	BRL(<0.49)	BRL(<1.8)	BRL(<1.9)	BRL(<1.9)	BRL(<1.7)
PFNA	20	BRL(<4.0)	BRL(<4.1)	BRL(<0.80)	BRL(<1.8)	BRL(<1.9)	BRL(<1.9)	BRL(<1.7)
PFHxS	20	8.6	BRL(<4.1)	BRL(<0.53)	BRL(<1.8)	BRL(<1.9)	BRL(<1.9)	BRL(<1.7)
PFHpA	20	24	BRL(<4.1)	BRL(<0.51)	BRL(<1.8)	BRL(<1.9)	BRL(<1.9)	BRL(<1.7)
PFDA	20	BRL(<4.0)	BRL(<4.1)	BRL(<0.64)	BRL(<1.8)	BRL(<1.9)	BRL(<1.9)	BRL(<1.7)
TOTAL PFAS6	20	48.6	BRL	BRL	BRL	BRL	BRL	BRL

Notes:

1. Current Massachusetts Contingency Plan GW-1 Risk Stands, final
2. BRL - Below Laboratory Detection Limits
3. Concentrations presented in ng/L - nanograms per Liter - parts per
4. Concentrations in **bold** exceed applicable MCP Method 1 GW-1 SI
5. PFOS - Perfluorooctanesulfonic acid
6. PFOA - Perfluorooctanoic acid
6. PFNA - Perfluorononanoic acid
7. PFHxS - Perfluorohexanesulfonic acid
8. PFHpA - Perfluoroheptanoic Acid
9. PFDA - Perfluorodecanoic Acid
10. EB = Equipment Rinsate Blank
11. EB obtained from Groundwater sampling tool/screen after decont

Table 9 - Summary of Phase II CSA Supplemental Soil Boring PFAS Analytical Data
Former Barnstable Country Fire and Rescue Training Academy Site
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

SAMPLE ID	MCP Method 1 S-1/GW-1	MCP Method 1 S-1/GW-3	MCP Method 1 S-2/GW-1	MW-301		MW-302		MW-303		MW-305		MW-306		MW-304		MW-310	
SAMPLE DEPTH (FT)	Soil Standards	Soil Standards	Soil Standards	0-2	12-14'	0-2	12-14'	0-2	12-14'	0-2	12-14'	0-2	8-10'	0-4"	12'	0-6"	12-13'
SAMPLING DATE				8/12/2022		8/12/2022		8/12/2022		8/18/2022		8/18/2022		10/3/2022		10/3/2022	
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFAS (ASTM Method D7968-17a m or PACE SOP 466)																	
PFOS	2	300	2	BRL(<0.27)	BRL(<0.27)	1.9	2.4	2.6	BRL(<0.27)	33	1.6	0.32	BRL(<0.27)	11	BRL(<0.49)	4.5	BRL(<0.46)
PFOA	0.72	300	0.72	BRL(<0.20)	BRL(<0.20)	BRL(<0.20)	BRL(<0.20)	0.34	BRL(<0.20)	0.26	BRL(<0.20)	BRL(<0.20)	BRL(<0.20)	0.97	BRL(<0.49)	0.56	BRL(<0.46)
PFHpA	0.5	300	0.5	0.17	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	BRL(<0.17)	0.54	BRL(<0.49)	BRL(<0.46)	BRL(<0.46)
PFNA	0.32	300	0.32	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.27)	BRL(<0.51)	BRL(<0.49)	BRL(<0.46)	BRL(<0.46)
PFHxS	0.3	300	0.3	1.4	BRL(<0.30)	BRL(<0.30)	BRL(<0.30)	BRL(<0.30)	BRL(<0.30)	7.8	0.35	BRL(<0.30)	BRL(<0.30)	1.9	BRL(<0.49)	BRL(<0.46)	BRL(<0.46)
PFDA	0.3	300	0.3	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.24)	BRL(<0.51)	BRL(<0.49)	BRL(<0.46)	BRL(<0.46)
Total Sum (PFAS)	NE	NE	NE	1.57	0	1.9	2.4	2.94	0	41.06	1.95	0.32	0	14.41	0	5.06	0
PFAS (ASTM Method D7968-17a m)																	
% Solids	NE	NE	NE	95	94.7	94.5	97.4	97.6	94.6	91.3	97.3	96.8	98	86	92.3	91.6	95.9

- Notes:
- PFOS: Perfluorooctanesulfonic acid (PFOS)
 - PFOA: Perfluoro-n-Octanoic Acid
 - PFHpA: Perfluoroheptanoic Acid (PFHpA)
 - PFHxS: Perfluorohexane Sulfonate
 - PFNA: Perfluorononanoic Acid
 - PFDA: Perfluorodecanoic acid
 - Concentrations in µg/kg - micrograms per kilogram
 - (BRL <0.14) - Below Laboratory Detection Limit shown in parentheses.
 - MassDEP finalized and established standards for 6 indiviual PFAS compounds in soil on December 27, 2019.
(PFOS, PFOA, PFHpA, PFNA, PFHxS, and PFDA) compounds.
 - Bolded** values indicate concentrations above the MCP applicable Method 1 S-1 Soil Stands
 - NE - Not Established

Table 10 - Summary of PFAS Analytical Results in Groundwater
Barnstable Fire District Parcel
Former Barnstable Country Fire and Rescue Training Academy Site Assessment
RTN 4-26179

SAMPLE ID		MW-307S	MW-307D	MW-308S	MW-308D	MW-309	WS-101
SCREEN DEPTH (FEET)	Method 1 GW 1 Standards ⁴	10-20'	35-40	10-20'	35-40	30-35	unknown
WELL DIAMETER (INCHES)		2	2	2	2	2	2
SAMPLING DATE		11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/9/2022	11/11/2022
UNITS	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L	ng/L
PFAS (Pace SOP 454)							
PFOS	20	2.1	BRL (<1.9)	2.2	5.4	11	BRL (<1.9)
PFOA	20	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)
PFNA	20	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)
PFHxS	20	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)	BRL (<2.0)	4.6	BRL (<1.9)
PFHpA	20	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)
PFDA	20	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)	BRL (<2.0)	BRL (<1.9)	BRL (<1.9)
TOTAL 6 PFAS	20	2.1	BRL	2.2	5.4	15.6	BRL

Notes:

1. Current Massachusetts Contingency Plan GW-1 Risk Stands, finalized on 12.27.2019 and Massachusetts maximum contaminant level
2. BRL - Below Laboratory Reporting Limits
3. Concentrations presented in ng/L - nanograms per Liter - parts per trillion
4. Concentrations in **bold** exceed applicable MCP Method 1 GW-1 Standard
5. PFOS - Perfluorooctanesulfonate
6. PFOA - Perfluorooctanoic Acid
6. PFNA - Perfluorononanoic Acid
7. PFHxS - Perfluorohexanesulfonic Acid
8. PFHpA - Perfluoroheptanoic Acid
9. PFDA - Perfluorodecanoic Acid

Table 12 - Summary of Phase II CSA PFAS Analytical Data in Shallow Soil
Former Barnstable Country Fire and Rescue Training Academy Site
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Transect	MCP Method 1 S-1/GW-1 Soil Standards	MCP Method 1 S-1/GW-3 Soil Standards	MCP Method 1 S-2/GW-1 Soil Standards	Transect A										
SAMPLE ID				SS-101		SS-102					SS-103		SS-104	
Distance from Fenceline				Adjacent		10 feet					25 Feet		50 feet	
SAMPLE DEPTH (FT)				0-3"	16-20"	FM	0-3"	16-20"	5'	10'	0-3"	16-20"	0-3"	16-20"
SAMPLING DATE				10/4/2022		10/4/2022					10/4/2022		10/4/2022	
UNITS				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFAS (ASTM Method D7968-17a m or PACE SOP 466)														
PFOS	2	300	2	9.4	9	13	24	4.2	4.1	3.2	15	6.1	9.1	BRL(<0.44)
PFOA	0.72	300	0.72	3	2.3	1.5	1.8	0.5	BRL(<0.45)	BRL(<0.44)	0.87	0.47	1.2	BRL(<0.44)
PFHpA	0.5	300	0.5	1.6	0.89	0.96	2.3	0.72	BRL(<0.45)	BRL(<0.44)	1.1	0.45	0.79	BRL(<0.44)
PFNA	0.32	300	0.32	1.9	1.8	0.82	1.3	0.53	BRL(<0.45)	BRL(<0.44)	0.99	BRL(<0.45)	BRL(<0.49)	BRL(<0.44)
PFHxS	0.3	300	0.3	2.4	1.6	3.5	2	0.6	BRL(<0.45)	BRL(<0.44)	1.3	0.68	2.2	BRL(<0.44)
PFDA	0.3	300	0.3	5.4	4.2	0.89	BRL(<0.49)	BRL(<0.47)	BRL(<0.45)	BRL(<0.44)	BRL(<0.51)	BRL(<0.45)	BRL(<0.49)	BRL(<0.44)
Total Sum (PFAS)	NE	NE	NE	23.7	19.79	20.67	31.4	6.55	4.1	3.2	19.26	7.7	13.29	0
Wet Chemistry														
Percent Solids (%)	NE	NE	NE	86.6	86.9	86.8	86	91	99	93.5	86.4	93.9	85.5	99.3
Total Iron (mg/kg)	NE	NE	NE	4040	---	---	4070	---	---	---	9360	---	5,550	---
TOC (mg/kg dry)	NE	NE	NE	39100	---	---	5370	---	---	---	2120	---	6,980	---

- Notes:
- PFOS: Perfluorooctanesulfonic acid (PFOS)
 - PFOA: Perfluoro-n-Octanoic Acid
 - PFHpA: Perfluoroheptanoic Acid
 - PFHxS: Perfluorohexane Sulfonate
 - PFNA: Perfluorononanoic Acid
 - PFDA: Perfluorodecanoic acid
 - Concentrations in µg/kg - micrograms per kilogram
 - (BRL <0.14) - Below Laboratory Detection Limit shown in parentheses.
 - MassDEP finalized and established standards for 6 individual PFAS compounds in soil on December 27, 2019.
(PFOS, PFOA, PFHpA, PFNA, PFHxs, and PFDA) compounds.
 - Bolded** values indicate concentrations above the applicable MCP Method 1 S-1 / GW-1 risk standards.
 - NE - Not Established

Table 12 - Summary of Phase II CSA PFAS Analytical Data in Shallow Soil
Former Barnstable Country Fire and Rescue Training Academy Site
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Transect	MCP Method 1 S-1/GW-1 Soil Standards	MCP Method 1 S-1/GW-3 Soil Standards	MCP Method 1 S-2/GW-1 Soil Standards	Transect B											
SAMPLE ID				SS-105			SS-106				SS-107		SS-108		
Distance from Fenceline				Adjacent			10 feet				25 feet		50 feet		
SAMPLE DEPTH (FT)				FM	0-3"	16-20"	0-3"	16-20"	5'	10'	0-3"	16-20"	0-3"	16-20"	
SAMPLING DATE				10/4/2022			10/4/2022				10/4/2022		10/4/2022		
UNITS				µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFAS (ASTM Method D7968-17a m or PACE SOP 466)															
PFOS	2	300	2	5.4	2.4	0.95	3.8	5.3	3.8	BRL(<0.43)	7.1	2.6	6.7	BRL(<0.47)	
PFOA	0.72	300	0.72	2.6	0.93	BRL(<0.46)	2.1	1.2	1.3	BRL(<0.43)	1.1	BRL(<0.45)	0.94	BRL(<0.47)	
PFHpA	0.5	300	0.5	1.3	BRL(<0.48)	BRL(<0.46)	1.3	BRL(<0.47)	BRL(<0.43)	BRL(<0.43)	0.85	BRL(<0.45)	BRL(<0.47)	BRL(<0.47)	
PFNA	0.32	300	0.32	BRL(<1.1)	BRL(<0.48)	BRL(<0.46)	2.9	3.3	1.5	BRL(<0.43)	0.56	BRL(<0.45)	BRL(<0.47)	BRL(<0.47)	
PFHxS	0.3	300	0.3	1.9	BRL(<0.48)	BRL(<0.46)	BRL(<0.47)	BRL(<0.47)	BRL(<0.43)	BRL(<0.43)	BRL(<0.46)	BRL(<0.45)	BRL(<0.47)	BRL(<0.47)	
PFDA	0.3	300	0.3	1.7	0.68	BRL(<0.46)	0.7	BRL(<0.47)	BRL(<0.43)	BRL(<0.43)	BRL(<0.46)	BRL(<0.45)	BRL(<0.47)	BRL(<0.47)	
Total Sum (PFAS)	NE	NE	NE	12.9	4.01	0.95	10.8	9.8	6.6	0	9.61	2.6	7.64	0	
Wet Chemistry															
Percent Solids (%)	NE	NE	NE	71.5	91.2	93.9	88.5	93.7	97	99.1	91.1	96.3	90.4	95.3	
Total Iron (mg/kg)	NE	NE	NE	---	4,560	---	3,450	---	---	---	3,670	---	4340	---	
TOC (mg/kg dry)	NE	NE	NE	---	5,020	---	7,080	---	---	---	7,470	---	4830	---	

- Notes:
- PFOS: Perfluorooctanesulfonic acid (PFOS)
 - PFOA: Perfluoro-n-Octanoic Acid
 - PFHpA: Perfluoroheptanoic Acid
 - PFHxS: Perfluorohexane Sulfonate
 - PFNA: Perfluorononanoic Acid
 - PFDA: Perfluorodecanoic acid
 - Concentrations in µg/kg - micrograms per kilogram
 - (BRL <0.14) - Below Laboratory Detection Limit shown in parentheses.
 - MassDEP finalized and established standards for 6 individual PFAS compounds in soil on December 27, 2019.
(PFOS, PFOA, PFHpA, PFNA, PFHxs, and PFDA) compounds.
 - Bolded** values indicate concentrations above the applicable MCP Method 1 S-1 / GW-1 risk standards.
 - NE - Not Established

Table 12 - Summary of Phase II CSA PFAS Analytical Data in Shallow Soil
Former Barnstable Country Fire and Rescue Training Academy Site
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Transect	MCP Method 1 S-1/GW-1 Soil Standards	MCP Method 1 S-1/GW-3 Soil Standards	MCP Method 1 S-2/GW-1 Soil Standards	Transect C										
				SS-109		SS-110					SS-111		SS-112	
				Adjacent		10 feet					25 feet		50 feet	
				0-3"	16-20"	FM	0-3"	16-20"	5'	10'	0-3"	16-20"	0-3"	16-20"
				10/3/2022		10/3/2022					10/3/2022		10/3/2022	
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFAS (ASTM Method D7968-17a m or PACE SOP 466)														
PFOS	2	300	2	4.5	180	19	90	63	11	0.7	14	35	2	6.9
PFOA	0.72	300	0.72	1.3	7.2	3.5	2.3	1.6	0.85	1	1.6	1.8	BRL(<0.49)	0.74
PFHpA	0.5	300	0.5	BRL(<0.47)	1.8	BRL(<1.8)	1.3	0.63	BRL(<0.42)	BRL(<0.43)	1	0.54	BRL(<0.49)	BRL(<0.48)
PFNA	0.32	300	0.32	0.57	8.3	BRL(<1.8)	7.8	3.6	BRL(<0.42)	BRL(<0.43)	0.96	BRL(<0.46)	BRL(<0.49)	BRL(<0.48)
PFHxS	0.3	300	0.3	1.6	8	5.6	1.2	0.65	0.51	0.78	1.7	0.72	BRL(<0.49)	0.53
PFDA	0.3	300	0.3	0.48	2.6	3	1	BRL(<0.46)	BRL(<0.42)	BRL(<0.43)	1.1	BRL(<0.46)	BRL(<0.49)	BRL(<0.48)
Total Sum (PFAS)	NE	NE	NE	8.45	207.9	31.1	103.6	69.48	12.36	2.48	20.36	38.06	2	8.17
Wet Chemistry														
Percent Solids (%)	NE	NE	NE	93	88.3	54.2	89.5	93	99.5	99.5	89.8	92.2	86.6	88.9
Total Iron (mg/kg)	NE	NE	NE	6270	---	---	3960	---	---	---	1900	---	--	---
TOC (mg/kg dry)	NE	NE	NE	17900	---	---	13600	---	---	---	13200	---	---	---

- Notes:
- PFOS: Perfluorooctanesulfonic acid (PFOS)
 - PFOA: Perfluoro-n-Octanoic Acid
 - PFHpA: Perfluoroheptanoic Acid
 - PFHxS: Perfluorohexane Sulfonate
 - PFNA: Perfluorononanoic Acid
 - PFDA: Perfluorodecanoic acid
 - Concentrations in µg/kg - micrograms per kilogram
 - (BRL <0.14) - Below Laboratory Detection Limit shown in parentheses.
 - MassDEP finalized and established standards for 6 individual PFAS compounds in soil on December 27, 2019.
(PFOS, PFOA, PFHpA, PFNA, PFHxs, and PFDA) compounds.
 - Bolded** values indicate concentrations above the applicable MCP Method 1 S-1 / GW-1 risk standards.
 - NE - Not Established

Table 12 - Summary of Phase II CSA PFAS Analytical Data in Shallow Soil
Former Barnstable Country Fire and Rescue Training Academy Site
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Transect	MCP Method 1 S-1/GW-1 Soil Standards	MCP Method 1 S-1/GW-3 Soil Standards	MCP Method 1 S-2/GW-1 Soil Standards	Transect D								Transect E							
SAMPLE ID				SS-113		SS-114					SS-115		SS-117		SS-118				
Distance from Fenceline				Adjacent		10 feet					25 feet		Adjacent		10 feet				
SAMPLE DEPTH (FT)				0-3"	16-20"	FM	0-3"	16-20"	5'	10'	0-3"	16-20"	0-3"	16-20"	FM	0-3"	16-20"	5'	10'
SAMPLING DATE				10/3/2022		10/3/2022					10/3/2022		10/3/2022		10/3/2022				
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFAS (ASTM Method D7968-17a m or PACE SOP 466)																			
PFOS	2	300	2	1.7	180	59	79	25	BRL(<0.45)	BRL(<0.45)	1.8	13	23	42	5.2	33	14	6.1	BRL(<0.43)
PFOA	0.72	300	0.72	BRL(<0.48)	5.1	3.2	0.81	0.96	BRL(<0.45)	BRL(<0.45)	BRL(<0.49)	0.57	0.84	1.5	BRL(<0.87)	1.4	BRL(<0.43)	BRL(<0.43)	BRL(<0.43)
PFHpA	0.5	300	0.5	BRL(<0.48)	1.1	BRL(<1.6)	BRL(<0.49)	BRL(<0.44)	BRL(<0.45)	BRL(<0.45)	BRL(<0.49)	BRL(<0.45)	0.5	0.58	BRL(<0.87)	0.55	BRL(<0.43)	BRL(<0.43)	BRL(<0.43)
PFNA	0.32	300	0.32	BRL(<0.48)	5.1	BRL(<1.6)	1.5	BRL(<0.44)	BRL(<0.45)	BRL(<0.45)	BRL(<0.49)	BRL(<0.45)	BRL(<0.46)	0.85	BRL(<0.87)	3	0.94	0.45	BRL(<0.43)
PFHxS	0.3	300	0.3	BRL(<0.48)	8.6	45	2.1	1.6	0.96	0.56	0.51	BRL(<0.45)	11	8.7	2.8	1.4	BRL(<0.43)	BRL(<0.43)	BRL(<0.43)
PFDA	0.3	300	0.3	BRL(<0.48)	BRL(<0.46)	1.6	BRL(<0.49)	BRL(<0.44)	BRL(<0.45)	BRL(<0.45)	BRL(<0.49)	BRL(<0.45)	BRL(<0.46)	1.6	BRL(<0.87)	BRL(<0.48)	BRL(<0.43)	BRL(<0.43)	BRL(<0.43)
Total Sum (PFAS)	NE	NE	NE	1.7	199.9	108.8	83.41	27.56	0.96	0.56	2.31	13.57	35.34	55.23	8	39.35	14.94	6.55	0
Wet Chemistry																			
Percent Solids (%)	NE	NE	NE	86.6	93.1	73.6	90.1	97.8	99.5	99.4	89.4	91.7	97	97.9	51.4	87.1	97.5	99.4	98.7
Total Iron (mg/kg)	NE	NE	NE	4300	---	---	4950	---	---	---	3110	---	14000	---	---	5440	---	---	---
TOC (mg/kg dry)	NE	NE	NE	6350	---	---	5810	---	---	---	16200	---	12400	---	---	5310	---	---	---

- Notes:
- PFOS: Perfluorooctanesulfonic acid (PFOS)
 - PFOA: Perfluoro-n-Octanoic Acid
 - PFHpA: Perfluoroheptanoic Acid
 - PFHxS: Perfluorohexane Sulfonate
 - PFNA: Perfluorononanoic Acid
 - PFDA: Perfluorodecanoic acid
 - Concentrations in µg/kg - micrograms per kilogram
 - (BRL <0.14) - Below Laboratory Detection Limit shown in parentheses.
 - MassDEP finalized and established standards for 6 individual PFAS compounds in soil on December 27, 2019.
(PFOS, PFOA, PFHpA, PFNA, PFHxs, and PFDA) compounds.
 - Bolded** values indicate concentrations above the applicable MCP Method 1 S-1 / GW-1 risk standards.
 - NE - Not Established

Table 12 - Summary of Phase II CSA PFAS Analytical Data in Shallow Soil
Former Barnstable Country Fire and Rescue Training Academy Site
155 Flint Rock Road, Barnstable, MA
RTN 4-26179

Transect	MCP Method 1 S-1/GW-1 Soil Standards	MCP Method 1 S-1/GW-3 Soil Standards	MCP Method 1 S-2/GW-1 Soil Standards	Transect F							Transect D	Transect C	Transect B
				SS-121		SS-122					Duplicate 2 (SS-115)	Duplicate 3 (SS-111)	Duplicate 4 (SS-107)
				Adjacent		10 feet					25 feet	25 feet	25 feet
				0-3"	16-20"	FM	0-3"	16-20"	5'	10'	16-20"	16-20"	16-20"
				10/3/2022		10/3/2022					10/3/2022	10/3/2022	10/4/2022
UNITS	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg	µg/kg
PFAS (ASTM Method D7968-17a m or PACE SOP 466)													
PFOS	2	300	2	4.7	8.7	6	28	0.86	BRL(<0.43)	BRL(<0.43)	1.2	38	7.8
PFOA	0.72	300	0.72	0.61	BRL(<0.45)	BRL(<0.90)	2.3	0.86	BRL(<0.43)	BRL(<0.43)	BRL(<0.47)	1.8	3.4
PFHpA	0.5	300	0.5	BRL(<0.50)	BRL(<0.45)	BRL(<0.90)	BRL(<0.46)	BRL(<0.42)	BRL(<0.43)	BRL(<0.43)	BRL(<0.47)	0.59	BRL(<1.6)
PFNA	0.32	300	0.32	BRL(<0.50)	0.46	BRL(<0.90)	1.1	BRL(<0.42)	BRL(<0.43)	BRL(<0.43)	BRL(<0.47)	BRL(<0.47)	BRL(<1.6)
PFHxS	0.3	300	0.3	1.1	BRL(<0.45)	1.9	1.5	0.68	0.53	BRL(<0.43)	0.49	0.68	2.5
PFDA	0.3	300	0.3	0.53	BRL(<0.45)	1.3	BRL(<0.46)	BRL(<0.42)	BRL(<0.43)	BRL(<0.43)	BRL(<0.47)	BRL(<0.47)	3.8
Total Sum (PFAS)	NE	NE	NE	6.94	9.16	9.2	32.9	2.4	0.53	0	1.69	41.07	17.5
Wet Chemistry													
Percent Solids (%)	NE	NE	NE	87.8	93.3	46.8	94.3	98.5	99.4	97.1	88.5	91.3	61.3
Total Iron (mg/kg)	NE	NE	NE	5,090	---	---	3170	---	"][-=	---	---	---	---
TOC (mg/kg dry)	NE	NE	NE	10,200	---	---	9200	---	1	---	---	---	---

- Notes:
- PFOS: Perfluorooctanesulfonic acid (PFOS)
 - PFOA: Perfluoro-n-Octanoic Acid
 - PFHpA: Perfluoroheptanoic Acid
 - PFHxS: Perfluorohexane Sulfonate
 - PFNA: Perfluorononanoic Acid
 - PFDA: Perfluorodecanoic acid
 - Concentrations in µg/kg - micrograms per kilogram
 - (BRL <0.14) - Below Laboratory Detection Limit shown in parentheses.
 - MassDEP finalized and established standards for 6 individual PFAS compounds in soil on December 27, 2019.
(PFOS, PFOA, PFHpA, PFNA, PFHxs, and PFDA) compounds.
 - Bolded** values indicate concentrations above the applicable MCP Method 1 S-1 / GW-1 risk standards.
 - NE - Not Established

FIGURES

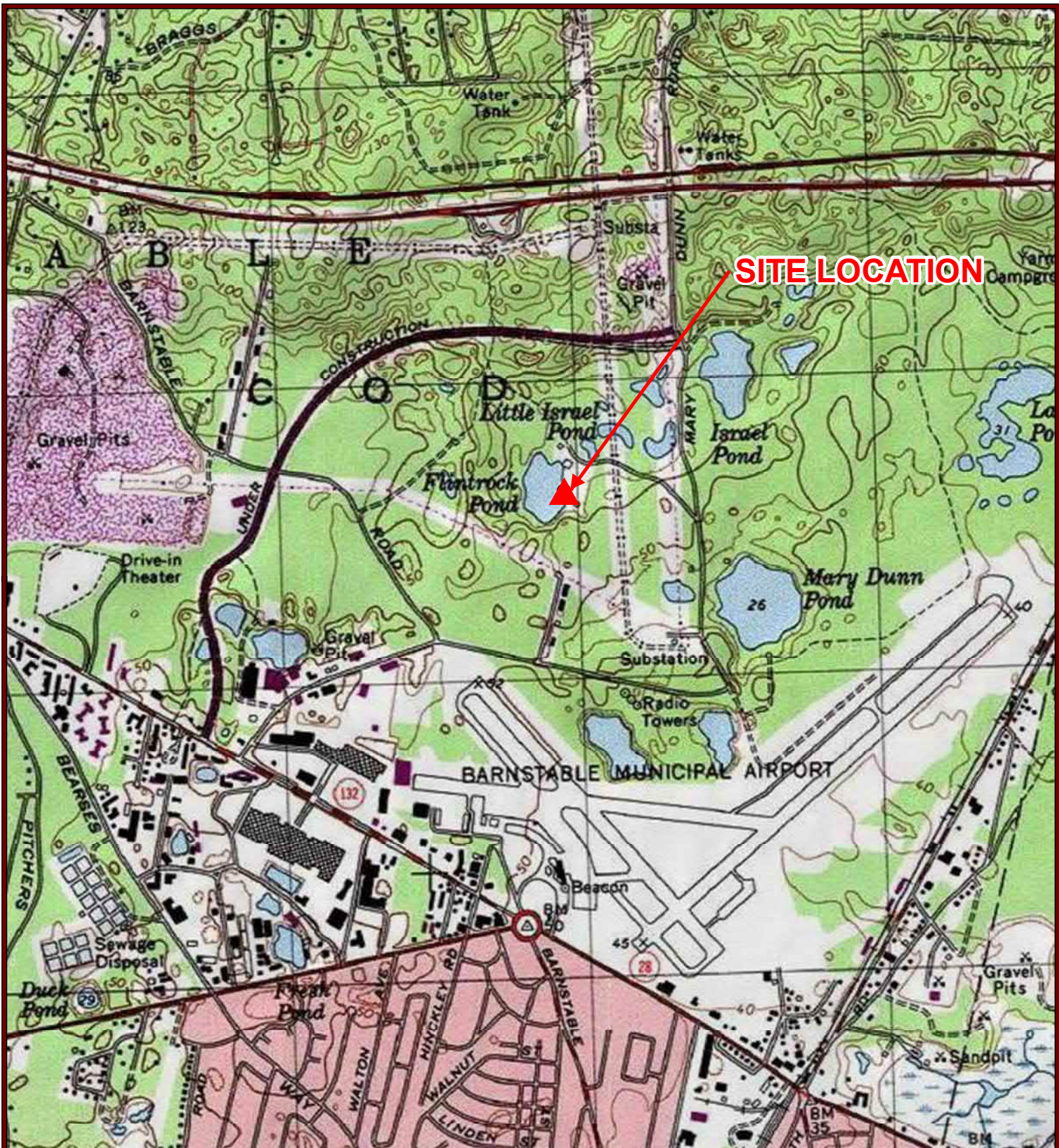


FIGURE 1 - SITE LOCATION

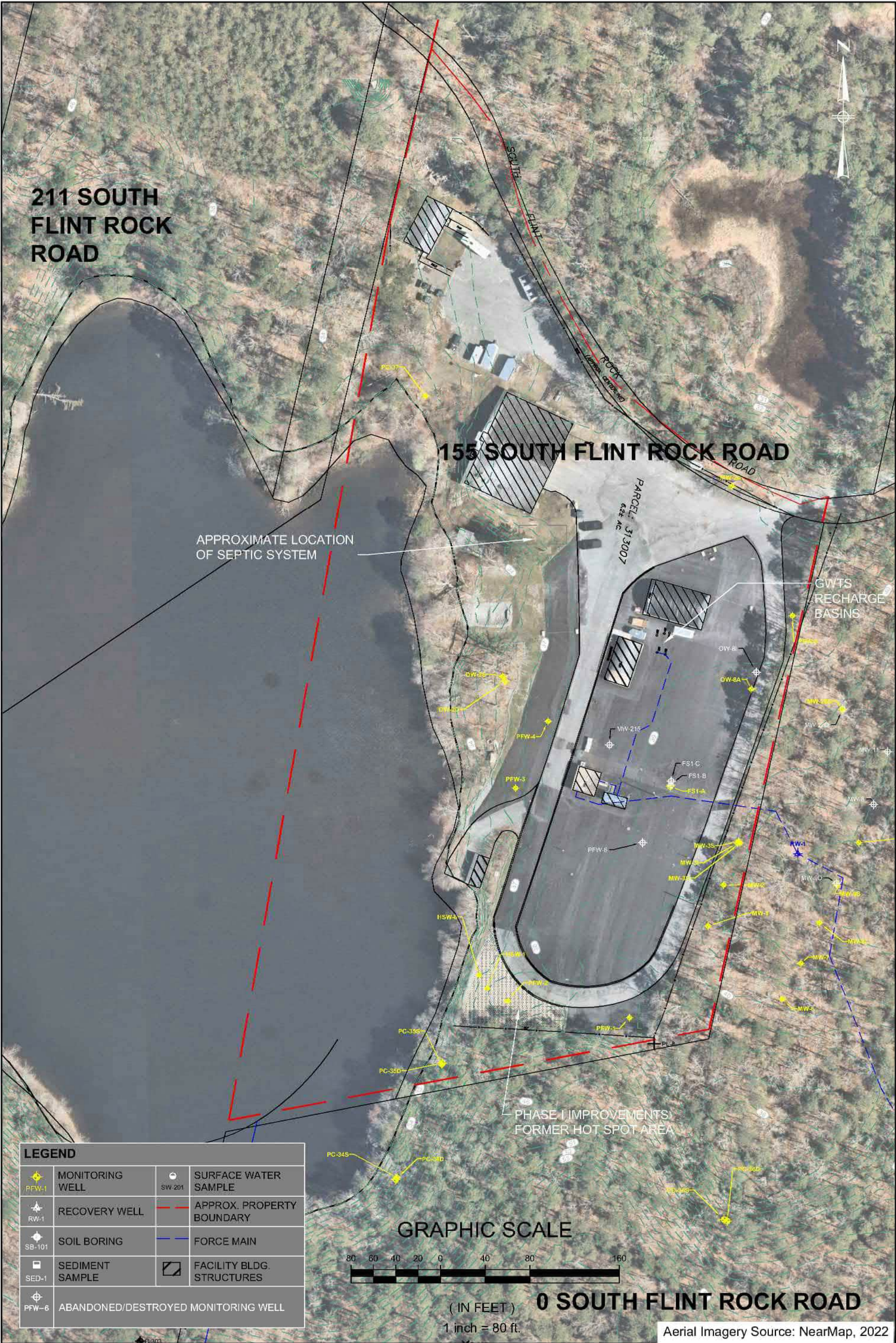
BARNSTABLE COUNTY
FIRE & RESCUE TRAINING ACADEMY SITE
155 S. FLINT ROCK ROAD
BARNSTABLE, MA 02630
RTN 4-26179

LATITUDE: 41°40'41.53"N
LONGITUDE: 70°17'7.82"W

0 500 1,000 2,000
Feet



Service Layer Credits: Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community
Copyright: © 2013 National Geographic Society, i-cubed



K:\6206 BARNSTABLE COUNTY\MCP LSP BASE SERVICES\DRAWINGFILES\GW CONTOUR\6206_EX_BASE_AW2.DWG

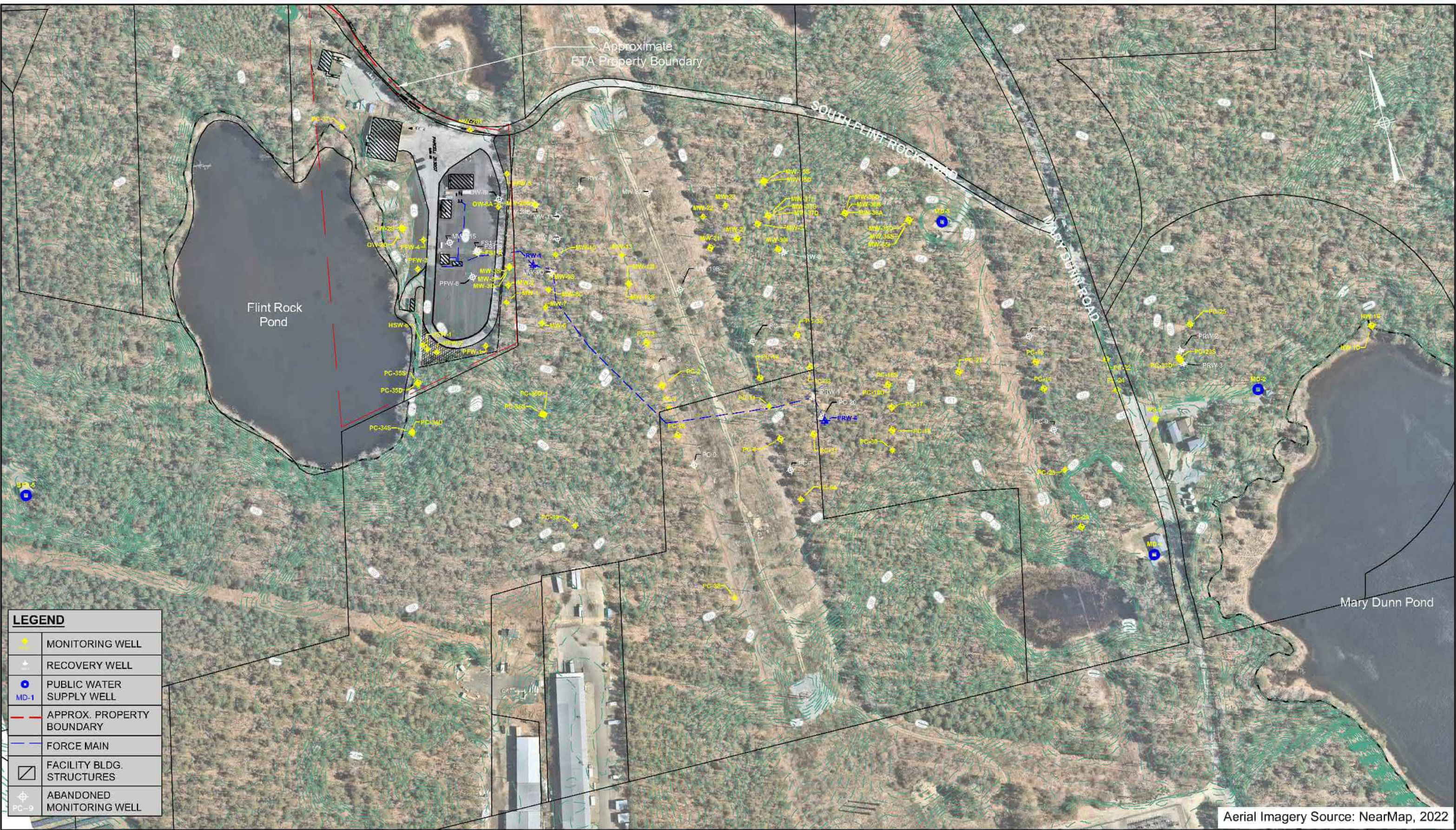
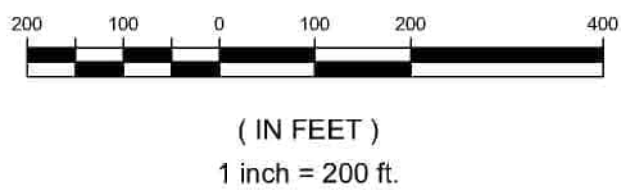


FIGURE 3 - SITE PLAN
Former Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA



MassDEP - Bureau of Waste Site Cleanup

Phase 1 Site Assessment Map: 500 feet & 0.5 Mile Radii

FIGURE 4

Site Information:

BARNSTABLE COUNTY FIRE & RESCUE TRAINING ACADEMY
155 SOUTH FLINT ROCK ROAD BARNSTABLE, MA
4-000026179

NAD83 UTM Meters:

4614868mN, 393038mE (Zone: 19)

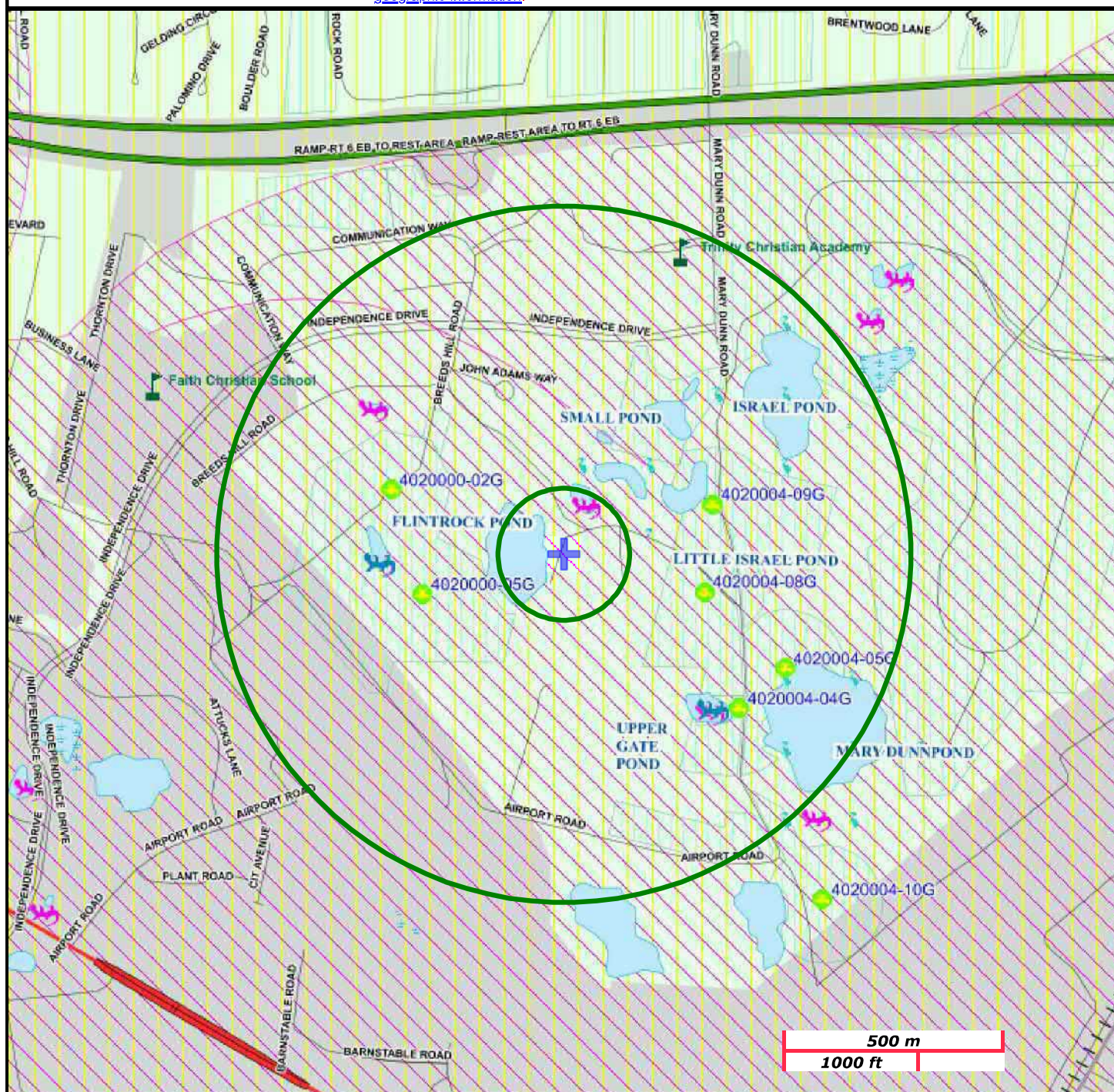
April 23, 2021

The information shown is the best available at the date of printing. However, it may be incomplete. The responsible party and LSP are ultimately responsible for ascertaining the true conditions surrounding the site. Metadata for data layers shown on this map can be found at:
<https://www.mass.gov/orgs/massgis-bureau-of-geographic-information>.



MassDEP

Commonwealth of Massachusetts
Department of Environmental Protection



Roads: Limited Access, Divided, Other Hwy, Major Road, Minor Road, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, PWS; Streams: Perennial, Intermittent, Man Made Shore, Dam

Aquifers: Medium Yield, High Yield, EPA Sole Source

Non Potential Drinking Water Source Area: Medium, High (Yield)

PWS Protection Areas: Zone II, IWPA, Zone A

Hydrography: Open Water, PWS Reservoir, Tidal Flat

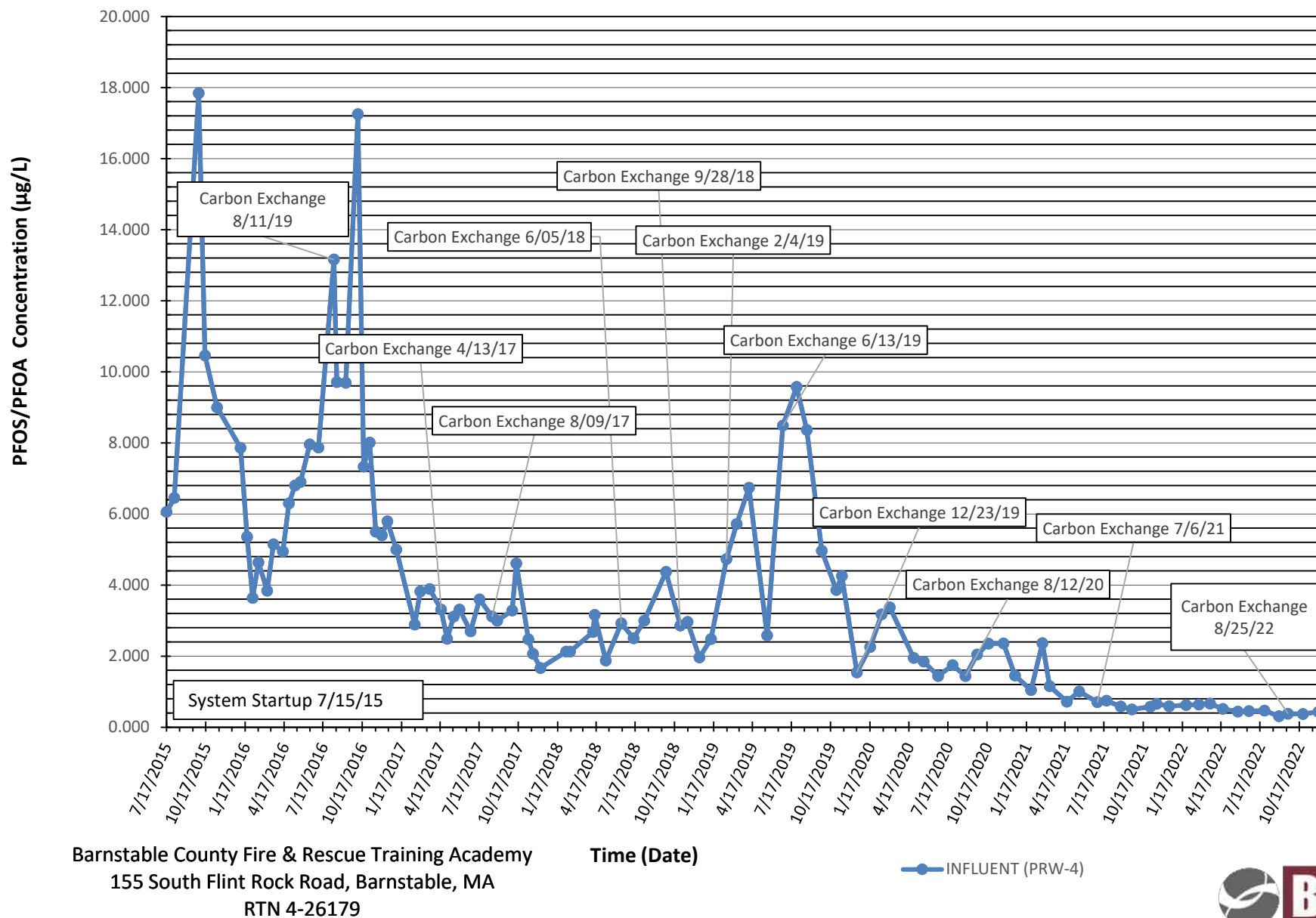
Wetlands: Freshwater, Saltwater, Cranberry Bog

FEMA 100yr Floodplain; Protected Open Space; ACEC

Est. Rare Wetland Wildlife Hab; Vernal Pool: Cert., Potential

Solid Waste Landfill; PWS: Com. GW, SW, Emerg., Non-Com.

Figure 5 - BFTA PRW-4/GWTS INFLUENT PFAS Concentrations

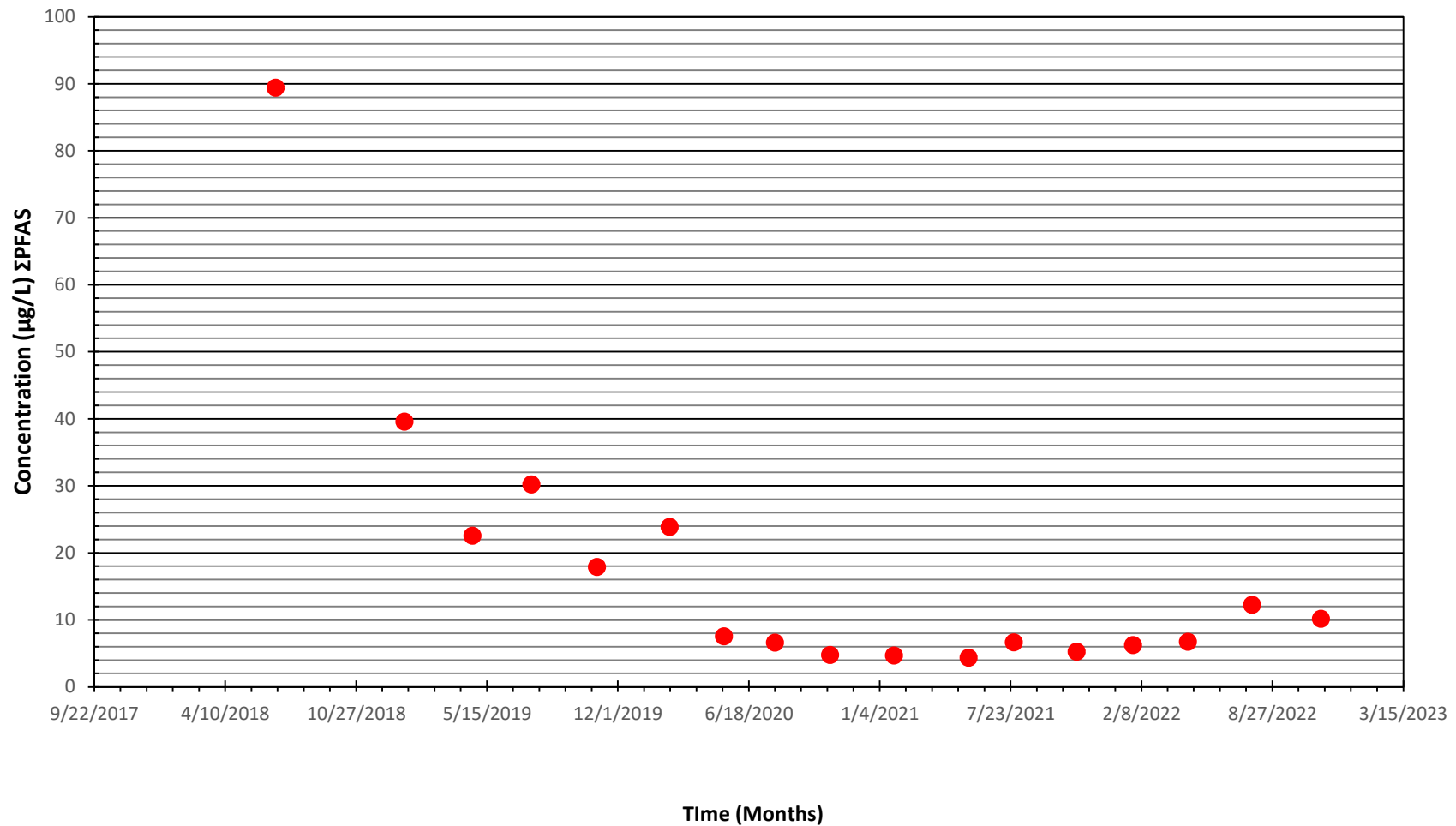


Notes:

1. Concentrations depicted represent the sum of the perfluorooctanesulfonic acid (PFOS) and the perfluorooctanic acid (PFOA) compounds in micrograms per liter (µg/L).



Figure 6 - ΣPFAS Concentrations in PFW-1 from June 2018 -November 2022



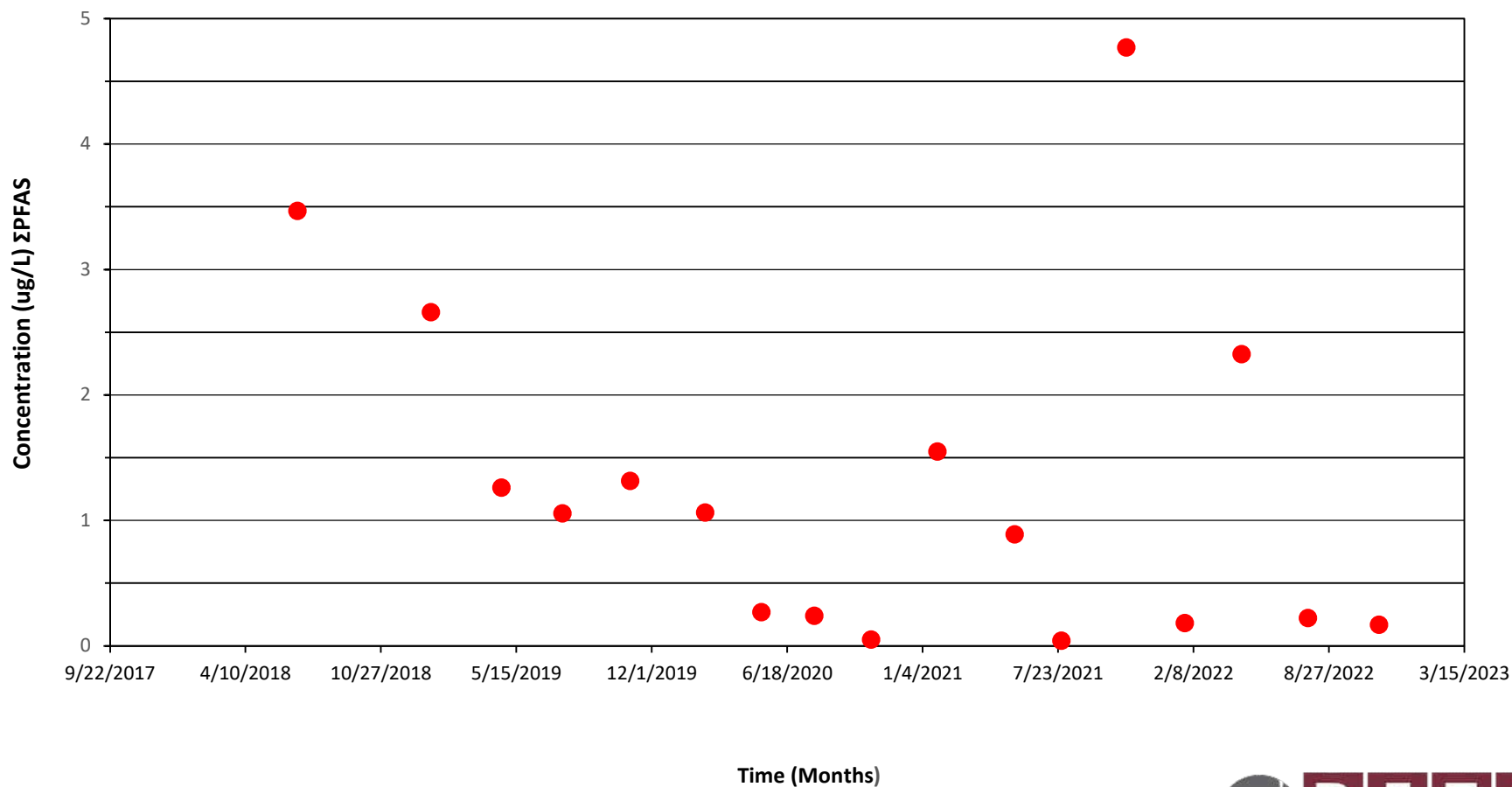
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179



Notes:

1. Concentrations depicted represent the sum of the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to current graphical date represent the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in micrograms per liter (µg/L) or parts per billion (ppb).

Figure 7 - ΣPFAS Concentrations in OW-8A from January 2019 - November 2022



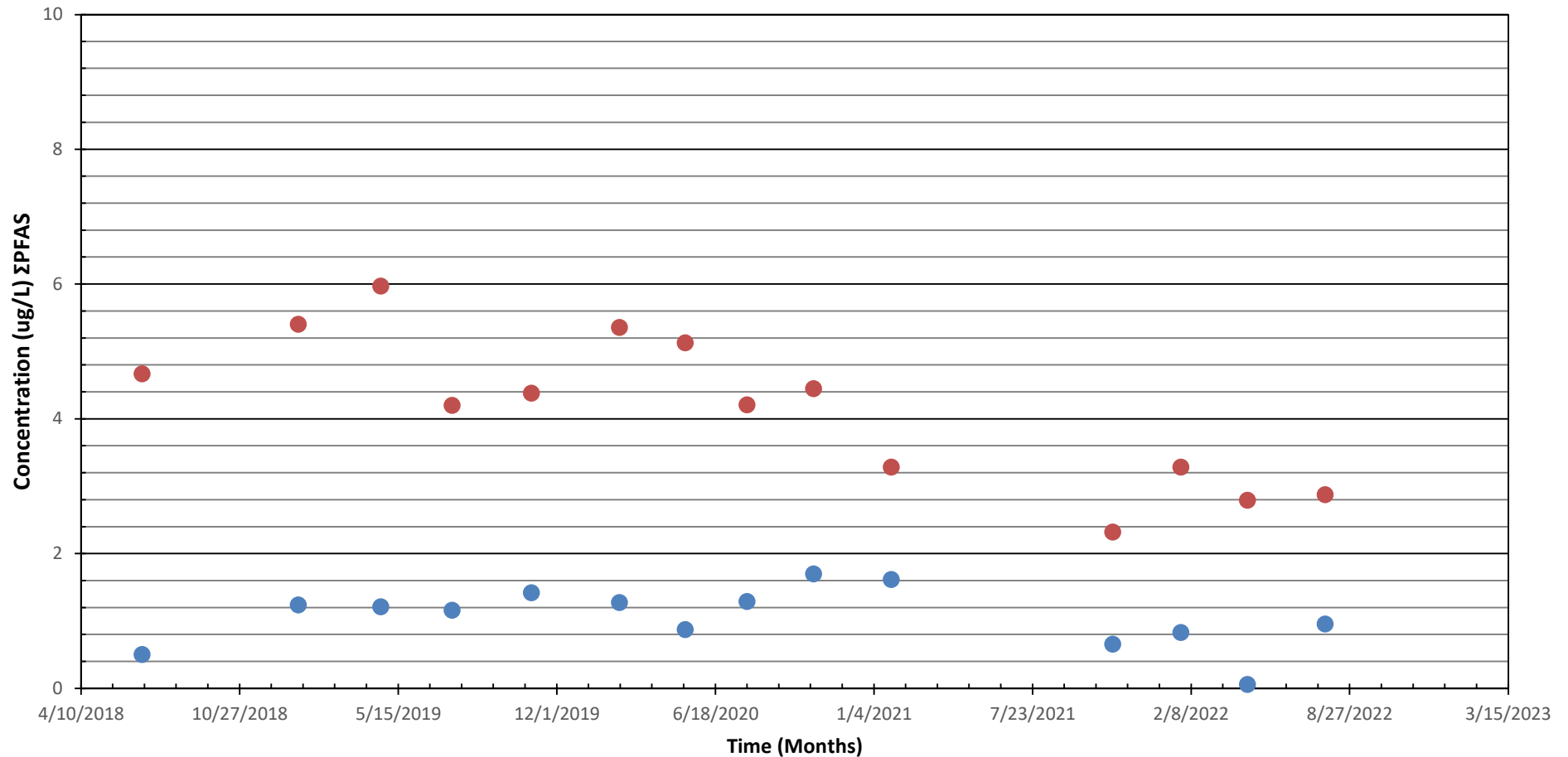
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179



Notes:

1. Concentrations depicted represent the sum of the the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to current graphical date represent the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in micrograms per liter (µg/L) or parts per billion (ppb) .

Figure 8 - ΣPFAS Concentrations in MW-12 and MW-22 from June 2018 - November 2022



Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179

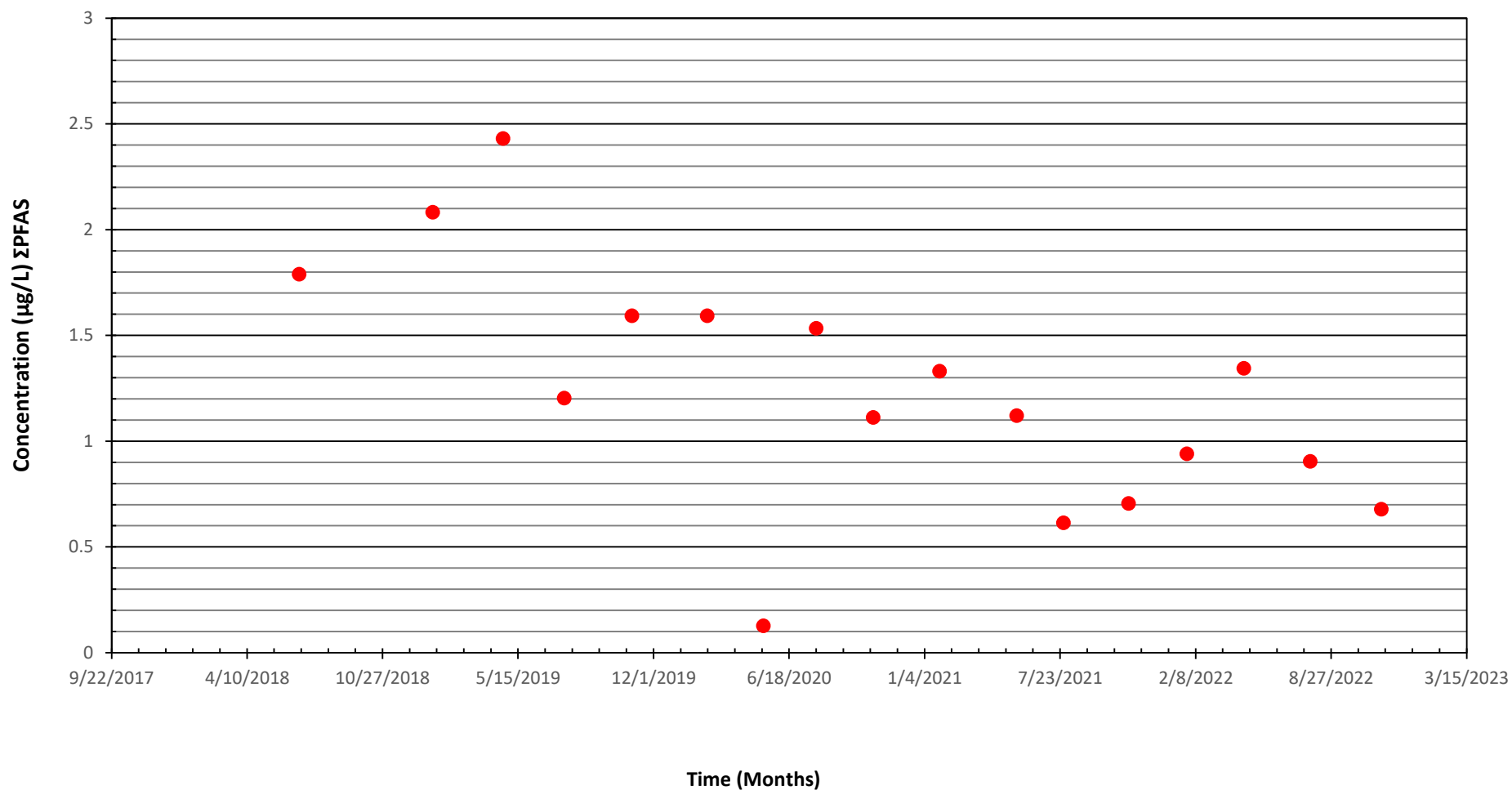
● MW-22 ● MW-12S



Notes:

1. Concentrations depicted represent the sum of the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to October 2019 represent the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in micrograms per liter (µg/L) or parts per billion (ppb).
3. Concentrations from May 2021 were not included due to sample naming issue and concentrations from July 2021 are not depicted because both wells were dry.

Figure 9A - ΣPFAS Concentrations in PC-6A from June 2018 - November 2022



Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179

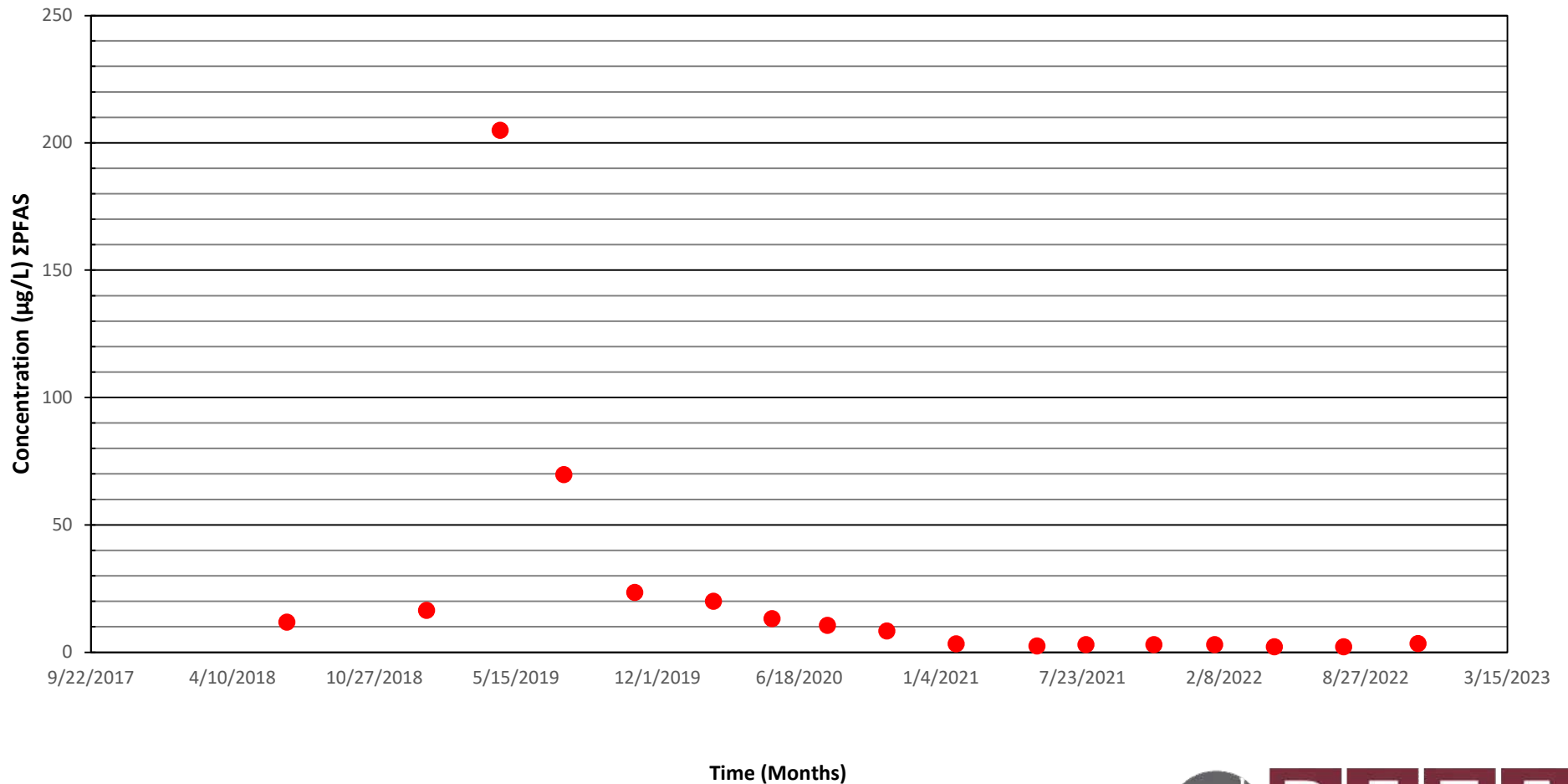
● PC-6A



Notes:

1. Concentrations depicted represent the sum of the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to October 2019 represent the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in micrograms per liter (µg/L) or parts per billion (ppb).

Figure 9B - ΣPFAS Concentrations in PC-11 from June 2018 - November 2022



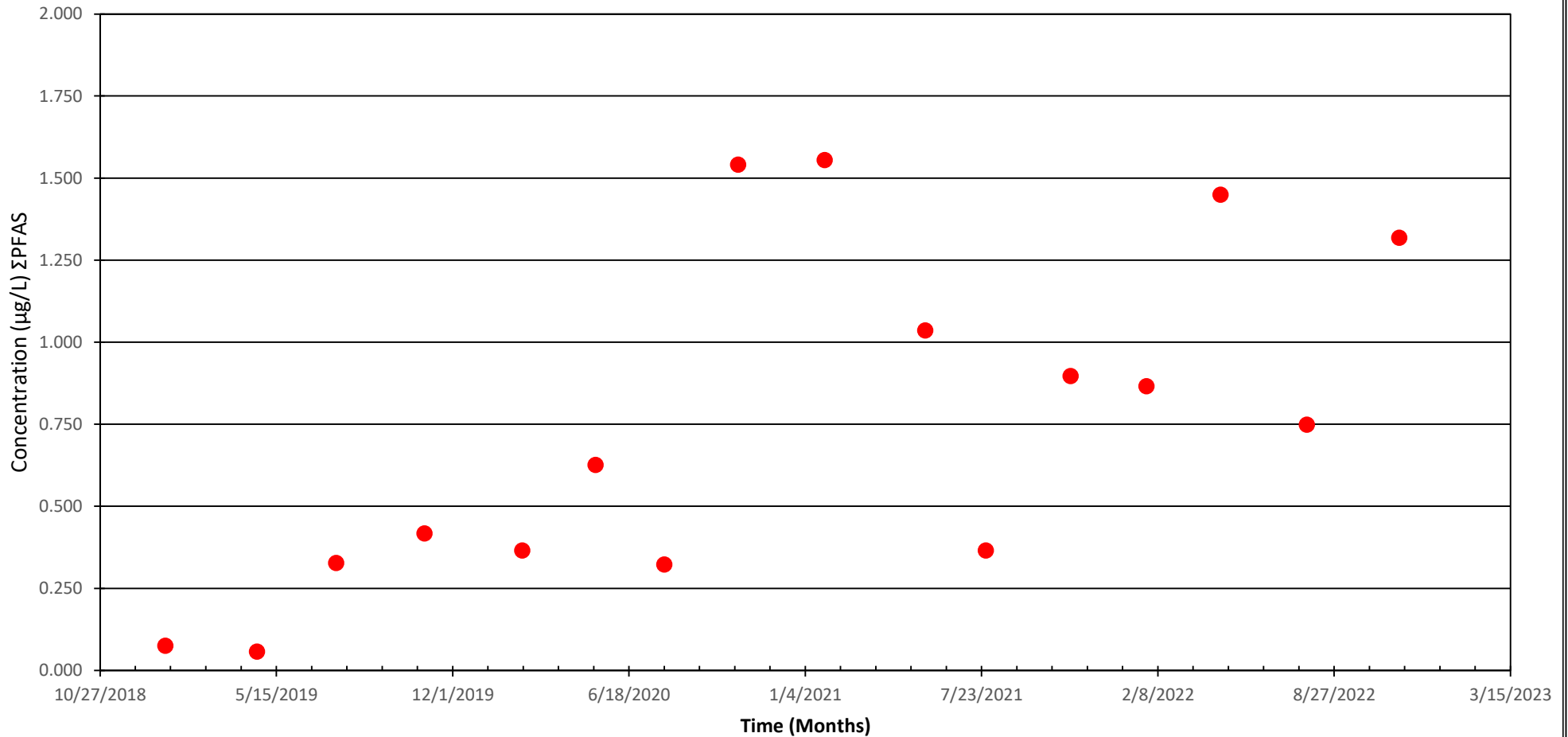
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179



Notes:

1. Concentrations depicted represent the sum of the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to October 2019 represent the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in micrograms per liter (µg/L) or parts per billion (ppb).

Figure 9C - ΣPFAS Concentrations in PC-28 from January 2019 - November 2022



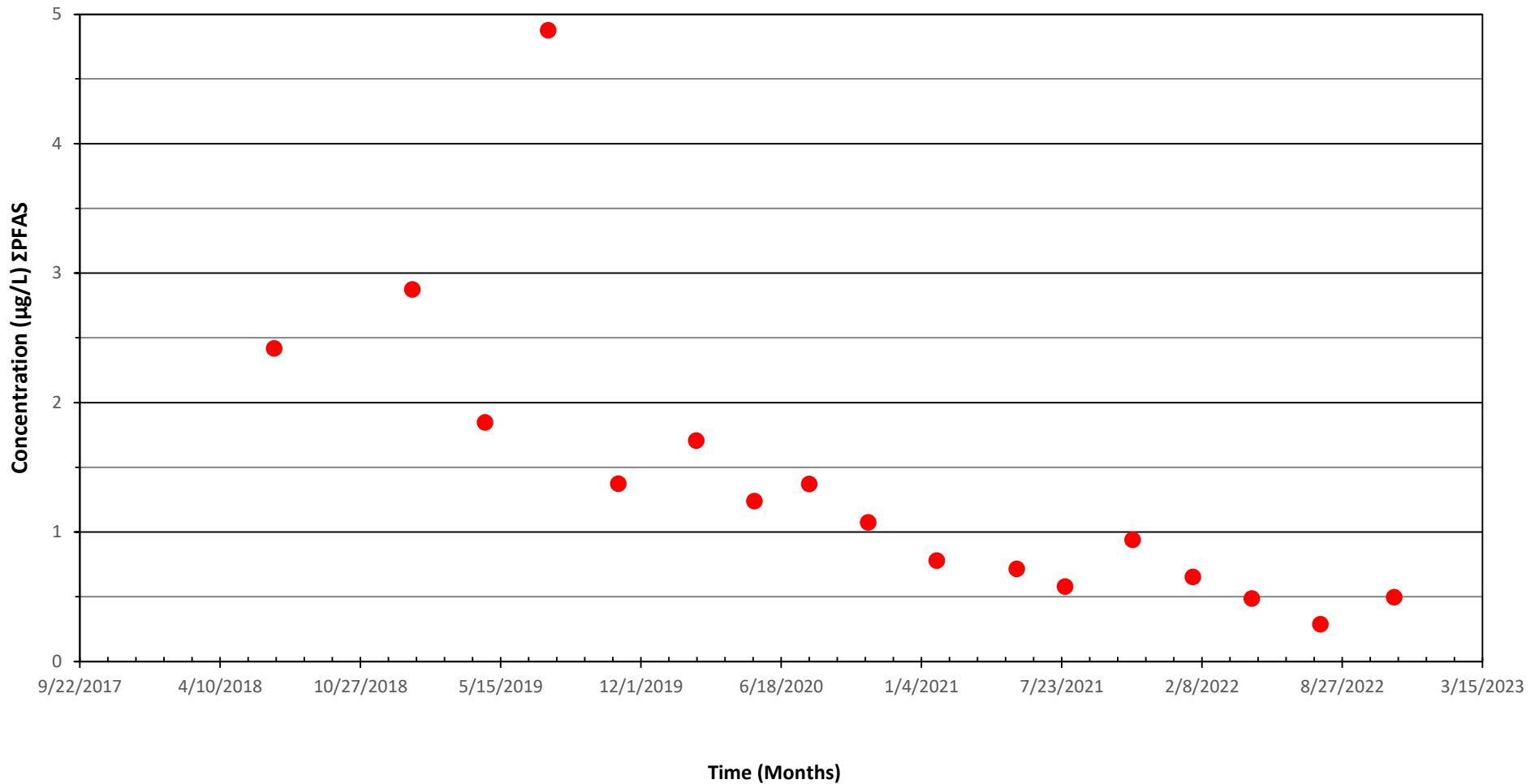
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179



Notes:

1. Concentrations depicted represent the sum of the the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to October 2019 represent the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in in micrograms per liter (µg/L) or parts per billion (ppb).

Figure 9D - ΣPFAS Concentrations in PC-30 from June 2018 - November 2022



Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA
RTN 4-26179

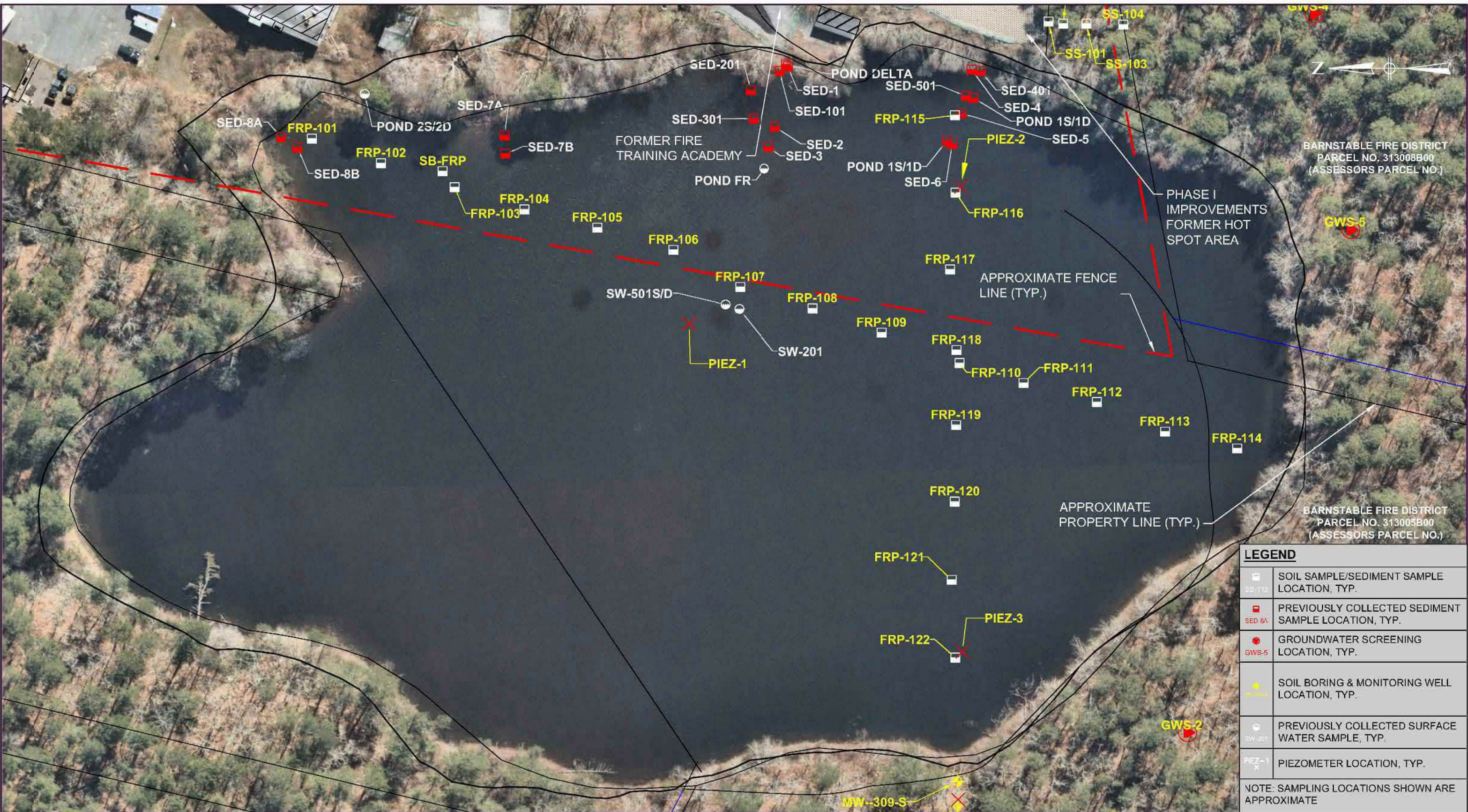
● PC-30



Notes:

1. Concentrations depicted represent the sum of the five (5) PFAS compounds, PFOS, PFOA, PFHpA, PFHxS, and PFNA from June 2018 to April 2019. Concentrations depicted from April 2019 to the graphically represented date are represented as the sum of the six (6) PFAS compounds PFOS, PFOA, PFHpA, PFHxS, PFNA, and PFDA.
2. Concentrations are in micrograms per liter (µg/L) or parts per billion (ppb).

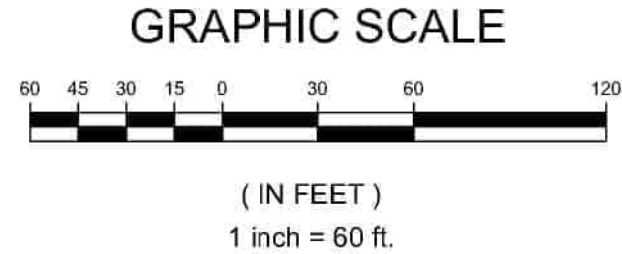
\\BETA-INC.COM\PROJECTS\BARNSTABLE COUNTY\MCP LSP BASE SERVICES\DRAWINGFILES\REFS\GW CONTOUR\0206_EX_BASE_AW3.DWG



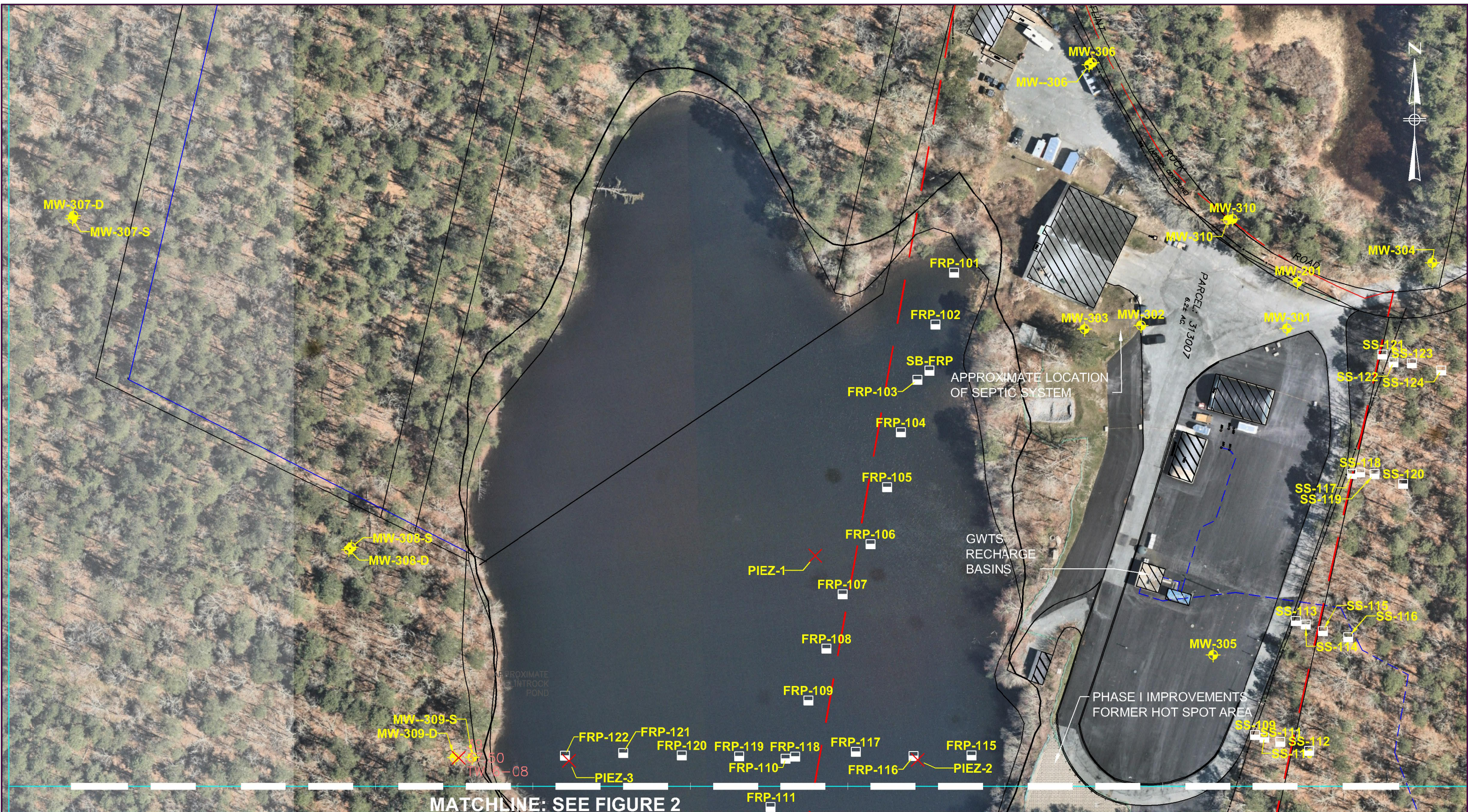
www.BETA-Inc.com

FIGURE 10
FLINTROCK POND SAMPLING LOCATIONS
Barnstable County Fire & Rescue Training Academy
155 South Flint Rock Road, Barnstable, MA

Plot Date: 02/06/2023 Drawn By: AW



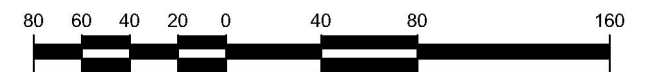
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www.BETA-Inc.com

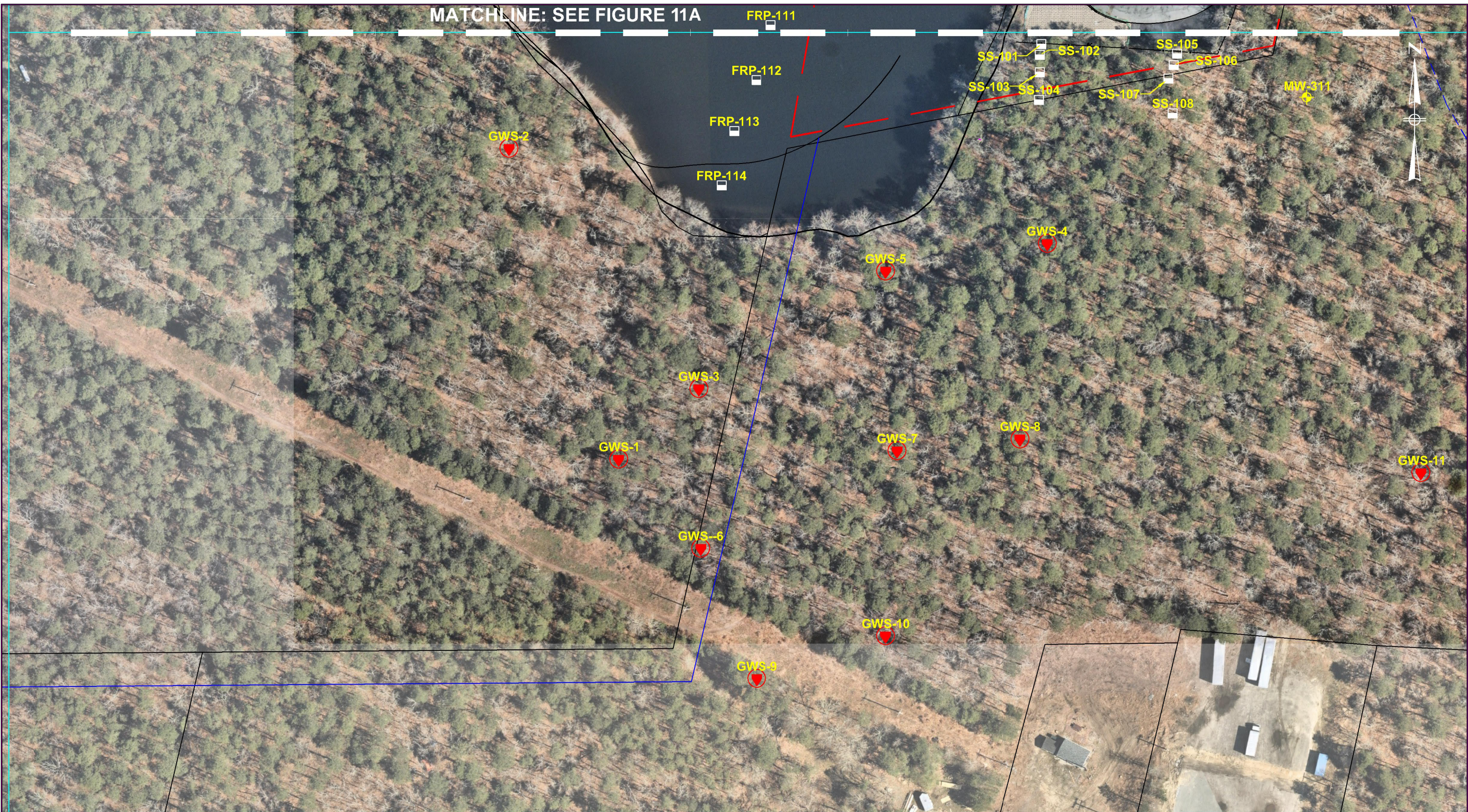
FIGURE 11A
PHASE II CSA SAMPLING LOCATIONS
Barnstable County Fire & Rescue Training Academy
Barnstable, MA
RTN 4-26179

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

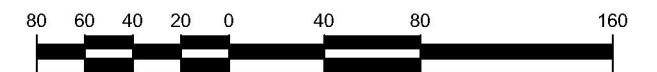
\\BETA-INC.COM\RUEN\SC16206 BARNSTABLE COUNTY\MCP LSP BASE SERVICES FMRLY 2018-2019 SERVICES\DRAWINGFILES\XREFS\GW CONTOUR\6206_EX_BASE_AW3.DWG



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FIGURE 11B
PHASE II CSA SAMPLING LOCATIONS
Barnstable County Fire & Rescue Training Academy
Barnstable, MA
RTN 4-26179

GRAPHIC SCALE



(IN FEET)
1 inch = 80 ft.

APPENDIX A

BWSC TRANSMITTAL FORM (UNSIGNED)



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

4 - 26179

A. SITE LOCATION:

1. Release Name/Location Aid: BARNSTABLE COUNTY FIRE TRAINING ACADEMY

2. Street Address: 155 SOUTH FLINT ROCK ROAD

3. City/Town: BARNSTABLE 4. Zip Code: 026300000

☐ 5. Check here if this location is Adequately Regulated, pursuant to 310 CMR 40.0110-0114.

☐ a. CERCLA

☐ b. HSWA Corrective Action

☐ c. Solid Waste Management

☐ d. RCRA State Program (21C Facilities)

B. THIS FORM IS BEING USED TO: (check all that apply)

1. List Submittal Date of Initial IRA Written Plan (if previously submitted): 9/26/2016

☐ 2. Submit an **Initial IRA Plan**.

☐ 3. Submit a **Modified IRA Plan** of a previously submitted written IRA Plan.

☐ 4. Submit an **Imminent Hazard Evaluation**. (check one)

☐ a. An Imminent Hazard exists in connection with this Release or Threat of Release.

☐ b. An Imminent Hazard does not exist in connection with this Release or Threat of Release.

☐ c. It is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release, and further assessment activities will be undertaken.

☐ d. It is unknown whether an Imminent Hazard exists in connection with this Release or Threat of Release. However, response actions will address those conditions that could pose an Imminent Hazard.

☐ 5. Submit a request to **Terminate an Active Remedial System or Response Action(s) Taken to Address an Imminent Hazard**.

☒ 6. Submit an **IRA Status Report**

☒ 7. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP.)

a. Type of Report: (check one) ☐ i. Initial Report ☒ ii. Interim Report ☐ iii. Final Report

b. Frequency of Submittal: (check all that apply)

☐ i. A Remedial Monitoring Report(s) submitted monthly to address an Imminent Hazard.

☐ ii. A Remedial Monitoring Report(s) submitted monthly to address a Condition of Substantial Release Migration.

☒ iii. A Remedial Monitoring Report(s) submitted every six months, concurrent with an IRA Status Report.

☐ iv. A Remedial Monitoring Report(s) submitted annually, concurrent with an IRA Status Report.

c. Number of Remedial Systems and/or Monitoring Programs: 2

A separate BWSC105A, IRA Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

Release Tracking Number

4

- 26179

☐ 8. Submit an **IRA Completion Statement**.

☐ a. Check here if future response actions addressing this Release or Threat of Release notification condition will be conducted as part of the Response Actions planned or ongoing at a Site that has already been Tier Classified under a different Release Tracking Number (RTN)

b. Provide Release Tracking Number of Tier Classified Site (Primary RTN): _____

These additional response actions must occur according to the deadlines applicable to the Primary RTN. Use the Primary RTN when making all future submittals for the site unless specifically relating to this Immediate Response Action.

☐ 9. Submit a **Revised IRA Completion Statement**.

☐ 10. Submit a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).

(All sections of this transmittal form must be filled out unless otherwise noted above)

C. RELEASE OR THREAT OF RELEASE CONDITIONS THAT WARRANT IRA:

1. Media Impacted and Receptors Affected: (check all that apply)

- | | | |
|--|--|---|
| <input type="checkbox"/> a. Paved Surface | <input type="checkbox"/> b. Basement | <input type="checkbox"/> c. School |
| <input checked="" type="checkbox"/> d. Public Water Supply | <input checked="" type="checkbox"/> e. Surface Water | <input checked="" type="checkbox"/> f. Zone 2 |
| <input type="checkbox"/> g. Private Well | <input type="checkbox"/> h. Residence | <input checked="" type="checkbox"/> i. Soil |
| <input checked="" type="checkbox"/> j. Groundwater | <input checked="" type="checkbox"/> k. Sediments | <input checked="" type="checkbox"/> l. Wetland |
| <input type="checkbox"/> m. Storm Drain | <input type="checkbox"/> n. Indoor Air | <input type="checkbox"/> o. Air |
| <input type="checkbox"/> p. Soil Gas | <input type="checkbox"/> q. Sub-Slab Soil Gas | <input type="checkbox"/> r. Critical Exposure Pathway |
| <input type="checkbox"/> s. NAPL | <input type="checkbox"/> t. Unknown | |
| <input type="checkbox"/> r. Others | Specify: _____ | |

2. Sources of the Release or TOR: (check all that apply)

- | | | |
|--|---|-----------------------------------|
| <input type="checkbox"/> a. Transformer | <input type="checkbox"/> b. Fuel Tank | <input type="checkbox"/> c. Pipe |
| <input type="checkbox"/> d. OHM Delivery | <input type="checkbox"/> e. AST | <input type="checkbox"/> f. Drums |
| <input type="checkbox"/> g. Tanker Truck | <input type="checkbox"/> h. Hose | <input type="checkbox"/> i. Line |
| <input type="checkbox"/> j. UST | Describe: _____ | |
| <input type="checkbox"/> k. Vehicle | <input type="checkbox"/> l. Boat/Vessel | |
| <input type="checkbox"/> m. Unknown | <input checked="" type="checkbox"/> n. Other: | FIRE FIGHTING FOAMS |

3. Type of Release or TOR: (check all that apply)

- | | | | |
|--|---|---|--------------------------------------|
| <input type="checkbox"/> a. Dumping | <input type="checkbox"/> b. Fire | <input type="checkbox"/> c. AST Removal | <input type="checkbox"/> d. Overfill |
| <input type="checkbox"/> e. Rupture | <input type="checkbox"/> f. Vehicle Accident | <input type="checkbox"/> g. Leak | <input type="checkbox"/> h. Spill |
| <input type="checkbox"/> i. Test failure | <input type="checkbox"/> j. TOR Only | | |
| <input type="checkbox"/> k. UST Removal | Describe: _____ | | |
| <input type="checkbox"/> l. Unknown | <input checked="" type="checkbox"/> m. Other: | HISTORIC FIRE TRAINING | |

4. Identify Oils and Hazardous Materials Released: (check all that apply)

- | | |
|--|--|
| <input type="checkbox"/> a. Oils | <input type="checkbox"/> b. Chlorinated Solvents |
| <input type="checkbox"/> c. Heavy Metals | <input checked="" type="checkbox"/> d. Others |
| Specify: PFAS | |

D. DESCRIPTION OF RESPONSE ACTIONS: (check all that apply, for volumes list cumulative amounts)

- | | |
|---|---|
| <input type="checkbox"/> 1. Assessment and/or Monitoring Only | <input checked="" type="checkbox"/> 2. Temporary Covers or Caps |
| <input type="checkbox"/> 3. Deployment of Absorbent or Containment Materials | <input type="checkbox"/> 4. Temporary Water Supplies |
| <input type="checkbox"/> 5. Structure Venting System/HVAC Modification System | <input type="checkbox"/> 6. Temporary Evacuation or Relocation of Residents |
| <input type="checkbox"/> 7. Product or NAPL Recovery | <input type="checkbox"/> 8. Fencing and Sign Posting |
| <input checked="" type="checkbox"/> 9. Groundwater Treatment Systems | <input type="checkbox"/> 10. Soil Vapor Extraction |
| <input type="checkbox"/> 11. Remedial Additives | <input type="checkbox"/> 12. Air Sparging |
| <input type="checkbox"/> 13. Active Exposure Pathway Mitigation System | <input type="checkbox"/> 14. Passive Exposure Pathway Mitigation System |



Massachusetts Department of Environmental Protection
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D. DESCRIPTION OF RESPONSE ACTIONS: (cont.)

☒ 15. Excavation of Contaminated Soils.

☐ a. Re-use, Recycling or Treatment

☐ i. On Site

Estimated volume in cubic yards

☐ ii. Off Site

Estimated volume in cubic yards

iiia. Receiving Facility: _____

Town: _____

State: _____

iiib. Receiving Facility: _____

Town: _____

State: _____

iiic. Describe: _____

☐ b. Store

☐ i. On Site

Estimated volume in cubic yards

☐ ii. Off Site

Estimated volume in cubic yards

iiia. Receiving Facility: _____

Town: _____

State: _____

iiib. Receiving Facility: _____

Town: _____

State: _____

☒ c. Landfill

☐ i. Cover

Estimated volume in cubic yards

Receiving Facility: _____

Town: _____

State: _____

☒ ii. Disposal

Estimated volume in cubic yards

200

Receiving Facility: _____

WASTE MANAGEMENT LANDFILL

Town: _____

TAUNTON

State: _____

MA

☐ 16. Removal of Drums, Tanks, or Containers:

a. Describe Quantity and Amount: _____

b. Receiving Facility: _____

Town: _____

State: _____

c. Receiving Facility: _____

Town: _____

State: _____

☒ 17. Removal of Other Contaminated Media:

a. Specify Type and Volume:

641 TONS- PFAS IMPACTED DEMOLITION DEBRIS AND SOIL - WAYNE DISPOSAL, MICHIGAN

☒ 18. Other Response Actions:

Describe:

CAPPED APPROX. 59,000 SF OF FTA - HOT MIX ASPHALT PAVEMENT, TEMP. CAP - 4,000 SF WITH MEMBRANE AND STONE COVER

☐ 19. Use of Innovative Technologies:

Describe: _____



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E. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B of this form indicates that an **Immediate Response Action Plan** is being submitted, the response action(s) that is(are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is(are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) complies(y) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that an **Imminent Hazard Evaluation** is being submitted, this Imminent Hazard Evaluation was developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and the assessment activity(ies) undertaken to support this Imminent Hazard Evaluation comply(ies) with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000;

> if Section B of this form indicates that an **Immediate Response Action Status Report** and/or a **Remedial Monitoring Report** is(are) being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B of this form indicates that an **Immediate Response Action Completion Statement** or a request to **Terminate an Active Remedial System or Response Action(s) Taken to Address an Imminent Hazard** is being submitted, the response action(s) that is(are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is(are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000 and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP #: 1443

2. First Name: ROGER P

3. Last Name: THIBAUT

4. Telephone: 508-331-2700

5. Ext:

6. Email:

7. Signature:

8. Date: (mm/dd/yyyy)

9. LSP Stamp:





Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

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F. PERSON UNDERTAKING IRA:

1. Check all that apply: ☒ a. change in contact name ☐ b. change of address ☐ c. change in the person undertaking response actions
2. Name of Organization: BARNSTABLE COUNTY COMMISSIONERS
3. Contact First Name: PAUL 4. Last Name: RUSZALA
5. Street: 3195 MAIN ST 6. Title: ASSETS & INFRASTRUCTURE MGR.
7. City/Town: BARNSTABLE 8. State: MA 9. Zip Code: 026301105
10. Telephone: 508-419-2860 11. Ext: 12. Email: paul.ruszala@capecod.gov

G. RELATIONSHIP TO RELEASE OR THREAT OF RELEASE OF PERSON UNDERTAKING IRA:

- ☐ Check here to change relationship
- ☒ 1. RP or PRP ☐ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter
- ☒ e. Other RP or PRP Specify Relationship: NON-SPECIFIED PRP
- ☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)
- ☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))
- ☐ 4. Any Other Person Undertaking Response Actions: Specify Relationship:

H. REQUIRED ATTACHMENT AND SUBMITTALS:

- ☐ 1. Check here if any Remediation Waste, generated as a result of this IRA, will be stored, treated, managed, recycled or reused at the site following submission of the IRA Completion Statement. If this box is checked, you must submit one of the following plans, along with the appropriate transmittal form.
- ☐ a. A Release Abatement Measure (RAM) Plan (BWSC106) ☐ b. Phase IV Remedy Implementation Plan (BWSC108)
- ☒ 2. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by MassDEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.
- ☒ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health were notified of the implementation of an Immediate Response Action taken to control, prevent, abate or eliminate an Imminent Hazard.
- ☐ 4. Check here to certify that the Chief Municipal Officer and the Local Board of Health were notified of the submittal of a Completion Statement for an Immediate Response Action taken to control, prevent, abate or eliminate an Imminent Hazard.
- ☐ 5. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to BWSC.eDEP@state.ma.us.
- ☒ 6. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

BWSC 105

Immediate Response Action (IRA) Transmittal Form

Pursuant to 310 CMR 40.0424 - 40.0427 (Subpart D)

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I. CERTIFICATION OF PERSON UNDERTAKING IRA:

1. I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form; (ii) that, based on my inquiry of the/those individual(s) immediately responsible for obtaining the information, the material information contained herein is, to the best of my knowledge, information and belief, true, accurate and complete; (iii) that, to the best of my knowledge, information and belief, I/the person(s) or entity(ies) on whose behalf this submittal is made satisfy(ies) the criteria in 310 CMR 40.0183(2); (iv) that I/the person(s) or entity(ies) on whose behalf this submittal is made have provided notice in accordance with 310 CMR 40.0183(5); and (v) that I am fully authorized to make this attestation on behalf of the person(s) or entity(ies) legally responsible for this submittal. I/the person(s) or entity(ies) on whose behalf this submittal is made is/are aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

2. By: _____ 3. Title: ASSETS & INFRASTRUCTURE MGR.
4. For: BARNSTABLE COUNTY COMMISSIONERS 5. Date: _____ (mm/dd/yyyy)

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section F.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. Zip Code: _____

11. Telephone: _____ 12. Ext: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY:)



Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Release Tracking Number

Remedial System or Monitoring Program:

1

of: 2

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A. DESCRIPTION OF ACTIVE OPERATION AND MAINTENANCE ACTIVITY:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

☒ a. Active Remedial System: (check all that apply)☐ i. NAPL Recovery☐ ii. Soil Vapor Extraction/Bioventing☐ iii. Vapor-phase Carbon Adsorption☒ iv. Groundwater Recovery☐ v. Dual/Multi-phase Extraction☒ vi. Aqueous-phase Carbon Adsorption☐ vii. Air Stripping☐ viii. Sparging/Biosparging☐ ix. Cat/Thermal Oxidation☐ x. Other Describe: _____☐ b. Active Exposure Pathway Elimination MeasureActive Exposure Pathway Mitigation System to address (check one): ☐ i. Indoor Air ☐ ii. Drinking Water☐ c. Application of Remedial Additives: (check all that apply)☐ i. To the Subsurface☐ ii. To Groundwater (Injection)☐ iii. To the Surface☐ d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)☐ i. Reactive Wall☐ ii. Natural Attenuation☐ iii. Other

Describe: _____

2. Mode of Operation: (check one)

☒ a. Continuous☐ b. Intermittent☐ c. Pulsed☐ d. One-time Event Only☐ e. Other: _____

3. System Effluent/Discharge: (check all that apply)

☐ a. Sanitary Sewer/POTW☒ b. Groundwater Re-infiltration/Re-injection: (check one)☐ i. Downgradient☒ ii. Upgradient☐ c. Vapor-phase Discharge to Ambient Air: (check one)☐ i. Off-gas Controls☐ ii. No Off-gas Controls☐ d. Drinking Water Supply☐ e. Surface Water (including Storm Drains)☐ f. Other Describe: _____**B. MONITORING FREQUENCY:**

1. Reporting period that is the subject of this submittal:

From: 7/1/2022

To: 12/31/2022

(mm/dd/yyyy)

(mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

☐ a. System Startup: (if applicable)☐ i. Days 1, 3, 6, and then weekly thereafter, for the first month.☐ ii. Other Describe: _____☒ b. Post-system Startup (after first month) or Monitoring Program:☒ i. Monthly☐ ii. Quarterly☐ iii. Annually☐ iv. Other Describe: _____☒ 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.**C. EFFLUENT/DISCHARGE REGULATION:** (check one to indicate how the effluent/discharge limits were established)☐ 1. NPDES: (check one)☐ a. Remediation General Permit☐ b. Individual Permit☐ c. Emergency Exclusion

Effective Date of Permit: _____

(mm/dd/yyyy)

☐ 2. MCP Performance Standard

MCP Citations(s): _____

☒ 3. DEP Approval Letter

Date of Letter: 11/16/2018

(mm/dd/yyyy)

☐ 4. Other Describe: _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: 1 of: 2

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D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

☒ 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.

a. Name: TJ MCGOFF

b. Grade: 4

c. License No: 15570

d. License Exp. Date: 12/31/2023

(mm/dd/yyyy)

☐ 2. Not Required

☐ 3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

☒ 1. The Active Remedial System was functional one or more days during the Reporting Period.

a. Days System was Fully Functional: 164

b. GW Recovered (gals): 3549313

c. NAPL Recovered (gals): 0

d. GW Discharged (gals): 3549313

e. Avg. Soil Gas Recovery Rate (scfm): 0

f. Avg. Sparging Rate (scfm): 0

☐ 2. Remedial Additives: (check all that apply)

☐ a. No Remedial Additives applied during the Reporting Period.

☐ b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Nitrogen/Phosphorus:

Name of Additive	Date	Quantity	Units

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

☐ iii. Microorganisms:

Name of Additive	Date	Quantity	Units

☐ iv. Other:

Name of Additive	Date	Quantity	Units

☐ c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Permanganates:

Name of Additive	Date	Quantity	Units

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

☐ iii. Persulfates:

Name of Additive	Date	Quantity	Units

☐ iv. Other:

Name of Additive	Date	Quantity	Units



IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: 1 of 2

Release Tracking Number

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E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)☐ d. Other additives applied: (total quantity applied at the site for the current reporting period)

Name of Additive	Date	Quantity	Units	Name of Additive	Date	Quantity	Units

☐ e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)**F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)**☒ 1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: 1 b. Total Number of Days of Unscheduled Shutdowns: 5

c. Reason(s) for Unscheduled Shutdowns: RECOVERY WELL PUMP RELAY FAILURE

☒ 2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Scheduled Shutdowns: 2 b. Total Number of Days of Scheduled Shutdowns: 15

c. Reason(s) for Scheduled Shutdowns: GAC CHANGEOUT, GAC VESSEL REPLACEMENT & WELL MAINT.& REPAIR

☐ 3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.a. Date of Final System or Monitoring Program Shutdown: _____
(mm/dd/yyyy)☐ b. No Further Effluent Discharges.☐ c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.☐ d. No Further Submittals Planned.☐ e. Other: Describe: _____**G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)**☒ 1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.☒ 2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.☒ 3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

THE GAC VESSELS REQUIRED FULL REPLACEMENT DUE TO CORROSION. REPLACEMENT WAS COORDINATED WITH

☐ 5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.



Massachusetts Department of Environmental Protection
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IRA REMEDIAL MONITORING REPORT
MEASUREMENTS

BWSC105 -B

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Remedial System or Monitoring Program:

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For each Point of Measurement, related to concentration indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

For each Point of Measurement for pressure differentials, indicate the lowest pressure differential detected during the reporting period.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)	Check here, if ND/BDL	Permissible Concentration or Pressure Differential	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge <input type="checkbox"/> Ground Water Concentration Pressure Differential				
SYSTEM	07/27/2022	PFAS 6	0.680	0.390		<input checked="" type="checkbox"/>	0.020	UG/L	YES
SYSTEM	08/30/2022	PFAS 6	0.469	0.000	0.001	<input type="checkbox"/>	0.020	UG/L	YES
SYSTEM	09/20/2022	PFAS 6	0.548	0.000		<input checked="" type="checkbox"/>	0.020	UG/L	YES
SYSTEM	10/25/2022	PFAS 6	0.555	0.000		<input checked="" type="checkbox"/>	0.020	UG/L	YES
SYSTEM	11/30/2022	PFAS 6	0.602	0.000		<input checked="" type="checkbox"/>	0.020	UG/L	YES
SYSTEM	12/22/2022	PFAS 6	0.710	0.008	0.008	<input type="checkbox"/>	0.020	UG/L	YES

☐ Check here if any additional BWSC105 B, Measurements Form(s), are needed.



Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Release Tracking Number

Remedial System or Monitoring Program: 2 of 2

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A. DESCRIPTION OF ACTIVE OPERATION AND MAINTENANCE ACTIVITY:

1. Type of Active Operation and Maintenance Activity: (check all that apply)

☒ a. Active Remedial System: (check all that apply)☐ i. NAPL Recovery☐ ii. Soil Vapor Extraction/Bioventing☐ iii. Vapor-phase Carbon Adsorption☒ iv. Groundwater Recovery☐ v. Dual/Multi-phase Extraction☒ vi. Aqueous-phase Carbon Adsorption☐ vii. Air Stripping☐ viii. Sparging/Biosparging☐ ix. Cat/Thermal Oxidation☐ x. Other Describe: _____☐ b. Active Exposure Pathway Elimination MeasureActive Exposure Pathway Mitigation System to address (check one): ☐ i. Indoor Air ☐ ii. Drinking Water☐ c. Application of Remedial Additives: (check all that apply)☐ i. To the Subsurface☐ ii. To Groundwater (Injection)☐ iii. To the Surface☐ d. Active Remedial Monitoring Program Without the Application of Remedial Additives: (check all that apply; Sections C, D and E are not required; attach supporting information, data, maps and/or sketches needed by checking Section G5)☐ i. Reactive Wall☐ ii. Natural Attenuation☐ iii. Other

Describe: _____

2. Mode of Operation: (check one)

☒ a. Continuous☐ b. Intermittent☐ c. Pulsed☐ d. One-time Event Only☐ e. Other: _____

3. System Effluent/Discharge: (check all that apply)

☐ a. Sanitary Sewer/POTW☒ b. Groundwater Re-infiltration/Re-injection: (check one)☐ i. Downgradient☒ ii. Upgradient☐ c. Vapor-phase Discharge to Ambient Air: (check one)☐ i. Off-gas Controls☐ ii. No Off-gas Controls☐ d. Drinking Water Supply☐ e. Surface Water (including Storm Drains)☐ f. Other Describe: _____**B. MONITORING FREQUENCY:**

1. Reporting period that is the subject of this submittal:

From: 7/1/2022

To: 12/31/2022

(mm/dd/yyyy)

(mm/dd/yyyy)

2. Number of monitoring events during the reporting period: (check one)

☐ a. System Startup: (if applicable)☐ i. Days 1, 3, 6, and then weekly thereafter, for the first month.☐ ii. Other Describe: _____☒ b. Post-system Startup (after first month) or Monitoring Program:☒ i. Monthly☐ ii. Quarterly☐ iii. Annually☐ iv. Other Describe: _____☒ 3. Check here to certify that the number of required monitoring events were conducted during the reporting period.**C. EFFLUENT/DISCHARGE REGULATION:** (check one to indicate how the effluent/discharge limits were established)☐ 1. NPDES: (check one)☐ a. Remediation General Permit☐ b. Individual Permit☐ c. Emergency Exclusion

Effective Date of Permit: _____

(mm/dd/yyyy)

☐ 2. MCP Performance Standard

MCP Citations(s): _____

☒ 3. DEP Approval Letter

Date of Letter: 11/18/2018

(mm/dd/yyyy)

☐ 4. Other Describe: _____



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup

IRA REMEDIAL MONITORING REPORT

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: 2 of: 2

BWSC105 -A

Release Tracking Number

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D. WASTEWATER TREATMENT PLANT OPERATOR: (check one)

☒ 1. Required due to Remedial Wastewater Treatment Plant in place for more than 30 days.

a. Name: TJ MCGOFF

b. Grade: 4

c. License No: 15570

d. License Exp. Date: 12/31/2023

(mm/dd/yyyy)

☐ 2. Not Required

☐ 3. Not Applicable

E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (check all that apply)

☒ 1. The Active Remedial System was functional one or more days during the Reporting Period.

a. Days System was Fully Functional: 79

b. GW Recovered (gals): 1499525

c. NAPL Recovered (gals): 0

d. GW Discharged (gals): 1499525

e. Avg. Soil Gas Recovery Rate (scfm): 0

f. Avg. Sparging Rate (scfm): 0

☐ 2. Remedial Additives: (check all that apply)

☐ a. No Remedial Additives applied during the Reporting Period.

☐ b. Enhanced Bioremediation Additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Nitrogen/Phosphorus:

Name of Additive	Date	Quantity	Units

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

☐ iii. Microorganisms:

Name of Additive	Date	Quantity	Units

☐ iv. Other:

Name of Additive	Date	Quantity	Units

☐ c. Chemical oxidation/reduction additives applied: (total quantity applied at the site for the current reporting period)

☐ i. Permanganates:

Name of Additive	Date	Quantity	Units

☐ ii. Peroxides:

Name of Additive	Date	Quantity	Units

☐ iii. Persulfates:

Name of Additive	Date	Quantity	Units

☐ iv. Other:

Name of Additive	Date	Quantity	Units



IRA REMEDIAL MONITORING REPORT

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Remedial System or Monitoring Program: 2 of 2

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E. STATUS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM DURING REPORTING PERIOD: (cont.)☐ d. Other additives applied: (total quantity applied at the site for the current reporting period)

Name of Additive	Date	Quantity	Units	Name of Additive	Date	Quantity	Units

☐ e. Check here if any additional Remedial Additives were applied. Attach list of additional additives and include Name of Additive, Date Applied, Quantity Applied and Units (in gals. or lbs.)**F. SHUTDOWNS OF ACTIVE REMEDIAL SYSTEM OR ACTIVE REMEDIAL MONITORING PROGRAM: (check all that apply)**☐ 1. The Active Remedial System had unscheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Unscheduled Shutdowns: _____ b. Total Number of Days of Unscheduled Shutdowns: _____

c. Reason(s) for Unscheduled Shutdowns: _____

☒ 2. The Active Remedial System had scheduled shutdowns on one or more occasions during the Reporting Period.

a. Number of Scheduled Shutdowns: 1 b. Total Number of Days of Scheduled Shutdowns: 105

c. Reason(s) for Scheduled Shutdowns: CONTRACTUAL DELAYS, GAC CHANGEOUT AND REPLACEMENT OF GAC VESSELS DUE TO D.

☐ 3. The Active Remedial System or Active Remedial Monitoring Program was permanently shutdown/discontinued during the Reporting Period.a. Date of Final System or Monitoring Program Shutdown: _____
(mm/dd/yyyy)☐ b. No Further Effluent Discharges.☐ c. No Further Application of Remedial Additives planned; sufficient monitoring completed to demonstrate compliance with 310 CMR 40.0046.☐ d. No Further Submittals Planned.☐ e. Other: Describe: _____**G. SUMMARY STATEMENTS: (check all that apply for the current reporting period)**☒ 1. All Active Remedial System checks and effluent analyses required by the approved plan and/or permit were performed when applicable.☐ 2. There were no significant problems or prolonged (>25% of reporting period) unscheduled shutdowns of the Active Remedial System.☒ 3. The Active Remedial System or Active Remedial Monitoring Program operated in conformance with the MCP, and all applicable approval conditions and/or permits.

4. Indicate any Operational Problems or Notes:

PFAS BREAKTHROUGH (PRIOR PERIOD) REQUIRED SHUTDOWN. CONTRACTUAL DELAYS PREVENTED TIMELY GAC

☐ 5. Check here if additional/supporting Information, data, maps, and/or sketches are attached to the form.



Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
IRA REMEDIAL MONITORING REPORT
MEASUREMENTS

BWSC105 -B

Pursuant to 310 CMR 40.0400 (SUBPART D)

Remedial System or Monitoring Program: of:

Release Tracking Number

For each Point of Measurement, related to concentration indicate the highest concentration detected during the reporting period, of each oil, hazardous material and/or remedial additive.

For each Point of Measurement for pressure differentials, indicate the lowest pressure differential detected during the reporting period.

Point of Measurement	Date (mm/dd/yyyy)	Contaminant, Measurement and/or Indicator Parameter	Influent Concentration (where applicable)	Midpoint Concentration (where applicable)	(check one)	Check here, if ND/BDL	Permissible Concentration or Pressure Differential	Units	Within Permissible Limits? (Y/N)
					<input checked="" type="checkbox"/> Discharge <input type="checkbox"/> Ground Water Concentration Pressure Differential				
SYSTEM	10/25/2022	PFAS 6	0.555	0.000		<input checked="" type="checkbox"/>	0.020	UG/L	YES
SYSTEM	11/30/2022	PFAS 6	0.602	0.000		<input checked="" type="checkbox"/>	0.020	UG/L	YES
SYSTEM	12/22/2022	PFAS 6	0.710	0.011		<input checked="" type="checkbox"/>	0.020	UG/L	YES

☐ Check here if any additional BWSC105 B, Measurements Form(s), are needed.



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Release Tracking Number

4

26179

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

A. SITE LOCATION:

1. Site Name: BARNSTABLE COUNTY FIRE TRAINING ACADEMY

2. Street Address: 155 SOUTH FLINT ROCK ROAD

3. City/Town: BARNSTABLE 4. ZIP Code: 026300000

☒ 5. Check here if the disposal site that is the source of the release is Tier Classified. Check the current Tier Classification Category:

☒ a. Tier I ☐ b. Tier ID ☐ c. Tier II

B. THIS FORM IS BEING USED TO: (check all that apply)

- ☐ 1. Submit a **Phase I Completion Statement**, pursuant to 310 CMR 40.0484.
- ☐ 2. Submit a **Revised Phase I Completion Statement**, pursuant to 310 CMR 40.0484.
- ☐ 3. Submit a **Phase II Scope of Work**, pursuant to 310 CMR 40.0834.
- ☒ 4. Submit an **interim Phase II Report**. This report does not satisfy the response action deadline requirements in 310 CMR 40.0500.
- ☐ 5. Submit a **final Phase II Report and Completion Statement**, pursuant to 310 CMR 40.0836.
- ☐ 6. Submit a **Revised Phase II Report and Completion Statement**, pursuant to 310 CMR 40.0836.
- ☐ 7. Submit a **Phase III Remedial Action Plan and Completion Statement**, pursuant to 310 CMR 40.0862.
- ☐ 8. Submit a **Revised Phase III Remedial Action Plan and Completion Statement**, pursuant to 310 CMR 40.0862.
- ☐ 9. Submit a **Phase IV Remedy Implementation Plan**, pursuant to 310 CMR 40.0874.
- ☐ 10. Submit a **Modified Phase IV Remedy Implementation Plan**, pursuant to 310 CMR 40.0874.
- ☐ 11. Submit an **As-Built Construction Report**, pursuant to 310 CMR 40.0875.
- ☐ 12. Submit a **Phase IV Status Report**, pursuant to 310 CMR 40.0877.
- ☐ 13. Submit a **Phase IV Completion Statement**, pursuant to 310 CMR 40.0878 and 40.0879.

Specify the outcome of Phase IV activities: (check one)

- ☐ a. Phase V Operation, Maintenance or Monitoring of the Comprehensive Remedial Action is necessary to achieve a Permanent or Temporary Solution.
- ☐ b. The requirements of a Permanent Solution have been met. A completed Permanent Solution Statement and Report (BWSC104) will be submitted to DEP.
- ☐ c. The requirements of a Temporary Solution have been met. A completed Temporary Solution Statement and Report (BWSC104) will be submitted to DEP.



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

Release Tracking Number

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B. THIS FORM IS BEING USED TO (cont.): (check all that apply)

- ☐ 14. Submit a **Revised Phase IV Completion Statement**, pursuant to 310 CMR 40.0878 and 40.0879.
- ☐ 15. Submit a **Phase V Status Report**, pursuant to 310 CMR 40.0892.
- ☐ 16. Submit a **Remedial Monitoring Report**. (This report can only be submitted through eDEP.)
- a. Type of Report: (check one) ☐ i. Initial Report ☐ ii. Interim Report ☐ iii. Final Report
- b. Frequency of Submittal: (check all that apply)
- ☐ i. A Remedial Monitoring Report(s) submitted monthly to address an Imminent Hazard.
- ☐ ii. A Remedial Monitoring Report(s) submitted monthly to address a Condition of Substantial Release Migration.
- ☐ iii. A Remedial Monitoring Report(s) submitted every six months, concurrent with a Status Report.
- ☐ iv. A Remedial Monitoring Report(s) submitted annually, concurrent with a Status Report.
- c. Status of Site: (check one) ☐ i. Phase IV ☐ ii. Phase V ☐ iii. Remedy Operation Status ☐ iv. Temporary Solution
- d. Number of Remedial Systems and/or Monitoring Programs: _____
- A separate BWSC108A, CRA Remedial Monitoring Report, must be filled out for each Remedial System and/or Monitoring Program addressed by this transmittal form.
- ☐ 17. Submit a **Remedy Operation Status**, pursuant to 310 CMR 40.0893.
- ☐ 18. Submit a **Status Report to maintain a Remedy Operation Status**, pursuant to 310 CMR 40.0893(2).
- ☐ 19. Submit a **Transfer and/or a Modification of Persons Maintaining a Remedy Operation Status (ROS)**, pursuant to 310 CMR 40.0893(5) (check one, or both, if applicable).
- ☐ a. Submit a Transfer of Persons Maintaining an ROS (the transferee should be the person listed in Section D, "Person Undertaking Response Actions").
- ☐ b. Submit a Modification of Persons Maintaining an ROS (the primary representative should be the person listed in Section D, "Person Undertaking Response Actions").
- c. Number of Persons Maintaining an ROS not including the primary representative: _____
- ☐ 20. Submit a **Termination of a Remedy Operation Status**, pursuant to 310 CMR 40.0893(6).(check one)
- ☐ a. Submit a notice indicating ROS performance standards have not been met. A plan and timetable pursuant to 310 CMR 40.0893(6)(b) for resuming the ROS are attached.
- ☐ b. Submit a notice of Termination of ROS.
- ☐ 21. Submit a **Phase V Completion Statement**, pursuant to 310 CMR 40.0894.
- Specify the outcome of Phase V activities: (check one)
- ☐ a. The requirements of a Permanent Solution have been met. A completed Permanent Solution Statement and Report (BWSC104) will be submitted to DEP.
- ☐ b. The requirements for a Temporary Solution have been met. A completed Temporary Solution Statement and Report (BWSC104) will be submitted to DEP.
- ☐ 22. Submit a **Revised Phase V Completion Statement**, pursuant to 310 CMR 40.0894.
- ☐ 23. Submit a **Temporary Solution Status Report**, pursuant to 310 CMR 40.0898.
- ☐ 24. Submit a **Plan for the Application of Remedial Additives** near a sensitive receptor, pursuant to 310 CMR 40.0046(3).
- a. Status of Site: (check one)
- ☐ i. Phase IV ☐ ii. Phase V ☐ iii. Remedy Operation Status ☐ iv. Temporary Solution



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

Release Tracking Number

4 - 26179

C. LSP SIGNATURE AND STAMP:

I attest under the pains and penalties of perjury that I have personally examined and am familiar with this transmittal form, including any and all documents accompanying this submittal. In my professional opinion and judgment based upon application of (i) the standard of care in 309 CMR 4.02(1), (ii) the applicable provisions of 309 CMR 4.02(2) and (3), and 309 CMR 4.03(2), and (iii) the provisions of 309 CMR 4.03(3), to the best of my knowledge, information and belief,

> if Section B indicates that a **Phase I, Phase II, Phase III, Phase IV or Phase V Completion Statement** and/or a **Termination of a Remedy Operation Status** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed and implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that a **Phase II Scope of Work** or a **Phase IV Remedy Implementation Plan** is being submitted, the response action(s) that is (are) the subject of this submittal (i) has (have) been developed in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal;

> if Section B indicates that an **As-Built Construction Report**, a **Remedy Operation Status**, a **Phase IV, Phase V or Temporary Solution Status Report**, a **Status Report to Maintain a Remedy Operation Status**, a **Transfer or Modification of Persons Maintaining a Remedy Operation Status** and/or a **Remedial Monitoring Report** is being submitted, the response action(s) that is (are) the subject of this submittal (i) is (are) being implemented in accordance with the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, (ii) is (are) appropriate and reasonable to accomplish the purposes of such response action(s) as set forth in the applicable provisions of M.G.L. c. 21E and 310 CMR 40.0000, and (iii) comply(ies) with the identified provisions of all orders, permits, and approvals identified in this submittal.

I am aware that significant penalties may result, including, but not limited to, possible fines and imprisonment, if I submit information which I know to be false, inaccurate or materially incomplete.

1. LSP#: 1443

2. First Name: ROGER P

3. Last Name: THIBAUT

4. Telephone: 5083312700

5. Ext.:

6. Email:

7. Signature:

8. Date:

(mm/dd/yyyy)

9. LSP Stamp:





**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

Release Tracking Number

4 - 26179

D. PERSON UNDERTAKING RESPONSE ACTIONS:

1. Check all that apply: ☒ a. change in contact name ☐ b. change of address ☐ c. change in the person undertaking response actions
2. Name of Organization: BARNSTABLE COUNTY COMMISSIONERS
3. Contact First Name: PAUL 4. Last Name: RUSZALA
5. Street: 3195 MAIN ST 6. Title: ASSETS & INFRASTRUCTURE MGR.
7. City/Town: BARNSTABLE 8. State: MA 9. ZIP Code: 026301105
10. Telephone: 5084192860 11. Ext: 12. Email: paul.ruszala@capecod.gov

E. RELATIONSHIP TO SITE OF PERSON UNDERTAKING RESPONSE ACTIONS: ☐ Check here to change relationship

- ☒ 1. RP or PRP ☐ a. Owner ☐ b. Operator ☐ c. Generator ☐ d. Transporter
- ☒ e. Other RP or PRP Specify: NON-SPECIFIED PRP

☐ 2. Fiduciary, Secured Lender or Municipality with Exempt Status (as defined by M.G.L. c. 21E, s. 2)

☐ 3. Agency or Public Utility on a Right of Way (as defined by M.G.L. c. 21E, s. 5(j))

☐ 4. Any Other Person Undertaking Response Actions Specify Relationship:

F. REQUIRED ATTACHMENT AND SUBMITTALS:

- ☒ 1. Check here if the Response Action(s) on which this opinion is based, if any, are (were) subject to any order(s), permit(s) and/or approval(s) issued by DEP or EPA. If the box is checked, you MUST attach a statement identifying the applicable provisions thereof.
- ☒ 2. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the submittal of any Phase Reports to DEP.
- ☐ 3. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the availability of a Phase III Remedial Action Plan.
- ☐ 4. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of the availability of a Phase IV Remedy Implementation Plan.
- ☐ 5. Check here to certify that the Chief Municipal Officer and the Local Board of Health have been notified of any field work involving the implementation of a Phase IV Remedial Action.
- ☐ 6. If submitting a Transfer of a Remedy Operation Status (as per 310 CMR 40.0893(5)), check here to certify that a statement detailing the compliance history for the person making this submittal (transferee) is attached.
- ☐ 7. If submitting a Modification of a Remedy Operation Status (as per 310 CMR 40.0893(5)), check here to certify that a statement detailing the compliance history for each new person making this submittal is attached.
- ☐ 8. Check here if any non-updatable information provided on this form is incorrect, e.g. Release Address/Location Aid. Send corrections to: BWSC.eDEP@state.ma.us.
- ☒ 9. Check here to certify that the LSP Opinion containing the material facts, data, and other information is attached.



**COMPREHENSIVE RESPONSE ACTION TRANSMITTAL
FORM & PHASE I COMPLETION STATEMENT**

Pursuant to 310 CMR 40.0484 (Subpart D) and 40.0800 (Subpart H)

Release Tracking Number

4 - 26179

G. CERTIFICATION OF PERSON UNDERTAKING RESPONSE ACTIONS:

1. I, _____, attest under the pains and penalties of perjury (i) that I have personally examined and am familiar with the information contained in this submittal, including any and all documents accompanying this transmittal form, (ii) that, based on my inquiry of those individuals immediately responsible for obtaining the information, the material information contained in this submittal is, to the best of my knowledge and belief, true, accurate and complete, and (iii) that I am fully authorized to make this attestation on behalf of the entity legally responsible for this submittal. I/the person or entity on whose behalf this submittal is made am/is aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate, or incomplete information.

>if Section B indicates that this is a **Modification of a Remedy Operation Status (ROS)**, I attest under the pains and penalties of perjury that I am fully authorized to act on behalf of all persons performing response actions under the ROS as stated in 310 CMR 40.0893(5)(d) to receive oral and written correspondence from MassDEP with respect to performance of response actions under the ROS, and to receive a statement of fee amount as per 4.03(3).

I understand that any material received by the Primary Representative from MassDEP shall be deemed received by all the persons performing response actions under the ROS, and I am aware that there are significant penalties, including, but not limited to, possible fines and imprisonment, for willfully submitting false, inaccurate or incomplete information.

2. By: _____ 3. Title: ASSETS & INFRASTRUCTURE MGR.
Signature

4. For: BARNSTABLE COUNTY COMMISSIONERS 5. Date: _____
(Name of person or entity recorded in Section D) (mm/dd/yyyy)

☐ 6. Check here if the address of the person providing certification is different from address recorded in Section D.

7. Street: _____

8. City/Town: _____ 9. State: _____ 10. ZIP Code: _____

11. Telephone: _____ 12. Ext.: _____ 13. Email: _____

YOU ARE SUBJECT TO AN ANNUAL COMPLIANCE ASSURANCE FEE OF UP TO \$10,000 PER BILLABLE YEAR FOR THIS DISPOSAL SITE. YOU MUST LEGIBLY COMPLETE ALL RELEVANT SECTIONS OF THIS FORM OR DEP MAY RETURN THE DOCUMENT AS INCOMPLETE. IF YOU SUBMIT AN INCOMPLETE FORM, YOU MAY BE PENALIZED FOR MISSING A REQUIRED DEADLINE.

Date Stamp (DEP USE ONLY:)





BARNSTABLE COUNTY
SUPERIOR COURTHOUSE
3195 MAIN STREET
P.O. BOX 427
BARNSTABLE, MASSACHUSETTS 02630

Paul Ruzala, P.E.
Assets and Infrastructure Manager
(508) 419-2860
paul.ruzala@capecod.gov

May 5, 2023

Massachusetts Department of Environmental Protection
Bureau of Waste Site Cleanup
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02587

ATTN: Navpreet Brolowski, P.E., LSP, Project Manager

Re: Delegation of Authority
IRA Status, RMR No. 64 & Interim Phase II CSA Status Report
Former Barnstable County Fire Training Academy Site
155 South Flint Rock Road, Barnstable, MA
DEP Release Tracking No. RTN 4-26179

Dear Ms. Brolowski:

The purpose of this letter is to delegate signature authority for the filing of the Immediate Response Action (IRA) Status, Remedial Monitoring Report (RMR) No. 64 and Interim Phase II CSA Status Report for the period of July 2022 to December 2022 to the Licensed Site Professional (LSP) on record, Roger Thibault, P.E., LSP. Effective upon the issuance of this letter, I authorize Roger Thibault, P.E., LSP, to submit and sign the above referenced documents on behalf of myself and Barnstable County.

If you have any questions upon review of this notification, please contact me, or Roger Thibault, P.E., LSP for the Site at BETA Group, Inc. at your convenience.

Thank you,

A handwritten signature in blue ink that reads "Paul Ruzala". The signature is fluid and cursive, with the first name "Paul" being more prominent than the last name "Ruzala".

Paul Ruzala, P.E.
Assets and Infrastructure Manager

APPENDIX B

LABORATORY REPORTS/CERTIFICATES OF ANALYSIS Groundwater Treatment Systems Performance Monitoring



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: n/a

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/19
Report #: R7259950
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L6128

Received: 2022/08/02, 13:39

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Low level PFOS and PFOA by SPE/LCMS (1)	3	2022/08/15	2022/08/17	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: n/a

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/19
Report #: R7259950
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L6128

Received: 2022/08/02, 13:39

Encryption Key

Lori Dufour
Project Manager
19 Aug 2022 15:08:02

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TIH763			TIH764			
Sampling Date								
COC Number		n/a			n/a			
	UNITS	INFLUENT (PRW-4)	RDL	MDL	SYSTEM #1 MIDPOINT	RDL	MDL	QC Batch
Perfluorinated Compounds								
Perfluorobutanoic acid (PFBA)	ng/L	23	2.0	0.67	21	2.0	0.67	8166405
Perfluoropentanoic acid (PFPeA)	ng/L	86	2.0	0.52	71	2.0	0.52	8166405
Perfluorohexanoic acid (PFHxA)	ng/L	86	2.0	0.70	67	2.0	0.70	8166405
Perfluoroheptanoic acid (PFHpA)	ng/L	48	2.0	0.51	34	2.0	0.51	8166405
Perfluorooctanoic acid (PFOA)	ng/L	29	2.0	0.49	20	2.0	0.49	8166405
Perfluorononanoic acid (PFNA)	ng/L	18	2.0	0.80	11	2.0	0.80	8166405
Perfluorodecanoic acid (PFDA)	ng/L	4.5	2.0	0.64	2.9	2.0	0.64	8166405
Perfluoroundecanoic acid (PFUnA)	ng/L	57	2.0	0.77	38	2.0	0.77	8166405
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	2.0	0.59	<0.59	2.0	0.59	8166405
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	2.0	0.48	<0.48	2.0	0.48	8166405
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	2.0	0.37	<0.37	2.0	0.37	8166405
Perfluorobutanesulfonic acid (PFBS)	ng/L	8.9	2.0	0.47	6.5	2.0	0.47	8166405
Perfluoropentanesulfonic acid (PFPeS)	ng/L	16	2.0	0.73	10	2.0	0.73	8166405
Perfluorohexanesulfonic acid (PFHxS)	ng/L	140	20	5.3	92	2.0	0.53	8166405
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	3.7	2.0	0.57	2.4	2.0	0.57	8166405
Perfluorooctanesulfonic acid (PFOS)	ng/L	440	20	4.3	230	20	4.3	8166405
Perfluorononanesulfonic acid (PFNS)	ng/L	1.8	2.0	0.64	1.3	2.0	0.64	8166405
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	2.0	0.53	<0.53	2.0	0.53	8166405
Perfluorooctane Sulfonamide (PFOSA)	ng/L	4.0	4.0	0.81	1.9	4.0	0.81	8166405
6:2 Fluorotelomer sulfonic acid	ng/L	100	40	5.9	69	4.0	0.59	8166405
8:2 Fluorotelomer sulfonic acid	ng/L	44	4.0	0.75	27	4.0	0.75	8166405
Surrogate Recovery (%)								
13C2-6:2-Fluorotelomersulfonic Acid	%	95	N/A	N/A	103	N/A	N/A	8166405
13C2-8:2-Fluorotelomersulfonic Acid	%	96	N/A	N/A	113	N/A	N/A	8166405
13C2-Perfluorodecanoic acid	%	109	N/A	N/A	125	N/A	N/A	8166405
13C2-Perfluorododecanoic acid	%	101	N/A	N/A	114	N/A	N/A	8166405
13C2-Perfluorohexanoic acid	%	103	N/A	N/A	125	N/A	N/A	8166405
13C2-perfluorotetradecanoic acid	%	82	N/A	N/A	99	N/A	N/A	8166405
13C2-Perfluoroundecanoic acid	%	102	N/A	N/A	117	N/A	N/A	8166405
13C3-Perfluorobutanesulfonic acid	%	103	N/A	N/A	123	N/A	N/A	8166405
13C4-Perfluorobutanoic acid	%	96	N/A	N/A	115	N/A	N/A	8166405
13C4-Perfluoroheptanoic acid	%	90	N/A	N/A	110	N/A	N/A	8166405
13C4-Perfluorooctanesulfonic acid	%	79	N/A	N/A	110	N/A	N/A	8166405
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TIH763			TIH764			
Sampling Date								
COC Number		n/a			n/a			
	UNITS	INFLUENT (PRW-4)	RDL	MDL	SYSTEM #1 MIDPOINT	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	109	N/A	N/A	130	N/A	N/A	8166405
13C5-Perfluorononanoic acid	%	98	N/A	N/A	119	N/A	N/A	8166405
13C5-Perfluoropentanoic acid	%	92	N/A	N/A	113	N/A	N/A	8166405
13C8-Perfluorooctane Sulfonamide	%	60	N/A	N/A	62	N/A	N/A	8166405
18O2-Perfluorohexanesulfonic acid	%	84	N/A	N/A	111	N/A	N/A	8166405
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TIH765			
Sampling Date					
COC Number		n/a			
	UNITS	SYSTEM #1 EFFLUENT	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ng/L	4.3	2.0	0.67	8166405
Perfluoropentanoic acid (PFPeA)	ng/L	2.4	2.0	0.52	8166405
Perfluorohexanoic acid (PFHxA)	ng/L	1.1	2.0	0.70	8166405
Perfluoroheptanoic acid (PFHpA)	ng/L	<0.51	2.0	0.51	8166405
Perfluorooctanoic acid (PFOA)	ng/L	<0.49	2.0	0.49	8166405
Perfluorononanoic acid (PFNA)	ng/L	<0.80	2.0	0.80	8166405
Perfluorodecanoic acid (PFDA)	ng/L	<0.64	2.0	0.64	8166405
Perfluoroundecanoic acid (PFUnA)	ng/L	<0.77	2.0	0.77	8166405
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	2.0	0.59	8166405
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	2.0	0.48	8166405
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	2.0	0.37	8166405
Perfluorobutanesulfonic acid (PFBS)	ng/L	<0.47	2.0	0.47	8166405
Perfluoropentanesulfonic acid (PFPeS)	ng/L	<0.73	2.0	0.73	8166405
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<0.53	2.0	0.53	8166405
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	<0.57	2.0	0.57	8166405
Perfluorooctanesulfonic acid (PFOS)	ng/L	<0.43	2.0	0.43	8166405
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.64	2.0	0.64	8166405
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	2.0	0.53	8166405
Perfluorooctane Sulfonamide (PFOSA)	ng/L	<0.81	4.0	0.81	8166405
6:2 Fluorotelomer sulfonic acid	ng/L	<0.59	4.0	0.59	8166405
8:2 Fluorotelomer sulfonic acid	ng/L	<0.75	4.0	0.75	8166405
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	107	N/A	N/A	8166405
13C2-8:2-Fluorotelomersulfonic Acid	%	106	N/A	N/A	8166405
13C2-Perfluorodecanoic acid	%	114	N/A	N/A	8166405
13C2-Perfluorododecanoic acid	%	99	N/A	N/A	8166405
13C2-Perfluorohexanoic acid	%	113	N/A	N/A	8166405
13C2-perfluorotetradecanoic acid	%	79	N/A	N/A	8166405
13C2-Perfluoroundecanoic acid	%	108	N/A	N/A	8166405
13C3-Perfluorobutanesulfonic acid	%	117	N/A	N/A	8166405
13C4-Perfluorobutanoic acid	%	104	N/A	N/A	8166405
13C4-Perfluoroheptanoic acid	%	118	N/A	N/A	8166405
13C4-Perfluorooctanesulfonic acid	%	112	N/A	N/A	8166405
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TIH765			
Sampling Date					
COC Number		n/a			
	UNITS	SYSTEM #1 EFFLUENT	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	118	N/A	N/A	8166405
13C5-Perfluorononanoic acid	%	116	N/A	N/A	8166405
13C5-Perfluoropentanoic acid	%	108	N/A	N/A	8166405
13C8-Perfluorooctane Sulfonamide	%	24	N/A	N/A	8166405
18O2-Perfluorohexanesulfonic acid	%	119	N/A	N/A	8166405
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

TEST SUMMARY

Bureau Veritas ID: TIH763
Sample ID: INFLUENT (PRW-4)
Matrix: Water

Collected:
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8166405	2022/08/15	2022/08/17	Tonghui (Jenny) Chen

Bureau Veritas ID: TIH764
Sample ID: SYSTEM #1 MIDPOINT
Matrix: Water

Collected:
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8166405	2022/08/15	2022/08/17	Tonghui (Jenny) Chen

Bureau Veritas ID: TIH765
Sample ID: SYSTEM #1 EFFLUENT
Matrix: Water

Collected:
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8166405	2022/08/15	2022/08/17	Tonghui (Jenny) Chen



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

GENERAL COMMENTS

Samples received above 10C. Client consented to proceed with analysis.

Sample TIH763 [INFLUENT (PRW-4)] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TIH764 [SYSTEM #1 MIDPOINT] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8166405	TJC	Spiked Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/17		95	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/17		103	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/17		114	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/17		108	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/17		116	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/17		104	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/17		108	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/17		108	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/17		112	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/17		108	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/17		111	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/17		114	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/17		110	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/17		111	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/17		41	%	20 - 130
				18O2-Perfluorohexanesulfonic acid	2022/08/17		107	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/17		102	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/17		104	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/17		100	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/17		103	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/17		102	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/17		104	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/17		105	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/17		104	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/17		101	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/17		102	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/17		101	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/17		104	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/08/17		103	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/17		102	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/17		96	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/17		104	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/08/17		95	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/17		92	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/17		98	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/17		104	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/17		99	%	70 - 130
8166405	TJC	Spiked Blank DUP		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/17		92	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/17		101	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/17		115	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/17		106	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/17		113	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/17		105	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/17		110	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/17		107	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/17		110	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/17		108	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/17		111	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/17		113	%	50 - 150
8166405	TJC	Spiked Blank DUP		13C5-Perfluorononanoic acid	2022/08/17		109	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/17		112	%	50 - 150



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8166405	TJC	RPD		13C8-Perfluorooctane Sulfonamide	2022/08/17		57	%	20 - 130
				18O2-Perfluorohexanesulfonic acid	2022/08/17		105	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/17		107	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/17		106	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/17		107	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/17		107	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/17		109	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/17		110	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/17		110	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/17		106	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/17		106	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/17		109	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/17		105	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/17		108	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/08/17		107	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/17		112	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/17		100	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/17		110	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/08/17		99	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/17		98	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/17		104	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/17		107	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/17		107	%	70 - 130
				Perfluorobutanoic acid (PFBA)	2022/08/17	4.7		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/17	1.9		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/17	6.7		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/17	3.7		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/17	6.4		%	30
				Perfluorononanoic acid (PFNA)	2022/08/17	5.5		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/17	4.8		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/17	1.8		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/17	5.0		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/17	6.4		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/17	4.1		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/17	4.1		%	30
				Perfluoropentanesulfonic acid PFPes	2022/08/17	3.9		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/17	9.9		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/17	3.7		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/17	5.1		%	30
				Perfluorononanesulfonic acid (PFNS)	2022/08/17	4.4		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/17	6.5		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/17	6.0		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/17	3.4		%	30
				8:2 Fluorotelomer sulfonic acid	2022/08/17	8.4		%	30
8166405	TJC	Method Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/17		113	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/17		111	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/17		120	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/17		109	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/17		121	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/17		111	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/17		108	%	50 - 150



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C3-Perfluorobutanesulfonic acid	2022/08/17		118	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/08/17		118	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/08/17		123	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/08/17		115	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/08/17		120	%	50 - 150
			13C5-Perfluorononanoic acid	2022/08/17		119	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/08/17		119	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/08/17		29	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2022/08/17		118	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/08/17	<0.67		ng/L	
			Perfluoropentanoic acid (PFPeA)	2022/08/17	<0.52		ng/L	
			Perfluorohexanoic acid (PFHxA)	2022/08/17	<0.70		ng/L	
			Perfluoroheptanoic acid (PFHpA)	2022/08/17	<0.51		ng/L	
			Perfluorooctanoic acid (PFOA)	2022/08/17	<0.49		ng/L	
			Perfluorononanoic acid (PFNA)	2022/08/17	<0.80		ng/L	
			Perfluorodecanoic acid (PFDA)	2022/08/17	<0.64		ng/L	
			Perfluoroundecanoic acid (PFUnA)	2022/08/17	<0.77		ng/L	
			Perfluorododecanoic acid (PFDoA)	2022/08/17	<0.59		ng/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/08/17	<0.48		ng/L	
			Perfluorotetradecanoic acid (PFTEDA)	2022/08/17	<0.37		ng/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/08/17	<0.47		ng/L	
			Perfluoropentanesulfonic acid (PFPeS)	2022/08/17	<0.73		ng/L	
			Perfluorohexanesulfonic acid (PFHxS)	2022/08/17	<0.53		ng/L	
			Perfluoroheptanesulfonic acid (PFHpS)	2022/08/17	<0.57		ng/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/08/17	<0.43		ng/L	
			Perfluorononanesulfonic acid (PFNS)	2022/08/17	<0.64		ng/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/08/17	<0.53		ng/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/08/17	<0.81		ng/L	
			6:2 Fluorotelomer sulfonic acid	2022/08/17	<0.59		ng/L	
			8:2 Fluorotelomer sulfonic acid	2022/08/17	<0.75		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Bureau Veritas Job #: C2L6128
Report Date: 2022/08/19

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: AM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Colm McNamara", written over a horizontal line.

Colm McNamara, Senior Analyst, Liquid Chromatography

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



www.bvna.com

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Phone: 905-817-5200 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

ENV COC - 00014v3

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information	
Company: Barnstable County		Company: BETA Group, Inc		Quotation #: 02-Aug-22 13:39	
Contact Name: Priscilla Ellis/ Steve Tebo		Contact Name: Roger Thibault		P.O. #/ AFE#: Lori Dufour	
Street Address: 3195 Main St		Street Address: 701 George Washington Hwy		Project #: 6206	
City: Barnstable	Prov:	City: Lincoln	Prov:	Site #: BFTA	C2L6128
Postal Code:		Postal Code:		Site Location: Barnstable, MA	
Phone:		Phone:		Site Location Province: GM ENV-1421	
Email: pellis@barnstablecounty.org		Email: Rthibault@BETA-Inc.com; Lbouley@BETA-Inc.com		Sampled By: Amanda Makela	
Copies: stebo@barnstablecounty.org		Copies: stebo@barnstablecounty.org			

Regulatory Criteria																													
REG 153	<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Med/Fine	<input type="checkbox"/> CCME	<input type="checkbox"/> Reg 406, Table:																								
	<input type="checkbox"/> Table 2	<input type="checkbox"/> Ind/Comm	<input type="checkbox"/> Course	<input type="checkbox"/> Reg 558*	<input type="checkbox"/> Sanitary Sewer Bylaw																								
	<input type="checkbox"/> Table 3	<input type="checkbox"/> Agri/other	<input type="checkbox"/> For RSC	<input type="checkbox"/> *min 3 day TAT	<input type="checkbox"/> Storm Sewer Bylaw																								
	<input type="checkbox"/> Table			<input type="checkbox"/> MISA	<input type="checkbox"/> Municipality																								
						<input type="checkbox"/> PWQO	<input type="checkbox"/> Other:																						
Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>																													
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																													

Sample Identification	Date Sampled					Time (24hr)		Matrix																							# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	Regular Turnaround Time (TAT)					
	YY	MM	DD	HH	MM																							Rush Turnaround Time (TAT)										
																												Surcharges apply										
1	Influent (PRW-4)					22	07	27	9	02	Water - Ground																							2		Use Lower		
2	System #1 Midpoint					22	07	27	9	00	Water - Ground																							2		RDL values		
3	System #1 Effluent					22	07	27	9	01	Water - Ground																							2		for all samples		
4																																						
5																																						
6																																						
7																																						
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11																																						
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*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY		Yes	No	°C	12.6	11.3	10.4	LAB USE ONLY		Yes	No	°C	1	2	3	LAB USE ONLY		Yes	No	°C	1	2	3	Temperature reading by:
Seal present								Seal present								Seal present								
Seal intact								Seal intact								Seal intact								
Cooling media present								Cooling media present								Cooling media present								

Relinquished by: (Signature/ Print)		Date					Time					Received by: (Signature/ Print)		Date					Time					Special Instructions				
Pelle		YY	MM	DD	HH	MM	ACam					2022		MM	DD	HH	MM											
		2022	08	01	11	00								08	02	13	39											



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/20
Report #: R7304002
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C209605

Received: 2022/08/31, 11:40

Sample Matrix: Water
Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Low level PFOS and PFOA by SPE/LCMS (1)	3	2022/09/13	2022/09/16	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/20
Report #: R7304002
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2O9605

Received: 2022/08/31, 11:40

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Lori Dufour, Project Manager
Email: Lori.Dufour@bureauveritas.com
Phone# (905) 817-5700

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2O9605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TPJ629			TPJ630	TPJ631			
Sampling Date		2022/08/30 12:30			2022/08/30 12:20	2022/08/30 12:15			
	UNITS	INFLUENT(PRW-4)	RDL	MDL	SYSTEM#1 MIDPOINT	SYSTEM#1 EFFLUENT	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ng/L	19	2.0	0.59	0.74	0.79	2.0	0.59	8222261
Perfluoropentanoic acid (PFPeA)	ng/L	67	2.0	0.22	<0.22	<0.22	2.0	0.22	8222261
Perfluorohexanoic acid (PFHxA)	ng/L	64	2.0	0.20	<0.20	<0.20	2.0	0.20	8222261
Perfluoroheptanoic acid (PFHpA)	ng/L	38	2.0	0.28	<0.28	<0.28	2.0	0.28	8222261
Perfluorooctanoic acid (PFOA)	ng/L	24	2.0	0.41	<0.41	<0.41	2.0	0.41	8222261
Perfluorononanoic acid (PFNA)	ng/L	13	2.0	0.35	<0.35	<0.35	2.0	0.35	8222261
Perfluorodecanoic acid (PFDA)	ng/L	3.7	2.0	0.29	<0.29	<0.29	2.0	0.29	8222261
Perfluoroundecanoic acid (PFUnA)	ng/L	54	2.0	0.37	<0.37	<0.37	2.0	0.37	8222261
Perfluorododecanoic acid (PFDoA)	ng/L	<0.48	2.0	0.48	<0.48	<0.48	2.0	0.48	8222261
Perfluorotridecanoic acid (PFTDA)	ng/L	<0.24	2.0	0.24	<0.24	<0.24	2.0	0.24	8222261
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.39	2.0	0.39	<0.39	<0.39	2.0	0.39	8222261
Perfluorobutanesulfonic acid (PFBS)	ng/L	6.8	2.0	0.27	<0.27	<0.27	2.0	0.27	8222261
Perfluoropentanesulfonic acid (PFPeS)	ng/L	11	2.0	0.34	<0.34	<0.34	2.0	0.34	8222261
Perfluorohexanesulfonic acid (PFHxS)	ng/L	100	20	2.8	<0.28	<0.28	2.0	0.28	8222261
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	2.9	2.0	0.43	<0.43	<0.43	2.0	0.43	8222261
Perfluorooctanesulfonic acid (PFOS)	ng/L	290	20	4.7	<0.47	0.61	2.0	0.47	8222261
Perfluorononanesulfonic acid (PFNS)	ng/L	2.0	2.0	0.64	<0.64	<0.64	2.0	0.64	8222261
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.60	2.0	0.60	<0.60	<0.60	2.0	0.60	8222261
Perfluorooctane Sulfonamide (PFOSA)	ng/L	3.6	4.0	0.40	<0.40	<0.40	4.0	0.40	8222261
6:2 Fluorotelomer sulfonic acid	ng/L	100	40	6.3	<4.0	<4.0	4.0	0.63	8231859
8:2 Fluorotelomer sulfonic acid	ng/L	36	4.0	0.53	<0.53	<0.53	4.0	0.53	8222261
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	100	N/A	N/A	108	102	N/A	N/A	8231859
13C2-8:2-Fluorotelomersulfonic Acid	%	87	N/A	N/A	98	97	N/A	N/A	8222261
13C2-Perfluorodecanoic acid	%	92	N/A	N/A	96	99	N/A	N/A	8222261
13C2-Perfluorododecanoic acid	%	82	N/A	N/A	87	91	N/A	N/A	8222261
13C2-Perfluorohexanoic acid	%	97	N/A	N/A	101	109	N/A	N/A	8222261
13C2-perfluorotetradecanoic acid	%	71	N/A	N/A	67	66	N/A	N/A	8222261
13C2-Perfluoroundecanoic acid	%	90	N/A	N/A	93	100	N/A	N/A	8222261
13C3-Perfluorobutanesulfonic acid	%	100	N/A	N/A	102	109	N/A	N/A	8222261
13C4-Perfluorobutanoic acid	%	90	N/A	N/A	94	99	N/A	N/A	8222261
13C4-Perfluoroheptanoic acid	%	90	N/A	N/A	99	108	N/A	N/A	8222261
13C4-Perfluorooctanesulfonic acid	%	99	N/A	N/A	102	106	N/A	N/A	8222261
13C4-Perfluorooctanoic acid	%	96	N/A	N/A	101	110	N/A	N/A	8222261
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									
N/A = Not Applicable									



BUREAU
VERITAS

Bureau Veritas Job #: C2O9605

Report Date: 2022/09/20

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: LB

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TPJ629			TPJ630	TPJ631			
Sampling Date		2022/08/30 12:30			2022/08/30 12:20	2022/08/30 12:15			
	UNITS	INFLUENT(PRW-4)	RDL	MDL	SYSTEM#1 MIDPOINT	SYSTEM#1 EFFLUENT	RDL	MDL	QC Batch
13C5-Perfluorononanoic acid	%	87	N/A	N/A	104	110	N/A	N/A	8222261
13C5-Perfluoropentanoic acid	%	95	N/A	N/A	100	108	N/A	N/A	8222261
13C8-Perfluorooctane Sulfonamide	%	53	N/A	N/A	51	20	N/A	N/A	8222261
18O2-Perfluorohexanesulfonic acid	%	108	N/A	N/A	104	111	N/A	N/A	8222261
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C2O9605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

TEST SUMMARY

Bureau Veritas ID: TPJ629
Sample ID: INFLUENT(PRW-4)
Matrix: Water

Collected: 2022/08/30
Shipped:
Received: 2022/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8231859	2022/09/18	2022/09/19	Patrick Yu Peng Li

Bureau Veritas ID: TPJ630
Sample ID: SYSTEM#1 MIDPOINT
Matrix: Water

Collected: 2022/08/30
Shipped:
Received: 2022/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8231859	2022/09/18	2022/09/19	Patrick Yu Peng Li

Bureau Veritas ID: TPJ631
Sample ID: SYSTEM#1 EFFLUENT
Matrix: Water

Collected: 2022/08/30
Shipped:
Received: 2022/08/31

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8231859	2022/09/18	2022/09/19	Patrick Yu Peng Li



Bureau Veritas Job #: C2O9605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

GENERAL COMMENTS

Sample TPJ629 [INFLUENT(PRW-4)] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TPJ629, Low level PFOS and PFOA by SPE/LCMS: Test repeated.

Sample TPJ630, Low level PFOS and PFOA by SPE/LCMS: Test repeated.

Sample TPJ631, Low level PFOS and PFOA by SPE/LCMS: Test repeated.

Results relate only to the items tested.



Bureau Veritas Job #: C2O9605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8222261	ATN	Spiked Blank		13C2-8:2-Fluorotelomersulfonic Acid	2022/09/16		95	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/16		102	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/16		90	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/16		101	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/16		86	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/16		96	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/16		100	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/16		102	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/16		100	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/16		98	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/16		100	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/16		102	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/16		102	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/16		49	%	20 - 130
				18O2-Perfluorohexanesulfonic acid	2022/09/16		101	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/16		105	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/16		104	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/16		105	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/16		106	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/16		109	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/16		105	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/16		102	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/16		106	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/16		110	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/16		107	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/16		110	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/16		105	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/09/16		104	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/16		103	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/09/16		103	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/16		106	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/09/16		92	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/16		94	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/16		104	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/16		107	%	70 - 130
8222261	ATN	Spiked Blank DUP		13C2-8:2-Fluorotelomersulfonic Acid	2022/09/16		91	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/16		98	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/16		88	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/16		98	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/16		82	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/16		93	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/16		96	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/16		98	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/16		96	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/16		96	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/16		100	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/16		99	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/16		98	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/16		43	%	20 - 130
				18O2-Perfluorohexanesulfonic acid	2022/09/16		97	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/16		104	%	70 - 130



Bureau Veritas Job #: C2O9605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8222261	ATN	RPD		Perfluoropentanoic acid (PFPeA)	2022/09/16		104	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/16		103	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/16		104	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/16		103	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/16		101	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/16		100	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/16		104	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/16		104	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/16		107	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/16		105	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/16		104	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/09/16		103	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/16		102	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/09/16		100	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/16		101	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/09/16		90	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/16		91	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/16		99	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/16		105	%	70 - 130
				Perfluorobutanoic acid (PFBA)	2022/09/16	1.5		%	30
				Perfluoropentanoic acid (PFPeA)	2022/09/16	0.40		%	30
				Perfluorohexanoic acid (PFHxA)	2022/09/16	2.3		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/09/16	1.5		%	30
				Perfluorooctanoic acid (PFOA)	2022/09/16	5.5		%	30
				Perfluorononanoic acid (PFNA)	2022/09/16	3.1		%	30
				Perfluorodecanoic acid (PFDA)	2022/09/16	1.6		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/09/16	1.7		%	30
				Perfluorododecanoic acid (PFDoA)	2022/09/16	5.9		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/09/16	0.0058		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/16	4.2		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/09/16	1.1		%	30
				Perfluoropentanesulfonic acid PFPes	2022/09/16	1.0		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/16	0.63		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/09/16	2.3		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/09/16	4.5		%	30
				Perfluorononanesulfonic acid (PFNS)	2022/09/16	2.3		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/09/16	3.5		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/16	4.6		%	30
				8:2 Fluorotelomer sulfonic acid	2022/09/16	1.7		%	30
8222261	ATN	Method Blank		13C2-8:2-Fluorotelomersulfonic Acid	2022/09/16		100	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/16		101	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/16		92	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/16		109	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/16		88	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/16		99	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/16		103	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/16		105	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/16		107	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/16		101	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/16		110	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/16		110	%	50 - 150



Bureau Veritas Job #: C2O9605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C5-Perfluoropentanoic acid	2022/09/16		107	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/09/16		49	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2022/09/16		106	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/09/16	0.73, RDL=2.0		ng/L	
			Perfluoropentanoic acid (PFPeA)	2022/09/16	<0.22		ng/L	
			Perfluorohexanoic acid (PFHxA)	2022/09/16	<0.20		ng/L	
			Perfluoroheptanoic acid (PFHpA)	2022/09/16	<0.28		ng/L	
			Perfluorooctanoic acid (PFOA)	2022/09/16	<0.41		ng/L	
			Perfluorononanoic acid (PFNA)	2022/09/16	<0.35		ng/L	
			Perfluorodecanoic acid (PFDA)	2022/09/16	<0.29		ng/L	
			Perfluoroundecanoic acid (PFUnA)	2022/09/16	<0.37		ng/L	
			Perfluorododecanoic acid (PFDoA)	2022/09/16	<0.48		ng/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/09/16	<0.24		ng/L	
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/16	<0.39		ng/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/09/16	<0.27		ng/L	
			Perfluoropentanesulfonic acid PFPes	2022/09/16	<0.34		ng/L	
			Perfluorohexanesulfonic acid(PFHxS)	2022/09/16	<0.28		ng/L	
			Perfluoroheptanesulfonic acid PFHpS	2022/09/16	<0.43		ng/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/09/16	<0.47		ng/L	
			Perfluorononanesulfonic acid (PFNS)	2022/09/16	<0.64		ng/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/09/16	<0.60		ng/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/16	<0.40		ng/L	
			8:2 Fluorotelomer sulfonic acid	2022/09/16	<0.53		ng/L	
8231859	YPL	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/19		101	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/09/19		107	%	70 - 130
8231859	YPL	Spiked Blank DUP	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/19		103	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/09/19		106	%	70 - 130
8231859	YPL	RPD	6:2 Fluorotelomer sulfonic acid	2022/09/19	0.91		%	30
8231859	YPL	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/19		106	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/09/19	<4.0		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Bureau Veritas Job #: C209605
Report Date: 2022/09/20

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to be "Colm McNamara", written over a horizontal line.

Colm McNamara, Senior Analyst, Liquid Chromatography

A handwritten signature in black ink, appearing to be "P.K. Patel", written over a horizontal line.

Pinkal Patel, Senior Analyst

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



CHAIN OF CUSTODY RECORD

ENV COC - 00014v2

Page 1 of 1

31-Aug-22 11:40

Lori Dufour



C209605

- AVI

ENV-600

Invoice Information				Report Information (if differs from invoice)				Project Information															
Company : Barnstable County				Company: BETA Group, Inc				Quotation #:															
Contact Name: Priscilla Ellis/Steve Tebo				Contact Name: Roger Thibault				P.O. #/ AFR:															
Street Address: 3195 Main St				Street Address: 701 George Washington Hwy				Project #: 6206															
City: Barnstable		Prov: MA		City: Lincoln		Prov: MA		Site #: BETA		Site Location: Barnstable, MA													
Phone:				Phone: 508-833-0000 @BarnstableCounty.org				Site Location Province: MA															
Email: pellis@barnstablecounty.ma.gov				Email: RThibault@BETA-Inc.com				Sampled By: Laura Bouley															
Copies: sttebo@barnstablecounty.org				Copies: LBOVICH@BETA-Inc.com																			
Regulatory Criteria																							
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/Other <input type="checkbox"/> For RSC <input type="checkbox"/> Table _____				<input type="checkbox"/> CCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Reg 558* <input type="checkbox"/> Sanitary Sewer Bylaw *min 3 day TAT <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA Municipality <input type="checkbox"/> PWQO Other:																			
Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>																							
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																							
Sample Identification		Date Sampled			Time (24hr)		Matrix	FIELD FILTERED	FIELD PRESERVED	LAB FILTRATION REQUIRED	BTX/FT	F2 - F4	VOCs	Reg 153 metals and inorganics	Reg 153 ICPMS metals	Reg 153 metals (Hg, Cr VI, ICPMS metals, HWS-B)	US EPA 533.1m (P&B)	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	Regular Turnaround Time (TAT)		Rush Turnaround Time (TAT) Surcharges apply	
		YY	MM	DD	HH	MM														<input type="checkbox"/> 5 to 7 Day	<input checked="" type="checkbox"/> 10 Day	<input type="checkbox"/> Same Day	<input type="checkbox"/> 1 Day
1	Influent+(PRW-4)	2022	08	30	12	30											X	2					USE lower
2	System#1 Midpoint	2022	08	30	12	20											X	2					RDL values
3	System#1 Effluent	2022	08	30	12	15											X	2					for all samples
4																							
5																							
6																							
7																							
8																							
9																							
10																							
11																							
12																							

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY.

LAB USE ONLY				LAB USE ONLY				LAB USE ONLY				Temperature reading by			
Yes	No	°C		Yes	No	°C		Yes	No	°C		1	2	3	
Seal present	/	5.8	7.4	Seal present				Seal present							
Seal intact	/			Seal intact				Seal intact							
Cooling media present	/			Cooling media present				Cooling media present							
Relinquished by: (Signature/ Print)				Received by: (Signature/ Print)				Special instructions							
2022 08 30 16 00				2 V TRINH				2022 08 31 11 40							

461137



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: n/a

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/10/18
Report #: R7346360
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2R4032

Received: 2022/09/22, 12:04

Sample Matrix: Water
Samples Received: 3

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Low level PFOS and PFOA by SPE/LCMS (1)	3	2022/09/29	2022/10/01	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: n/a

Report Date: 2022/10/18
Report #: R7346360
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2R4032

Received: 2022/09/22, 12:04

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

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For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TUQ481			TUQ482	TUQ483			
Sampling Date		2022/09/20 09:00			2022/09/20 08:50	2022/09/20 08:45			
COC Number		n/a			n/a	n/a			
	UNITS	INFLUENT(PRW-4)	RDL	MDL	SYSTEM#1 MID	SYSTEM#1 EFF	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ng/L	18	2.0	0.59	<0.59	<0.59	2.0	0.59	8255518
Perfluoropentanoic acid (PFPeA)	ng/L	60	2.0	0.22	<0.22	<0.22	2.0	0.22	8255518
Perfluorohexanoic acid (PFHxA)	ng/L	56	2.0	0.20	<0.20	<0.20	2.0	0.20	8255518
Perfluoroheptanoic acid (PFHpA)	ng/L	38	2.0	0.28	<0.28	<0.28	2.0	0.28	8255518
Perfluorooctanoic acid (PFOA)	ng/L	22	2.0	0.41	<0.41	<0.41	2.0	0.41	8255518
Perfluorononanoic acid (PFNA)	ng/L	15	2.0	0.35	<0.35	<0.35	2.0	0.35	8255518
Perfluorodecanoic acid (PFDA)	ng/L	3.0	2.0	0.29	<0.29	<0.29	2.0	0.29	8255518
Perfluoroundecanoic acid (PFUnA)	ng/L	37	2.0	0.37	<0.37	<0.37	2.0	0.37	8255518
Perfluorododecanoic acid (PFDoA)	ng/L	<0.48	2.0	0.48	<0.48	<0.48	2.0	0.48	8255518
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.24	2.0	0.24	<0.24	<0.24	2.0	0.24	8255518
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.39	2.0	0.39	<0.39	<0.39	2.0	0.39	8255518
Perfluorobutanesulfonic acid (PFBS)	ng/L	5.9	2.0	0.27	<0.27	<0.27	2.0	0.27	8255518
Perfluoropentanesulfonic acid PFPeS	ng/L	11	2.0	0.34	<0.34	<0.34	2.0	0.34	8255518
Perfluorohexanesulfonic acid (PFHxS)	ng/L	110	2.0	2.8	<0.28	<0.28	2.0	0.28	8255518
Perfluoroheptanesulfonic acid PFHpS	ng/L	2.6	2.0	0.43	<0.43	<0.43	2.0	0.43	8255518
Perfluorooctanesulfonic acid (PFOS)	ng/L	360	2.0	4.7	<0.47	<0.47	2.0	0.47	8255518
Perfluorononanesulfonic acid (PFNS)	ng/L	0.65	2.0	0.64	<0.64	<0.64	2.0	0.64	8255518
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.60	2.0	0.60	<0.60	<0.60	2.0	0.60	8255518
Perfluorooctane Sulfonamide (PFOSA)	ng/L	2.6	4.0	0.40	<0.40	<0.40	4.0	0.40	8255518
6:2 Fluorotelomer sulfonic acid	ng/L	66	4.0	0.63	<0.63	<0.63	4.0	0.63	8280228
8:2 Fluorotelomer sulfonic acid	ng/L	31	4.0	0.53	<0.53	<0.53	4.0	0.53	8255518
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	91	N/A	N/A	89	91	N/A	N/A	8280228
13C2-8:2-Fluorotelomersulfonic Acid	%	87	N/A	N/A	87	90	N/A	N/A	8255518
13C2-Perfluorodecanoic acid	%	85	N/A	N/A	84	88	N/A	N/A	8255518
13C2-Perfluorododecanoic acid	%	76	N/A	N/A	78	81	N/A	N/A	8255518
13C2-Perfluorohexanoic acid	%	86	N/A	N/A	88	96	N/A	N/A	8255518
13C2-perfluorotetradecanoic acid	%	69	N/A	N/A	64	64	N/A	N/A	8255518
13C2-Perfluoroundecanoic acid	%	80	N/A	N/A	81	82	N/A	N/A	8255518
13C3-Perfluorobutanesulfonic acid	%	93	N/A	N/A	95	98	N/A	N/A	8255518
13C4-Perfluorobutanoic acid	%	78	N/A	N/A	83	93	N/A	N/A	8255518
13C4-Perfluoroheptanoic acid	%	88	N/A	N/A	89	95	N/A	N/A	8255518
13C4-Perfluorooctanesulfonic acid	%	83	N/A	N/A	90	92	N/A	N/A	8255518
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TUQ481			TUQ482	TUQ483			
Sampling Date		2022/09/20 09:00			2022/09/20 08:50	2022/09/20 08:45			
COC Number		n/a			n/a	n/a			
	UNITS	INFLUENT(PRW-4)	RDL	MDL	SYSTEM#1 MID	SYSTEM#1 EFF	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	89	N/A	N/A	92	97	N/A	N/A	8255518
13C5-Perfluorononanoic acid	%	87	N/A	N/A	87	91	N/A	N/A	8255518
13C5-Perfluoropentanoic acid	%	82	N/A	N/A	88	96	N/A	N/A	8255518
13C8-Perfluorooctane Sulfonamide	%	67	N/A	N/A	66	73	N/A	N/A	8255518
18O2-Perfluorohexanesulfonic acid	%	88	N/A	N/A	94	96	N/A	N/A	8255518
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

TEST SUMMARY

Bureau Veritas ID: TUQ481
Sample ID: INFLUENT(PRW-4)
Matrix: Water

Collected: 2022/09/20
Shipped:
Received: 2022/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8280228	2022/10/13	2022/10/14	Hitaishi Bhardwaj

Bureau Veritas ID: TUQ482
Sample ID: SYSTEM#1 MID
Matrix: Water

Collected: 2022/09/20
Shipped:
Received: 2022/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8280228	2022/10/13	2022/10/14	Hitaishi Bhardwaj

Bureau Veritas ID: TUQ483
Sample ID: SYSTEM#1 EFF
Matrix: Water

Collected: 2022/09/20
Shipped:
Received: 2022/09/22

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8280228	2022/10/13	2022/10/14	Hitaishi Bhardwaj



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

GENERAL COMMENTS

Sample TUQ481 [INFLUENT(PRW-4)] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly. Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TUQ482 [SYSTEM#1 MID] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TUQ483 [SYSTEM#1 EFF] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TUQ481, Low level PFOS and PFOA by SPE/LCMS: Test repeated.

Sample TUQ482, Low level PFOS and PFOA by SPE/LCMS: Test repeated.

Sample TUQ483, Low level PFOS and PFOA by SPE/LCMS: Test repeated.

Results relate only to the items tested.

BUREAU
VERITAS

Bureau Veritas Job #: C2R4032

Report Date: 2022/10/18

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: LB

QUALITY ASSURANCE REPORT

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8255518	TJC	Spiked Blank	13C2-8:2-Fluorotelomersulfonic Acid	2022/10/01		81	%	50 - 150
			13C2-Perfluorodecanoic acid	2022/10/01		84	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/10/01		79	%	50 - 150
			13C2-Perfluorohexanoic acid	2022/10/01		92	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/10/01		76	%	50 - 150
			13C2-Perfluoroundecanoic acid	2022/10/01		80	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2022/10/01		94	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/10/01		92	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/10/01		90	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/10/01		83	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/10/01		88	%	50 - 150
			13C5-Perfluorononanoic acid	2022/10/01		84	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/10/01		93	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/10/01		76	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2022/10/01		87	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/10/01		118	%	70 - 130
			Perfluoropentanoic acid (PFPeA)	2022/10/01		117	%	70 - 130
			Perfluorohexanoic acid (PFHxA)	2022/10/01		118	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)	2022/10/01		124	%	70 - 130
			Perfluorooctanoic acid (PFOA)	2022/10/01		109	%	70 - 130
			Perfluorononanoic acid (PFNA)	2022/10/01		116	%	70 - 130
			Perfluorodecanoic acid (PFDA)	2022/10/01		106	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)	2022/10/01		108	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2022/10/01		106	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2022/10/01		117	%	70 - 130
			Perfluorotetradecanoic acid (PFTEDA)	2022/10/01		112	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)	2022/10/01		115	%	70 - 130
			Perfluoropentanesulfonic acid PFPeS	2022/10/01		112	%	70 - 130
			Perfluorohexanesulfonic acid (PFHxS)	2022/10/01		113	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS	2022/10/01		108	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)	2022/10/01		118	%	70 - 130
			Perfluorononanesulfonic acid (PFNS)	2022/10/01		108	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)	2022/10/01		106	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2022/10/01		107	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2022/10/01		120	%	70 - 130
8255518	TJC	Spiked Blank DUP	13C2-8:2-Fluorotelomersulfonic Acid	2022/10/01		85	%	50 - 150
			13C2-Perfluorodecanoic acid	2022/10/01		86	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/10/01		82	%	50 - 150
			13C2-Perfluorohexanoic acid	2022/10/01		89	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/10/01		83	%	50 - 150
			13C2-Perfluoroundecanoic acid	2022/10/01		82	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2022/10/01		95	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/10/01		88	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/10/01		89	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/10/01		91	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/10/01		88	%	50 - 150
			13C5-Perfluorononanoic acid	2022/10/01		86	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/10/01		89	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/10/01		72	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2022/10/01		93	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/10/01		117	%	70 - 130



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8255518	TJC	RPD		Perfluoropentanoic acid (PFPeA)	2022/10/01		116	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/10/01		118	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/10/01		123	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/10/01		109	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/10/01		115	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/10/01		107	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/10/01		110	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/10/01		106	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/10/01		113	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/10/01		108	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/10/01		111	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/10/01		121	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/10/01		113	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/10/01		118	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/10/01		116	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/10/01		116	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/10/01		109	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/10/01		108	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/10/01		112	%	70 - 130
				Perfluorobutanoic acid (PFBA)	2022/10/01	0.39		%	30
				Perfluoropentanoic acid (PFPeA)	2022/10/01	0.90		%	30
				Perfluorohexanoic acid (PFHxA)	2022/10/01	0.13		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/10/01	0.72		%	30
				Perfluorooctanoic acid (PFOA)	2022/10/01	0.50		%	30
				Perfluorononanoic acid (PFNA)	2022/10/01	1.2		%	30
				Perfluorodecanoic acid (PFDA)	2022/10/01	1.0		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/10/01	2.6		%	30
				Perfluorododecanoic acid (PFDoA)	2022/10/01	0.17		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/10/01	3.1		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/10/01	3.3		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/10/01	3.7		%	30
				Perfluoropentanesulfonic acid PFPes	2022/10/01	8.1		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/10/01	0.59		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/10/01	8.4		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/10/01	1.9		%	30
				Perfluorononanesulfonic acid (PFNS)	2022/10/01	7.6		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/10/01	3.0		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/10/01	1.0		%	30
				8:2 Fluorotelomer sulfonic acid	2022/10/01	6.2		%	30
8255518	TJC	Method Blank		13C2-8:2-Fluorotelomersulfonic Acid	2022/10/01		103	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/10/01		100	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/10/01		96	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/10/01		105	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/10/01		95	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/10/01		97	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/10/01		107	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/10/01		106	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/10/01		106	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/10/01		100	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/10/01		105	%	50 - 150
				13C5-Perfluorononanoic acid	2022/10/01		103	%	50 - 150



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C5-Perfluoropentanoic acid	2022/10/01		105	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/10/01		90	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2022/10/01		101	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/10/01	<2.0		ng/L	
			Perfluoropentanoic acid (PFPeA)	2022/10/01	<2.0		ng/L	
			Perfluorohexanoic acid (PFHxA)	2022/10/01	<2.0		ng/L	
			Perfluoroheptanoic acid (PFHpA)	2022/10/01	<2.0		ng/L	
			Perfluorooctanoic acid (PFOA)	2022/10/01	<2.0		ng/L	
			Perfluorononanoic acid (PFNA)	2022/10/01	<2.0		ng/L	
			Perfluorodecanoic acid (PFDA)	2022/10/01	<2.0		ng/L	
			Perfluoroundecanoic acid (PFUnA)	2022/10/01	<2.0		ng/L	
			Perfluorododecanoic acid (PFDoA)	2022/10/01	<2.0		ng/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/10/01	<2.0		ng/L	
			Perfluorotetradecanoic acid(PFTEDA)	2022/10/01	<2.0		ng/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/10/01	<2.0		ng/L	
			Perfluoropentanesulfonic acid PFPes	2022/10/01	<2.0		ng/L	
			Perfluorohexanesulfonic acid(PFHxS)	2022/10/01	<2.0		ng/L	
			Perfluoroheptanesulfonic acid PFHpS	2022/10/01	<2.0		ng/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/10/01	<2.0		ng/L	
			Perfluorononanesulfonic acid (PFNS)	2022/10/01	<2.0		ng/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/10/01	<2.0		ng/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/10/01	<4.0		ng/L	
			8:2 Fluorotelomer sulfonic acid	2022/10/01	<4.0		ng/L	
8280228	HBJ	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/10/14		102	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/10/14		114	%	70 - 130
8280228	HBJ	Spiked Blank DUP	13C2-6:2-Fluorotelomersulfonic Acid	2022/10/14		106	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/10/14		114	%	70 - 130
8280228	HBJ	RPD	6:2 Fluorotelomer sulfonic acid	2022/10/14	0.46		%	30
8280228	HBJ	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/10/14		122	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/10/14	<0.63		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



Bureau Veritas Job #: C2R4032
Report Date: 2022/10/18

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: LB

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Colm McNamara".

Colm McNamara, Senior Analyst, Liquid Chromatography

A handwritten signature in black ink, appearing to read "P.K. Patel".

Pinkal Patel, Senior Analyst

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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CHAIN OF CUSTODY RECORD

ENV COC - 00014v2

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information	
Company:	Barnstable County	Company:	BETA GROUP Inc	Quotation #:	
Contact Name:	Priscilla Ellis / Steve Tebo	Contact Name:	Roger Thibault	P.O. #/ AFE#:	
Street Address:	3195 Main St	Street Address:	701 George Washington Hwy	Project #:	6206
City:	Barnstable	City:	Lincoln	Site #:	BETA
Phone:		Phone:	step@barnstablecounty.org	Site Location:	Barnstable, MA
Email:	pellis@barnstablecounty.org	Email:	rthibault@beta-inc.com	Site Location Province:	
Copies:	step@barnstablecounty.org	Copies:	lbooley@beta-inc.com	Sampled By:	Laura Bouley

22-Sep-22 12:04
Lori Dufour
C2R4032

ANNA ENV 700

Regulatory Criteria		Regular Turnaround Time (TAT)	
<input type="checkbox"/> Table 1 <input type="checkbox"/> Table 2 <input type="checkbox"/> Table 3 <input type="checkbox"/> Table	<input type="checkbox"/> Res/Park <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC	<input type="checkbox"/> CCME <input type="checkbox"/> Reg 558* <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> MISA <input type="checkbox"/> PWQO	<input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Municipality <input type="checkbox"/> Other:
Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>		<input type="checkbox"/> 5 to 7 Day <input type="checkbox"/> 10 Day	
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS		<input type="checkbox"/> Rush Turnaround Time (TAT) Surcharges apply <input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day	
Sample Identification	Date Sampled	Time (24hr)	Matrix
YY MM DD HH MM			
1 Influent (ARW-4)	22 09 20	9 00	
2 System #1 Mid	22 09 20	8 50	
3 System #1 E66	22 09 20	8 45	
4			
5			
6			
7			
8			
9			
10			
11			
12			

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY		Yes	No	°C	LAB USE ONLY		Yes	No	°C	LAB USE ONLY		Yes	No	°C	Temperature reading by:
Seal present	/			50.6	Seal present	/				Seal present	/				
Seal intact	/				Seal intact	/				Seal intact	/				
Cooling media present	/				Cooling media present	/				Cooling media present	/				
Relinquished by: (Signature/ Print)		YY	MM	DD	HH	MM	Received by: (Signature/ Print)		YY	MM	DD	HH	MM	Special Instructions	
1 [Signature]		2022	09	21	11	00	1 [Signature]		2022	09	22	12	04		
2							2								

461149

December 6, 2022

Priscilla Ellis
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22J4376

Enclosed are results of analyses for samples as received by the laboratory on October 31, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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

Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 12/6/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J4376

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
INF (PRW-4)	22J4376-01	Ground Water		SOP-454 PFAS	
System #1 Mid	22J4376-02	Ground Water		SOP-454 PFAS	
System #1 Eff	22J4376-03	Ground Water		SOP-454 PFAS	
System #2 Mid	22J4376-04	Ground Water		SOP-454 PFAS	
System #2 Eff	22J4376-05	Ground Water		SOP-454 PFAS	

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CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:**

L-01

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**4,8-Dioxa-3H-perfluorononanoic acid**

B321920-BSD1

N-MeFOSAA (NMeFOSAA)B321920-BSD1

L-07

Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.

Analyte & Samples(s) Qualified:**6:2 Fluorotelomersulfonic acid (6:2**22J4376-01[INF (PRW-4)], B321920-BSD1

PF-17

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

Analyte & Samples(s) Qualified:**M2-8:2FTS**S080004-IBL1

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:22J4376-01RE1[INF (PRW-4)]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**M2-8:2FTS**S079900-CCV1, S080004-CCV2

V-05

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

Analyte & Samples(s) Qualified:**Perfluoro-1-hexanesulfonamide (F1**

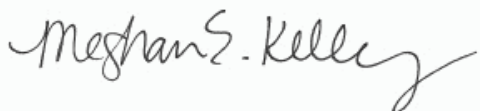
22J4376-01[INF (PRW-4)], 22J4376-02[System #1 Mid], 22J4376-03[System #1 Eff], 22J4376-04[System #2 Mid], 22J4376-05[System #2 Eff], S079900-CCV1

Perfluorotetradecanoic acid (PFTA

22J4376-01[INF (PRW-4)], 22J4376-02[System #1 Mid], 22J4376-03[System #1 Eff], 22J4376-04[System #2 Mid], 22J4376-05[System #2 Eff], S079900-CCV1

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J4376

Date Received: 10/31/2022

Field Sample #: INF (PRW-4)

Sampled: 10/25/2022 12:50

Sample ID: 22J4376-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	21	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorobutanesulfonic acid (PFBS)	8.5	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoropentanoic acid (PFPeA)	65	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorohexanoic acid (PFHxA)	58	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	38	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorodecanoic acid (PFDA)	3.9	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoroheptanesulfonic acid (PFHpS)	7.9	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.7	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorodecanesulfonic acid (PFDS)	2.9	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorooctanesulfonamide (FOSA)	3.1	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorononanesulfonic acid (PFNS)	5.1	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	47	1.7	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoro-1-butanefulfonamide (FBFA)	13	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorohexanesulfonic acid (PFHxS)	120	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	65	1.7	ng/L	1	L-07	SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoropentanesulfonic acid (PFPeS)	12	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoroundecanoic acid (PFUnA)	46	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluoroheptanoic acid (PFHpA)	37	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorooctanoic acid (PFOA)	25	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB
Perfluorooctanesulfonic acid (PFOS)	350	17	ng/L	10		SOP-454 PFAS	11/7/22	11/28/22 17:27	RRB
Perfluorononanoic acid (PFNA)	19	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:52	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J4376

Date Received: 10/31/2022

Field Sample #: System #1 Mid

Sampled: 10/25/2022 12:40

Sample ID: 22J4376-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 22:59	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J4376

Date Received: 10/31/2022

Field Sample #: System #1 Eff

Sampled: 10/25/2022 13:00

Sample ID: 22J4376-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorodecanoic acid (PFDA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.7	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.7	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorooctanoic acid (PFOA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB
Perfluorononanoic acid (PFNA)	ND	1.7	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:07	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J4376

Date Received: 10/31/2022

Field Sample #: System #2 Mid

Sampled: 10/25/2022 11:00

Sample ID: 22J4376-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:14	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J4376

Date Received: 10/31/2022

Field Sample #: System #2 Eff

Sampled: 10/25/2022 11:30

Sample ID: 22J4376-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1	V-05	SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	11/7/22	11/18/22 23:21	RRB

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data****Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22J4376-01 [INF (PRW-4)]	B321920	291	1.00	11/07/22
22J4376-01RE1 [INF (PRW-4)]	B321920	291	1.00	11/07/22
22J4376-02 [System #1 Mid]	B321920	282	1.00	11/07/22
22J4376-03 [System #1 Eff]	B321920	288	1.00	11/07/22
22J4376-04 [System #2 Mid]	B321920	271	1.00	11/07/22
22J4376-05 [System #2 Eff]	B321920	280	1.00	11/07/22

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

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B321920 - SOP 454-PFAAS

Blank (B321920-BLK1)

Prepared: 11/07/22 Analyzed: 11/18/22

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

LCS (B321920-BS1)

Prepared: 11/07/22 Analyzed: 11/18/22

Perfluorobutanoic acid (PFBA)	9.43	1.8	ng/L	9.04	104	73-129
Perfluorobutanesulfonic acid (PFBS)	8.62	1.8	ng/L	8.00	108	72-130
Perfluoropentanoic acid (PFPeA)	9.69	1.8	ng/L	9.04	107	72-129
Perfluorohexanoic acid (PFHxA)	9.86	1.8	ng/L	9.04	109	72-129
11Cl-PF3OUdS (F53B Major)	7.40	1.8	ng/L	8.51	86.9	55.1-141
9Cl-PF3ONS (F53B Minor)	7.77	1.8	ng/L	8.42	92.3	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	11.1	1.8	ng/L	8.51	131	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.06	1.8	ng/L	9.04	89.1	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.34	1.8	ng/L	8.68	108	67-138
Perfluorodecanoic acid (PFDA)	9.25	1.8	ng/L	9.04	102	71-129
Perfluorododecanoic acid (PFDoA)	8.25	1.8	ng/L	9.04	91.3	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.49	1.8	ng/L	8.04	106	49.4-154

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B321920 - SOP 454-PFAAS

LCS (B321920-BS1)

Prepared: 11/07/22 Analyzed: 11/18/22

Perfluoroheptanesulfonic acid (PFHpS)	10.2	1.8	ng/L	8.63		118	69-134			
N-EtFOSAA (NEtFOSAA)	11.2	1.8	ng/L	9.04		124	61-135			
N-MeFOSAA (NMeFOSAA)	11.7	1.8	ng/L	9.04		130	65-136			
Perfluorotetradecanoic acid (PFTA)	8.11	1.8	ng/L	9.04		89.7	71-132			
Perfluorotridecanoic acid (PFTTrDA)	8.18	1.8	ng/L	9.04		90.5	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.01	1.8	ng/L	8.45		107	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.99	1.8	ng/L	8.72		91.7	53-142			
Perfluorooctanesulfonamide (FOSA)	9.81	1.8	ng/L	9.04		109	67-137			
Perfluorononanesulfonic acid (PFNS)	8.56	1.8	ng/L	8.68		98.6	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	7.77	1.8	ng/L	9.04		86.0	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	9.15	1.8	ng/L	9.04		101	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.28	1.8	ng/L	8.27		100	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.85	1.8	ng/L	9.04		109	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.78	1.8	ng/L	9.04		108	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.34	1.8	ng/L	8.59		109	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.54	1.8	ng/L	8.50		100	71-127			
Perfluoroundecanoic acid (PFUnA)	9.89	1.8	ng/L	9.04		109	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.5	1.8	ng/L	9.04		117	58.5-143			
Perfluoroheptanoic acid (PFHpA)	9.68	1.8	ng/L	9.04		107	72-130			
Perfluorooctanoic acid (PFOA)	10.0	1.8	ng/L	9.04		111	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.73	1.8	ng/L	8.36		104	65-140			
Perfluorononanoic acid (PFNA)	9.69	1.8	ng/L	9.04		107	69-130			

LCS Dup (B321920-BSD1)

Prepared: 11/07/22 Analyzed: 11/18/22

Perfluorobutanoic acid (PFBA)	9.64	1.8	ng/L	8.87		109	73-129	2.24	30	
Perfluorobutanesulfonic acid (PFBS)	8.72	1.8	ng/L	7.85		111	72-130	1.12	30	
Perfluoropentanoic acid (PFPeA)	10.0	1.8	ng/L	8.87		113	72-129	3.22	30	
Perfluorohexanoic acid (PFHxA)	9.95	1.8	ng/L	8.87		112	72-129	0.906	30	
11Cl-PF3OUdS (F53B Major)	7.69	1.8	ng/L	8.36		92.0	55.1-141	3.81	30	
9Cl-PF3ONS (F53B Minor)	8.25	1.8	ng/L	8.27		99.8	59.6-146	5.95	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	11.8	1.8	ng/L	8.36		142	* 60.3-131	6.22	30	L-01
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.79	1.8	ng/L	8.87		99.0	37.6-167	8.66	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.03	1.8	ng/L	8.52		106	67-138	3.35	30	
Perfluorodecanoic acid (PFDA)	9.59	1.8	ng/L	8.87		108	71-129	3.56	30	
Perfluorododecanoic acid (PFDoA)	8.75	1.8	ng/L	8.87		98.6	72-134	5.88	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	8.81	1.8	ng/L	7.89		112	49.4-154	3.72	30	
Perfluoroheptanesulfonic acid (PFHpS)	10.3	1.8	ng/L	8.47		121	69-134	0.800	30	
N-EtFOSAA (NEtFOSAA)	11.7	1.8	ng/L	8.87		132	61-135	4.15	30	
N-MeFOSAA (NMeFOSAA)	12.1	1.8	ng/L	8.87		137	* 65-136	3.04	30	L-01
Perfluorotetradecanoic acid (PFTA)	8.81	1.8	ng/L	8.87		99.3	71-132	8.29	30	
Perfluorotridecanoic acid (PFTTrDA)	8.89	1.8	ng/L	8.87		100	65-144	8.28	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.64	1.8	ng/L	8.29		116	63-143	6.75	30	
Perfluorodecanesulfonic acid (PFDS)	8.51	1.8	ng/L	8.56		99.4	53-142	6.28	30	
Perfluorooctanesulfonamide (FOSA)	10.7	1.8	ng/L	8.87		121	67-137	8.77	30	
Perfluorononanesulfonic acid (PFNS)	9.24	1.8	ng/L	8.52		108	69-127	7.62	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	8.34	1.8	ng/L	8.87		94.0	61.7-156	7.10	30	
Perfluoro-1-butanefulfonamide (FBSA)	9.36	1.8	ng/L	8.87		105	61.3-145	2.27	30	
Perfluorohexanesulfonic acid (PFHxS)	8.34	1.8	ng/L	8.12		103	68-131	0.695	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	10.2	1.8	ng/L	8.87		115	59.8-147	3.53	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.2	1.8	ng/L	8.87		115	59.5-146	4.50	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B321920 - SOP 454-PFAAS
LCS Dup (B321920-BSD1)

Prepared: 11/07/22 Analyzed: 11/18/22

6:2 Fluorotelomersulfonic acid (6:2FTS A)	12.6	1.8	ng/L	8.43		149	*	64-140	29.4	30	L-07
Perfluoropetanesulfonic acid (PFPeS)	8.62	1.8	ng/L	8.34		103		71-127	1.02	30	
Perfluoroundecanoic acid (PFUnA)	10.6	1.8	ng/L	8.87		120		69-133	7.40	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.0	1.8	ng/L	8.87		124		58.5-143	4.59	30	
Perfluoroheptanoic acid (PFHpA)	10.1	1.8	ng/L	8.87		114		72-130	4.05	30	
Perfluorooctanoic acid (PFOA)	10.4	1.8	ng/L	8.87		117		71-133	4.02	30	
Perfluorooctanesulfonic acid (PFOS)	9.26	1.8	ng/L	8.21		113		65-140	5.87	30	
Perfluorononanoic acid (PFNA)	10.5	1.8	ng/L	8.87		118		69-130	8.12	30	

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

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
L-07	Either laboratory fortified blank/laboratory control sample or duplicate recovery is outside of control limits, but the other is within limits. RPD between the two LFB/LCS results is within method specified criteria.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
S-29	Extracted Internal Standard is outside of control limits.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
INF (PRW-4) (22J4376-01) Lab File ID: 22J4376-01.d Analyzed: 11/18/22 22:52									
M8FOSA	234506.7	3.980567	374,369.00	3.972567	63	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	86651.36	2.4228	95,103.00	2.4228	91	50 - 150	0.0000	+/-0.50	
M2PFTA	836753.5	4.297266	1,308,002.00	4.297266	64	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	140022.9	3.78685	174,267.00	3.78685	80	50 - 150	0.0000	+/-0.50	
MPFBA	437761.1	1.075083	569,738.00	1.075083	77	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	122775.9	2.76565	112,423.00	2.757467	109	50 - 150	0.0082	+/-0.50	
M6PFDA	562875.4	3.787367	778,372.00	3.7794	72	50 - 150	0.0080	+/-0.50	
M3PFBS	129530.5	1.845233	140,000.00	1.845233	93	50 - 150	0.0000	+/-0.50	
M7PFUnA	619037	3.92205	937,847.00	3.92205	66	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	68856.8	3.4293	67,370.00	3.4205	102	50 - 150	0.0088	+/-0.50	
M5PFPeA	408121.8	1.681733	457,636.00	1.681733	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	737015.2	2.506633	820,850.00	2.498417	90	50 - 150	0.0082	+/-0.50	
M3PFHxS	116507.6	3.185733	131,735.00	3.17765	88	50 - 150	0.0081	+/-0.50	
M4PFHpA	861352.7	3.14655	959,171.00	3.138467	90	50 - 150	0.0081	+/-0.50	
M8PFOA	821374.1	3.437833	927,458.00	3.437833	89	50 - 150	0.0000	+/-0.50	
M8PFOS	86664.2	3.636183	128,889.00	3.6282	67	50 - 150	0.0080	+/-0.50	
M9PFNA	516551.2	3.629233	701,674.00	3.629233	74	50 - 150	0.0000	+/-0.50	
MPFDoA	602246.6	4.056667	949,807.00	4.056667	63	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	159752.8	3.929517	233,583.00	3.929517	68	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	203151.3	3.85765	292,950.00	3.85765	69	50 - 150	0.0000	+/-0.50	
INF (PRW-4) (22J4376-01RE1) Lab File ID: 22J4376-01RE1.d Analyzed: 11/28/22 17:27									
M8PFOS	134214.4	3.628217	103,021.00	3.6282	130	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #1 Mid (22J4376-02) Lab File ID: 22J4376-02.d Analyzed: 11/18/22 22:59									
M8FOSA	291172.2	3.980567	374,369.00	3.972567	78	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	64335.05	2.4228	95,103.00	2.4228	68	50 - 150	0.0000	+/-0.50	
M2PFTA	1141998	4.297266	1,308,002.00	4.297266	87	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	147785.1	3.78685	174,267.00	3.78685	85	50 - 150	0.0000	+/-0.50	
MPFBA	526162.1	1.066783	569,738.00	1.075083	92	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	140663.7	2.76565	112,423.00	2.757467	125	50 - 150	0.0082	+/-0.50	
M6PFDA	687347.3	3.787367	778,372.00	3.7794	88	50 - 150	0.0080	+/-0.50	
M3PFBS	135970.9	1.845233	140,000.00	1.845233	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	732787.9	3.92205	937,847.00	3.92205	78	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	54066.36	3.4293	67,370.00	3.4205	80	50 - 150	0.0088	+/-0.50	
M5PFPeA	431516.1	1.681733	457,636.00	1.681733	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	783469.7	2.506633	820,850.00	2.498417	95	50 - 150	0.0082	+/-0.50	
M3PFHxS	121248.3	3.185733	131,735.00	3.17765	92	50 - 150	0.0081	+/-0.50	
M4PFHpA	907902.1	3.14655	959,171.00	3.138467	95	50 - 150	0.0081	+/-0.50	
M8PFOA	868385.9	3.437833	927,458.00	3.437833	94	50 - 150	0.0000	+/-0.50	
M8PFOS	114070	3.636183	128,889.00	3.6282	89	50 - 150	0.0080	+/-0.50	
M9PFNA	650321.5	3.629233	701,674.00	3.629233	93	50 - 150	0.0000	+/-0.50	
MPFDoA	768520.1	4.056667	949,807.00	4.056667	81	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	210384.2	3.929517	233,583.00	3.929517	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	246382.1	3.85765	292,950.00	3.85765	84	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #1 Eff (22J4376-03)		Lab File ID: 22J4376-03.d				Analyzed: 11/18/22 23:07			
M8FOSA	284557.4	3.980567	374,369.00	3.972567	76	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	62918.55	2.4228	95,103.00	2.4228	66	50 - 150	0.0000	+/-0.50	
M2PF _{TA}	1039396	4.297266	1,308,002.00	4.297266	79	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	147121.5	3.78685	174,267.00	3.78685	84	50 - 150	0.0000	+/-0.50	
MPFBA	525658.2	1.066783	569,738.00	1.075083	92	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	134646.8	2.76565	112,423.00	2.757467	120	50 - 150	0.0082	+/-0.50	
M6PFDA	688054.6	3.787367	778,372.00	3.7794	88	50 - 150	0.0080	+/-0.50	
M3PFBS	137041.7	1.845233	140,000.00	1.845233	98	50 - 150	0.0000	+/-0.50	
M7PFUnA	694787.7	3.92205	937,847.00	3.92205	74	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	47953.27	3.4293	67,370.00	3.4205	71	50 - 150	0.0088	+/-0.50	
M5PFPeA	436050.7	1.681733	457,636.00	1.681733	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	792008.8	2.506633	820,850.00	2.498417	96	50 - 150	0.0082	+/-0.50	
M3PFHxS	125702.8	3.185733	131,735.00	3.17765	95	50 - 150	0.0081	+/-0.50	
M4PFHpA	916387.9	3.14655	959,171.00	3.138467	96	50 - 150	0.0081	+/-0.50	
M8PFOA	850200.5	3.437833	927,458.00	3.437833	92	50 - 150	0.0000	+/-0.50	
M8PFOS	113439.4	3.636183	128,889.00	3.6282	88	50 - 150	0.0080	+/-0.50	
M9PFNA	627189.9	3.629233	701,674.00	3.629233	89	50 - 150	0.0000	+/-0.50	
MPFDoA	676756.1	4.056667	949,807.00	4.056667	71	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	188504.3	3.929517	233,583.00	3.929517	81	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	219212.5	3.85765	292,950.00	3.85765	75	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #2 Mid (22J4376-04) Lab File ID: 22J4376-04.d Analyzed: 11/18/22 23:14									
M8FOSA	290141.7	3.980567	374,369.00	3.972567	78	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	60964.94	2.431	95,103.00	2.4228	64	50 - 150	0.0082	+/-0.50	
M2PFtA	1044962	4.297266	1,308,002.00	4.297266	80	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	142484.4	3.78685	174,267.00	3.78685	82	50 - 150	0.0000	+/-0.50	
MPFBA	521809	1.066783	569,738.00	1.075083	92	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	137353.5	2.76565	112,423.00	2.757467	122	50 - 150	0.0082	+/-0.50	
M6PFDA	678510.6	3.787367	778,372.00	3.7794	87	50 - 150	0.0080	+/-0.50	
M3PFBS	134597.1	1.845233	140,000.00	1.845233	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	717750.3	3.92205	937,847.00	3.92205	77	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	49809.33	3.4293	67,370.00	3.4205	74	50 - 150	0.0088	+/-0.50	
M5PFPeA	436780.4	1.681733	457,636.00	1.681733	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	796384.4	2.506633	820,850.00	2.498417	97	50 - 150	0.0082	+/-0.50	
M3PFHxS	123548.6	3.185733	131,735.00	3.17765	94	50 - 150	0.0081	+/-0.50	
M4PFHpA	916057.8	3.14655	959,171.00	3.138467	96	50 - 150	0.0081	+/-0.50	
M8PFOA	837865.7	3.437833	927,458.00	3.437833	90	50 - 150	0.0000	+/-0.50	
M8PFOS	116078.2	3.636183	128,889.00	3.6282	90	50 - 150	0.0080	+/-0.50	
M9PFNA	634238.6	3.629233	701,674.00	3.629233	90	50 - 150	0.0000	+/-0.50	
MPFDaA	732389	4.056667	949,807.00	4.056667	77	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	185576.7	3.929517	233,583.00	3.929517	79	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	234640.3	3.85765	292,950.00	3.85765	80	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #2 Eff (22J4376-05)		Lab File ID: 22J4376-05.d				Analyzed: 11/18/22 23:21			
M8FOSA	309978.3	3.980567	374,369.00	3.972567	83	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	64094.37	2.431	95,103.00	2.4228	67	50 - 150	0.0082	+/-0.50	
M2PFTA	1093210	4.297266	1,308,002.00	4.297266	84	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	148224.9	3.78685	174,267.00	3.78685	85	50 - 150	0.0000	+/-0.50	
MPFBA	541570.2	1.066783	569,738.00	1.075083	95	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	132564.9	2.76565	112,423.00	2.757467	118	50 - 150	0.0082	+/-0.50	
M6PFDA	721579.7	3.787367	778,372.00	3.7794	93	50 - 150	0.0080	+/-0.50	
M3PFBS	138445.4	1.853533	140,000.00	1.845233	99	50 - 150	0.0083	+/-0.50	
M7PFUnA	776815.8	3.92205	937,847.00	3.92205	83	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	50785.48	3.4293	67,370.00	3.4205	75	50 - 150	0.0088	+/-0.50	
M5PFPeA	452257.3	1.681733	457,636.00	1.681733	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	803271.8	2.506633	820,850.00	2.498417	98	50 - 150	0.0082	+/-0.50	
M3PFHxS	125503.4	3.185733	131,735.00	3.17765	95	50 - 150	0.0081	+/-0.50	
M4PFHpA	937210.4	3.14655	959,171.00	3.138467	98	50 - 150	0.0081	+/-0.50	
M8PFOA	845834	3.437833	927,458.00	3.437833	91	50 - 150	0.0000	+/-0.50	
M8PFOS	118080.8	3.636183	128,889.00	3.6282	92	50 - 150	0.0080	+/-0.50	
M9PFNA	667671.9	3.629233	701,674.00	3.629233	95	50 - 150	0.0000	+/-0.50	
MPFDoA	801450.8	4.056667	949,807.00	4.056667	84	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	193287.5	3.929517	233,583.00	3.929517	83	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	243031.9	3.85765	292,950.00	3.85765	83	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B321920-BLK1)			Lab File ID: B321920-BLK1.d			Analyzed: 11/18/22 22:45			
M8FOSA	234511.6	3.980567	374,369.00	3.972567	63	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	91240.76	2.4228	95,103.00	2.4228	96	50 - 150	0.0000	+/-0.50	
M2PFTA	954342	4.297266	1,308,002.00	4.297266	73	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	145721.1	3.78685	174,267.00	3.78685	84	50 - 150	0.0000	+/-0.50	
MPFBA	525682.2	1.066783	569,738.00	1.075083	92	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	117642.7	2.757467	112,423.00	2.757467	105	50 - 150	0.0000	+/-0.50	
M6PFDA	655634.3	3.787367	778,372.00	3.7794	84	50 - 150	0.0080	+/-0.50	
M3PFBS	125225.9	1.845233	140,000.00	1.845233	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	691946.4	3.92205	937,847.00	3.92205	74	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	65528.48	3.4293	67,370.00	3.4205	97	50 - 150	0.0088	+/-0.50	
M5PFPeA	408018	1.681733	457,636.00	1.681733	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	717718.2	2.506633	820,850.00	2.498417	87	50 - 150	0.0082	+/-0.50	
M3PFHxS	116988.8	3.185733	131,735.00	3.17765	89	50 - 150	0.0081	+/-0.50	
M4PFHpA	838389.1	3.14655	959,171.00	3.138467	87	50 - 150	0.0081	+/-0.50	
M8PFOA	795827.6	3.437833	927,458.00	3.437833	86	50 - 150	0.0000	+/-0.50	
M8PFOS	108735.8	3.636183	128,889.00	3.6282	84	50 - 150	0.0080	+/-0.50	
M9PFNA	604458.6	3.629233	701,674.00	3.629233	86	50 - 150	0.0000	+/-0.50	
MPFDoA	669220.7	4.056667	949,807.00	4.056667	70	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	184645.8	3.929517	233,583.00	3.929517	79	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	226042.8	3.85765	292,950.00	3.85765	77	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B321920-BS1)			Lab File ID: B321920-BS1.d			Analyzed: 11/18/22 22:31			
M8FOSA	259351	3.972567	374,369.00	3.972567	69	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	100191.1	2.4228	95,103.00	2.4228	105	50 - 150	0.0000	+/-0.50	
M2PFTA	1161526	4.297266	1,308,002.00	4.297266	89	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	166232.8	3.78685	174,267.00	3.78685	95	50 - 150	0.0000	+/-0.50	
MPFBA	560837.1	1.066783	569,738.00	1.075083	98	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	129462.7	2.757467	112,423.00	2.757467	115	50 - 150	0.0000	+/-0.50	
M6PFDA	690610.1	3.787367	778,372.00	3.7794	89	50 - 150	0.0080	+/-0.50	
M3PFBS	136630.5	1.845233	140,000.00	1.845233	98	50 - 150	0.0000	+/-0.50	
M7PFUnA	779065	3.92205	937,847.00	3.92205	83	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	68719.23	3.4205	67,370.00	3.4205	102	50 - 150	0.0000	+/-0.50	
M5PFPeA	441468.2	1.681733	457,636.00	1.681733	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	782618	2.498417	820,850.00	2.498417	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	125139.3	3.17765	131,735.00	3.17765	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	918545.3	3.138467	959,171.00	3.138467	96	50 - 150	0.0000	+/-0.50	
M8PFOA	868427.3	3.437833	927,458.00	3.437833	94	50 - 150	0.0000	+/-0.50	
M8PFOS	120663.1	3.636183	128,889.00	3.6282	94	50 - 150	0.0080	+/-0.50	
M9PFNA	671763.6	3.629233	701,674.00	3.629233	96	50 - 150	0.0000	+/-0.50	
MPFDoA	807740.4	4.056667	949,807.00	4.056667	85	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	197969.4	3.929517	233,583.00	3.929517	85	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	257151.4	3.85765	292,950.00	3.85765	88	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B321920-BSD1)			Lab File ID: B321920-BSD1.d			Analyzed: 11/18/22 22:38			
M8FOSA	223295.7	3.972567	374,369.00	3.972567	60	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	87244.94	2.4228	95,103.00	2.4228	92	50 - 150	0.0000	+/-0.50	
M2PF _{TA}	992973.9	4.297266	1,308,002.00	4.297266	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	156390.1	3.78685	174,267.00	3.78685	90	50 - 150	0.0000	+/-0.50	
MPFBA	499288.6	1.066783	569,738.00	1.075083	88	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	119145.5	2.757467	112,423.00	2.757467	106	50 - 150	0.0000	+/-0.50	
M6PFDA	637354.3	3.787367	778,372.00	3.7794	82	50 - 150	0.0080	+/-0.50	
M3PFBS	118433.6	1.845233	140,000.00	1.845233	85	50 - 150	0.0000	+/-0.50	
M7PF _{UnA}	682491	3.92205	937,847.00	3.92205	73	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	62158.79	3.4205	67,370.00	3.4205	92	50 - 150	0.0000	+/-0.50	
M5PF _{PeA}	387748.3	1.681733	457,636.00	1.681733	85	50 - 150	0.0000	+/-0.50	
M5PF _{HxA}	690045.1	2.498417	820,850.00	2.498417	84	50 - 150	0.0000	+/-0.50	
M3PF _{HxS}	108090.7	3.17765	131,735.00	3.17765	82	50 - 150	0.0000	+/-0.50	
M4PF _{HpA}	808897.7	3.138483	959,171.00	3.138467	84	50 - 150	0.0000	+/-0.50	
M8PFOA	764200.2	3.437833	927,458.00	3.437833	82	50 - 150	0.0000	+/-0.50	
M8PFOS	105502.4	3.636183	128,889.00	3.6282	82	50 - 150	0.0080	+/-0.50	
M9PFNA	581752.4	3.629233	701,674.00	3.629233	83	50 - 150	0.0000	+/-0.50	
MPF _{DoA}	707078.3	4.056667	949,807.00	4.056667	74	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	176204.3	3.929517	233,583.00	3.929517	75	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	237983.7	3.85765	292,950.00	3.85765	81	50 - 150	0.0000	+/-0.50	

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

CERTIFICATIONS
Certified Analyses included in this Report

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

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

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



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Company Name: Barnstable County
Address: 3195 Main St. PO Box 427
Phone: BFTA
Project Location: Barnstable, MA 01906
Project Number: 6206
Project Manager: Roger Thibault

Con-Test Quote Name/Number:

Invoice Recipient: Priscilla Ellis - pellis@barnstablecounty.org

Sampled By: Matt Alger

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Requested Turnaround Time

7-Day ☐ 10-Day ☐ ☐ Field Filtered
PFAS 15-Day (std) ☒ Due Date: ☐ Lab to Filter

Rush Approval Required ☐ Orthophosphate Samples
1-Day ☐ 3-Day ☐ ☐ Field Filtered
2-Day ☐ 4-Day ☐ ☐ Lab to Filter

Format: PDF ☒ EXCEL ☒ **PCB ONLY**

Other: ☐ SOXHLET

CLP Like Data Pkg Required: ☐ **NON SOXHLET**

Email To: Rhinault@BETA-Inc.com; Lhouley@BETA-Inc.com

Fax To #:

ANALYSIS REQUESTED

Con-Test Work Order #	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS
1	INF (PRW-4)	10.25.22 12:30		GRAB	GW	U			NP			X
2	System #1 Mid	10.25.22 12:40		GRAB	GW	U			NP			X
3	System #1 Eff	10.25.22 13:00		GRAB	GW	U			NP			X
4	System #2 Mid	10.25.22 11:00		GRAB	GW	U			NP			X
5	System #2 Eff	10.25.22 11:30		GRAB	GW	U			NP			X
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Client Comments: Sample confirmation and report to Rhinault@BETA-Inc.com & Lhouley@BETA-Inc.com

Relinquished by: (signature) *Agnes*

Received by: (signature) *Bette Indge*

Relinquished by: (signature) *Agnes*

Received by: (signature) *Bette Indge*

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Received by: (signature) *Bette Indge*

Relinquished by: (signature) *Agnes*

Received by: (signature) *Bette Indge*

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

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

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

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

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

Other
☐ Chromatogram
☐ AIHA-LAP, LLC

RELAC and AIHA-LAP, LLC Accredited

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

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



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

Client Barnstable County

Received By [Signature] Date 10/31/22 Time 1720

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

Direct From Sample _____ Ambient _____ Melted Ice _____

Were samples within Temperature? Within 2-6°C T By Gun # 3 Actual Temp - 2.0

By Blank # _____ Actual Temp - _____

Was Custody Seal In tact? gle Were Samples Tampered with? gle

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

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

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

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

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

Are Sample labels filled out and legible? T

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

Are there Rushes? F Who was notified? _____

Are there Short Holds? F Who was notified? _____

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

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

Proper Media/Containers Used? T splitting samples require F

Were trip blanks receive F On COC? F

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

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

Unused Media

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

Comments:

January 12, 2023

Laura Bouley
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22L0109

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

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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

Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Laura Bouley

REPORT DATE: 1/12/2023

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22L0109

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
INF (PRW-4)	22L0109-01	Ground Water		SOP-454 PFAS	
System #1 Mid	22L0109-02	Ground Water		SOP-454 PFAS	
System #1 Eff	22L0109-03	Ground Water		SOP-454 PFAS	
System #2 Mid	22L0109-04	Ground Water		SOP-454 PFAS	
System #2 Eff	22L0109-05	Ground Water		SOP-454 PFAS	

CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:****PF-18**

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

Analyte & Samples(s) Qualified:**M2-4:2FTS**

22L0109-02[System #1 Mid], 22L0109-03[System #1 Eff], 22L0109-04[System #2 Mid], 22L0109-05[System #2 Eff]

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:**Perfluorooctanesulfonic acid (PFOS)**

22L0109-01RE1[INF (PRW-4)]

PF-23

Qualifier ion ratio <50% of associated calibration. Detection is suspect.

Analyte & Samples(s) Qualified:**Perfluorodecanesulfonic acid (PFDS)**

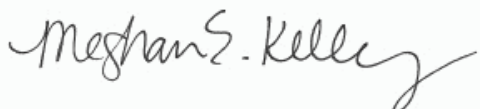
22L0109-01[INF (PRW-4)]

Perfluorooctanesulfonamide (FOSA)

22L0109-01[INF (PRW-4)]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Meghan E. Kelley
Reporting Specialist

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L0109

Date Received: 12/1/2022

Field Sample #: INF (PRW-4)

Sampled: 11/30/2022 12:30

Sample ID: 22L0109-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	20	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorobutanesulfonic acid (PFBS)	7.8	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoropentanoic acid (PFPeA)	58	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorohexanoic acid (PFHxA)	52	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	33	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorodecanoic acid (PFDA)	4.1	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoroheptanesulfonic acid (PFHpS)	6.4	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorodecanesulfonic acid (PFDS)	3.2	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorooctanesulfonamide (FOSA)	3.7	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorononanesulfonic acid (PFNS)	5.0	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	53	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoro-1-butanefulfonamide (FBFA)	12	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorohexanesulfonic acid (PFHxS)	110	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	47	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoropentanesulfonic acid (PFPeS)	11	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoroundecanoic acid (PFUnA)	42	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluoroheptanoic acid (PFHpA)	36	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorooctanoic acid (PFOA)	23	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB
Perfluorooctanesulfonic acid (PFOS)	410	19	ng/L	10	PF-19	SOP-454 PFAS	12/8/22	12/14/22 20:17	RRB
Perfluorononanoic acid (PFNA)	19	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:04	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L0109

Date Received: 12/1/2022

Field Sample #: System #1 Mid

Sampled: 11/30/2022 12:45

Sample ID: 22L0109-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorodecanoic acid (PFDA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorooctanoic acid (PFOA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB
Perfluorononanoic acid (PFNA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:11	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L0109

Date Received: 12/1/2022

Field Sample #: System #1 Eff

Sampled: 11/30/2022 12:15

Sample ID: 22L0109-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:26	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L0109

Date Received: 12/1/2022

Field Sample #: System #2 Mid

Sampled: 11/30/2022 11:30

Sample ID: 22L0109-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:33	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L0109

Date Received: 12/1/2022

Field Sample #: System #2 Eff

Sampled: 11/30/2022 11:40

Sample ID: 22L0109-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/8/22	12/14/22 19:41	RRB

Sample Extraction Data**Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L0109-01 [INF (PRW-4)]	B324974	268	1.00	12/08/22
22L0109-01RE1 [INF (PRW-4)]	B324974	268	1.00	12/08/22
22L0109-02 [System #1 Mid]	B324974	287	1.00	12/08/22
22L0109-03 [System #1 Eff]	B324974	275	1.00	12/08/22
22L0109-04 [System #2 Mid]	B324974	263	1.00	12/08/22
22L0109-05 [System #2 Eff]	B324974	274	1.00	12/08/22

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B324974 - SOP 454-PFAAS

Blank (B324974-BLK1)

Prepared: 12/08/22 Analyzed: 12/14/22

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

LCS (B324974-BS1)

Prepared: 12/08/22 Analyzed: 12/14/22

Perfluorobutanoic acid (PFBA)	9.03	1.9	ng/L	9.40	96.1	73-129
Perfluorobutanesulfonic acid (PFBS)	8.26	1.9	ng/L	8.32	99.4	72-130
Perfluoropentanoic acid (PFPeA)	9.00	1.9	ng/L	9.40	95.8	72-129
Perfluorohexanoic acid (PFHxA)	9.13	1.9	ng/L	9.40	97.1	72-129
11Cl-PF3OUdS (F53B Major)	7.91	1.9	ng/L	8.85	89.4	55.1-141
9Cl-PF3ONS (F53B Minor)	7.83	1.9	ng/L	8.76	89.4	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.04	1.9	ng/L	8.85	90.8	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6.61	1.9	ng/L	9.40	70.3	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.91	1.9	ng/L	9.02	110	67-138
Perfluorodecanoic acid (PFDA)	11.0	1.9	ng/L	9.40	117	71-129
Perfluorododecanoic acid (PFDoA)	10.1	1.9	ng/L	9.40	107	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	8.02	1.9	ng/L	8.36	95.9	49.4-154

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B324974 - SOP 454-PFAAS
LCS (B324974-BS1)

Prepared: 12/08/22 Analyzed: 12/14/22

Perfluoroheptanesulfonic acid (PFHpS)	9.61	1.9	ng/L	8.98		107	69-134			
N-EtFOSAA (NEtFOSAA)	11.6	1.9	ng/L	9.40		124	61-135			
N-MeFOSAA (NMeFOSAA)	10.8	1.9	ng/L	9.40		115	65-136			
Perfluorotetradecanoic acid (PFTA)	9.80	1.9	ng/L	9.40		104	71-132			
Perfluorotridecanoic acid (PFTTrDA)	9.96	1.9	ng/L	9.40		106	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.79	1.9	ng/L	8.79		100	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.46	1.9	ng/L	9.07		93.3	53-142			
Perfluorooctanesulfonamide (FOSA)	10.0	1.9	ng/L	9.40		107	67-137			
Perfluorononanesulfonic acid (PFNS)	9.08	1.9	ng/L	9.02		101	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.29	1.9	ng/L	9.40		98.9	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	9.03	1.9	ng/L	9.40		96.1	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.06	1.9	ng/L	8.60		93.8	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	8.82	1.9	ng/L	9.40		93.8	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.19	1.9	ng/L	9.40		97.7	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.58	1.9	ng/L	8.93		107	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.38	1.9	ng/L	8.83		94.9	71-127			
Perfluoroundecanoic acid (PFUnA)	10.9	1.9	ng/L	9.40		116	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.96	1.9	ng/L	9.40		106	58.5-143			
Perfluoroheptanoic acid (PFHpA)	9.37	1.9	ng/L	9.40		99.7	72-130			
Perfluorooctanoic acid (PFOA)	9.32	1.9	ng/L	9.40		99.2	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.87	1.9	ng/L	8.69		102	65-140			
Perfluorononanoic acid (PFNA)	9.59	1.9	ng/L	9.40		102	69-130			

Matrix Spike (B324974-MS1)
Source: 22L0109-02

Prepared: 12/08/22 Analyzed: 12/14/22

Perfluorobutanoic acid (PFBA)	10.4	1.8	ng/L	9.22	ND	112	73-129			
Perfluorobutanesulfonic acid (PFBS)	8.70	1.8	ng/L	8.16	ND	107	72-130			
Perfluoropentanoic acid (PFPeA)	10.3	1.8	ng/L	9.22	ND	112	72-129			
Perfluorohexanoic acid (PFHxA)	10.3	1.8	ng/L	9.22	ND	112	72-129			
11Cl-PF3OUdS (F53B Major)	9.17	1.8	ng/L	8.68	ND	106	58.3-140			
9Cl-PF3ONS (F53B Minor)	9.13	1.8	ng/L	8.59	ND	106	61.4-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.08	1.8	ng/L	8.68	ND	105	62.4-128			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.00	1.8	ng/L	9.22	ND	75.9	36.7-171			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.24	1.8	ng/L	8.85	ND	104	67-138			
Perfluorodecanoic acid (PFDA)	11.3	1.8	ng/L	9.22	ND	123	71-129			
Perfluorododecanoic acid (PFDoA)	11.1	1.8	ng/L	9.22	ND	120	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	8.79	1.8	ng/L	8.20	ND	107	54.3-149			
Perfluoroheptanesulfonic acid (PFHpS)	10.6	1.8	ng/L	8.80	ND	121	69-134			
N-EtFOSAA (NEtFOSAA)	12.1	1.8	ng/L	9.22	ND	131	61-135			
N-MeFOSAA (NMeFOSAA)	12.1	1.8	ng/L	9.22	ND	131	65-136			
Perfluorotetradecanoic acid (PFTA)	10.6	1.8	ng/L	9.22	ND	115	71-132			
Perfluorotridecanoic acid (PFTTrDA)	10.4	1.8	ng/L	9.22	ND	112	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.2	1.8	ng/L	8.62	ND	118	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.42	1.8	ng/L	8.90	ND	94.7	53-142			
Perfluorooctanesulfonamide (FOSA)	10.2	1.8	ng/L	9.22	ND	110	67-137			
Perfluorononanesulfonic acid (PFNS)	10.2	1.8	ng/L	8.85	ND	115	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	10.9	1.8	ng/L	9.22	ND	118	64.2-154			
Perfluoro-1-butanefulfonamide (FBSA)	10.2	1.8	ng/L	9.22	ND	111	65.9-140			
Perfluorohexanesulfonic acid (PFHxS)	9.15	1.8	ng/L	8.43	ND	108	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.74	1.8	ng/L	9.22	ND	106	61.9-143			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.1	1.8	ng/L	9.22	ND	110	61.4-142			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B324974 - SOP 454-PFAAS

Matrix Spike (B324974-MS1)		Source: 22L0109-02			Prepared: 12/08/22 Analyzed: 12/14/22					
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.5	1.8	ng/L	8.76	ND	120	64-140			
Perfluoropetanesulfonic acid (PFPeS)	9.29	1.8	ng/L	8.66	ND	107	71-127			
Perfluoroundecanoic acid (PFUnA)	10.6	1.8	ng/L	9.22	ND	115	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.9	1.8	ng/L	9.22	ND	118	62-138			
Perfluoroheptanoic acid (PFHpA)	10.8	1.8	ng/L	9.22	ND	117	72-130			
Perfluorooctanoic acid (PFOA)	10.3	1.8	ng/L	9.22	ND	111	71-133			
Perfluorooctanesulfonic acid (PFOS)	10.4	1.8	ng/L	8.53	1.05	110	65-140			
Perfluorononanoic acid (PFNA)	9.71	1.8	ng/L	9.22	ND	105	69-130			

Matrix Spike Dup (B324974-MSD1)		Source: 22L0109-02			Prepared: 12/08/22 Analyzed: 12/14/22					
Perfluorobutanoic acid (PFBA)	9.35	1.9	ng/L	9.61	ND	97.3	73-129	10.3	30	
Perfluorobutanesulfonic acid (PFBS)	7.96	1.9	ng/L	8.50	ND	93.6	72-130	8.88	30	
Perfluoropentanoic acid (PFPeA)	9.38	1.9	ng/L	9.61	ND	97.6	72-129	9.86	30	
Perfluorohexanoic acid (PFHxA)	9.24	1.9	ng/L	9.61	ND	96.2	72-129	10.9	30	
11Cl-PF3OUdS (F53B Major)	8.94	1.9	ng/L	9.05	ND	98.8	58.3-140	2.61	30	
9Cl-PF3ONS (F53B Minor)	7.60	1.9	ng/L	8.95	ND	84.9	61.4-144	18.3	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.99	1.9	ng/L	9.05	ND	88.3	62.4-128	12.7	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6.55	1.9	ng/L	9.61	ND	68.1	36.7-171	6.71	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.42	1.9	ng/L	9.22	ND	102	67-138	2.00	30	
Perfluorodecanoic acid (PFDA)	10.8	1.9	ng/L	9.61	ND	113	71-129	4.39	30	
Perfluorododecanoic acid (PFDoA)	9.82	1.9	ng/L	9.61	ND	102	72-134	11.9	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	7.76	1.9	ng/L	8.55	ND	90.8	54.3-149	12.4	30	
Perfluoroheptanesulfonic acid (PFHpS)	10.2	1.9	ng/L	9.17	ND	111	69-134	4.62	30	
N-EtFOSAA (NEtFOSAA)	11.0	1.9	ng/L	9.61	ND	114	61-135	10.0	30	
N-MeFOSAA (NMeFOSAA)	10.7	1.9	ng/L	9.61	ND	111	65-136	12.1	30	
Perfluorotetradecanoic acid (PFTA)	10.1	1.9	ng/L	9.61	ND	105	71-132	4.74	30	
Perfluorotridecanoic acid (PFTrDA)	9.99	1.9	ng/L	9.61	ND	104	65-144	3.58	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.93	1.9	ng/L	8.98	ND	99.5	63-143	12.9	30	
Perfluorodecanesulfonic acid (PFDS)	8.11	1.9	ng/L	9.27	ND	87.5	53-142	3.77	30	
Perfluorooctanesulfonamide (FOSA)	9.50	1.9	ng/L	9.61	ND	98.8	67-137	6.79	30	
Perfluorononanesulfonic acid (PFNS)	9.55	1.9	ng/L	9.22	ND	104	69-127	6.66	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	10.2	1.9	ng/L	9.61	ND	106	64.2-154	6.97	30	
Perfluoro-1-butanedisulfonamide (FBSA)	9.18	1.9	ng/L	9.61	ND	95.6	65.9-140	10.6	30	
Perfluorohexanesulfonic acid (PFHxS)	8.63	1.9	ng/L	8.79	ND	98.2	68-131	5.79	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	8.81	1.9	ng/L	9.61	ND	91.7	61.9-143	10.0	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	9.32	1.9	ng/L	9.61	ND	97.0	61.4-142	8.39	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.84	1.9	ng/L	9.13	ND	96.8	64-140	17.6	30	
Perfluoropetanesulfonic acid (PFPeS)	8.21	1.9	ng/L	9.03	ND	91.0	71-127	12.3	30	
Perfluoroundecanoic acid (PFUnA)	10.6	1.9	ng/L	9.61	ND	110	69-133	0.0193	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.81	1.9	ng/L	9.61	ND	102	62-138	10.4	30	
Perfluoroheptanoic acid (PFHpA)	9.74	1.9	ng/L	9.61	ND	101	72-130	10.2	30	
Perfluorooctanoic acid (PFOA)	10.1	1.9	ng/L	9.61	ND	105	71-133	1.90	30	
Perfluorooctanesulfonic acid (PFOS)	10.1	1.9	ng/L	8.89	1.05	102	65-140	3.30	30	
Perfluorononanoic acid (PFNA)	9.94	1.9	ng/L	9.61	ND	103	69-130	2.36	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B324974 - SOP 454-PFAAS
Reference (B324974-SRM1)

Prepared: 12/08/22 Analyzed: 12/14/22

Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	9.57			0-200			
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	8.47			0-200			
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	9.57			0-200			
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	9.57			0-200			
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	9.01			0-200			
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	8.92			0-200			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	9.01			0-200			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	9.57			0-200			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	9.19			0-200			
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	9.57			0-200			
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	9.57			0-200			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	8.52			0-200			
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	9.14			0-200			
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	9.57			0-200			
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	9.57			0-200			
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	9.57			0-200			
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	9.57			0-200			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	8.95			0-200			
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	9.23			0-200			
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	9.57			0-200			
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	9.19			0-200			
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	9.57			0-200			
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L	9.57			0-200			
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	8.76			0-200			
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	9.57			0-200			
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	9.57			0-200			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	9.09			0-200			
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	8.99			0-200			
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	9.57			0-200			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	9.57			0-200			
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	9.57			0-200			
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	9.57			0-200			
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	8.85			0-200			
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	9.57			0-200			

Batch B326461 - SOP 454-PFAAS
Blank (B326461-BLK1)

Prepared: 12/21/22 Analyzed: 12/27/22

Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L							
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L							

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B326461 - SOP 454-PFAAS
Blank (B326461-BLK1)

Prepared: 12/21/22 Analyzed: 12/27/22

Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L
Perfluoro-1-butanefulfonamide (FBSA)	ND	1.9	ng/L
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L

LCS (B326461-BS1)

Prepared: 12/21/22 Analyzed: 12/27/22

Perfluorobutanoic acid (PFBA)	10.9	2.0	ng/L	9.77	112	73-129
Perfluorobutanesulfonic acid (PFBS)	9.29	2.0	ng/L	8.65	107	72-130
Perfluoropentanoic acid (PFPeA)	10.9	2.0	ng/L	9.77	112	72-129
Perfluorohexanoic acid (PFHxA)	10.8	2.0	ng/L	9.77	110	72-129
11Cl-PF3OUdS (F53B Major)	8.51	2.0	ng/L	9.21	92.4	55.1-141
9Cl-PF3ONS (F53B Minor)	9.87	2.0	ng/L	9.11	108	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.32	2.0	ng/L	9.21	101	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10.3	2.0	ng/L	9.77	105	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.13	2.0	ng/L	9.38	97.3	67-138
Perfluorodecanoic acid (PFDA)	12.6	2.0	ng/L	9.77	129	71-129
Perfluorododecanoic acid (PFDoA)	12.4	2.0	ng/L	9.77	126	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.75	2.0	ng/L	8.70	101	49.4-154
Perfluoroheptanesulfonic acid (PFHpS)	9.50	2.0	ng/L	9.33	102	69-134
N-EtFOSAA (NEtFOSAA)	11.4	2.0	ng/L	9.77	117	61-135
N-MeFOSAA (NMeFOSAA)	12.8	2.0	ng/L	9.77	131	65-136
Perfluorotetradecanoic acid (PFTA)	11.1	2.0	ng/L	9.77	114	71-132
Perfluorotridecanoic acid (PFTrDA)	11.6	2.0	ng/L	9.77	118	65-144
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.95	2.0	ng/L	9.14	109	63-143
Perfluorodecanesulfonic acid (PFDS)	8.48	2.0	ng/L	9.43	89.9	53-142
Perfluorooctanesulfonamide (FOSA)	12.4	2.0	ng/L	9.77	127	67-137
Perfluorononanesulfonic acid (PFNS)	9.33	2.0	ng/L	9.38	99.4	69-127
Perfluoro-1-hexanesulfonamide (FHxSA)	11.2	2.0	ng/L	9.77	115	61.7-156
Perfluoro-1-butanefulfonamide (FBSA)	10.6	2.0	ng/L	9.77	108	61.3-145
Perfluorohexanesulfonic acid (PFHxS)	9.28	2.0	ng/L	8.94	104	68-131

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B326461 - SOP 454-PFAAS
LCS (B326461-BS1)

Prepared: 12/21/22 Analyzed: 12/27/22

Perfluoro-4-oxapentanoic acid (PFMPA)	10.3	2.0	ng/L	9.77		106	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.6	2.0	ng/L	9.77		109	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.8	2.0	ng/L	9.28		117	64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.93	2.0	ng/L	9.19		108	71-127			
Perfluoroundecanoic acid (PFUnA)	10.9	2.0	ng/L	9.77		112	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.2	2.0	ng/L	9.77		104	58.5-143			
Perfluoroheptanoic acid (PFHpA)	10.7	2.0	ng/L	9.77		110	72-130			
Perfluorooctanoic acid (PFOA)	10.5	2.0	ng/L	9.77		108	71-133			
Perfluorooctanesulfonic acid (PFOS)	10.3	2.0	ng/L	9.04		114	65-140			
Perfluorononanoic acid (PFNA)	11.3	2.0	ng/L	9.77		115	69-130			

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
PF-23	Qualifier ion ratio <50% of associated calibration. Detection is suspect.

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
INF (PRW-4) (22L0109-01) Lab File ID: 22L0109-01.d Analyzed: 12/14/22 19:04									
M8FOSA	182793.5	3.9486	236,835.00	3.9486	77	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	71849.2	2.4804	127,593.00	2.4804	56	50 - 150	0.0000	+/-0.50	
M2PFTA	621417.6	4.2892	883,350.00	4.297266	70	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	110578.6	3.76295	106,068.00	3.76295	104	50 - 150	0.0000	+/-0.50	
MPFBA	301889.8	1.033533	405,224.00	1.033533	74	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	120798.3	2.81475	94,452.00	2.822933	128	50 - 150	-0.0082	+/-0.50	
M6PFDA	456627.5	3.763467	509,721.00	3.763467	90	50 - 150	0.0000	+/-0.50	
M3PFBS	107504.7	1.878383	114,251.00	1.878383	94	50 - 150	0.0000	+/-0.50	
M7PFUnA	460522	3.906067	559,117.00	3.914067	82	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	129526	3.4044	112,597.00	3.4044	115	50 - 150	0.0000	+/-0.50	
M5PFPeA	355779.5	1.698283	386,004.00	1.698283	92	50 - 150	0.0000	+/-0.50	
M5PFHxA	595855.6	2.572333	652,040.00	2.572333	91	50 - 150	0.0000	+/-0.50	
M3PFHxS	78158.55	3.177667	82,239.00	3.17765	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	638265.1	3.14655	675,794.00	3.14655	94	50 - 150	0.0000	+/-0.50	
M8PFOA	590090.4	3.413117	614,656.00	3.413117	96	50 - 150	0.0000	+/-0.50	
M8PFOS	68550.3	3.60425	91,052.00	3.60425	75	50 - 150	0.0000	+/-0.50	
M9PFNA	402072.3	3.605283	493,594.00	3.605283	81	50 - 150	0.0000	+/-0.50	
MPFDoA	408197.8	4.048683	536,571.00	4.048683	76	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	112085.8	3.913533	158,959.00	3.913533	71	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	145201.1	3.833783	191,022.00	3.841733	76	50 - 150	-0.0080	+/-0.50	
INF (PRW-4) (22L0109-01RE1) Lab File ID: 22L0109-01RE1.d Analyzed: 12/14/22 20:17									
M8PFOS	82598.94	3.60425	91,052.00	3.60425	91	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #1 Mid (22L0109-02)		Lab File ID: 22L0109-02.d				Analyzed: 12/14/22 19:11			
M8FOSA	180258.8	3.9486	236,835.00	3.9486	76	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	58883.52	2.4804	127,593.00	2.4804	46	50 - 150	0.0000	+/-0.50	*
M2PFTA	645035.5	4.2892	883,350.00	4.297266	73	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	88957.63	3.76295	106,068.00	3.76295	84	50 - 150	0.0000	+/-0.50	
MPFBA	345118.6	1.033533	405,224.00	1.033533	85	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	110209.2	2.81475	94,452.00	2.822933	117	50 - 150	-0.0082	+/-0.50	
M6PFDA	454211.3	3.763467	509,721.00	3.763467	89	50 - 150	0.0000	+/-0.50	
M3PFBS	99966.13	1.878383	114,251.00	1.878383	87	50 - 150	0.0000	+/-0.50	
M7PFUnA	461584.3	3.906067	559,117.00	3.914067	83	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	84393.76	3.4044	112,597.00	3.4044	75	50 - 150	0.0000	+/-0.50	
M5PFPeA	342757.3	1.698283	386,004.00	1.698283	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	559964.2	2.572333	652,040.00	2.572333	86	50 - 150	0.0000	+/-0.50	
M3PFHxS	75992.92	3.17765	82,239.00	3.17765	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	597103.4	3.14655	675,794.00	3.14655	88	50 - 150	0.0000	+/-0.50	
M8PFOA	551639.8	3.413117	614,656.00	3.413117	90	50 - 150	0.0000	+/-0.50	
M8PFOS	77208.9	3.60425	91,052.00	3.60425	85	50 - 150	0.0000	+/-0.50	
M9PFNA	440954.5	3.605283	493,594.00	3.605283	89	50 - 150	0.0000	+/-0.50	
MPFDoA	359825.5	4.048683	536,571.00	4.048683	67	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	113001.2	3.913533	158,959.00	3.913533	71	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	148674.9	3.833783	191,022.00	3.841733	78	50 - 150	-0.0080	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #1 Eff (22L0109-03)		Lab File ID: 22L0109-03.d				Analyzed: 12/14/22 19:26			
M8FOSA	195750.5	3.9486	236,835.00	3.9486	83	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	58167.89	2.4804	127,593.00	2.4804	46	50 - 150	0.0000	+/-0.50	*
M2PFTA	645124.8	4.2892	883,350.00	4.2892	73	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	80628.52	3.76295	106,068.00	3.76295	76	50 - 150	0.0000	+/-0.50	
MPFBA	340520.1	1.033533	405,224.00	1.033533	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	106572.5	2.81475	94,452.00	2.81475	113	50 - 150	0.0000	+/-0.50	
M6PFDA	425930.8	3.763467	509,721.00	3.763467	84	50 - 150	0.0000	+/-0.50	
M3PFBS	101713.2	1.878383	114,251.00	1.878383	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	422800.6	3.906067	559,117.00	3.906067	76	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	81662.71	3.4044	112,597.00	3.4044	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	341906.6	1.698283	386,004.00	1.698283	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	559647.2	2.572333	652,040.00	2.572333	86	50 - 150	0.0000	+/-0.50	
M3PFHxS	75551.63	3.177667	82,239.00	3.177667	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	582372.4	3.14655	675,794.00	3.14655	86	50 - 150	0.0000	+/-0.50	
M8PFOA	553277.4	3.413117	614,656.00	3.413117	90	50 - 150	0.0000	+/-0.50	
M8PFOS	77323.41	3.60425	91,052.00	3.60425	85	50 - 150	0.0000	+/-0.50	
M9PFNA	425723.8	3.605283	493,594.00	3.605283	86	50 - 150	0.0000	+/-0.50	
MPFDoA	397087.3	4.048683	536,571.00	4.048683	74	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	114601.3	3.913533	158,959.00	3.913533	72	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	149251.1	3.833783	191,022.00	3.833783	78	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #2 Mid (22L0109-04)		Lab File ID: 22L0109-04.d				Analyzed: 12/14/22 19:33			
M8FOSA	170066.9	3.9486	236,835.00	3.9486	72	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	54720.38	2.4804	127,593.00	2.4804	43	50 - 150	0.0000	+/-0.50	*
M2PFTA	543842	4.2892	883,350.00	4.2892	62	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	80653.98	3.76295	106,068.00	3.76295	76	50 - 150	0.0000	+/-0.50	
MPFBA	329062.2	1.033533	405,224.00	1.033533	81	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	108388.2	2.81475	94,452.00	2.81475	115	50 - 150	0.0000	+/-0.50	
M6PFDA	410579.3	3.763467	509,721.00	3.763467	81	50 - 150	0.0000	+/-0.50	
M3PFBS	95923.39	1.878383	114,251.00	1.878383	84	50 - 150	0.0000	+/-0.50	
M7PFUnA	392076	3.91405	559,117.00	3.906067	70	50 - 150	0.0080	+/-0.50	
M2-6:2FTS	75901.16	3.4044	112,597.00	3.4044	67	50 - 150	0.0000	+/-0.50	
M5PFPeA	328528.6	1.698283	386,004.00	1.698283	85	50 - 150	0.0000	+/-0.50	
M5PFHxA	533158.7	2.572333	652,040.00	2.572333	82	50 - 150	0.0000	+/-0.50	
M3PFHxS	72807.08	3.17765	82,239.00	3.177667	89	50 - 150	0.0000	+/-0.50	
M4PFHpA	553153.8	3.14655	675,794.00	3.14655	82	50 - 150	0.0000	+/-0.50	
M8PFOA	500395.6	3.413117	614,656.00	3.413117	81	50 - 150	0.0000	+/-0.50	
M8PFOS	73422.13	3.60425	91,052.00	3.60425	81	50 - 150	0.0000	+/-0.50	
M9PFNA	407035.2	3.605283	493,594.00	3.605283	82	50 - 150	0.0000	+/-0.50	
MPFDoA	335330.5	4.048683	536,571.00	4.048683	62	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	99542.07	3.913533	158,959.00	3.913533	63	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	130799.3	3.841733	191,022.00	3.833783	68	50 - 150	0.0080	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #2 Eff (22L0109-05)		Lab File ID: 22L0109-05.d				Analyzed: 12/14/22 19:41			
M8FOSA	196769.6	3.9486	236,835.00	3.9486	83	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	60399.41	2.480383	127,593.00	2.4804	47	50 - 150	0.0000	+/-0.50	*
M2PFTA	730976.4	4.2892	883,350.00	4.2892	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	92744.23	3.76295	106,068.00	3.76295	87	50 - 150	0.0000	+/-0.50	
MPFBA	366154	1.033533	405,224.00	1.033533	90	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	102809.2	2.81475	94,452.00	2.81475	109	50 - 150	0.0000	+/-0.50	
M6PFDA	471770	3.763467	509,721.00	3.763467	93	50 - 150	0.0000	+/-0.50	
M3PFBS	111540.3	1.878383	114,251.00	1.878383	98	50 - 150	0.0000	+/-0.50	
M7PFUnA	490316.6	3.906067	559,117.00	3.906067	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	82992.07	3.4044	112,597.00	3.4044	74	50 - 150	0.0000	+/-0.50	
M5PFPeA	377750	1.698283	386,004.00	1.698283	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	621713.7	2.572333	652,040.00	2.572333	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	82872.58	3.17765	82,239.00	3.177667	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	665266.7	3.14655	675,794.00	3.14655	98	50 - 150	0.0000	+/-0.50	
M8PFOA	629573.2	3.413117	614,656.00	3.413117	102	50 - 150	0.0000	+/-0.50	
M8PFOS	86029.84	3.60425	91,052.00	3.60425	94	50 - 150	0.0000	+/-0.50	
M9PFNA	506143.2	3.605283	493,594.00	3.605283	103	50 - 150	0.0000	+/-0.50	
MPFDoA	445543.5	4.048683	536,571.00	4.048683	83	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	138507.7	3.913533	158,959.00	3.913533	87	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	160669.6	3.833783	191,022.00	3.833783	84	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B324974-BLK1)			Lab File ID: B324974-BLK1.d			Analyzed: 12/14/22 17:38			
M8FOSA	178603.2	3.9486	236,835.00	3.9486	75	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	120497.1	2.4804	127,593.00	2.4804	94	50 - 150	0.0000	+/-0.50	
M2PFTA	622613.7	4.297266	883,350.00	4.297266	70	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	119923.8	3.76295	106,068.00	3.76295	113	50 - 150	0.0000	+/-0.50	
MPFBA	382906.4	1.033533	405,224.00	1.033533	94	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	129051	2.81475	94,452.00	2.822933	137	50 - 150	-0.0082	+/-0.50	
M6PFDA	456965.5	3.763467	509,721.00	3.763467	90	50 - 150	0.0000	+/-0.50	
M3PFBS	102058	1.878383	114,251.00	1.878383	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	464099.8	3.91405	559,117.00	3.914067	83	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	125889.5	3.4044	112,597.00	3.4044	112	50 - 150	0.0000	+/-0.50	
M5PFPeA	361695.2	1.698283	386,004.00	1.698283	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	572924.7	2.572333	652,040.00	2.572333	88	50 - 150	0.0000	+/-0.50	
M3PFHxS	77944.23	3.17765	82,239.00	3.17765	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	617187.6	3.14655	675,794.00	3.14655	91	50 - 150	0.0000	+/-0.50	
M8PFOA	569905.4	3.421167	614,656.00	3.413117	93	50 - 150	0.0080	+/-0.50	
M8PFOS	75449.61	3.60425	91,052.00	3.60425	83	50 - 150	0.0000	+/-0.50	
M9PFNA	447764.5	3.605283	493,594.00	3.605283	91	50 - 150	0.0000	+/-0.50	
MPFDoA	439954	4.048683	536,571.00	4.048683	82	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	125386.5	3.913533	158,959.00	3.913533	79	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	171857.7	3.841733	191,022.00	3.841733	90	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B324974-BS1)			Lab File ID: B324974-BS1.d			Analyzed: 12/14/22 17:31			
M8FOSA	168533.4	3.9486	236,835.00	3.9486	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	116948.4	2.4804	127,593.00	2.4804	92	50 - 150	0.0000	+/-0.50	
M2PFTA	605126.2	4.297266	883,350.00	4.297266	69	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	108526.3	3.76295	106,068.00	3.76295	102	50 - 150	0.0000	+/-0.50	
MPFBA	380378.5	1.033533	405,224.00	1.033533	94	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	113819.7	2.822933	94,452.00	2.822933	121	50 - 150	0.0000	+/-0.50	
M6PFDA	421568.2	3.763467	509,721.00	3.763467	83	50 - 150	0.0000	+/-0.50	
M3PFBS	99494.78	1.878383	114,251.00	1.878383	87	50 - 150	0.0000	+/-0.50	
M7PFUnA	438575.6	3.914067	559,117.00	3.914067	78	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	115295.6	3.4044	112,597.00	3.4044	102	50 - 150	0.0000	+/-0.50	
M5PFPeA	362890.8	1.698283	386,004.00	1.698283	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	566883.9	2.572333	652,040.00	2.572333	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	71112.02	3.177667	82,239.00	3.17765	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	607406.6	3.14655	675,794.00	3.14655	90	50 - 150	0.0000	+/-0.50	
M8PFOA	555448.5	3.421167	614,656.00	3.413117	90	50 - 150	0.0080	+/-0.50	
M8PFOS	72765.86	3.60425	91,052.00	3.60425	80	50 - 150	0.0000	+/-0.50	
M9PFNA	443238.2	3.605283	493,594.00	3.605283	90	50 - 150	0.0000	+/-0.50	
MPFDoA	409943.4	4.048683	536,571.00	4.048683	76	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	115016.8	3.921533	158,959.00	3.913533	72	50 - 150	0.0080	+/-0.50	
D3-NMeFOSAA	156910.3	3.841733	191,022.00	3.841733	82	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B324974-MS1)		Lab File ID: B324974-MS1.d				Analyzed: 12/14/22 17:45			
M8FOSA	186111.3	3.9486	236,835.00	3.9486	79	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	64995.21	2.4886	127,593.00	2.4804	51	50 - 150	0.0082	+/-0.50	
M2PFTA	619241.4	4.297266	883,350.00	4.297266	70	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	90308.21	3.76295	106,068.00	3.76295	85	50 - 150	0.0000	+/-0.50	
MPFBA	341208.4	1.033533	405,224.00	1.033533	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	125246.2	2.822933	94,452.00	2.822933	133	50 - 150	0.0000	+/-0.50	
M6PFDA	407670.5	3.763467	509,721.00	3.763467	80	50 - 150	0.0000	+/-0.50	
M3PFBS	97678.59	1.886667	114,251.00	1.878383	85	50 - 150	0.0083	+/-0.50	
M7PFUnA	430443.1	3.914067	559,117.00	3.914067	77	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	85712.85	3.4044	112,597.00	3.4044	76	50 - 150	0.0000	+/-0.50	
M5PFPeA	340305.4	1.698283	386,004.00	1.698283	88	50 - 150	0.0000	+/-0.50	
M5PFHxA	551376.9	2.572333	652,040.00	2.572333	85	50 - 150	0.0000	+/-0.50	
M3PFHxS	70719.09	3.17765	82,239.00	3.17765	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	573149	3.14655	675,794.00	3.14655	85	50 - 150	0.0000	+/-0.50	
M8PFOA	531560.9	3.421167	614,656.00	3.413117	86	50 - 150	0.0080	+/-0.50	
M8PFOS	69948.73	3.60425	91,052.00	3.60425	77	50 - 150	0.0000	+/-0.50	
M9PFNA	414628.6	3.605283	493,594.00	3.605283	84	50 - 150	0.0000	+/-0.50	
MPFDoA	390910.1	4.048683	536,571.00	4.048683	73	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	114561.6	3.921533	158,959.00	3.913533	72	50 - 150	0.0080	+/-0.50	
D3-NMeFOSAA	138647.1	3.841733	191,022.00	3.841733	73	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B324974-MSD1)			Lab File ID: B324974-MSD1.d			Analyzed: 12/14/22 17:52			
M8FOSA	176159.2	3.9486	236,835.00	3.9486	74	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	65403.67	2.4804	127,593.00	2.4804	51	50 - 150	0.0000	+/-0.50	
M2PFTA	574210.8	4.2892	883,350.00	4.297266	65	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	90167.06	3.76295	106,068.00	3.76295	85	50 - 150	0.0000	+/-0.50	
MPFBA	326528.4	1.033533	405,224.00	1.033533	81	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	109474.1	2.81475	94,452.00	2.822933	116	50 - 150	-0.0082	+/-0.50	
M6PFDA	400996.3	3.763467	509,721.00	3.763467	79	50 - 150	0.0000	+/-0.50	
M3PFBS	97669.66	1.878383	114,251.00	1.878383	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	401522.5	3.914067	559,117.00	3.914067	72	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	84509.84	3.4044	112,597.00	3.4044	75	50 - 150	0.0000	+/-0.50	
M5PFPeA	332829.5	1.698283	386,004.00	1.698283	86	50 - 150	0.0000	+/-0.50	
M5PFHxA	546778.3	2.572333	652,040.00	2.572333	84	50 - 150	0.0000	+/-0.50	
M3PFHxS	69766.16	3.177667	82,239.00	3.17765	85	50 - 150	0.0000	+/-0.50	
M4PFHpA	589297.8	3.14655	675,794.00	3.14655	87	50 - 150	0.0000	+/-0.50	
M8PFOA	512596.5	3.421167	614,656.00	3.413117	83	50 - 150	0.0080	+/-0.50	
M8PFOS	69128.81	3.60425	91,052.00	3.60425	76	50 - 150	0.0000	+/-0.50	
M9PFNA	396827.5	3.605283	493,594.00	3.605283	80	50 - 150	0.0000	+/-0.50	
MPFDoA	377031.2	4.048683	536,571.00	4.048683	70	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	108680.3	3.913533	158,959.00	3.913533	68	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	144631.7	3.84175	191,022.00	3.841733	76	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Reference (B324974-SRM1)			Lab File ID: B324974-SRM1.d			Analyzed: 12/14/22 18:00			
M8FOSA	186242.4	3.9486	236,835.00	3.9486	79	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	102990.2	2.480383	127,593.00	2.4804	81	50 - 150	0.0000	+/-0.50	
M2PFTA	582191.3	4.297266	883,350.00	4.297266	66	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	103948.4	3.76295	106,068.00	3.76295	98	50 - 150	0.0000	+/-0.50	
MPFBA	385235.8	1.033533	405,224.00	1.033533	95	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	110374.1	2.81475	94,452.00	2.822933	117	50 - 150	-0.0082	+/-0.50	
M6PFDA	456578.3	3.763467	509,721.00	3.763467	90	50 - 150	0.0000	+/-0.50	
M3PFBS	105543.8	1.878383	114,251.00	1.878383	92	50 - 150	0.0000	+/-0.50	
M7PFUnA	447936.1	3.91405	559,117.00	3.914067	80	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	108753.6	3.4044	112,597.00	3.4044	97	50 - 150	0.0000	+/-0.50	
M5PFPeA	369343.1	1.698283	386,004.00	1.698283	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	591611.8	2.572333	652,040.00	2.572333	91	50 - 150	0.0000	+/-0.50	
M3PFHxS	77288.45	3.17765	82,239.00	3.17765	94	50 - 150	0.0000	+/-0.50	
M4PFHpA	617790.6	3.14655	675,794.00	3.14655	91	50 - 150	0.0000	+/-0.50	
M8PFOA	557926.1	3.421167	614,656.00	3.413117	91	50 - 150	0.0080	+/-0.50	
M8PFOS	77623.47	3.604233	91,052.00	3.60425	85	50 - 150	0.0000	+/-0.50	
M9PFNA	435931.5	3.605283	493,594.00	3.605283	88	50 - 150	0.0000	+/-0.50	
MPFDoA	410163	4.048683	536,571.00	4.048683	76	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	116449.2	3.913533	158,959.00	3.913533	73	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	158704.1	3.841733	191,022.00	3.841733	83	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B326461-BLK1)			Lab File ID: B326461-BLK1.d			Analyzed: 12/27/22 15:15			
M8FOSA	152674.2	3.9406	261,430.00	3.9406	58	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	114079.4	2.52145	162,923.00	2.52145	70	50 - 150	0.0000	+/-0.50	
M2PFTA	461604.8	4.313416	806,837.00	4.313416	57	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	104093.7	3.778883	186,704.00	3.778883	56	50 - 150	0.0000	+/-0.50	
MPFBA	284618.8	1.050167	363,309.00	1.050167	78	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	66571.58	2.847483	83,654.00	2.847483	80	50 - 150	0.0000	+/-0.50	
M6PFDA	375859.8	3.779417	537,185.00	3.779417	70	50 - 150	0.0000	+/-0.50	
M3PFBS	95095	1.911533	127,819.00	1.911533	74	50 - 150	0.0000	+/-0.50	
M7PFUnA	362713.1	3.93005	547,900.00	3.93005	66	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	118343.7	3.4205	151,245.00	3.4205	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	258124.8	1.731383	344,690.00	1.731383	75	50 - 150	0.0000	+/-0.50	
M5PFHxA	431461.7	2.605183	567,776.00	2.6134	76	50 - 150	-0.0082	+/-0.50	
M3PFHxS	65945.77	3.193817	89,328.00	3.193817	74	50 - 150	0.0000	+/-0.50	
M4PFHpA	453283.4	3.1627	612,784.00	3.1627	74	50 - 150	0.0000	+/-0.50	
M8PFOA	440195.4	3.42985	571,967.00	3.437833	77	50 - 150	-0.0080	+/-0.50	
M8PFOS	69442.89	3.620217	97,889.00	3.620217	71	50 - 150	0.0000	+/-0.50	
M9PFNA	375831.8	3.62125	490,092.00	3.62125	77	50 - 150	0.0000	+/-0.50	
MPFDoA	338720.1	4.064667	578,541.00	4.064667	59	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	116128.6	3.937517	192,678.00	3.937517	60	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	126142.5	3.85765	211,938.00	3.85765	60	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B326461-BS1)		Lab File ID: B326461-BS1.d				Analyzed: 12/27/22 15:07			
M8FOSA	164981.4	3.9406	261,430.00	3.9406	63	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	132212.4	2.52145	162,923.00	2.52145	81	50 - 150	0.0000	+/-0.50	
M2PFTA	534287.3	4.313416	806,837.00	4.313416	66	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	125263.6	3.778883	186,704.00	3.778883	67	50 - 150	0.0000	+/-0.50	
MPFBA	306662.6	1.050167	363,309.00	1.050167	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	64892.04	2.847483	83,654.00	2.847483	78	50 - 150	0.0000	+/-0.50	
M6PFDA	392402.9	3.779417	537,185.00	3.779417	73	50 - 150	0.0000	+/-0.50	
M3PFBS	105846.2	1.911533	127,819.00	1.911533	83	50 - 150	0.0000	+/-0.50	
M7PFUnA	415669.3	3.93005	547,900.00	3.93005	76	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	123774.4	3.4205	151,245.00	3.4205	82	50 - 150	0.0000	+/-0.50	
M5PFPeA	277314	1.731383	344,690.00	1.731383	80	50 - 150	0.0000	+/-0.50	
M5PFHxA	471757.9	2.605183	567,776.00	2.6134	83	50 - 150	-0.0082	+/-0.50	
M3PFHxS	73622.27	3.193817	89,328.00	3.193817	82	50 - 150	0.0000	+/-0.50	
M4PFHpA	497167.1	3.1627	612,784.00	3.1627	81	50 - 150	0.0000	+/-0.50	
M8PFOA	471695.2	3.42985	571,967.00	3.437833	82	50 - 150	-0.0080	+/-0.50	
M8PFOS	73946.97	3.620217	97,889.00	3.620217	76	50 - 150	0.0000	+/-0.50	
M9PFNA	406598.8	3.62125	490,092.00	3.62125	83	50 - 150	0.0000	+/-0.50	
MPFDoA	370251.8	4.064667	578,541.00	4.064667	64	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	137053.9	3.937517	192,678.00	3.937517	71	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	143918.9	3.85765	211,938.00	3.85765	68	50 - 150	0.0000	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

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

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

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

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



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

Client Darnstable
Received By mm Date 12/1/22 Time 1605/1620
How were the samples received? In Cooler T No Cooler On Ice T No Ice
Direct From Sample Ambient Melted Ice
Were samples within Temperature? Within 2-6°C By Gun # 5 Actual Temp - 5.0
By Blank # Actual Temp -
Was Custody Seal In tact? NA Were Samples Tampled with? NA
Was COC Relinquished? T Does Chain Agree With Samples? I
Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all Client? T Analysis? T Sampler Name? T
pertinent Information? Project? T ID's? T Collection Dates/Times? T
Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified?
Are there Rushes? F Who was notified?
Are there Short Holds? F Who was notified?
Samples are received within holding time? NA Is there enough Volume? T
Is there Headspace where applicable? NA MS/MSD? FR-T
Proper Media/Containers Used? T splitting samples require T
Were trip blanks receive F On COC? F
Do All Samples Have the proper pH? NA Acid NA Base NA

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

Unused Media

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

Comments:

January 20, 2023

Laura Bouley
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22L3425

Enclosed are results of analyses for samples as received by the laboratory on December 23, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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

Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Laura Bouley

REPORT DATE: 1/20/2023

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22L3425

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
INF (PRW-4)	22L3425-01	Ground Water		SOP-454 PFAS	
System #1 Mid	22L3425-02	Ground Water		SOP-454 PFAS	
System #1 Eff	22L3425-03	Ground Water		SOP-454 PFAS	
System #2 Mid	22L3425-04	Ground Water		SOP-454 PFAS	
System #2 Eff	22L3425-05	Ground Water		SOP-454 PFAS	

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CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:**

L-01

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**N-MeFOSAA (NMeFOSAA)**B327089-BSD1

PF-18

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

Analyte & Samples(s) Qualified:**M2-4:2FTS**

22L3425-02RE1[System #1 Mid], 22L3425-03[System #1 Eff], B328601-MS2, B328601-MSD2

M2-6:2FTS22L3425-02RE1[System #1 Mid], B328601-MSD2

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:**Perfluorooctanesulfonic acid (PFOS)**22L3425-01RE2[INF (PRW-4)]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**M2-4:2FTS**

22L3425-04[System #2 Mid], 22L3425-05[System #2 Eff]

M2-8:2FTS

22L3425-02RE1[System #1 Mid]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington

Technical Representative

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L3425

Date Received: 12/23/2022

Field Sample #: INF (PRW-4)

Sampled: 12/22/2022 14:00

Sample ID: 22L3425-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	22	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorobutanesulfonic acid (PFBS)	8.1	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoropentanoic acid (PFPeA)	61	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorohexanoic acid (PFHxA)	55	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	34	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorodecanoic acid (PFDA)	4.1	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoroheptanesulfonic acid (PFHpS)	5.4	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorodecanesulfonic acid (PFDS)	2.8	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorooctanesulfonamide (FOSA)	2.7	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorononanesulfonic acid (PFNS)	3.8	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	45	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoro-1-butanefulfonamide (FBFA)	11	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorohexanesulfonic acid (PFHxS)	110	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	50	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoropentanesulfonic acid (PFPeS)	12	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoroundecanoic acid (PFUnA)	38	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluoroheptanoic acid (PFHpA)	36	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorooctanoic acid (PFOA)	21	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL
Perfluorooctanesulfonic acid (PFOS)	520	20	ng/L	10	PF-19	SOP-454 PFAS	1/2/23	1/18/23 17:26	DRL
Perfluorononanoic acid (PFNA)	19	2.0	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:19	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L3425

Date Received: 12/23/2022

Field Sample #: System #1 Mid

Sampled: 12/22/2022 13:45

Sample ID: 22L3425-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorooctanesulfonic acid (PFOS)	8.3	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	1/16/23	1/19/23 5:46	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L3425

Date Received: 12/23/2022

Field Sample #: System #1 Eff

Sampled: 12/22/2022 13:40

Sample ID: 22L3425-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorooctanesulfonic acid (PFOS)	7.5	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:41	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L3425

Date Received: 12/23/2022

Field Sample #: System #2 Mid

Sampled: 12/22/2022 14:05

Sample ID: 22L3425-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoropentanoic acid (PFPeA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorohexanoic acid (PFHxA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorodecanoic acid (PFDA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorododecanoic acid (PFDoA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
N-EtFOSAA (NEtFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
N-MeFOSAA (NMeFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoro-1-butanefulfonamide (FBSA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.9	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoroundecanoic acid (PFUnA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorooctanoic acid (PFOA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorooctanesulfonic acid (PFOS)	8.8	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL
Perfluorononanoic acid (PFNA)	ND	1.7	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:48	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22L3425

Date Received: 12/23/2022

Field Sample #: System #2 Eff

Sampled: 12/22/2022 14:00

Sample ID: 22L3425-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	1/2/23	1/18/23 17:55	DRL

39 Spruce Street * East Longmeadow, MA 01028 * FAX 413/525-6405 * TEL. 413/525-2332**Sample Extraction Data****Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L3425-01 [INF (PRW-4)]	B327089	253	1.00	01/02/23
22L3425-01RE2 [INF (PRW-4)]	B327089	253	1.00	01/02/23
22L3425-03 [System #1 Eff]	B327089	271	1.00	01/02/23
22L3425-04 [System #2 Mid]	B327089	290	1.00	01/02/23
22L3425-05 [System #2 Eff]	B327089	272	1.00	01/02/23

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22L3425-02RE1 [System #1 Mid]	B328601	258	1.00	01/16/23

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

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B327089 - SOP 454-PFAAS
Blank (B327089-BLK1)

Prepared: 01/02/23 Analyzed: 01/18/23

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

LCS (B327089-BS1)

Prepared: 01/02/23 Analyzed: 01/18/23

Perfluorobutanoic acid (PFBA)	9.85	1.9	ng/L	9.30	106	73-129
Perfluorobutanesulfonic acid (PFBS)	8.58	1.9	ng/L	8.23	104	72-130
Perfluoropentanoic acid (PFPeA)	9.45	1.9	ng/L	9.30	102	72-129
Perfluorohexanoic acid (PFHxA)	9.66	1.9	ng/L	9.30	104	72-129
11Cl-PF3OUdS (F53B Major)	7.71	1.9	ng/L	8.76	88.0	55.1-141
9Cl-PF3ONS (F53B Minor)	8.38	1.9	ng/L	8.67	96.6	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	9.06	1.9	ng/L	8.76	103	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.42	1.9	ng/L	9.30	90.5	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.95	1.9	ng/L	8.93	100	67-138
Perfluorodecanoic acid (PFDA)	8.96	1.9	ng/L	9.30	96.4	71-129
Perfluorododecanoic acid (PFDoA)	10.2	1.9	ng/L	9.30	110	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	9.41	1.9	ng/L	8.28	114	49.4-154

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

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B327089 - SOP 454-PFAAS

LCS (B327089-BS1)

Prepared: 01/02/23 Analyzed: 01/18/23

Perfluoroheptanesulfonic acid (PFHpS)	9.01	1.9	ng/L	8.88		101	69-134			
N-EtFOSAA (NEtFOSAA)	11.1	1.9	ng/L	9.30		120	61-135			
N-MeFOSAA (NMeFOSAA)	11.2	1.9	ng/L	9.30		121	65-136			
Perfluorotetradecanoic acid (PFTA)	9.33	1.9	ng/L	9.30		100	71-132			
Perfluorotridecanoic acid (PFTTrDA)	9.51	1.9	ng/L	9.30		102	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.71	1.9	ng/L	8.70		100	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.73	1.9	ng/L	8.97		97.3	53-142			
Perfluorooctanesulfonamide (FOSA)	9.97	1.9	ng/L	9.30		107	67-137			
Perfluorononanesulfonic acid (PFNS)	8.66	1.9	ng/L	8.93		97.1	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.94	1.9	ng/L	9.30		107	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	9.72	1.9	ng/L	9.30		105	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.65	1.9	ng/L	8.51		102	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.2	1.9	ng/L	9.30		110	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.6	1.9	ng/L	9.30		114	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.32	1.9	ng/L	8.83		106	64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.15	1.9	ng/L	8.74		105	71-127			
Perfluoroundecanoic acid (PFUnA)	11.1	1.9	ng/L	9.30		119	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.3	1.9	ng/L	9.30		121	58.5-143			
Perfluoroheptanoic acid (PFHpA)	9.34	1.9	ng/L	9.30		100	72-130			
Perfluorooctanoic acid (PFOA)	10.6	1.9	ng/L	9.30		114	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.39	1.9	ng/L	8.60		97.5	65-140			
Perfluorononanoic acid (PFNA)	9.10	1.9	ng/L	9.30		97.9	69-130			

LCS Dup (B327089-BSD1)

Prepared: 01/02/23 Analyzed: 01/18/23

Perfluorobutanoic acid (PFBA)	11.0	1.8	ng/L	9.24		119	73-129	10.9	30	
Perfluorobutanesulfonic acid (PFBS)	9.36	1.8	ng/L	8.17		114	72-130	8.69	30	
Perfluoropentanoic acid (PFPeA)	10.4	1.8	ng/L	9.24		113	72-129	9.69	30	
Perfluorohexanoic acid (PFHxA)	10.5	1.8	ng/L	9.24		113	72-129	8.13	30	
11Cl-PF3OUdS (F53B Major)	8.70	1.8	ng/L	8.70		100	55.1-141	12.1	30	
9Cl-PF3ONS (F53B Minor)	9.24	1.8	ng/L	8.61		107	59.6-146	9.83	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.1	1.8	ng/L	8.70		116	60.3-131	10.4	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6.98	1.8	ng/L	9.24		75.6	37.6-167	18.7	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.8	1.8	ng/L	8.87		122	67-138	18.8	30	
Perfluorodecanoic acid (PFDA)	11.0	1.8	ng/L	9.24		119	71-129	20.5	30	
Perfluorododecanoic acid (PFDoA)	10.6	1.8	ng/L	9.24		115	72-134	3.55	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	10.5	1.8	ng/L	8.22		127	49.4-154	10.7	30	
Perfluoroheptanesulfonic acid (PFHpS)	10.0	1.8	ng/L	8.82		114	69-134	10.7	30	
N-EtFOSAA (NEtFOSAA)	10.7	1.8	ng/L	9.24		116	61-135	3.81	30	
N-MeFOSAA (NMeFOSAA)	12.7	1.8	ng/L	9.24		137	* 65-136	12.1	30	L-01
Perfluorotetradecanoic acid (PFTA)	10.9	1.8	ng/L	9.24		118	71-132	15.9	30	
Perfluorotridecanoic acid (PFTTrDA)	10.5	1.8	ng/L	9.24		114	65-144	9.82	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.60	1.8	ng/L	8.64		111	63-143	9.72	30	
Perfluorodecanesulfonic acid (PFDS)	10.6	1.8	ng/L	8.91		119	53-142	19.2	30	
Perfluorooctanesulfonamide (FOSA)	10.9	1.8	ng/L	9.24		118	67-137	9.31	30	
Perfluorononanesulfonic acid (PFNS)	9.24	1.8	ng/L	8.87		104	69-127	6.47	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	10.9	1.8	ng/L	9.24		119	61.7-156	9.65	30	
Perfluoro-1-butanefulfonamide (FBSA)	10.2	1.8	ng/L	9.24		111	61.3-145	5.30	30	
Perfluorohexanesulfonic acid (PFHxS)	10.1	1.8	ng/L	8.45		120	68-131	15.8	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	11.2	1.8	ng/L	9.24		121	59.8-147	8.93	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	11.9	1.8	ng/L	9.24		129	59.5-146	11.3	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B327089 - SOP 454-PFAAS
LCS Dup (B327089-BSD1)

Prepared: 01/02/23 Analyzed: 01/18/23

6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.79	1.8	ng/L	8.77		112	64-140	4.88	30	
Perfluoropentanesulfonic acid (PFPeS)	10.1	1.8	ng/L	8.68		117	71-127	10.2	30	
Perfluoroundecanoic acid (PFUnA)	10.9	1.8	ng/L	9.24		118	69-133	1.56	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	12.3	1.8	ng/L	9.24		133	58.5-143	8.53	30	
Perfluoroheptanoic acid (PFHpA)	10.6	1.8	ng/L	9.24		114	72-130	12.4	30	
Perfluorooctanoic acid (PFOA)	10.0	1.8	ng/L	9.24		108	71-133	5.68	30	
Perfluorooctanesulfonic acid (PFOS)	9.76	1.8	ng/L	8.54		114	65-140	15.1	30	
Perfluorononanoic acid (PFNA)	10.9	1.8	ng/L	9.24		118	69-130	18.1	30	

Batch B328601 - SOP 454-PFAAS
Blank (B328601-BLK1)

Prepared: 01/16/23 Analyzed: 01/19/23

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

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328601 - SOP 454-PFAAS

LCS (B328601-BS1)

Prepared: 01/16/23 Analyzed: 01/19/23

Perfluorobutanoic acid (PFBA)	11.4	2.0	ng/L	10.1		113	73-129			
Perfluorobutanesulfonic acid (PFBS)	9.76	2.0	ng/L	8.92		109	72-130			
Perfluoropentanoic acid (PFPeA)	11.1	2.0	ng/L	10.1		110	72-129			
Perfluorohexanoic acid (PFHxA)	11.6	2.0	ng/L	10.1		115	72-129			
11Cl-PF3OUdS (F53B Major)	8.40	2.0	ng/L	9.49		88.5	55.1-141			
9Cl-PF3ONS (F53B Minor)	8.57	2.0	ng/L	9.39		91.2	59.6-146			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.8	2.0	ng/L	9.49		113	60.3-131			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.97	2.0	ng/L	10.1		89.0	37.6-167			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11.2	2.0	ng/L	9.68		116	67-138			
Perfluorodecanoic acid (PFDA)	11.1	2.0	ng/L	10.1		110	71-129			
Perfluorododecanoic acid (PFDoA)	11.1	2.0	ng/L	10.1		110	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	11.0	2.0	ng/L	8.97		123	49.4-154			
Perfluoroheptanesulfonic acid (PFHpS)	9.78	2.0	ng/L	9.63		102	69-134			
N-EtFOSAA (NEtFOSAA)	13.4	2.0	ng/L	10.1		133	61-135			
N-MeFOSAA (NMeFOSAA)	12.9	2.0	ng/L	10.1		128	65-136			
Perfluorotetradecanoic acid (PFTA)	11.3	2.0	ng/L	10.1		112	71-132			
Perfluorotridecanoic acid (PFTrDA)	11.2	2.0	ng/L	10.1		111	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.5	2.0	ng/L	9.42		112	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.85	2.0	ng/L	9.73		91.0	53-142			
Perfluorooctanesulfonamide (FOSA)	10.7	2.0	ng/L	10.1		107	67-137			
Perfluorononanesulfonic acid (PFNS)	9.53	2.0	ng/L	9.68		98.5	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	12.0	2.0	ng/L	10.1		119	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	11.3	2.0	ng/L	10.1		112	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	10.4	2.0	ng/L	9.22		112	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	12.1	2.0	ng/L	10.1		120	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	12.6	2.0	ng/L	10.1		125	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11.4	2.0	ng/L	9.57		119	64-140			
Perfluoropentanesulfonic acid (PFPeS)	11.2	2.0	ng/L	9.47		118	71-127			
Perfluoroundecanoic acid (PFUnA)	11.4	2.0	ng/L	10.1		114	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	13.6	2.0	ng/L	10.1		135	58.5-143			
Perfluoroheptanoic acid (PFHpA)	11.7	2.0	ng/L	10.1		116	72-130			
Perfluorooctanoic acid (PFOA)	12.0	2.0	ng/L	10.1		119	71-133			
Perfluorooctanesulfonic acid (PFOS)	9.75	2.0	ng/L	9.32		105	65-140			
Perfluorononanoic acid (PFNA)	10.9	2.0	ng/L	10.1		109	69-130			

Matrix Spike (B328601-MS2)

Source: 22L3425-02RE1

Prepared: 01/16/23 Analyzed: 01/19/23

Perfluorobutanoic acid (PFBA)	13.2	2.1	ng/L	10.6	1.32	111	73-129			
Perfluorobutanesulfonic acid (PFBS)	10.3	2.1	ng/L	9.42	ND	110	72-130			
Perfluoropentanoic acid (PFPeA)	13.4	2.1	ng/L	10.6	1.80	108	72-129			
Perfluorohexanoic acid (PFHxA)	13.2	2.1	ng/L	10.6	1.50	110	72-129			
11Cl-PF3OUdS (F53B Major)	8.56	2.1	ng/L	10.0	ND	85.3	58.3-140			
9Cl-PF3ONS (F53B Minor)	9.36	2.1	ng/L	9.93	ND	94.3	61.4-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.3	2.1	ng/L	10.0	ND	103	62.4-128			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.0	2.1	ng/L	10.6	ND	103	36.7-171			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	12.0	2.1	ng/L	10.2	ND	117	67-138			
Perfluorodecanoic acid (PFDA)	12.8	2.1	ng/L	10.6	ND	120	71-129			
Perfluorododecanoic acid (PFDoA)	11.8	2.1	ng/L	10.6	ND	111	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	11.1	2.1	ng/L	9.48	ND	118	54.3-149			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328601 - SOP 454-PFAAS

Matrix Spike (B328601-MS2)		Source: 22L3425-02RE1			Prepared: 01/16/23		Analyzed: 01/19/23			
Perfluoroheptanesulfonic acid (PFHpS)	10.5	2.1	ng/L	10.2	ND	103	69-134			
N-EtFOSAA (NEtFOSAA)	13.1	2.1	ng/L	10.6	ND	123	61-135			
N-MeFOSAA (NMeFOSAA)	12.7	2.1	ng/L	10.6	ND	119	65-136			
Perfluorotetradecanoic acid (PFTA)	11.1	2.1	ng/L	10.6	ND	104	71-132			
Perfluorotridecanoic acid (PFTTrDA)	11.0	2.1	ng/L	10.6	ND	104	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.7	2.1	ng/L	9.96	ND	107	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.48	2.1	ng/L	10.3	ND	82.6	53-142			
Perfluorooctanesulfonamide (FOSA)	11.7	2.1	ng/L	10.6	ND	110	67-137			
Perfluorononanesulfonic acid (PFNS)	10.2	2.1	ng/L	10.2	ND	99.9	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	14.4	2.1	ng/L	10.6	1.21	124	64.2-154			
Perfluoro-1-butanefulfonamide (FBSA)	11.8	2.1	ng/L	10.6	ND	111	65.9-140			
Perfluorohexanesulfonic acid (PFHxS)	12.3	2.1	ng/L	9.74	1.92	106	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	12.4	2.1	ng/L	10.6	ND	117	61.9-143			
Perfluoro-5-oxahexanoic acid (PFMBA)	12.9	2.1	ng/L	10.6	ND	121	61.4-142			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	13.4	2.1	ng/L	10.1	1.66	116	64-140			
Perfluoropentanesulfonic acid (PFPeS)	11.8	2.1	ng/L	10.0	ND	117	71-127			
Perfluoroundecanoic acid (PFUnA)	13.4	2.1	ng/L	10.6	ND	126	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	13.3	2.1	ng/L	10.6	ND	125	62-138			
Perfluoroheptanoic acid (PFHpA)	12.3	2.1	ng/L	10.6	0.820	108	72-130			
Perfluorooctanoic acid (PFOA)	12.0	2.1	ng/L	10.6	ND	113	71-133			
Perfluorooctanesulfonic acid (PFOS)	18.1	2.1	ng/L	9.85	8.33	99.0	65-140			
Perfluorononanoic acid (PFNA)	11.6	2.1	ng/L	10.6	ND	109	69-130			

Matrix Spike Dup (B328601-MSD2)		Source: 22L3425-02RE1			Prepared: 01/16/23		Analyzed: 01/19/23			
Perfluorobutanoic acid (PFBA)	12.9	2.0	ng/L	9.90	1.32	117	73-129	2.10	30	
Perfluorobutanesulfonic acid (PFBS)	10.1	2.0	ng/L	8.77	ND	115	72-130	2.21	30	
Perfluoropentanoic acid (PFPeA)	13.2	2.0	ng/L	9.90	1.80	115	72-129	1.12	30	
Perfluorohexanoic acid (PFHxA)	13.2	2.0	ng/L	9.90	1.50	118	72-129	0.480	30	
11Cl-PF3OUdS (F53B Major)	9.19	2.0	ng/L	9.33	ND	98.5	58.3-140	7.11	30	
9Cl-PF3ONS (F53B Minor)	10.6	2.0	ng/L	9.23	ND	114	61.4-144	11.9	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.9	2.0	ng/L	9.33	ND	117	62.4-128	5.41	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.00	2.0	ng/L	9.90	ND	90.9	36.7-171	19.5	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11.6	2.0	ng/L	9.51	ND	122	67-138	3.67	30	
Perfluorodecanoic acid (PFDA)	11.7	2.0	ng/L	9.90	ND	118	71-129	9.15	30	
Perfluorododecanoic acid (PFDoA)	11.2	2.0	ng/L	9.90	ND	113	72-134	5.03	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	11.0	2.0	ng/L	8.82	ND	124	54.3-149	1.52	30	
Perfluoroheptanesulfonic acid (PFHpS)	11.4	2.0	ng/L	9.46	ND	120	69-134	7.98	30	
N-EtFOSAA (NEtFOSAA)	12.3	2.0	ng/L	9.90	ND	124	61-135	5.95	30	
N-MeFOSAA (NMeFOSAA)	13.0	2.0	ng/L	9.90	ND	131	65-136	2.36	30	
Perfluorotetradecanoic acid (PFTA)	11.0	2.0	ng/L	9.90	ND	111	71-132	0.779	30	
Perfluorotridecanoic acid (PFTTrDA)	10.9	2.0	ng/L	9.90	ND	110	65-144	1.12	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.5	2.0	ng/L	9.26	ND	114	63-143	1.49	30	
Perfluorodecanesulfonic acid (PFDS)	9.21	2.0	ng/L	9.56	ND	96.4	53-142	8.25	30	
Perfluorooctanesulfonamide (FOSA)	11.1	2.0	ng/L	9.90	ND	113	67-137	5.26	30	
Perfluorononanesulfonic acid (PFNS)	10.6	2.0	ng/L	9.51	ND	112	69-127	3.78	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	14.6	2.0	ng/L	9.90	1.21	136	64.2-154	1.53	30	
Perfluoro-1-butanefulfonamide (FBSA)	12.0	2.0	ng/L	9.90	ND	121	65.9-140	1.11	30	
Perfluorohexanesulfonic acid (PFHxS)	12.7	2.0	ng/L	9.06	1.92	119	68-131	3.34	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	12.2	2.0	ng/L	9.90	ND	124	61.9-143	1.56	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	12.5	2.0	ng/L	9.90	ND	126	61.4-142	2.97	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B328601 - SOP 454-PFAAS
Matrix Spike Dup (B328601-MSD2)
Source: 22L3425-02RE1

Prepared: 01/16/23 Analyzed: 01/19/23

6:2 Fluorotelomersulfonic acid (6:2FTS A)	13.9	2.0	ng/L	9.41	1.66	130	64-140	3.67	30	
Perfluoropentanesulfonic acid (PFPeS)	11.5	2.0	ng/L	9.31	ND	123	71-127	2.64	30	
Perfluoroundecanoic acid (PFUnA)	12.1	2.0	ng/L	9.90	0.750	115	69-133	10.2	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	13.3	2.0	ng/L	9.90	ND	134	62-138	0.242	30	
Perfluoroheptanoic acid (PFHpA)	12.6	2.0	ng/L	9.90	0.820	119	72-130	2.55	30	
Perfluorooctanoic acid (PFOA)	11.4	2.0	ng/L	9.90	ND	115	71-133	5.22	30	
Perfluorooctanesulfonic acid (PFOS)	19.1	2.0	ng/L	9.16	8.33	117	65-140	5.25	30	
Perfluorononanoic acid (PFNA)	10.7	2.0	ng/L	9.90	ND	108	69-130	8.20	30	

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

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
INF (PRW-4) (22L3425-01) Lab File ID: 22L3425-01.d Analyzed: 01/18/23 17:19									
M8FOSA	510380.6	4.0765	561,068.00	4.0765	91	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	137847.9	2.670717	216,189.00	2.670717	64	50 - 150	0.0000	+/-0.50	
M2PFTA	1333875	4.4109	1,551,168.00	4.4109	86	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	170869.4	3.875067	196,734.00	3.875067	87	50 - 150	0.0000	+/-0.50	
MPFBA	689318.6	1.141567	722,975.00	1.13325	95	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	192133.8	2.978433	175,160.00	2.978433	110	50 - 150	0.0000	+/-0.50	
M6PFDA	1048878	3.875583	1,000,087.00	3.875583	105	50 - 150	0.0000	+/-0.50	
M3PFBS	206203.9	2.044217	188,299.00	2.044217	110	50 - 150	0.0000	+/-0.50	
M7PFUnA	1256192	4.025967	1,285,812.00	4.025967	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	167187.2	3.5256	131,914.00	3.5256	127	50 - 150	0.0000	+/-0.50	
M5PFPeA	622177.8	1.849383	598,852.00	1.849383	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	1128537	2.7554	1,077,517.00	2.7554	105	50 - 150	0.0000	+/-0.50	
M3PFHxS	197859.6	3.308383	192,419.00	3.300333	103	50 - 150	0.0080	+/-0.50	
M4PFHpA	1256169	3.27725	1,220,774.00	3.27725	103	50 - 150	0.0000	+/-0.50	
M8PFOA	1268885	3.534133	1,175,467.00	3.534133	108	50 - 150	0.0000	+/-0.50	
M8PFOS	198661.5	3.71625	203,715.00	3.71625	98	50 - 150	0.0000	+/-0.50	
M9PFNA	979383.8	3.71725	1,054,218.00	3.71725	93	50 - 150	0.0000	+/-0.50	
MPFDoA	1254681	4.169267	1,303,969.00	4.1612	96	50 - 150	0.0081	+/-0.50	
D5-NEtFOSAA	293572	4.033433	285,562.00	4.033433	103	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	344507.2	3.953867	323,087.00	3.95385	107	50 - 150	0.0000	+/-0.50	
INF (PRW-4) (22L3425-01RE2) Lab File ID: 22L3425-01RE2.d Analyzed: 01/18/23 17:26									
M8PFOS	203893.1	3.71625	203,715.00	3.71625	100	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #1 Mid (22L3425-02RE1)		Lab File ID: 22L3425-02RE1.d				Analyzed: 01/19/23 05:46			
M8FOSA	341466	4.0765	561,068.00	4.0765	61	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	74581.07	2.661333	216,189.00	2.661333	34	50 - 150	0.0000	+/-0.50	*
M2PFTA	949433.6	4.402783	1,551,168.00	4.402783	61	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	77876.24	3.875067	196,734.00	3.875067	40	50 - 150	0.0000	+/-0.50	*
MPFBA	585128.4	1.13325	722,975.00	1.13325	81	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	173812	2.978433	175,160.00	2.970317	99	50 - 150	0.0081	+/-0.50	
M6PFDA	747436.1	3.875583	1,000,087.00	3.875583	75	50 - 150	0.0000	+/-0.50	
M3PFBS	158634.3	2.035933	188,299.00	2.035933	84	50 - 150	0.0000	+/-0.50	
M7PFUnA	846513.3	4.025967	1,285,812.00	4.025967	66	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	51807.31	3.5256	131,914.00	3.5256	39	50 - 150	0.0000	+/-0.50	*
M5PFPeA	491318.8	1.849383	598,852.00	1.849383	82	50 - 150	0.0000	+/-0.50	
M5PFHxA	861894.6	2.7554	1,077,517.00	2.7554	80	50 - 150	0.0000	+/-0.50	
M3PFHxS	140848.9	3.300333	192,419.00	3.300333	73	50 - 150	0.0000	+/-0.50	
M4PFHpA	943847.4	3.27725	1,220,774.00	3.268033	77	50 - 150	0.0092	+/-0.50	
M8PFOA	859106.4	3.534133	1,175,467.00	3.534133	73	50 - 150	0.0000	+/-0.50	
M8PFOS	149739.9	3.71625	203,715.00	3.71625	74	50 - 150	0.0000	+/-0.50	
M9PFNA	777940.8	3.71725	1,054,218.00	3.71725	74	50 - 150	0.0000	+/-0.50	
MPFDoA	805240.1	4.161183	1,303,969.00	4.1612	62	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	199482.2	4.033433	285,562.00	4.033433	70	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	236716.2	3.95385	323,087.00	3.95385	73	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #1 Eff (22L3425-03)		Lab File ID: 22L3425-03.d				Analyzed: 01/18/23 17:41			
M8FOSA	517051.2	4.076483	561,068.00	4.0765	92	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	93064.43	2.670717	216,189.00	2.670717	43	50 - 150	0.0000	+/-0.50	*
M2PFTA	1513433	4.402783	1,551,168.00	4.4109	98	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	191022.5	3.875067	196,734.00	3.875067	97	50 - 150	0.0000	+/-0.50	
MPFBA	805951.6	1.141567	722,975.00	1.13325	111	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	224780.2	2.978433	175,160.00	2.978433	128	50 - 150	0.0000	+/-0.50	
M6PFDA	1108155	3.875583	1,000,087.00	3.875583	111	50 - 150	0.0000	+/-0.50	
M3PFBS	216847	2.044217	188,299.00	2.044217	115	50 - 150	0.0000	+/-0.50	
M7PFUnA	1301970	4.025967	1,285,812.00	4.025967	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	89398.26	3.5256	131,914.00	3.5256	68	50 - 150	0.0000	+/-0.50	
M5PFPeA	667060.9	1.849383	598,852.00	1.849383	111	50 - 150	0.0000	+/-0.50	
M5PFHxA	1212829	2.7554	1,077,517.00	2.7554	113	50 - 150	0.0000	+/-0.50	
M3PFHxS	206074.5	3.308383	192,419.00	3.300333	107	50 - 150	0.0080	+/-0.50	
M4PFHpA	1358915	3.27725	1,220,774.00	3.27725	111	50 - 150	0.0000	+/-0.50	
M8PFOA	1290304	3.534133	1,175,467.00	3.534133	110	50 - 150	0.0000	+/-0.50	
M8PFOS	224751.5	3.71625	203,715.00	3.71625	110	50 - 150	0.0000	+/-0.50	
M9PFNA	1174941	3.71725	1,054,218.00	3.71725	111	50 - 150	0.0000	+/-0.50	
MPFDoA	1320928	4.169267	1,303,969.00	4.1612	101	50 - 150	0.0081	+/-0.50	
D5-NEtFOSAA	312351.4	4.033433	285,562.00	4.033433	109	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	350101.7	3.95385	323,087.00	3.95385	108	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #2 Mid (22L3425-04)		Lab File ID: 22L3425-04.d				Analyzed: 01/18/23 17:48			
M8FOSA	456968.3	4.076483	561,068.00	4.0765	81	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	79352.68	2.670717	216,189.00	2.670717	37	50 - 150	0.0000	+/-0.50	*
M2PFTA	1271358	4.402783	1,551,168.00	4.4109	82	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	144384.5	3.875067	196,734.00	3.875067	73	50 - 150	0.0000	+/-0.50	
MPFBA	697592.2	1.141567	722,975.00	1.13325	96	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	182912	2.978433	175,160.00	2.978433	104	50 - 150	0.0000	+/-0.50	
M6PFDA	894904.8	3.875583	1,000,087.00	3.875583	89	50 - 150	0.0000	+/-0.50	
M3PFBS	181496.8	2.044217	188,299.00	2.044217	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	1097022	4.025967	1,285,812.00	4.025967	85	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	70756.05	3.5256	131,914.00	3.5256	54	50 - 150	0.0000	+/-0.50	
M5PFPeA	577307.9	1.849383	598,852.00	1.849383	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	1036197	2.7554	1,077,517.00	2.7554	96	50 - 150	0.0000	+/-0.50	
M3PFHxS	180836.3	3.308383	192,419.00	3.300333	94	50 - 150	0.0080	+/-0.50	
M4PFHpA	1154617	3.27725	1,220,774.00	3.27725	95	50 - 150	0.0000	+/-0.50	
M8PFOA	1099442	3.534133	1,175,467.00	3.534133	94	50 - 150	0.0000	+/-0.50	
M8PFOS	181839.4	3.71625	203,715.00	3.71625	89	50 - 150	0.0000	+/-0.50	
M9PFNA	959637.4	3.71725	1,054,218.00	3.71725	91	50 - 150	0.0000	+/-0.50	
MPFDoA	1081979	4.161183	1,303,969.00	4.1612	83	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	255066.1	4.033433	285,562.00	4.033433	89	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	278331.1	3.95385	323,087.00	3.95385	86	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
System #2 Eff (22L3425-05)		Lab File ID: 22L3425-05.d				Analyzed: 01/18/23 17:55			
M8FOSA	472118.1	4.076483	561,068.00	4.0765	84	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	85663.99	2.670717	216,189.00	2.670717	40	50 - 150	0.0000	+/-0.50	*
M2PFTA	1313325	4.402783	1,551,168.00	4.4109	85	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	159533.4	3.875067	196,734.00	3.875067	81	50 - 150	0.0000	+/-0.50	
MPFBA	726441.6	1.141567	722,975.00	1.13325	100	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	214058.1	2.978433	175,160.00	2.978433	122	50 - 150	0.0000	+/-0.50	
M6PFDA	1002581	3.875583	1,000,087.00	3.875583	100	50 - 150	0.0000	+/-0.50	
M3PFBS	183780.5	2.044217	188,299.00	2.044217	98	50 - 150	0.0000	+/-0.50	
M7PFUnA	1151769	4.025967	1,285,812.00	4.025967	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	76792.29	3.5256	131,914.00	3.5256	58	50 - 150	0.0000	+/-0.50	
M5PFPeA	601960.2	1.849383	598,852.00	1.849383	101	50 - 150	0.0000	+/-0.50	
M5PFHxA	1072658	2.7554	1,077,517.00	2.7554	100	50 - 150	0.0000	+/-0.50	
M3PFHxS	183192.1	3.308383	192,419.00	3.300333	95	50 - 150	0.0080	+/-0.50	
M4PFHpA	1251767	3.27725	1,220,774.00	3.27725	103	50 - 150	0.0000	+/-0.50	
M8PFOA	1126745	3.534133	1,175,467.00	3.534133	96	50 - 150	0.0000	+/-0.50	
M8PFOS	194367.3	3.71625	203,715.00	3.71625	95	50 - 150	0.0000	+/-0.50	
M9PFNA	1065712	3.71725	1,054,218.00	3.71725	101	50 - 150	0.0000	+/-0.50	
MPFDoA	1088293	4.161183	1,303,969.00	4.1612	83	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	256196.9	4.033433	285,562.00	4.033433	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	302073.7	3.95385	323,087.00	3.95385	93	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B327089-BLK1)			Lab File ID: B327089-BLK1.d			Analyzed: 01/18/23 17:05			
M8FOSA	496243.2	4.076483	561,068.00	4.0765	88	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	209978.9	2.670717	216,189.00	2.670717	97	50 - 150	0.0000	+/-0.50	
M2PFTA	1492136	4.402783	1,551,168.00	4.4109	96	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	230620.2	3.875067	196,734.00	3.875067	117	50 - 150	0.0000	+/-0.50	
MPFBA	796884.8	1.141567	722,975.00	1.13325	110	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	194676.7	2.978433	175,160.00	2.978433	111	50 - 150	0.0000	+/-0.50	
M6PFDA	1092213	3.875583	1,000,087.00	3.875583	109	50 - 150	0.0000	+/-0.50	
M3PFBS	193745.8	2.044217	188,299.00	2.044217	103	50 - 150	0.0000	+/-0.50	
M7PFUnA	1327056	4.025967	1,285,812.00	4.025967	103	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	146964.3	3.5256	131,914.00	3.5256	111	50 - 150	0.0000	+/-0.50	
M5PFPeA	628557.4	1.849383	598,852.00	1.849383	105	50 - 150	0.0000	+/-0.50	
M5PFHxA	1114088	2.7554	1,077,517.00	2.7554	103	50 - 150	0.0000	+/-0.50	
M3PFHxS	191221.1	3.308383	192,419.00	3.300333	99	50 - 150	0.0080	+/-0.50	
M4PFHpA	1288970	3.27725	1,220,774.00	3.27725	106	50 - 150	0.0000	+/-0.50	
M8PFOA	1223979	3.534133	1,175,467.00	3.534133	104	50 - 150	0.0000	+/-0.50	
M8PFOS	202006.2	3.71625	203,715.00	3.71625	99	50 - 150	0.0000	+/-0.50	
M9PFNA	1117786	3.71725	1,054,218.00	3.71725	106	50 - 150	0.0000	+/-0.50	
MPFDoA	1249501	4.169267	1,303,969.00	4.1612	96	50 - 150	0.0081	+/-0.50	
D5-NEtFOSAA	325330.1	4.033433	285,562.00	4.033433	114	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	382412.1	3.95385	323,087.00	3.95385	118	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B327089-BS1)			Lab File ID: B327089-BS1.d			Analyzed: 01/18/23 16:50			
M8FOSA	500591.4	4.0765	561,068.00	4.0765	89	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	225421.6	2.670717	216,189.00	2.670717	104	50 - 150	0.0000	+/-0.50	
M2PFTA	1437913	4.4109	1,551,168.00	4.4109	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	216584.4	3.875067	196,734.00	3.875067	110	50 - 150	0.0000	+/-0.50	
MPFBA	822221.7	1.141567	722,975.00	1.13325	114	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	203094.8	2.978433	175,160.00	2.978433	116	50 - 150	0.0000	+/-0.50	
M6PFDA	1178772	3.875583	1,000,087.00	3.875583	118	50 - 150	0.0000	+/-0.50	
M3PFBS	202863.5	2.044217	188,299.00	2.044217	108	50 - 150	0.0000	+/-0.50	
M7PFUnA	1226246	4.025967	1,285,812.00	4.025967	95	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	142423.9	3.5256	131,914.00	3.5256	108	50 - 150	0.0000	+/-0.50	
M5PFPeA	643027.3	1.849383	598,852.00	1.849383	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	1146044	2.7554	1,077,517.00	2.7554	106	50 - 150	0.0000	+/-0.50	
M3PFHxS	202198.6	3.308383	192,419.00	3.300333	105	50 - 150	0.0080	+/-0.50	
M4PFHpA	1317613	3.27725	1,220,774.00	3.27725	108	50 - 150	0.0000	+/-0.50	
M8PFOA	1219389	3.534133	1,175,467.00	3.534133	104	50 - 150	0.0000	+/-0.50	
M8PFOS	215824.3	3.71625	203,715.00	3.71625	106	50 - 150	0.0000	+/-0.50	
M9PFNA	1154892	3.71725	1,054,218.00	3.71725	110	50 - 150	0.0000	+/-0.50	
MPFDoA	1197552	4.169267	1,303,969.00	4.1612	92	50 - 150	0.0081	+/-0.50	
D5-NEtFOSAA	279317	4.033433	285,562.00	4.033433	98	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	365912.5	3.95385	323,087.00	3.95385	113	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B327089-BSD1) Lab File ID: B327089-BSD1.d Analyzed: 01/18/23 16:58									
M8FOSA	439158.7	4.0765	561,068.00	4.0765	78	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	185245.7	2.670717	216,189.00	2.670717	86	50 - 150	0.0000	+/-0.50	
M2PFTA	1196949	4.402783	1,551,168.00	4.4109	77	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	168310.5	3.875067	196,734.00	3.875067	86	50 - 150	0.0000	+/-0.50	
MPFBA	691680.1	1.141567	722,975.00	1.13325	96	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	193794.8	2.978433	175,160.00	2.978433	111	50 - 150	0.0000	+/-0.50	
M6PFDA	926245.9	3.875583	1,000,087.00	3.875583	93	50 - 150	0.0000	+/-0.50	
M3PFBS	167998.1	2.044217	188,299.00	2.044217	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	1115044	4.025967	1,285,812.00	4.025967	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	122638.6	3.5256	131,914.00	3.5256	93	50 - 150	0.0000	+/-0.50	
M5PFPeA	544747.4	1.849383	598,852.00	1.849383	91	50 - 150	0.0000	+/-0.50	
M5PFHxA	984227.6	2.763583	1,077,517.00	2.7554	91	50 - 150	0.0082	+/-0.50	
M3PFHxS	165492.8	3.308383	192,419.00	3.300333	86	50 - 150	0.0080	+/-0.50	
M4PFHpA	1119136	3.27725	1,220,774.00	3.27725	92	50 - 150	0.0000	+/-0.50	
M8PFOA	1066110	3.534133	1,175,467.00	3.534133	91	50 - 150	0.0000	+/-0.50	
M8PFOS	181964.2	3.71625	203,715.00	3.71625	89	50 - 150	0.0000	+/-0.50	
M9PFNA	920530.5	3.71725	1,054,218.00	3.71725	87	50 - 150	0.0000	+/-0.50	
MPFDoA	1086345	4.169267	1,303,969.00	4.1612	83	50 - 150	0.0081	+/-0.50	
D5-NEtFOSAA	261267.3	4.033433	285,562.00	4.033433	91	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	307163.6	3.953867	323,087.00	3.95385	95	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B328601-BLK1)			Lab File ID: B328601-BLK1.d			Analyzed: 01/19/23 04:55			
M8FOSA	409197.6	4.076483	561,068.00	4.0765	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	152292.3	2.670717	216,189.00	2.661333	70	50 - 150	0.0094	+/-0.50	
M2PFTA	994112.8	4.402783	1,551,168.00	4.402783	64	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	126389.4	3.875067	196,734.00	3.875067	64	50 - 150	0.0000	+/-0.50	
MPFBA	631638.6	1.13325	722,975.00	1.13325	87	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	153373.9	2.978433	175,160.00	2.970317	88	50 - 150	0.0081	+/-0.50	
M6PFDA	806709.4	3.875583	1,000,087.00	3.875583	81	50 - 150	0.0000	+/-0.50	
M3PFBS	168206.7	2.035933	188,299.00	2.035933	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	888287.8	4.025967	1,285,812.00	4.025967	69	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	96635.84	3.5256	131,914.00	3.5256	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	526852.6	1.849383	598,852.00	1.849383	88	50 - 150	0.0000	+/-0.50	
M5PFHxA	908471.7	2.7554	1,077,517.00	2.7554	84	50 - 150	0.0000	+/-0.50	
M3PFHxS	158065	3.300333	192,419.00	3.300333	82	50 - 150	0.0000	+/-0.50	
M4PFHpA	1026063	3.27725	1,220,774.00	3.268033	84	50 - 150	0.0092	+/-0.50	
M8PFOA	939184.4	3.534133	1,175,467.00	3.534133	80	50 - 150	0.0000	+/-0.50	
M8PFOS	155732.9	3.71625	203,715.00	3.71625	76	50 - 150	0.0000	+/-0.50	
M9PFNA	854030.6	3.71725	1,054,218.00	3.71725	81	50 - 150	0.0000	+/-0.50	
MPFDoA	875913.8	4.161183	1,303,969.00	4.1612	67	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	215917.1	4.033433	285,562.00	4.033433	76	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	253060.9	3.95385	323,087.00	3.95385	78	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B328601-BS1)			Lab File ID: B328601-BS1.d			Analyzed: 01/19/23 04:48			
M8FOSA	406090.2	4.0765	561,068.00	4.0765	72	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	152895	2.670717	216,189.00	2.661333	71	50 - 150	0.0094	+/-0.50	
M2PFTA	1063499	4.402783	1,551,168.00	4.402783	69	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	120322.7	3.875067	196,734.00	3.875067	61	50 - 150	0.0000	+/-0.50	
MPFBA	645374	1.13325	722,975.00	1.13325	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	178859.9	2.978433	175,160.00	2.970317	102	50 - 150	0.0081	+/-0.50	
M6PFDA	894652.9	3.875583	1,000,087.00	3.875583	89	50 - 150	0.0000	+/-0.50	
M3PFBS	175621.6	2.035933	188,299.00	2.035933	93	50 - 150	0.0000	+/-0.50	
M7PFUnA	978238.4	4.025967	1,285,812.00	4.025967	76	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	92652.1	3.5256	131,914.00	3.5256	70	50 - 150	0.0000	+/-0.50	
M5PFPeA	541577.6	1.849383	598,852.00	1.849383	90	50 - 150	0.0000	+/-0.50	
M5PFHxA	947199.6	2.7554	1,077,517.00	2.7554	88	50 - 150	0.0000	+/-0.50	
M3PFHxS	160194.9	3.300333	192,419.00	3.300333	83	50 - 150	0.0000	+/-0.50	
M4PFHpA	1021774	3.27725	1,220,774.00	3.268033	84	50 - 150	0.0092	+/-0.50	
M8PFOA	946561.1	3.534133	1,175,467.00	3.534133	81	50 - 150	0.0000	+/-0.50	
M8PFOS	188695.4	3.71625	203,715.00	3.71625	93	50 - 150	0.0000	+/-0.50	
M9PFNA	888616.6	3.71725	1,054,218.00	3.71725	84	50 - 150	0.0000	+/-0.50	
MPFDoA	963600.6	4.1612	1,303,969.00	4.1612	74	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	200592.8	4.033433	285,562.00	4.033433	70	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	262738.3	3.95385	323,087.00	3.95385	81	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B328601-MS2) Lab File ID: B328601-MS2.d Analyzed: 01/19/23 05:03									
M8FOSA	431575.1	4.0765	561,068.00	4.0765	77	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	105367.4	2.661333	216,189.00	2.661333	49	50 - 150	0.0000	+/-0.50	*
M2PFTA	1122848	4.402783	1,551,168.00	4.402783	72	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	101379.8	3.875067	196,734.00	3.875067	52	50 - 150	0.0000	+/-0.50	
MPFBA	656478.1	1.13325	722,975.00	1.13325	91	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	175220.4	2.978433	175,160.00	2.970317	100	50 - 150	0.0081	+/-0.50	
M6PFDA	808990.1	3.875583	1,000,087.00	3.875583	81	50 - 150	0.0000	+/-0.50	
M3PFBS	179113.8	2.035933	188,299.00	2.035933	95	50 - 150	0.0000	+/-0.50	
M7PFUnA	957404.3	4.025967	1,285,812.00	4.025967	74	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	70101.77	3.5256	131,914.00	3.5256	53	50 - 150	0.0000	+/-0.50	
M5PFPeA	551117.1	1.849383	598,852.00	1.849383	92	50 - 150	0.0000	+/-0.50	
M5PFHxA	983405.9	2.7554	1,077,517.00	2.7554	91	50 - 150	0.0000	+/-0.50	
M3PFHxS	159665.6	3.300333	192,419.00	3.300333	83	50 - 150	0.0000	+/-0.50	
M4PFHpA	1066303	3.27725	1,220,774.00	3.268033	87	50 - 150	0.0092	+/-0.50	
M8PFOA	952704.4	3.534133	1,175,467.00	3.534133	81	50 - 150	0.0000	+/-0.50	
M8PFOS	181761.7	3.71625	203,715.00	3.71625	89	50 - 150	0.0000	+/-0.50	
M9PFNA	857546.1	3.71725	1,054,218.00	3.71725	81	50 - 150	0.0000	+/-0.50	
MPFDoA	937242.2	4.1612	1,303,969.00	4.1612	72	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	220095.8	4.033433	285,562.00	4.033433	77	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	273329.5	3.95385	323,087.00	3.95385	85	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B328601-MSD2) Lab File ID: B328601-MSD2.d Analyzed: 01/19/23 05:10									
M8FOSA	405798.2	4.0765	561,068.00	4.0765	72	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	90549.79	2.661333	216,189.00	2.661333	42	50 - 150	0.0000	+/-0.50	*
M2PFTA	1123297	4.402783	1,551,168.00	4.402783	72	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	100933.6	3.875067	196,734.00	3.875067	51	50 - 150	0.0000	+/-0.50	
MPFBA	634024.4	1.13325	722,975.00	1.13325	88	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	184732.2	2.970317	175,160.00	2.970317	105	50 - 150	0.0000	+/-0.50	
M6PFDA	826421.6	3.875583	1,000,087.00	3.875583	83	50 - 150	0.0000	+/-0.50	
M3PFBS	171611.4	2.035933	188,299.00	2.035933	91	50 - 150	0.0000	+/-0.50	
M7PFUnA	1002459	4.025967	1,285,812.00	4.025967	78	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	58986.2	3.5256	131,914.00	3.5256	45	50 - 150	0.0000	+/-0.50	*
M5PFPeA	535438.6	1.849383	598,852.00	1.849383	89	50 - 150	0.0000	+/-0.50	
M5PFHxA	935918.7	2.7554	1,077,517.00	2.7554	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	148645.2	3.300333	192,419.00	3.300333	77	50 - 150	0.0000	+/-0.50	
M4PFHpA	974711.5	3.27725	1,220,774.00	3.268033	80	50 - 150	0.0092	+/-0.50	
M8PFOA	933050.5	3.534133	1,175,467.00	3.534133	79	50 - 150	0.0000	+/-0.50	
M8PFOS	164918.8	3.716267	203,715.00	3.71625	81	50 - 150	0.0000	+/-0.50	
M9PFNA	864010.8	3.71725	1,054,218.00	3.71725	82	50 - 150	0.0000	+/-0.50	
MPFDoA	974776.4	4.1612	1,303,969.00	4.1612	75	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	219899.9	4.033433	285,562.00	4.033433	77	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	272044.5	3.953867	323,087.00	3.95385	84	50 - 150	0.0000	+/-0.50	

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

CERTIFICATIONS
Certified Analyses included in this Report

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

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

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



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Barnstable County
3195 Main St. PO Box 427

Project Name:

Project Location:

Project Number:

Project Manager:

Con-Test Quote Name/Number:

Invoice Recipient:

Sampled By:

Client Sample ID / Description

Beginning Date/Time

Ending Date/Time

COMP/GRAB

Matrix Code

Conc Code

VIALS

GLASS

PLASTIC

BACTERIA

ENCORE

PFAS

Client Comments: Sample confirmation and report to Rthibault@BETA-Inc.com & Lboulley@BETA-Inc.com

Date/Time

Date/Time

Date/Time

Date/Time

Date/Time

Date/Time

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Date/Time

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

ANALYSIS REQUESTED

Requested Turnaround Time

7-Day

PFAS 15-Day (std)

Due Date:

1-Day

2-Day

3-Day

4-Day

Field Filtered

Lab to Filter

Orthophosphate Samples

Field Filtered

Lab to Filter

PCB ONLY

SOXHLET

NON SOXHLET

Format: PDF

EXCEL

Other:

CLP Like Data Pkg Required:

Email To:

Fax To #:

Request Approval Required

MA HCP Required

MCP Certification Form Required

CT RCP Required

RCP Certification Form Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

MA State DW Required

Page 1 of 1

Preservation Code

Courier Use Only

Total Number Of:

VIALS

GLASS

PLASTIC

BACTERIA

ENCORE

Glassware in the fridge?

Glassware in freezer? Y / N

Prepackaged Cooler? Y / N

*Contest is not responsible for missing samples from prepacked coolers

Matrix Codes:

GW = Ground Water

WW = Waste Water

DW = Drinking Water

A = Air

S = Soil

SL = Sludge

SOL = Solid

O = Other (please define)

Preservation Codes:

I = Iced

H = HCL

M = Methanol

N = Nitric Acid

S = Sulfuric Acid

B = Sodium Bisulfate

X = Sodium Hydroxide

T = Sodium Thiosulfate

O = Other (please define)

Please use the following codes to indicate possible sample concentration within the Conc Code column above:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

NEIAC and AHA-LAP, LLC Accredited

Other

Chromatogram

AHA-LAP, LLC

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

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

Pace PEOPLE ADVANCING SCIENCE
Doc# 277 Rev 6 July 2022

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

Client Barnstable County
Received By CH Date 12/23/22 Time 14:20

How were the samples received? In Cooler T No Cooler On Ice T No Ice
Direct From Sample Ambient Melted Ice

Were samples within Temperature? Within 2-6°C T By Gun # 5 Actual Temp - 5.6
By Blank # Actual Temp -

Was Custody Seal In tact? NA Were Samples Tampered with? NA
Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time?
Did COC include all pertinent information? Client? T Analysis? T Sampler Name? T
Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified?
Are there Rushes? F Who was notified?
Are there Short Holds? F Who was notified?

Samples are received within holding time? T Is there enough Volume? F
Is there Headspace where applicable? NA MS/MSD? T
Proper Media/Containers Used? T splitting samples require F
Were trip blanks receive F On COC? F

Do All Samples Have the proper pH? NA Acid Base

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

Unused Media

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

Comments:

X ONN received double volume for ms/msd.

APPENDIX C

LABORATORY REPORTS/CERTIFICATES OF ANALYSIS

Site Groundwater Monitoring



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/15
Report #: R7253855
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L6109

Received: 2022/08/02, 13:39

Sample Matrix: Water
Samples Received: 17

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
PFAS in water by SPE/LCMS (1)	17	2022/08/10	2022/08/12	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/15
Report #: R7253855
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L6109

Received: 2022/08/02, 13:39

Encryption Key

Lori Dufour
Project Manager
16 Aug 2022 15:30:54

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH628		TIH629			TIH630			
Sampling Date		2022/07/27 12:45		2022/07/27 11:55			2022/07/27 11:05			
COC Number		na		na			na			
	UNITS	PFW-1	RDL	MW-3S	RDL	MDL	OW-8A	RDL	MDL	QC Batch
Perfluorinated Compounds										
Perfluorobutanoic acid (PFBA)	ug/L	0.20	0.020	0.13	0.020	0.0039	0.0073	0.020	0.0039	8158628
Perfluoropentanoic acid (PFPeA)	ug/L	0.85	0.020	0.47	0.020	0.0067	0.025	0.020	0.0067	8158628
Perfluorohexanoic acid (PFHxA)	ug/L	0.85	0.020	0.41	0.020	0.0053	0.013	0.020	0.0053	8158628
Perfluoroheptanoic acid (PFHpA)	ug/L	0.66	0.020	0.19	0.020	0.0067	0.012	0.020	0.0067	8158628
Perfluorooctanoic acid (PFOA)	ug/L	0.54	0.020	0.47	0.020	0.0050	0.016	0.020	0.0050	8158628
Perfluorononanoic acid (PFNA)	ug/L	0.099	0.020	0.068	0.020	0.0051	0.020	0.020	0.0051	8158628
Perfluorodecanoic acid (PFDA)	ug/L	0.038	0.020	0.010	0.020	0.0039	<0.0039	0.020	0.0039	8158628
Perfluoroundecanoic acid (PFUnA)	ug/L	0.16	0.020	0.017	0.020	0.0062	0.0074	0.020	0.0062	8158628
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	0.020	<0.0080	0.020	0.0080	<0.0080	0.020	0.0080	8158628
Perfluorotridecanoic acid (PFTRDA)	ug/L	<0.0064	0.020	<0.0064	0.020	0.0064	<0.0064	0.020	0.0064	8158628
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	0.020	<0.0068	0.020	0.0068	<0.0068	0.020	0.0068	8158628
Perfluorobutanesulfonic acid (PFBS)	ug/L	0.088	0.020	0.044	0.020	0.0056	<0.0056	0.020	0.0056	8158628
Perfluorohexanesulfonic acid (PFHxS)	ug/L	3.3	0.20	1.2	0.20	0.044	0.045	0.020	0.0044	8158628
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	0.075	0.020	0.024	0.020	0.0065	<0.0065	0.020	0.0065	8158628
Perfluorooctanesulfonic acid (PFOS)	ug/L	7.6	0.20	1.6	0.20	0.057	0.13	0.020	0.0057	8158628
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	0.020	<0.0064	0.020	0.0064	<0.0064	0.020	0.0064	8158628
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.010	0.020	0.022	0.020	0.0036	<0.0036	0.020	0.0036	8158628
EtFOSA	ug/L	<0.0070	0.020	<0.0070	0.020	0.0070	<0.0070	0.020	0.0070	8158628
MeFOSA	ug/L	<0.0078	0.020	<0.0078	0.020	0.0078	<0.0078	0.020	0.0078	8158628
EtFOSE	ug/L	<0.0071	0.020	<0.0071	0.020	0.0071	<0.0071	0.020	0.0071	8158628
MeFOSE	ug/L	<0.0070	0.020	<0.0070	0.020	0.0070	<0.0070	0.020	0.0070	8158628
6:2 Fluorotelomer sulfonic acid	ug/L	2.4	0.20	0.071	0.020	0.0065	0.013	0.020	0.0065	8158628
8:2 Fluorotelomer sulfonic acid	ug/L	0.94	0.020	<0.0067	0.020	0.0067	0.0075	0.020	0.0067	8158628
Surrogate Recovery (%)										
13C2-6:2-Fluorotelomersulfonic Acid	%	104	N/A	100	N/A	N/A	105	N/A	N/A	8158628
13C2-8:2-Fluorotelomersulfonic Acid	%	102	N/A	104	N/A	N/A	104	N/A	N/A	8158628
13C2-Perfluorodecanoic acid	%	110	N/A	100	N/A	N/A	101	N/A	N/A	8158628
13C2-Perfluorododecanoic acid	%	104	N/A	100	N/A	N/A	101	N/A	N/A	8158628
13C2-Perfluorohexanoic acid	%	103	N/A	95	N/A	N/A	98	N/A	N/A	8158628
13C2-perfluorotetradecanoic acid	%	96	N/A	105	N/A	N/A	106	N/A	N/A	8158628
13C2-Perfluoroundecanoic acid	%	106	N/A	96	N/A	N/A	99	N/A	N/A	8158628
13C3-Perfluorobutanesulfonic acid	%	104	N/A	91	N/A	N/A	95	N/A	N/A	8158628
13C4-Perfluorobutanoic acid	%	100	N/A	96	N/A	N/A	94	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



BUREAU
VERITAS

Bureau Veritas Job #: C2L6109

Report Date: 2022/08/15

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH628		TIH629			TIH630			
Sampling Date		2022/07/27 12:45		2022/07/27 11:55			2022/07/27 11:05			
COC Number		na		na			na			
	UNITS	PFW-1	RDL	MW-3S	RDL	MDL	OW-8A	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	97	N/A	99	N/A	N/A	105	N/A	N/A	8158628
13C4-Perfluorooctanesulfonic acid	%	92	N/A	97	N/A	N/A	97	N/A	N/A	8158628
13C4-Perfluorooctanoic acid	%	109	N/A	103	N/A	N/A	103	N/A	N/A	8158628
13C5-Perfluorononanoic acid	%	113	N/A	105	N/A	N/A	105	N/A	N/A	8158628
13C5-Perfluoropentanoic acid	%	100	N/A	88	N/A	N/A	96	N/A	N/A	8158628
13C8-Perfluorooctane Sulfonamide	%	103	N/A	97	N/A	N/A	97	N/A	N/A	8158628
18O2-Perfluorohexanesulfonic acid	%	98	N/A	101	N/A	N/A	94	N/A	N/A	8158628
D3-MeFOSA	%	74	N/A	74	N/A	N/A	62	N/A	N/A	8158628
D5-EtFOSA	%	81	N/A	75	N/A	N/A	68	N/A	N/A	8158628
D7-MeFOSE	%	87	N/A	82	N/A	N/A	80	N/A	N/A	8158628
D9-EtFOSE	%	87	N/A	84	N/A	N/A	83	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH631	TIH632			TIH633	TIH634			
Sampling Date		2022/07/27 10:00	2022/07/27 13:30			2022/07/27 14:40	2022/07/27 15:00			
COC Number		na	na			na	na			
	UNITS	PFW-5	PFW-2	RDL	MDL	PC-34S	RINSATE 1	RDL	MDL	QC Batch
Perfluorinated Compounds										
Perfluorobutanoic acid (PFBA)	ug/L	0.0057	0.12	0.020	0.0039	0.037	<0.0039	0.020	0.0039	8158628
Perfluoropentanoic acid (PFPeA)	ug/L	0.0094	0.44	0.020	0.0067	0.11	<0.0067	0.020	0.0067	8158628
Perfluorohexanoic acid (PFHxA)	ug/L	0.011	0.43	0.020	0.0053	0.15	<0.0053	0.020	0.0053	8158628
Perfluoroheptanoic acid (PFHpA)	ug/L	0.0092	0.13	0.020	0.0067	0.074	<0.0067	0.020	0.0067	8158628
Perfluorooctanoic acid (PFOA)	ug/L	0.014	0.19	0.020	0.0050	0.069	<0.0050	0.020	0.0050	8158628
Perfluorononanoic acid (PFNA)	ug/L	0.0055	0.14	0.020	0.0051	0.13	<0.0051	0.020	0.0051	8158628
Perfluorodecanoic acid (PFDA)	ug/L	0.013	0.015	0.020	0.0039	0.0086	<0.0039	0.020	0.0039	8158628
Perfluoroundecanoic acid (PFUnA)	ug/L	0.030	0.082	0.020	0.0062	<0.0062	<0.0062	0.020	0.0062	8158628
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	<0.0080	0.020	0.0080	<0.0080	<0.0080	0.020	0.0080	8158628
Perfluorotridecanoic acid (PFTRDA)	ug/L	<0.0064	<0.0064	0.020	0.0064	<0.0064	<0.0064	0.020	0.0064	8158628
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	<0.0068	0.020	0.0068	<0.0068	<0.0068	0.020	0.0068	8158628
Perfluorobutanesulfonic acid (PFBS)	ug/L	<0.0056	0.035	0.020	0.0056	0.025	<0.0056	0.020	0.0056	8158628
Perfluorohexanesulfonic acid (PFHxS)	ug/L	0.067	0.47	0.020	0.0044	0.14	<0.0044	0.020	0.0044	8158628
Perfluoroheptanesulfonic acid PFHpS	ug/L	<0.0065	0.028	0.020	0.0065	0.011	<0.0065	0.020	0.0065	8158628
Perfluorooctanesulfonic acid (PFOS)	ug/L	1.1	2.6	0.20	0.057	0.71	<0.0057	0.020	0.0057	8158628
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	<0.0064	0.020	0.0064	<0.0064	<0.0064	0.020	0.0064	8158628
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.025	0.0042	0.020	0.0036	<0.0036	<0.0036	0.020	0.0036	8158628
EtFOSA	ug/L	<0.0070	<0.0070	0.020	0.0070	<0.0070	<0.0070	0.020	0.0070	8158628
MeFOSA	ug/L	<0.0078	<0.0078	0.020	0.0078	<0.0078	<0.0078	0.020	0.0078	8158628
EtFOSE	ug/L	<0.0071	<0.0071	0.020	0.0071	<0.0071	<0.0071	0.020	0.0071	8158628
MeFOSE	ug/L	<0.0070	<0.0070	0.020	0.0070	<0.0070	<0.0070	0.020	0.0070	8158628
6:2 Fluorotelomer sulfonic acid	ug/L	<0.0065	0.87	0.020	0.0065	0.080	<0.0065	0.020	0.0065	8158628
8:2 Fluorotelomer sulfonic acid	ug/L	0.074	0.35	0.020	0.0067	0.0077	<0.0067	0.020	0.0067	8158628
Surrogate Recovery (%)										
13C2-6:2-Fluorotelomersulfonic Acid	%	108	95	N/A	N/A	105	81	N/A	N/A	8158628
13C2-8:2-Fluorotelomersulfonic Acid	%	101	103	N/A	N/A	104	97	N/A	N/A	8158628
13C2-Perfluorodecanoic acid	%	99	101	N/A	N/A	97	89	N/A	N/A	8158628
13C2-Perfluorododecanoic acid	%	96	102	N/A	N/A	82	91	N/A	N/A	8158628
13C2-Perfluorohexanoic acid	%	101	98	N/A	N/A	99	87	N/A	N/A	8158628
13C2-perfluorotetradecanoic acid	%	71	99	N/A	N/A	68	86	N/A	N/A	8158628
13C2-Perfluoroundecanoic acid	%	96	100	N/A	N/A	91	91	N/A	N/A	8158628
13C3-Perfluorobutanesulfonic acid	%	97	95	N/A	N/A	94	81	N/A	N/A	8158628
13C4-Perfluorobutanoic acid	%	95	97	N/A	N/A	95	82	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH631	TIH632			TIH633	TIH634			
Sampling Date		2022/07/27 10:00	2022/07/27 13:30			2022/07/27 14:40	2022/07/27 15:00			
COC Number		na	na			na	na			
	UNITS	PFW-5	PFW-2	RDL	MDL	PC-34S	RINSATE 1	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	106	103	N/A	N/A	104	93	N/A	N/A	8158628
13C4-Perfluorooctanesulfonic acid	%	96	98	N/A	N/A	94	86	N/A	N/A	8158628
13C4-Perfluorooctanoic acid	%	106	105	N/A	N/A	105	92	N/A	N/A	8158628
13C5-Perfluorononanoic acid	%	104	106	N/A	N/A	106	93	N/A	N/A	8158628
13C5-Perfluoropentanoic acid	%	97	96	N/A	N/A	95	84	N/A	N/A	8158628
13C8-Perfluorooctane Sulfonamide	%	97	100	N/A	N/A	98	86	N/A	N/A	8158628
18O2-Perfluorohexanesulfonic acid	%	98	94	N/A	N/A	95	83	N/A	N/A	8158628
D3-MeFOSA	%	68	73	N/A	N/A	71	62	N/A	N/A	8158628
D5-EtFOSA	%	74	74	N/A	N/A	69	63	N/A	N/A	8158628
D7-MeFOSE	%	82	80	N/A	N/A	80	70	N/A	N/A	8158628
D9-EtFOSE	%	84	84	N/A	N/A	84	74	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH635	TIH636			TIH637			
Sampling Date		2022/07/28 08:00	2022/07/28 12:00			2022/07/28 09:25			
COC Number		na	na			na			
	UNITS	PC-28	PC-1	RDL	MDL	MW-12S	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ug/L	0.021	0.038	0.020	0.0039	0.054	0.020	0.0039	8158628
Perfluoropentanoic acid (PFPeA)	ug/L	0.053	0.13	0.020	0.0067	0.19	0.020	0.0067	8158628
Perfluorohexanoic acid (PFHxA)	ug/L	0.059	0.11	0.020	0.0053	0.27	0.020	0.0053	8158628
Perfluoroheptanoic acid (PFHpA)	ug/L	0.040	0.078	0.020	0.0067	0.10	0.020	0.0067	8158628
Perfluorooctanoic acid (PFOA)	ug/L	0.030	0.053	0.020	0.0050	0.35	0.020	0.0050	8158628
Perfluorononanoic acid (PFNA)	ug/L	0.045	0.044	0.020	0.0051	0.017	0.020	0.0051	8158628
Perfluorodecanoic acid (PFDA)	ug/L	0.0090	0.0094	0.020	0.0039	0.0075	0.020	0.0039	8158628
Perfluoroundecanoic acid (PFUnA)	ug/L	0.028	0.17	0.020	0.0062	0.031	0.020	0.0062	8158628
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	<0.0080	0.020	0.0080	<0.0080	0.020	0.0080	8158628
Perfluorotridecanoic acid (PFTrDA)	ug/L	<0.0064	<0.0064	0.020	0.0064	<0.0064	0.020	0.0064	8158628
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	<0.0068	0.020	0.0068	<0.0068	0.020	0.0068	8158628
Perfluorobutanesulfonic acid (PFBS)	ug/L	0.0078	0.014	0.020	0.0056	0.032	0.020	0.0056	8158628
Perfluorohexanesulfonic acid (PFHxS)	ug/L	0.075	0.24	0.020	0.0044	0.90	0.020	0.0044	8158628
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	0.0067	0.0077	0.020	0.0065	0.018	0.020	0.0065	8158628
Perfluorooctanesulfonic acid (PFOS)	ug/L	0.55	0.94	0.020	0.0057	1.5	0.20	0.057	8158628
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	<0.0064	0.020	0.0064	<0.0064	0.020	0.0064	8158628
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0036	0.0069	0.020	0.0036	0.24	0.020	0.0036	8158628
EtFOSA	ug/L	<0.0070	<0.0070	0.020	0.0070	<0.0070	0.020	0.0070	8158628
MeFOSA	ug/L	<0.0078	<0.0078	0.020	0.0078	<0.0078	0.020	0.0078	8158628
EtFOSE	ug/L	<0.0071	<0.0071	0.020	0.0071	<0.0071	0.020	0.0071	8158628
MeFOSE	ug/L	<0.0070	<0.0070	0.020	0.0070	<0.0070	0.020	0.0070	8158628
6:2 Fluorotelomer sulfonic acid	ug/L	0.018	0.24	0.020	0.0065	0.034	0.020	0.0065	8158628
8:2 Fluorotelomer sulfonic acid	ug/L	0.0075	0.18	0.020	0.0067	0.023	0.020	0.0067	8158628
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	117	107	N/A	N/A	113	N/A	N/A	8158628
13C2-8:2-Fluorotelomersulfonic Acid	%	130	110	N/A	N/A	116	N/A	N/A	8158628
13C2-Perfluorodecanoic acid	%	123	107	N/A	N/A	107	N/A	N/A	8158628
13C2-Perfluorododecanoic acid	%	114	104	N/A	N/A	72	N/A	N/A	8158628
13C2-Perfluorohexanoic acid	%	117	104	N/A	N/A	110	N/A	N/A	8158628
13C2-perfluorotetradecanoic acid	%	87	97	N/A	N/A	45 (1)	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL). Laboratory spiked water resulted in satisfactory recovery of the extracted internal standard analyte. When considered together, these QC data suggest that matrix interferences may be increasing the variability of the associated native analyte result (PFTEDA, PFTrDA).									



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH635	TIH636			TIH637			
Sampling Date		2022/07/28 08:00	2022/07/28 12:00			2022/07/28 09:25			
COC Number		na	na			na			
	UNITS	PC-28	PC-1	RDL	MDL	MW-12S	RDL	MDL	QC Batch
13C2-Perfluoroundecanoic acid	%	118	104	N/A	N/A	91	N/A	N/A	8158628
13C3-Perfluorobutanesulfonic acid	%	112	98	N/A	N/A	103	N/A	N/A	8158628
13C4-Perfluorobutanoic acid	%	109	98	N/A	N/A	105	N/A	N/A	8158628
13C4-Perfluoroheptanoic acid	%	123	108	N/A	N/A	115	N/A	N/A	8158628
13C4-Perfluorooctanesulfonic acid	%	115	101	N/A	N/A	104	N/A	N/A	8158628
13C4-Perfluorooctanoic acid	%	125	111	N/A	N/A	118	N/A	N/A	8158628
13C5-Perfluorononanoic acid	%	127	112	N/A	N/A	118	N/A	N/A	8158628
13C5-Perfluoropentanoic acid	%	114	99	N/A	N/A	105	N/A	N/A	8158628
13C8-Perfluorooctane Sulfonamide	%	115	105	N/A	N/A	111	N/A	N/A	8158628
18O2-Perfluorohexanesulfonic acid	%	112	101	N/A	N/A	104	N/A	N/A	8158628
D3-MeFOSA	%	77	75	N/A	N/A	76	N/A	N/A	8158628
D5-EtFOSA	%	80	76	N/A	N/A	78	N/A	N/A	8158628
D7-MeFOSE	%	97	90	N/A	N/A	92	N/A	N/A	8158628
D9-EtFOSE	%	93	88	N/A	N/A	90	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH638	TIH639	TIH640			TIH641			
Sampling Date		2022/07/28 08:55	2022/07/28 11:30	2022/07/28 09:00			2022/07/28 11:00			
COC Number		na	na	na			na			
	UNITS	MW-22	PC-39	PC-6A	RDL	MDL	PC-16D	RDL	MDL	QC Batch
Perfluorinated Compounds										
Perfluorobutanoic acid (PFBA)	ug/L	0.0081	<0.0039	0.014	0.020	0.0039	0.074	0.020	0.0039	8158628
Perfluoropentanoic acid (PFPeA)	ug/L	0.021	<0.0067	0.035	0.020	0.0067	0.32	0.020	0.0067	8158628
Perfluorohexanoic acid (PFHxA)	ug/L	0.034	<0.0053	0.039	0.020	0.0053	0.26	0.020	0.0053	8158628
Perfluoroheptanoic acid (PFHpA)	ug/L	0.020	<0.0067	0.033	0.020	0.0067	0.088	0.020	0.0067	8158628
Perfluorooctanoic acid (PFOA)	ug/L	0.077	<0.0050	0.026	0.020	0.0050	0.13	0.020	0.0050	8158628
Perfluorononanoic acid (PFNA)	ug/L	0.0087	0.0060	0.042	0.020	0.0051	0.070	0.020	0.0051	8158628
Perfluorodecanoic acid (PFDA)	ug/L	<0.0039	<0.0039	0.011	0.020	0.0039	0.010	0.020	0.0039	8158628
Perfluoroundecanoic acid (PFUnA)	ug/L	<0.0062	0.013	0.028	0.020	0.0062	0.020	0.020	0.0062	8158628
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	<0.0080	<0.0080	0.020	0.0080	<0.0080	0.020	0.0080	8158628
Perfluorotridecanoic acid (PFTRDA)	ug/L	<0.0064	<0.0064	<0.0064	0.020	0.0064	<0.0064	0.020	0.0064	8158628
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	<0.0068	<0.0068	0.020	0.0068	<0.0068	0.020	0.0068	8158628
Perfluorobutanesulfonic acid (PFBS)	ug/L	0.0088	<0.0056	0.0058	0.020	0.0056	0.046	0.020	0.0056	8158628
Perfluorohexanesulfonic acid (PFHxS)	ug/L	0.37	0.012	0.062	0.020	0.0044	0.68	0.020	0.0044	8158628
Perfluoroheptanesulfonic acid PFHpS	ug/L	0.0089	<0.0065	0.0070	0.020	0.0065	0.024	0.020	0.0065	8158628
Perfluorooctanesulfonic acid (PFOS)	ug/L	0.48	0.18	0.73	0.020	0.0057	1.3	0.20	0.057	8158628
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	<0.0064	<0.0064	0.020	0.0064	<0.0064	0.020	0.0064	8158628
Perfluorooctane Sulfonamide (PFOSA)	ug/L	0.0079	<0.0036	<0.0036	0.020	0.0036	0.0057	0.020	0.0036	8158628
EtFOSA	ug/L	<0.0070	<0.0070	<0.0070	0.020	0.0070	<0.0070	0.020	0.0070	8158628
MeFOSA	ug/L	<0.0078	<0.0078	<0.0078	0.020	0.0078	<0.0078	0.020	0.0078	8158628
EtFOSE	ug/L	<0.0071	<0.0071	<0.0071	0.020	0.0071	<0.0071	0.020	0.0071	8158628
MeFOSE	ug/L	<0.0070	<0.0070	<0.0070	0.020	0.0070	<0.0070	0.020	0.0070	8158628
6:2 Fluorotelomer sulfonic acid	ug/L	<0.0065	<0.0065	0.010	0.020	0.0065	0.10	0.020	0.0065	8158628
8:2 Fluorotelomer sulfonic acid	ug/L	<0.0067	<0.0067	0.0071	0.020	0.0067	0.012	0.020	0.0067	8158628
Surrogate Recovery (%)										
13C2-6:2-Fluorotelomersulfonic Acid	%	112	107	113	N/A	N/A	106	N/A	N/A	8158628
13C2-8:2-Fluorotelomersulfonic Acid	%	103	107	113	N/A	N/A	111	N/A	N/A	8158628
13C2-Perfluorodecanoic acid	%	97	99	106	N/A	N/A	104	N/A	N/A	8158628
13C2-Perfluorododecanoic acid	%	96	99	100	N/A	N/A	99	N/A	N/A	8158628
13C2-Perfluorohexanoic acid	%	102	98	106	N/A	N/A	102	N/A	N/A	8158628
13C2-perfluorotetradecanoic acid	%	83	104	67	N/A	N/A	64	N/A	N/A	8158628
13C2-Perfluoroundecanoic acid	%	95	100	103	N/A	N/A	102	N/A	N/A	8158628
13C3-Perfluorobutanesulfonic acid	%	98	94	100	N/A	N/A	96	N/A	N/A	8158628
13C4-Perfluorobutanoic acid	%	98	93	100	N/A	N/A	98	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



BUREAU
VERITAS

Bureau Veritas Job #: C2L6109

Report Date: 2022/08/15

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH638	TIH639	TIH640			TIH641			
Sampling Date		2022/07/28 08:55	2022/07/28 11:30	2022/07/28 09:00			2022/07/28 11:00			
COC Number		na	na	na			na			
	UNITS	MW-22	PC-39	PC-6A	RDL	MDL	PC-16D	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	108	104	111	N/A	N/A	106	N/A	N/A	8158628
13C4-Perfluorooctanesulfonic acid	%	94	97	102	N/A	N/A	109	N/A	N/A	8158628
13C4-Perfluorooctanoic acid	%	109	106	112	N/A	N/A	109	N/A	N/A	8158628
13C5-Perfluorononanoic acid	%	106	108	114	N/A	N/A	112	N/A	N/A	8158628
13C5-Perfluoropentanoic acid	%	99	94	102	N/A	N/A	98	N/A	N/A	8158628
13C8-Perfluorooctane Sulfonamide	%	100	99	103	N/A	N/A	104	N/A	N/A	8158628
18O2-Perfluorohexanesulfonic acid	%	97	94	104	N/A	N/A	96	N/A	N/A	8158628
D3-MeFOSA	%	64	68	66	N/A	N/A	77	N/A	N/A	8158628
D5-EtFOSA	%	64	71	69	N/A	N/A	80	N/A	N/A	8158628
D7-MeFOSE	%	81	89	82	N/A	N/A	88	N/A	N/A	8158628
D9-EtFOSE	%	82	82	84	N/A	N/A	87	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH642	TIH643	TIH644			
Sampling Date		2022/07/28 10:00	2022/07/28 12:10	2022/07/28 12:00			
COC Number		na	na	na			
	UNITS	PC-30	DUPLICATE	RINSATE 2	RDL	MDL	QC Batch
Perfluorinated Compounds							
Perfluorobutanoic acid (PFBA)	ug/L	0.012	0.039	<0.0039	0.020	0.0039	8158628
Perfluoropentanoic acid (PFPeA)	ug/L	0.029	0.13	<0.0067	0.020	0.0067	8158628
Perfluorohexanoic acid (PFHxA)	ug/L	0.032	0.11	<0.0053	0.020	0.0053	8158628
Perfluoroheptanoic acid (PFHpA)	ug/L	0.025	0.080	<0.0067	0.020	0.0067	8158628
Perfluorooctanoic acid (PFOA)	ug/L	0.016	0.055	<0.0050	0.020	0.0050	8158628
Perfluorononanoic acid (PFNA)	ug/L	0.019	0.048	<0.0051	0.020	0.0051	8158628
Perfluorodecanoic acid (PFDA)	ug/L	0.0048	0.010	<0.0039	0.020	0.0039	8158628
Perfluoroundecanoic acid (PFUnA)	ug/L	0.011	0.17	<0.0062	0.020	0.0062	8158628
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	<0.0080	<0.0080	0.020	0.0080	8158628
Perfluorotridecanoic acid (PFTRDA)	ug/L	<0.0064	<0.0064	<0.0064	0.020	0.0064	8158628
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	<0.0068	<0.0068	0.020	0.0068	8158628
Perfluorobutanesulfonic acid (PFBS)	ug/L	0.0061	0.014	<0.0056	0.020	0.0056	8158628
Perfluorohexanesulfonic acid (PFHxS)	ug/L	0.043	0.25	<0.0044	0.020	0.0044	8158628
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	<0.0065	0.0082	<0.0065	0.020	0.0065	8158628
Perfluorooctanesulfonic acid (PFOS)	ug/L	0.18	0.98	<0.0057	0.020	0.0057	8158628
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	<0.0064	<0.0064	0.020	0.0064	8158628
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0036	0.0070	<0.0036	0.020	0.0036	8158628
EtFOSA	ug/L	<0.0070	<0.0070	<0.0070	0.020	0.0070	8158628
MeFOSA	ug/L	<0.0078	<0.0078	<0.0078	0.020	0.0078	8158628
EtFOSE	ug/L	<0.0071	<0.0071	<0.0071	0.020	0.0071	8158628
MeFOSE	ug/L	<0.0070	<0.0070	<0.0070	0.020	0.0070	8158628
6:2 Fluorotelomer sulfonic acid	ug/L	0.013	0.25	<0.0065	0.020	0.0065	8158628
8:2 Fluorotelomer sulfonic acid	ug/L	<0.0067	0.18	<0.0067	0.020	0.0067	8158628
Surrogate Recovery (%)							
13C2-6:2-Fluorotelomersulfonic Acid	%	114	107	101	N/A	N/A	8158628
13C2-8:2-Fluorotelomersulfonic Acid	%	113	110	114	N/A	N/A	8158628
13C2-Perfluorodecanoic acid	%	106	108	111	N/A	N/A	8158628
13C2-Perfluorododecanoic acid	%	100	105	105	N/A	N/A	8158628
13C2-Perfluorohexanoic acid	%	107	103	106	N/A	N/A	8158628
13C2-perfluorotetradecanoic acid	%	53	98	100	N/A	N/A	8158628
13C2-Perfluoroundecanoic acid	%	102	105	106	N/A	N/A	8158628
13C3-Perfluorobutanesulfonic acid	%	101	99	102	N/A	N/A	8158628
13C4-Perfluorobutanoic acid	%	100	99	99	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable							



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TIH642	TIH643	TIH644			
Sampling Date		2022/07/28 10:00	2022/07/28 12:10	2022/07/28 12:00			
COC Number		na	na	na			
	UNITS	PC-30	DUPLICATE	RINSATE 2	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	113	109	113	N/A	N/A	8158628
13C4-Perfluorooctanesulfonic acid	%	103	101	104	N/A	N/A	8158628
13C4-Perfluorooctanoic acid	%	114	112	113	N/A	N/A	8158628
13C5-Perfluorononanoic acid	%	114	115	116	N/A	N/A	8158628
13C5-Perfluoropentanoic acid	%	103	101	104	N/A	N/A	8158628
13C8-Perfluorooctane Sulfonamide	%	106	106	101	N/A	N/A	8158628
18O2-Perfluorohexanesulfonic acid	%	104	100	101	N/A	N/A	8158628
D3-MeFOSA	%	70	73	61	N/A	N/A	8158628
D5-EtFOSA	%	70	73	61	N/A	N/A	8158628
D7-MeFOSE	%	88	83	79	N/A	N/A	8158628
D9-EtFOSE	%	85	87	79	N/A	N/A	8158628
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable							



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TIH628
Sample ID: PFW-1
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH629
Sample ID: MW-3S
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH630
Sample ID: OW-8A
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH631
Sample ID: PFW-5
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH632
Sample ID: PFW-2
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH633
Sample ID: PC-34S
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH634
Sample ID: RINSATE 1
Matrix: Water

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TIH635
Sample ID: PC-28
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH636
Sample ID: PC-1
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH637
Sample ID: MW-12S
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH638
Sample ID: MW-22
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH639
Sample ID: PC-39
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH640
Sample ID: PC-6A
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH641
Sample ID: PC-16D
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TIH642
Sample ID: PC-30
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH643
Sample ID: DUPLICATE
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan

Bureau Veritas ID: TIH644
Sample ID: RINSATE 2
Matrix: Water

Collected: 2022/07/28
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8158628	2022/08/10	2022/08/12	Adnan Khan



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

GENERAL COMMENTS

Samples received above 10C. Client consented to proceed with analysis.

Sample TIH628 [PFW-1] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TIH629 [MW-3S] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TIH631 [PFW-5] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TIH632 [PFW-2] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TIH637 [MW-12S] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Sample TIH641 [PC-16D] : Per- and polyfluoroalkyl substances (PFAS): Due to high concentrations of the target analytes, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8158628	AKH	Spiked Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/12		106	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/12		105	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/12		105	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/12		100	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/12		107	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/12		102	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/12		102	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/12		103	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/12		102	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/12		106	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/12		104	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/12		107	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/12		107	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/12		105	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/12		99	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/12		103	%	50 - 150
				D3-MeFOSA	2022/08/12		77	%	50 - 150
				D5-EtFOSA	2022/08/12		86	%	50 - 150
				D7-MeFOSE	2022/08/12		88	%	50 - 150
				D9-EtFOSE	2022/08/12		91	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/12		101	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/12		100	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/12		101	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/12		101	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/12		102	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/12		101	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/12		101	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/12		102	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/12		102	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/12		103	%	70 - 130
				Perfluorotetradecanoic acid (PFTEDA)	2022/08/12		98	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/12		100	%	70 - 130
				Perfluorohexanesulfonic acid (PFHxS)	2022/08/12		99	%	70 - 130
				Perfluoroheptanesulfonic acid (PFHpS)	2022/08/12		93	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/12		98	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/12		94	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/12		98	%	70 - 130
				EtFOSA	2022/08/12		102	%	70 - 130
				MeFOSA	2022/08/12		100	%	70 - 130
				EtFOSE	2022/08/12		100	%	70 - 130
				MeFOSE	2022/08/12		106	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/12		98	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/12		99	%	70 - 130
8158628	AKH	Spiked Blank DUP		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/12		99	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/12		99	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/12		100	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/12		95	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/12		100	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/12		93	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/12		93	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/12		99	%	50 - 150



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C4-Perfluorobutanoic acid	2022/08/12		98	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/12		102	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/12		98	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/12		105	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/12		104	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/12		99	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/12		94	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/12		98	%	50 - 150
				D3-MeFOSA	2022/08/12		78	%	50 - 150
				D5-EtFOSA	2022/08/12		84	%	50 - 150
				D7-MeFOSE	2022/08/12		85	%	50 - 150
				D9-EtFOSE	2022/08/12		82	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/12		100	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/12		101	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/12		103	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/12		100	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/12		99	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/12		101	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/12		102	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/12		106	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/12		104	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/12		105	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/12		101	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/12		101	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/12		99	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/12		94	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/12		100	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/12		91	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/12		98	%	70 - 130
				EtFOSA	2022/08/12		98	%	70 - 130
				MeFOSA	2022/08/12		99	%	70 - 130
				EtFOSE	2022/08/12		106	%	70 - 130
				MeFOSE	2022/08/12		107	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/12		100	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/12		102	%	70 - 130
8158628	AKH	RPD		Perfluorobutanoic acid (PFBA)	2022/08/12	0.65		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/12	0.79		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/12	1.5		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/12	0.88		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/12	2.4		%	30
				Perfluorononanoic acid (PFNA)	2022/08/12	0.046		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/12	0.45		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/12	4.2		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/12	1.7		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/12	1.7		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/12	2.9		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/12	0.97		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/12	0.098		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/12	1.0		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/12	2.6		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/12	3.1		%	30



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8158628	AKH	Method Blank	Perfluorooctane Sulfonamide (PFOSA)	2022/08/12	0.44			%	30
			EtFOSA	2022/08/12	3.4			%	30
			MeFOSA	2022/08/12	1.2			%	30
			EtFOSE	2022/08/12	5.7			%	30
			MeFOSE	2022/08/12	1.0			%	30
			6:2 Fluorotelomer sulfonic acid	2022/08/12	2.0			%	30
			8:2 Fluorotelomer sulfonic acid	2022/08/12	2.8			%	30
			13C2-6:2-Fluorotelomersulfonic Acid	2022/08/12			105	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2022/08/12			104	%	50 - 150
			13C2-Perfluorodecanoic acid	2022/08/12			96	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/08/12			93	%	50 - 150
			13C2-Perfluorohexanoic acid	2022/08/12			102	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/08/12			92	%	50 - 150
			13C2-Perfluoroundecanoic acid	2022/08/12			93	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2022/08/12			99	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/08/12			96	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/08/12			104	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/08/12			98	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/08/12			101	%	50 - 150
			13C5-Perfluorononanoic acid	2022/08/12			103	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/08/12			98	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/08/12			90	%	50 - 150
			18O2-Perfluorohexanesulfonic acid	2022/08/12			97	%	50 - 150
			D3-MeFOSA	2022/08/12			72	%	50 - 150
			D5-EtFOSA	2022/08/12			77	%	50 - 150
			D7-MeFOSE	2022/08/12			84	%	50 - 150
			D9-EtFOSE	2022/08/12			83	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/08/12	<0.0039			ug/L	
			Perfluoropentanoic acid (PFPeA)	2022/08/12	<0.0067			ug/L	
			Perfluorohexanoic acid (PFHxA)	2022/08/12	<0.0053			ug/L	
			Perfluoroheptanoic acid (PFHpA)	2022/08/12	<0.0067			ug/L	
			Perfluorooctanoic acid (PFOA)	2022/08/12	<0.0050			ug/L	
			Perfluorononanoic acid (PFNA)	2022/08/12	<0.0051			ug/L	
			Perfluorodecanoic acid (PFDA)	2022/08/12	<0.0039			ug/L	
			Perfluoroundecanoic acid (PFUnA)	2022/08/12	<0.0062			ug/L	
			Perfluorododecanoic acid (PFDoA)	2022/08/12	<0.0080			ug/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/08/12	<0.0064			ug/L	
			Perfluorotetradecanoic acid(PFTEDA)	2022/08/12	<0.0068			ug/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/08/12	<0.0056			ug/L	
			Perfluorohexanesulfonic acid(PFHxS)	2022/08/12	<0.0044			ug/L	
			Perfluoroheptanesulfonic acid PFHpS	2022/08/12	<0.0065			ug/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/08/12	<0.0057			ug/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/08/12	<0.0064			ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/08/12	<0.0036			ug/L	
			EtFOSA	2022/08/12	<0.0070			ug/L	
			MeFOSA	2022/08/12	<0.0078			ug/L	
			EtFOSE	2022/08/12	<0.0071			ug/L	
			MeFOSE	2022/08/12	<0.0070			ug/L	
			6:2 Fluorotelomer sulfonic acid	2022/08/12	<0.0065			ug/L	



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				8:2 Fluorotelomer sulfonic acid	2022/08/12	<0.0067		ug/L	
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.									
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.									
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.									
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.									



Bureau Veritas Job #: C2L6109
Report Date: 2022/08/15

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Colm McNamara", written over a horizontal line.

Colm McNamara, Senior Analyst, Liquid Chromatography

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

ENV COC - 00014v3

Page 1 of 2

Invoice Information		Report information (if differs from invoice)		Project Information	
Company:	Barnstable County	Company:	BETA Group, Inc	Quotation #:	
Contact Name:	Priscilla Ellis/ Steve Tebo	Contact Name:	Roger Thibault	P.O. #/ AFE#:	
Street Address:	3195 Main St. PO Box 427	Street Address:	701 George Washington Hwy	Project #:	6206
City:	Barnstable Prov:	City:	Lincoln Prov:	Site #:	BFTA
Phone:		Phone:		Site Location:	Barnstable, MA
Email:	pellis@barnstablecounty.org	Email:	Rthibault@BETA-Inc.com; Lbouley@BETA-Inc.com	Site Location Province:	
Copies:	stebo@barnstablecounty.org	Copies:	stebo@barnstablecounty.org	Sampled By:	Chris Oien, Amanda Makela

02-Aug-22 13:39
Lori Dufour
C2L6109
ICM ENV-1421

Regulatory Criteria		Regular Turnaround Time (TAT)																								
<input type="checkbox"/> Table 1 <input type="checkbox"/> Table 2 <input type="checkbox"/> Table 3 <input type="checkbox"/> Table	<input type="checkbox"/> Res/Park <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Agri/other	<input type="checkbox"/> Med/Fine <input type="checkbox"/> Course <input type="checkbox"/> For RSC	<input type="checkbox"/> CCME <input type="checkbox"/> Reg 558* <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> MISA <input type="checkbox"/> PWQO	<input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Municipality <input type="checkbox"/> Other:	<input type="checkbox"/> 5 to 7 Day <input checked="" type="checkbox"/> 10 Day Rush Turnaround Time (TAT) Surcharges apply <input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day Date Required: YY MM DD Comments																					

Include Criteria on Certificate of Analysis (check if yes): ☐

SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS

Sample Identification	Date Sampled			Time (24hr)		Matrix	ANALYSIS																					
	YY	MM	DD	HH	MM		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
1 PFW-1	22	07	27	12	45	Water - Ground																						
2 MW-35	22	07	27	11	55	Water - Ground																						
3 OW-8A	22	07	27	11	05	Water - Ground																						
4 PFW-5	22	07	27	10	00	Water - Ground																						
5 PFW-2	22	07	27	13	30	Water - Ground																						
6 PC-345	22	07	27	14	40	Water - Ground																						
7 RINSATE 1	22	07	27	15	00	Water																						
8 PC-28	22	07	28	8	00	Water - Ground																						
9 PC-1	22	07	28	12	00	Water - Ground																						
10 MW-125	22	07	28	9	25	Water - Ground																						
11 MW-22	22	07	28	8	55	Water - Ground																						
12 PC-39	22	07	28	11	30	Water - Ground																						

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY		LAB USE ONLY	
Seal present	✓	Seal present	✓	Seal present	✓	Seal present	✓	Seal present	✓
Seal intact	✓	Seal intact	✓	Seal intact	✓	Seal intact	✓	Seal intact	✓
Cooling media present	✓	Cooling media present	✓	Cooling media present	✓	Cooling media present	✓	Cooling media present	✓

Relinquished by: (Signature/ Print)		Date		Time		Received by: (Signature/ Print)		Date		Time		Special Instructions		
YY	MM	DD	HH	MM	YY	MM	DD	HH	MM	YY	MM	DD	HH	MM
2022	08	01	11	00	2022	08	02	13	39					



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ENV COC - 00014v3

Page 2 of 2

[illegible]

January 16, 2023

Priscilla Ellis
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22K2021

Enclosed are results of analyses for samples as received by the laboratory on November 14, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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Barnstable County Regional Government of Cape Co
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 1/16/2023

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22K2021

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
PFW-1	22K2021-01	Ground Water		SOP-454 PFAS	
PFW-2	22K2021-02	Ground Water		SOP-454 PFAS	
PFW-5	22K2021-03	Ground Water		SOP-454 PFAS	
OW-8A	22K2021-04	Ground Water		SOP-454 PFAS	
HSW-6	22K2021-05	Ground Water		SOP-454 PFAS	
PC-1	22K2021-06	Ground Water		SOP-454 PFAS	
PC-6A	22K2021-07	Ground Water		SOP-454 PFAS	
PC-11	22K2021-08	Ground Water		SOP-454 PFAS	
PC-14	22K2021-09	Ground Water		SOP-454 PFAS	
PC-16D	22K2021-10	Ground Water		SOP-454 PFAS	
PC-18	22K2021-11	Ground Water		SOP-454 PFAS	
PC-28	22K2021-12	Ground Water		SOP-454 PFAS	
PC-29	22K2021-13	Ground Water		SOP-454 PFAS	
PC-30	22K2021-14	Ground Water		SOP-454 PFAS	
PC-345	22K2021-15	Ground Water		SOP-454 PFAS	
PC-36	22K2021-16	Ground Water		SOP-454 PFAS	
PC-39	22K2021-17	Ground Water		SOP-454 PFAS	
MW-3	22K2021-18	Ground Water		SOP-454 PFAS	
MW-13	22K2021-19	Ground Water		SOP-454 PFAS	
MW-23	22K2021-20	Ground Water		SOP-454 PFAS	
MW-35I	22K2021-21	Ground Water		SOP-454 PFAS	
MW-201	22K2021-22	Ground Water		SOP-454 PFAS	
MW-307S	22K2021-23	Ground Water		SOP-454 PFAS	
MW-307D	22K2021-24	Ground Water		SOP-454 PFAS	
MW-308S	22K2021-25	Ground Water		SOP-454 PFAS	
MW-308D	22K2021-26	Ground Water		SOP-454 PFAS	
MW-309	22K2021-27	Ground Water		SOP-454 PFAS	
HW-1D	22K2021-28	Ground Water		SOP-454 PFAS	
WS-101	22K2021-29	Ground Water		SOP-454 PFAS	
DUP 1	22K2021-30	Ground Water		SOP-454 PFAS	
Equipment Blank 1	22K2021-31	Ground Water		SOP-454 PFAS	
Equipment Blank 2	22K2021-32	Ground Water		SOP-454 PFAS	
Equip-Blank-3	22K2021-33	Ground Water		SOP-454 PFAS	
DUP-2	22K2021-34	Ground Water		SOP-454 PFAS	
PC 38	22K2021-35	Ground Water		SOP-454 PFAS	

CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:****D-01**

Sample extracted/prepared at a dilution due to sample matrix interference.

Analyte & Samples(s) Qualified:

22K2021-17RE2[PC-39]

H-06

Sample was extracted past the recommended holding time.

Analyte & Samples(s) Qualified:

22K2021-03RE2[PFW-5], 22K2021-03RE3[PFW-5], 22K2021-06RE2[PC-1], 22K2021-06RE3[PC-1], 22K2021-09RE2[PC-14], 22K2021-09RE3[PC-14], 22K2021-10RE2[PC-16D], 22K2021-10RE3[PC-16D], 22K2021-11RE1[PC-18], 22K2021-17RE2[PC-39], 22K2021-20RE2[MW-23], 22K2021-20RE3[MW-23], 22K2021-35RE1[PC 38]

MS-09

Matrix spike recovery and/or matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:**11CI-PF3OUdS (F53B Major)**

B323249-MS1, B323249-MSD1

Perfluorodecanesulfonic acid (PFDS)

22K2021-08[PC-11], B323249-MS1, B323249-MSD1

Perfluorononanesulfonic acid (PFNS)

22K2021-08[PC-11], B323249-MS1, B323249-MSD1

MS-12

Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:**Perfluorononanoic acid (PFNA)**

22K2021-08[PC-11], B323249-MS1, B323249-MSD1

MS-19

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:**6:2 Fluorotelomersulfonic acid (6:2FTS A)**

B323249-MSD1

8:2 Fluorotelomersulfonic acid (8:2FTS A)

B323249-MS1, B323249-MSD1

Perfluoro-1-hexanesulfonamide (FHxSA)

B323249-MS1, B323249-MSD1

Perfluoroheptanesulfonic acid (PFHpS)

B323249-MS1, B323249-MSD1

Perfluoroheptanoic acid (PFHpA)

B323249-MSD1

Perfluorohexanesulfonic acid (PFHxS)

B323248-MS1, B323248-MSD1, B323249-MS1

Perfluorohexanoic acid (PFHxA)

B323249-MSD1

Perfluorooctanesulfonic acid (PFOS)

B323248-MS1, B323248-MSD1, B323249-MS1, B323249-MSD1

Perfluoropentanoic acid (PFPeA)

B323249-MSD1

Perfluoroundecanoic acid (PFUnA)

B323249-MS1, B323249-MSD1

MS-22

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.

Analyte & Samples(s) Qualified:**Perfluoro-1-butanefulfonamide (FBSA)**

22K2021-08[PC-11], B323249-MSD1

Perfluorobutanoic acid (PFBA)

22K2021-08[PC-11], B323249-MS1

Perfluorooctanoic acid (PFOA)

22K2021-08[PC-11], B323249-MS1

Perfluoropentanesulfonic acid (PFPeS)

22K2021-08[PC-11], B323249-MS1

Perfluorotridecanoic acid (PFTrDA)

B323248-MSD1

MS-23

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is outside of the method specified criteria. Reduced precision anticipated for any reported result for this compound.

Analyte & Samples(s) Qualified:**Perfluorotridecanoic acid (PFTrDA)**

B323249-MSD1

PF-17

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

Analyte & Samples(s) Qualified:**M2-4:2FTS**

22K2021-18[MW-3]

M2-8:2FTS

22K2021-27[MW-309], 22K2021-31[Equipment Blank 1], 22K2021-32[Equipment Blank 2], 22K2021-33[Equip-Blank-3], S080993-IBL1, S081156-IBL1

M3HFPO-DA

22K2021-22[MW-201], 22K2021-24[MW-307D], 22K2021-26[MW-308D], 22K2021-27[MW-309], 22K2021-28[HW-1D], 22K2021-29[WS-101], 22K2021-31[Equipment Blank 1], 22K2021-33[Equip-Blank-3]

M7PFUnA

S081561-IBL1

M8PFOS

S081561-IBL1

MPFDoA

S081561-IBL1

PF-18

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

Analyte & Samples(s) Qualified:**D3-NMeFOSAA**

B323249-MS1, B323249-MSD1

D5-NEtFOSAA

22K2021-05[HSW-6], B323249-MS1, B323249-MSD1

M2-4:2FTS

22K2021-04[OW-8A], B323248-MSD1

M2-6:2FTS

22K2021-10[PC-16D], 22K2021-10RE2[PC-16D], 22K2021-18[MW-3], B323249-MS1, B323249-MSD1

M2PFTA

22K2021-01[PFW-1], 22K2021-02[PFW-2], 22K2021-04[OW-8A], 22K2021-05[HSW-6], 22K2021-07[PC-6A], 22K2021-08[PC-11], 22K2021-10[PC-16D], 22K2021-10RE2[PC-16D], 22K2021-14[PC-30], 22K2021-15[PC-345], 22K2021-16[PC-36], 22K2021-18[MW-3], 22K2021-21[MW-35I], 22K2021-30[DUP 1], B323248-MS1, B323248-MSD1, B323249-MS1, B323249-MSD1

M7PFUnA

B323249-MS1, B323249-MSD1

M8FOSA

22K2021-05[HSW-6], 22K2021-07[PC-6A], 22K2021-10[PC-16D], 22K2021-10RE2[PC-16D], 22K2021-14[PC-30], 22K2021-15[PC-345], 22K2021-18[MW-3], 22K2021-21[MW-35I], 22K2021-30[DUP 1], B323249-MS1, B323249-MSD1

M8PFOS

22K2021-01[PFW-1], 22K2021-02[PFW-2], 22K2021-05[HSW-6], 22K2021-18[MW-3], 22K2021-30[DUP 1]

M9PFNA

22K2021-01[PFW-1], 22K2021-02[PFW-2], 22K2021-05[HSW-6], 22K2021-18[MW-3], 22K2021-30[DUP 1]

MPFBA

22K2021-02[PFW-2], 22K2021-05[HSW-6], 22K2021-16[PC-36], 22K2021-18[MW-3]

MPFDoA

22K2021-02[PFW-2], 22K2021-04[OW-8A], 22K2021-05[HSW-6], 22K2021-07[PC-6A], 22K2021-10[PC-16D], 22K2021-10RE2[PC-16D], 22K2021-14[PC-30], 22K2021-15[PC-345], 22K2021-18[MW-3], 22K2021-21[MW-35I], 22K2021-30[DUP 1], B323249-MS1, B323249-MSD1

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:**6:2 Fluorotelomersulfonic acid (6:2FTS A)**

22K2021-02RE1[PFW-2], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC- 11], 22K2021-10RE1[PC-16D], 22K2021-18RE2[MW-3], 22K2021-30RE2[DUP 1]

8:2 Fluorotelomersulfonic acid (8:2FTS A)

22K2021-01RE1[PFW-1], 22K2021-02RE1[PFW-2], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC-11], 22K2021-30RE1[DUP 1]

Perfluoro-1-butanefulfonamide (FBSA)

22K2021-01RE1[PFW-1], 22K2021-30RE1[DUP 1]

Perfluoro-1-hexanesulfonamide (FHxSA)

22K2021-01RE1[PFW-1], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC-11], 22K2021-18RE1[MW-3], 22K2021-30RE1[DUP 1]

Perfluorobutanoic acid (PFBA)

22K2021-01RE1[PFW-1], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-30RE1[DUP 1]

Perfluoroheptanesulfonic acid (PFHpS)

22K2021-01RE1[PFW-1], 22K2021-08RE1[PC-11], 22K2021-18RE1[MW-3], 22K2021-30RE1[DUP 1]

Perfluoroheptanoic acid (PFHpA)

22K2021-01RE1[PFW-1], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC- 11], 22K2021-18RE1[MW-3], 22K2021-30RE1[DUP 1]

Perfluorohexanesulfonic acid (PFHxS)

22K2021-02RE1[PFW-2], 22K2021-03RE1[PFW-5], 22K2021-03RE3[PFW-5], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC-11], 22K2021-09RE1[PC-14], 22K2021-09RE3[PC-14], 22K2021-10RE1[PC-16D], 22K2021-10RE3[PC-16D], 22K2021-15RE1[PC-345], 22K2021-18RE2[MW-3], 22K2021-20RE1[MW-23], 22K2021-20RE3[MW-23], 22K2021-30RE2[DUP 1]

Perfluorohexanoic acid (PFHxA)

22K2021-01RE1[PFW-1], 22K2021-02RE1[PFW-2], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC- 11], 22K2021-18RE1[MW-3], 22K2021-30RE1[DUP 1]

Perfluorononanesulfonic acid (PFNS)

22K2021-01RE1[PFW-1], 22K2021-30RE1[DUP 1]

Perfluorooctanesulfonic acid (PFOS)

22K2021-02RE1[PFW-2], 22K2021-03RE1[PFW-5], 22K2021-03RE3[PFW-5], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-07RE1[PC-6A], 22K2021-08RE2[PC-11], 22K2021-09RE1[PC-14], 22K2021-09RE3[PC-14], 22K2021-10RE1[PC-16D], 22K2021-10RE3[PC-16D], 22K2021-12RE1[PC-28], 22K2021-14RE1[PC-30], 22K2021-15RE1[PC-345], 22K2021-16RE1[PC-36], 22K2021-18RE2[MW-3], 22K2021-19RE1[MW-13], 22K2021-30RE2[DUP 1]

Perfluorooctanoic acid (PFOA)

22K2021-01RE1[PFW-1], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-18RE1[MW-3], 22K2021-30RE1[DUP 1]

Perfluoropentanoic acid (PFPeA)

22K2021-01RE1[PFW-1], 22K2021-02RE1[PFW-2], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC- 11], 22K2021-18RE1[MW-3], 22K2021-30RE1[DUP 1]

Perfluoropentanesulfonic acid (PFPeS)

22K2021-01RE1[PFW-1], 22K2021-30RE1[DUP 1]

Perfluoroundecanoic acid (PFUnA)

22K2021-01RE1[PFW-1], 22K2021-02RE1[PFW-2], 22K2021-05RE1[HSW-6], 22K2021-06RE1[PC-1], 22K2021-06RE3[PC-1], 22K2021-08RE1[PC- 11], 22K2021-30RE1[DUP 1]

PF-20

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

Analyte & Samples(s) Qualified:**Perfluoroheptanesulfonic acid (PFHpS)**

22K2021-11RE1[PC-18]

Perfluorotetradecanoic acid (PFTA)

22K2021-05[HSW-6]

Perfluorotridecanoic acid (PFTrDA)

22K2021-05[HSW-6]

PF-21

Qualifying ion signal to noise ratio is <3. Detection is suspect.

Analyte & Samples(s) Qualified:**Perfluorotetradecanoic acid (PFTA)**

22K2021-05[HSW-6]

PF-22

Qualifier ion ratio >150% of associated calibration. Detection is suspect.

Analyte & Samples(s) Qualified:**Perfluorooctanoic acid (PFOA)**

22K2021-04[OW-8A]

PF-23

Qualifier ion ratio <50% of associated calibration. Detection is suspect.

Analyte & Samples(s) Qualified:**N-MeFOSAA (NMeFOSAA)**

22K2021-18[MW-3]

Perfluorodecanesulfonic acid (PFDS)

22K2021-01[PFW-1], 22K2021-02[PFW-2], 22K2021-03[PFW-5], 22K2021-03RE2[PFW-5], 22K2021-05[HSW-6], 22K2021-06[PC-1], 22K2021-06RE2[PC-1], 22K2021-07[PC-6A], 22K2021-08[PC-11], 22K2021-09RE2[PC-14], 22K2021-10RE2[PC-16D], 22K2021-12[PC-28], 22K2021-17[PC-39], 22K2021-30[DUP 1]

Perfluorooctanesulfonamide (FOSA)

22K2021-09[PC-14], 22K2021-12[PC-28]

R-06

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

Analyte & Samples(s) Qualified:**11Cl-PF3OUdS (F53B Major)**

B323249-MSD1

Perfluorodecanesulfonic acid (PFDS)

22K2021-08[PC-11], B323249-MSD1

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**D3-NMeFOSAA**

22K2021-03[PFW-5], 22K2021-10[PC-16D], 22K2021-35[PC 38]

D5-NEtFOSAA

22K2021-03[PFW-5], 22K2021-06[PC-1], 22K2021-10[PC-16D], 22K2021-14[PC-30], 22K2021-17[PC-39], 22K2021-35[PC 38]

M2-4:2FTS

22K2021-03[PFW-5], 22K2021-11[PC-18], 22K2021-13[PC-29], 22K2021-19[MW-13], 22K2021-20[MW-23]

M2-8:2FTS

22K2021-18[MW-3], 22K2021-35[PC 38], S080634-CCV3, S080634-CCV4, S080634-CCV5

M2PFTA

22K2021-03[PFW-5], 22K2021-06[PC-1], 22K2021-09[PC-14], 22K2021-11[PC-18], 22K2021-35[PC 38]

M6PFDA

22K2021-35[PC 38], B323249-MS1

M7PFUnA

22K2021-09[PC-14], 22K2021-10[PC-16D], 22K2021-14[PC-30], 22K2021-18[MW-3], 22K2021-35[PC 38]

M8FOSA

22K2021-09[PC-14], 22K2021-35[PC 38]

M8PFOS

22K2021-03[PFW-5], 22K2021-06[PC-1], 22K2021-10[PC-16D], 22K2021-35[PC 38], B323249-MS1

M9PFNA

22K2021-03[PFW-5], 22K2021-10[PC-16D]

MPFBA

22K2021-01[PFW-1], 22K2021-06[PC-1], 22K2021-07[PC-6A], 22K2021-10[PC-16D], 22K2021-15[PC-345]

MPFDoA

22K2021-03[PFW-5], 22K2021-09[PC-14], 22K2021-35[PC 38]

V-05

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

Analyte & Samples(s) Qualified:**Perfluoro-1-hexanesulfonamide (FHxSA)**

S080424-CCV2, S080634-CCV2

Perfluoroundecanoic acid (PFUnA)

S080424-CCV2, S080634-CCV2

V-20

Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.

Analyte & Samples(s) Qualified:**Hexafluoropropylene oxide dimer acid (HFPO-DA)**

S080424-CCV1, S080424-CCV2, S080634-CCV1, S080634-CCV2, S080634-CCV3

Z-01

Sample re-extracted due to EIS outliers. Re-extraction yielded conforming results. Both results reported.

Analyte & Samples(s) Qualified:

22K2021-03RE2[PFW-5], 22K2021-06RE2[PC-1], 22K2021-06RE3[PC-1], 22K2021-09RE2[PC-14], 22K2021-10RE2[PC-16D], 22K2021-10RE3[PC-16D], 22K2021-11RE1[PC-18], 22K2021-17RE2[PC-39], 22K2021-20RE2[MW-23], 22K2021-20RE3[MW-23], 22K2021-35RE1[PC 38]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PFW-1

Sampled: 11/9/2022 12:15

Sample ID: 22K2021-01

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	220	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluorobutanesulfonic acid (PFBS)	110	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluoropentanoic acid (PFPeA)	780	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluorohexanoic acid (PFHxA)	730	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	900	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluorodecanoic acid (PFDA)	42	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluoroheptanesulfonic acid (PFHpS)	360	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
N-EtFOSAA (NEtFOSAA)	2.5	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.5	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluorodecanesulfonic acid (PFDS)	49	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluorooctanesulfonamide (FOSA)	12	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluorononanesulfonic acid (PFNS)	100	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	990	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluoro-1-butanefulfonamide (FBFA)	250	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluorohexanesulfonic acid (PFHxS)	2000	90	ng/L	50		SOP-454 PFAS	12/6/22	12/27/22 11:27	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1700	90	ng/L	50		SOP-454 PFAS	12/6/22	12/27/22 11:27	RRB
Perfluoropentanesulfonic acid (PFPeS)	130	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluoroundecanoic acid (PFUnA)	240	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB
Perfluoroheptanoic acid (PFHpA)	330	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluorooctanoic acid (PFOA)	500	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:10	RRB
Perfluorooctanesulfonic acid (PFOS)	7100	90	ng/L	50		SOP-454 PFAS	12/6/22	12/27/22 11:27	RRB
Perfluorononanoic acid (PFNA)	170	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:05	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PFW-2

Sampled: 11/9/2022 12:55

Sample ID: 22K2021-02

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	170	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorobutanesulfonic acid (PFBS)	76	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoropentanoic acid (PFPeA)	560	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
Perfluorohexanoic acid (PFHxA)	610	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	210	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
Perfluorodecanoic acid (PFDA)	27	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorododecanoic acid (PFDoA)	10	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoroheptanesulfonic acid (PFHpS)	24	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorotridecanoic acid (PFTrDA)	5.0	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	26	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorodecanesulfonic acid (PFDS)	15	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorooctanesulfonamide (FOSA)	4.7	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorononanesulfonic acid (PFNS)	22	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	120	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoro-1-butanesulfonamide (FBSA)	120	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorohexanesulfonic acid (PFHxS)	310	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	910	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
Perfluoropentanesulfonic acid (PFPeS)	85	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoroundecanoic acid (PFUnA)	120	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluoroheptanoic acid (PFHpA)	180	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorooctanoic acid (PFOA)	110	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB
Perfluorooctanesulfonic acid (PFOS)	1900	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:24	RRB
Perfluorononanoic acid (PFNA)	86	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:13	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PFW-5

Sampled: 11/9/2022 11:00

Sample ID: 22K2021-03

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	14	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorobutanoic acid (PFBA)	16	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorobutanesulfonic acid (PFBS)	24	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorobutanesulfonic acid (PFBS)	26	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoropentanoic acid (PFPeA)	25	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoropentanoic acid (PFPeA)	28	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorohexanoic acid (PFHxA)	49	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorohexanoic acid (PFHxA)	52	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	23	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	25	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorodecanoic acid (PFDA)	7.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorodecanoic acid (PFDA)	8.3	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoroheptanesulfonic acid (PFHpS)	61	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoroheptanesulfonic acid (PFHpS)	73	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorodecanesulfonic acid (PFDS)	3.4	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorodecanesulfonic acid (PFDS)	3.5	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorooctanesulfonamide (FOSA)	6.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorooctanesulfonamide (FOSA)	8.9	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorononanesulfonic acid (PFNS)	11	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PFW-5

Sampled: 11/9/2022 11:00

Sample ID: 22K2021-03

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	15	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	25	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	23	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoro-1-butanefulfonamide (FBFA)	11	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoro-1-butanefulfonamide (FBFA)	11	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorohexanesulfonic acid (PFHxS)	500	36	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:32	RRB
Perfluorohexanesulfonic acid (PFHxS)	700	93	ng/L	50	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:06	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.6	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4.2	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoropentanesulfonic acid (PFPeS)	40	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoropentanesulfonic acid (PFPeS)	44	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoroundecanoic acid (PFUnA)	26	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoroundecanoic acid (PFUnA)	27	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluoroheptanoic acid (PFHpA)	20	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluoroheptanoic acid (PFHpA)	20	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorooctanoic acid (PFOA)	24	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorooctanoic acid (PFOA)	26	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB
Perfluorooctanesulfonic acid (PFOS)	2700	36	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:32	RRB
Perfluorooctanesulfonic acid (PFOS)	4200	93	ng/L	50	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:06	RRB
Perfluorononanoic acid (PFNA)	5.5	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:20	RRB
Perfluorononanoic acid (PFNA)	6.2	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:23	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: OW-8A

Sampled: 11/9/2022 10:30

Sample ID: 22K2021-04

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.5	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorobutanesulfonic acid (PFBS)	3.4	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoropentanoic acid (PFPeA)	18	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorohexanoic acid (PFHxA)	21	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorooctanesulfonamide (FOSA)	3.0	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	15	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoro-1-butanefulfonamide (FBFA)	3.3	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorohexanesulfonic acid (PFHxS)	70	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.3	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoropentanesulfonic acid (PFPeS)	3.9	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluoroheptanoic acid (PFHpA)	10	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorooctanoic acid (PFOA)	13	1.9	ng/L	1	PF-22	SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorooctanesulfonic acid (PFOS)	76	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:27	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: HSW-6

Sampled: 11/9/2022 13:30

Sample ID: 22K2021-05

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	180	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Perfluorobutanesulfonic acid (PFBS)	98	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoropentanoic acid (PFPeA)	830	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Perfluorohexanoic acid (PFHxA)	1000	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	150	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorodecanoic acid (PFDA)	19	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorododecanoic acid (PFDoA)	2.4	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoroheptanesulfonic acid (PFHpS)	53	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorotetradecanoic acid (PFTA)	4.1	1.9	ng/L	1	PF-20, PF-21	SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorotridecanoic acid (PFTrDA)	47	1.9	ng/L	1	PF-20	SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	31	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorodecanesulfonic acid (PFDS)	3.2	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorononanesulfonic acid (PFNS)	22	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	100	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoro-1-butanefulfonamide (FBFA)	88	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorohexanesulfonic acid (PFHxS)	350	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	830	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Perfluoropentanesulfonic acid (PFPeS)	110	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoroundecanoic acid (PFUnA)	44	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluoroheptanoic acid (PFHpA)	200	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Perfluorooctanoic acid (PFOA)	160	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB
Perfluorooctanesulfonic acid (PFOS)	1700	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:39	RRB
Perfluorononanoic acid (PFNA)	150	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:34	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-1

Sampled: 11/10/2022 13:00

Sample ID: 22K2021-06

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	230	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluorobutanoic acid (PFBA)	160	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluorobutanesulfonic acid (PFBS)	81	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorobutanesulfonic acid (PFBS)	64	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoropentanoic acid (PFPeA)	710	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluoropentanoic acid (PFPeA)	970	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluorohexanoic acid (PFHxA)	610	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluorohexanoic acid (PFHxA)	760	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	580	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	380	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluorodecanoic acid (PFDA)	23	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorodecanoic acid (PFDA)	21	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorododecanoic acid (PFDoA)	3.4	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoroheptanesulfonic acid (PFHpS)	33	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluoroheptanesulfonic acid (PFHpS)	21	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	13	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.0	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorodecanesulfonic acid (PFDS)	20	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorodecanesulfonic acid (PFDS)	15	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorooctanesulfonamide (FOSA)	13	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorooctanesulfonamide (FOSA)	10	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorononanesulfonic acid (PFNS)	22	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-1

Sampled: 11/10/2022 13:00

Sample ID: 22K2021-06

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	16	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	210	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	240	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluoro-1-butanefulfonamide (FBFA)	140	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluoro-1-butanefulfonamide (FBFA)	85	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluorohexanesulfonic acid (PFHxS)	960	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluorohexanesulfonic acid (PFHxS)	660	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1300	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1000	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluoropentanesulfonic acid (PFPeS)	140	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluoropentanesulfonic acid (PFPeS)	110	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoroundecanoic acid (PFUnA)	230	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluoroundecanoic acid (PFUnA)	160	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB
Perfluoroheptanoic acid (PFHpA)	550	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluoroheptanoic acid (PFHpA)	420	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluorooctanoic acid (PFOA)	300	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluorooctanoic acid (PFOA)	230	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluorooctanesulfonic acid (PFOS)	850	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:46	RRB
Perfluorooctanesulfonic acid (PFOS)	1100	36	ng/L	20	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:20	RRB
Perfluorononanoic acid (PFNA)	61	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:42	RRB
Perfluorononanoic acid (PFNA)	50	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:30	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-6A

Sampled: 11/10/2022 11:45

Sample ID: 22K2021-07

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	18	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorobutanesulfonic acid (PFBS)	4.8	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoropentanoic acid (PFPeA)	40	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorohexanoic acid (PFHxA)	47	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	4.9	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorodecanoic acid (PFDA)	12	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoroheptanesulfonic acid (PFHpS)	8.1	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorodecanesulfonic acid (PFDS)	3.1	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorononanesulfonic acid (PFNS)	7.3	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	14	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoro-1-butanefulfonamide (FBFA)	4.1	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorohexanesulfonic acid (PFHxS)	72	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	12	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoropentanesulfonic acid (PFPeS)	6.3	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoroundecanoic acid (PFUnA)	53	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluoroheptanoic acid (PFHpA)	47	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorooctanoic acid (PFOA)	30	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB
Perfluorooctanesulfonic acid (PFOS)	470	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 23:53	RRB
Perfluorononanoic acid (PFNA)	47	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:49	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-11

Sampled: 11/10/2022 11:00

Sample ID: 22K2021-08

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	100	1.7	ng/L	1	MS-22	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorobutanesulfonic acid (PFBS)	35	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoropentanoic acid (PFPeA)	310	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Perfluorohexanoic acid (PFHxA)	250	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	280	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Perfluorodecanoic acid (PFDA)	22	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoroheptanesulfonic acid (PFHpS)	31	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorodecanesulfonic acid (PFDS)	21	1.7	ng/L	1	MS-09, PF-23, R-06	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorooctanesulfonamide (FOSA)	24	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorononanesulfonic acid (PFNS)	37	1.7	ng/L	1	MS-09	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	290	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Perfluoro-1-butanedisulfonamide (FBISA)	40	1.7	ng/L	1	MS-22	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorohexanesulfonic acid (PFHxS)	620	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	210	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Perfluoropentanesulfonic acid (PFPeS)	54	1.7	ng/L	1	MS-22	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoroundecanoic acid (PFUnA)	240	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluoroheptanoic acid (PFHpA)	210	17	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:12	RRB
Perfluorooctanoic acid (PFOA)	120	1.7	ng/L	1	MS-22	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB
Perfluorooctanesulfonic acid (PFOS)	2300	87	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:19	RRB
Perfluorononanoic acid (PFNA)	82	1.7	ng/L	1	MS-12	SOP-454 PFAS	12/6/22	12/9/22 2:08	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-14

Sampled: 11/11/2022 09:00

Sample ID: 22K2021-09

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	39	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorobutanoic acid (PFBA)	49	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorobutanesulfonic acid (PFBS)	15	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorobutanesulfonic acid (PFBS)	19	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoropentanoic acid (PFPeA)	110	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoropentanoic acid (PFPeA)	160	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorohexanoic acid (PFHxA)	99	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorohexanoic acid (PFHxA)	130	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.2	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.5	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorodecanoic acid (PFDA)	7.3	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorodecanoic acid (PFDA)	8.5	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoroheptanesulfonic acid (PFHpS)	28	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoroheptanesulfonic acid (PFHpS)	40	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorodecanesulfonic acid (PFDS)	3.0	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorooctanesulfonamide (FOSA)	10	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorooctanesulfonamide (FOSA)	13	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorononanesulfonic acid (PFNS)	5.6	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-14

Sampled: 11/11/2022 09:00

Sample ID: 22K2021-09

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	8.4	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	41	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	64	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoro-1-butanefulfonamide (FBFA)	22	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoro-1-butanefulfonamide (FBFA)	28	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorohexanesulfonic acid (PFHxS)	320	19	ng/L	10	PF-19	SOP-454 PFAS	12/15/22	12/21/22 16:31	RRB
Perfluorohexanesulfonic acid (PFHxS)	160	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:00	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	51	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	65	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoropentanesulfonic acid (PFPeS)	21	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoropentanesulfonic acid (PFPeS)	30	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoroundecanoic acid (PFUnA)	24	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoroundecanoic acid (PFUnA)	30	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluoroheptanoic acid (PFHpA)	62	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluoroheptanoic acid (PFHpA)	75	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorooctanoic acid (PFOA)	76	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorooctanoic acid (PFOA)	110	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB
Perfluorooctanesulfonic acid (PFOS)	1300	19	ng/L	10	PF-19	SOP-454 PFAS	12/15/22	12/21/22 16:31	RRB
Perfluorooctanesulfonic acid (PFOS)	700	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:00	RRB
Perfluorononanoic acid (PFNA)	69	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 5:56	RRB
Perfluorononanoic acid (PFNA)	82	1.9	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:29	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-16D

Sampled: 11/10/2022 10:00

Sample ID: 22K2021-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	44	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorobutanoic acid (PFBA)	41	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorobutanesulfonic acid (PFBS)	26	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorobutanesulfonic acid (PFBS)	24	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoropentanoic acid (PFPeA)	160	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoropentanoic acid (PFPeA)	150	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorohexanoic acid (PFHxA)	160	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorohexanoic acid (PFHxA)	150	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	35	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	35	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorodecanoic acid (PFDA)	11	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorodecanoic acid (PFDA)	9.4	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoroheptanesulfonic acid (PFHpS)	51	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoroheptanesulfonic acid (PFHpS)	52	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorodecanesulfonic acid (PFDS)	2.1	1.7	ng/L	1	PF-23	SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorooctanesulfonamide (FOSA)	9.0	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorooctanesulfonamide (FOSA)	7.8	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorononanesulfonic acid (PFNS)	8.4	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-16D

Sampled: 11/10/2022 10:00

Sample ID: 22K2021-10

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	12	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	48	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	53	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoro-1-butanefulfonamide (FBFA)	28	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoro-1-butanefulfonamide (FBFA)	23	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorohexanesulfonic acid (PFHxS)	360	35	ng/L	20	PF-19	SOP-454 PFAS	12/15/22	12/21/22 16:38	RRB
Perfluorohexanesulfonic acid (PFHxS)	280	35	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:07	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	140	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	110	35	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:07	RRB
Perfluoropentanesulfonic acid (PFPeS)	38	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoropentanesulfonic acid (PFPeS)	35	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoroundecanoic acid (PFUnA)	29	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoroundecanoic acid (PFUnA)	27	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluoroheptanoic acid (PFHpA)	71	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluoroheptanoic acid (PFHpA)	66	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorooctanoic acid (PFOA)	89	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorooctanoic acid (PFOA)	87	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB
Perfluorooctanesulfonic acid (PFOS)	1100	35	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:07	RRB
Perfluorooctanesulfonic acid (PFOS)	1700	35	ng/L	20	PF-19	SOP-454 PFAS	12/15/22	12/21/22 16:38	RRB
Perfluorononanoic acid (PFNA)	59	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:03	RRB
Perfluorononanoic acid (PFNA)	57	1.7	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 14:36	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-18

Sampled: 11/10/2022 10:30

Sample ID: 22K2021-11

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	10	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorobutanoic acid (PFBA)	11	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorobutanesulfonic acid (PFBS)	2.9	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorobutanesulfonic acid (PFBS)	3.0	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoropentanoic acid (PFPeA)	20	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoropentanoic acid (PFPeA)	22	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorohexanoic acid (PFHxA)	20	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorohexanoic acid (PFHxA)	22	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.0	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.4	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorodecanoic acid (PFDA)	2.2	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorodecanoic acid (PFDA)	1.9	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoroheptanesulfonic acid (PFHpS)	2.4	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoroheptanesulfonic acid (PFHpS)	1.8	1.8	ng/L	1	PF-20	SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-18

Sampled: 11/10/2022 10:30

Sample ID: 22K2021-11

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	6.4	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	3.9	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoro-1-butanefulfonamide (FBFA)	3.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoro-1-butanefulfonamide (FBFA)	3.5	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorohexanesulfonic acid (PFHxS)	32	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorohexanesulfonic acid (PFHxS)	38	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	7.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoropentanesulfonic acid (PFPeS)	3.0	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoropentanesulfonic acid (PFPeS)	3.9	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoroundecanoic acid (PFUnA)	6.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoroundecanoic acid (PFUnA)	7.7	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluoroheptanoic acid (PFHpA)	18	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluoroheptanoic acid (PFHpA)	18	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorooctanoic acid (PFOA)	8.2	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorooctanoic acid (PFOA)	8.2	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorooctanesulfonic acid (PFOS)	140	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorooctanesulfonic acid (PFOS)	160	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB
Perfluorononanoic acid (PFNA)	12	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:10	RRB
Perfluorononanoic acid (PFNA)	12	1.8	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:37	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-28

Sampled: 11/10/2022 13:40

Sample ID: 22K2021-12

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	36	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorobutanesulfonic acid (PFBS)	14	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoropentanoic acid (PFPeA)	96	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorohexanoic acid (PFHxA)	130	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorodecanoic acid (PFDA)	15	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoroheptanesulfonic acid (PFHpS)	19	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorodecanesulfonic acid (PFDS)	2.5	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorooctanesulfonamide (FOSA)	3.9	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorononanesulfonic acid (PFNS)	9.1	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	40	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoro-1-butanesulfonamide (FBSA)	20	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorohexanesulfonic acid (PFHxS)	130	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	41	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoropentanesulfonic acid (PFPeS)	15	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoroundecanoic acid (PFUnA)	60	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluoroheptanoic acid (PFHpA)	75	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorooctanoic acid (PFOA)	56	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB
Perfluorooctanesulfonic acid (PFOS)	960	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:15	RRB
Perfluorononanoic acid (PFNA)	82	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:32	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-29

Sampled: 11/10/2022 14:00

Sample ID: 22K2021-13

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoropentanoic acid (PFPeA)	2.6	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorohexanoic acid (PFHxA)	1.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorohexanesulfonic acid (PFHxS)	3.6	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorooctanesulfonic acid (PFOS)	2.4	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:40	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-30

Sampled: 11/10/2022 09:00

Sample ID: 22K2021-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	13	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorobutanesulfonic acid (PFBS)	4.6	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoropentanoic acid (PFPeA)	33	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorohexanoic acid (PFHxA)	40	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	5.7	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorodecanoic acid (PFDA)	5.3	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoroheptanesulfonic acid (PFHpS)	8.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorononanesulfonic acid (PFNS)	2.4	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	13	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoro-1-butanefulfonamide (FBFA)	8.0	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorohexanesulfonic acid (PFHxS)	59	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	13	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoropentanesulfonic acid (PFPeS)	5.8	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoroundecanoic acid (PFUnA)	12	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluoroheptanoic acid (PFHpA)	29	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorooctanoic acid (PFOA)	21	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB
Perfluorooctanesulfonic acid (PFOS)	340	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:44	RRB
Perfluorononanoic acid (PFNA)	43	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:47	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-345

Sampled: 11/9/2022 13:45

Sample ID: 22K2021-15

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	46	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorobutanesulfonic acid (PFBS)	20	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoropentanoic acid (PFPeA)	120	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorohexanoic acid (PFHxA)	160	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	17	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorodecanoic acid (PFDA)	16	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoroheptanesulfonic acid (PFHpS)	30	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorononanesulfonic acid (PFNS)	8.8	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	37	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoro-1-butanefulfonamide (FBFA)	16	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorohexanesulfonic acid (PFHxS)	130	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:51	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	51	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoropentanesulfonic acid (PFPeS)	22	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoroundecanoic acid (PFUnA)	8.6	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluoroheptanoic acid (PFHpA)	98	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorooctanoic acid (PFOA)	80	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB
Perfluorooctanesulfonic acid (PFOS)	1300	38	ng/L	20	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:51	RRB
Perfluorononanoic acid (PFNA)	140	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 6:54	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-36

Sampled: 11/10/2022 10:00

Sample ID: 22K2021-16

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	28	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorobutanesulfonic acid (PFBS)	12	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoropentanoic acid (PFPeA)	78	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorohexanoic acid (PFHxA)	91	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	12	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorodecanoic acid (PFDA)	13	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoroheptanesulfonic acid (PFHpS)	18	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorononanesulfonic acid (PFNS)	5.8	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	32	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoro-1-butanesulfonamide (FBSA)	10	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorohexanesulfonic acid (PFHxS)	90	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	34	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoropentanesulfonic acid (PFPeS)	10	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoroundecanoic acid (PFUnA)	26	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluoroheptanoic acid (PFHpA)	49	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorooctanoic acid (PFOA)	37	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB
Perfluorooctanesulfonic acid (PFOS)	760	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 0:58	RRB
Perfluorononanoic acid (PFNA)	120	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:01	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-39

Sampled: 11/10/2022 11:00

Sample ID: 22K2021-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.3	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoropentanoic acid (PFPeA)	5.5	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoropentanoic acid (PFPeA)	5.0	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorohexanoic acid (PFHxA)	5.9	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorohexanoic acid (PFHxA)	5.5	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
N-EtFOSAA (NEtFOSAA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
N-MeFOSAA (NMeFOSAA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorodecanesulfonic acid (PFDS)	2.0	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC-39

Sampled: 11/10/2022 11:00

Sample ID: 22K2021-17

Sample Matrix: Ground Water

Sample Flags: D-01, H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	2.6	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorohexanesulfonic acid (PFHxS)	12	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorohexanesulfonic acid (PFHxS)	11	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoroundecanoic acid (PFUnA)	14	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoroundecanoic acid (PFUnA)	11	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluoroheptanoic acid (PFHpA)	4.0	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorooctanoic acid (PFOA)	2.2	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorooctanoic acid (PFOA)	ND	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorooctanesulfonic acid (PFOS)	160	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorooctanesulfonic acid (PFOS)	170	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB
Perfluorononanoic acid (PFNA)	5.2	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:08	RRB
Perfluorononanoic acid (PFNA)	5.5	4.1	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 10:59	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-3

Sampled: 11/9/2022 11:30

Sample ID: 22K2021-18

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	180	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorobutanesulfonic acid (PFBS)	30	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoropentanoic acid (PFPeA)	780	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:13	RRB
Perfluorohexanoic acid (PFHxA)	520	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:13	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorodecanoic acid (PFDA)	8.3	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoroheptanesulfonic acid (PFHpS)	76	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:13	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
N-MeFOSAA (NMeFOSAA)	3.4	1.8	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorooctanesulfonamide (FOSA)	76	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorononanesulfonic acid (PFNS)	16	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	400	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:13	RRB
Perfluoro-1-butanefulfonamide (FBFA)	36	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluorohexanesulfonic acid (PFHxS)	1600	91	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:20	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2400	91	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:20	RRB
Perfluoropentanesulfonic acid (PFPeS)	65	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoroundecanoic acid (PFUnA)	16	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB
Perfluoroheptanoic acid (PFHpA)	530	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:13	RRB
Perfluorooctanoic acid (PFOA)	890	18	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:13	RRB
Perfluorooctanesulfonic acid (PFOS)	4200	91	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:20	RRB
Perfluorononanoic acid (PFNA)	110	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:16	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-13

Sampled: 11/10/2022 14:30

Sample ID: 22K2021-19

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	13	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorobutanesulfonic acid (PFBS)	5.9	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoropentanoic acid (PFPeA)	48	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorohexanoic acid (PFHxA)	42	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoroheptanesulfonic acid (PFHpS)	3.7	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	2.5	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoro-1-butanefulfonamide (FBFA)	7.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorohexanesulfonic acid (PFHxS)	95	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	12	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoropentanesulfonic acid (PFPeS)	9.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoroundecanoic acid (PFUnA)	3.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluoroheptanoic acid (PFHpA)	30	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorooctanoic acid (PFOA)	17	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB
Perfluorooctanesulfonic acid (PFOS)	200	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:27	RRB
Perfluorononanoic acid (PFNA)	4.5	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:23	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-23

Sampled: 11/10/2022 12:30

Sample ID: 22K2021-20

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	24	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorobutanoic acid (PFBA)	26	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorobutanesulfonic acid (PFBS)	6.8	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorobutanesulfonic acid (PFBS)	6.8	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoropentanoic acid (PFPeA)	80	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoropentanoic acid (PFPeA)	84	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorohexanoic acid (PFHxA)	66	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorohexanoic acid (PFHxA)	66	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoroheptanesulfonic acid (PFHpS)	9.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoroheptanesulfonic acid (PFHpS)	9.2	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-23

Sampled: 11/10/2022 12:30

Sample ID: 22K2021-20

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	2.5	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	2.5	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoro-1-butanefulfonamide (FBFA)	2.6	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoro-1-butanefulfonamide (FBFA)	2.4	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorohexanesulfonic acid (PFHxS)	210	19	ng/L	10	PF-19	SOP-454 PFAS	12/23/22	1/11/23 10:41	RRB
Perfluorohexanesulfonic acid (PFHxS)	180	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/16/22 1:34	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	15	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	15	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoropentanesulfonic acid (PFPeS)	9.0	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoropentanesulfonic acid (PFPeS)	9.2	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluoroheptanoic acid (PFHpA)	49	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluoroheptanoic acid (PFHpA)	51	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorooctanoic acid (PFOA)	120	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorooctanoic acid (PFOA)	120	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorooctanesulfonic acid (PFOS)	89	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorooctanesulfonic acid (PFOS)	110	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB
Perfluorononanoic acid (PFNA)	4.9	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:30	RRB
Perfluorononanoic acid (PFNA)	5.1	1.9	ng/L	1		SOP-454 PFAS	12/23/22	12/30/22 11:13	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-351

Sampled: 11/11/2022 08:00

Sample ID: 22K2021-21

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.7	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorobutanesulfonic acid (PFBS)	2.0	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoropentanoic acid (PFPeA)	6.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorohexanoic acid (PFHxA)	7.4	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorohexanesulfonic acid (PFHxS)	17	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoropentanesulfonic acid (PFPeS)	2.1	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluoroheptanoic acid (PFHpA)	4.1	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorooctanoic acid (PFOA)	2.8	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorooctanesulfonic acid (PFOS)	23	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/15/22 7:37	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-201

Sampled: 11/9/2022 14:20

Sample ID: 22K2021-22

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoropentanoic acid (PFPeA)	2.0	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorohexanoic acid (PFHxA)	2.0	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorohexanesulfonic acid (PFHxS)	15	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorooctanesulfonic acid (PFOS)	18	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:15	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-307S

Sampled: 11/9/2022 14:10

Sample ID: 22K2021-23

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorooctanesulfonic acid (PFOS)	2.1	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:22	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-307D

Sampled: 11/9/2022 14:40

Sample ID: 22K2021-24

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:30	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-308S

Sampled: 11/9/2022 11:45

Sample ID: 22K2021-25

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	27	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorooctanesulfonic acid (PFOS)	2.2	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:37	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-308D

Sampled: 11/9/2022 12:30

Sample ID: 22K2021-26

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
4,8-Dioxo-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorooctanesulfonic acid (PFOS)	5.4	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:44	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: MW-309

Sampled: 11/9/2022 12:30

Sample ID: 22K2021-27

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorohexanesulfonic acid (PFHxS)	4.6	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorooctanesulfonic acid (PFOS)	11	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:51	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: HW-1D

Sampled: 11/11/2022 11:00

Sample ID: 22K2021-28

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorobutanesulfonic acid (PFBS)	2.1	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoropentanoic acid (PFPeA)	2.1	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorohexanesulfonic acid (PFHxS)	37	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoropentanesulfonic acid (PFPeS)	2.7	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorooctanesulfonic acid (PFOS)	17	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 2:58	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: WS-101

Sampled: 11/11/2022 12:00

Sample ID: 22K2021-29

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:06	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: DUP 1

Sampled: 11/9/2022 12:30

Sample ID: 22K2021-30

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	260	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluorobutanesulfonic acid (PFBS)	89	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluoropentanoic acid (PFPeA)	900	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluorohexanoic acid (PFHxA)	830	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	920	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluorodecanoic acid (PFDA)	37	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluoroheptanesulfonic acid (PFHpS)	400	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
N-EtFOSAA (NEtFOSAA)	2.3	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.3	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluorodecanesulfonic acid (PFDS)	22	1.9	ng/L	1	PF-23	SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluorooctanesulfonamide (FOSA)	21	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluorononanesulfonic acid (PFNS)	95	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	620	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluoro-1-butanefulfonamide (FBFA)	250	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluorohexanesulfonic acid (PFHxS)	2200	95	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:33	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2300	95	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:33	RRB
Perfluoropentanesulfonic acid (PFPeS)	160	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluoroundecanoic acid (PFUnA)	230	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB
Perfluoroheptanoic acid (PFHpA)	380	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluorooctanoic acid (PFOA)	550	19	ng/L	10	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:26	RRB
Perfluorooctanesulfonic acid (PFOS)	8600	95	ng/L	50	PF-19	SOP-454 PFAS	12/6/22	12/15/22 22:33	RRB
Perfluorononanoic acid (PFNA)	150	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:13	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: Equipment Blank 1

Sampled: 11/9/2022 15:00

Sample ID: 22K2021-31

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:27	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: Equipment Blank 2

Sampled: 11/10/2022 14:15

Sample ID: 22K2021-32

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:34	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: Equip-Blank-3

Sampled: 11/11/2022 12:30

Sample ID: 22K2021-33

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:42	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: DUP-2

Sampled: 11/11/2022 12:00

Sample ID: 22K2021-34

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:49	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC 38

Sampled: 11/10/2022 12:00

Sample ID: 22K2021-35

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
N-EtFOSAA (NEtFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
N-MeFOSAA (NMeFOSAA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22K2021

Date Received: 11/14/2022

Field Sample #: PC 38

Sampled: 11/10/2022 12:00

Sample ID: 22K2021-35

Sample Matrix: Ground Water

Sample Flags: H-06, Z-01

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorooctanesulfonic acid (PFOS)	5.5	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorooctanesulfonic acid (PFOS)	9.1	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L	1		SOP-454 PFAS	12/6/22	12/9/22 3:56	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	12/15/22	12/20/22 15:49	RRB

Sample Extraction Data

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K2021-01 [PFW-1]	B323248	279	1.00	12/06/22
22K2021-01RE1 [PFW-1]	B323248	279	1.00	12/06/22
22K2021-01RE2 [PFW-1]	B323248	279	1.00	12/06/22
22K2021-02 [PFW-2]	B323248	265	1.00	12/06/22
22K2021-02RE1 [PFW-2]	B323248	265	1.00	12/06/22
22K2021-03 [PFW-5]	B323248	278	1.00	12/06/22
22K2021-03RE1 [PFW-5]	B323248	278	1.00	12/06/22
22K2021-04 [OW-8A]	B323248	264	1.00	12/06/22
22K2021-05 [HSW-6]	B323248	265	1.00	12/06/22
22K2021-05RE1 [HSW-6]	B323248	265	1.00	12/06/22
22K2021-06 [PC-1]	B323248	265	1.00	12/06/22
22K2021-06RE1 [PC-1]	B323248	265	1.00	12/06/22
22K2021-07 [PC-6A]	B323248	268	1.00	12/06/22
22K2021-07RE1 [PC-6A]	B323248	268	1.00	12/06/22
22K2021-09 [PC-14]	B323248	274	1.00	12/06/22
22K2021-09RE1 [PC-14]	B323248	274	1.00	12/06/22
22K2021-10 [PC-16D]	B323248	283	1.00	12/06/22
22K2021-10RE1 [PC-16D]	B323248	283	1.00	12/06/22
22K2021-11 [PC-18]	B323248	282	1.00	12/06/22
22K2021-12 [PC-28]	B323248	271	1.00	12/06/22
22K2021-12RE1 [PC-28]	B323248	271	1.00	12/06/22
22K2021-13 [PC-29]	B323248	275	1.00	12/06/22
22K2021-14 [PC-30]	B323248	272	1.00	12/06/22
22K2021-14RE1 [PC-30]	B323248	272	1.00	12/06/22
22K2021-15 [PC-345]	B323248	266	1.00	12/06/22
22K2021-15RE1 [PC-345]	B323248	266	1.00	12/06/22
22K2021-16 [PC-36]	B323248	263	1.00	12/06/22
22K2021-16RE1 [PC-36]	B323248	263	1.00	12/06/22
22K2021-17 [PC-39]	B323248	272	1.00	12/06/22
22K2021-18 [MW-3]	B323248	275	1.00	12/06/22
22K2021-18RE1 [MW-3]	B323248	275	1.00	12/06/22
22K2021-18RE2 [MW-3]	B323248	275	1.00	12/06/22
22K2021-19 [MW-13]	B323248	256	1.00	12/06/22
22K2021-19RE1 [MW-13]	B323248	256	1.00	12/06/22
22K2021-20 [MW-23]	B323248	270	1.00	12/06/22
22K2021-20RE1 [MW-23]	B323248	270	1.00	12/06/22
22K2021-21 [MW-35I]	B323248	266	1.00	12/06/22

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K2021-08 [PC-11]	B323249	287	1.00	12/06/22
22K2021-08RE1 [PC-11]	B323249	287	1.00	12/06/22
22K2021-08RE2 [PC-11]	B323249	287	1.00	12/06/22
22K2021-22 [MW-201]	B323249	264	1.00	12/06/22
22K2021-23 [MW-307S]	B323249	253	1.00	12/06/22
22K2021-24 [MW-307D]	B323249	269	1.00	12/06/22
22K2021-25 [MW-308S]	B323249	266	1.00	12/06/22
22K2021-26 [MW-308D]	B323249	249	1.00	12/06/22
22K2021-27 [MW-309]	B323249	270	1.00	12/06/22
22K2021-28 [HW-1D]	B323249	266	1.00	12/06/22
22K2021-29 [WS-101]	B323249	261	1.00	12/06/22
22K2021-30 [DUP 1]	B323249	264	1.00	12/06/22
22K2021-30RE1 [DUP 1]	B323249	264	1.00	12/06/22

Sample Extraction Data**Prep Method: SOP 454-PFAAS Analytical Method: SOP-454 PFAS**

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K2021-30RE2 [DUP 1]	B323249	264	1.00	12/06/22
22K2021-31 [Equipment Blank 1]	B323249	259	1.00	12/06/22
22K2021-32 [Equipment Blank 2]	B323249	261	1.00	12/06/22
22K2021-33 [Equip-Blank-3]	B323249	276	1.00	12/06/22
22K2021-34 [DUP-2]	B323249	261	1.00	12/06/22
22K2021-35 [PC 38]	B323249	255	1.00	12/06/22

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K2021-09RE2 [PC-14]	B325808	264	1.00	12/15/22
22K2021-09RE3 [PC-14]	B325808	264	1.00	12/15/22
22K2021-10RE2 [PC-16D]	B325808	286	1.00	12/15/22
22K2021-10RE3 [PC-16D]	B325808	286	1.00	12/15/22
22K2021-35RE1 [PC 38]	B325808	272	1.00	12/15/22

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22K2021-03RE2 [PFW-5]	B326602	269	1.00	12/23/22
22K2021-03RE3 [PFW-5]	B326602	269	1.00	12/23/22
22K2021-06RE2 [PC-1]	B326602	275	1.00	12/23/22
22K2021-06RE3 [PC-1]	B326602	275	1.00	12/23/22
22K2021-11RE1 [PC-18]	B326602	284	1.00	12/23/22
22K2021-17RE2 [PC-39]	B326602	122	1.00	12/23/22
22K2021-20RE2 [MW-23]	B326602	262	1.00	12/23/22
22K2021-20RE3 [MW-23]	B326602	262	1.00	12/23/22

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B323248 - SOP 454-PFAAS
Blank (B323248-BLK1)

Prepared: 12/06/22 Analyzed: 12/15/22

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

LCS (B323248-BS1)

Prepared: 12/06/22 Analyzed: 12/15/22

Perfluorobutanoic acid (PFBA)	9.80	2.0	ng/L	9.81	100	73-129
Perfluorobutanesulfonic acid (PFBS)	8.30	2.0	ng/L	8.68	95.6	72-130
Perfluoropentanoic acid (PFPeA)	9.75	2.0	ng/L	9.81	99.4	72-129
Perfluorohexanoic acid (PFHxA)	9.52	2.0	ng/L	9.81	97.1	72-129
11Cl-PF3OUdS (F53B Major)	9.37	2.0	ng/L	9.24	101	55.1-141
9Cl-PF3ONS (F53B Minor)	8.48	2.0	ng/L	9.14	92.8	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.82	2.0	ng/L	9.24	95.4	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.75	2.0	ng/L	9.81	79.0	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.4	2.0	ng/L	9.41	111	67-138
Perfluorodecanoic acid (PFDA)	10.3	2.0	ng/L	9.81	105	71-129
Perfluorododecanoic acid (PFDoA)	10.5	2.0	ng/L	9.81	107	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	8.20	2.0	ng/L	8.73	94.0	49.4-154

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B323248 - SOP 454-PFAAS
LCS (B323248-BS1)

Prepared: 12/06/22 Analyzed: 12/15/22

Perfluoroheptanesulfonic acid (PFHpS)	10.9	2.0	ng/L	9.37		117	69-134			
N-EtFOSAA (NEtFOSAA)	11.2	2.0	ng/L	9.81		114	61-135			
N-MeFOSAA (NMeFOSAA)	11.8	2.0	ng/L	9.81		120	65-136			
Perfluorotetradecanoic acid (PFTA)	10.1	2.0	ng/L	9.81		103	71-132			
Perfluorotridecanoic acid (PFTTrDA)	10.3	2.0	ng/L	9.81		105	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.21	2.0	ng/L	9.17		100	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.23	2.0	ng/L	9.46		87.0	53-142			
Perfluorooctanesulfonamide (FOSA)	9.76	2.0	ng/L	9.81		99.5	67-137			
Perfluorononanesulfonic acid (PFNS)	9.95	2.0	ng/L	9.41		106	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.91	2.0	ng/L	9.81		101	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	9.69	2.0	ng/L	9.81		98.8	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.52	2.0	ng/L	8.97		94.9	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.13	2.0	ng/L	9.81		93.1	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.61	2.0	ng/L	9.81		98.0	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.66	2.0	ng/L	9.32		104	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.17	2.0	ng/L	9.22		88.7	71-127			
Perfluoroundecanoic acid (PFUnA)	9.92	2.0	ng/L	9.81		101	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.5	2.0	ng/L	9.81		107	58.5-143			
Perfluoroheptanoic acid (PFHpA)	10.5	2.0	ng/L	9.81		107	72-130			
Perfluorooctanoic acid (PFOA)	10.3	2.0	ng/L	9.81		105	71-133			
Perfluorooctanesulfonic acid (PFOS)	9.35	2.0	ng/L	9.07		103	65-140			
Perfluorononanoic acid (PFNA)	9.32	2.0	ng/L	9.81		95.1	69-130			

Matrix Spike (B323248-MS1)
Source: 22K2021-04

Prepared: 12/06/22 Analyzed: 12/15/22

Perfluorobutanoic acid (PFBA)	14.8	1.8	ng/L	8.96	6.50	93.1	73-129			
Perfluorobutanesulfonic acid (PFBS)	11.7	1.8	ng/L	7.93	3.39	105	72-130			
Perfluoropentanoic acid (PFPeA)	28.7	1.8	ng/L	8.96	17.6	124	72-129			
Perfluorohexanoic acid (PFHxA)	32.5	1.8	ng/L	8.96	21.3	125	72-129			
11Cl-PF3OUdS (F53B Major)	7.04	1.8	ng/L	8.44	ND	83.4	58.3-140			
9Cl-PF3ONS (F53B Minor)	7.88	1.8	ng/L	8.35	ND	94.3	61.4-144			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.84	1.8	ng/L	8.44	ND	92.8	62.4-128			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.37	1.8	ng/L	8.96	ND	82.3	36.7-171			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11.6	1.8	ng/L	8.60	ND	135	67-138			
Perfluorodecanoic acid (PFDA)	11.2	1.8	ng/L	8.96	1.54	108	71-129			
Perfluorododecanoic acid (PFDoA)	9.22	1.8	ng/L	8.96	ND	103	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	7.21	1.8	ng/L	7.97	ND	90.4	54.3-149			
Perfluoroheptanesulfonic acid (PFHpS)	10.8	1.8	ng/L	8.56	1.02	114	69-134			
N-EtFOSAA (NEtFOSAA)	9.82	1.8	ng/L	8.96	ND	110	61-135			
N-MeFOSAA (NMeFOSAA)	9.96	1.8	ng/L	8.96	ND	111	65-136			
Perfluorotetradecanoic acid (PFTA)	9.24	1.8	ng/L	8.96	ND	103	71-132			
Perfluorotridecanoic acid (PFTTrDA)	10.4	1.8	ng/L	8.96	ND	116	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.36	1.8	ng/L	8.38	ND	99.8	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.59	1.8	ng/L	8.65	ND	87.8	53-142			
Perfluorooctanesulfonamide (FOSA)	11.5	1.8	ng/L	8.96	3.02	94.3	67-137			
Perfluorononanesulfonic acid (PFNS)	9.58	1.8	ng/L	8.60	ND	111	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	24.8	1.8	ng/L	8.96	15.3	105	64.2-154			
Perfluoro-1-butanefulfonamide (FBSA)	12.3	1.8	ng/L	8.96	3.25	101	65.9-140			
Perfluorohexanesulfonic acid (PFHxS)	81.7	1.8	ng/L	8.20	70.4	137 *	68-131			MS-19
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	1.8	ng/L	8.96	ND	116	61.9-143			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.05	1.8	ng/L	8.96	ND	101	61.4-142			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B323248 - SOP 454-PFAAS

Matrix Spike (B323248-MS1)		Source: 22K2021-04			Prepared: 12/06/22 Analyzed: 12/15/22					
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.8	1.8	ng/L	8.51	2.27	101	64-140			
Perfluoropetanesulfonic acid (PFPeS)	11.5	1.8	ng/L	8.42	3.88	90.6	71-127			
Perfluoroundecanoic acid (PFUnA)	10.9	1.8	ng/L	8.96	1.24	108	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.82	1.8	ng/L	8.96	ND	110	62-138			
Perfluoroheptanoic acid (PFHpA)	20.0	1.8	ng/L	8.96	10.2	109	72-130			
Perfluorooctanoic acid (PFOA)	22.9	1.8	ng/L	8.96	13.3	107	71-133			
Perfluorooctanesulfonic acid (PFOS)	88.3	1.8	ng/L	8.29	76.3	144 *	65-140			MS-19
Perfluorononanoic acid (PFNA)	10.2	1.8	ng/L	8.96	1.60	96.3	69-130			

Matrix Spike Dup (B323248-MSD1)		Source: 22K2021-04			Prepared: 12/06/22 Analyzed: 12/15/22					
Perfluorobutanoic acid (PFBA)	13.2	1.8	ng/L	8.96	6.50	75.2	73-129	11.4	30	
Perfluorobutanesulfonic acid (PFBS)	10.8	1.8	ng/L	7.93	3.39	92.8	72-130	8.31	30	
Perfluoropentanoic acid (PFPeA)	25.8	1.8	ng/L	8.96	17.6	91.3	72-129	10.7	30	
Perfluorohexanoic acid (PFHxA)	28.1	1.8	ng/L	8.96	21.3	75.8	72-129	14.4	30	
11Cl-PF3OUdS (F53B Major)	6.49	1.8	ng/L	8.44	ND	76.8	58.3-140	8.20	30	
9Cl-PF3ONS (F53B Minor)	7.16	1.8	ng/L	8.35	ND	85.7	61.4-144	9.59	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.53	1.8	ng/L	8.44	ND	89.2	62.4-128	3.98	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.68	1.8	ng/L	8.96	ND	85.7	36.7-171	4.16	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	8.81	1.8	ng/L	8.60	ND	102	67-138	27.1	30	
Perfluorodecanoic acid (PFDA)	10.4	1.8	ng/L	8.96	1.54	98.5	71-129	8.15	30	
Perfluorododecanoic acid (PFDoA)	8.51	1.8	ng/L	8.96	ND	94.9	72-134	8.08	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	7.29	1.8	ng/L	7.98	ND	91.4	54.3-149	1.14	30	
Perfluoroheptanesulfonic acid (PFHpS)	9.35	1.8	ng/L	8.56	1.02	97.4	69-134	14.3	30	
N-EtFOSAA (NEtFOSAA)	11.2	1.8	ng/L	8.96	ND	125	61-135	13.0	30	
N-MeFOSAA (NMeFOSAA)	10.2	1.8	ng/L	8.96	ND	114	65-136	2.73	30	
Perfluorotetradecanoic acid (PFTA)	8.55	1.8	ng/L	8.96	ND	95.4	71-132	7.80	30	
Perfluorotridecanoic acid (PFTrDA)	13.7	1.8	ng/L	8.96	ND	153 *	65-144	27.1	30	MS-22
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.75	1.8	ng/L	8.38	ND	104	63-143	4.62	30	
Perfluorodecanesulfonic acid (PFDS)	6.36	1.8	ng/L	8.65	ND	73.5	53-142	17.7	30	
Perfluorooctanesulfonamide (FOSA)	10.6	1.8	ng/L	8.96	3.02	84.4	67-137	7.97	30	
Perfluorononanesulfonic acid (PFNS)	8.43	1.8	ng/L	8.60	ND	98.0	69-127	12.7	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	23.5	1.8	ng/L	8.96	15.3	90.6	64.2-154	5.52	30	
Perfluoro-1-butanedisulfonamide (FBSA)	12.4	1.8	ng/L	8.96	3.25	102	65.9-140	0.562	30	
Perfluorohexanesulfonic acid (PFHxS)	71.7	1.8	ng/L	8.20	70.4	15.9 *	68-131	13.0	30	MS-19
Perfluoro-4-oxapentanoic acid (PFMPA)	9.98	1.8	ng/L	8.96	ND	111	61.9-143	3.79	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	8.92	1.8	ng/L	8.96	ND	99.5	61.4-142	1.47	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.2	1.8	ng/L	8.51	2.27	93.7	64-140	5.64	30	
Perfluoropetanesulfonic acid (PFPeS)	11.1	1.8	ng/L	8.42	3.88	86.2	71-127	3.20	30	
Perfluoroundecanoic acid (PFUnA)	10.9	1.8	ng/L	8.96	1.24	107	69-133	0.531	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.35	1.8	ng/L	8.96	ND	104	62-138	4.88	30	
Perfluoroheptanoic acid (PFHpA)	18.0	1.8	ng/L	8.96	10.2	86.8	72-130	10.2	30	
Perfluorooctanoic acid (PFOA)	20.5	1.8	ng/L	8.96	13.3	80.4	71-133	11.0	30	
Perfluorooctanesulfonic acid (PFOS)	80.8	1.8	ng/L	8.29	76.3	54.5 *	65-140	8.82	30	MS-19
Perfluorononanoic acid (PFNA)	10.8	1.8	ng/L	8.96	1.60	103	69-130	5.83	30	

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B323249 - SOP 454-PFAAS

Blank (B323249-BLK1)

Prepared: 12/06/22 Analyzed: 12/08/22

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

LCS (B323249-BS1)

Prepared: 12/06/22 Analyzed: 12/08/22

Perfluorobutanoic acid (PFBA)	8.76	1.9	ng/L	9.48	92.4	73-129
Perfluorobutanesulfonic acid (PFBS)	7.62	1.9	ng/L	8.39	90.8	72-130
Perfluoropentanoic acid (PFPeA)	9.55	1.9	ng/L	9.48	101	72-129
Perfluorohexanoic acid (PFHxA)	9.34	1.9	ng/L	9.48	98.5	72-129
11Cl-PF3OUdS (F53B Major)	7.14	1.9	ng/L	8.93	80.0	55.1-141
9Cl-PF3ONS (F53B Minor)	7.37	1.9	ng/L	8.84	83.4	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.48	1.9	ng/L	8.93	83.7	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.0	1.9	ng/L	9.48	116	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.67	1.9	ng/L	9.10	106	67-138
Perfluorodecanoic acid (PFDA)	9.63	1.9	ng/L	9.48	102	71-129
Perfluorododecanoic acid (PFDoA)	10.2	1.9	ng/L	9.48	108	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.34	1.9	ng/L	8.44	98.8	49.4-154

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B323249 - SOP 454-PFAAS
LCS (B323249-BS1)

Prepared: 12/06/22 Analyzed: 12/08/22

Perfluoroheptanesulfonic acid (PFHpS)	9.61	1.9	ng/L	9.06		106	69-134			
N-EtFOSAA (NEtFOSAA)	9.56	1.9	ng/L	9.48		101	61-135			
N-MeFOSAA (NMeFOSAA)	10.5	1.9	ng/L	9.48		110	65-136			
Perfluorotetradecanoic acid (PFTA)	8.89	1.9	ng/L	9.48		93.7	71-132			
Perfluorotridecanoic acid (PFTTrDA)	9.54	1.9	ng/L	9.48		101	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.81	1.9	ng/L	8.87		88.1	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.95	1.9	ng/L	9.15		97.8	53-142			
Perfluorooctanesulfonamide (FOSA)	8.28	1.9	ng/L	9.48		87.3	67-137			
Perfluorononanesulfonic acid (PFNS)	8.49	1.9	ng/L	9.10		93.2	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	8.57	1.9	ng/L	9.48		90.4	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	8.25	1.9	ng/L	9.48		87.0	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.72	1.9	ng/L	8.68		101	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	8.70	1.9	ng/L	9.48		91.8	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.74	1.9	ng/L	9.48		103	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.37	1.9	ng/L	9.01		93.0	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.69	1.9	ng/L	8.91		97.5	71-127			
Perfluoroundecanoic acid (PFUnA)	9.74	1.9	ng/L	9.48		103	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.73	1.9	ng/L	9.48		103	58.5-143			
Perfluoroheptanoic acid (PFHpA)	9.49	1.9	ng/L	9.48		100	72-130			
Perfluorooctanoic acid (PFOA)	8.87	1.9	ng/L	9.48		93.5	71-133			
Perfluorooctanesulfonic acid (PFOS)	9.19	1.9	ng/L	8.77		105	65-140			
Perfluorononanoic acid (PFNA)	8.51	1.9	ng/L	9.48		89.8	69-130			

Matrix Spike (B323249-MS1)
Source: 22K2021-08

Prepared: 12/06/22 Analyzed: 12/08/22

Perfluorobutanoic acid (PFBA)	113	1.8	ng/L	8.78	101	134	*	73-129		MS-22
Perfluorobutanesulfonic acid (PFBS)	44.6	1.8	ng/L	7.77	35.2	120		72-130		
Perfluoropentanoic acid (PFPeA)	220	1.8	ng/L	8.78	213	77.4		72-129		
Perfluorohexanoic acid (PFHxA)	189	1.8	ng/L	8.78	181	86.9		72-129		
11Cl-PF3OUdS (F53B Major)	0.773	1.8	ng/L	8.27	ND	9.35	*	58.3-140		MS-09
9Cl-PF3ONS (F53B Minor)	9.04	1.8	ng/L	8.19	ND	110		61.4-144		
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	7.11	1.8	ng/L	8.27	ND	86.0		62.4-128		
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.60	1.8	ng/L	8.78	ND	97.9		36.7-171		
8:2 Fluorotelomersulfonic acid (8:2FTS A)	105	1.8	ng/L	8.43	104	23.0	*	67-138		MS-19
Perfluorodecanoic acid (PFDA)	31.0	1.8	ng/L	8.78	21.9	104		71-129		
Perfluorododecanoic acid (PFDoA)	9.74	1.8	ng/L	8.78	ND	111		72-134		
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.07	1.8	ng/L	7.82	ND	103		54.3-149		
Perfluoroheptanesulfonic acid (PFHpS)	55.8	1.8	ng/L	8.39	35.3	244	*	69-134		MS-19
N-EtFOSAA (NEtFOSAA)	9.87	1.8	ng/L	8.78	1.08	100		61-135		
N-MeFOSAA (NMeFOSAA)	10.2	1.8	ng/L	8.78	ND	116		65-136		
Perfluorotetradecanoic acid (PFTA)	7.63	1.8	ng/L	8.78	ND	86.8		71-132		
Perfluorotridecanoic acid (PFTTrDA)	9.10	1.8	ng/L	8.78	ND	104		65-144		
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.14	1.8	ng/L	8.21	0.708	90.5		63-143		
Perfluorodecanesulfonic acid (PFDS)	4.48	1.8	ng/L	8.48	21.4	-199	*	53-142		MS-09
Perfluorooctanesulfonamide (FOSA)	34.8	1.8	ng/L	8.78	23.7	127		67-137		
Perfluorononanesulfonic acid (PFNS)	23.7	1.8	ng/L	8.43	36.8	-156	*	69-127		MS-09
Perfluoro-1-hexanesulfonamide (FHxSA)	165	1.8	ng/L	8.78	184	-213	*	64.2-154		MS-19
Perfluoro-1-butanefulfonamide (FBSA)	45.8	1.8	ng/L	8.78	39.8	69.1		65.9-140		
Perfluorohexanesulfonic acid (PFHxS)	338	1.8	ng/L	8.04	326	147	*	68-131		MS-19
Perfluoro-4-oxapentanoic acid (PFMPA)	10.2	1.8	ng/L	8.78	ND	117		61.9-143		

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B323249 - SOP 454-PFAAS										
Matrix Spike (B323249-MS1)		Source: 22K2021-08			Prepared: 12/06/22 Analyzed: 12/08/22					
Perfluoro-5-oxahexanoic acid (PFMBA)	10.1	1.8	ng/L	8.78	ND	114	61.4-142			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	144	1.8	ng/L	8.35	135	115	64-140			
Perfluoropetanesulfonic acid (PFPeS)	65.2	1.8	ng/L	8.26	54.4	131	* 71-127			MS-22
Perfluoroundecanoic acid (PFUnA)	194	1.8	ng/L	8.78	210	-185	* 69-133			MS-19
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.57	1.8	ng/L	8.78	ND	109	62-138			
Perfluoroheptanoic acid (PFHpA)	153	1.8	ng/L	8.78	146	75.6	72-130			
Perfluorooctanoic acid (PFOA)	135	1.8	ng/L	8.78	121	169	* 71-133			MS-22
Perfluorooctanesulfonic acid (PFOS)	675	1.8	ng/L	8.13	641	426	* 65-140			MS-19
Perfluorononanoic acid (PFNA)	96.5	1.8	ng/L	8.78	81.9	166	* 69-130			MS-12
Matrix Spike Dup (B323249-MSD1)		Source: 22K2021-08			Prepared: 12/06/22 Analyzed: 12/08/22					
Perfluorobutanoic acid (PFBA)	108	1.8	ng/L	9.00	101	83.7	73-129	3.80	30	
Perfluorobutanesulfonic acid (PFBS)	43.1	1.8	ng/L	7.97	35.2	99.7	72-130	3.22	30	
Perfluoropentanoic acid (PFPeA)	216	1.8	ng/L	9.00	213	31.6	* 72-129	1.82	30	MS-19
Perfluorohexanoic acid (PFHxA)	184	1.8	ng/L	9.00	181	26.5	* 72-129	2.81	30	MS-19
11Cl-PF3OUdS (F53B Major)	1.69	1.8	ng/L	8.48	ND	20.0	* 58.3-140	74.7	* 30	MS-09, R-06
9Cl-PF3ONS (F53B Minor)	9.06	1.8	ng/L	8.39	ND	108	61.4-144	0.292	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	6.90	1.8	ng/L	8.48	ND	81.4	62.4-128	3.01	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.83	1.8	ng/L	9.00	ND	109	36.7-171	13.3	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	106	1.8	ng/L	8.64	104	26.3	* 67-138	0.313	30	MS-19
Perfluorodecanoic acid (PFDA)	31.0	1.8	ng/L	9.00	21.9	102	71-129	0.000191	30	
Perfluorododecanoic acid (PFDoA)	10.4	1.8	ng/L	9.00	ND	116	72-134	6.67	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	8.18	1.8	ng/L	8.01	ND	102	54.3-149	1.27	30	
Perfluoroheptanesulfonic acid (PFHpS)	48.2	1.8	ng/L	8.60	35.3	150	* 69-134	14.6	30	MS-19
N-EtFOSAA (NEtFOSAA)	10.8	1.8	ng/L	9.00	1.08	108	61-135	8.81	30	
N-MeFOSAA (NMeFOSAA)	11.7	1.8	ng/L	9.00	ND	129	65-136	13.3	30	
Perfluorotetradecanoic acid (PFTA)	9.85	1.8	ng/L	9.00	ND	109	71-132	25.4	30	
Perfluorotridecanoic acid (PFTrDA)	23.3	1.8	ng/L	9.00	ND	259	* 65-144	87.7	* 30	MS-23
4:2 Fluorotelomersulfonic acid (4:2FTS A)	8.57	1.8	ng/L	8.42	0.708	93.4	63-143	5.10	30	
Perfluorodecanesulfonic acid (PFDS)	8.55	1.8	ng/L	8.69	21.4	-147	* 53-142	62.6	* 30	MS-09, R-06
Perfluorooctanesulfonamide (FOSA)	33.3	1.8	ng/L	9.00	23.7	107	67-137	4.36	30	
Perfluorononanesulfonic acid (PFNS)	28.2	1.8	ng/L	8.64	36.8	-99.5	* 69-127	17.6	30	MS-09
Perfluoro-1-hexanesulfonamide (FHxSA)	148	1.8	ng/L	9.00	184	-398	* 64.2-154	10.9	30	MS-19
Perfluoro-1-butanesulfonamide (FBSA)	45.2	1.8	ng/L	9.00	39.8	60.9	* 65.9-140	1.29	30	MS-22
Perfluorohexanesulfonic acid (PFHxS)	334	1.8	ng/L	8.24	326	90.2	68-131	1.29	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	10.6	1.8	ng/L	9.00	ND	118	61.9-143	3.70	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.3	1.8	ng/L	9.00	ND	115	61.4-142	2.70	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	139	1.8	ng/L	8.55	135	51.6	* 64-140	3.69	30	MS-19
Perfluoropetanesulfonic acid (PFPeS)	63.5	1.8	ng/L	8.46	54.4	107	71-127	2.72	30	
Perfluoroundecanoic acid (PFUnA)	198	1.8	ng/L	9.00	210	-142	* 69-133	1.78	30	MS-19
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.49	1.8	ng/L	9.00	ND	105	62-138	0.782	30	
Perfluoroheptanoic acid (PFHpA)	149	1.8	ng/L	9.00	146	27.5	* 72-130	2.77	30	MS-19
Perfluorooctanoic acid (PFOA)	129	1.8	ng/L	9.00	121	91.3	71-133	5.02	30	
Perfluorooctanesulfonic acid (PFOS)	636	1.8	ng/L	8.33	641	-53.3	* 65-140	5.96	30	MS-19
Perfluorononanoic acid (PFNA)	95.2	1.8	ng/L	9.00	81.9	149	* 69-130	1.27	30	MS-12

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B325808 - SOP 454-PFAAS
Blank (B325808-BLK1)

Prepared: 12/15/22 Analyzed: 12/20/22

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

LCS (B325808-BS1)

Prepared: 12/15/22 Analyzed: 12/20/22

Perfluorobutanoic acid (PFBA)	9.64	1.9	ng/L	9.74	99.0	73-129
Perfluorobutanesulfonic acid (PFBS)	8.26	1.9	ng/L	8.62	95.9	72-130
Perfluoropentanoic acid (PFPeA)	9.50	1.9	ng/L	9.74	97.6	72-129
Perfluorohexanoic acid (PFHxA)	9.49	1.9	ng/L	9.74	97.5	72-129
11Cl-PF3OUdS (F53B Major)	6.63	1.9	ng/L	9.17	72.3	55.1-141
9Cl-PF3ONS (F53B Minor)	7.09	1.9	ng/L	9.08	78.2	59.6-146
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.50	1.9	ng/L	9.17	92.7	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	8.98	1.9	ng/L	9.74	92.2	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.1	1.9	ng/L	9.35	108	67-138
Perfluorodecanoic acid (PFDA)	9.11	1.9	ng/L	9.74	93.5	71-129
Perfluorododecanoic acid (PFDoA)	10.3	1.9	ng/L	9.74	105	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.08	1.9	ng/L	8.67	93.2	49.4-154

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B325808 - SOP 454-PFAAS
LCS (B325808-BS1)

Prepared: 12/15/22 Analyzed: 12/20/22

Perfluoroheptanesulfonic acid (PFHpS)	8.67	1.9	ng/L	9.30		93.2	69-134			
N-EtFOSAA (NEtFOSAA)	10.9	1.9	ng/L	9.74		111	61-135			
N-MeFOSAA (NMeFOSAA)	13.2	1.9	ng/L	9.74		135	65-136			
Perfluorotetradecanoic acid (PFTA)	10.8	1.9	ng/L	9.74		111	71-132			
Perfluorotridecanoic acid (PFTTrDA)	10.5	1.9	ng/L	9.74		108	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.23	1.9	ng/L	9.11		101	63-143			
Perfluorodecanesulfonic acid (PFDS)	8.29	1.9	ng/L	9.40		88.2	53-142			
Perfluorooctanesulfonamide (FOSA)	10.2	1.9	ng/L	9.74		105	67-137			
Perfluorononanesulfonic acid (PFNS)	9.34	1.9	ng/L	9.35		99.9	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	10.4	1.9	ng/L	9.74		107	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	9.09	1.9	ng/L	9.74		93.3	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.54	1.9	ng/L	8.91		95.8	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	9.56	1.9	ng/L	9.74		98.1	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.35	1.9	ng/L	9.74		96.0	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	7.84	1.9	ng/L	9.25		84.7	64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.12	1.9	ng/L	9.15		99.6	71-127			
Perfluoroundecanoic acid (PFUnA)	9.64	1.9	ng/L	9.74		99.0	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.46	1.9	ng/L	9.74		97.1	58.5-143			
Perfluoroheptanoic acid (PFHpA)	9.94	1.9	ng/L	9.74		102	72-130			
Perfluorooctanoic acid (PFOA)	9.69	1.9	ng/L	9.74		99.5	71-133			
Perfluorooctanesulfonic acid (PFOS)	8.72	1.9	ng/L	9.01		96.8	65-140			
Perfluorononanoic acid (PFNA)	9.48	1.9	ng/L	9.74		97.3	69-130			

LCS Dup (B325808-BSD1)

Prepared: 12/15/22 Analyzed: 12/20/22

Perfluorobutanoic acid (PFBA)	9.55	2.0	ng/L	9.83		97.1	73-129	0.972	30	
Perfluorobutanesulfonic acid (PFBS)	8.36	2.0	ng/L	8.70		96.1	72-130	1.13	30	
Perfluoropentanoic acid (PFPeA)	9.65	2.0	ng/L	9.83		98.2	72-129	1.58	30	
Perfluorohexanoic acid (PFHxA)	9.61	2.0	ng/L	9.83		97.8	72-129	1.26	30	
11Cl-PF3OUdS (F53B Major)	7.51	2.0	ng/L	9.26		81.1	55.1-141	12.5	30	
9Cl-PF3ONS (F53B Minor)	7.82	2.0	ng/L	9.16		85.3	59.6-146	9.69	30	
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	8.94	2.0	ng/L	9.26		96.5	60.3-131	5.03	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.30	2.0	ng/L	9.83		94.5	37.6-167	3.51	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.68	2.0	ng/L	9.44		103	67-138	3.99	30	
Perfluorodecanoic acid (PFDA)	9.03	2.0	ng/L	9.83		91.9	71-129	0.846	30	
Perfluorododecanoic acid (PFDoA)	10.1	2.0	ng/L	9.83		103	72-134	1.42	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	8.28	2.0	ng/L	8.75		94.6	49.4-154	2.47	30	
Perfluoroheptanesulfonic acid (PFHpS)	9.95	2.0	ng/L	9.39		106	69-134	13.8	30	
N-EtFOSAA (NEtFOSAA)	10.8	2.0	ng/L	9.83		109	61-135	0.956	30	
N-MeFOSAA (NMeFOSAA)	12.7	2.0	ng/L	9.83		129	65-136	3.73	30	
Perfluorotetradecanoic acid (PFTA)	10.3	2.0	ng/L	9.83		105	71-132	4.61	30	
Perfluorotridecanoic acid (PFTTrDA)	11.1	2.0	ng/L	9.83		113	65-144	5.71	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.58	2.0	ng/L	9.19		104	63-143	3.72	30	
Perfluorodecanesulfonic acid (PFDS)	8.45	2.0	ng/L	9.49		89.0	53-142	1.93	30	
Perfluorooctanesulfonamide (FOSA)	11.1	2.0	ng/L	9.83		113	67-137	8.64	30	
Perfluorononanesulfonic acid (PFNS)	8.80	2.0	ng/L	9.44		93.2	69-127	5.95	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	10.5	2.0	ng/L	9.83		106	61.7-156	0.294	30	
Perfluoro-1-butanefulfonamide (FBSA)	9.81	2.0	ng/L	9.83		99.8	61.3-145	7.63	30	
Perfluorohexanesulfonic acid (PFHxS)	8.40	2.0	ng/L	9.00		93.4	68-131	1.63	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.42	2.0	ng/L	9.83		95.8	59.8-147	1.46	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	9.52	2.0	ng/L	9.83		96.8	59.5-146	1.78	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B325808 - SOP 454-PFAAS
LCS Dup (B325808-BSD1)

Prepared: 12/15/22 Analyzed: 12/20/22

6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.86	2.0	ng/L	9.34		94.9	64-140	12.3	30	
Perfluoropetanesulfonic acid (PFPeS)	9.07	2.0	ng/L	9.24		98.2	71-127	0.510	30	
Perfluoroundecanoic acid (PFUnA)	9.90	2.0	ng/L	9.83		101	69-133	2.56	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	9.45	2.0	ng/L	9.83		96.1	58.5-143	0.106	30	
Perfluoroheptanoic acid (PFHpA)	9.85	2.0	ng/L	9.83		100	72-130	0.874	30	
Perfluorooctanoic acid (PFOA)	10.4	2.0	ng/L	9.83		105	71-133	6.76	30	
Perfluorooctanesulfonic acid (PFOS)	8.95	2.0	ng/L	9.10		98.4	65-140	2.66	30	
Perfluorononanoic acid (PFNA)	9.65	2.0	ng/L	9.83		98.2	69-130	1.79	30	

Batch B326602 - SOP 454-PFAAS
Blank (B326602-BLK1)

Prepared: 12/23/22 Analyzed: 12/30/22

Perfluorobutanoic acid (PFBA)	ND	2.0	ng/L							
Perfluorobutanesulfonic acid (PFBS)	ND	2.0	ng/L							
Perfluoropentanoic acid (PFPeA)	ND	2.0	ng/L							
Perfluorohexanoic acid (PFHxA)	ND	2.0	ng/L							
11Cl-PF3OUdS (F53B Major)	ND	2.0	ng/L							
9Cl-PF3ONS (F53B Minor)	ND	2.0	ng/L							
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	ND	2.0	ng/L							
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	2.0	ng/L							
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	2.0	ng/L							
Perfluorodecanoic acid (PFDA)	ND	2.0	ng/L							
Perfluorododecanoic acid (PFDoA)	ND	2.0	ng/L							
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	2.0	ng/L							
Perfluoroheptanesulfonic acid (PFHpS)	ND	2.0	ng/L							
N-EtFOSAA (NEtFOSAA)	ND	2.0	ng/L							
N-MeFOSAA (NMeFOSAA)	ND	2.0	ng/L							
Perfluorotetradecanoic acid (PFTA)	ND	2.0	ng/L							
Perfluorotridecanoic acid (PFTTrDA)	ND	2.0	ng/L							
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	2.0	ng/L							
Perfluorodecanesulfonic acid (PFDS)	ND	2.0	ng/L							
Perfluorooctanesulfonamide (FOSA)	ND	2.0	ng/L							
Perfluorononanesulfonic acid (PFNS)	ND	2.0	ng/L							
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	2.0	ng/L							
Perfluoro-1-butanesulfonamide (FBSA)	ND	2.0	ng/L							
Perfluorohexanesulfonic acid (PFHxS)	ND	2.0	ng/L							
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	2.0	ng/L							
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	2.0	ng/L							
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	2.0	ng/L							
Perfluoropetanesulfonic acid (PFPeS)	ND	2.0	ng/L							
Perfluoroundecanoic acid (PFUnA)	ND	2.0	ng/L							
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	2.0	ng/L							
Perfluoroheptanoic acid (PFHpA)	ND	2.0	ng/L							
Perfluorooctanoic acid (PFOA)	ND	2.0	ng/L							
Perfluorooctanesulfonic acid (PFOS)	ND	2.0	ng/L							
Perfluorononanoic acid (PFNA)	ND	2.0	ng/L							

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B326602 - SOP 454-PFAAS
LCS (B326602-BS1)

Prepared: 12/23/22 Analyzed: 12/30/22

Perfluorobutanoic acid (PFBA)	11.9	2.1	ng/L	10.6		113	73-129			
Perfluorobutanesulfonic acid (PFBS)	9.98	2.1	ng/L	9.35		107	72-130			
Perfluoropentanoic acid (PFPeA)	12.2	2.1	ng/L	10.6		116	72-129			
Perfluorohexanoic acid (PFHxA)	12.1	2.1	ng/L	10.6		115	72-129			
11Cl-PF3OUdS (F53B Major)	9.70	2.1	ng/L	9.96		97.4	55.1-141			
9Cl-PF3ONS (F53B Minor)	10.5	2.1	ng/L	9.85		107	59.6-146			
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	10.8	2.1	ng/L	9.96		109	60.3-131			
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10.7	2.1	ng/L	10.6		102	37.6-167			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	12.5	2.1	ng/L	10.1		123	67-138			
Perfluorodecanoic acid (PFDA)	12.7	2.1	ng/L	10.6		120	71-129			
Perfluorododecanoic acid (PFDoA)	11.8	2.1	ng/L	10.6		112	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	9.86	2.1	ng/L	9.41		105	49.4-154			
Perfluoroheptanesulfonic acid (PFHpS)	9.08	2.1	ng/L	10.1		90.0	69-134			
N-EtFOSAA (NEtFOSAA)	10.9	2.1	ng/L	10.6		103	61-135			
N-MeFOSAA (NMeFOSAA)	14.4	2.1	ng/L	10.6		136	65-136			
Perfluorotetradecanoic acid (PFTA)	12.7	2.1	ng/L	10.6		120	71-132			
Perfluorotridecanoic acid (PFTrDA)	13.3	2.1	ng/L	10.6		126	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.1	2.1	ng/L	9.88		102	63-143			
Perfluorodecanesulfonic acid (PFDS)	9.82	2.1	ng/L	10.2		96.3	53-142			
Perfluorooctanesulfonamide (FOSA)	13.4	2.1	ng/L	10.6		127	67-137			
Perfluorononanesulfonic acid (PFNS)	9.62	2.1	ng/L	10.1		94.8	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	11.8	2.1	ng/L	10.6		111	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	12.0	2.1	ng/L	10.6		114	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	10.4	2.1	ng/L	9.67		108	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	11.5	2.1	ng/L	10.6		109	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	11.0	2.1	ng/L	10.6		104	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	11.8	2.1	ng/L	10.0		118	64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.98	2.1	ng/L	9.93		100	71-127			
Perfluoroundecanoic acid (PFUnA)	12.6	2.1	ng/L	10.6		120	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.3	2.1	ng/L	10.6		107	58.5-143			
Perfluoroheptanoic acid (PFHpA)	12.1	2.1	ng/L	10.6		114	72-130			
Perfluorooctanoic acid (PFOA)	11.7	2.1	ng/L	10.6		111	71-133			
Perfluorooctanesulfonic acid (PFOS)	11.5	2.1	ng/L	9.78		117	65-140			
Perfluorononanoic acid (PFNA)	12.6	2.1	ng/L	10.6		119	69-130			

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
D-01	Sample extracted/prepared at a dilution due to sample matrix interference.
H-06	Sample was extracted past the recommended holding time.
MS-09	Matrix spike recovery and/or matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a low bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-12	Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
MS-22	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.
MS-23	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is outside of the method specified criteria. Reduced precision anticipated for any reported result for this compound.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
PF-20	Quantifying ion signal to noise ratio is <10. Detection is suspect.
PF-21	Qualifying ion signal to noise ratio is <3. Detection is suspect.
PF-22	Qualifier ion ratio >150% of associated calibration. Detection is suspect.
PF-23	Qualifier ion ratio <50% of associated calibration. Detection is suspect.
R-06	Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.
S-29	Extracted Internal Standard is outside of control limits.
V-05	Continuing calibration verification (CCV) did not meet method specifications and was biased on the low side for this compound.
V-20	Continuing calibration verification (CCV) did not meet method specifications and was biased on the high side. Data validation is not affected since sample result was "not detected" for this compound.
Z-01	Sample re-extracted due to EIS outliers. Re-extraction yielded conforming results. Both results reported.

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PFW-1 (22K2021-01) <div>Lab File ID: 22K2021-01.d</div> <div>Analyzed: 12/15/22 05:05</div>									
M8FOSA	152754.5	3.9486	236,835.00	3.9486	64	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	94633.36	2.472183	127,593.00	2.472183	74	50 - 150	0.0000	+/-0.50	
M2PFTA	386483.5	4.2892	883,350.00	4.2892	44	50 - 150	0.0000	+/-0.50	*
MPFBA	196682.2	1.033533	405,224.00	1.025233	49	50 - 150	0.0083	+/-0.50	*
M3HFPO-DA	85406.66	2.81475	94,452.00	2.81475	90	50 - 150	0.0000	+/-0.50	
M6PFDA	375271.5	3.7555	509,721.00	3.763467	74	50 - 150	-0.0080	+/-0.50	
M3PFBS	89985.2	1.8701	114,251.00	1.8701	79	50 - 150	0.0000	+/-0.50	
M7PFUnA	341122.7	3.906067	559,117.00	3.906067	61	50 - 150	0.0000	+/-0.50	
M5PFPeA	242391.4	1.690017	386,004.00	1.690017	63	50 - 150	0.0000	+/-0.50	
M3PFHxS	42233.01	3.177667	82,239.00	3.169583	51	50 - 150	0.0081	+/-0.50	
M4PFHpA	455218.9	3.138483	675,794.00	3.138483	67	50 - 150	0.0000	+/-0.50	
M8PFOA	387289.2	3.413117	614,656.00	3.413117	63	50 - 150	0.0000	+/-0.50	
M8PFOS	10907.81	3.692083	91,052.00	3.60425	12	50 - 150	0.0878	+/-0.50	*
M9PFNA	119263.8	3.605283	493,594.00	3.605283	24	50 - 150	0.0000	+/-0.50	*
MPFDoA	319003.7	4.048683	536,571.00	4.048683	59	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	92987.47	3.913533	158,959.00	3.913533	58	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	131090	3.833783	191,022.00	3.833783	69	50 - 150	0.0000	+/-0.50	
PFW-1 (22K2021-01RE1) <div>Lab File ID: 22K2021-01RE1.d</div> <div>Analyzed: 12/15/22 23:10</div>									
M2-8:2FTS	187566.2	3.754983	143,640.00	3.754983	131	50 - 150	0.0000	+/-0.50	
MPFBA	407524.3	1.025233	363,562.00	1.025233	112	50 - 150	0.0000	+/-0.50	
M7PFUnA	611351.1	3.906067	542,504.00	3.906067	113	50 - 150	0.0000	+/-0.50	
M5PFPeA	429288.1	1.690017	350,297.00	1.690017	123	50 - 150	0.0000	+/-0.50	
M5PFHxA	687050.3	2.555917	571,594.00	2.555917	120	50 - 150	0.0000	+/-0.50	
M3PFHxS	87358.8	3.169583	72,409.00	3.169583	121	50 - 150	0.0000	+/-0.50	
M4PFHpA	720528.5	3.138483	607,601.00	3.138483	119	50 - 150	0.0000	+/-0.50	
M8PFOA	656468.9	3.413117	605,485.00	3.413117	108	50 - 150	0.0000	+/-0.50	
M8PFOS	69666.07	3.60425	81,727.00	3.60425	85	50 - 150	0.0000	+/-0.50	
PFW-1 (22K2021-01RE2) <div>Lab File ID: 22K2021-01RE6.d</div> <div>Analyzed: 12/27/22 11:27</div>									
M2-6:2FTS	126651.3	3.4205	130,563.00	3.4205	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	74038.25	3.193817	82,155.00	3.193817	90	50 - 150	0.0000	+/-0.50	
M8PFOS	81777.02	3.620217	91,262.00	3.620217	90	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PFW-2 (22K2021-02) Lab File ID: 22K2021-02.d Analyzed: 12/15/22 05:13									
M8FOSA	127090	3.9486	236,835.00	3.9486	54	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	102461.3	2.472183	127,593.00	2.472183	80	50 - 150	0.0000	+/-0.50	
M2PFTA	232298.8	4.2892	883,350.00	4.2892	26	50 - 150	0.0000	+/-0.50	*
MPFBA	185350	1.033533	405,224.00	1.025233	46	50 - 150	0.0083	+/-0.50	*
M3HFPO-DA	65589.05	2.81475	94,452.00	2.81475	69	50 - 150	0.0000	+/-0.50	
M6PFDA	368383.6	3.7555	509,721.00	3.763467	72	50 - 150	-0.0080	+/-0.50	
M3PFBS	86533.73	1.8701	114,251.00	1.8701	76	50 - 150	0.0000	+/-0.50	
M7PFUnA	332831.3	3.906067	559,117.00	3.906067	60	50 - 150	0.0000	+/-0.50	
M5PFPeA	250994.3	1.690017	386,004.00	1.690017	65	50 - 150	0.0000	+/-0.50	
M5PFHxA	438455.2	2.564133	652,040.00	2.564117	67	50 - 150	0.0000	+/-0.50	
M3PFHxS	62057.18	3.169583	82,239.00	3.169583	75	50 - 150	0.0000	+/-0.50	
M4PFHpA	492665.1	3.138483	675,794.00	3.138483	73	50 - 150	0.0000	+/-0.50	
M8PFOA	462360.6	3.413117	614,656.00	3.413117	75	50 - 150	0.0000	+/-0.50	
M8PFOS	38466	3.60425	91,052.00	3.60425	42	50 - 150	0.0000	+/-0.50	*
M9PFNA	205362.9	3.605283	493,594.00	3.605283	42	50 - 150	0.0000	+/-0.50	*
MPFDoA	266142.9	4.048683	536,571.00	4.048683	50	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	88924.87	3.913533	158,959.00	3.913533	56	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	121087.8	3.833783	191,022.00	3.833783	63	50 - 150	0.0000	+/-0.50	
PFW-2 (22K2021-02RE1) Lab File ID: 22K2021-02RE1.d Analyzed: 12/15/22 23:24									
M2-8:2FTS	156977.7	3.754983	143,640.00	3.754983	109	50 - 150	0.0000	+/-0.50	
M7PFUnA	562121.7	3.906067	542,504.00	3.906067	104	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	142008.3	3.39635	128,403.00	3.39635	111	50 - 150	0.0000	+/-0.50	
M5PFPeA	438387.8	1.690017	350,297.00	1.690017	125	50 - 150	0.0000	+/-0.50	
M5PFHxA	700642.8	2.564133	571,594.00	2.555917	123	50 - 150	0.0082	+/-0.50	
M3PFHxS	91420.98	3.169583	72,409.00	3.169583	126	50 - 150	0.0000	+/-0.50	
M8PFOS	91592.4	3.60425	81,727.00	3.60425	112	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PFW-5 (22K2021-03) Lab File ID: 22K2021-03.d Analyzed: 12/15/22 05:20									
M8FOSA	131258.1	3.9486	236,835.00	3.9486	55	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	52515.68	2.472183	127,593.00	2.472183	41	50 - 150	0.0000	+/-0.50	*
M2PFTA	416237.9	4.2892	883,350.00	4.2892	47	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	83562.49	3.76295	106,068.00	3.754983	79	50 - 150	0.0080	+/-0.50	
MPFBA	248570.7	1.033533	405,224.00	1.025233	61	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	82033.29	2.81475	94,452.00	2.81475	87	50 - 150	0.0000	+/-0.50	
M6PFDA	377844.2	3.763467	509,721.00	3.763467	74	50 - 150	0.0000	+/-0.50	
M3PFBS	86049.05	1.8701	114,251.00	1.8701	75	50 - 150	0.0000	+/-0.50	
M7PFUnA	337613.1	3.906067	559,117.00	3.906067	60	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	78515.06	3.4044	112,597.00	3.4044	70	50 - 150	0.0000	+/-0.50	
M5PFPeA	277875.5	1.690017	386,004.00	1.690017	72	50 - 150	0.0000	+/-0.50	
M5PFHxA	465180.7	2.564117	652,040.00	2.564117	71	50 - 150	0.0000	+/-0.50	
M3PFHxS	54348.54	3.169583	82,239.00	3.169583	66	50 - 150	0.0000	+/-0.50	
M4PFHpA	488564.8	3.138483	675,794.00	3.138483	72	50 - 150	0.0000	+/-0.50	
M8PFOA	459631.3	3.413117	614,656.00	3.413117	75	50 - 150	0.0000	+/-0.50	
M8PFOS	31731.27	3.60425	91,052.00	3.60425	35	50 - 150	0.0000	+/-0.50	*
M9PFNA	176098	3.605283	493,594.00	3.605283	36	50 - 150	0.0000	+/-0.50	*
MPFDoA	261292	4.048683	536,571.00	4.048683	49	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	77517.95	3.913533	158,959.00	3.913533	49	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	92480.1	3.833783	191,022.00	3.833783	48	50 - 150	0.0000	+/-0.50	*
PFW-5 (22K2021-03RE1) Lab File ID: 22K2021-03RE1.d Analyzed: 12/15/22 23:32									
M3PFHxS	80714.77	3.169583	72,409.00	3.169583	111	50 - 150	0.0000	+/-0.50	
M8PFOS	88181.85	3.60425	81,727.00	3.60425	108	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PFW-5 (22K2021-03RE2) Lab File ID: 22K2021-03RE2.d Analyzed: 12/30/22 10:23									
M8FOSA	142013.7	3.932617	205,724.00	3.932617	69	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	86994.37	2.472183	106,792.00	2.4804	81	50 - 150	-0.0082	+/-0.50	
M2PFTA	449685.5	4.297266	562,114.00	4.297266	80	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	174099.1	3.76295	218,600.00	3.76295	80	50 - 150	0.0000	+/-0.50	
MPFBA	244562.8	1.04185	267,115.00	1.04185	92	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	96180.14	2.806567	89,963.00	2.81475	107	50 - 150	-0.0082	+/-0.50	
M6PFDA	453219.4	3.763467	436,896.00	3.763467	104	50 - 150	0.0000	+/-0.50	
M3PFBS	116935.4	1.878383	94,401.00	1.878383	124	50 - 150	0.0000	+/-0.50	
M7PFUnA	400515.5	3.906067	410,900.00	3.91405	97	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	86181.62	3.4044	100,580.00	3.4044	86	50 - 150	0.0000	+/-0.50	
M5PFPeA	288966.4	1.698283	261,820.00	1.698283	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	490019.7	2.564117	419,158.00	2.564117	117	50 - 150	0.0000	+/-0.50	
M3PFHxS	66404.52	3.169583	65,210.00	3.17765	102	50 - 150	-0.0081	+/-0.50	
M4PFHpA	516226.9	3.138483	428,379.00	3.138483	121	50 - 150	0.0000	+/-0.50	
M8PFOA	488121	3.413117	413,621.00	3.421167	118	50 - 150	-0.0080	+/-0.50	
M8PFOS	36942.2	3.60425	63,625.00	3.60425	58	50 - 150	0.0000	+/-0.50	
M9PFNA	197924.4	3.605283	343,397.00	3.605283	58	50 - 150	0.0000	+/-0.50	
MPFDoA	345188.3	4.048683	336,792.00	4.048683	102	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	129177.9	3.913533	128,194.00	3.921533	101	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	149538.3	3.84175	166,732.00	3.841733	90	50 - 150	0.0000	+/-0.50	
PFW-5 (22K2021-03RE3) Lab File ID: 22K2021-03RE3.d Analyzed: 01/11/23 10:06									
M3PFHxS	9408.761	3.185733	9,834.00	3.17765	96	50 - 150	0.0081	+/-0.50	
M8PFOS	9005.299	3.612217	9,789.00	3.612217	92	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
OW-8A (22K2021-04) Lab File ID: 22K2021-04.d Analyzed: 12/15/22 05:27									
M8FOSA	133592.8	3.9486	236,835.00	3.9486	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	62228.26	2.4804	127,593.00	2.472183	49	50 - 150	0.0082	+/-0.50	*
M2PFTA	137309.5	4.2892	883,350.00	4.2892	16	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	85061.63	3.754983	106,068.00	3.754983	80	50 - 150	0.0000	+/-0.50	
MPFBA	264959.9	1.033533	405,224.00	1.025233	65	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	84347.55	2.81475	94,452.00	2.81475	89	50 - 150	0.0000	+/-0.50	
M6PFDA	367353	3.7555	509,721.00	3.763467	72	50 - 150	-0.0080	+/-0.50	
M3PFBS	97045.84	1.878383	114,251.00	1.8701	85	50 - 150	0.0083	+/-0.50	
M7PFUnA	316736.8	3.906067	559,117.00	3.906067	57	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	87938.32	3.4044	112,597.00	3.4044	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	317553.6	1.698283	386,004.00	1.690017	82	50 - 150	0.0083	+/-0.50	
M5PFHxA	527100.6	2.564133	652,040.00	2.564117	81	50 - 150	0.0000	+/-0.50	
M3PFHxS	66550.14	3.177667	82,239.00	3.169583	81	50 - 150	0.0081	+/-0.50	
M4PFHpA	552549.1	3.138483	675,794.00	3.138483	82	50 - 150	0.0000	+/-0.50	
M8PFOA	493010.3	3.413117	614,656.00	3.413117	80	50 - 150	0.0000	+/-0.50	
M8PFOS	66638.53	3.60425	91,052.00	3.60425	73	50 - 150	0.0000	+/-0.50	
M9PFNA	386894.9	3.605283	493,594.00	3.605283	78	50 - 150	0.0000	+/-0.50	
MPFDoA	228767	4.048683	536,571.00	4.048683	43	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	87856.48	3.913533	158,959.00	3.913533	55	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	113201.4	3.833783	191,022.00	3.833783	59	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HSW-6 (22K2021-05) Lab File ID: 22K2021-05.d Analyzed: 12/15/22 05:34									
M8FOSA	72397.84	3.9486	236,835.00	3.9486	31	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	140014	2.472183	127,593.00	2.472183	110	50 - 150	0.0000	+/-0.50	
M2PFTA	6007.845	4.2892	883,350.00	4.2892	01	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	115572.1	3.754983	106,068.00	3.754983	109	50 - 150	0.0000	+/-0.50	
MPFBA	169939.8	1.025233	405,224.00	1.025233	42	50 - 150	0.0000	+/-0.50	*
M3HFPO-DA	80310.06	2.806567	94,452.00	2.81475	85	50 - 150	-0.0082	+/-0.50	
M6PFDA	292553	3.7555	509,721.00	3.763467	57	50 - 150	-0.0080	+/-0.50	
M3PFBS	90601.33	1.8701	114,251.00	1.8701	79	50 - 150	0.0000	+/-0.50	
M5PFPeA	237621	1.690017	386,004.00	1.690017	62	50 - 150	0.0000	+/-0.50	
M5PFHxA	431481.5	2.555917	652,040.00	2.564117	66	50 - 150	-0.0082	+/-0.50	
M3PFHxS	59561.01	3.169583	82,239.00	3.169583	72	50 - 150	0.0000	+/-0.50	
M4PFHpA	495292.2	3.138483	675,794.00	3.138483	73	50 - 150	0.0000	+/-0.50	
M8PFOA	454303.2	3.413117	614,656.00	3.413117	74	50 - 150	0.0000	+/-0.50	
M8PFOS	29900.52	3.60425	91,052.00	3.60425	33	50 - 150	0.0000	+/-0.50	*
M9PFNA	191275.7	3.605283	493,594.00	3.605283	39	50 - 150	0.0000	+/-0.50	*
MPFDaA	69691.3	4.048683	536,571.00	4.048683	13	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	61373.4	3.913533	158,959.00	3.913533	39	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	99161.63	3.833783	191,022.00	3.833783	52	50 - 150	0.0000	+/-0.50	
HSW-6 (22K2021-05RE1) Lab File ID: 22K2021-05RE1.d Analyzed: 12/15/22 23:39									
MPFBA	406946.9	1.025233	363,562.00	1.025233	112	50 - 150	0.0000	+/-0.50	
M7PFUnA	543833.2	3.906067	542,504.00	3.906067	100	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	143848	3.39635	128,403.00	3.39635	112	50 - 150	0.0000	+/-0.50	
M5PFPeA	425511.1	1.690017	350,297.00	1.690017	121	50 - 150	0.0000	+/-0.50	
M5PFHxA	682569.8	2.555917	571,594.00	2.555917	119	50 - 150	0.0000	+/-0.50	
M3PFHxS	84684.44	3.169583	72,409.00	3.169583	117	50 - 150	0.0000	+/-0.50	
M4PFHpA	677351.8	3.138483	607,601.00	3.138483	111	50 - 150	0.0000	+/-0.50	
M8PFOS	88229.57	3.60425	81,727.00	3.60425	108	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-1 (22K2021-06) Lab File ID: 22K2021-06.d Analyzed: 12/15/22 05:42									
M8FOSA	145050.2	3.9486	236,835.00	3.9486	61	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	87292.42	2.472183	127,593.00	2.472183	68	50 - 150	0.0000	+/-0.50	
M2PFTA	398450.3	4.2892	883,350.00	4.2892	45	50 - 150	0.0000	+/-0.50	*
MPFBA	183615.4	1.033533	405,224.00	1.025233	45	50 - 150	0.0083	+/-0.50	*
M3HFPO-DA	84439.84	2.806567	94,452.00	2.81475	89	50 - 150	-0.0082	+/-0.50	
M6PFDA	349830	3.7555	509,721.00	3.763467	69	50 - 150	-0.0080	+/-0.50	
M3PFBS	83283	1.8701	114,251.00	1.8701	73	50 - 150	0.0000	+/-0.50	
M7PFUnA	301501	3.906067	559,117.00	3.906067	54	50 - 150	0.0000	+/-0.50	
M5PFPeA	229062.3	1.690017	386,004.00	1.690017	59	50 - 150	0.0000	+/-0.50	
M5PFHxA	425450.4	2.555917	652,040.00	2.564117	65	50 - 150	-0.0082	+/-0.50	
M3PFHxS	51562.78	3.169583	82,239.00	3.169583	63	50 - 150	0.0000	+/-0.50	
M4PFHpA	421464.1	3.138483	675,794.00	3.138483	62	50 - 150	0.0000	+/-0.50	
M8PFOA	431043.2	3.413117	614,656.00	3.413117	70	50 - 150	0.0000	+/-0.50	
M8PFOS	37659.14	3.60425	91,052.00	3.60425	41	50 - 150	0.0000	+/-0.50	*
M9PFNA	255611	3.605283	493,594.00	3.605283	52	50 - 150	0.0000	+/-0.50	
MPFDoA	286558.3	4.048683	536,571.00	4.048683	53	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	77892.31	3.913533	158,959.00	3.913533	49	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	118550.4	3.833783	191,022.00	3.833783	62	50 - 150	0.0000	+/-0.50	
PC-1 (22K2021-06RE1) Lab File ID: 22K2021-06RE1.d Analyzed: 12/15/22 23:46									
M2-8:2FTS	166408.2	3.754983	143,640.00	3.754983	116	50 - 150	0.0000	+/-0.50	
MPFBA	451518.8	1.025233	363,562.00	1.025233	124	50 - 150	0.0000	+/-0.50	
M7PFUnA	618055.4	3.906067	542,504.00	3.906067	114	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	156845.3	3.39635	128,403.00	3.39635	122	50 - 150	0.0000	+/-0.50	
M5PFPeA	454330.4	1.690017	350,297.00	1.690017	130	50 - 150	0.0000	+/-0.50	
M5PFHxA	733466.3	2.555917	571,594.00	2.555917	128	50 - 150	0.0000	+/-0.50	
M3PFHxS	95883.46	3.169583	72,409.00	3.169583	132	50 - 150	0.0000	+/-0.50	
M4PFHpA	771165.7	3.138483	607,601.00	3.138483	127	50 - 150	0.0000	+/-0.50	
M8PFOA	722042.1	3.413117	605,485.00	3.413117	119	50 - 150	0.0000	+/-0.50	
M8PFOS	102452.7	3.60425	81,727.00	3.60425	125	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-1 (22K2021-06RE2) Lab File ID: 22K2021-06RE2.d Analyzed: 12/30/22 10:30									
M8FOSA	200608.4	3.932617	205,724.00	3.932617	98	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	144549.5	2.472183	106,792.00	2.4804	135	50 - 150	-0.0082	+/-0.50	
M2PFTA	583084.3	4.2892	562,114.00	4.297266	104	50 - 150	-0.0081	+/-0.50	
MPFBA	205376	1.04185	267,115.00	1.04185	77	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	75020.11	2.806567	89,963.00	2.81475	83	50 - 150	-0.0082	+/-0.50	
M6PFDA	500593.1	3.763483	436,896.00	3.763467	115	50 - 150	0.0000	+/-0.50	
M3PFBS	125879.3	1.8701	94,401.00	1.878383	133	50 - 150	-0.0083	+/-0.50	
M5PFPeA	273694.7	1.698283	261,820.00	1.698283	105	50 - 150	0.0000	+/-0.50	
M5PFHxA	495212.1	2.555917	419,158.00	2.564117	118	50 - 150	-0.0082	+/-0.50	
M3PFHxS	72497.48	3.169583	65,210.00	3.17765	111	50 - 150	-0.0081	+/-0.50	
M4PFHpA	500758.2	3.138483	428,379.00	3.138483	117	50 - 150	0.0000	+/-0.50	
M8PFOA	517311.1	3.413133	413,621.00	3.421167	125	50 - 150	-0.0080	+/-0.50	
M8PFOS	69631.21	3.60425	63,625.00	3.60425	109	50 - 150	0.0000	+/-0.50	
M9PFNA	349187.3	3.605283	343,397.00	3.605283	102	50 - 150	0.0000	+/-0.50	
MPFDoA	396417.5	4.048683	336,792.00	4.048683	118	50 - 150	0.0000	+/-0.50	
D5-NeFOSAA	152686.2	3.913533	128,194.00	3.921533	119	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	180351.5	3.833783	166,732.00	3.841733	108	50 - 150	-0.0080	+/-0.50	
PC-1 (22K2021-06RE3) Lab File ID: 22K2021-06RE3.d Analyzed: 01/11/23 10:20									
M2-8:2FTS	17610.3	3.770917	28,927.00	3.770917	61	50 - 150	0.0000	+/-0.50	
MPFBA	32266.53	1.04185	34,358.00	1.04185	94	50 - 150	0.0000	+/-0.50	
M7PFUnA	48549.22	3.91405	47,823.00	3.91405	102	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	15036.34	3.412433	13,374.00	3.412433	112	50 - 150	0.0000	+/-0.50	
M5PFPeA	31813.88	1.706567	32,546.00	1.714833	98	50 - 150	-0.0083	+/-0.50	
M5PFHxA	49541.83	2.58055	50,625.00	2.58055	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	9507.1	3.17765	9,834.00	3.17765	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	49250.52	3.14655	53,551.00	3.14655	92	50 - 150	0.0000	+/-0.50	
M8PFOA	48565.71	3.421167	48,566.00	3.421167	100	50 - 150	0.0000	+/-0.50	
M8PFOS	10305.37	3.612217	9,789.00	3.612217	105	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-6A (22K2021-07) Lab File ID: 22K2021-07.d Analyzed: 12/15/22 05:49									
M8FOSA	104547	3.9486	236,835.00	3.9486	44	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	71946.67	2.472183	127,593.00	2.472183	56	50 - 150	0.0000	+/-0.50	
M2PFTA	255186.3	4.2892	883,350.00	4.2892	29	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	86353.75	3.754983	106,068.00	3.754983	81	50 - 150	0.0000	+/-0.50	
MPFBA	195117.5	1.033533	405,224.00	1.025233	48	50 - 150	0.0083	+/-0.50	*
M3HFPO-DA	80170.42	2.81475	94,452.00	2.81475	85	50 - 150	0.0000	+/-0.50	
M6PFDA	354133.5	3.7555	509,721.00	3.763467	69	50 - 150	-0.0080	+/-0.50	
M3PFBS	83006.5	1.878383	114,251.00	1.8701	73	50 - 150	0.0083	+/-0.50	
M7PFUnA	321066.2	3.906067	559,117.00	3.906067	57	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	105300.4	3.4044	112,597.00	3.4044	94	50 - 150	0.0000	+/-0.50	
M5PFPeA	265016.5	1.690017	386,004.00	1.690017	69	50 - 150	0.0000	+/-0.50	
M5PFHxA	449683.9	2.564133	652,040.00	2.564117	69	50 - 150	0.0000	+/-0.50	
M3PFHxS	60982.79	3.169583	82,239.00	3.169583	74	50 - 150	0.0000	+/-0.50	
M4PFHpA	464851.5	3.138483	675,794.00	3.138483	69	50 - 150	0.0000	+/-0.50	
M8PFOA	446983.7	3.413117	614,656.00	3.413117	73	50 - 150	0.0000	+/-0.50	
M8PFOS	51061.93	3.60425	91,052.00	3.60425	56	50 - 150	0.0000	+/-0.50	
M9PFNA	293841.2	3.605283	493,594.00	3.605283	60	50 - 150	0.0000	+/-0.50	
MPFDoA	250107.5	4.048683	536,571.00	4.048683	47	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	84125.8	3.913533	158,959.00	3.913533	53	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	112740.9	3.833783	191,022.00	3.833783	59	50 - 150	0.0000	+/-0.50	
PC-6A (22K2021-07RE1) Lab File ID: 22K2021-07RE1.d Analyzed: 12/15/22 23:53									
M8PFOS	98795.94	3.60425	81,727.00	3.60425	121	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-11 (22K2021-08) <div>Lab File ID: 22K2021-08.d</div> <div>Analyzed: 12/09/22 02:08</div>									
M8FOSA	154147.7	3.9726	246,442.00	3.9726	63	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	101716.3	2.349033	90,043.00	2.340817	113	50 - 150	0.0082	+/-0.50	
M2PFTA	373119.7	4.240716	868,119.00	4.240716	43	50 - 150	0.0000	+/-0.50	*
MPFBA	310615.8	1.050167	397,253.00	1.050167	78	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	119764.4	2.674817	86,854.00	2.674817	138	50 - 150	0.0000	+/-0.50	
M6PFDA	502379.3	3.74755	533,863.00	3.74755	94	50 - 150	0.0000	+/-0.50	
M3PFBS	111809.5	1.777867	95,878.00	1.777867	117	50 - 150	0.0000	+/-0.50	
M7PFUnA	531808.9	3.881917	575,723.00	3.881917	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	347475.2	1.623833	318,641.00	1.623833	109	50 - 150	0.0000	+/-0.50	
M5PFHxA	645043.6	2.424267	569,553.00	2.416067	113	50 - 150	0.0082	+/-0.50	
M3PFHxS	87137.91	3.145367	88,565.00	3.14535	98	50 - 150	0.0000	+/-0.50	
M4PFHpA	698690	3.097167	668,068.00	3.097167	105	50 - 150	0.0000	+/-0.50	
M8PFOA	649441.7	3.405083	625,484.00	3.405083	104	50 - 150	0.0000	+/-0.50	
M8PFOS	54976.73	3.596283	83,017.00	3.596267	66	50 - 150	0.0000	+/-0.50	
M9PFNA	325854.6	3.597317	477,041.00	3.5973	68	50 - 150	0.0000	+/-0.50	
MPFDoA	508860.2	4.008733	567,925.00	4.008733	90	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	145491	3.889417	151,944.00	3.889417	96	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	219817.4	3.81745	204,022.00	3.81745	108	50 - 150	0.0000	+/-0.50	
PC-11 (22K2021-08RE1) <div>Lab File ID: 22K2021-08RE1.d</div> <div>Analyzed: 12/15/22 22:12</div>									
M2-8:2FTS	95504.55	3.754983	143,640.00	3.754983	66	50 - 150	0.0000	+/-0.50	
M7PFUnA	541386.8	3.906067	542,504.00	3.906067	100	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	85995	3.39635	128,403.00	3.39635	67	50 - 150	0.0000	+/-0.50	
M5PFPeA	445231.8	1.690017	350,297.00	1.690017	127	50 - 150	0.0000	+/-0.50	
M5PFHxA	712390.2	2.564117	571,594.00	2.564133	125	50 - 150	0.0000	+/-0.50	
M3PFHxS	85713.15	3.169583	72,409.00	3.169583	118	50 - 150	0.0000	+/-0.50	
M4PFHpA	696058.2	3.138483	607,601.00	3.138483	115	50 - 150	0.0000	+/-0.50	
M8PFOA	672383.7	3.413117	605,485.00	3.413117	111	50 - 150	0.0000	+/-0.50	
M8PFOS	83645.88	3.60425	81,727.00	3.60425	102	50 - 150	0.0000	+/-0.50	
PC-11 (22K2021-08RE2) <div>Lab File ID: 22K2021-08RE2.d</div> <div>Analyzed: 12/15/22 22:19</div>									
M8PFOS	94757.98	3.60425	81,727.00	3.60425	116	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-14 (22K2021-09) Lab File ID: 22K2021-09.d Analyzed: 12/15/22 05:56									
M8FOSA	80405.3	3.9486	236,835.00	3.9486	34	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	64063.92	2.472183	127,593.00	2.472183	50	50 - 150	0.0000	+/-0.50	
M2PFTA	88299.93	4.2892	883,350.00	4.2892	10	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	87464.09	3.754983	106,068.00	3.754983	82	50 - 150	0.0000	+/-0.50	
MPFBA	203472.1	1.033533	405,224.00	1.025233	50	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	74351.43	2.81475	94,452.00	2.81475	79	50 - 150	0.0000	+/-0.50	
M6PFDA	293434.5	3.7555	509,721.00	3.763467	58	50 - 150	-0.0080	+/-0.50	
M3PFBS	86014.58	1.8701	114,251.00	1.8701	75	50 - 150	0.0000	+/-0.50	
M7PFUnA	262600.8	3.906067	559,117.00	3.906067	47	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	109010.5	3.39635	112,597.00	3.4044	97	50 - 150	-0.0080	+/-0.50	
M5PFPeA	261458.4	1.690017	386,004.00	1.690017	68	50 - 150	0.0000	+/-0.50	
M5PFHxA	455513.8	2.564133	652,040.00	2.564117	70	50 - 150	0.0000	+/-0.50	
M3PFHxS	58457.05	3.169583	82,239.00	3.169583	71	50 - 150	0.0000	+/-0.50	
M4PFHpA	474799.2	3.138483	675,794.00	3.138483	70	50 - 150	0.0000	+/-0.50	
M8PFOA	431805.1	3.413117	614,656.00	3.413117	70	50 - 150	0.0000	+/-0.50	
M8PFOS	46860.14	3.60425	91,052.00	3.60425	51	50 - 150	0.0000	+/-0.50	
M9PFNA	249750.5	3.605283	493,594.00	3.605283	51	50 - 150	0.0000	+/-0.50	
MPFDoA	158097.8	4.048683	536,571.00	4.048683	29	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	80651.98	3.913533	158,959.00	3.913533	51	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	108444.9	3.833783	191,022.00	3.833783	57	50 - 150	0.0000	+/-0.50	
PC-14 (22K2021-09RE1) Lab File ID: 22K2021-09RE1.d Analyzed: 12/16/22 00:00									
M3PFHxS	87208.95	3.169583	72,409.00	3.169583	120	50 - 150	0.0000	+/-0.50	
M8PFOS	93859.54	3.60425	81,727.00	3.60425	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-14 (22K2021-09RE2) Lab File ID: 22K2021-09RE2.d Analyzed: 12/20/22 14:29									
M8FOSA	196904.1	3.9486	269,671.00	3.9486	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	129414.7	2.4886	173,380.00	2.4886	75	50 - 150	0.0000	+/-0.50	
M2PFTA	520241.5	4.297266	775,042.00	4.297266	67	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	141513.8	3.76295	141,290.00	3.76295	100	50 - 150	0.0000	+/-0.50	
MPFBA	207277.4	1.04185	340,287.00	1.04185	61	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	93226.72	2.822933	90,729.00	2.822933	103	50 - 150	0.0000	+/-0.50	
M6PFDA	422193.1	3.763483	479,584.00	3.763467	88	50 - 150	0.0000	+/-0.50	
M3PFBS	115884.6	1.886683	128,229.00	1.886667	90	50 - 150	0.0000	+/-0.50	
M7PFUnA	465651.1	3.914067	517,421.00	3.914067	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	188324.5	3.4044	150,815.00	3.4044	125	50 - 150	0.0000	+/-0.50	
M5PFPeA	279631.2	1.706567	333,389.00	1.706567	84	50 - 150	0.0000	+/-0.50	
M5PFHxA	507828.3	2.572333	550,327.00	2.58055	92	50 - 150	-0.0082	+/-0.50	
M3PFHxS	79193.23	3.177667	87,862.00	3.177667	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	545861.6	3.14655	575,756.00	3.14655	95	50 - 150	0.0000	+/-0.50	
M8PFOA	502018	3.421183	546,781.00	3.421167	92	50 - 150	0.0000	+/-0.50	
M8PFOS	57969.29	3.612233	91,121.00	3.612233	64	50 - 150	0.0000	+/-0.50	
M9PFNA	301243.3	3.613267	473,423.00	3.613267	64	50 - 150	0.0000	+/-0.50	
MPFDoA	398199.7	4.056667	476,847.00	4.056667	84	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	156108.2	3.921533	181,660.00	3.921533	86	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	182520.3	3.84175	188,780.00	3.84175	97	50 - 150	0.0000	+/-0.50	
PC-14 (22K2021-09RE3) Lab File ID: 22K2021-09RE3.d Analyzed: 12/21/22 16:31									
M3PFHxS	79801.7	3.185733	87,656.00	3.185733	91	50 - 150	0.0000	+/-0.50	
M8PFOS	84894.43	3.612233	86,739.00	3.612233	98	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-16D (22K2021-10) Lab File ID: 22K2021-10.d Analyzed: 12/15/22 06:03									
M8FOSA	28701.81	3.9486	236,835.00	3.9486	12	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	108564.6	2.472183	127,593.00	2.472183	85	50 - 150	0.0000	+/-0.50	
M2PFTA	6073.714	4.2892	883,350.00	4.2892	01	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	101810.9	3.754983	106,068.00	3.754983	96	50 - 150	0.0000	+/-0.50	
MPFBA	201940	1.033533	405,224.00	1.025233	50	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	68423.14	2.806567	94,452.00	2.81475	72	50 - 150	-0.0082	+/-0.50	
M6PFDA	261390.2	3.7555	509,721.00	3.763467	51	50 - 150	-0.0080	+/-0.50	
M3PFBS	95921.09	1.8701	114,251.00	1.8701	84	50 - 150	0.0000	+/-0.50	
M7PFUnA	152257	3.906067	559,117.00	3.906067	27	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	182535.7	3.4044	112,597.00	3.4044	162	50 - 150	0.0000	+/-0.50	*
M5PFPeA	292453.8	1.690017	386,004.00	1.690017	76	50 - 150	0.0000	+/-0.50	
M5PFHxA	521050.6	2.564133	652,040.00	2.564117	80	50 - 150	0.0000	+/-0.50	
M3PFHxS	63594.31	3.169583	82,239.00	3.169583	77	50 - 150	0.0000	+/-0.50	
M4PFHpA	535550.1	3.138483	675,794.00	3.138483	79	50 - 150	0.0000	+/-0.50	
M8PFOA	489233.4	3.413117	614,656.00	3.413117	80	50 - 150	0.0000	+/-0.50	
M8PFOS	38866.89	3.60425	91,052.00	3.60425	43	50 - 150	0.0000	+/-0.50	*
M9PFNA	242477.6	3.605283	493,594.00	3.605283	49	50 - 150	0.0000	+/-0.50	*
MPFDoA	66562.7	4.048683	536,571.00	4.048683	12	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	45994.12	3.913533	158,959.00	3.913533	29	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	70367.05	3.833783	191,022.00	3.833783	37	50 - 150	0.0000	+/-0.50	*
PC-16D (22K2021-10RE1) Lab File ID: 22K2021-10RE1.d Analyzed: 12/16/22 00:07									
M2-6:2FTS	141565	3.39635	128,403.00	3.39635	110	50 - 150	0.0000	+/-0.50	
M3PFHxS	92291.96	3.169583	72,409.00	3.169583	127	50 - 150	0.0000	+/-0.50	
M8PFOS	100064	3.60425	81,727.00	3.60425	122	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-16D (22K2021-10RE2) Lab File ID: 22K2021-10RE2.d Analyzed: 12/20/22 14:36									
M8FOSA	86224.53	3.9406	269,671.00	3.9486	32	50 - 150	-0.0080	+/-0.50	*
M2-4:2FTS	172889	2.4804	173,380.00	2.4886	100	50 - 150	-0.0082	+/-0.50	
M2PFTA	56610.51	4.297266	775,042.00	4.297266	07	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	143166.5	3.76295	141,290.00	3.76295	101	50 - 150	0.0000	+/-0.50	
MPFBA	199782.9	1.04185	340,287.00	1.04185	59	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	78555.68	2.81475	90,729.00	2.822933	87	50 - 150	-0.0082	+/-0.50	
M6PFDA	392134.8	3.763483	479,584.00	3.763467	82	50 - 150	0.0000	+/-0.50	
M3PFBS	119802.3	1.878383	128,229.00	1.886667	93	50 - 150	-0.0083	+/-0.50	
M7PFUnA	264930.6	3.914067	517,421.00	3.914067	51	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	241661.9	3.4044	150,815.00	3.4044	160	50 - 150	0.0000	+/-0.50	*
M5PFPeA	288586.4	1.698283	333,389.00	1.706567	87	50 - 150	-0.0083	+/-0.50	
M5PFHxA	545430.1	2.572333	550,327.00	2.58055	99	50 - 150	-0.0082	+/-0.50	
M3PFHxS	86027.88	3.177667	87,862.00	3.177667	98	50 - 150	0.0000	+/-0.50	
M4PFHpA	562896.2	3.14655	575,756.00	3.14655	98	50 - 150	0.0000	+/-0.50	
M8PFOA	535341.9	3.421183	546,781.00	3.421167	98	50 - 150	0.0000	+/-0.50	
M8PFOS	46817.49	3.60425	91,121.00	3.612233	51	50 - 150	-0.0080	+/-0.50	
M9PFNA	275049.2	3.605283	473,423.00	3.613267	58	50 - 150	-0.0080	+/-0.50	
MPFDoA	136606.4	4.048683	476,847.00	4.056667	29	50 - 150	-0.0080	+/-0.50	*
D5-NEtFOSAA	99731.97	3.921533	181,660.00	3.921533	55	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	134076.6	3.84175	188,780.00	3.84175	71	50 - 150	0.0000	+/-0.50	
PC-16D (22K2021-10RE3) Lab File ID: 22K2021-10RE3.d Analyzed: 12/21/22 16:38									
M3PFHxS	81813.63	3.185733	87,656.00	3.185733	93	50 - 150	0.0000	+/-0.50	
M8PFOS	83242.69	3.612233	86,739.00	3.612233	96	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-18 (22K2021-11) Lab File ID: 22K2021-11.d Analyzed: 12/15/22 06:10									
M8FOSA	129725.5	3.9486	236,835.00	3.9486	55	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	49690.21	2.472183	127,593.00	2.472183	39	50 - 150	0.0000	+/-0.50	*
M2PFTA	364148.1	4.2892	883,350.00	4.2892	41	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	75378.89	3.754983	106,068.00	3.754983	71	50 - 150	0.0000	+/-0.50	
MPFBA	259433.3	1.033533	405,224.00	1.025233	64	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	93208.89	2.81475	94,452.00	2.81475	99	50 - 150	0.0000	+/-0.50	
M6PFDA	391447.2	3.7555	509,721.00	3.763467	77	50 - 150	-0.0080	+/-0.50	
M3PFBS	92957.46	1.878383	114,251.00	1.8701	81	50 - 150	0.0083	+/-0.50	
M7PFUnA	386749.5	3.906067	559,117.00	3.906067	69	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	77761.16	3.4044	112,597.00	3.4044	69	50 - 150	0.0000	+/-0.50	
M5PFPeA	294960.5	1.698283	386,004.00	1.690017	76	50 - 150	0.0083	+/-0.50	
M5PFHxA	486139.7	2.564117	652,040.00	2.564117	75	50 - 150	0.0000	+/-0.50	
M3PFHxS	66389.79	3.17765	82,239.00	3.169583	81	50 - 150	0.0081	+/-0.50	
M4PFHpA	499203.9	3.138483	675,794.00	3.138483	74	50 - 150	0.0000	+/-0.50	
M8PFOA	474054.7	3.413117	614,656.00	3.413117	77	50 - 150	0.0000	+/-0.50	
M8PFOS	65398.05	3.60425	91,052.00	3.60425	72	50 - 150	0.0000	+/-0.50	
M9PFNA	359674.7	3.605283	493,594.00	3.605283	73	50 - 150	0.0000	+/-0.50	
MPFDoA	320929.4	4.048683	536,571.00	4.048683	60	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	95794.77	3.913533	158,959.00	3.913533	60	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	110406.4	3.833783	191,022.00	3.833783	58	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-18 (22K2021-11RE1) Lab File ID: 22K2021-11RE1.d Analyzed: 12/30/22 10:37									
M8FOSA	123870.1	3.932617	205,724.00	3.932617	60	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	87467.45	2.472183	106,792.00	2.4804	82	50 - 150	-0.0082	+/-0.50	
M2PFTA	454961	4.2892	562,114.00	4.297266	81	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	146893.5	3.76295	218,600.00	3.76295	67	50 - 150	0.0000	+/-0.50	
MPFBA	236700.1	1.04185	267,115.00	1.04185	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	68082.42	2.806567	89,963.00	2.81475	76	50 - 150	-0.0082	+/-0.50	
M6PFDA	418021.1	3.763467	436,896.00	3.763467	96	50 - 150	0.0000	+/-0.50	
M3PFBS	110053.1	1.878383	94,401.00	1.878383	117	50 - 150	0.0000	+/-0.50	
M7PFUnA	381883.3	3.906067	410,900.00	3.91405	93	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	89560.45	3.4044	100,580.00	3.4044	89	50 - 150	0.0000	+/-0.50	
M5PFPeA	280657.7	1.698283	261,820.00	1.698283	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	461380.5	2.564117	419,158.00	2.564117	110	50 - 150	0.0000	+/-0.50	
M3PFHxS	70734.27	3.177667	65,210.00	3.17765	108	50 - 150	0.0000	+/-0.50	
M4PFHpA	497002.6	3.138483	428,379.00	3.138483	116	50 - 150	0.0000	+/-0.50	
M8PFOA	471076.5	3.413117	413,621.00	3.421167	114	50 - 150	-0.0080	+/-0.50	
M8PFOS	67494.16	3.60425	63,625.00	3.60425	106	50 - 150	0.0000	+/-0.50	
M9PFNA	376047.7	3.605283	343,397.00	3.605283	110	50 - 150	0.0000	+/-0.50	
MPFDoA	299286.3	4.048683	336,792.00	4.048683	89	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	115480.8	3.913533	128,194.00	3.921533	90	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	127051.9	3.841733	166,732.00	3.841733	76	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-28 (22K2021-12) Lab File ID: 22K2021-12.d Analyzed: 12/15/22 06:32									
M8FOSA	168612.3	3.9486	236,835.00	3.9486	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	85154.26	2.472183	127,593.00	2.472183	67	50 - 150	0.0000	+/-0.50	
M2PFTA	583585.9	4.2892	883,350.00	4.2892	66	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	120947.3	3.754983	106,068.00	3.754983	114	50 - 150	0.0000	+/-0.50	
MPFBA	236732.4	1.033533	405,224.00	1.033533	58	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	102339.6	2.81475	94,452.00	2.806567	108	50 - 150	0.0082	+/-0.50	
M6PFDA	462645	3.7555	509,721.00	3.7555	91	50 - 150	0.0000	+/-0.50	
M3PFBS	104799.5	1.878383	114,251.00	1.8701	92	50 - 150	0.0083	+/-0.50	
M7PFUnA	444791.4	3.906067	559,117.00	3.906067	80	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	126799.1	3.4044	112,597.00	3.4044	113	50 - 150	0.0000	+/-0.50	
M5PFPeA	330147.8	1.690017	386,004.00	1.690017	86	50 - 150	0.0000	+/-0.50	
M5PFHxA	563688.6	2.564133	652,040.00	2.564133	86	50 - 150	0.0000	+/-0.50	
M3PFHxS	71950.03	3.177667	82,239.00	3.169583	87	50 - 150	0.0081	+/-0.50	
M4PFHpA	581101.6	3.138483	675,794.00	3.138483	86	50 - 150	0.0000	+/-0.50	
M8PFOA	561072.7	3.413117	614,656.00	3.413117	91	50 - 150	0.0000	+/-0.50	
M8PFOS	56055.76	3.60425	91,052.00	3.60425	62	50 - 150	0.0000	+/-0.50	
M9PFNA	323436	3.605283	493,594.00	3.605283	66	50 - 150	0.0000	+/-0.50	
MPFDoA	367828.3	4.048683	536,571.00	4.048683	69	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	110130	3.913533	158,959.00	3.913533	69	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	162677.2	3.833783	191,022.00	3.833783	85	50 - 150	0.0000	+/-0.50	
PC-28 (22K2021-12RE1) Lab File ID: 22K2021-12RE1.d Analyzed: 12/16/22 00:15									
M8PFOS	85115.71	3.60425	81,727.00	3.60425	104	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-29 (22K2021-13)		Lab File ID: 22K2021-13.d				Analyzed: 12/15/22 06:40			
M8FOSA	157671.7	3.9486	236,835.00	3.9486	67	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	62843.36	2.472183	127,593.00	2.472183	49	50 - 150	0.0000	+/-0.50	*
M2PFTA	523176.8	4.2892	883,350.00	4.2892	59	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	95347.52	3.754983	106,068.00	3.754983	90	50 - 150	0.0000	+/-0.50	
MPFBA	273604.5	1.033533	405,224.00	1.033533	68	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	92157.51	2.81475	94,452.00	2.806567	98	50 - 150	0.0082	+/-0.50	
M6PFDA	385605.8	3.7555	509,721.00	3.7555	76	50 - 150	0.0000	+/-0.50	
M3PFBS	91267.24	1.878383	114,251.00	1.8701	80	50 - 150	0.0083	+/-0.50	
M7PFUnA	400035.9	3.906067	559,117.00	3.906067	72	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	88083.67	3.4044	112,597.00	3.4044	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	306409	1.698283	386,004.00	1.690017	79	50 - 150	0.0083	+/-0.50	
M5PFHxA	497239.5	2.564117	652,040.00	2.564133	76	50 - 150	0.0000	+/-0.50	
M3PFHxS	65356.09	3.17765	82,239.00	3.169583	79	50 - 150	0.0081	+/-0.50	
M4PFHpA	521630.2	3.138483	675,794.00	3.138483	77	50 - 150	0.0000	+/-0.50	
M8PFOA	498990.1	3.413117	614,656.00	3.413117	81	50 - 150	0.0000	+/-0.50	
M8PFOS	64751.41	3.60425	91,052.00	3.60425	71	50 - 150	0.0000	+/-0.50	
M9PFNA	391538.6	3.605283	493,594.00	3.605283	79	50 - 150	0.0000	+/-0.50	
MPFDoA	337288.9	4.048683	536,571.00	4.048683	63	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	107198.6	3.913533	158,959.00	3.913533	67	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	124818.1	3.833783	191,022.00	3.833783	65	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-30 (22K2021-14) Lab File ID: 22K2021-14.d Analyzed: 12/15/22 06:47									
M8FOSA	72567.16	3.9486	236,835.00	3.9486	31	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	85512.44	2.472183	127,593.00	2.472183	67	50 - 150	0.0000	+/-0.50	
M2PFTA	17451.01	4.2892	883,350.00	4.2892	02	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	89416.01	3.754983	106,068.00	3.754983	84	50 - 150	0.0000	+/-0.50	
MPFBA	254684.2	1.033533	405,224.00	1.033533	63	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	89310.89	2.81475	94,452.00	2.806567	95	50 - 150	0.0082	+/-0.50	
M6PFDA	332455.7	3.7555	509,721.00	3.7555	65	50 - 150	0.0000	+/-0.50	
M3PFBS	103108.2	1.878383	114,251.00	1.8701	90	50 - 150	0.0083	+/-0.50	
M7PFUnA	240543.5	3.906067	559,117.00	3.906067	43	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	111674.1	3.4044	112,597.00	3.4044	99	50 - 150	0.0000	+/-0.50	
M5PFPeA	339633.1	1.690017	386,004.00	1.690017	88	50 - 150	0.0000	+/-0.50	
M5PFHxA	569331	2.564133	652,040.00	2.564133	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	70181.17	3.169583	82,239.00	3.169583	85	50 - 150	0.0000	+/-0.50	
M4PFHpA	578278.1	3.138483	675,794.00	3.138483	86	50 - 150	0.0000	+/-0.50	
M8PFOA	537202.9	3.413117	614,656.00	3.413117	87	50 - 150	0.0000	+/-0.50	
M8PFOS	55335.39	3.60425	91,052.00	3.60425	61	50 - 150	0.0000	+/-0.50	
M9PFNA	337515.1	3.605283	493,594.00	3.605283	68	50 - 150	0.0000	+/-0.50	
MPFDoA	95839.62	4.048683	536,571.00	4.048683	18	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	68825.97	3.913533	158,959.00	3.913533	43	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	101215.2	3.833783	191,022.00	3.833783	53	50 - 150	0.0000	+/-0.50	
PC-30 (22K2021-14RE1) Lab File ID: 22K2021-14RE1.d Analyzed: 12/16/22 00:44									
M8PFOS	90457.94	3.60425	81,727.00	3.60425	111	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-345 (22K2021-15) Lab File ID: 22K2021-15.d Analyzed: 12/15/22 06:54									
M8FOSA	94138.04	3.9486	236,835.00	3.9486	40	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	109359.5	2.472183	127,593.00	2.472183	86	50 - 150	0.0000	+/-0.50	
M2PFTA	149496.5	4.2892	883,350.00	4.2892	17	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	114101.2	3.76295	106,068.00	3.754983	108	50 - 150	0.0080	+/-0.50	
MPFBA	171994.3	1.033533	405,224.00	1.033533	42	50 - 150	0.0000	+/-0.50	*
M3HFPO-DA	75166.77	2.81475	94,452.00	2.806567	80	50 - 150	0.0082	+/-0.50	
M6PFDA	378496.7	3.7555	509,721.00	3.7555	74	50 - 150	0.0000	+/-0.50	
M3PFBS	88829.09	1.8701	114,251.00	1.8701	78	50 - 150	0.0000	+/-0.50	
M7PFUnA	328749.9	3.906067	559,117.00	3.906067	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	147667	3.4044	112,597.00	3.4044	131	50 - 150	0.0000	+/-0.50	
M5PFPeA	259760.3	1.690017	386,004.00	1.690017	67	50 - 150	0.0000	+/-0.50	
M5PFHxA	461647.4	2.564133	652,040.00	2.564133	71	50 - 150	0.0000	+/-0.50	
M3PFHxS	62854.1	3.169583	82,239.00	3.169583	76	50 - 150	0.0000	+/-0.50	
M4PFHpA	486120	3.138483	675,794.00	3.138483	72	50 - 150	0.0000	+/-0.50	
M8PFOA	472967.5	3.413117	614,656.00	3.413117	77	50 - 150	0.0000	+/-0.50	
M8PFOS	47041.05	3.60425	91,052.00	3.60425	52	50 - 150	0.0000	+/-0.50	
M9PFNA	251577.3	3.605283	493,594.00	3.605283	51	50 - 150	0.0000	+/-0.50	
MPFDoA	242383.8	4.048683	536,571.00	4.048683	45	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	94645.58	3.913533	158,959.00	3.913533	60	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	122038.2	3.833783	191,022.00	3.833783	64	50 - 150	0.0000	+/-0.50	
PC-345 (22K2021-15RE1) Lab File ID: 22K2021-15RE1.d Analyzed: 12/16/22 00:51									
M3PFHxS	81471.24	3.169583	72,409.00	3.169583	113	50 - 150	0.0000	+/-0.50	
M8PFOS	84481.88	3.60425	81,727.00	3.60425	103	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-36 (22K2021-16) Lab File ID: 22K2021-16.d Analyzed: 12/15/22 07:01									
M8FOSA	122151.7	3.9486	236,835.00	3.9486	52	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	91670.28	2.472183	127,593.00	2.472183	72	50 - 150	0.0000	+/-0.50	
M2PFTA	181611.7	4.2892	883,350.00	4.2892	21	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	95821	3.76295	106,068.00	3.754983	90	50 - 150	0.0080	+/-0.50	
MPFBA	188130.4	1.033533	405,224.00	1.033533	46	50 - 150	0.0000	+/-0.50	*
M3HFPO-DA	77514.26	2.806567	94,452.00	2.806567	82	50 - 150	0.0000	+/-0.50	
M6PFDA	363342.1	3.7555	509,721.00	3.7555	71	50 - 150	0.0000	+/-0.50	
M3PFBS	82889.77	1.8701	114,251.00	1.8701	73	50 - 150	0.0000	+/-0.50	
M7PFUnA	366915	3.906067	559,117.00	3.906067	66	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	130923.4	3.4044	112,597.00	3.4044	116	50 - 150	0.0000	+/-0.50	
M5PFPeA	266056	1.690017	386,004.00	1.690017	69	50 - 150	0.0000	+/-0.50	
M5PFHxA	464610.3	2.564133	652,040.00	2.564133	71	50 - 150	0.0000	+/-0.50	
M3PFHxS	60873.75	3.169583	82,239.00	3.169583	74	50 - 150	0.0000	+/-0.50	
M4PFHpA	486405.2	3.138483	675,794.00	3.138483	72	50 - 150	0.0000	+/-0.50	
M8PFOA	477915.7	3.413117	614,656.00	3.413117	78	50 - 150	0.0000	+/-0.50	
M8PFOS	50669.62	3.60425	91,052.00	3.60425	56	50 - 150	0.0000	+/-0.50	
M9PFNA	280857.7	3.605283	493,594.00	3.605283	57	50 - 150	0.0000	+/-0.50	
MPFDoA	268046.7	4.048683	536,571.00	4.048683	50	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	100132.6	3.913533	158,959.00	3.913533	63	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	127171.1	3.833783	191,022.00	3.833783	67	50 - 150	0.0000	+/-0.50	
PC-36 (22K2021-16RE1) Lab File ID: 22K2021-16RE1.d Analyzed: 12/16/22 00:58									
M8PFOS	91046.45	3.60425	81,727.00	3.60425	111	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-39 (22K2021-17) Lab File ID: 22K2021-17.d Analyzed: 12/15/22 07:08									
M8FOSA	129396.8	3.9486	236,835.00	3.9486	55	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	64062.56	2.472183	127,593.00	2.472183	50	50 - 150	0.0000	+/-0.50	
M2PFTA	441306.7	4.2892	883,350.00	4.2892	50	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	80499.29	3.754983	106,068.00	3.754983	76	50 - 150	0.0000	+/-0.50	
MPFBA	238101.5	1.033533	405,224.00	1.033533	59	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	94999.84	2.81475	94,452.00	2.806567	101	50 - 150	0.0082	+/-0.50	
M6PFDA	384125.2	3.7555	509,721.00	3.7555	75	50 - 150	0.0000	+/-0.50	
M3PFBS	89272.39	1.878383	114,251.00	1.8701	78	50 - 150	0.0083	+/-0.50	
M7PFUnA	361375.7	3.906067	559,117.00	3.906067	65	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	81482.42	3.4044	112,597.00	3.4044	72	50 - 150	0.0000	+/-0.50	
M5PFPeA	293522.3	1.690017	386,004.00	1.690017	76	50 - 150	0.0000	+/-0.50	
M5PFHxA	479342.1	2.564117	652,040.00	2.564133	74	50 - 150	0.0000	+/-0.50	
M3PFHxS	61765.83	3.17765	82,239.00	3.169583	75	50 - 150	0.0081	+/-0.50	
M4PFHpA	512706.5	3.138483	675,794.00	3.138483	76	50 - 150	0.0000	+/-0.50	
M8PFOA	470125.8	3.413117	614,656.00	3.413117	76	50 - 150	0.0000	+/-0.50	
M8PFOS	62535.46	3.60425	91,052.00	3.60425	69	50 - 150	0.0000	+/-0.50	
M9PFNA	351922	3.605283	493,594.00	3.605283	71	50 - 150	0.0000	+/-0.50	
MPFDoA	292632.5	4.048683	536,571.00	4.048683	55	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	75652.14	3.913533	158,959.00	3.913533	48	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	102322.9	3.833783	191,022.00	3.833783	54	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC-39 (22K2021-17RE2) Lab File ID: 22K2021-17RE2.d Analyzed: 12/30/22 10:59									
M8FOSA	180782.9	3.932617	205,724.00	3.932617	88	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	74501.22	2.472183	106,792.00	2.4804	70	50 - 150	-0.0082	+/-0.50	
M2PFTA	523057.7	4.2892	562,114.00	4.297266	93	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	146734.3	3.76295	218,600.00	3.76295	67	50 - 150	0.0000	+/-0.50	
MPFBA	295095.8	1.04185	267,115.00	1.04185	110	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	88448.1	2.806567	89,963.00	2.81475	98	50 - 150	-0.0082	+/-0.50	
M6PFDA	458920.4	3.763467	436,896.00	3.763467	105	50 - 150	0.0000	+/-0.50	
M3PFBS	112032.7	1.8701	94,401.00	1.878383	119	50 - 150	-0.0083	+/-0.50	
M7PFUnA	441977.5	3.906067	410,900.00	3.91405	108	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	73999.06	3.4044	100,580.00	3.4044	74	50 - 150	0.0000	+/-0.50	
M5PFPeA	308155.8	1.698283	261,820.00	1.698283	118	50 - 150	0.0000	+/-0.50	
M5PFHxA	490779	2.555917	419,158.00	2.564117	117	50 - 150	-0.0082	+/-0.50	
M3PFHxS	74590.14	3.169583	65,210.00	3.17765	114	50 - 150	-0.0081	+/-0.50	
M4PFHpA	502120.4	3.138483	428,379.00	3.138483	117	50 - 150	0.0000	+/-0.50	
M8PFOA	481053.8	3.413117	413,621.00	3.421167	116	50 - 150	-0.0080	+/-0.50	
M8PFOS	74658.45	3.60425	63,625.00	3.60425	117	50 - 150	0.0000	+/-0.50	
M9PFNA	367329.8	3.605283	343,397.00	3.605283	107	50 - 150	0.0000	+/-0.50	
MPFDoA	355797.3	4.048683	336,792.00	4.048683	106	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	144783.5	3.913533	128,194.00	3.921533	113	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	151251.4	3.833783	166,732.00	3.841733	91	50 - 150	-0.0080	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-3 (22K2021-18) Lab File ID: 22K2021-18.d Analyzed: 12/15/22 07:16									
M8FOSA	31012.63	3.9486	236,835.00	3.9486	13	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	242924	2.439333	127,593.00	2.472183	190	50 - 150	-0.0328	+/-0.50	*
M2PFTA	32108.8	4.2892	883,350.00	4.2892	04	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	161928	3.754983	106,068.00	3.754983	153	50 - 150	0.0000	+/-0.50	*
MPFBA	125312.8	1.016917	405,224.00	1.033533	31	50 - 150	-0.0166	+/-0.50	*
M3HFPO-DA	63366.15	2.7902	94,452.00	2.806567	67	50 - 150	-0.0164	+/-0.50	
M6PFDA	325062.3	3.755517	509,721.00	3.7555	64	50 - 150	0.0000	+/-0.50	
M3PFBS	96572.31	1.83695	114,251.00	1.8701	85	50 - 150	-0.0332	+/-0.50	
M7PFUnA	241984.8	3.906067	559,117.00	3.906067	43	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	1135175	3.39635	112,597.00	3.4044	1008	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	256484.9	1.656917	386,004.00	1.690017	66	50 - 150	-0.0331	+/-0.50	
M5PFHxA	548175.9	2.523067	652,040.00	2.564133	84	50 - 150	-0.0411	+/-0.50	
M3PFHxS	53229.85	3.169583	82,239.00	3.169583	65	50 - 150	0.0000	+/-0.50	
M4PFHpA	499464.6	3.1304	675,794.00	3.138483	74	50 - 150	-0.0081	+/-0.50	
M8PFOA	409578.7	3.413133	614,656.00	3.413117	67	50 - 150	0.0000	+/-0.50	
M8PFOS	34349.59	3.596267	91,052.00	3.60425	38	50 - 150	-0.0080	+/-0.50	*
M9PFNA	168746.9	3.605283	493,594.00	3.605283	34	50 - 150	0.0000	+/-0.50	*
MPFDoA	105711.5	4.048683	536,571.00	4.048683	20	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	87965.55	3.913533	158,959.00	3.913533	55	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	111843	3.833783	191,022.00	3.833783	59	50 - 150	0.0000	+/-0.50	
MW-3 (22K2021-18RE1) Lab File ID: 22K2021-18RE1.d Analyzed: 12/16/22 01:13									
M5PFPeA	380780.5	1.690017	350,297.00	1.690017	109	50 - 150	0.0000	+/-0.50	
M5PFHxA	621779.3	2.555917	571,594.00	2.555917	109	50 - 150	0.0000	+/-0.50	
M4PFHpA	651767.9	3.138483	607,601.00	3.138483	107	50 - 150	0.0000	+/-0.50	
M8PFOA	629013.6	3.413117	605,485.00	3.413117	104	50 - 150	0.0000	+/-0.50	
M8PFOS	76747.52	3.60425	81,727.00	3.60425	94	50 - 150	0.0000	+/-0.50	
MW-3 (22K2021-18RE2) Lab File ID: 22K2021-18RE2.d Analyzed: 12/16/22 01:20									
M2-6:2FTS	144143.1	3.39635	128,403.00	3.39635	112	50 - 150	0.0000	+/-0.50	
M3PFHxS	88697.86	3.169583	72,409.00	3.169583	122	50 - 150	0.0000	+/-0.50	
M8PFOS	90844.76	3.60425	81,727.00	3.60425	111	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-13 (22K2021-19) Lab File ID: 22K2021-19.d Analyzed: 12/15/22 07:23									
M8FOSA	160833.8	3.9486	236,835.00	3.9486	68	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	51769.07	2.472183	127,593.00	2.472183	41	50 - 150	0.0000	+/-0.50	*
M2PFTA	482213.4	4.2892	883,350.00	4.2892	55	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	85887.35	3.754983	106,068.00	3.754983	81	50 - 150	0.0000	+/-0.50	
MPFBA	326270.4	1.033533	405,224.00	1.033533	81	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	107005.1	2.81475	94,452.00	2.806567	113	50 - 150	0.0082	+/-0.50	
M6PFDA	425772.9	3.7555	509,721.00	3.7555	84	50 - 150	0.0000	+/-0.50	
M3PFBS	101774.4	1.878383	114,251.00	1.8701	89	50 - 150	0.0083	+/-0.50	
M7PFUnA	392449.4	3.906067	559,117.00	3.906067	70	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	78991.29	3.39635	112,597.00	3.4044	70	50 - 150	-0.0080	+/-0.50	
M5PFPeA	342904.4	1.698283	386,004.00	1.690017	89	50 - 150	0.0083	+/-0.50	
M5PFHxA	552067.8	2.564117	652,040.00	2.564133	85	50 - 150	0.0000	+/-0.50	
M3PFHxS	70220.3	3.169583	82,239.00	3.169583	85	50 - 150	0.0000	+/-0.50	
M4PFHpA	549943.7	3.138483	675,794.00	3.138483	81	50 - 150	0.0000	+/-0.50	
M8PFOA	545259.3	3.413117	614,656.00	3.413117	89	50 - 150	0.0000	+/-0.50	
M8PFOS	72136.04	3.60425	91,052.00	3.60425	79	50 - 150	0.0000	+/-0.50	
M9PFNA	383693.5	3.605283	493,594.00	3.605283	78	50 - 150	0.0000	+/-0.50	
MPFDoA	329865.9	4.048683	536,571.00	4.048683	61	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	99366.88	3.913533	158,959.00	3.913533	63	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	143427.8	3.833783	191,022.00	3.833783	75	50 - 150	0.0000	+/-0.50	
MW-13 (22K2021-19RE1) Lab File ID: 22K2021-19RE1.d Analyzed: 12/16/22 01:27									
M8PFOS	98281.19	3.60425	81,727.00	3.60425	120	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-23 (22K2021-20) Lab File ID: 22K2021-20.d Analyzed: 12/15/22 07:30									
M8FOSA	160925.2	3.9486	236,835.00	3.9486	68	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	61283.52	2.472183	127,593.00	2.472183	48	50 - 150	0.0000	+/-0.50	*
M2PFTA	523653	4.2892	883,350.00	4.2892	59	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	77955.41	3.754983	106,068.00	3.754983	73	50 - 150	0.0000	+/-0.50	
MPFBA	248541.3	1.033533	405,224.00	1.033533	61	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	97030.06	2.81475	94,452.00	2.806567	103	50 - 150	0.0082	+/-0.50	
M6PFDA	384717.4	3.7555	509,721.00	3.7555	75	50 - 150	0.0000	+/-0.50	
M3PFBS	94447.37	1.8701	114,251.00	1.8701	83	50 - 150	0.0000	+/-0.50	
M7PFUnA	371363.1	3.906067	559,117.00	3.906067	66	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	82448.55	3.39635	112,597.00	3.4044	73	50 - 150	-0.0080	+/-0.50	
M5PFPeA	307269.2	1.690017	386,004.00	1.690017	80	50 - 150	0.0000	+/-0.50	
M5PFHxA	511945.5	2.564117	652,040.00	2.564133	79	50 - 150	0.0000	+/-0.50	
M3PFHxS	64961.01	3.17765	82,239.00	3.169583	79	50 - 150	0.0081	+/-0.50	
M4PFHpA	542831.9	3.138483	675,794.00	3.138483	80	50 - 150	0.0000	+/-0.50	
M8PFOA	493318.3	3.413117	614,656.00	3.413117	80	50 - 150	0.0000	+/-0.50	
M8PFOS	76100.44	3.60425	91,052.00	3.60425	84	50 - 150	0.0000	+/-0.50	
M9PFNA	402748.2	3.605283	493,594.00	3.605283	82	50 - 150	0.0000	+/-0.50	
MPFDoA	326822.3	4.048683	536,571.00	4.048683	61	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	88057.02	3.913533	158,959.00	3.913533	55	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	114606.8	3.833783	191,022.00	3.833783	60	50 - 150	0.0000	+/-0.50	
MW-23 (22K2021-20RE1) Lab File ID: 22K2021-20RE1.d Analyzed: 12/16/22 01:34									
M3PFHxS	82933.61	3.169583	72,409.00	3.169583	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-23 (22K2021-20RE2) Lab File ID: 22K2021-20RE2.d Analyzed: 12/30/22 11:13									
M8FOSA	168985.7	3.932617	205,724.00	3.932617	82	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	104564.7	2.472183	106,792.00	2.4804	98	50 - 150	-0.0082	+/-0.50	
M2PFTA	522744.9	4.2892	562,114.00	4.297266	93	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	156515.2	3.76295	218,600.00	3.76295	72	50 - 150	0.0000	+/-0.50	
MPFBA	233911	1.04185	267,115.00	1.04185	88	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	75766.39	2.806567	89,963.00	2.81475	84	50 - 150	-0.0082	+/-0.50	
M6PFDA	422485.7	3.763467	436,896.00	3.763467	97	50 - 150	0.0000	+/-0.50	
M3PFBS	113699	1.8701	94,401.00	1.878383	120	50 - 150	-0.0083	+/-0.50	
M7PFUnA	390613	3.906067	410,900.00	3.91405	95	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	109893.3	3.4044	100,580.00	3.4044	109	50 - 150	0.0000	+/-0.50	
M5PFPeA	287993.6	1.698283	261,820.00	1.698283	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	498604.6	2.555917	419,158.00	2.564117	119	50 - 150	-0.0082	+/-0.50	
M3PFHxS	76260.28	3.169583	65,210.00	3.17765	117	50 - 150	-0.0081	+/-0.50	
M4PFHpA	506065.9	3.138483	428,379.00	3.138483	118	50 - 150	0.0000	+/-0.50	
M8PFOA	474231.5	3.413117	413,621.00	3.421167	115	50 - 150	-0.0080	+/-0.50	
M8PFOS	75034.7	3.60425	63,625.00	3.60425	118	50 - 150	0.0000	+/-0.50	
M9PFNA	386488.9	3.605283	343,397.00	3.605283	113	50 - 150	0.0000	+/-0.50	
MPFDoA	348295.4	4.048683	336,792.00	4.048683	103	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	129259.3	3.913533	128,194.00	3.921533	101	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	143658.5	3.833783	166,732.00	3.841733	86	50 - 150	-0.0080	+/-0.50	
MW-23 (22K2021-20RE3) Lab File ID: 22K2021-20RE3.d Analyzed: 01/11/23 10:41									
M3PFHxS	10298.66	3.185733	9,834.00	3.17765	105	50 - 150	0.0081	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-35I (22K2021-21) Lab File ID: 22K2021-21.d Analyzed: 12/15/22 07:37									
M8FOSA	113413.7	3.9486	236,835.00	3.9486	48	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	75150.41	2.4804	127,593.00	2.472183	59	50 - 150	0.0082	+/-0.50	
M2PFTA	48337.45	4.2892	883,350.00	4.2892	05	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	92685.55	3.754983	106,068.00	3.754983	87	50 - 150	0.0000	+/-0.50	
MPFBA	396862.3	1.033533	405,224.00	1.033533	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	95397.27	2.81475	94,452.00	2.806567	101	50 - 150	0.0082	+/-0.50	
M6PFDA	383301.8	3.7555	509,721.00	3.7555	75	50 - 150	0.0000	+/-0.50	
M3PFBS	125417	1.878383	114,251.00	1.8701	110	50 - 150	0.0083	+/-0.50	
M7PFUnA	289834.4	3.906067	559,117.00	3.906067	52	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	99414.02	3.39635	112,597.00	3.4044	88	50 - 150	-0.0080	+/-0.50	
M5PFPeA	423193.3	1.698283	386,004.00	1.690017	110	50 - 150	0.0083	+/-0.50	
M5PFHxA	668317.4	2.564117	652,040.00	2.564133	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	84761.78	3.169583	82,239.00	3.169583	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	698208.1	3.138483	675,794.00	3.138483	103	50 - 150	0.0000	+/-0.50	
M8PFOA	595262.9	3.413117	614,656.00	3.413117	97	50 - 150	0.0000	+/-0.50	
M8PFOS	73397.29	3.60425	91,052.00	3.60425	81	50 - 150	0.0000	+/-0.50	
M9PFNA	445536.2	3.605283	493,594.00	3.605283	90	50 - 150	0.0000	+/-0.50	
MPFDoA	136350.1	4.048683	536,571.00	4.048683	25	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	91578.62	3.913533	158,959.00	3.913533	58	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	132209.7	3.833783	191,022.00	3.833783	69	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-201 (22K2021-22)		Lab File ID: 22K2021-22.d				Analyzed: 12/09/22 02:15			
M8FOSA	230912.8	3.972583	246,442.00	3.9726	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	55379.87	2.34905	90,043.00	2.340817	62	50 - 150	0.0082	+/-0.50	
M2PFTA	770184.1	4.2407	868,119.00	4.240716	89	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	230205.8	3.747017	154,852.00	3.747033	149	50 - 150	0.0000	+/-0.50	
MPFBA	457794.3	1.050167	397,253.00	1.050167	115	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	132076.2	2.683033	86,854.00	2.674817	152	50 - 150	0.0082	+/-0.50	*
M6PFDA	554975.6	3.74755	533,863.00	3.74755	104	50 - 150	0.0000	+/-0.50	
M3PFBS	112133.2	1.787233	95,878.00	1.777867	117	50 - 150	0.0094	+/-0.50	
M7PFUnA	592629.3	3.881917	575,723.00	3.881917	103	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	38763.26	3.3883	60,785.00	3.3883	64	50 - 150	0.0000	+/-0.50	
M5PFPeA	369360.6	1.623833	318,641.00	1.623833	116	50 - 150	0.0000	+/-0.50	
M5PFHxA	643811.4	2.424283	569,553.00	2.416067	113	50 - 150	0.0082	+/-0.50	
M3PFHxS	94326.09	3.145367	88,565.00	3.14535	107	50 - 150	0.0000	+/-0.50	
M4PFHpA	702713.9	3.097167	668,068.00	3.097167	105	50 - 150	0.0000	+/-0.50	
M8PFOA	656752.9	3.405083	625,484.00	3.405083	105	50 - 150	0.0000	+/-0.50	
M8PFOS	89597.13	3.60425	83,017.00	3.596267	108	50 - 150	0.0080	+/-0.50	
M9PFNA	482152.9	3.5973	477,041.00	3.5973	101	50 - 150	0.0000	+/-0.50	
MPFDoA	580054.4	4.008717	567,925.00	4.008733	102	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	146368.7	3.8894	151,944.00	3.889417	96	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	203654.6	3.817433	204,022.00	3.81745	100	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-307S (22K2021-23)		Lab File ID: 22K2021-23.d				Analyzed: 12/09/22 02:22			
M8FOSA	203143.3	3.972583	246,442.00	3.9726	82	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	71946.09	2.349033	90,043.00	2.340817	80	50 - 150	0.0082	+/-0.50	
M2PFTA	495194.8	4.2407	868,119.00	4.240716	57	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	163740.8	3.747017	154,852.00	3.747033	106	50 - 150	0.0000	+/-0.50	
MPFBA	335286	1.050167	397,253.00	1.050167	84	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	125079	2.683017	86,854.00	2.674817	144	50 - 150	0.0082	+/-0.50	
M6PFDA	484803.8	3.74755	533,863.00	3.74755	91	50 - 150	0.0000	+/-0.50	
M3PFBS	107523.3	1.787233	95,878.00	1.777867	112	50 - 150	0.0094	+/-0.50	
M7PFUnA	549781.3	3.881917	575,723.00	3.881917	95	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	47444.14	3.3883	60,785.00	3.3883	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	356523.8	1.623833	318,641.00	1.623833	112	50 - 150	0.0000	+/-0.50	
M5PFHxA	636605.3	2.424267	569,553.00	2.416067	112	50 - 150	0.0082	+/-0.50	
M3PFHxS	95790.21	3.145367	88,565.00	3.14535	108	50 - 150	0.0000	+/-0.50	
M4PFHpA	706159.3	3.1053	668,068.00	3.097167	106	50 - 150	0.0081	+/-0.50	
M8PFOA	650933.4	3.405083	625,484.00	3.405083	104	50 - 150	0.0000	+/-0.50	
M8PFOS	85256.84	3.60425	83,017.00	3.596267	103	50 - 150	0.0080	+/-0.50	
M9PFNA	468701.6	3.5973	477,041.00	3.5973	98	50 - 150	0.0000	+/-0.50	
MPFDoA	516724.1	4.008717	567,925.00	4.008733	91	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	137000.5	3.8894	151,944.00	3.889417	90	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	188496.2	3.81745	204,022.00	3.81745	92	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-307D (22K2021-24)		Lab File ID: 22K2021-24.d				Analyzed: 12/09/22 02:30			
M8FOSA	224041.6	3.972583	246,442.00	3.9726	91	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	60543.35	2.349033	90,043.00	2.340817	67	50 - 150	0.0082	+/-0.50	
M2PFTA	786418.6	4.2407	868,119.00	4.240716	91	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	221824.6	3.747017	154,852.00	3.747033	143	50 - 150	0.0000	+/-0.50	
MPFBA	404068	1.050167	397,253.00	1.050167	102	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	132285	2.683017	86,854.00	2.674817	152	50 - 150	0.0082	+/-0.50	*
M6PFDA	517604.5	3.747533	533,863.00	3.74755	97	50 - 150	0.0000	+/-0.50	
M3PFBS	106829.6	1.787233	95,878.00	1.777867	111	50 - 150	0.0094	+/-0.50	
M7PFUnA	557155.8	3.8819	575,723.00	3.881917	97	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	40980.79	3.3883	60,785.00	3.3883	67	50 - 150	0.0000	+/-0.50	
M5PFPeA	353827.1	1.623833	318,641.00	1.623833	111	50 - 150	0.0000	+/-0.50	
M5PFHxA	622376.1	2.424267	569,553.00	2.416067	109	50 - 150	0.0082	+/-0.50	
M3PFHxS	92262.13	3.14535	88,565.00	3.14535	104	50 - 150	0.0000	+/-0.50	
M4PFHpA	704518.8	3.105283	668,068.00	3.097167	105	50 - 150	0.0081	+/-0.50	
M8PFOA	660402.4	3.405067	625,484.00	3.405083	106	50 - 150	0.0000	+/-0.50	
M8PFOS	81683.13	3.60425	83,017.00	3.596267	98	50 - 150	0.0080	+/-0.50	
M9PFNA	476491.2	3.5973	477,041.00	3.5973	100	50 - 150	0.0000	+/-0.50	
MPFDoA	543180.1	4.0087	567,925.00	4.008733	96	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	138073.1	3.8894	151,944.00	3.889417	91	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	198808	3.817433	204,022.00	3.81745	97	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-308S (22K2021-25)		Lab File ID: 22K2021-25.d				Analyzed: 12/09/22 02:37			
M8FOSA	154817.3	3.9726	246,442.00	3.9726	63	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	70738.91	2.349033	90,043.00	2.340817	79	50 - 150	0.0082	+/-0.50	
M2PFTA	746232.4	4.240716	868,119.00	4.240716	86	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	144726	3.747017	154,852.00	3.747033	93	50 - 150	0.0000	+/-0.50	
MPFBA	319943.4	1.050167	397,253.00	1.050167	81	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	120444.9	2.683017	86,854.00	2.674817	139	50 - 150	0.0082	+/-0.50	
M6PFDA	489870	3.74755	533,863.00	3.74755	92	50 - 150	0.0000	+/-0.50	
M3PFBS	106633.2	1.787233	95,878.00	1.777867	111	50 - 150	0.0094	+/-0.50	
M7PFUnA	567485.3	3.881917	575,723.00	3.881917	99	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	54327.68	3.3883	60,785.00	3.3883	89	50 - 150	0.0000	+/-0.50	
M5PFPeA	349893.2	1.623833	318,641.00	1.623833	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	636424.8	2.424267	569,553.00	2.416067	112	50 - 150	0.0082	+/-0.50	
M3PFHxS	91940.64	3.145367	88,565.00	3.14535	104	50 - 150	0.0000	+/-0.50	
M4PFHpA	702565	3.097167	668,068.00	3.097167	105	50 - 150	0.0000	+/-0.50	
M8PFOA	630636.8	3.405083	625,484.00	3.405083	101	50 - 150	0.0000	+/-0.50	
M8PFOS	86272.13	3.60425	83,017.00	3.596267	104	50 - 150	0.0080	+/-0.50	
M9PFNA	508859.8	3.5973	477,041.00	3.5973	107	50 - 150	0.0000	+/-0.50	
MPFDoA	584122.5	4.008717	567,925.00	4.008733	103	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	149113.9	3.8894	151,944.00	3.889417	98	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	189673.3	3.81745	204,022.00	3.81745	93	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-308D (22K2021-26)		Lab File ID: 22K2021-26.d				Analyzed: 12/09/22 02:44			
M8FOSA	207596.6	3.9726	246,442.00	3.9726	84	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	60839.64	2.349033	90,043.00	2.340817	68	50 - 150	0.0082	+/-0.50	
M2PFTA	746497.3	4.240733	868,119.00	4.240716	86	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	164278.9	3.747017	154,852.00	3.747033	106	50 - 150	0.0000	+/-0.50	
MPFBA	405939.4	1.050167	397,253.00	1.050167	102	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	136863.1	2.683017	86,854.00	2.674817	158	50 - 150	0.0082	+/-0.50	*
M6PFDA	492957.7	3.74755	533,863.00	3.74755	92	50 - 150	0.0000	+/-0.50	
M3PFBS	104243.9	1.787233	95,878.00	1.777867	109	50 - 150	0.0094	+/-0.50	
M7PFUnA	553562.9	3.881917	575,723.00	3.881917	96	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	39469.48	3.3883	60,785.00	3.3883	65	50 - 150	0.0000	+/-0.50	
M5PFPeA	343779	1.623833	318,641.00	1.623833	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	608017.6	2.424267	569,553.00	2.416067	107	50 - 150	0.0082	+/-0.50	
M3PFHxS	89093.43	3.14535	88,565.00	3.14535	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	668966.2	3.09715	668,068.00	3.097167	100	50 - 150	0.0000	+/-0.50	
M8PFOA	638962.3	3.405067	625,484.00	3.405083	102	50 - 150	0.0000	+/-0.50	
M8PFOS	79028.4	3.596267	83,017.00	3.596267	95	50 - 150	0.0000	+/-0.50	
M9PFNA	470723.9	3.5973	477,041.00	3.5973	99	50 - 150	0.0000	+/-0.50	
MPFDoA	519523.9	4.008717	567,925.00	4.008733	91	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	139012.2	3.889417	151,944.00	3.889417	91	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	193617	3.81745	204,022.00	3.81745	95	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-309 (22K2021-27)		Lab File ID: 22K2021-27.d				Analyzed: 12/09/22 02:51			
M8FOSA	240270.3	3.9726	246,442.00	3.9726	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	69683.09	2.34905	90,043.00	2.340817	77	50 - 150	0.0082	+/-0.50	
M2PFTA	867200.1	4.240716	868,119.00	4.240716	100	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	241770.9	3.747017	154,852.00	3.747033	156	50 - 150	0.0000	+/-0.50	*
MPFBA	448836.8	1.050167	397,253.00	1.050167	113	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	138719	2.683033	86,854.00	2.674817	160	50 - 150	0.0082	+/-0.50	*
M6PFDA	548211.6	3.74755	533,863.00	3.74755	103	50 - 150	0.0000	+/-0.50	
M3PFBS	115294.6	1.787233	95,878.00	1.777867	120	50 - 150	0.0094	+/-0.50	
M7PFUnA	597235.4	3.881917	575,723.00	3.881917	104	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	46541.51	3.3883	60,785.00	3.3883	77	50 - 150	0.0000	+/-0.50	
M5PFPeA	387326.9	1.623833	318,641.00	1.623833	122	50 - 150	0.0000	+/-0.50	
M5PFHxA	685710.8	2.424283	569,553.00	2.416067	120	50 - 150	0.0082	+/-0.50	
M3PFHxS	97239.49	3.145367	88,565.00	3.14535	110	50 - 150	0.0000	+/-0.50	
M4PFHpA	744963.8	3.1053	668,068.00	3.097167	112	50 - 150	0.0081	+/-0.50	
M8PFOA	708737	3.405083	625,484.00	3.405083	113	50 - 150	0.0000	+/-0.50	
M8PFOS	90891.64	3.60425	83,017.00	3.596267	109	50 - 150	0.0080	+/-0.50	
M9PFNA	536170.4	3.5973	477,041.00	3.5973	112	50 - 150	0.0000	+/-0.50	
MPFDoA	584942.9	4.008717	567,925.00	4.008733	103	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	157035	3.8894	151,944.00	3.889417	103	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	207851.4	3.817433	204,022.00	3.81745	102	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
HW-1D (22K2021-28)		Lab File ID: 22K2021-28.d				Analyzed: 12/09/22 02:58			
M8FOSA	227687.8	3.9726	246,442.00	3.9726	92	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	68832.32	2.349033	90,043.00	2.340817	76	50 - 150	0.0082	+/-0.50	
M2PFTA	783410.9	4.240716	868,119.00	4.240716	90	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	220713.9	3.747033	154,852.00	3.747033	143	50 - 150	0.0000	+/-0.50	
MPFBA	367888.1	1.050167	397,253.00	1.050167	93	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	138649.8	2.683017	86,854.00	2.674817	160	50 - 150	0.0082	+/-0.50	*
M6PFDA	531171.8	3.74755	533,863.00	3.74755	99	50 - 150	0.0000	+/-0.50	
M3PFBS	112419.9	1.787233	95,878.00	1.777867	117	50 - 150	0.0094	+/-0.50	
M7PFUnA	582752.1	3.881933	575,723.00	3.881917	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	45765.61	3.3883	60,785.00	3.3883	75	50 - 150	0.0000	+/-0.50	
M5PFPeA	372584	1.623833	318,641.00	1.623833	117	50 - 150	0.0000	+/-0.50	
M5PFHxA	661317.1	2.424267	569,553.00	2.416067	116	50 - 150	0.0082	+/-0.50	
M3PFHxS	96545.78	3.14535	88,565.00	3.14535	109	50 - 150	0.0000	+/-0.50	
M4PFHpA	749190.1	3.105283	668,068.00	3.097167	112	50 - 150	0.0081	+/-0.50	
M8PFOA	658898.4	3.405067	625,484.00	3.405083	105	50 - 150	0.0000	+/-0.50	
M8PFOS	89475.33	3.60425	83,017.00	3.596267	108	50 - 150	0.0080	+/-0.50	
M9PFNA	505944.7	3.5973	477,041.00	3.5973	106	50 - 150	0.0000	+/-0.50	
MPFDoA	575194.3	4.008733	567,925.00	4.008733	101	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	154748.8	3.889417	151,944.00	3.889417	102	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	207416.2	3.81745	204,022.00	3.81745	102	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
WS-101 (22K2021-29)		Lab File ID: 22K2021-29.d				Analyzed: 12/09/22 03:06			
M8FOSA	216450.8	3.972583	246,442.00	3.9726	88	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	71154.72	2.349033	90,043.00	2.340817	79	50 - 150	0.0082	+/-0.50	
M2PFTA	888627.1	4.2407	868,119.00	4.240716	102	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	175763.2	3.747017	154,852.00	3.747033	114	50 - 150	0.0000	+/-0.50	
MPFBA	343336.3	1.050167	397,253.00	1.050167	86	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	141955.1	2.674817	86,854.00	2.674817	163	50 - 150	0.0000	+/-0.50	*
M6PFDA	516568.7	3.747533	533,863.00	3.74755	97	50 - 150	0.0000	+/-0.50	
M3PFBS	112601.2	1.77785	95,878.00	1.777867	117	50 - 150	0.0000	+/-0.50	
M7PFUnA	586499.6	3.881917	575,723.00	3.881917	102	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	44502.35	3.3883	60,785.00	3.3883	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	369883.2	1.623833	318,641.00	1.623833	116	50 - 150	0.0000	+/-0.50	
M5PFHxA	652711.8	2.424267	569,553.00	2.416067	115	50 - 150	0.0082	+/-0.50	
M3PFHxS	101027.8	3.14535	88,565.00	3.14535	114	50 - 150	0.0000	+/-0.50	
M4PFHpA	747771.3	3.09715	668,068.00	3.097167	112	50 - 150	0.0000	+/-0.50	
M8PFOA	667183.5	3.405067	625,484.00	3.405083	107	50 - 150	0.0000	+/-0.50	
M8PFOS	89133.32	3.59625	83,017.00	3.596267	107	50 - 150	0.0000	+/-0.50	
M9PFNA	501000.2	3.5973	477,041.00	3.5973	105	50 - 150	0.0000	+/-0.50	
MPFDoA	606767.4	4.008717	567,925.00	4.008733	107	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	140938.3	3.8894	151,944.00	3.889417	93	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	194874.3	3.817433	204,022.00	3.81745	96	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
DUP 1 (22K2021-30) <div>Lab File ID: 22K2021-30.d</div> <div>Analyzed: 12/09/22 03:13</div>									
M8FOSA	54589.57	3.9726	246,442.00	3.9726	22	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	104156.5	2.349033	90,043.00	2.340817	116	50 - 150	0.0082	+/-0.50	
M2PFTA	45273.96	4.240716	868,119.00	4.240716	05	50 - 150	0.0000	+/-0.50	*
MPFBA	310152	1.050167	397,253.00	1.050167	78	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	118546.1	2.674817	86,854.00	2.674817	136	50 - 150	0.0000	+/-0.50	
M6PFDA	400388.8	3.74755	533,863.00	3.74755	75	50 - 150	0.0000	+/-0.50	
M3PFBS	114192.1	1.787233	95,878.00	1.777867	119	50 - 150	0.0094	+/-0.50	
M7PFUnA	328537.1	3.881917	575,723.00	3.881917	57	50 - 150	0.0000	+/-0.50	
M5PFPeA	321305.1	1.623833	318,641.00	1.623833	101	50 - 150	0.0000	+/-0.50	
M5PFHxA	625380.4	2.424267	569,553.00	2.416067	110	50 - 150	0.0082	+/-0.50	
M3PFHxS	68254.48	3.14535	88,565.00	3.14535	77	50 - 150	0.0000	+/-0.50	
M4PFHpA	658795.1	3.097167	668,068.00	3.097167	99	50 - 150	0.0000	+/-0.50	
M8PFOA	555127.8	3.405067	625,484.00	3.405083	89	50 - 150	0.0000	+/-0.50	
M8PFOS	31349.45	3.596267	83,017.00	3.596267	38	50 - 150	0.0000	+/-0.50	*
M9PFNA	200565.3	3.5973	477,041.00	3.5973	42	50 - 150	0.0000	+/-0.50	*
MPFDoA	172522.7	4.008717	567,925.00	4.008733	30	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	79488.12	3.889417	151,944.00	3.889417	52	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	128823.3	3.81745	204,022.00	3.81745	63	50 - 150	0.0000	+/-0.50	
DUP 1 (22K2021-30RE1) <div>Lab File ID: 22K2021-30RE1.d</div> <div>Analyzed: 12/15/22 22:26</div>									
M2-8:2FTS	138698.8	3.754983	143,640.00	3.754983	97	50 - 150	0.0000	+/-0.50	
MPFBA	399042.9	1.025233	363,562.00	1.025233	110	50 - 150	0.0000	+/-0.50	
M7PFUnA	522739.8	3.906067	542,504.00	3.906067	96	50 - 150	0.0000	+/-0.50	
M5PFPeA	419408.4	1.690017	350,297.00	1.690017	120	50 - 150	0.0000	+/-0.50	
M5PFHxA	666832.9	2.564117	571,594.00	2.564133	117	50 - 150	0.0000	+/-0.50	
M3PFHxS	79465.3	3.169583	72,409.00	3.169583	110	50 - 150	0.0000	+/-0.50	
M4PFHpA	675375.6	3.138483	607,601.00	3.138483	111	50 - 150	0.0000	+/-0.50	
M8PFOA	629205	3.413117	605,485.00	3.413117	104	50 - 150	0.0000	+/-0.50	
M8PFOS	64889.67	3.60425	81,727.00	3.60425	79	50 - 150	0.0000	+/-0.50	
DUP 1 (22K2021-30RE2) <div>Lab File ID: 22K2021-30RE2.d</div> <div>Analyzed: 12/15/22 22:33</div>									
M2-6:2FTS	113341.3	3.39635	128,403.00	3.39635	88	50 - 150	0.0000	+/-0.50	
M3PFHxS	80147.68	3.169583	72,409.00	3.169583	111	50 - 150	0.0000	+/-0.50	
M8PFOS	82630.08	3.60425	81,727.00	3.60425	101	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Equipment Blank 1 (22K2021-31)		Lab File ID: 22K2021-31.d				Analyzed: 12/09/22 03:27			
M8FOSA	218430.8	3.972583	246,442.00	3.9726	89	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	80113.79	2.349033	90,043.00	2.349033	89	50 - 150	0.0000	+/-0.50	
M2PFTA	895497.4	4.2407	868,119.00	4.240733	103	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	268257.9	3.747017	154,852.00	3.747033	173	50 - 150	0.0000	+/-0.50	*
MPFBA	485460.5	1.050167	397,253.00	1.050167	122	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	138381	2.683017	86,854.00	2.674817	159	50 - 150	0.0082	+/-0.50	*
M6PFDA	575972.9	3.747533	533,863.00	3.74755	108	50 - 150	0.0000	+/-0.50	
M3PFBS	113547.8	1.77785	95,878.00	1.787233	118	50 - 150	-0.0094	+/-0.50	
M7PFUnA	656912.8	3.8819	575,723.00	3.881933	114	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	55207.7	3.3883	60,785.00	3.3883	91	50 - 150	0.0000	+/-0.50	
M5PFPeA	379061.2	1.623833	318,641.00	1.623833	119	50 - 150	0.0000	+/-0.50	
M5PFHxA	669110.8	2.424267	569,553.00	2.424267	117	50 - 150	0.0000	+/-0.50	
M3PFHxS	99124.77	3.14535	88,565.00	3.145367	112	50 - 150	0.0000	+/-0.50	
M4PFHpA	754439.4	3.09715	668,068.00	3.097167	113	50 - 150	0.0000	+/-0.50	
M8PFOA	704444.3	3.405067	625,484.00	3.405083	113	50 - 150	0.0000	+/-0.50	
M8PFOS	93774.4	3.60425	83,017.00	3.596267	113	50 - 150	0.0080	+/-0.50	
M9PFNA	515133.3	3.5973	477,041.00	3.5973	108	50 - 150	0.0000	+/-0.50	
MPFDoA	621574.9	4.0087	567,925.00	4.008733	109	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	160990.1	3.8894	151,944.00	3.889417	106	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	241199.4	3.817433	204,022.00	3.81745	118	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Equipment Blank 2 (22K2021-32)		Lab File ID: 22K2021-32.d				Analyzed: 12/09/22 03:34			
M8FOSA	226069.7	3.9726	246,442.00	3.9726	92	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	80600.23	2.357183	90,043.00	2.349033	90	50 - 150	0.0082	+/-0.50	
M2PFTA	883018.3	4.240716	868,119.00	4.240733	102	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	246240.4	3.747033	154,852.00	3.747033	159	50 - 150	0.0000	+/-0.50	*
MPFBA	477989.6	1.050167	397,253.00	1.050167	120	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	122110.6	2.683017	86,854.00	2.674817	141	50 - 150	0.0082	+/-0.50	
M6PFDA	548756.4	3.74755	533,863.00	3.74755	103	50 - 150	0.0000	+/-0.50	
M3PFBS	114246.9	1.787233	95,878.00	1.787233	119	50 - 150	0.0000	+/-0.50	
M7PFUnA	597695.9	3.881917	575,723.00	3.881933	104	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	57015.92	3.39635	60,785.00	3.3883	94	50 - 150	0.0080	+/-0.50	
M5PFPeA	371346	1.6321	318,641.00	1.623833	117	50 - 150	0.0083	+/-0.50	
M5PFHxA	662288	2.432467	569,553.00	2.424267	116	50 - 150	0.0082	+/-0.50	
M3PFHxS	98816.47	3.14535	88,565.00	3.145367	112	50 - 150	0.0000	+/-0.50	
M4PFHpA	730251.9	3.105283	668,068.00	3.097167	109	50 - 150	0.0081	+/-0.50	
M8PFOA	666426.7	3.405083	625,484.00	3.405083	107	50 - 150	0.0000	+/-0.50	
M8PFOS	93372.28	3.60425	83,017.00	3.596267	112	50 - 150	0.0080	+/-0.50	
M9PFNA	511764.6	3.5973	477,041.00	3.5973	107	50 - 150	0.0000	+/-0.50	
MPFDoA	590120.4	4.008717	567,925.00	4.008733	104	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	148538.5	3.889417	151,944.00	3.889417	98	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	219347.6	3.81745	204,022.00	3.81745	108	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Equip-Blank-3 (22K2021-33)		Lab File ID: 22K2021-33.d				Analyzed: 12/09/22 03:42			
M8FOSA	211068.9	3.9726	246,442.00	3.9726	86	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	81924.32	2.349033	90,043.00	2.349033	91	50 - 150	0.0000	+/-0.50	
M2PFTA	874306	4.240716	868,119.00	4.240733	101	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	252234.4	3.747017	154,852.00	3.747033	163	50 - 150	0.0000	+/-0.50	*
MPFBA	468265.2	1.050167	397,253.00	1.050167	118	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	132743.5	2.683017	86,854.00	2.674817	153	50 - 150	0.0082	+/-0.50	*
M6PFDA	580133.4	3.747533	533,863.00	3.74755	109	50 - 150	0.0000	+/-0.50	
M3PFBS	110825.1	1.787233	95,878.00	1.787233	116	50 - 150	0.0000	+/-0.50	
M7PFUnA	640562.3	3.881917	575,723.00	3.881933	111	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	58242.84	3.3883	60,785.00	3.3883	96	50 - 150	0.0000	+/-0.50	
M5PFPeA	362865.3	1.623833	318,641.00	1.623833	114	50 - 150	0.0000	+/-0.50	
M5PFHxA	645509.8	2.424267	569,553.00	2.424267	113	50 - 150	0.0000	+/-0.50	
M3PFHxS	92342.58	3.14535	88,565.00	3.145367	104	50 - 150	0.0000	+/-0.50	
M4PFHpA	728635.9	3.105283	668,068.00	3.097167	109	50 - 150	0.0081	+/-0.50	
M8PFOA	680604.4	3.405067	625,484.00	3.405083	109	50 - 150	0.0000	+/-0.50	
M8PFOS	90778.13	3.60425	83,017.00	3.596267	109	50 - 150	0.0080	+/-0.50	
M9PFNA	509430.9	3.5973	477,041.00	3.5973	107	50 - 150	0.0000	+/-0.50	
MPFDoA	604989.1	4.008717	567,925.00	4.008733	107	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	155292.7	3.8894	151,944.00	3.889417	102	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	221556.8	3.81745	204,022.00	3.81745	109	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
DUP-2 (22K2021-34)		Lab File ID: 22K2021-34.d				Analyzed: 12/09/22 03:49			
M8FOSA	193789.6	3.972583	246,442.00	3.9726	79	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	64343.25	2.349033	90,043.00	2.349033	71	50 - 150	0.0000	+/-0.50	
M2PFTA	761051.9	4.2407	868,119.00	4.240733	88	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	162308.5	3.747017	154,852.00	3.747033	105	50 - 150	0.0000	+/-0.50	
MPFBA	306833.6	1.050167	397,253.00	1.050167	77	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	114707.3	2.683017	86,854.00	2.674817	132	50 - 150	0.0082	+/-0.50	
M6PFDA	472233.9	3.74755	533,863.00	3.74755	88	50 - 150	0.0000	+/-0.50	
M3PFBS	95199.2	1.787233	95,878.00	1.787233	99	50 - 150	0.0000	+/-0.50	
M7PFUnA	510779.8	3.881917	575,723.00	3.881933	89	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	43005.58	3.3883	60,785.00	3.3883	71	50 - 150	0.0000	+/-0.50	
M5PFPeA	313592.8	1.623833	318,641.00	1.623833	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	575507.9	2.424267	569,553.00	2.424267	101	50 - 150	0.0000	+/-0.50	
M3PFHxS	87307.87	3.14535	88,565.00	3.145367	99	50 - 150	0.0000	+/-0.50	
M4PFHpA	637926.4	3.097167	668,068.00	3.097167	95	50 - 150	0.0000	+/-0.50	
M8PFOA	581439	3.405083	625,484.00	3.405083	93	50 - 150	0.0000	+/-0.50	
M8PFOS	76713.93	3.596267	83,017.00	3.596267	92	50 - 150	0.0000	+/-0.50	
M9PFNA	463169.3	3.5973	477,041.00	3.5973	97	50 - 150	0.0000	+/-0.50	
MPFDoA	523814.4	4.008717	567,925.00	4.008733	92	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	131289.1	3.8894	151,944.00	3.889417	86	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	171220	3.817433	204,022.00	3.81745	84	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC 38 (22K2021-35)			Lab File ID: 22K2021-35.d			Analyzed: 12/09/22 03:56			
M8FOSA			246,442.00	3.9726		50 - 150	-3.9726	+/-0.50	*
M2-4:2FTS	63888.35	2.349033	90,043.00	2.349033	71	50 - 150	0.0000	+/-0.50	
M2PFTA			868,119.00	4.240733		50 - 150	-4.2407	+/-0.50	*
M2-8:2FTS	43982.36	3.747017	154,852.00	3.747033	28	50 - 150	0.0000	+/-0.50	*
MPFBA	361725.2	1.058467	397,253.00	1.050167	91	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	105271.6	2.683017	86,854.00	2.674817	121	50 - 150	0.0082	+/-0.50	
M6PFDA	120551.8	3.74755	533,863.00	3.74755	23	50 - 150	0.0000	+/-0.50	*
M3PFBS	98327.8	1.787233	95,878.00	1.787233	103	50 - 150	0.0000	+/-0.50	
M7PFUnA	31318.31	3.881917	575,723.00	3.881933	05	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	34252.3	3.3883	60,785.00	3.3883	56	50 - 150	0.0000	+/-0.50	
M5PFPeA	309213.5	1.6321	318,641.00	1.623833	97	50 - 150	0.0083	+/-0.50	
M5PFHxA	538336.4	2.424267	569,553.00	2.424267	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	79952.92	3.14535	88,565.00	3.145367	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	583381.4	3.097167	668,068.00	3.097167	87	50 - 150	0.0000	+/-0.50	
M8PFOA	494879.6	3.405067	625,484.00	3.405083	79	50 - 150	0.0000	+/-0.50	
M8PFOS	28721.42	3.596267	83,017.00	3.596267	35	50 - 150	0.0000	+/-0.50	*
M9PFNA	284353.3	3.5973	477,041.00	3.5973	60	50 - 150	0.0000	+/-0.50	
MPFDoA	11145.07	4.008717	567,925.00	4.008733	02	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	9040.066	3.8894	151,944.00	3.889417	06	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	22638.58	3.817433	204,022.00	3.81745	11	50 - 150	0.0000	+/-0.50	*

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
PC 38 (22K2021-35RE1)		Lab File ID: 22K2021-35RE1.d				Analyzed: 12/20/22 15:49			
M8FOSA	232149.2	3.9486	269,671.00	3.9486	86	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	117014	2.4886	173,380.00	2.4804	67	50 - 150	0.0082	+/-0.50	
M2PFTA	652302.3	4.297266	775,042.00	4.297266	84	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	134718.9	3.76295	141,290.00	3.76295	95	50 - 150	0.0000	+/-0.50	
MPFBA	334029.4	1.04185	340,287.00	1.033533	98	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	83714.85	2.822933	90,729.00	2.822933	92	50 - 150	0.0000	+/-0.50	
M6PFDA	516730.6	3.763467	479,584.00	3.763467	108	50 - 150	0.0000	+/-0.50	
M3PFBS	142453.6	1.886667	128,229.00	1.886667	111	50 - 150	0.0000	+/-0.50	
M7PFUnA	485409.4	3.914067	517,421.00	3.914067	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	134274.5	3.4044	150,815.00	3.4044	89	50 - 150	0.0000	+/-0.50	
M5PFPeA	375525.3	1.706567	333,389.00	1.706567	113	50 - 150	0.0000	+/-0.50	
M5PFHxA	623896.5	2.58055	550,327.00	2.572333	113	50 - 150	0.0082	+/-0.50	
M3PFHxS	98853.61	3.177667	87,862.00	3.17765	113	50 - 150	0.0000	+/-0.50	
M4PFHpA	671353.5	3.14655	575,756.00	3.14655	117	50 - 150	0.0000	+/-0.50	
M8PFOA	644143.3	3.421167	546,781.00	3.421167	118	50 - 150	0.0000	+/-0.50	
M8PFOS	91313.23	3.612233	91,121.00	3.612233	100	50 - 150	0.0000	+/-0.50	
M9PFNA	517256	3.605283	473,423.00	3.613267	109	50 - 150	-0.0080	+/-0.50	
MPFDoA	441641.2	4.048683	476,847.00	4.056667	93	50 - 150	-0.0080	+/-0.50	
D5-NEtFOSAA	160430.9	3.921533	181,660.00	3.921533	88	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	198752.7	3.841733	188,780.00	3.841733	105	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B323248-BLK1)			Lab File ID: B323248-BLK1.d			Analyzed: 12/15/22 04:44			
M8FOSA	171772.2	3.9486	236,835.00	3.9486	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	103123.9	2.472183	127,593.00	2.472183	81	50 - 150	0.0000	+/-0.50	
M2PFTA	579759.1	4.2892	883,350.00	4.2892	66	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	130521.1	3.76295	106,068.00	3.754983	123	50 - 150	0.0080	+/-0.50	
MPFBA	379879.2	1.025233	405,224.00	1.025233	94	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	93281.8	2.806567	94,452.00	2.81475	99	50 - 150	-0.0082	+/-0.50	
M6PFDA	464748	3.7555	509,721.00	3.763467	91	50 - 150	-0.0080	+/-0.50	
M3PFBS	101291.4	1.8701	114,251.00	1.8701	89	50 - 150	0.0000	+/-0.50	
M7PFUnA	448086.4	3.906067	559,117.00	3.906067	80	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	113505.2	3.4044	112,597.00	3.4044	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	359818.5	1.690017	386,004.00	1.690017	93	50 - 150	0.0000	+/-0.50	
M5PFHxA	558536.8	2.564117	652,040.00	2.564117	86	50 - 150	0.0000	+/-0.50	
M3PFHxS	73905.22	3.169583	82,239.00	3.169583	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	596572.9	3.138483	675,794.00	3.138483	88	50 - 150	0.0000	+/-0.50	
M8PFOA	533992.9	3.413117	614,656.00	3.413117	87	50 - 150	0.0000	+/-0.50	
M8PFOS	73578.98	3.60425	91,052.00	3.60425	81	50 - 150	0.0000	+/-0.50	
M9PFNA	453760.5	3.605283	493,594.00	3.605283	92	50 - 150	0.0000	+/-0.50	
MPFDoA	386161.2	4.048683	536,571.00	4.048683	72	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	113855.6	3.913533	158,959.00	3.913533	72	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	155767.1	3.833783	191,022.00	3.833783	82	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B323248-BS1)		Lab File ID: B323248-BS1.d				Analyzed: 12/15/22 04:36			
M8FOSA	168590.2	3.9486	236,835.00	3.9486	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	101277.9	2.4804	127,593.00	2.472183	79	50 - 150	0.0082	+/-0.50	
M2PFTA	583047.4	4.2892	883,350.00	4.2892	66	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	115964.3	3.76295	106,068.00	3.754983	109	50 - 150	0.0080	+/-0.50	
MPFBA	365298.5	1.025233	405,224.00	1.025233	90	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	106279.3	2.81475	94,452.00	2.81475	113	50 - 150	0.0000	+/-0.50	
M6PFDA	429306.5	3.7555	509,721.00	3.763467	84	50 - 150	-0.0080	+/-0.50	
M3PFBS	98316.28	1.878383	114,251.00	1.8701	86	50 - 150	0.0083	+/-0.50	
M7PFUnA	431764.6	3.906067	559,117.00	3.906067	77	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	100574.6	3.4044	112,597.00	3.4044	89	50 - 150	0.0000	+/-0.50	
M5PFPeA	345841.2	1.690017	386,004.00	1.690017	90	50 - 150	0.0000	+/-0.50	
M5PFHxA	544769.7	2.564117	652,040.00	2.564117	84	50 - 150	0.0000	+/-0.50	
M3PFHxS	70951.74	3.17765	82,239.00	3.169583	86	50 - 150	0.0081	+/-0.50	
M4PFHpA	558506.8	3.138483	675,794.00	3.138483	83	50 - 150	0.0000	+/-0.50	
M8PFOA	527032.3	3.413117	614,656.00	3.413117	86	50 - 150	0.0000	+/-0.50	
M8PFOS	69846.24	3.60425	91,052.00	3.60425	77	50 - 150	0.0000	+/-0.50	
M9PFNA	448701.6	3.605283	493,594.00	3.605283	91	50 - 150	0.0000	+/-0.50	
MPFDoA	368121.3	4.048683	536,571.00	4.048683	69	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	113132	3.913533	158,959.00	3.913533	71	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	150476.8	3.833783	191,022.00	3.833783	79	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B323248-MS1) Lab File ID: B323248-MS1.d Analyzed: 12/15/22 04:51									
M8FOSA	153316	3.9486	236,835.00	3.9486	65	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	65066.77	2.4804	127,593.00	2.472183	51	50 - 150	0.0082	+/-0.50	
M2PFTA	411245.8	4.2892	883,350.00	4.2892	47	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	88097.42	3.76295	106,068.00	3.754983	83	50 - 150	0.0080	+/-0.50	
MPFBA	246520.2	1.033533	405,224.00	1.025233	61	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	84922.61	2.81475	94,452.00	2.81475	90	50 - 150	0.0000	+/-0.50	
M6PFDA	400073.8	3.7555	509,721.00	3.763467	78	50 - 150	-0.0080	+/-0.50	
M3PFBS	94333.73	1.878383	114,251.00	1.8701	83	50 - 150	0.0083	+/-0.50	
M7PFUnA	374460.8	3.906067	559,117.00	3.906067	67	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	95780.47	3.4044	112,597.00	3.4044	85	50 - 150	0.0000	+/-0.50	
M5PFPeA	305670.2	1.698283	386,004.00	1.690017	79	50 - 150	0.0083	+/-0.50	
M5PFHxA	505982	2.564133	652,040.00	2.564117	78	50 - 150	0.0000	+/-0.50	
M3PFHxS	66518.88	3.177667	82,239.00	3.169583	81	50 - 150	0.0081	+/-0.50	
M4PFHpA	537920.9	3.138483	675,794.00	3.138483	80	50 - 150	0.0000	+/-0.50	
M8PFOA	512314.6	3.413117	614,656.00	3.413117	83	50 - 150	0.0000	+/-0.50	
M8PFOS	68173.24	3.60425	91,052.00	3.60425	75	50 - 150	0.0000	+/-0.50	
M9PFNA	412678.7	3.605283	493,594.00	3.605283	84	50 - 150	0.0000	+/-0.50	
MPFDoA	323581.8	4.048683	536,571.00	4.048683	60	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	106512	3.913533	158,959.00	3.913533	67	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	126976.8	3.833783	191,022.00	3.833783	66	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B323248-MSD1)			Lab File ID: B323248-MSD1.d			Analyzed: 12/15/22 04:58			
M8FOSA	151582.2	3.9486	236,835.00	3.9486	64	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	62316.43	2.4804	127,593.00	2.472183	49	50 - 150	0.0082	+/-0.50	*
M2PFTA	242688.7	4.2892	883,350.00	4.2892	27	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	98696.13	3.754983	106,068.00	3.754983	93	50 - 150	0.0000	+/-0.50	
MPFBA	276571.4	1.033533	405,224.00	1.025233	68	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	86418.66	2.81475	94,452.00	2.81475	91	50 - 150	0.0000	+/-0.50	
M6PFDA	414530.5	3.7555	509,721.00	3.763467	81	50 - 150	-0.0080	+/-0.50	
M3PFBS	99331.45	1.878383	114,251.00	1.8701	87	50 - 150	0.0083	+/-0.50	
M7PFUnA	364181	3.906067	559,117.00	3.906067	65	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	94762.2	3.4044	112,597.00	3.4044	84	50 - 150	0.0000	+/-0.50	
M5PFPeA	327917.3	1.698283	386,004.00	1.690017	85	50 - 150	0.0083	+/-0.50	
M5PFHxA	547542.7	2.564133	652,040.00	2.564117	84	50 - 150	0.0000	+/-0.50	
M3PFHxS	72435.3	3.177667	82,239.00	3.169583	88	50 - 150	0.0081	+/-0.50	
M4PFHpA	578844.7	3.138483	675,794.00	3.138483	86	50 - 150	0.0000	+/-0.50	
M8PFOA	534761.1	3.413117	614,656.00	3.413117	87	50 - 150	0.0000	+/-0.50	
M8PFOS	72164.92	3.60425	91,052.00	3.60425	79	50 - 150	0.0000	+/-0.50	
M9PFNA	403294.4	3.605283	493,594.00	3.605283	82	50 - 150	0.0000	+/-0.50	
MPFDoA	300735.1	4.048683	536,571.00	4.048683	56	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	99218.39	3.913533	158,959.00	3.913533	62	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	132588.8	3.833783	191,022.00	3.833783	69	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B323249-BLK1)			Lab File ID: B323249-BLK1.d			Analyzed: 12/08/22 19:22			
M8FOSA	210370.9	3.980567	246,442.00	3.980583	85	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	78210.32	2.4228	90,043.00	2.4228	87	50 - 150	0.0000	+/-0.50	
M2PFTA	813608.7	4.2892	868,119.00	4.2892	94	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	145646.7	3.78685	154,852.00	3.786867	94	50 - 150	0.0000	+/-0.50	
MPFBA	439000.9	1.066783	397,253.00	1.075083	111	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	103616.6	2.757467	86,854.00	2.76565	119	50 - 150	-0.0082	+/-0.50	
M6PFDA	581034.8	3.787383	533,863.00	3.787383	109	50 - 150	0.0000	+/-0.50	
M3PFBS	102546.1	1.845233	95,878.00	1.845233	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	573337.1	3.92205	575,723.00	3.922067	100	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	55858.45	3.4293	60,785.00	3.429317	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	343278.9	1.673467	318,641.00	1.681733	108	50 - 150	-0.0083	+/-0.50	
M5PFHxA	603363.8	2.498417	569,553.00	2.506633	106	50 - 150	-0.0082	+/-0.50	
M3PFHxS	94561.17	3.185733	88,565.00	3.185733	107	50 - 150	0.0000	+/-0.50	
M4PFHpA	708509.3	3.14655	668,068.00	3.14655	106	50 - 150	0.0000	+/-0.50	
M8PFOA	653650.9	3.437833	625,484.00	3.445833	105	50 - 150	-0.0080	+/-0.50	
M8PFOS	88235.86	3.636183	83,017.00	3.636183	106	50 - 150	0.0000	+/-0.50	
M9PFNA	519677.4	3.637217	477,041.00	3.637217	109	50 - 150	0.0000	+/-0.50	
MPFDoA	586334.8	4.056667	567,925.00	4.056684	103	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	150131.7	3.929517	151,944.00	3.929533	99	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	206304.2	3.85765	204,022.00	3.857667	101	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B323249-BS1)		Lab File ID: B323249-BS1.d				Analyzed: 12/08/22 19:15			
M8FOSA	249851.1	3.980583	246,442.00	3.980583	101	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	88287.4	2.4228	90,043.00	2.4228	98	50 - 150	0.0000	+/-0.50	
M2PFTA	933636.4	4.289217	868,119.00	4.2892	108	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	180306	3.786867	154,852.00	3.786867	116	50 - 150	0.0000	+/-0.50	
MPFBA	491749.2	1.075083	397,253.00	1.075083	124	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	108415	2.76565	86,854.00	2.76565	125	50 - 150	0.0000	+/-0.50	
M6PFDA	618326.1	3.7874	533,863.00	3.787383	116	50 - 150	0.0000	+/-0.50	
M3PFBS	112941.1	1.845233	95,878.00	1.845233	118	50 - 150	0.0000	+/-0.50	
M7PFUnA	635670.3	3.922067	575,723.00	3.922067	110	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	64381.78	3.429317	60,785.00	3.429317	106	50 - 150	0.0000	+/-0.50	
M5PFPeA	387429.7	1.681733	318,641.00	1.681733	122	50 - 150	0.0000	+/-0.50	
M5PFHxA	674073.9	2.506633	569,553.00	2.506633	118	50 - 150	0.0000	+/-0.50	
M3PFHxS	101987.8	3.185733	88,565.00	3.185733	115	50 - 150	0.0000	+/-0.50	
M4PFHpA	785210.6	3.14655	668,068.00	3.14655	118	50 - 150	0.0000	+/-0.50	
M8PFOA	736585.8	3.445833	625,484.00	3.445833	118	50 - 150	0.0000	+/-0.50	
M8PFOS	98229.55	3.6362	83,017.00	3.636183	118	50 - 150	0.0000	+/-0.50	
M9PFNA	568438.4	3.637233	477,041.00	3.637217	119	50 - 150	0.0000	+/-0.50	
MPFDoA	660599.8	4.056684	567,925.00	4.056684	116	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	169339.5	3.929533	151,944.00	3.929533	111	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	235046.8	3.857667	204,022.00	3.857667	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B323249-MS1) Lab File ID: B323249-MS1.d Analyzed: 12/08/22 19:30									
M8FOSA	21697.94	3.988583	246,442.00	3.980583	09	50 - 150	0.0080	+/-0.50	*
M2-4:2FTS	97703.4	2.4228	90,043.00	2.4228	109	50 - 150	0.0000	+/-0.50	
M2PFTA	12794.14	4.2892	868,119.00	4.2892	01	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	175955.2	3.786867	154,852.00	3.786867	114	50 - 150	0.0000	+/-0.50	
MPFBA	265093	1.075083	397,253.00	1.075083	67	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	85777.83	2.76565	86,854.00	2.76565	99	50 - 150	0.0000	+/-0.50	
M6PFDA	263537.8	3.787383	533,863.00	3.787383	49	50 - 150	0.0000	+/-0.50	*
M3PFBS	89960.27	1.845233	95,878.00	1.845233	94	50 - 150	0.0000	+/-0.50	
M7PFUnA	115266	3.922067	575,723.00	3.922067	20	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	91667.73	3.429317	60,785.00	3.429317	151	50 - 150	0.0000	+/-0.50	*
M5PFPeA	286702.7	1.681733	318,641.00	1.681733	90	50 - 150	0.0000	+/-0.50	
M5PFHxA	550131.9	2.506633	569,553.00	2.506633	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	72312.06	3.193817	88,565.00	3.185733	82	50 - 150	0.0081	+/-0.50	
M4PFHpA	612840.4	3.146567	668,068.00	3.14655	92	50 - 150	0.0000	+/-0.50	
M8PFOA	550808.8	3.445833	625,484.00	3.445833	88	50 - 150	0.0000	+/-0.50	
M8PFOS	31703.6	3.6362	83,017.00	3.636183	38	50 - 150	0.0000	+/-0.50	*
M9PFNA	288658.6	3.637233	477,041.00	3.637217	61	50 - 150	0.0000	+/-0.50	
MPFDoA	33703.67	4.056684	567,925.00	4.056684	06	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	32862.89	3.929533	151,944.00	3.929533	22	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	67034.83	3.857667	204,022.00	3.857667	33	50 - 150	0.0000	+/-0.50	*

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B323249-MSD1)			Lab File ID: B323249-MSD1.d			Analyzed: 12/08/22 19:37			
M8FOSA	34842.48	3.980583	246,442.00	3.980583	14	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	96791.34	2.4228	90,043.00	2.4228	107	50 - 150	0.0000	+/-0.50	
M2PFTA	11826.42	4.289217	868,119.00	4.2892	01	50 - 150	0.0000	+/-0.50	*
M2-8:2FTS	192729.1	3.786867	154,852.00	3.786867	124	50 - 150	0.0000	+/-0.50	
MPFBA	271553.7	1.075083	397,253.00	1.075083	68	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	78084.18	2.757467	86,854.00	2.76565	90	50 - 150	-0.0082	+/-0.50	
M6PFDA	323103.3	3.787383	533,863.00	3.787383	61	50 - 150	0.0000	+/-0.50	
M3PFBS	93397.09	1.845233	95,878.00	1.845233	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	172328.9	3.922067	575,723.00	3.922067	30	50 - 150	0.0000	+/-0.50	*
M2-6:2FTS	94050.41	3.429317	60,785.00	3.429317	155	50 - 150	0.0000	+/-0.50	*
M5PFPeA	290482.6	1.681733	318,641.00	1.681733	91	50 - 150	0.0000	+/-0.50	
M5PFHxA	558794.9	2.498417	569,553.00	2.506633	98	50 - 150	-0.0082	+/-0.50	
M3PFHxS	75491.5	3.185733	88,565.00	3.185733	85	50 - 150	0.0000	+/-0.50	
M4PFHpA	636940.9	3.14655	668,068.00	3.14655	95	50 - 150	0.0000	+/-0.50	
M8PFOA	580663.7	3.437833	625,484.00	3.445833	93	50 - 150	-0.0080	+/-0.50	
M8PFOS	42175.46	3.6362	83,017.00	3.636183	51	50 - 150	0.0000	+/-0.50	
M9PFNA	305639.5	3.637233	477,041.00	3.637217	64	50 - 150	0.0000	+/-0.50	
MPFDoA	65725.57	4.056684	567,925.00	4.056684	12	50 - 150	0.0000	+/-0.50	*
D5-NEtFOSAA	47644.87	3.929533	151,944.00	3.929533	31	50 - 150	0.0000	+/-0.50	*
D3-NMeFOSAA	93458.35	3.857667	204,022.00	3.857667	46	50 - 150	0.0000	+/-0.50	*

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B325808-BLK1)			Lab File ID: B325808-BLK1.d			Analyzed: 12/20/22 13:09			
M8FOSA	197678.2	3.9486	269,671.00	3.9486	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	131441.4	2.496817	173,380.00	2.4886	76	50 - 150	0.0082	+/-0.50	
M2PFTA	530504.1	4.297266	775,042.00	4.297266	68	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	193134.1	3.770917	141,290.00	3.770917	137	50 - 150	0.0000	+/-0.50	
MPFBA	354881.1	1.04185	340,287.00	1.033533	104	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	103835.9	2.822933	90,729.00	2.822933	114	50 - 150	0.0000	+/-0.50	
M6PFDA	499047.7	3.771433	479,584.00	3.763467	104	50 - 150	0.0080	+/-0.50	
M3PFBS	123781.9	1.886667	128,229.00	1.886667	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	456227.7	3.91405	517,421.00	3.914067	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	130959.7	3.41245	150,815.00	3.41245	87	50 - 150	0.0000	+/-0.50	
M5PFPeA	327013.9	1.706567	333,389.00	1.706567	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	531872.4	2.58055	550,327.00	2.58055	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	87106.21	3.185733	87,862.00	3.17765	99	50 - 150	0.0081	+/-0.50	
M4PFHpA	563993.8	3.14655	575,756.00	3.14655	98	50 - 150	0.0000	+/-0.50	
M8PFOA	530215.9	3.421167	546,781.00	3.421167	97	50 - 150	0.0000	+/-0.50	
M8PFOS	79617.55	3.612233	91,121.00	3.612233	87	50 - 150	0.0000	+/-0.50	
M9PFNA	432899	3.613267	473,423.00	3.613267	91	50 - 150	0.0000	+/-0.50	
MPFDoA	373828.7	4.056667	476,847.00	4.056667	78	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	140201.4	3.921533	181,660.00	3.921533	77	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	171879.8	3.841733	188,780.00	3.841733	91	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B325808-BS1)		Lab File ID: B325808-BS1.d				Analyzed: 12/20/22 12:55			
M8FOSA	239544.8	3.9486	269,671.00	3.9486	89	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	160324.3	2.496817	173,380.00	2.4886	92	50 - 150	0.0082	+/-0.50	
M2PFTA	639830.8	4.297266	775,042.00	4.297266	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	138019.1	3.770917	141,290.00	3.770917	98	50 - 150	0.0000	+/-0.50	
MPFBA	389947.1	1.033533	340,287.00	1.033533	115	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	95303.96	2.831117	90,729.00	2.822933	105	50 - 150	0.0082	+/-0.50	
M6PFDA	519593.3	3.763467	479,584.00	3.763467	108	50 - 150	0.0000	+/-0.50	
M3PFBS	138018	1.886683	128,229.00	1.886667	108	50 - 150	0.0000	+/-0.50	
M7PFUnA	527910.8	3.914067	517,421.00	3.914067	102	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	150524.6	3.41245	150,815.00	3.41245	100	50 - 150	0.0000	+/-0.50	
M5PFPeA	357630.4	1.706567	333,389.00	1.706567	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	590174.7	2.58055	550,327.00	2.58055	107	50 - 150	0.0000	+/-0.50	
M3PFHxS	93769.3	3.185733	87,862.00	3.17765	107	50 - 150	0.0081	+/-0.50	
M4PFHpA	629463.5	3.14655	575,756.00	3.14655	109	50 - 150	0.0000	+/-0.50	
M8PFOA	599162.9	3.421167	546,781.00	3.421167	110	50 - 150	0.0000	+/-0.50	
M8PFOS	102102.3	3.612233	91,121.00	3.612233	112	50 - 150	0.0000	+/-0.50	
M9PFNA	535054.8	3.613267	473,423.00	3.613267	113	50 - 150	0.0000	+/-0.50	
MPFDoA	433555.5	4.056667	476,847.00	4.056667	91	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	176556.7	3.921533	181,660.00	3.921533	97	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	184926.3	3.84175	188,780.00	3.841733	98	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B325808-BSD1)			Lab File ID: B325808-BSD1.d			Analyzed: 12/20/22 13:02			
M8FOSA	218742.1	3.9486	269,671.00	3.9486	81	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	150109.9	2.496817	173,380.00	2.4886	87	50 - 150	0.0082	+/-0.50	
M2PFTA	641671	4.297266	775,042.00	4.297266	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	182601.9	3.770917	141,290.00	3.770917	129	50 - 150	0.0000	+/-0.50	
MPFBA	392555.8	1.04185	340,287.00	1.033533	115	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	104558.8	2.831117	90,729.00	2.822933	115	50 - 150	0.0082	+/-0.50	
M6PFDA	559934.1	3.771433	479,584.00	3.763467	117	50 - 150	0.0080	+/-0.50	
M3PFBS	136227.3	1.886667	128,229.00	1.886667	106	50 - 150	0.0000	+/-0.50	
M7PFUnA	532054.6	3.914067	517,421.00	3.914067	103	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	140195.3	3.41245	150,815.00	3.41245	93	50 - 150	0.0000	+/-0.50	
M5PFPeA	359573.8	1.706567	333,389.00	1.706567	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	593241.2	2.58055	550,327.00	2.58055	108	50 - 150	0.0000	+/-0.50	
M3PFHxS	94964.4	3.185733	87,862.00	3.17765	108	50 - 150	0.0081	+/-0.50	
M4PFHpA	619081.3	3.14655	575,756.00	3.14655	108	50 - 150	0.0000	+/-0.50	
M8PFOA	570106.8	3.421167	546,781.00	3.421167	104	50 - 150	0.0000	+/-0.50	
M8PFOS	92023.72	3.612233	91,121.00	3.612233	101	50 - 150	0.0000	+/-0.50	
M9PFNA	489756.8	3.613267	473,423.00	3.613267	103	50 - 150	0.0000	+/-0.50	
MPFDoA	434177.9	4.056667	476,847.00	4.056667	91	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	176473.2	3.921533	181,660.00	3.921533	97	50 - 150	0.0000	+/-0.50	
D3-NMeFOSAA	188257.7	3.841733	188,780.00	3.841733	100	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B326602-BLK1)			Lab File ID: B326602-BLK1.d			Analyzed: 12/30/22 10:01			
M8FOSA	176495.9	3.932617	205,724.00	3.932617	86	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	121340.8	2.472183	106,792.00	2.4804	114	50 - 150	-0.0082	+/-0.50	
M2PFTA	450679.9	4.297266	562,114.00	4.297266	80	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	216455.2	3.76295	218,600.00	3.76295	99	50 - 150	0.0000	+/-0.50	
MPFBA	336197.2	1.04185	267,115.00	1.04185	126	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	86238.34	2.806567	89,963.00	2.81475	96	50 - 150	-0.0082	+/-0.50	
M6PFDA	471007.3	3.763467	436,896.00	3.763467	108	50 - 150	0.0000	+/-0.50	
M3PFBS	108285.3	1.878383	94,401.00	1.878383	115	50 - 150	0.0000	+/-0.50	
M7PFUnA	422138.8	3.906067	410,900.00	3.91405	103	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	116231.1	3.4044	100,580.00	3.4044	116	50 - 150	0.0000	+/-0.50	
M5PFPeA	319753.9	1.698283	261,820.00	1.698283	122	50 - 150	0.0000	+/-0.50	
M5PFHxA	509012.7	2.564117	419,158.00	2.564117	121	50 - 150	0.0000	+/-0.50	
M3PFHxS	73378.95	3.17765	65,210.00	3.17765	113	50 - 150	0.0000	+/-0.50	
M4PFHpA	507933	3.138483	428,379.00	3.138483	119	50 - 150	0.0000	+/-0.50	
M8PFOA	502154	3.413117	413,621.00	3.421167	121	50 - 150	-0.0080	+/-0.50	
M8PFOS	80338.16	3.60425	63,625.00	3.60425	126	50 - 150	0.0000	+/-0.50	
M9PFNA	408106.8	3.605283	343,397.00	3.605283	119	50 - 150	0.0000	+/-0.50	
MPFDoA	354292.1	4.048683	336,792.00	4.048683	105	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	130421	3.913533	128,194.00	3.921533	102	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	160323	3.841733	166,732.00	3.841733	96	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B326602-BS1)			Lab File ID: B326602-BS1.d			Analyzed: 12/30/22 09:54			
M8FOSA	213718.4	3.932617	205,724.00	3.932617	104	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	145869.9	2.472183	106,792.00	2.4804	137	50 - 150	-0.0082	+/-0.50	
M2PFTA	591127.1	4.2892	562,114.00	4.297266	105	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	277842.6	3.76295	218,600.00	3.76295	127	50 - 150	0.0000	+/-0.50	
MPFBA	374993.4	1.04185	267,115.00	1.04185	140	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	100649.4	2.806567	89,963.00	2.81475	112	50 - 150	-0.0082	+/-0.50	
M6PFDA	559970.7	3.763467	436,896.00	3.763467	128	50 - 150	0.0000	+/-0.50	
M3PFBS	131113.3	1.8701	94,401.00	1.878383	139	50 - 150	-0.0083	+/-0.50	
M7PFUnA	479228.7	3.906067	410,900.00	3.91405	117	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	134229.9	3.4044	100,580.00	3.4044	133	50 - 150	0.0000	+/-0.50	
M5PFPeA	365194	1.698283	261,820.00	1.698283	139	50 - 150	0.0000	+/-0.50	
M5PFHxA	575277.9	2.564117	419,158.00	2.564117	137	50 - 150	0.0000	+/-0.50	
M3PFHxS	89600.53	3.169583	65,210.00	3.17765	137	50 - 150	-0.0081	+/-0.50	
M4PFHpA	589351.1	3.138483	428,379.00	3.138483	138	50 - 150	0.0000	+/-0.50	
M8PFOA	603047.7	3.413117	413,621.00	3.421167	146	50 - 150	-0.0080	+/-0.50	
M8PFOS	92650.09	3.60425	63,625.00	3.60425	146	50 - 150	0.0000	+/-0.50	
M9PFNA	481579.3	3.605283	343,397.00	3.605283	140	50 - 150	0.0000	+/-0.50	
MPFDoA	458536.5	4.048683	336,792.00	4.048683	136	50 - 150	0.0000	+/-0.50	
D5-NEtFOSAA	174703.3	3.913533	128,194.00	3.921533	136	50 - 150	-0.0080	+/-0.50	
D3-NMeFOSAA	185837.5	3.833783	166,732.00	3.841733	111	50 - 150	-0.0080	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

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

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

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

22K2021

Company Name: Barnstable County Address: 3195 Main St. PO Box 427 Phone: BETA Project Location: Barnstable, MA Project Number: 6206 Project Manager: Roger Thibault		Con-Test Quote Name/Number: Invoice Recipient: Pricilla Ellis - pellis@barnstablecounty.org Sampled By: Chris Oien, Lauryn Mulcahy, Amanda Makela		Request for Custody Record 7-Day <input type="checkbox"/> 10-Day <input type="checkbox"/> PFAS 15-Day (std) <input checked="" type="checkbox"/> Due Date: 1-Day <input type="checkbox"/> 3-Day <input type="checkbox"/> 2-Day <input type="checkbox"/> 4-Day <input type="checkbox"/> Format: PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> Other: <input type="checkbox"/>		Required Analysis: Dissolved Metals Field Filtered: <input type="checkbox"/> Lab to Filter: <input type="checkbox"/> Orthophosphate: <input type="checkbox"/> Lab to Filter: <input type="checkbox"/> Data Delivery: <input type="checkbox"/> PCB ONLY SOXHLET <input type="checkbox"/> NON SOXHLET <input type="checkbox"/>		ANALYSIS REQUESTED NP		Preservation Code Counter Use Only Total Number Of: VIALS GLASS PLASTIC 20 BACTERIA ENCORE								
Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS	Glassware in the fridge? <input checked="" type="checkbox"/> Y / N	Glassware in freezer? Y / N	Prepackaged Cooler? Y / N	*Contest is not responsible for missing samples from prepacked coolers	1 Matrix Codes: GW = Ground Water WW = Waste Water DW = Drinking Water A = Air S = Soil SL = Sludge SOL = Solid O = Other (please define)	2 Preservation Codes: I = Iced H = HCL M = Methanol N = Nitric Acid S = Sulfuric Acid B = Sodium Bisulfate X = Sodium Hydroxide T = Sodium Thiosulfate O = Other (please define)
9	PC-14	11/11/2022 9:00	11/11/2022 9:00	GRAB	GW	U												
10	PC-16D	11/10/2022 10:00	11/10/2022 10:00	GRAB	GW	U												
11	PC-18	11/10/2022 10:30	11/10/2022 10:30	GRAB	GW	U												
12	PC-28	11/10/2022 13:40	11/10/2022 13:40	GRAB	GW	U												
13	PC-29	11/10/2022 14:00	11/10/2022 14:00	GRAB	GW	U												
14	PC-30	11/10/2022 9:00	11/10/2022 9:00	GRAB	GW	U												
15	PC-34S	11/9/2022 13:45	11/9/2022 13:45	GRAB	GW	U												
16	PC-36	11/10/2022 10:00	11/10/2022 10:00	GRAB	GW	U												
17	PC-39	11/10/2022 11:00	11/10/2022 11:00	GRAB	GW	U												
18	MW-3	11/9/2022 11:30	11/9/2022 11:30	GRAB	GW	U												
Relinquished by: (signature)		Date/Time: 11-11-22 2pm	Client Comments: Sample confirmation and report to Rnhbault@BETA-Inc.com & Lboulvey@BETA-Inc.com															
Received by: (signature)		Date/Time: 11-14-22 12:30	Special Requirements															
Relinquished by: (signature)		Date/Time: 11-14-22 14	MA MCP Required															
Received by: (signature)		Date/Time: 11-14-22 14:53	MCP Certification Form Required															
Relinquished by: (signature)		Date/Time: 11-14-22 16:50	CT RCP Required															
Received by: (signature)		Date/Time: 11-14-22 16:50	RCP Certification Form Required															
Relinquished by: (signature)		Date/Time: 11-14-22 16:50	MA State DW Required															
Received by: (signature)		Date/Time: 11-14-22 16:50	PWSID #															
Relinquished by: (signature)		Date/Time: 11-14-22 16:50	Project Entity															
Received by: (signature)		Date/Time: 11-14-22 16:50	Government <input type="checkbox"/> Federal <input type="checkbox"/> City <input type="checkbox"/> Municipality <input type="checkbox"/> 21 J <input type="checkbox"/> Brownfield <input type="checkbox"/> MWRA <input type="checkbox"/> School <input type="checkbox"/> MBTA <input type="checkbox"/> WRTA <input type="checkbox"/> Other <input type="checkbox"/> Chromatogram <input type="checkbox"/> AIHA-LAP, LLC <input type="checkbox"/>															

Lab Comments:

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

[illegible]

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

[illegible]

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



Doc# 277 Rev 6 July 2022

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

Client Barstable County

Received By DM Date 11/19/22 Time 1650

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

Were samples within Direct From Sample Ambient Melted Ice

Temperature? Within 2-6°C By Gun # 5 Actual Temp - 3.7, 2.0

Was Custody Seal In tact? NA By Blank # Actual Temp -

Was COC Relinquished? T Were Samples Tampered with? NA

Are there broken/leaking/loose caps on any samples? T Does Chain Agree With Samples? T

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

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

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

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified?

Are there Rushes? F Who was notified?

Are there Short Holds? F Who was notified?

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

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

Proper Media/Containers Used? T splitting samples require F

Were trip blanks receive F On COC? F

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

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

Unused Media

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

Comments:

Just sent samples PC 38 not on COC
11/19/22 @ 12

APPENDIX D

PUBLIC NOTIFICATIONS



April 2023

Mark S. Ells, Town Manager
Town of Barnstable
200 Main Street
Hyannis, MA 02601

RE: Immediate Response Action Status and Remedial Monitoring Report #64 and
Interim Phase II CSA Status Report
The Former Barnstable County Fire Training Academy
155 South Flint Rock Road
Barnstable, Massachusetts
DEP Release Tracking No. 4-26179
Project File #6206

Dear Mr. Ells,

As required by the Massachusetts Contingency Plan (MCP) 310 CMR 40.1403(3)(e) and 40.1403(6), BETA Group, Inc.(BETA) is notifying you on behalf of our client, Barnstable County, that Immediate Response Action (IRA) Status and Remedial Monitoring Report (RMR) No. 64 is being submitted to the Massachusetts Department of Environmental Protection – Bureau of Waste Site Cleanup (MassDEP – BWSC) for the release Site referenced as the former Barnstable County Fire Training Academy (FTA) located at 155 South Flint Rock Road in Barnstable, Massachusetts (the Disposal Site or Site). This Report summarizes the IRA activities that occurred during the June 2022 to December 2022 six-month reporting period.

In addition to on-going Immediate Response Actions at the Site, the MCP Phase II Comprehensive Site Assessment is underway. In response to a request from MassDEP, the report also includes preliminary information on the Phase II Comprehensive Site Assessment (CSA) activities conducted during the period of June 2022 through December 2022.

A release of poly- and perfluoroalkyl substances (PFAS) attributable to historic training with aqueous film-forming foams (AFFF) has been documented at the Site. In August 2016, MassDEP Southeast Regional Office issued a Notice of Responsibility (NOR) to Barnstable County, as the owner and operator of the Barnstable County Fire and Rescue Training Academy (BCFRTA) at that time, that the detection of elevated concentrations of PFAS in groundwater at the Site constituted a release under the MCP. MassDEP issued Release Tracking Number (RTN) 4-26179 to this release. As summarized in the NOR, based on the detected PFAS concentrations in soil and groundwater at the BCFRTA and the inferred groundwater flow, MassDEP determined that the releases of PFAS from the use of aqueous film-forming foam (AFFF) at the BCFRTA is a source of PFAS detected in the Mary Dunn public water supply wells.

During the June 2022 to December 2022 reporting period, two treatment systems, GWTS #1 and GWTS#2, were in operation for all, or portions of the 6-month period. The primary treatment system (GWTS #1) was in operation approximately 164 days and secondary system (GWTS #2) was in operation for

approximately 79 days. The overall (average) system flow rate and gallons of groundwater treated, based on the available Effluent flow totalizer readings for both systems, was approximately 3.5 million gallons.

The IRA Status and RMR document is available electronically via the searchable sites database of the MassGOV / MassDEP website via the following link:

<https://eeaonline.eea.state.ma.us/portal#!/wastesite/4-0026179>

At this time, IRA activities are ongoing. Continuing IRA activities will include operation and monitoring of the on-Site Groundwater Pump and Treatment Systems (GWPTS), including performance sampling of GWTS #1 and #2, review and evaluation of the on-Site GWPTS operation and maintenance activities as they affect groundwater treatment, and quarterly groundwater monitoring. Additional information regarding the continuing IRA activities are included in the IRA Status and RMR No. 64 report document.

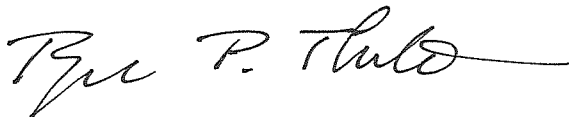
Change in Procedure for Filing Status Reports

In December 2021 it was established with MassDEP that a six-month submittal schedule for IRA Status and RMR reports would be acceptable. The referenced IRA Status and RMR No. 64 document is the second submittal under that schedule.

Approximately quarterly, updates regarding clean up and remediation activities of the PFAS release at the Site will be provided to the public, more specifically those listed on the Public Involvement mailing list. These updates will be in the form of written notices and/or public meetings.

If you have any questions or comments, please do not hesitate to contact our office.

Sincerely,
BETA Group, Inc.



Roger P. Thibault, P.E., LSP
Senior Associate

Copies: Mass Department of Environmental Protection
Southeast Regional Office
20 Riverside Drive
Lakeville, MA 02347

Thomas McKean, Director
Town of Barnstable Health Division
200 Main Street
Hyannis, MA 02601

Hans Keijser, Supervisor
Town of Barnstable Water Supply Division
47 Old Yarmouth Road
Hyannis, MA 02601

APPENDIX E

Soil Boring & Mon Well Logs



BORING/ MONITORING WELL LOG

BORING ID: MW-301
Page 1 of 1

PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Matt Alger
LOCATION:	155 S. Flint Rock Road Barnstable, MA	CLIENT:	Barnstable County
CONSULTANT:	BETA	DRILLER:	Bronson Drilling - Dan

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	15
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH 13'	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	15

SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details			
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `-/--/--`	PID (ppmv)	Groundwater					
1	0-5'	48/60	N/A		<div><div></div></div>	20" Dry brown fine SAND + SILT, some gravel	<div><div></div></div>			
2										
3										
4										
5										
6	5-10'	52/60	N/A			<div><div></div></div>		28" fine to coarse SAND with some gravel		
7										
8										
9										
10										
11	10-15'	60/60	N/A					<div><div></div></div>	44" Fine to coarse SAND with some gravel	
12										
13										
14										
15										
16									<div><div></div></div>	END OF BORING AT 15' WELL SET AT 15'
17										
18										
19										
20										

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 5'	Screen From: 5-15'
START DATE:	8/12/2022	Filter Sand: #2	Sand Pack Intervals
END DATE:	8/12/2022	4" Steel Well Protector:	Bentonite Seal Interval
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-302
Page 1 of 1

PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Matt Alger
LOCATION:	155 S. Flint Rock Road Barnstable, MA	CLIENT:	Barnstable County
CONSULTANT:	BETA	DRILLER:	Bronson Drilling - Dan

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	15
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH 13'	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	15

SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details	
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `-/--/--`	PID (ppmv)	Groundwater			
1	0-5'	48/60	N/A		<div>▽</div>	36" Dry brown fine SAND + SILT	<div></div>	
2								
3								
4								
5								
6	5-10'	48/60	N/A			28" Fine to coarse SAND with little gravel		
7								
8								
9								
10								
11	10-15'	55/60	N/A			25" Fine to medium SAND with little gravel		
12								
13								
14								
15								
16						END OF BORING AT 15' WELL SET AT 15'		
17								
18								
19								
20								

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 5'	Screen From: 5-15'
START DATE:	8/12/2022	Filter Sand: #2	Sand Pack Intervals
END DATE:	8/12/2022	4" Steel Well Protector:	Bentonite Seal Interval
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-303
Page 1 of 1


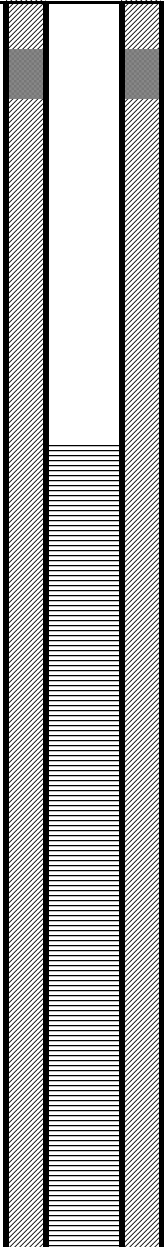
PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Matt Alger
LOCATION:	155 S. Flint Rock Road Barnstable, MA	CLIENT:	Barnstable County
CONSULTANT:	BETA	DRILLER:	Bronson Drilling - Dan

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	15
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH 13'	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	15

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `-/--/--`	PID (ppmv)			
1	0-5'	42/60	N/A		<div>▽</div>	Dry brown fine SAND + SILT	<div></div>
2							
3							
4							
5							
6	5-10'	60/60	N/A			12" Dry brown fine SAND + SILT	
7						16" Fine to medium SAND, silt + some gravel	
8						26" Medium to coarse SAND with some gravel	
9						6" Coarse SAND + GRAVEL	
10						24" Fine SAND + SILT with little gravel	
11	10-15'	60/60	N/A			12" Medium to coarse SAND with some gravel	
12						24" Coarse SAND with some gravel	
13						END OF BORING AT 15'	
14						WELL SET AT 15'	
15							
16							
17							
18							
19							
20							

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 5'	Screen From: 5-15'
START DATE:	8/12/2022	Filter Sand: #2	Sand Pack Intervals
END DATE:	8/12/2022	4" Steel Well Protector:	Bentonite Seal Interval
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	

		BORING/ MONITORING WELL LOG				BORING ID: MW-304 Page 1 of 1						
PROJECT: FMR FTA Site					BETA JOB NUMBER: 6206.02 FIELD REP: Roger Thibault							
LOCATION: BFD Parcel No. 313008B00					CLIENT: Barnstable County							
CONSULTANT: BETA					DRILLER: Bronson Drilling - Dan							
		SAMPLER	CASING	CORE BARREL		DEPTH TO GROUNDWATER		SUMMARY				
TYPE		Single tube core sampler	NA	NA		DATE		Overburden (feet):		15		
SIZE (ID)		2"	NA	NA		TIME		Rock Cored (feet):		--		
HAMMER WEIGHT		NA	NA	---		DEPTH 12'		# of samples:		--		
HAMMER FALL		NA	NA	---		SURFACE ELEV:		Well set (feet):		15		
SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)				Monitoring Well Construction Details		
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--`	PID (ppmv)	Groundwater							
1	0-5'	48/60	N/A		<div>▽</div>	8" ORGANIC MATTER with some sand						
				23" Brown SAND, fine to coarse gravel								
2						8" Brown to black SAND + Organic with 2" peat layer						
3						9" Tan fine to coarse SAND with some medium gravel						
4												
5												
6	5-10'	48/60	N/A			21" Tan fine to coarse SAND with large gravel angular						
				2" MOTTLING - slight								
				14" Tan medium to coare SAND with Gravel								
7						11" Tan fine to coarse SAND with large gravel angular						
8												
9												
10												
11	10-15'	48/60	N/A			12" Olive medium-coarse SAND - damp						
				4" Orange medium to coarse SAND, mottling with 1" peat layer								
				16" Medium to coarse SAND with some small gravel - damp								
12						16" Coarse SAND with some fine gravel - wet						
13												
14												
15												
16					END OF BORING AT 15'							
				WELL SET AT 15'								
17												
18												
19												
20												
DRILLING RIG TYPE: Geoprobe 7822 DT					MONITORING WELL INSTALLED:			2-inch Diameter, Sch 40 PVC				
SURFACE ELEVATION:					RISER FROM: 0' TO 5'			Screen From: 5-15'				
START DATE: 10/3/2022					Filter Sand: #2			Sand Pack Intervals				
END DATE: 10/3/2022					4" Steel Well Protector: +2.5' TO 2.5'			Bentonite Seal Interval 0.5-1'				
								Native Backfill				
PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)						
trace 0-10%		0-4 Very Loose		0-2 Very Soft		Boulders >11.8		Fine Sand .02-.003				
little 10-20%		4-10 Loose		2-4 Soft		Cobbles 11.8-2.9		Silt <.003				
some 20-35%		10-30 Medium Dense		4-8 Medium Stiff		Coarse Gravel 2.9-.75		Clay <.003				
and 35-50%		30-50 Dense		8-15 Stiff		Fine Gravel .75-.19						
		50+ Very Dense		15-30 Very Stiff		Coarse Sand .19-.08						
				30+ Hard		Medium Sand .08-.02						



BORING/ MONITORING WELL LOG

BORING ID: MW-305
Page 1 of 1

PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Chris Oien
LOCATION:	155 S. Flint Rock Road Barnstable, MA	CLIENT:	Barnstable County
CONSULTANT:	BETA	DRILLER:	Bronson Drilling - Dan

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	15
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	15

SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details	
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `-/--/--`	PID (ppmv)	Groundwater			
1	0-5'	34/60	N/A			6" ASPHALT		
2								
3						28" Fine SAND, few brown small gravel		
4								
5								
6								
7	5-10'	56/60	N/A			SAND with small + medium sized tan gravel		
8								
9								
10								
11	10-15'	60/60	N/A			Fine light tan SAND		
12								
13								
14								
15								
16						END OF BORING AT 15' WELL SET AT 15'		
17								
18								
19								
20								

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
		RISER FROM: 0' TO 5'	Screen From: 5-15'
SURFACE ELEVATION:		Filter Sand: #2	Sand Pack Intervals
START DATE:	8/18/2022	4" Steel Well Protector:	Bentonite Seal Interval
END DATE:	8/18/2022		Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-306
Page 1 of 1



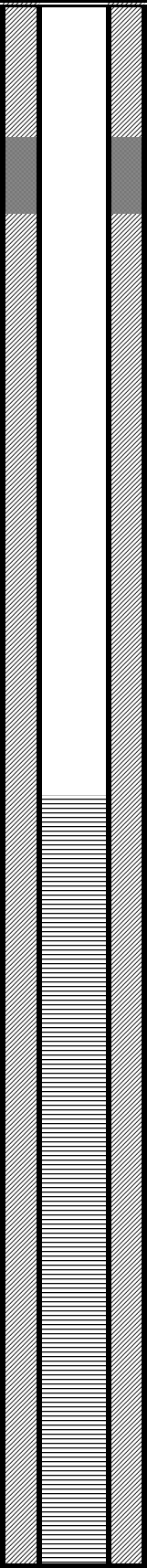
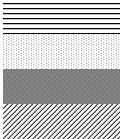
PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Chris Oien
LOCATION:	155 S. Flint Rock Road Barnstable, MA	CLIENT:	Barnstable County
CONSULTANT:	BETA	DRILLER:	Bronson Drilling - Dan

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	15
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH 10'	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	15

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `-/--/--`	PID (ppmv)			
1	0-5'	40/60	N/A		<div>▽</div>	23" Dark tan SAND	<div></div>
2							
3							
4						17" Light tan SAND	
5							
6	5-10'	56/60	N/A			54" Fine light tan SAND	
7							
8							
9							
10						2" Fine SAND, wet	
11	10-15'	31/60	N/A			Coarse orange brown SAND	
12							
13							
14							
15							
16						END OF BORING AT 15' WELL SET AT 15'	
17							
18							
19							
20							

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 5'	Screen From: 5-15'
START DATE:	8/18/2022	Filter Sand: #2	Sand Pack Intervals
END DATE:	8/18/2022	4" Steel Well Protector:	Bentonite Seal Interval
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	

			BORING/ MONITORING WELL LOG				BORING ID: MW-307-S							
Page 1 of 1														
PROJECT: FMR FTA Site					BETA JOB NUMBER: 6206.02									
FIELD REP: Peter Newton														
LOCATION: BFD Parcel No. 3130051300					CLIENT: Barnstable County									
CONSULTANT: BETA/ Bristol Engineering					DRILLER: Maher Drilling - Jake									
		SAMPLER	CASING	CORE BARREL		DEPTH TO GROUNDWATER		SUMMARY						
TYPE		Single tube core sampler	NA	NA		DATE		Overburden (feet): 20						
SIZE (ID)		2"	NA	NA		TIME		Rock Cored (feet): --						
HAMMER WEIGHT		NA	NA	---		DEPTH 16'		# of samples: --						
HAMMER FALL		NA	NA	---		SURFACE ELEV:		Well set (feet): 20						
SAMPLING INTERVALS														
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" --/--/--	PID (ppmv)	Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)			Monitoring Well Construction Details					
1	0-5'	30/60	N/A			6" Tan TOPSOIL, forest mottling								
2				24" Tan fine SAND, little/trace silt										
3														
4														
5														
6	5-10'	54/60	N/A			24" Tan fine SAND								
7														
8														
9														
10														
11	10-15'	48/60	N/A			30" Tan fine-medium SAND, some medium angular gravel, little silt								
12				24" Tan fine to medium SAND, some medium angular gravel, little silt										
13				12" Orange fine to medium SAND, some medium angular gravel, little silt										
14				12" Olive-brown fine to medium SAND, some medium angular gravel, little silt										
15														
16	15-20'	30/60	N/A			Wet, tan medium SAND + GRAVEL								
17														
18														
19														
20														
						END OF BORING AT 20'			WELL SET AT 20'					
DRILLING RIG TYPE: Geoprobe 7822 DT					MONITORING WELL INSTALLED: RISER FROM: 0' TO 10'					2-inch Diameter, Sch 40 PVC				
SURFACE ELEVATION:					Filter Sand: #2					Screen From: 10-20'				
START DATE: 9/27/2022					4" Steel Well Protector: +2.5' TO 2.5'					Sand Pack Intervals				
END DATE: 9/27/2022										Bentonite Seal Interval 2-3'				
														
PROPORTIONS USED		RELATIVE DENSITY		CONSISTENCY		SOIL CLASSIFICATION (inches)								
trace 0-10%		0-4 Very Loose		0-2 Very Soft		Boulders >11.8		Fine Sand .02-.003						
little 10-20%		4-10 Loose		2-4 Soft		Cobbles 11.8-2.9		Silt <.003						
some 20-35%		10-30 Medium Dense		4-8 Medium Stiff		Coarse Gravel 2.9-.75		Clay <.003						
and 35-50%		30-50 Dense		8-15 Stiff		Fine Gravel .75-.19								
		50+ Very Dense		15-30 Very Stiff		Coarse Sand .19-.08								
				30+ Hard		Medium Sand .08-.02								


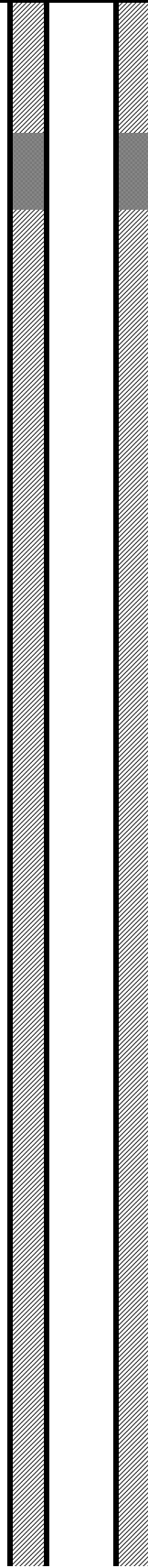


BORING/ MONITORING WELL LOG

BORING ID: MW-307-D
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PROJECT: FMR FTA Site	BETA JOB NUMBER: 6206.02 FIELD REP: Peter Newton
LOCATION: BFD Parcel No. 3130051300	CLIENT: Barnstable County
Consultant: BETA/ Bristol Engineering	DRILLER: Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet): 40	
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet): --	
HAMMER WEIGHT	NA	NA	---	DEPTH 16'	# of samples: --	
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet): 40	

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details		
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--	PID (ppmv)					
1	0-5'	30/60	N/A			6" Tan TOPSOIL, forest mottling			
2									
3						24" Tan fine SAND, little/trace silt			
4									
5									
6	5-10'	54/60	N/A			24" Tan fine SAND			
7									
8						30" Tan fine-medium SAND, some medium angular gravel, little silt			
9									
10									
11	10-15'	48/60	N/A			24" Tan fine to medium SAND, some medium angular gravel, little silt			
12						12" Orange fine to medium SAND, some medium angular gravel, little silt			
13									
14									
15						12" Olive-brown fine to medium SAND, some medium angular gravel, little silt			
16	15-20'	30/60	N/A			Wet, tan medium SAND + GRAVEL			
17									
18									
19									
20									

DRILLING RIG TYPE: Geoprobe 7822 DT	MONITORING WELL INSTALLED: RISER FROM: 0' TO 35'	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:	Filter Sand: N/A	Screen From: 35-40'
START DATE: 9/27/2022	4" Steel Well Protector: +2.5' TO 2.5'	Sand Pack Intervals
END DATE: 9/27/2022		Bentonite Seal Interval 2-3'
		Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-307-D
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PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Peter Newton
LOCATION:	BFD Parcel No. 3130051300	CLIENT:	Barnstable County
Consultant:	BETA/ Bristol Engineering	DRILLER:	Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	40
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	40

SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details			
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--`	PID (ppmv)	Groundwater					
21	20-25'	0/60	N/A			Little to no recovery				
22										
23										
24										
25										
26	25-30'	0/60	N/A			Little to no recovery				
27										
28										
29										
30										
31	35-40'	0/60	N/A			Little to no recovery				
32										
33										
34										
35										
36	35-40'	0/60	N/A			Little to no recovery				
37										
38										
39										
40										
					END OF BORING AT 40' WELL SET AT 40'					

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 35'	Screen From: 35-40'
START DATE:	9/27/2022	Filter Sand: N/A	Sand Pack Intervals
END DATE:	9/27/2022	4" Steel Well Protector: +2.5' TO 2.5'	Bentonite Seal Interval 2-3'
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-308-S
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PROJECT: FMR FTA Site	BETA JOB NUMBER: 6206.02
LOCATION: BFD Parcel No. 3130051300	FIELD REP: Matt Alger
CLIENT: Barnstable County	
CONSULTANT: BETA	DRILLER: Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet): 20
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet): --
HAMMER WEIGHT	NA	NA	---	DEPTH 14.00	# of samples: --
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet): 20

SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details	
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--`	PID (ppmv)	Groundwater			
1	0-5'	42/60	N/A		<div>▽</div>	12" Dry medium brown fine SAND, some silt	<div></div>	
2								
3						30" Dry light brown fine SAND, little silt, trace gravel		
4								
5								
6	5-10'	30/60	N/A					Dry fine to medium light brown SAND, little gravel
7								
8								
9								
10								
11	10-15'	10/60	N/A			2" ROCK (Broken)		
12								
13						6" Dry medium light brown SAND		
14						2" Wet light brown coarse SAND		
15								
16	15-20'	44/60	N/A			11" Wet light brown coarse SAND + GRAVEL		
17								
18						33" Wet light brown coarse SAND, little gravel		
19								
20								
						END OF BORING AT 20' WELL SET AT 20'		

DRILLING RIG TYPE: Geoprobe 7822 DT	MONITORING WELL INSTALLED: RISER FROM: 0' TO 10'	2-inch Diameter, Sch 40 PVC Screen From: 10-20'
SURFACE ELEVATION:	Filter Sand: #2	Sand Pack Intervals
START DATE: 9/28/2022	4" Steel Well Protector: +2	Bentonite Seal Interval
END DATE: 9/28/2022		Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08
		30+ Hard	Medium Sand .08-.02
			Fine Sand .02-.003
			Silt <.003
			Clay <.003



BORING/ MONITORING WELL LOG

BORING ID: MW-308-D
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PROJECT: FMR FTA Site	BETA JOB NUMBER: 6206.02 FIELD REP: Matt Alger
LOCATION: BFD Parcel No. 3130051300	CLIENT: Barnstable County
Consultant: BETA	DRILLER: Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet): 40
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet): --
HAMMER WEIGHT	NA	NA	---	DEPTH 14.00	# of samples: --
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet): 40

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details			
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--	PID (ppmv)						
1	0-5'	44/60	N/A		<div>▽</div> <div>—</div>	12" Dry medium brown fine SAND, some silt				
2						32" Dry light brown fine SAND, little silt, trace gravel				
3										
4										
5										
6	5-10'	32/60	N/A			16" Dry light brown fine to coarse SAND				
7						16" Dry medium brown fine to coarse SAND, some gravel				
8										
9										
10										
11	10-15'	22/60	N/A			14" Dry medium brown fine to coarse SAND, some gravel				
12						8" Wet light brown coarse SAND				
13										
14										
15										
16	15-20'	32/60	N/A			5" Wet light brown coarse SAND + GRAVEL				
17						13" Wet light brown fine SAND, some silt				
18										
19										
20						14" Wet light brown fine to medium SAND				

DRILLING RIG TYPE: Geoprobe 7822 DT	MONITORING WELL INSTALLED: RISER FROM: 0' TO 35'	2-inch Diameter, Sch 40 PVC Screen From: 35-40'
SURFACE ELEVATION:	Filter Sand: N/A	Sand Pack Intervals
START DATE: 9/28/2022	4" Steel Well Protector: +2	Bentonite Seal Interval
END DATE: 9/28/2022		Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08
		30+ Hard	Medium Sand .08-.02



BORING/ MONITORING WELL LOG

BORING ID: MW-308-D
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PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Matt Alger
LOCATION:	BFD Parcel No. 3130051300	CLIENT:	Barnstable County
Consultant:	BETA	DRILLER:	Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	40
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH 14.00	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	40

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details				
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--`	PID (ppmv)							
21	20-25'	24/60	N/A			20" Wet light brown fine to medium SAND					
22											
23											
24											
25											
26	25-30'	30/60	N/A			20" Wet light brown medium to coarse SAND					
27											
28											
29											
30											
31	35-40'	20/60	N/A			10" Wet light brown coarse SAND					
32											
33											
34											
35											
36	35-40'	22/60	N/A								Wet light brown coarse SAND
37											
38											
39											
40											
					END OF BORING AT 40' WELL SET AT 40'						

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 35'	Screen From: 35-40'
START DATE:	9/28/2022	Filter Sand: N/A	Sand Pack Intervals
END DATE:	9/28/2022	4" Steel Well Protector: +2	Bentonite Seal Interval
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	


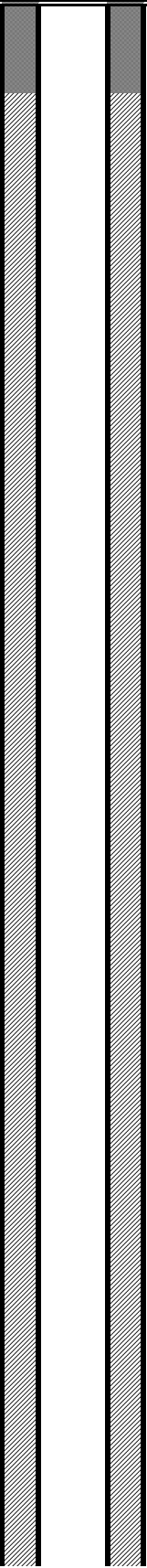


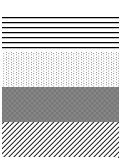
BORING/ MONITORING WELL LOG

BORING ID: MW-309
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PROJECT: FMR FTA Site	BETA JOB NUMBER: 6206.02 FIELD REP: Roger Thibault
LOCATION: BFD Parcel No. 3130051300	CLIENT: Barnstable County
Consultant: BETA	DRILLER: Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet): 35	
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet): --	
HAMMER WEIGHT	NA	NA	---	DEPTH ~10-11'	# of samples: --	
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet): 35	

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" --/--/--	PID (ppmv)			
1	0-5'	39/60	N/A			6" Dry, black fine SAND, silt with intermixed roots and organic matter (loam)	
2							
3						33" Dry, tan fine to medium SAND, trace fine gravel	
4							
5							
6	5-10'	19/60	N/A			6" Tan, dry, medium SAND, some coarse sand, little fine gravel, trace coarse gravel	
7							
8						13" Tan, dry loose fine to medium SAND, some fine to medium gravel, little coarse gravel	
9							
10							
11	10-15'	17/60	N/A			Wet, orange-brown coare SAND + fine GRAVEL, some medium to coarse gravel	
12							
13							
14							
15							
16	15-20'	8/60	N/A			Wet, medium SAND, little fine sand, trace fine gravel	
17							
18							
19							
20							

DRILLING RIG TYPE: Geoprobe 7822 DT	MONITORING WELL INSTALLED: RISER FROM: 0' TO 30' Filter Sand: N/A 4" Steel Well Protector: +2.5' TO 2.5'	2-inch Diameter, Sch 40 PVC Screen From: 30-35' Sand Pack Intervals Bentonite Seal Interval 0-1 Native Backfill
SURFACE ELEVATION:	START DATE: 9/28/2022 END DATE: 9/28/2022	

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-309
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PROJECT:	FMR FTA Site	BETA JOB NUMBER:	6206.02
		FIELD REP:	Roger Thibault
LOCATION:	BFD Parcel No. 3130051300	CLIENT:	Barnstable County
Consultant:	BETA	DRILLER:	Maher Drilling - Jake

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY	
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet):	35
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet):	--
HAMMER WEIGHT	NA	NA	---	DEPTH ~10-11'	# of samples:	--
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet):	35

SAMPLING INTERVALS						DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details		
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" `--/--/--`	PID (ppmv)	Groundwater				
21	20-25'	0/60	N/A			Little to no recovery			
22									
23									
24									
25									
26	25-30'	0/60	N/A					Little to no recovery	
27									
28									
29									
30									
31	35-40'	0/60	N/A						Little to no recovery
32									
33									
34									
35									
36						END OF BORING AT 35' WELL SET AT 35'			
37									
38									
39									
40									

DRILLING RIG TYPE:	Geoprobe 7822 DT	MONITORING WELL INSTALLED:	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:		RISER FROM: 0' TO 30'	Screen From: 30-35'
START DATE:	9/28/2022	Filter Sand: N/A	Sand Pack Intervals
END DATE:	9/28/2022	4" Steel Well Protector: +2.5' TO 2.5'	Bentonite Seal Interval 0-1
			Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)	
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8	Fine Sand .02-.003
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9	Silt <.003
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75	Clay <.003
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19	
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08	
		30+ Hard	Medium Sand .08-.02	



BORING/ MONITORING WELL LOG

BORING ID: MW-311
Page 1 of 1

PROJECT: FMR FTA Site	BETA JOB NUMBER: 6206.02
LOCATION: BFD Parcel No. 313008B00	FIELD REP: Roger Thibault
CLIENT: Barnstable County	
CONSULTANT: BETA	DRILLER: Bronson Drilling - Dan

	SAMPLER	CASING	CORE BARREL	DEPTH TO GROUNDWATER	SUMMARY
TYPE	Single tube core sampler	NA	NA	DATE	Overburden (feet): 15
SIZE (ID)	2"	NA	NA	TIME	Rock Cored (feet): --
HAMMER WEIGHT	NA	NA	---	DEPTH 14'	# of samples: --
HAMMER FALL	NA	NA	---	SURFACE ELEV:	Well set (feet): 16

SAMPLING INTERVALS					Groundwater	DESCRIPTION OF MATERIALS (Burmister Soil Classification System)	Monitoring Well Construction Details
DEPTH (feet)	Sample ID #	REC/PEN Inches	Blows / 6" --/--/--	PID (ppmv)			
1	0-5'	48/60	N/A		<div>▽</div>	5" FOREST MATTER + grey medium SAND	<div></div>
2						6" Orange fine to medium SAND	
3						9" Orange fine to medium SAND, with trace small gravel	
4						16" Tan fine to coarse SAND with small large gravel	
5							
6	5-10'	48/60	N/A			Tan (dry) fine - coarse SAND with small to large GRAVEL	
7							
8							
9							
10							
11	10-15'	26/60	N/A			8" Tand (dry) Fine-coarse SAND with small to large GRAVEL	
12							
13							
14						22" Coarse SAND + GRAVEL, trace fine sand	
15							
16						END OF BORING AT 15'	
17						WELL SET AT 16'	
18							
19							
20							

DRILLING RIG TYPE: Geoprobe 7822 DT	MONITORING WELL INSTALLED: RISER FROM: 0' TO 6'	2-inch Diameter, Sch 40 PVC
SURFACE ELEVATION:	Filter Sand: #2	Screen From: 6-16'
START DATE: 10/3/2022	4" Steel Well Protector: +2' TO 2'	Sand Pack Intervals
END DATE: 10/3/2022		Bentonite Seal Interval 1-2'
		Native Backfill

PROPORTIONS USED	RELATIVE DENSITY	CONSISTENCY	SOIL CLASSIFICATION (inches)
trace 0-10%	0-4 Very Loose	0-2 Very Soft	Boulders >11.8
little 10-20%	4-10 Loose	2-4 Soft	Cobbles 11.8-2.9
some 20-35%	10-30 Medium Dense	4-8 Medium Stiff	Coarse Gravel 2.9-.75
and 35-50%	30-50 Dense	8-15 Stiff	Fine Gravel .75-.19
	50+ Very Dense	15-30 Very Stiff	Coarse Sand .19-.08
		30+ Hard	Medium Sand .08-.02

APPENDIX F

FLINTROCK POND BATHYMETRIC SURVEY



GENERAL NOTES

1. THIS HYDROGRAPHIC SURVEY REPRESENTS CONDITIONS EXISTING ON 5/3/22 AND MAY NOT BE REPRESENTATIVE OF CONDITIONS ON ANOTHER DATE.
2. THIS HYDROGRAPHIC SURVEY IS INTENDED FOR USE ON THIS PROJECT ONLY, AND IS NOT INTENDED FOR ANY OTHER PROJECT OR PURPOSE.
3. SINGLE BEAM BATHYMETRIC DATA COLLECTED USING A TELEDYNE ECHOTRAC E20, 200 KHZ SONAR, TRIMBLE SP5855 RTK GPS POSITIONING SYSTEM WITH SMARTNET VRS GPS CORRECTIONS, AND HYPACK 2019 FOR DATA ACQUISITION AND PROCESSING. SUPPLEMENTAL ROVER TOPO COLLECTED ALONG SHORELINE USING TRIMBLE SP5855 RTK GPS ROVER WITH TSC3 DATA COLLECTOR.
4. SOUNDINGS ARE IN FEET AND TENTHS ABOVE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88). CONTOURS GENERATED USING 1' SORTED DATA. THE COORDINATE SYSTEM IS MA-MAINLAND STATE PLANE COORDINATE SYSTEM, DATUM:NAD83, UNITS: US SURVEY FEET.
6. BACKGROUND SATELLITE IMAGERY FOR VISUAL REFERENCE; APPROXIMATE LOCATION ONLY.

SINGLE BEAM
BATHYMETRIC SURVEY

FLINT ROCK POND
BARNSTABLE, MA

PREPARED FOR:
BETA GROUP, INC.
315 NORWOOD PARK S 2ND FLOOR
NORWOOD, MA 02062

STEELE ASSOCIATES MARINE
CONSULTANTS, LLC.

94 Gifford Street
Falmouth, MA 02540
Phone: 508 540-0001
Fax: 508 374-0405
info@steeleassociates.net

REVISIONS:

NO:	DATE:	REVISION:

Date:	5/3/22	Scale:	1"=40'-0"
Drawn By:	KT	Chk'd By:	ES
Project:	FLINT_ROCK_POND_2022		
Sheet Number:	1 of 1		

APPENDIX G

Laboratory Reports/Certificate of Analysis - Phase II CSA

November 21, 2022

Priscilla Ellis
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22J2282

Enclosed are results of analyses for samples as received by the laboratory on October 17, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/21/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J2282

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-101 (0-3in)	22J2282-01	Soil		SM 2540G SOP-466 PFAS	
SS-101 (16-20in)	22J2282-02	Soil		SM 2540G SOP-466 PFAS	
SS-102 (FM)	22J2282-03	Soil		SM 2540G SOP-466 PFAS	
SS-102 (0-3in)	22J2282-04	Soil		SM 2540G SOP-466 PFAS	
SS-102 (16-20in)	22J2282-05	Soil		SM 2540G SOP-466 PFAS	
SS-102 (5ft)	22J2282-06	Soil		SM 2540G SOP-466 PFAS	
SS-102 (10ft)	22J2282-07	Soil		SM 2540G SOP-466 PFAS	
SS-103 (0-3in)	22J2282-08	Soil		SM 2540G SOP-466 PFAS	
SS-103 (16-20in)	22J2282-09	Soil		SM 2540G SOP-466 PFAS	
SS-104 (0-3in)	22J2282-10	Soil		SM 2540G SOP-466 PFAS	
SS-104 (16-20in)	22J2282-11	Soil		SM 2540G SOP-466 PFAS	
SS-105 (FM)	22J2282-12	Soil		SM 2540G SOP-466 PFAS	
SS-105 (0-3in)	22J2282-13	Soil		SM 2540G SOP-466 PFAS	
SS-105 (16-20in)	22J2282-14	Soil		SM 2540G SOP-466 PFAS	
SS-106 (0-3in)	22J2282-15	Soil		SM 2540G SOP-466 PFAS	
SS-106 (16-20in)	22J2282-16	Soil		SM 2540G SOP-466 PFAS	
SS-106 (5ft)	22J2282-17	Soil		SM 2540G SOP-466 PFAS	
SS-106 (10ft)	22J2282-18	Soil		SM 2540G SOP-466 PFAS	
SS-107 (0-3in)	22J2282-19	Soil		SM 2540G SOP-466 PFAS	
SS-107 (16-20in)	22J2282-20	Soil		SM 2540G SOP-466 PFAS	

Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/21/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J2282

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-108 (0-3in)	22J2282-21	Soil		SM 2540G SOP-466 PFAS	
SS-108 (16-20in)	22J2282-22	Soil		SM 2540G SOP-466 PFAS	
MW-304 (0-4in)	22J2282-23	Soil		SM 2540G SOP-466 PFAS	
MW-304(12ft)	22J2282-24	Soil		SM 2540G SOP-466 PFAS	
MW-310(0-6in)	22J2282-25	Soil		SM 2540G SOP-466 PFAS	
MW-310 (12-13ft)	22J2282-26	Soil		SM 2540G SOP-466 PFAS	
Duplicate 4	22J2282-27	Soil		SM 2540G SOP-466 PFAS	
SS-118 (0-in)	22J2282-28	Soil		SM 2540G SOP-466 PFAS	

CASE NARRATIVE SUMMARY

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

SM 2540G**Qualifications:****H-03**

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:**% Solids**

22J2282-01[SS-101 (0-3in)], 22J2282-02[SS-101 (16-20in)], 22J2282-03[SS-102 (FM)], 22J2282-04[SS-102 (0-3in)], 22J2282-05[SS-102 (16-20in)], 22J2282-06[SS-102 (5ft)], 22J2282-07[SS-102 (10ft)], 22J2282-08[SS-103 (0-3in)], 22J2282-09[SS-103 (16-20in)], 22J2282-10[SS-104 (0-3in)], 22J2282-11[SS-104 (16-20in)], 22J2282-12[SS-105 (FM)], 22J2282-13[SS-105 (0-3in)], 22J2282-14[SS-105 (16-20in)], 22J2282-15[SS-106 (0-3in)], 22J2282-16[SS-106 (16-20in)], 22J2282-17[SS-106 (5ft)], 22J2282-18[SS-106 (10ft)], 22J2282-19[SS-107 (0-3in)], 22J2282-20[SS-107 (16-20in)], 22J2282-21[SS-108 (0-3in)], 22J2282-22[SS-108 (16-20in)], 22J2282-23[MW-304 (0-4in)], 22J2282-24[MW-304(12ft)], 22J2282-25[MW-310(0-6in)], 22J2282-26[MW-310 (12-13ft)], 22J2282-27[Duplicate 4], 22J2282-28[SS- 118 (0-in)]

SOP-466 PFAS**Qualifications:****L-01**

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B320799-BS1

MS-12

Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B320654-MS1, B320654-MSD1

Perfluorotridecanoic acid (PFTrDA)

22J2282-01[SS-101 (0-3in)], B320654-MS1, B320654-MSD1

MS-22

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.

Analyte & Samples(s) Qualified:**Perfluorooctanesulfonic acid (PFO)**

22J2282-01[SS-101 (0-3in)], B320654-MS1

Perfluoroundecanoic acid (PFUnA)

22J2282-01[SS-101 (0-3in)], B320654-MS1

PF-17

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

Analyte & Samples(s) Qualified:**d3-NMeFOSAA**

22J2282-14[SS-105 (16-20in)]

d5-NEtFOSAA

22J2282-13[SS-105 (0-3in)], 22J2282-14[SS-105 (16-20in)], 22J2282-21[SS-108 (0-3in)]

M2-6:2FTS

22J2282-03[SS-102 (FM)], 22J2282-13[SS-105 (0-3in)], 22J2282-14[SS-105 (16-20in)], 22J2282-17[SS-106 (5ft)], 22J2282-18[SS-106 (10ft)], 22J2282-19[SS-107 (0-3in)], 22J2282-21[SS-108 (0-3in)], 22J2282-22[SS-108 (16-20in)], B320799-BLK1

M2-8:2FTS

22J2282-03[SS-102 (FM)], 22J2282-10[SS-104 (0-3in)]

M2PFTA

22J2282-14[SS-105 (16-20in)]

M3HFPO-DA

22J2282-14[SS-105 (16-20in)]

M3PFBS

22J2282-14[SS-105 (16-20in)]

M3PFHxS

22J2282-14[SS-105 (16-20in)]

M4PFHpA

22J2282-14[SS-105 (16-20in)]

M5PFHxA

22J2282-14[SS-105 (16-20in)]

M8PFOA

22J2282-14[SS-105 (16-20in)]

M9PFNA

22J2282-14[SS-105 (16-20in)]

MPFDoA

22J2282-14[SS-105 (16-20in)]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**M2-6:2FTS**

22J2282-12[SS-105 (FM)], B320799-BS1

M2-8:2FTS

22J2282-27[Duplicate 4], B320799-BS1, S078769-CCV1, S079599-CCV1

M5PFPeA

22J2282-14[SS-105 (16-20in)]

M7PFUnA

22J2282-14[SS-105 (16-20in)]

M8PFOS

22J2282-14[SS-105 (16-20in)]

MPFBA

22J2282-14[SS-105 (16-20in)]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Tod E. Kopyscinski
Laboratory Director

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (0-3in)

Sampled: 10/4/2022 07:30

Sample ID: 22J2282-01

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoropentanoic acid (PFPeA)	3.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorohexanoic acid (PFHxA)	2.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorodecanoic acid (PFDA)	5.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorododecanoic acid (PFDoA)	2.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorotetradecanoic acid (PFTA)	0.96	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorotridecanoic acid (PFTTrDA)	9.5	0.48	µg/kg dry	1	MS-12	SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorodecanesulfonic acid (PFDS)	0.91	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	1.9	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.64	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoroundecanoic acid (PFUnA)	8.5	0.48	µg/kg dry	1	MS-22	SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoroheptanoic acid (PFHpA)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorooctanoic acid (PFOA)	3.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorooctanesulfonic acid (PFOS)	9.4	0.48	µg/kg dry	1	MS-22	SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorononanoic acid (PFNA)	1.9	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (0-3in)

Sampled: 10/4/2022 07:30

Sample ID: 22J2282-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.6		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (16-20in)

Sampled: 10/4/2022 07:40

Sample ID: 22J2282-02

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.95	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoropentanoic acid (PFPeA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorohexanoic acid (PFHxA)	1.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.72	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorodecanoic acid (PFDA)	4.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorododecanoic acid (PFDoA)	1.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorotetradecanoic acid (PFTA)	0.56	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorotridecanoic acid (PFTrDA)	5.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorodecanesulfonic acid (PFDS)	0.79	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoroundecanoic acid (PFUnA)	7.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoroheptanoic acid (PFHpA)	0.89	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorooctanoic acid (PFOA)	2.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorooctanesulfonic acid (PFOS)	9.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorononanoic acid (PFNA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (16-20in)

Sampled: 10/4/2022 07:40

Sample ID: 22J2282-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.9		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (FM)

Sampled: 10/4/2022 07:45

Sample ID: 22J2282-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoropentanoic acid (PFPeA)	3.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorohexanoic acid (PFHxA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorodecanoic acid (PFDA)	0.89	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorododecanoic acid (PFDoA)	0.70	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorotridecanoic acid (PFTrDA)	2.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorohexanesulfonic acid (PFHxS)	3.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoroundecanoic acid (PFUnA)	3.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoroheptanoic acid (PFHpA)	0.96	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorooctanoic acid (PFOA)	1.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorooctanesulfonic acid (PFOS)	13	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorononanoic acid (PFNA)	0.82	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (FM)

Sampled: 10/4/2022 07:45

Sample ID: 22J2282-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.8		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (0-3in)

Sampled: 10/4/2022 07:50

Sample ID: 22J2282-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.9	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoropentanoic acid (PFPeA)	8.4	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorohexanoic acid (PFHxA)	4.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoroheptanoic acid (PFHpA)	2.3	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorooctanoic acid (PFOA)	1.8	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorooctanesulfonic acid (PFOS)	24	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorononanoic acid (PFNA)	1.3	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (0-3in)

Sampled: 10/4/2022 07:50

Sample ID: 22J2282-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (16-20in)

Sampled: 10/4/2022 07:55

Sample ID: 22J2282-05

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoropentanoic acid (PFPeA)	1.8	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorohexanoic acid (PFHxA)	1.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.60	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoroheptanoic acid (PFHpA)	0.72	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorooctanoic acid (PFOA)	0.50	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorooctanesulfonic acid (PFOS)	4.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorononanoic acid (PFNA)	0.53	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (16-20in)

Sampled: 10/4/2022 07:55

Sample ID: 22J2282-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (5ft)

Sampled: 10/4/2022 08:00

Sample ID: 22J2282-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorooctanesulfonic acid (PFOS)	4.1	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (5ft)

Sampled: 10/4/2022 08:00

Sample ID: 22J2282-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (10ft)

Sampled: 10/4/2022 08:05

Sample ID: 22J2282-07

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorodecanoic acid (PFDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
N-EtFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
N-MeFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorooctanoic acid (PFOA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorooctanesulfonic acid (PFOS)	3.2	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorononanoic acid (PFNA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (10ft)

Sampled: 10/4/2022 08:05

Sample ID: 22J2282-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (0-3in)

Sampled: 10/4/2022 08:10

Sample ID: 22J2282-08

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.6	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoropentanoic acid (PFPeA)	3.9	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorohexanoic acid (PFHxA)	1.9	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorodecanoic acid (PFDA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
N-EtFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
N-MeFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.3	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoroheptanoic acid (PFHpA)	1.1	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorooctanoic acid (PFOA)	0.87	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorooctanesulfonic acid (PFOS)	15	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorononanoic acid (PFNA)	0.99	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (0-3in)

Sampled: 10/4/2022 08:10

Sample ID: 22J2282-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.4		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (16-20in)

Sampled: 10/4/2022 08:15

Sample ID: 22J2282-09

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.84	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoropentanoic acid (PFPeA)	1.1	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorohexanoic acid (PFHxA)	0.59	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.68	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoroheptanoic acid (PFHpA)	0.45	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorooctanoic acid (PFOA)	0.47	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorooctanesulfonic acid (PFOS)	6.1	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (16-20in)

Sampled: 10/4/2022 08:15

Sample ID: 22J2282-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.9		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (0-3in)

Sampled: 10/4/2022 08:20

Sample ID: 22J2282-10

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.9	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoropentanoic acid (PFPeA)	3.3	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorohexanoic acid (PFHxA)	2.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoroheptanoic acid (PFHpA)	0.79	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorooctanoic acid (PFOA)	1.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorooctanesulfonic acid (PFOS)	9.1	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorononanoic acid (PFNA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (0-3in)

Sampled: 10/4/2022 08:20

Sample ID: 22J2282-10

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (16-20in)

Sampled: 10/4/2022 08:25

Sample ID: 22J2282-11

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorodecanoic acid (PFDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
N-EtFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
N-MeFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorooctanoic acid (PFOA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorononanoic acid (PFNA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (16-20in)

Sampled: 10/4/2022 08:25

Sample ID: 22J2282-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (FM)

Sampled: 10/4/2022 08:30

Sample ID: 22J2282-12

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.0	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoropentanoic acid (PFPeA)	4.8	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorohexanoic acid (PFHxA)	2.1	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.7	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorodecanoic acid (PFDA)	1.7	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorododecanoic acid (PFDoA)	2.6	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
N-EtFOSAA	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
N-MeFOSAA	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorotridecanoic acid (PFTTrDA)	5.5	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.9	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.1	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoroundecanoic acid (PFUnA)	4.4	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoroheptanoic acid (PFHpA)	1.3	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorooctanoic acid (PFOA)	2.6	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorooctanesulfonic acid (PFOS)	5.4	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorononanoic acid (PFNA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (FM)

Sampled: 10/4/2022 08:30

Sample ID: 22J2282-12

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	71.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (0-3in)

Sampled: 10/4/2022 08:35

Sample ID: 22J2282-13

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoropentanoic acid (PFPeA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorohexanoic acid (PFHxA)	0.74	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorodecanoic acid (PFDA)	0.68	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorotridecanoic acid (PFTDA)	0.63	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoroundecanoic acid (PFUnA)	2.1	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorooctanoic acid (PFOA)	0.93	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorooctanesulfonic acid (PFOS)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorononanoic acid (PFNA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (0-3in)

Sampled: 10/4/2022 08:35

Sample ID: 22J2282-13

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.2		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (16-20in)

Sampled: 10/4/2022 08:40

Sample ID: 22J2282-14

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.53	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoropentanoic acid (PFPeA)	0.73	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorotridecanoic acid (PFTDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoroundecanoic acid (PFUnA)	1.4	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorooctanoic acid (PFOA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorooctanesulfonic acid (PFOS)	0.95	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (16-20in)

Sampled: 10/4/2022 08:40

Sample ID: 22J2282-14

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.9		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (0-3in)

Sampled: 10/4/2022 08:45

Sample ID: 22J2282-15

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoropentanoic acid (PFPeA)	2.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorohexanoic acid (PFHxA)	1.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.4	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorodecanoic acid (PFDA)	0.70	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-1-butanessulfonamide (FBSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoroheptanoic acid (PFHpA)	1.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorooctanoic acid (PFOA)	2.1	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorooctanesulfonic acid (PFOS)	3.8	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorononanoic acid (PFNA)	2.9	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (0-3in)

Sampled: 10/4/2022 08:45

Sample ID: 22J2282-15

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (16-20in)

Sampled: 10/4/2022 08:50

Sample ID: 22J2282-16

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoropentanoic acid (PFPeA)	1.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorohexanoic acid (PFHxA)	0.47	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorotridecanoic acid (PFTDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorooctanoic acid (PFOA)	1.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorooctanesulfonic acid (PFOS)	5.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorononanoic acid (PFNA)	3.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (16-20in)

Sampled: 10/4/2022 08:50

Sample ID: 22J2282-16

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.7		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (5ft)

Sampled: 10/4/2022 08:55

Sample ID: 22J2282-17

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorooctanoic acid (PFOA)	1.3	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorooctanesulfonic acid (PFOS)	3.8	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorononanoic acid (PFNA)	1.5	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (5ft)

Sampled: 10/4/2022 08:55

Sample ID: 22J2282-17

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (10ft)

Sampled: 10/4/2022 09:00

Sample ID: 22J2282-18

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (10ft)

Sampled: 10/4/2022 09:00

Sample ID: 22J2282-18

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.1		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (0-3in)

Sampled: 10/4/2022 09:05

Sample ID: 22J2282-19

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoropentanoic acid (PFPeA)	2.7	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorohexanoic acid (PFHxA)	1.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorotridecanoic acid (PFTDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoroheptanoic acid (PFHpA)	0.85	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorooctanoic acid (PFOA)	1.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorooctanesulfonic acid (PFOS)	7.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorononanoic acid (PFNA)	0.56	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (0-3in)

Sampled: 10/4/2022 09:05

Sample ID: 22J2282-19

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.1		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (16-20in)

Sampled: 10/4/2022 09:10

Sample ID: 22J2282-20

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorotridecanoic acid (PFTDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-1-butanessulfonamide (FBSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorooctanesulfonic acid (PFOS)	2.6	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (16-20in)

Sampled: 10/4/2022 09:10

Sample ID: 22J2282-20

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	96.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (0-3in)

Sampled: 10/4/2022 09:15

Sample ID: 22J2282-21

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.1	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoropentanoic acid (PFPeA)	1.5	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorohexanoic acid (PFHxA)	0.74	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorooctanoic acid (PFOA)	0.94	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorooctanesulfonic acid (PFOS)	6.7	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorononanoic acid (PFNA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (0-3in)

Sampled: 10/4/2022 09:15

Sample ID: 22J2282-21

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (16-20in)

Sampled: 10/4/2022 09:20

Sample ID: 22J2282-22

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-1-butanessulfonamide (FBSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorooctanoic acid (PFOA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorononanoic acid (PFNA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (16-20in)

Sampled: 10/4/2022 09:20

Sample ID: 22J2282-22

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	95.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304 (0-4in)

Sampled: 10/3/2022 09:55

Sample ID: 22J2282-23

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoropentanoic acid (PFPeA)	0.77	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorohexanoic acid (PFHxA)	0.94	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorodecanoic acid (PFDA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
N-EtFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
N-MeFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorotridecanoic acid (PFTrDA)	0.96	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorooctanesulfonamide (FOSA)	0.61	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoroheptanoic acid (PFHpA)	0.54	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorooctanoic acid (PFOA)	0.97	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorooctanesulfonic acid (PFOS)	11	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorononanoic acid (PFNA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304 (0-4in)

Sampled: 10/3/2022 09:55

Sample ID: 22J2282-23

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.0		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:20	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304(12ft)

Sampled: 10/3/2022 10:00

Sample ID: 22J2282-24

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.59	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorooctanoic acid (PFOA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorononanoic acid (PFNA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304(12ft)

Sampled: 10/3/2022 10:00

Sample ID: 22J2282-24

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.3		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:20	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310(0-6in)

Sampled: 10/3/2022 11:00

Sample ID: 22J2282-25

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorooctanoic acid (PFOA)	0.56	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorooctanesulfonic acid (PFOS)	4.5	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310(0-6in)

Sampled: 10/3/2022 11:00

Sample ID: 22J2282-25

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.6		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:21	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310 (12-13ft)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-26

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorotridecanoic acid (PFTTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorooctanoic acid (PFOA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310 (12-13ft)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-26

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	95.9		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:21	WDC

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: Duplicate 4

Sampled: 10/4/2022 09:25

Sample ID: 22J2282-27

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoropentanoic acid (PFPeA)	23	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorohexanoic acid (PFHxA)	2.4	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.1	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorodecanoic acid (PFDA)	3.8	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorododecanoic acid (PFDoA)	3.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
N-EtFOSAA	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
N-MeFOSAA	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorotridecanoic acid (PFTTrDA)	7.9	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.3	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoroundecanoic acid (PFUnA)	6.3	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorooctanoic acid (PFOA)	3.4	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorooctanesulfonic acid (PFOS)	7.8	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorononanoic acid (PFNA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: Duplicate 4

Sampled: 10/4/2022 09:25

Sample ID: 22J2282-27

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	61.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-118 (0-in)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-28

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoropentanoic acid (PFPeA)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorohexanoic acid (PFHxA)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorodecanoic acid (PFDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoroundecanoic acid (PFUnA)	0.74	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoroheptanoic acid (PFHpA)	0.55	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorooctanoic acid (PFOA)	1.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorooctanesulfonic acid (PFOS)	33	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorononanoic acid (PFNA)	3.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-118 (0-in)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-28

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.1		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:21	WDC

Sample Extraction Data**Prep Method: % Solids Analytical Method: SM 2540G**

Lab Number [Field ID]	Batch	Date
22J2282-01 [SS-101 (0-3in)]	B321538	10/29/22
22J2282-02 [SS-101 (16-20in)]	B321538	10/29/22
22J2282-03 [SS-102 (FM)]	B321538	10/29/22
22J2282-04 [SS-102 (0-3in)]	B321538	10/29/22
22J2282-05 [SS-102 (16-20in)]	B321538	10/29/22
22J2282-06 [SS-102 (5ft)]	B321538	10/29/22
22J2282-07 [SS-102 (10ft)]	B321538	10/29/22
22J2282-08 [SS-103 (0-3in)]	B321538	10/29/22
22J2282-09 [SS-103 (16-20in)]	B321538	10/29/22
22J2282-10 [SS-104 (0-3in)]	B321538	10/29/22
22J2282-11 [SS-104 (16-20in)]	B321538	10/29/22
22J2282-12 [SS-105 (FM)]	B321538	10/29/22
22J2282-13 [SS-105 (0-3in)]	B321538	10/29/22
22J2282-14 [SS-105 (16-20in)]	B321538	10/29/22
22J2282-15 [SS-106 (0-3in)]	B321538	10/29/22
22J2282-16 [SS-106 (16-20in)]	B321538	10/29/22
22J2282-17 [SS-106 (5ft)]	B321538	10/29/22
22J2282-18 [SS-106 (10ft)]	B321538	10/29/22
22J2282-19 [SS-107 (0-3in)]	B321538	10/29/22
22J2282-20 [SS-107 (16-20in)]	B321538	10/29/22
22J2282-21 [SS-108 (0-3in)]	B321538	10/29/22
22J2282-22 [SS-108 (16-20in)]	B321538	10/29/22
22J2282-27 [Duplicate 4]	B321538	10/29/22

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22J2282-23 [MW-304 (0-4in)]	B321558	10/29/22
22J2282-24 [MW-304(12ft)]	B321558	10/29/22
22J2282-25 [MW-310(0-6in)]	B321558	10/29/22
22J2282-26 [MW-310 (12-13ft)]	B321558	10/29/22
22J2282-28 [SS-118 (0-in)]	B321558	10/29/22

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J2282-01 [SS-101 (0-3in)]	B320654	5.90	5.00	10/24/22
22J2282-02 [SS-101 (16-20in)]	B320654	5.98	5.00	10/24/22
22J2282-03 [SS-102 (FM)]	B320654	5.90	5.00	10/24/22
22J2282-04 [SS-102 (0-3in)]	B320654	5.89	5.00	10/24/22
22J2282-05 [SS-102 (16-20in)]	B320654	5.82	5.00	10/24/22
22J2282-06 [SS-102 (5ft)]	B320654	5.55	5.00	10/24/22
22J2282-07 [SS-102 (10ft)]	B320654	5.98	5.00	10/24/22
22J2282-08 [SS-103 (0-3in)]	B320654	5.60	5.00	10/24/22
22J2282-09 [SS-103 (16-20in)]	B320654	5.85	5.00	10/24/22
22J2282-10 [SS-104 (0-3in)]	B320654	5.95	5.00	10/24/22
22J2282-11 [SS-104 (16-20in)]	B320654	5.62	5.00	10/24/22
22J2282-12 [SS-105 (FM)]	B320654	3.01	5.00	10/24/22
22J2282-23 [MW-304 (0-4in)]	B320654	5.60	5.00	10/24/22
22J2282-24 [MW-304(12ft)]	B320654	5.50	5.00	10/24/22
22J2282-25 [MW-310(0-6in)]	B320654	5.92	5.00	10/24/22
22J2282-26 [MW-310 (12-13ft)]	B320654	5.62	5.00	10/24/22
22J2282-27 [Duplicate 4]	B320654	2.60	5.00	10/24/22

Sample Extraction Data**Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J2282-28 [SS-118 (0-in)]	B320654	5.98	5.00	10/24/22

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J2282-13 [SS-105 (0-3in)]	B320799	5.65	5.00	10/31/22
22J2282-14 [SS-105 (16-20in)]	B320799	5.71	5.00	10/31/22
22J2282-15 [SS-106 (0-3in)]	B320799	5.96	5.00	10/31/22
22J2282-16 [SS-106 (16-20in)]	B320799	5.67	5.00	10/31/22
22J2282-17 [SS-106 (5ft)]	B320799	5.88	5.00	10/31/22
22J2282-18 [SS-106 (10ft)]	B320799	5.85	5.00	10/31/22
22J2282-19 [SS-107 (0-3in)]	B320799	5.90	5.00	10/31/22
22J2282-20 [SS-107 (16-20in)]	B320799	5.71	5.00	10/31/22
22J2282-21 [SS-108 (0-3in)]	B320799	5.81	5.00	10/31/22
22J2282-22 [SS-108 (16-20in)]	B320799	5.55	5.00	10/31/22

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320654 - SOP 465-PFAAS
Blank (B320654-BLK1)

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg wet
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg wet
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg wet
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg wet
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg wet
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg wet
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg wet
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg wet
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg wet
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg wet
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg wet
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.45	µg/kg wet
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg wet
N-EtFOSAA	ND	0.45	µg/kg wet
N-MeFOSAA	ND	0.45	µg/kg wet
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg wet
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg wet
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg wet
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg wet
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg wet
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg wet
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg wet
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg wet
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg wet
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg wet
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg wet
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg wet
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg wet
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg wet
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg wet
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg wet
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg wet
Perfluorooctanesulfonic acid (PFOS)	ND	0.45	µg/kg wet
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg wet

LCS (B320654-BS1)

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluorobutanoic acid (PFBA)	1.78	0.43	µg/kg wet	2.18	81.6	71-135
Perfluorobutanesulfonic acid (PFBS)	1.46	0.43	µg/kg wet	1.93	76.0	72-128
Perfluoropentanoic acid (PFPeA)	1.77	0.43	µg/kg wet	2.18	81.0	69-132
Perfluorohexanoic acid (PFHxA)	1.85	0.43	µg/kg wet	2.18	84.8	70-132
11Cl-PF3OUdS (F53B Major)	1.34	0.43	µg/kg wet	2.05	65.4	41.8-128
9Cl-PF3ONS (F53B Minor)	1.46	0.43	µg/kg wet	2.03	72.1	51.1-141
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	2.43	0.43	µg/kg wet	2.05	119	55.2-122
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.28	0.43	µg/kg wet	2.18	58.5	27.6-137
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.80	0.43	µg/kg wet	2.09	86.1	65-137
Perfluorodecanoic acid (PFDA)	1.66	0.43	µg/kg wet	2.18	76.3	69-133
Perfluorododecanoic acid (PFDoA)	1.56	0.43	µg/kg wet	2.18	71.5	69-135
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	1.39	0.43	µg/kg wet	1.94	71.7	56.7-133

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320654 - SOP 465-PFAAS

LCS (B320654-BS1)

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluoroheptanesulfonic acid (PFHpS)	1.71	0.43	µg/kg wet	2.08		81.9	70-132			
N-EtFOSAA	1.92	0.43	µg/kg wet	2.18		88.0	61-139			
N-MeFOSAA	1.84	0.43	µg/kg wet	2.18		84.5	63-144			
Perfluorotetradecanoic acid (PFTA)	1.61	0.43	µg/kg wet	2.18		73.8	69-133			
Perfluorotridecanoic acid (PFTTrDA)	1.83	0.43	µg/kg wet	2.18		84.1	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.70	0.43	µg/kg wet	2.04		83.3	62-145			
Perfluorodecanesulfonic acid (PFDS)	1.54	0.43	µg/kg wet	2.10		73.5	59-134			
Perfluorooctanesulfonamide (FOSA)	1.68	0.43	µg/kg wet	2.18		77.3	67-137			
Perfluorononanesulfonic acid (PFNS)	1.91	0.43	µg/kg wet	2.09		91.2	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	1.81	0.43	µg/kg wet	2.18		83.0	51.4-142			
Perfluoro-1-butanefulfonamide (FBSA)	1.89	0.43	µg/kg wet	2.18		86.7	53.5-129			
Perfluorohexanesulfonic acid (PFHxS)	1.55	0.43	µg/kg wet	2.00		77.5	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.52	0.43	µg/kg wet	2.18		69.9	57.8-127			
Perfluoro-5-oxahexanoic acid (PFMBA)	1.53	0.43	µg/kg wet	2.18		70.4	56.5-132			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.78	0.43	µg/kg wet	2.07		85.8	64-140			
Perfluoropentanesulfonic acid (PFPeS)	1.63	0.43	µg/kg wet	2.05		79.4	73-123			
Perfluoroundecanoic acid (PFUnA)	1.70	0.43	µg/kg wet	2.18		78.0	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.77	0.43	µg/kg wet	2.18		81.3	54.5-128			
Perfluoroheptanoic acid (PFHpA)	1.82	0.43	µg/kg wet	2.18		83.3	71-131			
Perfluorooctanoic acid (PFOA)	1.61	0.43	µg/kg wet	2.18		74.1	69-133			
Perfluorooctanesulfonic acid (PFOS)	1.60	0.43	µg/kg wet	2.01		79.5	68-136			
Perfluorononanoic acid (PFNA)	1.68	0.43	µg/kg wet	2.18		77.2	72-129			

Matrix Spike (B320654-MS1)

Source: 22J2282-01

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluorobutanoic acid (PFBA)	3.91	0.48	µg/kg dry	2.41	1.46	101	71-135			
Perfluorobutanesulfonic acid (PFBS)	2.00	0.48	µg/kg dry	2.13	0.0904	89.4	72-128			
Perfluoropentanoic acid (PFPeA)	5.86	0.48	µg/kg dry	2.41	2.96	120	69-132			
Perfluorohexanoic acid (PFHxA)	5.32	0.48	µg/kg dry	2.41	2.70	109	70-132			
11Cl-PF3OUdS (F53B Major)	1.67	0.48	µg/kg dry	2.27	ND	73.6	4.02-158			
9Cl-PF3ONS (F53B Minor)	1.72	0.48	µg/kg dry	2.25	ND	76.4	52.5-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.08	0.48	µg/kg dry	2.27	ND	135 *	50.7-124			MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.82	0.48	µg/kg dry	2.41	ND	75.5	29.2-146			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.79	0.48	µg/kg dry	2.32	1.35	105	65-137			
Perfluorodecanoic acid (PFDA)	7.72	0.48	µg/kg dry	2.41	5.40	96.4	69-133			
Perfluorododecanoic acid (PFDoA)	5.06	0.48	µg/kg dry	2.41	2.58	103	69-135			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.76	0.48	µg/kg dry	2.15	ND	82.2	60.7-135			
Perfluoroheptanesulfonic acid (PFHpS)	2.29	0.48	µg/kg dry	2.31	ND	99.1	70-132			
N-EtFOSAA	2.47	0.48	µg/kg dry	2.41	ND	102	61-139			
N-MeFOSAA	2.24	0.48	µg/kg dry	2.41	ND	92.9	63-144			
Perfluorotetradecanoic acid (PFTA)	3.20	0.48	µg/kg dry	2.41	0.965	92.7	69-133			
Perfluorotridecanoic acid (PFTTrDA)	15.5	0.48	µg/kg dry	2.41	9.46	252 *	66-139			MS-12
4:2 Fluorotelomersulfonic acid (4:2FTS A)	2.14	0.48	µg/kg dry	2.26	ND	94.5	62-145			
Perfluorodecanesulfonic acid (PFDS)	3.12	0.48	µg/kg dry	2.33	0.915	94.9	59-134			
Perfluorooctanesulfonamide (FOSA)	2.58	0.48	µg/kg dry	2.41	0.429	89.1	67-137			
Perfluorononanesulfonic acid (PFNS)	2.56	0.48	µg/kg dry	2.32	0.341	95.6	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	4.34	0.48	µg/kg dry	2.41	1.94	99.2	18.9-162			
Perfluoro-1-butanefulfonamide (FBSA)	2.02	0.48	µg/kg dry	2.41	ND	83.7	49.8-135			
Perfluorohexanesulfonic acid (PFHxS)	5.04	0.48	µg/kg dry	2.21	2.35	121	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.86	0.48	µg/kg dry	2.41	ND	76.9	62-155			
Perfluoro-5-oxahexanoic acid (PFMBA)	1.91	0.48	µg/kg dry	2.41	ND	79.3	52.1-148			

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320654 - SOP 465-PFAAS

Matrix Spike (B320654-MS1)	Source: 22J2282-01			Prepared: 10/24/22 Analyzed: 11/01/22						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.05	0.48	µg/kg dry	2.29	0.641	105	64-140			
Perfluoropentanesulfonic acid (PFPeS)	2.22	0.48	µg/kg dry	2.27	0.145	91.5	73-123			
Perfluoroundecanoic acid (PFUnA)	11.8	0.48	µg/kg dry	2.41	8.49	138 *	64-136			MS-22
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.18	0.48	µg/kg dry	2.41	ND	90.4	54.6-133			
Perfluoroheptanoic acid (PFHpA)	4.24	0.48	µg/kg dry	2.41	1.61	109	71-131			
Perfluorooctanoic acid (PFOA)	5.39	0.48	µg/kg dry	2.41	3.01	98.3	69-133			
Perfluorooctanesulfonic acid (PFOS)	13.0	0.48	µg/kg dry	2.23	9.41	160 *	68-136			MS-22
Perfluorononanoic acid (PFNA)	4.27	0.48	µg/kg dry	2.41	1.88	99.0	72-129			

Matrix Spike Dup (B320654-MSD1)	Source: 22J2282-01			Prepared: 10/24/22 Analyzed: 11/01/22						
Perfluorobutanoic acid (PFBA)	3.84	0.50	µg/kg dry	2.54	1.46	93.7	71-135	1.71	30	
Perfluorobutanesulfonic acid (PFBS)	2.11	0.50	µg/kg dry	2.24	0.0904	90.1	72-128	5.61	30	
Perfluoropentanoic acid (PFPeA)	5.45	0.50	µg/kg dry	2.54	2.96	98.0	69-132	7.32	30	
Perfluorohexanoic acid (PFHxA)	4.97	0.50	µg/kg dry	2.54	2.70	89.5	70-132	6.81	30	
11Cl-PF3OUdS (F53B Major)	1.78	0.50	µg/kg dry	2.39	ND	74.3	4.02-158	5.95	30	
9Cl-PF3ONS (F53B Minor)	1.81	0.50	µg/kg dry	2.37	ND	76.3	52.5-150	5.01	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.26	0.50	µg/kg dry	2.39	ND	136 *	50.7-124	5.91	30	MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.99	0.50	µg/kg dry	2.54	ND	78.5	29.2-146	8.98	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.97	0.50	µg/kg dry	2.44	1.35	107	65-137	4.69	30	
Perfluorodecanoic acid (PFDA)	7.77	0.50	µg/kg dry	2.54	5.40	93.4	69-133	0.576	30	
Perfluorododecanoic acid (PFDoA)	5.16	0.50	µg/kg dry	2.54	2.58	102	69-135	1.97	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	1.85	0.50	µg/kg dry	2.26	ND	82.0	60.7-135	4.87	30	
Perfluoroheptanesulfonic acid (PFHpS)	2.42	0.50	µg/kg dry	2.43	ND	99.6	70-132	5.52	30	
N-EtFOSAA	2.58	0.50	µg/kg dry	2.54	ND	102	61-139	4.56	30	
N-MeFOSAA	2.41	0.50	µg/kg dry	2.54	ND	94.8	63-144	7.14	30	
Perfluorotetradecanoic acid (PFTA)	3.23	0.50	µg/kg dry	2.54	0.965	89.1	69-133	0.748	30	
Perfluorotridecanoic acid (PFTTrDA)	13.3	0.50	µg/kg dry	2.54	9.46	153 *	66-139	15.1	30	MS-12
4:2 Fluorotelomersulfonic acid (4:2FTS A)	2.18	0.50	µg/kg dry	2.38	ND	91.8	62-145	2.14	30	
Perfluorodecanesulfonic acid (PFDS)	3.03	0.50	µg/kg dry	2.45	0.915	86.6	59-134	2.89	30	
Perfluorooctanesulfonamide (FOSA)	2.63	0.50	µg/kg dry	2.54	0.429	86.8	67-137	2.01	30	
Perfluorononanesulfonic acid (PFNS)	2.62	0.50	µg/kg dry	2.44	0.341	93.6	69-125	2.54	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	4.22	0.50	µg/kg dry	2.54	1.94	89.7	18.9-162	2.75	30	
Perfluoro-1-butanedisulfonamide (FBSA)	2.13	0.50	µg/kg dry	2.54	ND	83.8	49.8-135	5.21	30	
Perfluorohexanesulfonic acid (PFHxS)	5.26	0.50	µg/kg dry	2.33	2.35	125	67-130	4.30	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	1.99	0.50	µg/kg dry	2.54	ND	78.4	62-155	6.90	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	2.03	0.50	µg/kg dry	2.54	ND	80.1	52.1-148	5.99	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.84	0.50	µg/kg dry	2.41	0.641	91.3	64-140	7.04	30	
Perfluoropentanesulfonic acid (PFPeS)	2.31	0.50	µg/kg dry	2.39	0.145	90.9	73-123	4.09	30	
Perfluoroundecanoic acid (PFUnA)	11.2	0.50	µg/kg dry	2.54	8.49	105	64-136	5.80	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.35	0.50	µg/kg dry	2.54	ND	92.7	54.6-133	7.55	30	
Perfluoroheptanoic acid (PFHpA)	3.99	0.50	µg/kg dry	2.54	1.61	93.7	71-131	6.01	30	
Perfluorooctanoic acid (PFOA)	5.57	0.50	µg/kg dry	2.54	3.01	100	69-133	3.27	30	
Perfluorooctanesulfonic acid (PFOS)	11.6	0.50	µg/kg dry	2.35	9.41	93.2	68-136	11.2	30	
Perfluorononanoic acid (PFNA)	4.17	0.50	µg/kg dry	2.54	1.88	90.1	72-129	2.40	30	

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320799 - SOP 465-PFAAS

Blank (B320799-BLK1)

Prepared: 10/31/22 Analyzed: 11/18/22

Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg wet
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg wet
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg wet
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg wet
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg wet
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg wet
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg wet
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg wet
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg wet
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg wet
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg wet
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.43	µg/kg wet
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg wet
N-EtFOSAA	ND	0.43	µg/kg wet
N-MeFOSAA	ND	0.43	µg/kg wet
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg wet
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg wet
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg wet
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg wet
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg wet
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg wet
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg wet
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg wet
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg wet
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg wet
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg wet
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg wet
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg wet
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg wet
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg wet
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg wet
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg wet
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg wet
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg wet

LCS (B320799-BS1)

Prepared: 10/31/22 Analyzed: 11/18/22

Perfluorobutanoic acid (PFBA)	2.01	0.42	µg/kg wet	2.13	94.3	71-135	
Perfluorobutanesulfonic acid (PFBS)	1.80	0.42	µg/kg wet	1.89	95.5	72-128	
Perfluoropentanoic acid (PFPeA)	2.09	0.42	µg/kg wet	2.13	97.8	69-132	
Perfluorohexanoic acid (PFHxA)	2.10	0.42	µg/kg wet	2.13	98.3	70-132	
11Cl-PF3OUdS (F53B Major)	1.62	0.42	µg/kg wet	2.01	80.5	41.8-128	
9Cl-PF3ONS (F53B Minor)	1.66	0.42	µg/kg wet	1.99	83.6	51.1-141	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.20	0.42	µg/kg wet	2.01	159 *	55.2-122	L-01
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.92	0.42	µg/kg wet	2.13	89.9	27.6-137	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.84	0.42	µg/kg wet	2.05	89.7	65-137	
Perfluorodecanoic acid (PFDA)	1.92	0.42	µg/kg wet	2.13	89.8	69-133	
Perfluorododecanoic acid (PFDoA)	1.73	0.42	µg/kg wet	2.13	81.2	69-135	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	1.78	0.42	µg/kg wet	1.90	93.9	56.7-133	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320799 - SOP 465-PFAAS
LCS (B320799-BS1)

Prepared: 10/31/22 Analyzed: 11/18/22

Perfluoroheptanesulfonic acid (PFHpS)	2.01	0.42	µg/kg wet	2.04		98.4	70-132			
N-EtFOSAA	2.12	0.42	µg/kg wet	2.13		99.1	61-139			
N-MeFOSAA	2.25	0.42	µg/kg wet	2.13		106	63-144			
Perfluorotetradecanoic acid (PFTA)	1.74	0.42	µg/kg wet	2.13		81.4	69-133			
Perfluorotridecanoic acid (PFTDA)	1.73	0.42	µg/kg wet	2.13		81.2	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.85	0.42	µg/kg wet	2.00		92.8	62-145			
Perfluorodecanesulfonic acid (PFDS)	2.01	0.42	µg/kg wet	2.06		97.9	59-134			
Perfluorooctanesulfonamide (FOSA)	1.87	0.42	µg/kg wet	2.13		87.7	67-137			
Perfluorononanesulfonic acid (PFNS)	1.85	0.42	µg/kg wet	2.05		90.4	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	1.86	0.42	µg/kg wet	2.13		87.2	51.4-142			
Perfluoro-1-butanefulfonamide (FBSA)	2.11	0.42	µg/kg wet	2.13		98.8	53.5-129			
Perfluorohexanesulfonic acid (PFHxS)	1.75	0.42	µg/kg wet	1.96		89.5	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	2.09	0.42	µg/kg wet	2.13		97.7	57.8-127			
Perfluoro-5-oxahexanoic acid (PFMBA)	2.14	0.42	µg/kg wet	2.13		100	56.5-132			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.99	0.42	µg/kg wet	2.03		97.9	64-140			
Perfluoropentanesulfonic acid (PFPeS)	1.86	0.42	µg/kg wet	2.01		92.7	73-123			
Perfluoroundecanoic acid (PFUnA)	1.96	0.42	µg/kg wet	2.13		91.7	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.21	0.42	µg/kg wet	2.13		104	54.5-128			
Perfluoroheptanoic acid (PFHpA)	2.00	0.42	µg/kg wet	2.13		93.7	71-131			
Perfluorooctanoic acid (PFOA)	2.04	0.42	µg/kg wet	2.13		95.4	69-133			
Perfluorooctanesulfonic acid (PFOS)	1.83	0.42	µg/kg wet	1.97		92.7	68-136			
Perfluorononanoic acid (PFNA)	2.02	0.42	µg/kg wet	2.13		94.4	72-129			

QUALITY CONTROL
Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B321538 - % Solids

Duplicate (B321538-DUP1)	Source: 22J2282-09		Prepared & Analyzed: 10/29/22							
% Solids	94.0		% Wt		93.9			0.153	10	
Duplicate (B321538-DUP2)	Source: 22J2282-10		Prepared & Analyzed: 10/29/22							
% Solids	86.1		% Wt		85.5			0.726	10	
Duplicate (B321538-DUP3)	Source: 22J2282-11		Prepared & Analyzed: 10/29/22							
% Solids	99.4		% Wt		99.3			0.0331	10	
Duplicate (B321538-DUP4)	Source: 22J2282-04		Prepared & Analyzed: 10/29/22							
% Solids	86.0		% Wt		86.0			0.0172	10	
Duplicate (B321538-DUP5)	Source: 22J2282-05		Prepared & Analyzed: 10/29/22							
% Solids	91.4		% Wt		91.0			0.384	10	
Duplicate (B321538-DUP6)	Source: 22J2282-06		Prepared & Analyzed: 10/29/22							
% Solids	99.0		% Wt		99.0			0.0748	10	
Duplicate (B321538-DUP7)	Source: 22J2282-07		Prepared & Analyzed: 10/29/22							
% Solids	93.8		% Wt		93.5			0.296	10	
Duplicate (B321538-DUP8)	Source: 22J2282-08		Prepared & Analyzed: 10/29/22							
% Solids	86.5		% Wt		86.4			0.0694	10	

Batch B321558 - % Solids

Duplicate (B321558-DUP1)	Source: 22J2282-23		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	88.3		% Wt		86.0			2.65	10	
Duplicate (B321558-DUP2)	Source: 22J2282-24		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	92.0		% Wt		92.3			0.386	10	
Duplicate (B321558-DUP3)	Source: 22J2282-25		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	89.6		% Wt		91.6			2.16	10	
Duplicate (B321558-DUP4)	Source: 22J2282-28		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	85.5		% Wt		87.1			1.88	10	

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-03	Sample received after recommended holding time was exceeded.
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
MS-12	Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-22	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
S-29	Extracted Internal Standard is outside of control limits.

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-101 (0-3in) (22J2282-01) Lab File ID: 22J2282-01.d Analyzed: 11/01/22 15:49									
M8FOSA	259042.5	3.980583	270,500.00	3.988567	96	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	223069	2.463967	259,163.00	2.463967	86	50 - 150	0.0000	+/-0.50	
M2PFTA	973067.3	4.30535	1,040,441.00	4.30535	94	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	164943.6	3.786867	138,397.00	3.786867	119	50 - 150	0.0000	+/-0.50	
MPFBA	448795.7	1.066783	416,918.00	1.058467	108	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	97156.41	2.798383	101,833.00	2.798383	95	50 - 150	0.0000	+/-0.50	
M6PFDA	615995.4	3.787383	619,732.00	3.787383	99	50 - 150	0.0000	+/-0.50	
M3PFBS	122372.1	1.878383	118,352.00	1.878383	103	50 - 150	0.0000	+/-0.50	
M7PFUnA	653179.8	3.93005	666,280.00	3.93005	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	125226.4	3.4373	128,005.00	3.4373	98	50 - 150	0.0000	+/-0.50	
M5PFPeA	394499.8	1.698283	373,092.00	1.698283	106	50 - 150	0.0000	+/-0.50	
M5PFHxA	760100.9	2.5477	742,233.00	2.5477	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	108939.2	3.21025	109,331.00	3.201883	100	50 - 150	0.0084	+/-0.50	
M4PFHpA	862604.1	3.170783	853,747.00	3.170783	101	50 - 150	0.0000	+/-0.50	
M8PFOA	859843.2	3.445833	831,933.00	3.445833	103	50 - 150	0.0000	+/-0.50	
M8PFOS	103781.3	3.636183	101,247.00	3.636183	103	50 - 150	0.0000	+/-0.50	
M9PFNA	656305.3	3.637217	639,014.00	3.637217	103	50 - 150	0.0000	+/-0.50	
MPFDoA	646430.7	4.064667	642,225.00	4.064667	101	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	220237.6	3.937517	194,892.00	3.937517	113	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	248522.6	3.865617	237,657.00	3.865617	105	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-101 (16-20in) (22J2282-02) Lab File ID: 22J2282-02.d Analyzed: 11/01/22 15:56									
M8FOSA	268123.4	3.988567	270,500.00	3.988567	99	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	238767.1	2.463967	259,163.00	2.463967	92	50 - 150	0.0000	+/-0.50	
M2PFTA	1044932	4.30535	1,040,441.00	4.30535	100	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	195347	3.786867	138,397.00	3.786867	141	50 - 150	0.0000	+/-0.50	
MPFBA	463163.8	1.066783	416,918.00	1.058467	111	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	99632.34	2.798383	101,833.00	2.798383	98	50 - 150	0.0000	+/-0.50	
M6PFDA	665661	3.787383	619,732.00	3.787383	107	50 - 150	0.0000	+/-0.50	
M3PFBS	126604.7	1.878383	118,352.00	1.878383	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	719849.9	3.93005	666,280.00	3.93005	108	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	139543.6	3.4373	128,005.00	3.4373	109	50 - 150	0.0000	+/-0.50	
M5PFPeA	405957.4	1.698283	373,092.00	1.698283	109	50 - 150	0.0000	+/-0.50	
M5PFHxA	796680.8	2.5477	742,233.00	2.5477	107	50 - 150	0.0000	+/-0.50	
M3PFHxS	114805.5	3.21025	109,331.00	3.201883	105	50 - 150	0.0084	+/-0.50	
M4PFHpA	917771.4	3.170783	853,747.00	3.170783	107	50 - 150	0.0000	+/-0.50	
M8PFOA	895269	3.445833	831,933.00	3.445833	108	50 - 150	0.0000	+/-0.50	
M8PFOS	108154.6	3.636183	101,247.00	3.636183	107	50 - 150	0.0000	+/-0.50	
M9PFNA	696231.3	3.637217	639,014.00	3.637217	109	50 - 150	0.0000	+/-0.50	
MPFDoA	676994.1	4.064667	642,225.00	4.064667	105	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	260496.4	3.937517	194,892.00	3.937517	134	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	280138.3	3.865617	237,657.00	3.865617	118	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (FM) (22J2282-03)		Lab File ID: 22J2282-03.d				Analyzed: 11/01/22 16:03			
M8FOSA	226298.3	3.980583	270,500.00	3.988567	84	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	274880.1	2.463967	259,163.00	2.463967	106	50 - 150	0.0000	+/-0.50	
M2PFTA	910962	4.30535	1,040,441.00	4.30535	88	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	228088.1	3.786867	138,397.00	3.786867	165	50 - 150	0.0000	+/-0.50	*
MPFBA	455797.8	1.066783	416,918.00	1.058467	109	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	91142.7	2.798383	101,833.00	2.798383	90	50 - 150	0.0000	+/-0.50	
M6PFDA	577679.6	3.787383	619,732.00	3.787383	93	50 - 150	0.0000	+/-0.50	
M3PFBS	130266.2	1.878383	118,352.00	1.878383	110	50 - 150	0.0000	+/-0.50	
M7PFUnA	608283.7	3.93005	666,280.00	3.93005	91	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	212939.4	3.4373	128,005.00	3.4373	166	50 - 150	0.0000	+/-0.50	*
M5PFPeA	410087.8	1.698283	373,092.00	1.698283	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	792683.8	2.5477	742,233.00	2.5477	107	50 - 150	0.0000	+/-0.50	
M3PFHxS	111574.9	3.201883	109,331.00	3.201883	102	50 - 150	0.0000	+/-0.50	
M4PFHpA	899819.5	3.1627	853,747.00	3.170783	105	50 - 150	-0.0081	+/-0.50	
M8PFOA	852993.7	3.445833	831,933.00	3.445833	103	50 - 150	0.0000	+/-0.50	
M8PFOS	96170.17	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	646768.1	3.637217	639,014.00	3.637217	101	50 - 150	0.0000	+/-0.50	
MPFDoA	581819.9	4.064667	642,225.00	4.064667	91	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	249292.7	3.937517	194,892.00	3.937517	128	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	271523.5	3.865617	237,657.00	3.865617	114	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (0-3in) (22J2282-04)		Lab File ID: 22J2282-04.d				Analyzed: 11/01/22 16:10			
M8FOSA	263215.3	3.988567	270,500.00	3.988567	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	220399	2.463967	259,163.00	2.463967	85	50 - 150	0.0000	+/-0.50	
M2PFTA	969786.8	4.30535	1,040,441.00	4.30535	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	160340.9	3.78685	138,397.00	3.786867	116	50 - 150	0.0000	+/-0.50	
MPFBA	428922	1.066783	416,918.00	1.058467	103	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	91148.64	2.798383	101,833.00	2.798383	90	50 - 150	0.0000	+/-0.50	
M6PFDA	634527.9	3.787383	619,732.00	3.787383	102	50 - 150	0.0000	+/-0.50	
M3PFBS	118287	1.878383	118,352.00	1.878383	100	50 - 150	0.0000	+/-0.50	
M7PFUnA	655464.4	3.93005	666,280.00	3.93005	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	120372.5	3.4373	128,005.00	3.4373	94	50 - 150	0.0000	+/-0.50	
M5PFPeA	373922.4	1.698283	373,092.00	1.698283	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	729669.3	2.5477	742,233.00	2.5477	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	106186.2	3.201883	109,331.00	3.201883	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	836956.2	3.170783	853,747.00	3.170783	98	50 - 150	0.0000	+/-0.50	
M8PFOA	814717.3	3.445833	831,933.00	3.445833	98	50 - 150	0.0000	+/-0.50	
M8PFOS	96656.3	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	638251.9	3.637217	639,014.00	3.637217	100	50 - 150	0.0000	+/-0.50	
MPFDoA	616531.5	4.064667	642,225.00	4.064667	96	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	183562.8	3.937517	194,892.00	3.937517	94	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	244971	3.865617	237,657.00	3.865617	103	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (16-20in) (22J2282-05)			Lab File ID: 22J2282-05.d			Analyzed: 11/01/22 16:17			
M8FOSA	309821.5	3.988567	270,500.00	3.988567	115	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	272337.1	2.472183	259,163.00	2.463967	105	50 - 150	0.0082	+/-0.50	
M2PFTA	1001843	4.30535	1,040,441.00	4.30535	96	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	156606.2	3.794833	138,397.00	3.786867	113	50 - 150	0.0080	+/-0.50	
MPFBA	459470.5	1.066783	416,918.00	1.058467	110	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	105221.1	2.806567	101,833.00	2.798383	103	50 - 150	0.0082	+/-0.50	
M6PFDA	671687.2	3.79535	619,732.00	3.787383	108	50 - 150	0.0080	+/-0.50	
M3PFBS	127014.4	1.878383	118,352.00	1.878383	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	715521.2	3.938033	666,280.00	3.93005	107	50 - 150	0.0080	+/-0.50	
M2-6:2FTS	116594.2	3.445283	128,005.00	3.4373	91	50 - 150	0.0080	+/-0.50	
M5PFPeA	406184.6	1.698283	373,092.00	1.698283	109	50 - 150	0.0000	+/-0.50	
M5PFHxA	800881.2	2.5477	742,233.00	2.5477	108	50 - 150	0.0000	+/-0.50	
M3PFHxS	112096.7	3.21025	109,331.00	3.201883	103	50 - 150	0.0084	+/-0.50	
M4PFHpA	917100.6	3.170783	853,747.00	3.170783	107	50 - 150	0.0000	+/-0.50	
M8PFOA	907412.7	3.453817	831,933.00	3.445833	109	50 - 150	0.0080	+/-0.50	
M8PFOS	105547.7	3.644167	101,247.00	3.636183	104	50 - 150	0.0080	+/-0.50	
M9PFNA	681631.3	3.6452	639,014.00	3.637217	107	50 - 150	0.0080	+/-0.50	
MPFDoA	667448.1	4.064667	642,225.00	4.064667	104	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	209807.8	3.937517	194,892.00	3.937517	108	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	240709.6	3.865617	237,657.00	3.865617	101	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (5ft) (22J2282-06)		Lab File ID: 22J2282-06.d				Analyzed: 11/01/22 16:25			
M8FOSA	296491.5	3.988567	270,500.00	3.988567	110	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	237164.3	2.463967	259,163.00	2.463967	92	50 - 150	0.0000	+/-0.50	
M2PFTA	887165.6	4.30535	1,040,441.00	4.30535	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	131782.8	3.78685	138,397.00	3.786867	95	50 - 150	0.0000	+/-0.50	
MPFBA	417071.4	1.066783	416,918.00	1.058467	100	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	101762.3	2.798383	101,833.00	2.798383	100	50 - 150	0.0000	+/-0.50	
M6PFDA	623914.4	3.787383	619,732.00	3.787383	101	50 - 150	0.0000	+/-0.50	
M3PFBS	115139.1	1.878383	118,352.00	1.878383	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	630251.6	3.93005	666,280.00	3.93005	95	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	108355.6	3.4373	128,005.00	3.4373	85	50 - 150	0.0000	+/-0.50	
M5PFPeA	373970.6	1.698283	373,092.00	1.698283	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	720950.8	2.5477	742,233.00	2.5477	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	104100.5	3.21025	109,331.00	3.201883	95	50 - 150	0.0084	+/-0.50	
M4PFHpA	823644.9	3.170783	853,747.00	3.170783	96	50 - 150	0.0000	+/-0.50	
M8PFOA	793751.6	3.445833	831,933.00	3.445833	95	50 - 150	0.0000	+/-0.50	
M8PFOS	95696.61	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	626971.1	3.637217	639,014.00	3.637217	98	50 - 150	0.0000	+/-0.50	
MPFDoA	607832.6	4.064667	642,225.00	4.064667	95	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	172031.9	3.937517	194,892.00	3.937517	88	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	204620.6	3.865617	237,657.00	3.865617	86	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (10ft) (22J2282-07) Lab File ID: 22J2282-07.d Analyzed: 11/01/22 16:32									
M8FOSA	306117.5	3.988567	270,500.00	3.988567	113	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	235049.1	2.463967	259,163.00	2.463967	91	50 - 150	0.0000	+/-0.50	
M2PFTA	786476.3	4.30535	1,040,441.00	4.30535	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	136577.6	3.786867	138,397.00	3.786867	99	50 - 150	0.0000	+/-0.50	
MPFBA	415254.9	1.066783	416,918.00	1.058467	100	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	97548.16	2.798383	101,833.00	2.798383	96	50 - 150	0.0000	+/-0.50	
M6PFDA	607160.2	3.787383	619,732.00	3.787383	98	50 - 150	0.0000	+/-0.50	
M3PFBS	117047.3	1.878383	118,352.00	1.878383	99	50 - 150	0.0000	+/-0.50	
M7PFUnA	623684.9	3.93005	666,280.00	3.93005	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	109580.5	3.4373	128,005.00	3.4373	86	50 - 150	0.0000	+/-0.50	
M5PFPeA	371735.2	1.698283	373,092.00	1.698283	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	724794.7	2.5477	742,233.00	2.5477	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	107773.3	3.201883	109,331.00	3.201883	99	50 - 150	0.0000	+/-0.50	
M4PFHpA	832165	3.170783	853,747.00	3.170783	97	50 - 150	0.0000	+/-0.50	
M8PFOA	854491	3.445833	831,933.00	3.445833	103	50 - 150	0.0000	+/-0.50	
M8PFOS	94194.77	3.636183	101,247.00	3.636183	93	50 - 150	0.0000	+/-0.50	
M9PFNA	614875.4	3.637217	639,014.00	3.637217	96	50 - 150	0.0000	+/-0.50	
MPFDoA	597145.3	4.064667	642,225.00	4.064667	93	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	141085.9	3.937517	194,892.00	3.937517	72	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	179915.6	3.865617	237,657.00	3.865617	76	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-103 (0-3in) (22J2282-08) Lab File ID: 22J2282-08.d Analyzed: 11/01/22 16:39									
M8FOSA	306350.6	3.988567	270,500.00	3.988567	113	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	291585.6	2.463967	259,163.00	2.463967	113	50 - 150	0.0000	+/-0.50	
M2PFTA	1132241	4.30535	1,040,441.00	4.30535	109	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	179336.4	3.786867	138,397.00	3.786867	130	50 - 150	0.0000	+/-0.50	
MPFBA	486797.4	1.066783	416,918.00	1.058467	117	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	115855.8	2.798383	101,833.00	2.798383	114	50 - 150	0.0000	+/-0.50	
M6PFDA	715795.1	3.787383	619,732.00	3.787383	116	50 - 150	0.0000	+/-0.50	
M3PFBS	136853.4	1.878383	118,352.00	1.878383	116	50 - 150	0.0000	+/-0.50	
M7PFUnA	750838.8	3.93005	666,280.00	3.93005	113	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	130329.3	3.4373	128,005.00	3.4373	102	50 - 150	0.0000	+/-0.50	
M5PFPeA	434199.3	1.698283	373,092.00	1.698283	116	50 - 150	0.0000	+/-0.50	
M5PFHxA	850051.7	2.5477	742,233.00	2.5477	115	50 - 150	0.0000	+/-0.50	
M3PFHxS	121990.6	3.201883	109,331.00	3.201883	112	50 - 150	0.0000	+/-0.50	
M4PFHpA	964561.8	3.170783	853,747.00	3.170783	113	50 - 150	0.0000	+/-0.50	
M8PFOA	976149.6	3.445833	831,933.00	3.445833	117	50 - 150	0.0000	+/-0.50	
M8PFOS	115464.3	3.636183	101,247.00	3.636183	114	50 - 150	0.0000	+/-0.50	
M9PFNA	734031.8	3.637217	639,014.00	3.637217	115	50 - 150	0.0000	+/-0.50	
MPFDoA	719326.4	4.064667	642,225.00	4.064667	112	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	208888.8	3.937517	194,892.00	3.937517	107	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	303061.2	3.865617	237,657.00	3.865617	128	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-103 (16-20in) (22J2282-09) Lab File ID: 22J2282-09.d Analyzed: 11/01/22 16:46									
M8FOSA	330059.5	3.988567	270,500.00	3.988567	122	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	265637.2	2.463967	259,163.00	2.463967	102	50 - 150	0.0000	+/-0.50	
M2PFTA	1022427	4.30535	1,040,441.00	4.30535	98	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	150131.7	3.78685	138,397.00	3.786867	108	50 - 150	0.0000	+/-0.50	
MPFBA	473496.3	1.066783	416,918.00	1.058467	114	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	110334.2	2.798383	101,833.00	2.798383	108	50 - 150	0.0000	+/-0.50	
M6PFDA	695519.8	3.787383	619,732.00	3.787383	112	50 - 150	0.0000	+/-0.50	
M3PFBS	130521.7	1.878383	118,352.00	1.878383	110	50 - 150	0.0000	+/-0.50	
M7PFUnA	702410.9	3.93005	666,280.00	3.93005	105	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	127096.4	3.4373	128,005.00	3.4373	99	50 - 150	0.0000	+/-0.50	
M5PFPeA	415335.3	1.698283	373,092.00	1.698283	111	50 - 150	0.0000	+/-0.50	
M5PFHxA	814404.8	2.5477	742,233.00	2.5477	110	50 - 150	0.0000	+/-0.50	
M3PFHxS	114302.7	3.201883	109,331.00	3.201883	105	50 - 150	0.0000	+/-0.50	
M4PFHpA	949572.5	3.1627	853,747.00	3.170783	111	50 - 150	-0.0081	+/-0.50	
M8PFOA	913055.3	3.445833	831,933.00	3.445833	110	50 - 150	0.0000	+/-0.50	
M8PFOS	106894.8	3.636183	101,247.00	3.636183	106	50 - 150	0.0000	+/-0.50	
M9PFNA	708955.9	3.637217	639,014.00	3.637217	111	50 - 150	0.0000	+/-0.50	
MPFDoA	661763.6	4.064667	642,225.00	4.064667	103	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	199562.3	3.937517	194,892.00	3.937517	102	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	226112.8	3.865617	237,657.00	3.865617	95	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-104 (0-3in) (22J2282-10) Lab File ID: 22J2282-10.d Analyzed: 11/01/22 16:53									
M8FOSA	335024.9	3.988567	270,500.00	3.988567	124	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	315378.9	2.45575	259,163.00	2.463967	122	50 - 150	-0.0082	+/-0.50	
M2PFTA	1180131	4.30535	1,040,441.00	4.30535	113	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	210720	3.786867	138,397.00	3.786867	152	50 - 150	0.0000	+/-0.50	*
MPFBA	504004.5	1.066783	416,918.00	1.058467	121	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	113369.6	2.798383	101,833.00	2.798383	111	50 - 150	0.0000	+/-0.50	
M6PFDA	740925.3	3.787383	619,732.00	3.787383	120	50 - 150	0.0000	+/-0.50	
M3PFBS	144907.3	1.8701	118,352.00	1.878383	122	50 - 150	-0.0083	+/-0.50	
M7PFUnA	796599.3	3.93005	666,280.00	3.93005	120	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	155523.3	3.4373	128,005.00	3.4373	121	50 - 150	0.0000	+/-0.50	
M5PFPeA	451255.5	1.698283	373,092.00	1.698283	121	50 - 150	0.0000	+/-0.50	
M5PFHxA	888612.1	2.539483	742,233.00	2.5477	120	50 - 150	-0.0082	+/-0.50	
M3PFHxS	129761.4	3.201883	109,331.00	3.201883	119	50 - 150	0.0000	+/-0.50	
M4PFHpA	1046864	3.1627	853,747.00	3.170783	123	50 - 150	-0.0081	+/-0.50	
M8PFOA	1013292	3.445833	831,933.00	3.445833	122	50 - 150	0.0000	+/-0.50	
M8PFOS	122241.1	3.636183	101,247.00	3.636183	121	50 - 150	0.0000	+/-0.50	
M9PFNA	767214.3	3.637217	639,014.00	3.637217	120	50 - 150	0.0000	+/-0.50	
MPFDoA	773482.4	4.064667	642,225.00	4.064667	120	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	226086.3	3.937517	194,892.00	3.937517	116	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	300515.2	3.865617	237,657.00	3.865617	126	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-104 (16-20in) (22J2282-11)		Lab File ID: 22J2282-11.d				Analyzed: 11/01/22 17:08			
M8FOSA	242200	3.988567	270,500.00	3.988567	90	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	190216.9	2.45575	259,163.00	2.45575	73	50 - 150	0.0000	+/-0.50	
M2PFTA	736863.7	4.30535	1,040,441.00	4.30535	71	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	118454.9	3.786867	138,397.00	3.786867	86	50 - 150	0.0000	+/-0.50	
MPFBA	339771.6	1.066783	416,918.00	1.058467	81	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	70658	2.7902	101,833.00	2.7902	69	50 - 150	0.0000	+/-0.50	
M6PFDA	498657.9	3.787383	619,732.00	3.787383	80	50 - 150	0.0000	+/-0.50	
M3PFBS	91939.48	1.8701	118,352.00	1.8701	78	50 - 150	0.0000	+/-0.50	
M7PFUnA	507998.4	3.93005	666,280.00	3.93005	76	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	90287.28	3.4373	128,005.00	3.4293	71	50 - 150	0.0080	+/-0.50	
M5PFPeA	298433	1.690017	373,092.00	1.690017	80	50 - 150	0.0000	+/-0.50	
M5PFHxA	583490.6	2.539483	742,233.00	2.539483	79	50 - 150	0.0000	+/-0.50	
M3PFHxS	84360.05	3.201883	109,331.00	3.201883	77	50 - 150	0.0000	+/-0.50	
M4PFHpA	671410.8	3.1627	853,747.00	3.1627	79	50 - 150	0.0000	+/-0.50	
M8PFOA	650831.8	3.445833	831,933.00	3.445833	78	50 - 150	0.0000	+/-0.50	
M8PFOS	80109.98	3.636183	101,247.00	3.636183	79	50 - 150	0.0000	+/-0.50	
M9PFNA	510349	3.637217	639,014.00	3.637217	80	50 - 150	0.0000	+/-0.50	
MPFDoA	476187.3	4.064667	642,225.00	4.064667	74	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	140252	3.937517	194,892.00	3.937517	72	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	172772.9	3.85765	237,657.00	3.85765	73	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-105 (FM) (22J2282-12) Lab File ID: 22J2282-12.d Analyzed: 11/01/22 17:15									
M8FOSA	222438	3.988567	270,500.00	3.988567	82	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	276866.4	2.45575	259,163.00	2.45575	107	50 - 150	0.0000	+/-0.50	
M2PFTA	907563.1	4.297266	1,040,441.00	4.30535	87	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	199042.2	3.786867	138,397.00	3.786867	144	50 - 150	0.0000	+/-0.50	
MPFBA	381467.2	1.066783	416,918.00	1.058467	91	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	77810.74	2.7902	101,833.00	2.7902	76	50 - 150	0.0000	+/-0.50	
M6PFDA	527295.6	3.787383	619,732.00	3.787383	85	50 - 150	0.0000	+/-0.50	
M3PFBS	123210.4	1.8701	118,352.00	1.8701	104	50 - 150	0.0000	+/-0.50	
M7PFUnA	585397.3	3.93005	666,280.00	3.93005	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	194294.4	3.429317	128,005.00	3.4293	152	50 - 150	0.0000	+/-0.50	*
M5PFPeA	354370.7	1.690017	373,092.00	1.690017	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	704134.3	2.539483	742,233.00	2.539483	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	106624.2	3.201883	109,331.00	3.201883	98	50 - 150	0.0000	+/-0.50	
M4PFHpA	804658.1	3.1627	853,747.00	3.1627	94	50 - 150	0.0000	+/-0.50	
M8PFOA	775248.1	3.445833	831,933.00	3.445833	93	50 - 150	0.0000	+/-0.50	
M8PFOS	96638.2	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	585275.1	3.637217	639,014.00	3.637217	92	50 - 150	0.0000	+/-0.50	
MPFDoA	570068.7	4.056667	642,225.00	4.064667	89	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	228139.2	3.929517	194,892.00	3.937517	117	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	243022.7	3.857667	237,657.00	3.85765	102	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-105 (0-3in) (22J2282-13) Lab File ID: 22J2282-13.d Analyzed: 11/18/22 12:58									
M8FOSA	409172.2	4.00455	402,195.00	4.00455	102	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	118297.5	2.5543	124,614.00	2.5543	95	50 - 150	0.0000	+/-0.50	
M2PFTA	1678129	4.345917	1,397,266.00	4.354033	120	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	179906.2	3.82705	185,971.00	3.82705	97	50 - 150	0.0000	+/-0.50	
MPFBA	584789.6	1.100017	537,852.00	1.100017	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	111970.8	2.880217	106,348.00	2.880217	105	50 - 150	0.0000	+/-0.50	
M6PFDA	861949.1	3.82755	802,144.00	3.82755	107	50 - 150	0.0000	+/-0.50	
M3PFBS	152063.7	1.944683	131,390.00	1.95315	116	50 - 150	-0.0085	+/-0.50	
M7PFUnA	1082633	3.97	897,290.00	3.978	121	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	180579.1	3.477367	96,655.00	3.477367	187	50 - 150	0.0000	+/-0.50	*
M5PFPeA	483246.8	1.766017	435,064.00	1.7743	111	50 - 150	-0.0083	+/-0.50	
M5PFHxA	892000.6	2.638533	826,757.00	2.638533	108	50 - 150	0.0000	+/-0.50	
M3PFHxS	147960	3.242583	129,892.00	3.250667	114	50 - 150	-0.0081	+/-0.50	
M4PFHpA	1036790	3.21145	979,162.00	3.21145	106	50 - 150	0.0000	+/-0.50	
M8PFOA	1057961	3.485883	924,207.00	3.485883	114	50 - 150	0.0000	+/-0.50	
M8PFOS	140010.8	3.6761	126,766.00	3.6761	110	50 - 150	0.0000	+/-0.50	
M9PFNA	792399.4	3.677133	728,352.00	3.677133	109	50 - 150	0.0000	+/-0.50	
MPFDoA	1151784	4.112617	995,275.00	4.112617	116	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	372139.6	3.977483	243,167.00	3.985467	153	50 - 150	-0.0080	+/-0.50	*
d3-NMeFOSAA	349505.1	3.9059	301,558.00	3.9059	116	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-105 (16-20in) (22J2282-14) Lab File ID: 22J2282-14.d Analyzed: 11/18/22 13:05									
M8FOSA	576281.3	3.99655	402,195.00	4.00455	143	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	171326	2.5461	124,614.00	2.5543	137	50 - 150	-0.0082	+/-0.50	
M2PFTA	2411134	4.345917	1,397,266.00	4.354033	173	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	246327.7	3.82705	185,971.00	3.82705	132	50 - 150	0.0000	+/-0.50	
MPFBA	841685.8	1.100017	537,852.00	1.100017	156	50 - 150	0.0000	+/-0.50	*
M3HFPO-DA	167302.3	2.872033	106,348.00	2.880217	157	50 - 150	-0.0082	+/-0.50	*
M6PFDA	1196073	3.827533	802,144.00	3.82755	149	50 - 150	0.0000	+/-0.50	
M3PFBS	211853.1	1.944683	131,390.00	1.95315	161	50 - 150	-0.0085	+/-0.50	*
M7PFUnA	1424753	3.97	897,290.00	3.978	159	50 - 150	-0.0080	+/-0.50	*
M2-6:2FTS	277848.4	3.469383	96,655.00	3.477367	287	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	695874.9	1.766017	435,064.00	1.7743	160	50 - 150	-0.0083	+/-0.50	*
M5PFHxA	1252025	2.629817	826,757.00	2.638533	151	50 - 150	-0.0087	+/-0.50	*
M3PFHxS	200058.5	3.242583	129,892.00	3.250667	154	50 - 150	-0.0081	+/-0.50	*
M4PFHpA	1509759	3.21145	979,162.00	3.21145	154	50 - 150	0.0000	+/-0.50	*
M8PFOA	1470475	3.485883	924,207.00	3.485883	159	50 - 150	0.0000	+/-0.50	*
M8PFOS	200275.3	3.6761	126,766.00	3.6761	158	50 - 150	0.0000	+/-0.50	*
M9PFNA	1099048	3.677133	728,352.00	3.677133	151	50 - 150	0.0000	+/-0.50	*
MPFDoA	1582847	4.104633	995,275.00	4.112617	159	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	389591.9	3.977483	243,167.00	3.985467	160	50 - 150	-0.0080	+/-0.50	*
d3-NMeFOSAA	455151.5	3.9059	301,558.00	3.9059	151	50 - 150	0.0000	+/-0.50	*

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (0-3in) (22J2282-15) Lab File ID: 22J2282-15.d Analyzed: 11/18/22 13:12									
M8FOSA	315657	3.99655	402,195.00	4.00455	78	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	94908.9	2.5461	124,614.00	2.5543	76	50 - 150	-0.0082	+/-0.50	
M2PFTA	1163012	4.345917	1,397,266.00	4.354033	83	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	153897.1	3.82705	185,971.00	3.82705	83	50 - 150	0.0000	+/-0.50	
MPFBA	422765.9	1.100017	537,852.00	1.100017	79	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98834.38	2.872033	106,348.00	2.880217	93	50 - 150	-0.0082	+/-0.50	
M6PFDA	599486.9	3.82755	802,144.00	3.82755	75	50 - 150	0.0000	+/-0.50	
M3PFBS	117489.7	1.9364	131,390.00	1.95315	89	50 - 150	-0.0168	+/-0.50	
M7PFUnA	855468.6	3.970017	897,290.00	3.978	95	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	133434.7	3.469383	96,655.00	3.477367	138	50 - 150	-0.0080	+/-0.50	
M5PFPeA	373648.3	1.757717	435,064.00	1.7743	86	50 - 150	-0.0166	+/-0.50	
M5PFHxA	682395.6	2.629817	826,757.00	2.638533	83	50 - 150	-0.0087	+/-0.50	
M3PFHxS	104308.4	3.242583	129,892.00	3.250667	80	50 - 150	-0.0081	+/-0.50	
M4PFHpA	803819.4	3.21145	979,162.00	3.21145	82	50 - 150	0.0000	+/-0.50	
M8PFOA	738884.1	3.485883	924,207.00	3.485883	80	50 - 150	0.0000	+/-0.50	
M8PFOS	112775.8	3.6761	126,766.00	3.6761	89	50 - 150	0.0000	+/-0.50	
M9PFNA	570111.9	3.67715	728,352.00	3.677133	78	50 - 150	0.0000	+/-0.50	
MPFDoA	926836.8	4.112617	995,275.00	4.112617	93	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	222595.9	3.977483	243,167.00	3.985467	92	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	256521.3	3.9059	301,558.00	3.9059	85	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (16-20in) (22J2282-16) Lab File ID: 22J2282-16.d Analyzed: 11/18/22 13:20									
M8FOSA	315091.9	3.99655	402,195.00	4.00455	78	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	90452.14	2.5461	124,614.00	2.5543	73	50 - 150	-0.0082	+/-0.50	
M2PFTA	949813.3	4.345917	1,397,266.00	4.354033	68	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	115082.2	3.82705	185,971.00	3.82705	62	50 - 150	0.0000	+/-0.50	
MPFBA	390829.5	1.100017	537,852.00	1.100017	73	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	83330.41	2.872033	106,348.00	2.880217	78	50 - 150	-0.0082	+/-0.50	
M6PFDA	548262.3	3.827533	802,144.00	3.82755	68	50 - 150	0.0000	+/-0.50	
M3PFBS	107977.2	1.9364	131,390.00	1.95315	82	50 - 150	-0.0168	+/-0.50	
M7PFUnA	701721.3	3.97	897,290.00	3.978	78	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	116666.7	3.469383	96,655.00	3.477367	121	50 - 150	-0.0080	+/-0.50	
M5PFPeA	346213.4	1.757717	435,064.00	1.7743	80	50 - 150	-0.0166	+/-0.50	
M5PFHxA	627381.9	2.629817	826,757.00	2.638533	76	50 - 150	-0.0087	+/-0.50	
M3PFHxS	94630.01	3.242583	129,892.00	3.250667	73	50 - 150	-0.0081	+/-0.50	
M4PFHpA	735976	3.21145	979,162.00	3.21145	75	50 - 150	0.0000	+/-0.50	
M8PFOA	671168.8	3.485883	924,207.00	3.485883	73	50 - 150	0.0000	+/-0.50	
M8PFOS	94035.47	3.6761	126,766.00	3.6761	74	50 - 150	0.0000	+/-0.50	
M9PFNA	497843.3	3.677133	728,352.00	3.677133	68	50 - 150	0.0000	+/-0.50	
MPFDoA	821752.4	4.104633	995,275.00	4.112617	83	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	176184.8	3.977483	243,167.00	3.985467	72	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	210863.1	3.9059	301,558.00	3.9059	70	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (5ft) (22J2282-17) Lab File ID: 22J2282-17.d Analyzed: 11/18/22 13:34									
M8FOSA	384977.7	3.99655	402,195.00	4.00455	96	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	118366.5	2.5461	124,614.00	2.5461	95	50 - 150	0.0000	+/-0.50	
M2PFTA	1199446	4.345917	1,397,266.00	4.354033	86	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	137037.6	3.82705	185,971.00	3.82705	74	50 - 150	0.0000	+/-0.50	
MPFBA	475880.1	1.100017	537,852.00	1.100017	88	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98631.09	2.872033	106,348.00	2.872033	93	50 - 150	0.0000	+/-0.50	
M6PFDA	712211.3	3.82755	802,144.00	3.82755	89	50 - 150	0.0000	+/-0.50	
M3PFBS	131303.6	1.9364	131,390.00	1.944683	100	50 - 150	-0.0083	+/-0.50	
M7PFUnA	872578.6	3.97	897,290.00	3.970017	97	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	146908.5	3.469383	96,655.00	3.477367	152	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	410190.7	1.766017	435,064.00	1.766017	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	741681.6	2.629817	826,757.00	2.629833	90	50 - 150	0.0000	+/-0.50	
M3PFHxS	122807.3	3.242583	129,892.00	3.242583	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	899242.8	3.21145	979,162.00	3.21145	92	50 - 150	0.0000	+/-0.50	
M8PFOA	839136.1	3.485883	924,207.00	3.485883	91	50 - 150	0.0000	+/-0.50	
M8PFOS	119295.6	3.6761	126,766.00	3.6761	94	50 - 150	0.0000	+/-0.50	
M9PFNA	620106.6	3.66915	728,352.00	3.67715	85	50 - 150	-0.0080	+/-0.50	
MPFDoA	937550.9	4.104633	995,275.00	4.112617	94	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	188362.8	3.977483	243,167.00	3.977483	77	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	240812.5	3.9059	301,558.00	3.9059	80	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (10ft) (22J2282-18) Lab File ID: 22J2282-18.d Analyzed: 11/18/22 13:41									
M8FOSA	392054.5	3.99655	402,195.00	4.00455	97	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	119665.8	2.537883	124,614.00	2.5461	96	50 - 150	-0.0082	+/-0.50	
M2PFTA	1353186	4.345917	1,397,266.00	4.354033	97	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	144269.5	3.82705	185,971.00	3.82705	78	50 - 150	0.0000	+/-0.50	
MPFBA	498177.4	1.100017	537,852.00	1.100017	93	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	106780.8	2.872033	106,348.00	2.872033	100	50 - 150	0.0000	+/-0.50	
M6PFDA	757791.6	3.82755	802,144.00	3.82755	94	50 - 150	0.0000	+/-0.50	
M3PFBS	136024.5	1.9364	131,390.00	1.944683	104	50 - 150	-0.0083	+/-0.50	
M7PFUnA	927448.4	3.97	897,290.00	3.970017	103	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	148196.3	3.469383	96,655.00	3.477367	153	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	438086.6	1.757717	435,064.00	1.766017	101	50 - 150	-0.0083	+/-0.50	
M5PFHxA	792581.1	2.621617	826,757.00	2.629833	96	50 - 150	-0.0082	+/-0.50	
M3PFHxS	125453.6	3.242583	129,892.00	3.242583	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	951470.6	3.21145	979,162.00	3.21145	97	50 - 150	0.0000	+/-0.50	
M8PFOA	906395.6	3.485883	924,207.00	3.485883	98	50 - 150	0.0000	+/-0.50	
M8PFOS	128202.2	3.6761	126,766.00	3.6761	101	50 - 150	0.0000	+/-0.50	
M9PFNA	679356.2	3.677133	728,352.00	3.67715	93	50 - 150	0.0000	+/-0.50	
MPFDoA	1017849	4.104633	995,275.00	4.112617	102	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	231103.5	3.977483	243,167.00	3.977483	95	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	273679	3.9059	301,558.00	3.9059	91	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-107 (0-3in) (22J2282-19) Lab File ID: 22J2282-19.d Analyzed: 11/18/22 13:49									
M8FOSA	425903.6	3.99655	402,195.00	4.00455	106	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	120001.6	2.5461	124,614.00	2.5461	96	50 - 150	0.0000	+/-0.50	
M2PFTA	1411885	4.345917	1,397,266.00	4.354033	101	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	190596.3	3.82705	185,971.00	3.82705	102	50 - 150	0.0000	+/-0.50	
MPFBA	554428.8	1.100017	537,852.00	1.100017	103	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	119356.9	2.872033	106,348.00	2.872033	112	50 - 150	0.0000	+/-0.50	
M6PFDA	797580.1	3.82755	802,144.00	3.82755	99	50 - 150	0.0000	+/-0.50	
M3PFBS	150477.1	1.9364	131,390.00	1.944683	115	50 - 150	-0.0083	+/-0.50	
M7PFUnA	972103.8	3.97	897,290.00	3.970017	108	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	149169.7	3.469383	96,655.00	3.477367	154	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	477841.7	1.766017	435,064.00	1.766017	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	859340.1	2.629817	826,757.00	2.629833	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	139470.2	3.242583	129,892.00	3.242583	107	50 - 150	0.0000	+/-0.50	
M4PFHpA	1021939	3.21145	979,162.00	3.21145	104	50 - 150	0.0000	+/-0.50	
M8PFOA	960666.7	3.485883	924,207.00	3.485883	104	50 - 150	0.0000	+/-0.50	
M8PFOS	135763	3.6761	126,766.00	3.6761	107	50 - 150	0.0000	+/-0.50	
M9PFNA	733558.4	3.677133	728,352.00	3.67715	101	50 - 150	0.0000	+/-0.50	
MPFDoA	1089265	4.104633	995,275.00	4.112617	109	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	239133.2	3.977483	243,167.00	3.977483	98	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	310433	3.9059	301,558.00	3.9059	103	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-107 (16-20in) (22J2282-20) Lab File ID: 22J2282-20.d Analyzed: 11/18/22 13:56									
M8FOSA	367107.5	3.99655	402,195.00	4.00455	91	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	116362.6	2.546083	124,614.00	2.5461	93	50 - 150	0.0000	+/-0.50	
M2PFTA	1207919	4.345917	1,397,266.00	4.354033	86	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	133032.6	3.82705	185,971.00	3.82705	72	50 - 150	0.0000	+/-0.50	
MPFBA	478759.4	1.100017	537,852.00	1.100017	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	95774.89	2.872033	106,348.00	2.872033	90	50 - 150	0.0000	+/-0.50	
M6PFDA	688428.1	3.82755	802,144.00	3.82755	86	50 - 150	0.0000	+/-0.50	
M3PFBS	129160.6	1.9364	131,390.00	1.944683	98	50 - 150	-0.0083	+/-0.50	
M7PFUnA	876905.9	3.97	897,290.00	3.970017	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	123180.4	3.469383	96,655.00	3.477367	127	50 - 150	-0.0080	+/-0.50	
M5PFPeA	412540.1	1.766017	435,064.00	1.766017	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	766774.5	2.629817	826,757.00	2.629833	93	50 - 150	0.0000	+/-0.50	
M3PFHxS	117555.3	3.242583	129,892.00	3.242583	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	892735.2	3.21145	979,162.00	3.21145	91	50 - 150	0.0000	+/-0.50	
M8PFOA	834933.1	3.485883	924,207.00	3.485883	90	50 - 150	0.0000	+/-0.50	
M8PFOS	120294.9	3.6761	126,766.00	3.6761	95	50 - 150	0.0000	+/-0.50	
M9PFNA	659545.6	3.677133	728,352.00	3.67715	91	50 - 150	0.0000	+/-0.50	
MPFDoA	968552.3	4.112617	995,275.00	4.112617	97	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	210087.3	3.977483	243,167.00	3.977483	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	252169.2	3.9059	301,558.00	3.9059	84	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-108 (0-3in) (22J2282-21) Lab File ID: 22J2282-21.d Analyzed: 11/18/22 14:03									
M8FOSA	475929.2	3.99655	402,195.00	4.00455	118	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	164432.4	2.5461	124,614.00	2.5461	132	50 - 150	0.0000	+/-0.50	
M2PFTA	1911164	4.345917	1,397,266.00	4.354033	137	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	268310.3	3.82705	185,971.00	3.82705	144	50 - 150	0.0000	+/-0.50	
MPFBA	622272.3	1.100017	537,852.00	1.100017	116	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	119664.5	2.872033	106,348.00	2.872033	113	50 - 150	0.0000	+/-0.50	
M6PFDA	959978.2	3.82755	802,144.00	3.82755	120	50 - 150	0.0000	+/-0.50	
M3PFBS	174205.2	1.9364	131,390.00	1.944683	133	50 - 150	-0.0083	+/-0.50	
M7PFUnA	1259931	3.970017	897,290.00	3.970017	140	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	267512.9	3.469383	96,655.00	3.477367	277	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	548386.1	1.757717	435,064.00	1.766017	126	50 - 150	-0.0083	+/-0.50	
M5PFHxA	995596.1	2.629817	826,757.00	2.629833	120	50 - 150	0.0000	+/-0.50	
M3PFHxS	166588	3.242583	129,892.00	3.242583	128	50 - 150	0.0000	+/-0.50	
M4PFHpA	1185831	3.21145	979,162.00	3.21145	121	50 - 150	0.0000	+/-0.50	
M8PFOA	1117943	3.485883	924,207.00	3.485883	121	50 - 150	0.0000	+/-0.50	
M8PFOS	155333.6	3.6761	126,766.00	3.6761	123	50 - 150	0.0000	+/-0.50	
M9PFNA	834422.3	3.677133	728,352.00	3.67715	115	50 - 150	0.0000	+/-0.50	
MPFDoA	1423314	4.104633	995,275.00	4.112617	143	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	367635.3	3.977483	243,167.00	3.977483	151	50 - 150	0.0000	+/-0.50	*
d3-NMeFOSAA	430063.8	3.9059	301,558.00	3.9059	143	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-108 (16-20in) (22J2282-22) Lab File ID: 22J2282-22.d Analyzed: 11/18/22 14:10									
M8FOSA	365511.2	3.99655	402,195.00	4.00455	91	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	112587.7	2.546083	124,614.00	2.5461	90	50 - 150	0.0000	+/-0.50	
M2PFTA	1175657	4.345917	1,397,266.00	4.354033	84	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	131940.7	3.82705	185,971.00	3.82705	71	50 - 150	0.0000	+/-0.50	
MPFBA	468415.4	1.100017	537,852.00	1.100017	87	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	97077.21	2.872033	106,348.00	2.872033	91	50 - 150	0.0000	+/-0.50	
M6PFDA	681934.4	3.82755	802,144.00	3.82755	85	50 - 150	0.0000	+/-0.50	
M3PFBS	126512.9	1.9364	131,390.00	1.944683	96	50 - 150	-0.0083	+/-0.50	
M7PFUnA	843652.6	3.97	897,290.00	3.970017	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	152890.2	3.469383	96,655.00	3.477367	158	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	402260.3	1.757717	435,064.00	1.766017	92	50 - 150	-0.0083	+/-0.50	
M5PFHxA	733299.9	2.621617	826,757.00	2.629833	89	50 - 150	-0.0082	+/-0.50	
M3PFHxS	117321.1	3.242583	129,892.00	3.242583	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	853827.4	3.21145	979,162.00	3.21145	87	50 - 150	0.0000	+/-0.50	
M8PFOA	842981.9	3.485883	924,207.00	3.485883	91	50 - 150	0.0000	+/-0.50	
M8PFOS	113174.2	3.6761	126,766.00	3.6761	89	50 - 150	0.0000	+/-0.50	
M9PFNA	599679.9	3.677133	728,352.00	3.67715	82	50 - 150	0.0000	+/-0.50	
MPFDoA	912967.3	4.104633	995,275.00	4.112617	92	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	202943.8	3.977483	243,167.00	3.977483	83	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	244954.4	3.9059	301,558.00	3.9059	81	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-304 (0-4in) (22J2282-23) Lab File ID: 22J2282-23.d Analyzed: 11/01/22 17:22									
M8FOSA	254960.6	3.988567	270,500.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	223203.3	2.45575	259,163.00	2.45575	86	50 - 150	0.0000	+/-0.50	
M2PFTA	870196.9	4.297266	1,040,441.00	4.30535	84	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	139399.6	3.786867	138,397.00	3.786867	101	50 - 150	0.0000	+/-0.50	
MPFBA	394448.3	1.066783	416,918.00	1.058467	95	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	90432.3	2.7902	101,833.00	2.7902	89	50 - 150	0.0000	+/-0.50	
M6PFDA	585285.9	3.787383	619,732.00	3.787383	94	50 - 150	0.0000	+/-0.50	
M3PFBS	108411	1.8701	118,352.00	1.8701	92	50 - 150	0.0000	+/-0.50	
M7PFUnA	598608.6	3.93005	666,280.00	3.93005	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	102921.9	3.4293	128,005.00	3.4293	80	50 - 150	0.0000	+/-0.50	
M5PFPeA	348969.3	1.690017	373,092.00	1.690017	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	666523.3	2.539483	742,233.00	2.539483	90	50 - 150	0.0000	+/-0.50	
M3PFHxS	99136.04	3.201883	109,331.00	3.201883	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	777680.3	3.1627	853,747.00	3.1627	91	50 - 150	0.0000	+/-0.50	
M8PFOA	764598.5	3.445833	831,933.00	3.445833	92	50 - 150	0.0000	+/-0.50	
M8PFOS	93790.9	3.636183	101,247.00	3.636183	93	50 - 150	0.0000	+/-0.50	
M9PFNA	595130.4	3.637217	639,014.00	3.637217	93	50 - 150	0.0000	+/-0.50	
MPFDoA	565443.7	4.056667	642,225.00	4.064667	88	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	174148.3	3.929517	194,892.00	3.937517	89	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	209574.7	3.85765	237,657.00	3.85765	88	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-304(12ft) (22J2282-24) Lab File ID: 22J2282-24.d Analyzed: 11/01/22 17:30									
M8FOSA	317805.6	3.988567	270,500.00	3.988567	117	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	264355.3	2.45575	259,163.00	2.45575	102	50 - 150	0.0000	+/-0.50	
M2PFTA	914988.4	4.297266	1,040,441.00	4.30535	88	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	156085.3	3.786867	138,397.00	3.786867	113	50 - 150	0.0000	+/-0.50	
MPFBA	449105.9	1.066783	416,918.00	1.058467	108	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	105659.7	2.7902	101,833.00	2.7902	104	50 - 150	0.0000	+/-0.50	
M6PFDA	661701.6	3.787383	619,732.00	3.787383	107	50 - 150	0.0000	+/-0.50	
M3PFBS	125605.6	1.8701	118,352.00	1.8701	106	50 - 150	0.0000	+/-0.50	
M7PFUnA	660828	3.92205	666,280.00	3.93005	99	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	124460	3.429317	128,005.00	3.4293	97	50 - 150	0.0000	+/-0.50	
M5PFPeA	402971	1.690017	373,092.00	1.690017	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	774921	2.539483	742,233.00	2.539483	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	112162.4	3.201883	109,331.00	3.201883	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	892594.8	3.1627	853,747.00	3.1627	105	50 - 150	0.0000	+/-0.50	
M8PFOA	890502.3	3.445833	831,933.00	3.445833	107	50 - 150	0.0000	+/-0.50	
M8PFOS	105764.1	3.636183	101,247.00	3.636183	104	50 - 150	0.0000	+/-0.50	
M9PFNA	675126.4	3.637217	639,014.00	3.637217	106	50 - 150	0.0000	+/-0.50	
MPFDoA	640111.6	4.056667	642,225.00	4.064667	100	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	186271.8	3.929517	194,892.00	3.937517	96	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	232375.5	3.85765	237,657.00	3.85765	98	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-310(0-6in) (22J2282-25) Lab File ID: 22J2282-25.d Analyzed: 11/01/22 17:37									
M8FOSA	323591.3	3.988567	270,500.00	3.988567	120	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	298213.3	2.45575	259,163.00	2.45575	115	50 - 150	0.0000	+/-0.50	
M2PFTA	1090842	4.297266	1,040,441.00	4.30535	105	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	179206.5	3.778883	138,397.00	3.786867	129	50 - 150	-0.0080	+/-0.50	
MPFBA	502386.6	1.066783	416,918.00	1.058467	121	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	111970.2	2.7902	101,833.00	2.7902	110	50 - 150	0.0000	+/-0.50	
M6PFDA	743025	3.787383	619,732.00	3.787383	120	50 - 150	0.0000	+/-0.50	
M3PFBS	138806.5	1.8701	118,352.00	1.8701	117	50 - 150	0.0000	+/-0.50	
M7PFUnA	756578.9	3.92205	666,280.00	3.93005	114	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	129192	3.4293	128,005.00	3.4293	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	440944.8	1.690017	373,092.00	1.690017	118	50 - 150	0.0000	+/-0.50	
M5PFHxA	859512.6	2.539483	742,233.00	2.539483	116	50 - 150	0.0000	+/-0.50	
M3PFHxS	123028.1	3.201883	109,331.00	3.201883	113	50 - 150	0.0000	+/-0.50	
M4PFHpA	1002437	3.1627	853,747.00	3.1627	117	50 - 150	0.0000	+/-0.50	
M8PFOA	978878.5	3.445833	831,933.00	3.445833	118	50 - 150	0.0000	+/-0.50	
M8PFOS	113148.6	3.636183	101,247.00	3.636183	112	50 - 150	0.0000	+/-0.50	
M9PFNA	737086.1	3.637217	639,014.00	3.637217	115	50 - 150	0.0000	+/-0.50	
MPFDoA	730620.3	4.056667	642,225.00	4.064667	114	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	213733.1	3.929517	194,892.00	3.937517	110	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	272250.1	3.85765	237,657.00	3.85765	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-310 (12-13ft) (22J2282-26) Lab File ID: 22J2282-26.d Analyzed: 11/01/22 17:44									
M8FOSA	338358.4	3.988567	270,500.00	3.988567	125	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	298338.1	2.447533	259,163.00	2.45575	115	50 - 150	-0.0082	+/-0.50	
M2PFTA	1007950	4.297266	1,040,441.00	4.30535	97	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	167992.7	3.778883	138,397.00	3.786867	121	50 - 150	-0.0080	+/-0.50	
MPFBA	482192.4	1.066783	416,918.00	1.058467	116	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	108364	2.7902	101,833.00	2.7902	106	50 - 150	0.0000	+/-0.50	
M6PFDA	699009.6	3.787383	619,732.00	3.787383	113	50 - 150	0.0000	+/-0.50	
M3PFBS	135211.9	1.8701	118,352.00	1.8701	114	50 - 150	0.0000	+/-0.50	
M7PFUnA	746117.4	3.92205	666,280.00	3.93005	112	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	135989.3	3.4293	128,005.00	3.4293	106	50 - 150	0.0000	+/-0.50	
M5PFPeA	428689.9	1.690017	373,092.00	1.690017	115	50 - 150	0.0000	+/-0.50	
M5PFHxA	824693.4	2.531267	742,233.00	2.539483	111	50 - 150	-0.0082	+/-0.50	
M3PFHxS	120199.4	3.201883	109,331.00	3.201883	110	50 - 150	0.0000	+/-0.50	
M4PFHpA	973256.2	3.1627	853,747.00	3.1627	114	50 - 150	0.0000	+/-0.50	
M8PFOA	970562.4	3.445833	831,933.00	3.445833	117	50 - 150	0.0000	+/-0.50	
M8PFOS	108653.3	3.636183	101,247.00	3.636183	107	50 - 150	0.0000	+/-0.50	
M9PFNA	718106.4	3.637217	639,014.00	3.637217	112	50 - 150	0.0000	+/-0.50	
MPFDoA	713990.9	4.056667	642,225.00	4.064667	111	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	200627.3	3.929517	194,892.00	3.937517	103	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	241008.5	3.85765	237,657.00	3.85765	101	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Duplicate 4 (22J2282-27)		Lab File ID: 22J2282-27.d				Analyzed: 11/01/22 17:51			
M8FOSA	245576.2	3.988567	270,500.00	3.988567	91	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	277955.8	2.44755	259,163.00	2.45575	107	50 - 150	-0.0082	+/-0.50	
M2PFTA	929064.4	4.297266	1,040,441.00	4.30535	89	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	209084.5	3.778883	138,397.00	3.786867	151	50 - 150	-0.0080	+/-0.50	*
MPFBA	406821.1	1.058467	416,918.00	1.058467	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	87224.32	2.782017	101,833.00	2.7902	86	50 - 150	-0.0082	+/-0.50	
M6PFDA	566624.7	3.779417	619,732.00	3.787383	91	50 - 150	-0.0080	+/-0.50	
M3PFBS	128632.3	1.861817	118,352.00	1.8701	109	50 - 150	-0.0083	+/-0.50	
M7PFUnA	622464.4	3.92205	666,280.00	3.93005	93	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	190590	3.429317	128,005.00	3.4293	149	50 - 150	0.0000	+/-0.50	
M5PFPeA	376251.3	1.690017	373,092.00	1.690017	101	50 - 150	0.0000	+/-0.50	
M5PFHxA	748844.3	2.531267	742,233.00	2.539483	101	50 - 150	-0.0082	+/-0.50	
M3PFHxS	114240.8	3.193817	109,331.00	3.201883	104	50 - 150	-0.0081	+/-0.50	
M4PFHpA	871890.4	3.154633	853,747.00	3.1627	102	50 - 150	-0.0081	+/-0.50	
M8PFOA	836339.9	3.445833	831,933.00	3.445833	101	50 - 150	0.0000	+/-0.50	
M8PFOS	97300.19	3.636183	101,247.00	3.636183	96	50 - 150	0.0000	+/-0.50	
M9PFNA	600733.5	3.629233	639,014.00	3.637217	94	50 - 150	-0.0080	+/-0.50	
MPFDoA	575706.2	4.056667	642,225.00	4.064667	90	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	242524	3.929517	194,892.00	3.937517	124	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	273966.4	3.857667	237,657.00	3.85765	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-118 (0-in) (22J2282-28)		Lab File ID: 22J2282-28.d				Analyzed: 11/01/22 17:58			
M8FOSA	296433.9	3.988567	270,500.00	3.988567	110	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	250670	2.447533	259,163.00	2.45575	97	50 - 150	-0.0082	+/-0.50	
M2PFTA	832936.7	4.2892	1,040,441.00	4.30535	80	50 - 150	-0.0161	+/-0.50	
M2-8:2FTS	165625.2	3.778883	138,397.00	3.786867	120	50 - 150	-0.0080	+/-0.50	
MPFBA	427384.6	1.066783	416,918.00	1.058467	103	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	104427.7	2.782017	101,833.00	2.7902	103	50 - 150	-0.0082	+/-0.50	
M6PFDA	639987.1	3.779417	619,732.00	3.787383	103	50 - 150	-0.0080	+/-0.50	
M3PFBS	126104.7	1.861817	118,352.00	1.8701	107	50 - 150	-0.0083	+/-0.50	
M7PFUnA	657908.6	3.92205	666,280.00	3.93005	99	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	118292.9	3.4293	128,005.00	3.4293	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	380095	1.690017	373,092.00	1.690017	102	50 - 150	0.0000	+/-0.50	
M5PFHxA	741685.2	2.531267	742,233.00	2.539483	100	50 - 150	-0.0082	+/-0.50	
M3PFHxS	113943.7	3.193817	109,331.00	3.201883	104	50 - 150	-0.0081	+/-0.50	
M4PFHpA	875387.3	3.154633	853,747.00	3.1627	103	50 - 150	-0.0081	+/-0.50	
M8PFOA	859864.4	3.437833	831,933.00	3.445833	103	50 - 150	-0.0080	+/-0.50	
M8PFOS	101333.4	3.6282	101,247.00	3.636183	100	50 - 150	-0.0080	+/-0.50	
M9PFNA	656812.6	3.629233	639,014.00	3.637217	103	50 - 150	-0.0080	+/-0.50	
MPFDoA	627295.6	4.056667	642,225.00	4.064667	98	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	172038.1	3.929517	194,892.00	3.937517	88	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	223901.3	3.8497	237,657.00	3.85765	94	50 - 150	-0.0080	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B320654-BLK1)			Lab File ID: B320654-BLK1.d			Analyzed: 11/01/22 15:27			
M8FOSA	254060.7	3.988567	270,500.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	184661.4	2.463967	259,163.00	2.463967	71	50 - 150	0.0000	+/-0.50	
M2PFTA	835261.8	4.30535	1,040,441.00	4.30535	80	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	109998	3.78685	138,397.00	3.786867	79	50 - 150	0.0000	+/-0.50	
MPFBA	393376.9	1.066783	416,918.00	1.058467	94	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	84946.2	2.798383	101,833.00	2.798383	83	50 - 150	0.0000	+/-0.50	
M6PFDA	586642.9	3.787383	619,732.00	3.787383	95	50 - 150	0.0000	+/-0.50	
M3PFBS	106939.5	1.878383	118,352.00	1.878383	90	50 - 150	0.0000	+/-0.50	
M7PFUnA	574922.3	3.93005	666,280.00	3.93005	86	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	89975.79	3.4373	128,005.00	3.4373	70	50 - 150	0.0000	+/-0.50	
M5PFPeA	345944.4	1.698283	373,092.00	1.698283	93	50 - 150	0.0000	+/-0.50	
M5PFHxA	662720	2.5477	742,233.00	2.5477	89	50 - 150	0.0000	+/-0.50	
M3PFHxS	92409.13	3.21025	109,331.00	3.201883	85	50 - 150	0.0084	+/-0.50	
M4PFHpA	767673.1	3.170783	853,747.00	3.170783	90	50 - 150	0.0000	+/-0.50	
M8PFOA	766853.4	3.445833	831,933.00	3.445833	92	50 - 150	0.0000	+/-0.50	
M8PFOS	88492.14	3.636183	101,247.00	3.636183	87	50 - 150	0.0000	+/-0.50	
M9PFNA	578643.7	3.637217	639,014.00	3.637217	91	50 - 150	0.0000	+/-0.50	
MPFDoA	567798.4	4.064667	642,225.00	4.064667	88	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	168270	3.937517	194,892.00	3.937517	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	195123.5	3.865617	237,657.00	3.865617	82	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B320654-BS1)			Lab File ID: B320654-BS1.d			Analyzed: 11/01/22 15:20			
M8FOSA	312652.7	3.988567	270,500.00	3.988567	116	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	202077.5	2.463967	259,163.00	2.463967	78	50 - 150	0.0000	+/-0.50	
M2PFTA	960827.6	4.30535	1,040,441.00	4.30535	92	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	129837.2	3.78685	138,397.00	3.786867	94	50 - 150	0.0000	+/-0.50	
MPFBA	462497.2	1.066783	416,918.00	1.058467	111	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	100920.9	2.798383	101,833.00	2.798383	99	50 - 150	0.0000	+/-0.50	
M6PFDA	658462.3	3.787383	619,732.00	3.787383	106	50 - 150	0.0000	+/-0.50	
M3PFBS	126384.1	1.878383	118,352.00	1.878383	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	680376.1	3.93005	666,280.00	3.93005	102	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	105364.5	3.4373	128,005.00	3.4373	82	50 - 150	0.0000	+/-0.50	
M5PFPeA	402008.4	1.698283	373,092.00	1.698283	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	774914.3	2.5477	742,233.00	2.5477	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	111346.8	3.21025	109,331.00	3.201883	102	50 - 150	0.0084	+/-0.50	
M4PFHpA	900379.4	3.170783	853,747.00	3.170783	105	50 - 150	0.0000	+/-0.50	
M8PFOA	893111.6	3.445833	831,933.00	3.445833	107	50 - 150	0.0000	+/-0.50	
M8PFOS	103934.1	3.636183	101,247.00	3.636183	103	50 - 150	0.0000	+/-0.50	
M9PFNA	691828.4	3.637217	639,014.00	3.637217	108	50 - 150	0.0000	+/-0.50	
MPFDoA	648253.4	4.064667	642,225.00	4.064667	101	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	179303.6	3.937517	194,892.00	3.937517	92	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	230326.2	3.865617	237,657.00	3.865617	97	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B320654-MS1)			Lab File ID: B320654-MS1.d			Analyzed: 11/01/22 15:34			
M8FOSA	253964.4	3.988567	270,500.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	222897.8	2.463967	259,163.00	2.463967	86	50 - 150	0.0000	+/-0.50	
M2PFTA	959453.2	4.30535	1,040,441.00	4.30535	92	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	165046.8	3.786867	138,397.00	3.786867	119	50 - 150	0.0000	+/-0.50	
MPFBA	443671.6	1.066783	416,918.00	1.058467	106	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	94494.5	2.806567	101,833.00	2.798383	93	50 - 150	0.0082	+/-0.50	
M6PFDA	619537	3.787383	619,732.00	3.787383	100	50 - 150	0.0000	+/-0.50	
M3PFBS	119633.9	1.878383	118,352.00	1.878383	101	50 - 150	0.0000	+/-0.50	
M7PFUnA	641709.9	3.93005	666,280.00	3.93005	96	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	125421	3.4373	128,005.00	3.4373	98	50 - 150	0.0000	+/-0.50	
M5PFPeA	388164.8	1.698283	373,092.00	1.698283	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	756532.3	2.5477	742,233.00	2.5477	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	108119.5	3.21025	109,331.00	3.201883	99	50 - 150	0.0084	+/-0.50	
M4PFHpA	859781.5	3.170783	853,747.00	3.170783	101	50 - 150	0.0000	+/-0.50	
M8PFOA	862611.5	3.445833	831,933.00	3.445833	104	50 - 150	0.0000	+/-0.50	
M8PFOS	100630.3	3.636183	101,247.00	3.636183	99	50 - 150	0.0000	+/-0.50	
M9PFNA	641621.3	3.637217	639,014.00	3.637217	100	50 - 150	0.0000	+/-0.50	
MPFDoA	631452.4	4.064667	642,225.00	4.064667	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	212565.5	3.937517	194,892.00	3.937517	109	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	255354.8	3.865617	237,657.00	3.865617	107	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B320654-MSD1)			Lab File ID: B320654-MSD1.d			Analyzed: 11/01/22 15:41			
M8FOSA	251530.4	3.988567	270,500.00	3.988567	93	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	229171.3	2.463967	259,163.00	2.463967	88	50 - 150	0.0000	+/-0.50	
M2PFTA	972666.4	4.30535	1,040,441.00	4.30535	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	168669.3	3.786867	138,397.00	3.786867	122	50 - 150	0.0000	+/-0.50	
MPFBA	447335.5	1.066783	416,918.00	1.058467	107	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	90381.45	2.798383	101,833.00	2.798383	89	50 - 150	0.0000	+/-0.50	
M6PFDA	601454.9	3.787383	619,732.00	3.787383	97	50 - 150	0.0000	+/-0.50	
M3PFBS	119018.9	1.878383	118,352.00	1.878383	101	50 - 150	0.0000	+/-0.50	
M7PFUnA	671762.6	3.93005	666,280.00	3.93005	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	128888.7	3.4373	128,005.00	3.4373	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	386445.2	1.698283	373,092.00	1.698283	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	751929.9	2.5477	742,233.00	2.5477	101	50 - 150	0.0000	+/-0.50	
M3PFHxS	106032.5	3.21025	109,331.00	3.201883	97	50 - 150	0.0084	+/-0.50	
M4PFHpA	860121.5	3.170783	853,747.00	3.170783	101	50 - 150	0.0000	+/-0.50	
M8PFOA	850895.8	3.445833	831,933.00	3.445833	102	50 - 150	0.0000	+/-0.50	
M8PFOS	103718.2	3.636183	101,247.00	3.636183	102	50 - 150	0.0000	+/-0.50	
M9PFNA	653048.1	3.637217	639,014.00	3.637217	102	50 - 150	0.0000	+/-0.50	
MPFDoA	629517.6	4.064667	642,225.00	4.064667	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	217967.7	3.937517	194,892.00	3.937517	112	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	264884.5	3.865617	237,657.00	3.865617	111	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B320799-BLK1)			Lab File ID: B320799-BLK1.d			Analyzed: 11/18/22 11:53			
M8FOSA	477827.7	4.00455	402,195.00	4.00455	119	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	163603.9	2.562517	124,614.00	2.5543	131	50 - 150	0.0082	+/-0.50	
M2PFTA	1927639	4.354033	1,397,266.00	4.354033	138	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	271879.3	3.835	185,971.00	3.82705	146	50 - 150	0.0080	+/-0.50	
MPFBA	729235.3	1.100017	537,852.00	1.100017	136	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	146563.4	2.880217	106,348.00	2.880217	138	50 - 150	0.0000	+/-0.50	
M6PFDA	1068229	3.827533	802,144.00	3.82755	133	50 - 150	0.0000	+/-0.50	
M3PFBS	188706	1.95315	131,390.00	1.95315	144	50 - 150	0.0000	+/-0.50	
M7PFUnA	1221808	3.978	897,290.00	3.978	136	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	215190.7	3.477367	96,655.00	3.477367	223	50 - 150	0.0000	+/-0.50	*
M5PFPeA	607516.4	1.7743	435,064.00	1.7743	140	50 - 150	0.0000	+/-0.50	
M5PFHxA	1098703	2.646767	826,757.00	2.638533	133	50 - 150	0.0082	+/-0.50	
M3PFHxS	173500.8	3.250667	129,892.00	3.250667	134	50 - 150	0.0000	+/-0.50	
M4PFHpA	1308564	3.219533	979,162.00	3.21145	134	50 - 150	0.0081	+/-0.50	
M8PFOA	1301931	3.485883	924,207.00	3.485883	141	50 - 150	0.0000	+/-0.50	
M8PFOS	170491.8	3.6761	126,766.00	3.6761	134	50 - 150	0.0000	+/-0.50	
M9PFNA	951200.8	3.677133	728,352.00	3.677133	131	50 - 150	0.0000	+/-0.50	
MPFDoA	1368912	4.112617	995,275.00	4.112617	138	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	325238.3	3.985467	243,167.00	3.985467	134	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	397609.9	3.9059	301,558.00	3.9059	132	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B320799-BS1)			Lab File ID: B320799-BS1.d			Analyzed: 11/18/22 11:46			
M8FOSA	375865.8	4.00455	402,195.00	4.00455	93	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	116829.5	2.562517	124,614.00	2.5543	94	50 - 150	0.0082	+/-0.50	
M2PFTA	1312070	4.354033	1,397,266.00	4.354033	94	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	294631	3.835017	185,971.00	3.82705	158	50 - 150	0.0080	+/-0.50	*
MPFBA	501233.2	1.108317	537,852.00	1.100017	93	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	107216.7	2.8884	106,348.00	2.880217	101	50 - 150	0.0082	+/-0.50	
M6PFDA	773566	3.82755	802,144.00	3.82755	96	50 - 150	0.0000	+/-0.50	
M3PFBS	127275.4	1.95315	131,390.00	1.95315	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	870748.7	3.978	897,290.00	3.978	97	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	166419.6	3.477367	96,655.00	3.477367	172	50 - 150	0.0000	+/-0.50	*
M5PFPeA	414562.3	1.7743	435,064.00	1.7743	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	771822.3	2.646767	826,757.00	2.638533	93	50 - 150	0.0082	+/-0.50	
M3PFHxS	124040.8	3.250667	129,892.00	3.250667	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	925950.9	3.219533	979,162.00	3.21145	95	50 - 150	0.0081	+/-0.50	
M8PFOA	903259.3	3.485883	924,207.00	3.485883	98	50 - 150	0.0000	+/-0.50	
M8PFOS	123550.9	3.6761	126,766.00	3.6761	97	50 - 150	0.0000	+/-0.50	
M9PFNA	670313.8	3.677133	728,352.00	3.677133	92	50 - 150	0.0000	+/-0.50	
MPFDoA	912190.1	4.112617	995,275.00	4.112617	92	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	224559.6	3.985467	243,167.00	3.985467	92	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	279784	3.9059	301,558.00	3.9059	93	50 - 150	0.0000	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-466 PFAS in Soil</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanedisulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

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

2252282



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Barnstable County
3195 Main St. PO Box 427

Project Name: BFTA

Project Location: Barnstable, MA

Project Number: 6206

Project Manager: Roger Thibault

Con-Test Quote Name/Number: Pricilla Ellis - pellis@barnstablecounty.org

Invoice Recipient: Matt Alger

Sampled By: Matt Alger

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Requested Turnaround Time

7-Day ☐ 10-Day ☐ Due Date:

PFAS 15-Day (std) ☒ Rush Approval Required

1-Day ☐ 3-Day ☐ 4-Day ☐ Lab to Filter

2-Day ☐ Lab to Filter

Format: PDF ☒ EXCEL ☒

Other: ☐

CLP Like Data Pkg Required: ☐

Email To: ☐

Fax To #: ☐

ANALYSIS REQUESTED

Con-Test Work Order #	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Covc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS	NP	Preservation Code	Counter Use Only
1	SS-101 (0-3')	10.4.22 7:30		GRAB	S	U									
2	SS-101 (16-20')	10.4.22 7:40		GRAB	S	U									
3	SS-102 (PM)	10.4.22 7:45		GRAB	S	U									
4	SS-102 (0-3')	10.4.22 7:50		GRAB	S	U									
5	SS-102 (16-20')	10.4.22 7:55		GRAB	S	U									
6	SS-102 (5')	10.4.22 8:00		GRAB	S	U									
7	SS-102 (10')	10.4.22 8:05		GRAB	S	U									
8	SS-103 (0-3')	10.4.22 8:10		GRAB	S	U									
9	SS-103 (16-20')	10.4.22 8:15		GRAB	S	U									
10	SS-104 (0-3')	10.4.22 8:20		GRAB	S	U									

Client Comments:

Relinquished by (signature) *[Signature]* Date/Time: 10/17/22 9:00

Received by (signature) *[Signature]* Date/Time: 10/17/22 9:45

Relinquished by (signature) *[Signature]* Date/Time: 10/17/22 13:13

Received by (signature) *[Signature]* Date/Time: 10/17/22 15:08

Relinquished by (signature) *[Signature]* Date/Time: 10/17/22 17:05

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Page 1 of 3

Preservation Code

Counter Use Only

Total Number Of:

VIALS

GLASS

PLASTIC

BACTERIA

ENCORE

Glassware in the fridge? ☒ N

Glassware in freezer? Y / N

Prepackaged Cooler? ☒ N

*Context is not responsible for missing samples from prepackaged coolers

1 Matrix Codes:

GW = Ground Water

WW = Waste Water

DW = Drinking Water

A = Air

S = Soil

SL = Sludge

SOL = Solid

O = Other (please define)

2 Preservation Codes:

I = Iced

H = HCL

M = Methanol

N = Nitric Acid

S = Sulfuric Acid

B = Sodium Bisulfate

X = Sodium Hydroxide

T = Sodium Thiosulfate

O = Other (please define)

Please use the following codes to indicate possible sample concentration within the Conc Code column above:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

MA MCP Required

MCP Certification Form Required

CT RCP Required

RCP Certification Form Required

MA State PW Required

PWSD #

Project Entity

Government

Federal

City

Municipality

21 J

Brownfield

AMVRA

School

MBTA

WRTA

Other

Chromatogram

AIHA-LAP, LLC

HEMAC and AIHA-LAP, LLC Accredited

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



Phone: 413-525-2332

Fax: 413-525-6405

Email: info@contestlabs.com

Barnstable County

Address: 3195 Main St. PO Box 427

Phone: BFTA

Project Location: Barnstable, MA

Project Number: 6206

Project Manager: Roger Thibault

Con-Test Quote Name/Number: Pricilla Ellis - pellis@barnstablecounty.org

Invoice Recipient: Matt Alger

Sampled By:

Beginning Date/Time: 10.4.22 8:25

Client Sample ID / Description: SS-104 (16-20')

Con-Test Work Order#

12

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Doc # 381 Rev 2_06262019

39 Spruce Street
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

http://www.contestlabs.com

Page 2 of 3

ANALYSIS REQUESTED

Con-Test Work Order#	Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	COMP/GRAB	Matrix Code	Conc Code	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE	PFAS	NP	Preservation Code	Total Number Of
1	SS-104 (16-20')	10.4.22 8:25	10.4.22 8:25	GRAB	S	U			NP			X			
2	SS-105 (FM)	10.4.22 8:30	10.4.22 8:30	GRAB	S	U			NP			X			
3	SS-105 (0-3')	10.4.22 8:35	10.4.22 8:35	GRAB	S	U			NP			X			
4	SS-105 (16-20')	10.4.22 8:40	10.4.22 8:40	GRAB	S	U			NP			X			
5	SS-106 (0-3')	10.4.22 8:45	10.4.22 8:45	GRAB	S	U			NP			X			
6	SS-106 (16-20')	10.4.22 8:50	10.4.22 8:50	GRAB	S	U			NP			X			
7	SS-106 (5')	10.4.22 8:55	10.4.22 8:55	GRAB	S	U			NP			X			
8	SS-106 (10')	10.4.22 9:00	10.4.22 9:00	GRAB	S	U			NP			X			
9	SS-107 (0-3')	10.4.22 9:05	10.4.22 9:05	GRAB	S	U			NP			X			
10	SS-107 (16-20')	10.4.22 9:10	10.4.22 9:10	GRAB	S	U			NP			X			

Client Comments:

Date/Time: 10/17/2020

Date/Time: 10-17-22 9:45

Date/Time: 11-17-22 13:10

Date/Time: 10/17/22 15:00

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27500.82



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Company Name: Barnstable County
Address: 3195 Main St. PO Box 427
Phone: BFTA
Project Location: Barnstable, MA 0206
Project Number: Roger Thibault
Project Manager: Pricilla Ellis - pellis@barnstablecounty.org
Invoice Recipient: Matt Alger
Sampled By:

Doc # 381 Rev 2_06262019

39 Spruce Street
East Longmeadow, MA 01028

CHAIN OF CUSTODY RECORD

MA 01028

Page 3 of 3

ANALYSIS REQUESTED

7-Day ☐ 10-Day ☐ Field Filtered ☐
PFAS 15-Day (std) ☒ Due Date: ☐
Orthophosphate Samples
1-Day ☐ 3-Day ☐ Field Filtered ☐
2-Day ☐ 4-Day ☐ Lab to Filter ☐

Format: PDF ☒ EXCEL ☒
Other: ☐
CLP Like Data Pig Required: ☐
Email To: ☐
Fax To #:

PCB ONLY
SOXHLET
NON SOXHLET

Beginning Date/Time: 10.4.22 9:15
Ending Date/Time: 10.4.22 9:20

Client Sample ID / Description: SS-108 (0-3")
SS-108 (16-20")
MW-304 (0-4") (0-4")
MW-304 (12") (12")
MW-310 (10-6") (10-6")
MW-310 (12-13") (12-13")
Duplicate 4
SS-118 (0-3")

Conc Code: U
Matrix Code: S

COMP GRAB: GRAB
GRAB
GRAB
GRAB
GRAB
GRAB
GRAB
GRAB
GRAB

VIALS: NP
GLASS: NP
PLASTIC: NP
BACTERIA: NP
ENCORE: NP

PFAS: X
X
X
X
X
X
X
X
X

Glassware in the fridge? ☒ N
Glassware in freezer? Y / N
Prepackaged Cooler? ☒ N
*Context is not responsible for missing samples from prepacked coolers

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

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

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

MA MCP Required ☐
MCP Certification Form Required ☐
CT RCP Required ☐
RCP Certification Form Required ☐
MA State DW Required ☐
MA State DW Required ☐
PWSD #

Project Entity: Government ☐ Municipality ☐ City ☐
Federal ☐ 21 J ☐ Brownfield ☐
City ☐

Other: ☐ Chromatogram ☐
☐ AIHA-LAP, LLC Accredited

Relinquished by: (signature) *Paul Christy*
Received by: (signature) *Paul Christy*
Relinquished by: (signature) *Paul Christy*
Received by: (signature) *Paul Christy*
Relinquished by: (signature) *Paul Christy*
Received by: (signature) *Paul Christy*
Relinquished by: (signature) *Paul Christy*
Received by: (signature) *Paul Christy*

Date/Time: 10/17/22 9:00
Date/Time: 10/17/22 9:45
Date/Time: 10/17/22 1:30
Date/Time: 10/17/22 1:50
Date/Time: 10/17/22 1:55
Date/Time: 10/17/22 1:55
Date/Time: 10/17/22 1:55

Client Comments:

Lab Comments:

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

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

Pace PEOPLE ADVANCING SCIENCE
Doc# 277 Rev 6 July 2022

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

Client Barnstable County
Received By [Signature] Date 10/17/22 Time 1725

How were the samples received? In Cooler T No Cooler On Ice T No Ice
Direct From Sample Ambient Melted Ice

Were samples within Temperature? Within 2-6°C T By Gun # 3 Actual Temp - 3.5
By Blank # Actual Temp -

Was Custody Seal In tact? nk Were Samples Tampered with? nk
Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all Client? T Analysis? T Sampler Name? T
pertinent Information? Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified?
Are there Rushes? F Who was notified?
Are there Short Holds? F Who was notified?

Samples are received within holding time? T Is there enough Volume? T
Is there Headspace where applicable? nk MS/MSD? F
Proper Media/Containers Used? T splitting samples require F
Were trip blanks receive F On COC? T

Do All Samples Have the proper pH? nk Acid Base

Vials	#	Containers:	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic	16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic	8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint	2oz Amb/Clear
DI-		Other Plastic	<u>200</u>	Other Glass	Encore
Thiosulfate-		SOC Kit		Plastic Bag	Frozen:
Sulfuric-		Perchlorate		Ziplock	

Unused Media

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

Comments:

November 7, 2022

Priscilla Ellis
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22J1383

Enclosed are results of analyses for samples as received by the laboratory on October 11, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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

Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/7/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J1383

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-109 (0-3)	22J1383-01	Soil		SM 2540G SOP-466 PFAS	
SS-109 (16-20)	22J1383-02	Soil		SM 2540G SOP-466 PFAS	
SS-110 (FM)	22J1383-03	Soil		SM 2540G SOP-466 PFAS	
SS-110 (0-3)	22J1383-04	Soil		SM 2540G SOP-466 PFAS	
SS-110 (16-20)	22J1383-05	Soil		SM 2540G SOP-466 PFAS	
SS-110 (5)	22J1383-06	Soil		SM 2540G SOP-466 PFAS	
SS-110 (10)	22J1383-07	Soil		SM 2540G SOP-466 PFAS	
SS-111 (0-3)	22J1383-08	Soil		SM 2540G SOP-466 PFAS	
SS-111 (16-20)	22J1383-09	Soil		SM 2540G SOP-466 PFAS	
SS-112 (0-3)	22J1383-10	Soil		SM 2540G SOP-466 PFAS	
SS-112 (16-20)	22J1383-11	Soil		SM 2540G SOP-466 PFAS	
SS-113 (0-3)	22J1383-12	Soil		SM 2540G SOP-466 PFAS	
SS-113 (16-20)	22J1383-13	Soil		SM 2540G SOP-466 PFAS	
SS-114 (FM)	22J1383-14	Soil		SM 2540G SOP-466 PFAS	
SS-114 (0-3)	22J1383-15	Soil		SM 2540G SOP-466 PFAS	
SS-114 (16-20)	22J1383-16	Soil		SM 2540G SOP-466 PFAS	
SS-114 (5)	22J1383-17	Soil		SM 2540G SOP-466 PFAS	
SS-114 (10)	22J1383-18	Soil		SM 2540G SOP-466 PFAS	
SS-115 (0-3)	22J1383-19	Soil		SM 2540G SOP-466 PFAS	
SS-115 (16-20)	22J1383-20	Soil		SM 2540G SOP-466 PFAS	

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Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/7/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J1383

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-117 (0-3)	22J1383-21	Soil		SM 2540G SOP-466 PFAS	
SS-117 (16-20)	22J1383-22	Soil		SM 2540G SOP-466 PFAS	
SS-118 (FM)	22J1383-23	Soil		SM 2540G SOP-466 PFAS	
SS-118 (16-20)	22J1383-25	Soil		SM 2540G SOP-466 PFAS	
SS-118 (5)	22J1383-26	Soil		SM 2540G SOP-466 PFAS	
SS-118 (10)	22J1383-27	Soil		SM 2540G SOP-466 PFAS	
SS-121 (0-3)	22J1383-28	Soil		SM 2540G SOP-466 PFAS	
SS-121 (16-20)	22J1383-29	Soil		SM 2540G SOP-466 PFAS	
SS-122 (FM)	22J1383-30	Soil		SM 2540G SOP-466 PFAS	
SS-122 (0-3)	22J1383-31	Soil		SM 2540G SOP-466 PFAS	
SS-122 (16-20)	22J1383-32	Soil		SM 2540G SOP-466 PFAS	
SS-122 (5)	22J1383-33	Soil		SM 2540G SOP-466 PFAS	
SS-1222 (10)	22J1383-34	Soil		SM 2540G SOP-466 PFAS	
Duplicate 2	22J1383-35	Soil		SM 2540G SOP-466 PFAS	
Duplicate 3	22J1383-36	Soil		SM 2540G SOP-466 PFAS	
Equipment Blank	22J1383-37	Water		SOP-454 PFAS	

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CASE NARRATIVE SUMMARY

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

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

SM 2540G**Qualifications:****H-03**

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:**% Solids**

22J1383-01[SS-109 (0-3)], 22J1383-02[SS-109 (16-20)], 22J1383-03[SS-110 (FM)], 22J1383-04[SS-110 (0-3)], 22J1383-05[SS-110 (16-20)], 22J1383-06[SS-110 (5)], 22J1383-07[SS-110 (10)], 22J1383-08[SS-111 (0-3)], 22J1383-09[SS-111 (16-20)], 22J1383-10[SS-112 (0-3)], 22J1383-11[SS-112 (16-20)], 22J1383-12[SS-113 (0-3)], 22J1383-13[SS-113 (16-20)], 22J1383-14RE1[SS-114 (FM)], 22J1383-15[SS-114 (0-3)], 22J1383-16[SS-114 (16-20)], 22J1383-17[SS-114 (5)], 22J1383-18[SS-114 (10)], 22J1383-19[SS-115 (0-3)], 22J1383-20[SS-115 (16-20)], 22J1383-21[SS-117 (0-3)], 22J1383-22[SS-117 (16-20)], 22J1383-23[SS-118 (FM)], 22J1383-25[SS-118 (16-20)], 22J1383-26[SS-118 (5)], 22J1383-27[SS-118 (10)], 22J1383-28[SS-121 (0-3)], 22J1383-29[SS-121 (16-20)], 22J1383-30[SS-122 (FM)], 22J1383-31[SS-122 (0-3)], 22J1383-32[SS-122 (16-20)], 22J1383-33[SS-122 (5)], 22J1383-34[SS-1222 (10)], 22J1383-35[Duplicate 2], 22J1383-36[Duplicate 3]

SOP-454 PFAS**Qualifications:****L-01**

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**N-MeFOSAA**

B320251-BSD1

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**M2-8:2FTS**

S078683-CCV1

SOP-466 PFAS**Qualifications:****L-01**

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B319614-BS1, B319615-BS1

MS-12

Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B319614-MS1, B319614-MSD1, B319615-MS1, B319615-MSD1

MS-19

Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.

Analyte & Samples(s) Qualified:**Perfluorohexanesulfonic acid (PFH)**

22J1383-14[SS-114 (FM)], B319614-MS1, B319614-MSD1

Perfluorooctanesulfonic acid (PFO)

22J1383-14[SS-114 (FM)], 22J1383-16[SS-114 (16-20)], B319614-MS1, B319614-MSD1, B319615-MS1, B319615-MSD1

MS-22

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.

Analyte & Samples(s) Qualified:**Perfluoropetanesulfonic acid (PFP)**

22J1383-14[SS-114 (FM)], B319614-MS1

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MS-23

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is outside of the method specified criteria. Reduced precision anticipated for any reported result for this compound.

Analyte & Samples(s) Qualified:**Perfluoro-1-hexanesulfonamide (F1)**22J1383-14[SS-114 (FM)], B319614-MS1

PF-17

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

Analyte & Samples(s) Qualified:**M2-8:2FTS**22J1383-30[SS-122 (FM)]

PF-18

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

Analyte & Samples(s) Qualified:**M2-8:2FTS**

B319614-MS1, B319614-MSD1

M3HFPO-DAB319614-MS1, B319614-MSD1

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:

22J1383-02RE1[SS-109 (16-20)], 22J1383-04RE1[SS-110 (0-3)], 22J1383-05RE1[SS-110 (16-20)], 22J1383-13RE1[SS-113 (16-20)], 22J1383-15RE1[SS-114 (0-3)], 22J1383-22RE1[SS-117 (16-20)]

PF-20

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

Analyte & Samples(s) Qualified:**Perfluorooctanesulfonic acid (PFO)**22J1383-14[SS-114 (FM)]

R-06

Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.

Analyte & Samples(s) Qualified:**Perfluoro-1-hexanesulfonamide (F1)**22J1383-14[SS-114 (FM)], B319614-MSD1

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**M2-8:2FTS**

22J1383-28[SS-121 (0-3)]

M3HFPO-DA

22J1383-14[SS-114 (FM)], B319614-BLK1

M3PFHxS

22J1383-14[SS-114 (FM)]

M6PFDA

22J1383-14[SS-114 (FM)]

M8FOSA

22J1383-14[SS-114 (FM)], 22J1383-23[SS-118 (FM)]

M8PFOA

22J1383-14[SS-114 (FM)]

M8PFOS

22J1383-14[SS-114 (FM)]

M9PFNA

22J1383-14[SS-114 (FM)], 22J1383-23[SS-118 (FM)]

MPFBA

22J1383-14[SS-114 (FM)]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-109 (0-3)

Sampled: 10/3/2022 09:00

Sample ID: 22J1383-01

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoropentanoic acid (PFPeA)	0.77	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorohexanoic acid (PFHxA)	0.93	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.1	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorodecanoic acid (PFDA)	0.48	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorododecanoic acid (PFDoA)	0.77	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorotridecanoic acid (PFTrDA)	0.62	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	1.8	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.6	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.77	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoroundecanoic acid (PFUnA)	0.79	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorooctanoic acid (PFOA)	1.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorooctanesulfonic acid (PFOS)	4.5	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL
Perfluorononanoic acid (PFNA)	0.57	0.47	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 9:58	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-109 (0-3)

Sampled: 10/3/2022 09:00

Sample ID: 22J1383-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.0		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:12	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-109 (16-20)

Sampled: 10/3/2022 09:05

Sample ID: 22J1383-02

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.1	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoropentanoic acid (PFPeA)	4.9	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorohexanoic acid (PFHxA)	3.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.78	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorodecanoic acid (PFDA)	2.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoroheptanesulfonic acid (PFHpS)	0.86	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorodecanesulfonic acid (PFDS)	3.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorononanesulfonic acid (PFNS)	9.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	16	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorohexanesulfonic acid (PFHxS)	8.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.69	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoroundecanoic acid (PFUnA)	1.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluoroheptanoic acid (PFHpA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorooctanoic acid (PFOA)	7.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL
Perfluorooctanesulfonic acid (PFOS)	180	4.8	µg/kg dry	10		SOP-466 PFAS	10/19/22	10/29/22 8:25	RRB
Perfluorononanoic acid (PFNA)	8.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:05	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-109 (16-20)

Sampled: 10/3/2022 09:05

Sample ID: 22J1383-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.3		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:12	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (FM)

Sampled: 10/3/2022 09:10

Sample ID: 22J1383-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.7	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoropentanoic acid (PFPeA)	4.4	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorohexanoic acid (PFHxA)	3.2	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.2	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorodecanoic acid (PFDA)	3.0	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorododecanoic acid (PFDoA)	2.1	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
N-EtFOSAA	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
N-MeFOSAA	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	2.6	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorohexanesulfonic acid (PFHxS)	5.6	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoroundecanoic acid (PFUnA)	2.2	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorooctanoic acid (PFOA)	3.5	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorooctanesulfonic acid (PFOS)	19	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL
Perfluorononanoic acid (PFNA)	ND	1.8	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:12	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (FM)

Sampled: 10/3/2022 09:10

Sample ID: 22J1383-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	54.2		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:12	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (0-3)

Sampled: 10/3/2022 09:15

Sample ID: 22J1383-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoropentanoic acid (PFPeA)	3.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorohexanoic acid (PFHxA)	2.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.92	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorodecanoic acid (PFDA)	1.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorononanesulfonic acid (PFNS)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluoroheptanoic acid (PFHpA)	1.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorooctanoic acid (PFOA)	2.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL
Perfluorooctanesulfonic acid (PFOS)	90	4.8	µg/kg dry	10		SOP-466 PFAS	10/19/22	10/29/22 8:32	RRB
Perfluorononanoic acid (PFNA)	7.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:19	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (0-3)

Sampled: 10/3/2022 09:15

Sample ID: 22J1383-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:12	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (16-20)

Sampled: 10/3/2022 09:20

Sample ID: 22J1383-05

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.85	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoropentanoic acid (PFPeA)	0.95	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorohexanoic acid (PFHxA)	0.72	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.65	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluoroheptanoic acid (PFHpA)	0.63	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorooctanoic acid (PFOA)	1.6	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL
Perfluorooctanesulfonic acid (PFOS)	63	4.6	µg/kg dry	10		SOP-466 PFAS	10/19/22	10/29/22 8:40	RRB
Perfluorononanoic acid (PFNA)	3.6	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:27	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (16-20)

Sampled: 10/3/2022 09:20

Sample ID: 22J1383-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.0		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:13	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (5)

Sampled: 10/3/2022 09:25

Sample ID: 22J1383-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorodecanoic acid (PFDA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
N-EtFOSAA	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
N-MeFOSAA	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.51	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorooctanoic acid (PFOA)	0.85	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorooctanesulfonic acid (PFOS)	11	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL
Perfluorononanoic acid (PFNA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:34	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (5)

Sampled: 10/3/2022 09:25

Sample ID: 22J1383-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:13	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (10)

Sampled: 10/3/2022 09:30

Sample ID: 22J1383-07

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.78	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorooctanoic acid (PFOA)	1.0	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorooctanesulfonic acid (PFOS)	0.70	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:41	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-110 (10)

Sampled: 10/3/2022 09:30

Sample ID: 22J1383-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:13	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-111 (0-3)

Sampled: 10/3/2022 09:35

Sample ID: 22J1383-08

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.1	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoropentanoic acid (PFPeA)	4.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorohexanoic acid (PFHxA)	2.4	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorodecanoic acid (PFDA)	1.1	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.7	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluoroheptanoic acid (PFHpA)	1.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorooctanoic acid (PFOA)	1.6	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorooctanesulfonic acid (PFOS)	14	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL
Perfluorononanoic acid (PFNA)	0.96	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 10:56	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-111 (0-3)

Sampled: 10/3/2022 09:35

Sample ID: 22J1383-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.8		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:13	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-111 (16-20)

Sampled: 10/3/2022 09:40

Sample ID: 22J1383-09

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.6	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoropentanoic acid (PFPeA)	2.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorohexanoic acid (PFHxA)	1.0	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.72	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluoroheptanoic acid (PFHpA)	0.54	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorooctanoic acid (PFOA)	1.8	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorooctanesulfonic acid (PFOS)	35	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:03	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-111 (16-20)

Sampled: 10/3/2022 09:40

Sample ID: 22J1383-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.2		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:14	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-112 (0-3)

Sampled: 10/3/2022 09:45

Sample ID: 22J1383-10

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.69	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoropentanoic acid (PFPeA)	0.67	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorooctanoic acid (PFOA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorooctanesulfonic acid (PFOS)	2.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL
Perfluorononanoic acid (PFNA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:10	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-112 (0-3)

Sampled: 10/3/2022 09:45

Sample ID: 22J1383-10

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.6		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:14	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-112 (16-20)

Sampled: 10/3/2022 09:50

Sample ID: 22J1383-11

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.64	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoropentanoic acid (PFPeA)	0.89	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorohexanoic acid (PFHxA)	0.58	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorodecanoic acid (PFDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.53	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorooctanoic acid (PFOA)	0.74	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorooctanesulfonic acid (PFOS)	6.9	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL
Perfluorononanoic acid (PFNA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:17	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-112 (16-20)

Sampled: 10/3/2022 09:50

Sample ID: 22J1383-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.9		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:14	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-113 (0-3)

Sampled: 10/3/2022 09:55

Sample ID: 22J1383-12

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorodecanoic acid (PFDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorooctanoic acid (PFOA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorooctanesulfonic acid (PFOS)	1.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL
Perfluorononanoic acid (PFNA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:25	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-113 (0-3)

Sampled: 10/3/2022 09:55

Sample ID: 22J1383-12

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.6		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:14	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-113 (16-20)

Sampled: 10/3/2022 10:00

Sample ID: 22J1383-13

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.4	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoropentanoic acid (PFPeA)	4.4	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorohexanoic acid (PFHxA)	5.3	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoroheptanesulfonic acid (PFHpS)	1.9	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorononanesulfonic acid (PFNS)	0.86	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorohexanesulfonic acid (PFHxS)	8.6	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoroundecanoic acid (PFUnA)	1.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluoroheptanoic acid (PFHpA)	1.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorooctanoic acid (PFOA)	5.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL
Perfluorooctanesulfonic acid (PFOS)	180	4.6	µg/kg dry	10		SOP-466 PFAS	10/19/22	10/29/22 8:47	RRB
Perfluorononanoic acid (PFNA)	5.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:32	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-113 (16-20)

Sampled: 10/3/2022 10:00

Sample ID: 22J1383-13

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.1		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:14	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (FM)

Sampled: 10/3/2022 10:05

Sample ID: 22J1383-14

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.4	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorobutanesulfonic acid (PFBS)	3.7	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoropentanoic acid (PFPeA)	3.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorohexanoic acid (PFHxA)	7.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorodecanoic acid (PFDA)	1.6	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorododecanoic acid (PFDoA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
N-EtFOSAA	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
N-MeFOSAA	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorotridecanoic acid (PFTrDA)	3.0	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorodecanesulfonic acid (PFDS)	1.7	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	8.1	1.6	µg/kg dry	1	MS-23, R-06	SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoro-1-butanefulfonamide (FBFA)	6.0	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorohexanesulfonic acid (PFHxS)	45	1.6	µg/kg dry	1	MS-19	SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoropentanesulfonic acid (PFPeS)	5.0	1.6	µg/kg dry	1	MS-22	SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoroundecanoic acid (PFUnA)	7.8	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorooctanoic acid (PFOA)	3.2	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorooctanesulfonic acid (PFOS)	59	1.6	µg/kg dry	1	MS-19, PF-20	SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL
Perfluorononanoic acid (PFNA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:39	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (FM)

Sampled: 10/3/2022 10:05

Sample ID: 22J1383-14

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	73.6		% Wt	1	H-03	SM 2540G	10/14/22	10/14/22 15:26	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (0-3)

Sampled: 10/3/2022 10:10

Sample ID: 22J1383-15

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoropentanoic acid (PFPeA)	1.9	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorohexanoic acid (PFHxA)	2.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.1	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorooctanoic acid (PFOA)	0.81	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL
Perfluorooctanesulfonic acid (PFOS)	79	4.9	µg/kg dry	10		SOP-466 PFAS	10/19/22	10/29/22 8:54	RRB
Perfluorononanoic acid (PFNA)	1.5	0.49	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:46	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (0-3)

Sampled: 10/3/2022 10:10

Sample ID: 22J1383-15

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.1		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:15	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (16-20)

Sampled: 10/3/2022 10:15

Sample ID: 22J1383-16

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoropentanoic acid (PFPeA)	0.53	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorodecanoic acid (PFDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoroheptanesulfonic acid (PFHpS)	1.4	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
N-EtFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
N-MeFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.6	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorooctanoic acid (PFOA)	0.96	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorooctanesulfonic acid (PFOS)	25	0.44	µg/kg dry	1	MS-19	SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL
Perfluorononanoic acid (PFNA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:44	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (16-20)

Sampled: 10/3/2022 10:15

Sample ID: 22J1383-16

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.8		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:15	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (5)

Sampled: 10/3/2022 10:20

Sample ID: 22J1383-17

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.96	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 11:53	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (5)

Sampled: 10/3/2022 10:20

Sample ID: 22J1383-17

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:15	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (10)

Sampled: 10/3/2022 10:25

Sample ID: 22J1383-18

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.56	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/19/22	10/26/22 12:01	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-114 (10)

Sampled: 10/3/2022 10:25

Sample ID: 22J1383-18

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.4		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:15	WDC

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Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-115 (0-3)

Sampled: 10/3/2022 10:30

Sample ID: 22J1383-19

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.76	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoropentanoic acid (PFPeA)	0.73	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorohexanoic acid (PFHxA)	0.73	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.51	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoroundecanoic acid (PFUnA)	0.65	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorooctanoic acid (PFOA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorooctanesulfonic acid (PFOS)	1.8	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL
Perfluorononanoic acid (PFNA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:51	DRL

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Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-115 (0-3)

Sampled: 10/3/2022 10:30

Sample ID: 22J1383-19

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	89.4		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:15	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-115 (16-20)

Sampled: 10/3/2022 10:35

Sample ID: 22J1383-20

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoropentanoic acid (PFPeA)	0.46	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorohexanoic acid (PFHxA)	0.54	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorooctanoic acid (PFOA)	0.57	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorooctanesulfonic acid (PFOS)	13	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 16:58	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-115 (16-20)

Sampled: 10/3/2022 10:35

Sample ID: 22J1383-20

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.7		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:16	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-117 (0-3)

Sampled: 10/3/2022 10:50

Sample ID: 22J1383-21

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorobutanesulfonic acid (PFBS)	0.80	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorohexanoic acid (PFHxA)	1.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorododecanoic acid (PFDoA)	1.0	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorotridecanoic acid (PFTrDA)	4.4	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorodecanesulfonic acid (PFDS)	0.70	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorooctanesulfonamide (FOSA)	4.7	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	1.5	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorohexanesulfonic acid (PFHxS)	11	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.62	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoropentanesulfonic acid (PFPeS)	0.93	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoroundecanoic acid (PFUnA)	0.73	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluoroheptanoic acid (PFHpA)	0.50	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorooctanoic acid (PFOA)	0.84	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorooctanesulfonic acid (PFOS)	23	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:05	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-117 (0-3)

Sampled: 10/3/2022 10:50

Sample ID: 22J1383-21

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.0		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:16	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-117 (16-20)

Sampled: 10/3/2022 10:55

Sample ID: 22J1383-22

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoropentanoic acid (PFPeA)	0.62	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorohexanoic acid (PFHxA)	1.0	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.79	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorodecanoic acid (PFDA)	1.6	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorododecanoic acid (PFDoA)	0.76	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorotridecanoic acid (PFTrDA)	3.2	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorodecanesulfonic acid (PFDS)	0.60	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorooctanesulfonamide (FOSA)	5.8	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorononanesulfonic acid (PFNS)	0.45	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	5.1	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorohexanesulfonic acid (PFHxS)	8.7	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoropentanesulfonic acid (PFPeS)	0.56	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoroundecanoic acid (PFUnA)	3.1	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluoroheptanoic acid (PFHpA)	0.58	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorooctanoic acid (PFOA)	1.5	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL
Perfluorooctanesulfonic acid (PFOS)	42	4.3	µg/kg dry	10		SOP-466 PFAS	10/12/22	10/29/22 9:01	RRB
Perfluorononanoic acid (PFNA)	0.85	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:12	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-117 (16-20)

Sampled: 10/3/2022 10:55

Sample ID: 22J1383-22

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.9		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:16	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (FM)

Sampled: 10/3/2022 11:00

Sample ID: 22J1383-23

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.7	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorohexanoic acid (PFHxA)	1.1	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorodecanoic acid (PFDA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
N-EtFOSAA	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
N-MeFOSAA	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorotridecanoic acid (PFTrDA)	1.6	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.8	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoroundecanoic acid (PFUnA)	2.5	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorooctanoic acid (PFOA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorooctanesulfonic acid (PFOS)	5.2	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL
Perfluorononanoic acid (PFNA)	ND	0.87	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:20	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (FM)

Sampled: 10/3/2022 11:00

Sample ID: 22J1383-23

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	51.4		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:16	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (16-20)

Sampled: 10/3/2022 11:10

Sample ID: 22J1383-25

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorooctanesulfonic acid (PFOS)	14	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL
Perfluorononanoic acid (PFNA)	0.94	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:27	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (16-20)

Sampled: 10/3/2022 11:10

Sample ID: 22J1383-25

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:17	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (5)

Sampled: 10/3/2022 11:15

Sample ID: 22J1383-26

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorooctanesulfonic acid (PFOS)	6.1	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL
Perfluorononanoic acid (PFNA)	0.45	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:34	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (5)

Sampled: 10/3/2022 11:15

Sample ID: 22J1383-26

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.4		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:17	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (10)

Sampled: 10/3/2022 11:20

Sample ID: 22J1383-27

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:49	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-118 (10)

Sampled: 10/3/2022 11:20

Sample ID: 22J1383-27

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	98.7		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:17	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-121 (0-3)

Sampled: 10/3/2022 11:45

Sample ID: 22J1383-28

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.55	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorodecanoic acid (PFDA)	0.53	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
N-EtFOSAA	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
N-MeFOSAA	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorooctanesulfonamide (FOSA)	1.4	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	0.55	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.1	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoroundecanoic acid (PFUnA)	0.99	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorooctanoic acid (PFOA)	0.61	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorooctanesulfonic acid (PFOS)	4.7	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL
Perfluorononanoic acid (PFNA)	ND	0.50	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 17:56	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-121 (0-3)

Sampled: 10/3/2022 11:45

Sample ID: 22J1383-28

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.8		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:17	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-121 (16-20)

Sampled: 10/3/2022 11:50

Sample ID: 22J1383-29

Sample Matrix: Soil

Semivolatiles Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoroundecanoic acid (PFUnA)	1.8	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorooctanesulfonic acid (PFOS)	8.7	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL
Perfluorononanoic acid (PFNA)	0.46	0.45	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:03	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-121 (16-20)

Sampled: 10/3/2022 11:50

Sample ID: 22J1383-29

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.3		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:17	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (FM)

Sampled: 10/3/2022 11:55

Sample ID: 22J1383-30

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.2	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoropentanoic acid (PFPeA)	1.9	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorohexanoic acid (PFHxA)	1.1	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorodecanoic acid (PFDA)	1.3	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
N-EtFOSAA	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
N-MeFOSAA	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorotridecanoic acid (PFTrDA)	1.2	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorooctanesulfonamide (FOSA)	1.3	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoroundecanoic acid (PFUnA)	1.3	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorooctanoic acid (PFOA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorooctanesulfonic acid (PFOS)	6.0	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL
Perfluorononanoic acid (PFNA)	ND	0.90	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:10	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (FM)

Sampled: 10/3/2022 11:55

Sample ID: 22J1383-30

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	46.8		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:18	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (0-3)

Sampled: 10/3/2022 12:00

Sample ID: 22J1383-31

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoropentanoic acid (PFPeA)	2.6	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorohexanoic acid (PFHxA)	0.99	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.5	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorooctanoic acid (PFOA)	2.3	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorooctanesulfonic acid (PFOS)	28	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL
Perfluorononanoic acid (PFNA)	1.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:17	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (0-3)

Sampled: 10/3/2022 12:00

Sample ID: 22J1383-31

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	94.3		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:18	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (16-20)

Sampled: 10/3/2022 12:05

Sample ID: 22J1383-32

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.48	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoropentanoic acid (PFPeA)	0.49	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorodecanoic acid (PFDA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
N-EtFOSAA	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
N-MeFOSAA	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.68	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorooctanoic acid (PFOA)	0.86	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorooctanesulfonic acid (PFOS)	0.86	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL
Perfluorononanoic acid (PFNA)	ND	0.42	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:25	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (16-20)

Sampled: 10/3/2022 12:05

Sample ID: 22J1383-32

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	98.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:18	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (5)

Sampled: 10/3/2022 12:10

Sample ID: 22J1383-33

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.53	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:32	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-122 (5)

Sampled: 10/3/2022 12:10

Sample ID: 22J1383-33

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.4		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:18	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-1222 (10)

Sampled: 10/3/2022 12:15

Sample ID: 22J1383-34

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:39	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: SS-1222 (10)

Sampled: 10/3/2022 12:15

Sample ID: 22J1383-34

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.1		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:18	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: Duplicate 2

Sampled: 10/3/2022 10:35

Sample ID: 22J1383-35

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.64	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoropentanoic acid (PFPeA)	0.65	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorohexanoic acid (PFHxA)	0.77	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.49	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoroundecanoic acid (PFUnA)	0.63	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorooctanoic acid (PFOA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorooctanesulfonic acid (PFOS)	1.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL
Perfluorononanoic acid (PFNA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:46	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: Duplicate 2

Sampled: 10/3/2022 10:35

Sample ID: 22J1383-35

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.5		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:19	WDC

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Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: Duplicate 3

Sampled: 10/3/2022 09:40

Sample ID: 22J1383-36

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.7	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoropentanoic acid (PFPeA)	2.4	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorohexanoic acid (PFHxA)	1.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.68	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluoroheptanoic acid (PFHpA)	0.59	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorooctanoic acid (PFOA)	1.8	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorooctanesulfonic acid (PFOS)	38	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL
Perfluorononanoic acid (PFNA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/12/22	10/26/22 18:53	DRL

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Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: Duplicate 3

Sampled: 10/3/2022 09:40

Sample ID: 22J1383-36

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.3		% Wt	1	H-03	SM 2540G	10/13/22	10/13/22 14:19	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1383

Date Received: 10/11/2022

Field Sample #: Equipment Blank

Sampled: 10/3/2022 12:30

Sample ID: 22J1383-37

Sample Matrix: Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
N-EtFOSAA	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
N-MeFOSAA	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/19/22	10/22/22 9:46	DRL

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Sample Extraction Data

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22J1383-01 [SS-109 (0-3)]	B319847	10/13/22
22J1383-02 [SS-109 (16-20)]	B319847	10/13/22
22J1383-03 [SS-110 (FM)]	B319847	10/13/22
22J1383-04 [SS-110 (0-3)]	B319847	10/13/22
22J1383-05 [SS-110 (16-20)]	B319847	10/13/22
22J1383-06 [SS-110 (5)]	B319847	10/13/22
22J1383-07 [SS-110 (10)]	B319847	10/13/22
22J1383-08 [SS-111 (0-3)]	B319847	10/13/22
22J1383-09 [SS-111 (16-20)]	B319847	10/13/22
22J1383-10 [SS-112 (0-3)]	B319847	10/13/22
22J1383-11 [SS-112 (16-20)]	B319847	10/13/22
22J1383-12 [SS-113 (0-3)]	B319847	10/13/22
22J1383-13 [SS-113 (16-20)]	B319847	10/13/22
22J1383-15 [SS-114 (0-3)]	B319847	10/13/22
22J1383-16 [SS-114 (16-20)]	B319847	10/13/22
22J1383-17 [SS-114 (5)]	B319847	10/13/22
22J1383-18 [SS-114 (10)]	B319847	10/13/22
22J1383-19 [SS-115 (0-3)]	B319847	10/13/22
22J1383-20 [SS-115 (16-20)]	B319847	10/13/22
22J1383-21 [SS-117 (0-3)]	B319847	10/13/22
22J1383-22 [SS-117 (16-20)]	B319847	10/13/22
22J1383-23 [SS-118 (FM)]	B319847	10/13/22
22J1383-25 [SS-118 (16-20)]	B319847	10/13/22
22J1383-26 [SS-118 (5)]	B319847	10/13/22
22J1383-27 [SS-118 (10)]	B319847	10/13/22
22J1383-28 [SS-121 (0-3)]	B319847	10/13/22
22J1383-29 [SS-121 (16-20)]	B319847	10/13/22
22J1383-30 [SS-122 (FM)]	B319847	10/13/22
22J1383-31 [SS-122 (0-3)]	B319847	10/13/22
22J1383-32 [SS-122 (16-20)]	B319847	10/13/22
22J1383-33 [SS-122 (5)]	B319847	10/13/22
22J1383-34 [SS-1222 (10)]	B319847	10/13/22
22J1383-35 [Duplicate 2]	B319847	10/13/22
22J1383-36 [Duplicate 3]	B319847	10/13/22

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22J1383-14RE1 [SS-114 (FM)]	B319985	10/14/22

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22J1383-37 [Equipment Blank]	B320251	265	1.00	10/19/22

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J1383-01 [SS-109 (0-3)]	B319614	5.63	5.00	10/19/22
22J1383-02 [SS-109 (16-20)]	B319614	5.87	5.00	10/19/22
22J1383-02RE1 [SS-109 (16-20)]	B319614	5.87	5.00	10/19/22

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Sample Extraction Data

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J1383-03 [SS-110 (FM)]	B319614	2.50	5.00	10/19/22
22J1383-04 [SS-110 (0-3)]	B319614	5.73	5.00	10/19/22
22J1383-04RE1 [SS-110 (0-3)]	B319614	5.73	5.00	10/19/22
22J1383-05 [SS-110 (16-20)]	B319614	5.75	5.00	10/19/22
22J1383-05RE1 [SS-110 (16-20)]	B319614	5.75	5.00	10/19/22
22J1383-06 [SS-110 (5)]	B319614	5.98	5.00	10/19/22
22J1383-07 [SS-110 (10)]	B319614	5.84	5.00	10/19/22
22J1383-08 [SS-111 (0-3)]	B319614	5.58	5.00	10/19/22
22J1383-09 [SS-111 (16-20)]	B319614	5.78	5.00	10/19/22
22J1383-10 [SS-112 (0-3)]	B319614	5.85	5.00	10/19/22
22J1383-11 [SS-112 (16-20)]	B319614	5.80	5.00	10/19/22
22J1383-12 [SS-113 (0-3)]	B319614	5.94	5.00	10/19/22
22J1383-13 [SS-113 (16-20)]	B319614	5.76	5.00	10/19/22
22J1383-13RE1 [SS-113 (16-20)]	B319614	5.76	5.00	10/19/22
22J1383-14 [SS-114 (FM)]	B319614	2.65	5.00	10/19/22
22J1383-15 [SS-114 (0-3)]	B319614	5.59	5.00	10/19/22
22J1383-15RE1 [SS-114 (0-3)]	B319614	5.59	5.00	10/19/22
22J1383-17 [SS-114 (5)]	B319614	5.58	5.00	10/19/22
22J1383-18 [SS-114 (10)]	B319614	5.55	5.00	10/19/22

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J1383-16 [SS-114 (16-20)]	B319615	5.76	5.00	10/12/22
22J1383-19 [SS-115 (0-3)]	B319615	5.60	5.00	10/12/22
22J1383-20 [SS-115 (16-20)]	B319615	5.98	5.00	10/12/22
22J1383-21 [SS-117 (0-3)]	B319615	5.58	5.00	10/12/22
22J1383-22 [SS-117 (16-20)]	B319615	5.84	5.00	10/12/22
22J1383-22RE1 [SS-117 (16-20)]	B319615	5.84	5.00	10/12/22
22J1383-23 [SS-118 (FM)]	B319615	5.55	5.00	10/12/22
22J1383-25 [SS-118 (16-20)]	B319615	5.95	5.00	10/12/22
22J1383-26 [SS-118 (5)]	B319615	5.82	5.00	10/12/22
22J1383-27 [SS-118 (10)]	B319615	5.86	5.00	10/12/22
22J1383-28 [SS-121 (0-3)]	B319615	5.68	5.00	10/12/22
22J1383-29 [SS-121 (16-20)]	B319615	5.83	5.00	10/12/22
22J1383-30 [SS-122 (FM)]	B319615	5.87	5.00	10/12/22
22J1383-31 [SS-122 (0-3)]	B319615	5.76	5.00	10/12/22
22J1383-32 [SS-122 (16-20)]	B319615	5.94	5.00	10/12/22
22J1383-33 [SS-122 (5)]	B319615	5.73	5.00	10/12/22
22J1383-34 [SS-1222 (10)]	B319615	5.95	5.00	10/12/22
22J1383-35 [Duplicate 2]	B319615	5.89	5.00	10/12/22
22J1383-36 [Duplicate 3]	B319615	5.78	5.00	10/12/22

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B319614 - SOP 465-PFAAS
Blank (B319614-BLK1)

Prepared: 10/19/22 Analyzed: 10/26/22

Perfluorobutanoic acid (PFBA)	ND	0.42	µg/kg wet
Perfluorobutanesulfonic acid (PFBS)	ND	0.42	µg/kg wet
Perfluoropentanoic acid (PFPeA)	ND	0.42	µg/kg wet
Perfluorohexanoic acid (PFHxA)	ND	0.42	µg/kg wet
11Cl-PF3OUdS (F53B Major)	ND	0.42	µg/kg wet
9Cl-PF3ONS (F53B Minor)	ND	0.42	µg/kg wet
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.42	µg/kg wet
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.42	µg/kg wet
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.42	µg/kg wet
Perfluorodecanoic acid (PFDA)	ND	0.42	µg/kg wet
Perfluorododecanoic acid (PFDoA)	ND	0.42	µg/kg wet
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.42	µg/kg wet
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.42	µg/kg wet
N-EtFOSAA	ND	0.42	µg/kg wet
N-MeFOSAA	ND	0.42	µg/kg wet
Perfluorotetradecanoic acid (PFTA)	ND	0.42	µg/kg wet
Perfluorotridecanoic acid (PFTrDA)	ND	0.42	µg/kg wet
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.42	µg/kg wet
Perfluorodecanesulfonic acid (PFDS)	ND	0.42	µg/kg wet
Perfluorooctanesulfonamide (FOSA)	ND	0.42	µg/kg wet
Perfluorononanesulfonic acid (PFNS)	ND	0.42	µg/kg wet
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.42	µg/kg wet
Perfluoro-1-butanefulfonamide (FBSA)	ND	0.42	µg/kg wet
Perfluorohexanesulfonic acid (PFHxS)	ND	0.42	µg/kg wet
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.42	µg/kg wet
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.42	µg/kg wet
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.42	µg/kg wet
Perfluoropentanesulfonic acid (PFPeS)	ND	0.42	µg/kg wet
Perfluoroundecanoic acid (PFUnA)	ND	0.42	µg/kg wet
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.42	µg/kg wet
Perfluoroheptanoic acid (PFHpA)	ND	0.42	µg/kg wet
Perfluorooctanoic acid (PFOA)	ND	0.42	µg/kg wet
Perfluorooctanesulfonic acid (PFOS)	ND	0.42	µg/kg wet
Perfluorononanoic acid (PFNA)	ND	0.42	µg/kg wet

LCS (B319614-BS1)

Prepared: 10/19/22 Analyzed: 10/26/22

Perfluorobutanoic acid (PFBA)	1.87	0.43	µg/kg wet	2.15	86.9	71-135
Perfluorobutanesulfonic acid (PFBS)	1.55	0.43	µg/kg wet	1.90	81.7	72-128
Perfluoropentanoic acid (PFPeA)	1.74	0.43	µg/kg wet	2.15	81.0	69-132
Perfluorohexanoic acid (PFHxA)	1.85	0.43	µg/kg wet	2.15	86.4	70-132
11Cl-PF3OUdS (F53B Major)	1.51	0.43	µg/kg wet	2.02	74.7	41.8-128
9Cl-PF3ONS (F53B Minor)	1.47	0.43	µg/kg wet	2.00	73.5	51.1-141
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	2.70	0.43	µg/kg wet	2.02	134 *	55.2-122
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.54	0.43	µg/kg wet	2.15	71.9	27.6-137
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.82	0.43	µg/kg wet	2.06	88.1	65-137
Perfluorodecanoic acid (PFDA)	1.71	0.43	µg/kg wet	2.15	79.4	69-133
Perfluorododecanoic acid (PFDoA)	1.61	0.43	µg/kg wet	2.15	74.9	69-135
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.42	0.43	µg/kg wet	1.91	74.1	56.7-133

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B319614 - SOP 465-PFAAS

LCS (B319614-BS1)

Prepared: 10/19/22 Analyzed: 10/26/22

Perfluoroheptanesulfonic acid (PFHpS)	1.73	0.43	µg/kg wet	2.05		84.2	70-132			
N-EtFOSAA	1.83	0.43	µg/kg wet	2.15		85.2	61-139			
N-MeFOSAA	1.97	0.43	µg/kg wet	2.15		91.7	63-144			
Perfluorotetradecanoic acid (PFTA)	1.72	0.43	µg/kg wet	2.15		80.2	69-133			
Perfluorotridecanoic acid (PFTTrDA)	1.87	0.43	µg/kg wet	2.15		87.1	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.66	0.43	µg/kg wet	2.01		82.5	62-145			
Perfluorodecanesulfonic acid (PFDS)	1.63	0.43	µg/kg wet	2.07		78.6	59-134			
Perfluorooctanesulfonamide (FOSA)	1.83	0.43	µg/kg wet	2.15		85.0	67-137			
Perfluorononanesulfonic acid (PFNS)	1.95	0.43	µg/kg wet	2.06		94.7	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	1.73	0.43	µg/kg wet	2.15		80.5	51.4-142			
Perfluoro-1-butanefulfonamide (FBSA)	1.71	0.43	µg/kg wet	2.15		79.8	53.5-129			
Perfluorohexanesulfonic acid (PFHxS)	1.55	0.43	µg/kg wet	1.97		78.8	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.58	0.43	µg/kg wet	2.15		73.6	57.8-127			
Perfluoro-5-oxahexanoic acid (PFMBA)	1.68	0.43	µg/kg wet	2.15		78.2	56.5-132			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.88	0.43	µg/kg wet	2.04		92.1	64-140			
Perfluoropentanesulfonic acid (PFPeS)	1.72	0.43	µg/kg wet	2.02		85.0	73-123			
Perfluoroundecanoic acid (PFUnA)	1.82	0.43	µg/kg wet	2.15		85.0	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.84	0.43	µg/kg wet	2.15		85.6	54.5-128			
Perfluoroheptanoic acid (PFHpA)	1.94	0.43	µg/kg wet	2.15		90.2	71-131			
Perfluorooctanoic acid (PFOA)	1.70	0.43	µg/kg wet	2.15		79.4	69-133			
Perfluorooctanesulfonic acid (PFOS)	1.66	0.43	µg/kg wet	1.98		83.5	68-136			
Perfluorononanoic acid (PFNA)	1.69	0.43	µg/kg wet	2.15		78.9	72-129			

Matrix Spike (B319614-MS1)

Source: 22J1383-14

Prepared: 10/19/22 Analyzed: 10/26/22

Perfluorobutanoic acid (PFBA)	11.7	1.6	µg/kg dry	8.01	3.42	103	71-135			
Perfluorobutanesulfonic acid (PFBS)	12.1	1.6	µg/kg dry	7.08	3.68	118	72-128			
Perfluoropentanoic acid (PFPeA)	11.1	1.6	µg/kg dry	8.01	3.50	94.4	69-132			
Perfluorohexanoic acid (PFHxA)	16.5	1.6	µg/kg dry	8.01	7.51	112	70-132			
11Cl-PF3OUdS (F53B Major)	6.28	1.6	µg/kg dry	7.54	ND	83.2	4.02-158			
9Cl-PF3ONS (F53B Minor)	6.22	1.6	µg/kg dry	7.46	ND	83.3	52.5-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	10.8	1.6	µg/kg dry	7.54	ND	143	* 50.7-124			MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	6.51	1.6	µg/kg dry	8.01	ND	81.3	29.2-146			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.51	1.6	µg/kg dry	7.69	ND	97.7	65-137			
Perfluorodecanoic acid (PFDA)	8.85	1.6	µg/kg dry	8.01	1.64	90.0	69-133			
Perfluorododecanoic acid (PFDoA)	7.79	1.6	µg/kg dry	8.01	0.757	87.9	69-135			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	6.27	1.6	µg/kg dry	7.13	ND	88.0	60.7-135			
Perfluoroheptanesulfonic acid (PFHpS)	8.37	1.6	µg/kg dry	7.66	0.964	96.7	70-132			
N-EtFOSAA	8.87	1.6	µg/kg dry	8.01	ND	111	61-139			
N-MeFOSAA	7.38	1.6	µg/kg dry	8.01	ND	92.1	63-144			
Perfluorotetradecanoic acid (PFTA)	7.54	1.6	µg/kg dry	8.01	0.314	90.3	69-133			
Perfluorotridecanoic acid (PFTTrDA)	12.1	1.6	µg/kg dry	8.01	3.02	113	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	7.20	1.6	µg/kg dry	7.50	ND	96.0	62-145			
Perfluorodecanesulfonic acid (PFDS)	8.43	1.6	µg/kg dry	7.72	1.72	86.9	59-134			
Perfluorooctanesulfonamide (FOSA)	10.2	1.6	µg/kg dry	8.01	1.44	109	67-137			
Perfluorononanesulfonic acid (PFNS)	8.53	1.6	µg/kg dry	7.69	1.32	93.9	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	21.8	1.6	µg/kg dry	8.01	8.12	171	* 18.9-162			MS-23
Perfluoro-1-butanefulfonamide (FBSA)	13.4	1.6	µg/kg dry	8.01	6.01	92.9	49.8-135			
Perfluorohexanesulfonic acid (PFHxS)	60.1	1.6	µg/kg dry	7.34	45.5	199	* 67-130			MS-19
Perfluoro-4-oxapentanoic acid (PFMPA)	7.61	1.6	µg/kg dry	8.01	ND	95.0	62-155			
Perfluoro-5-oxahexanoic acid (PFMBA)	7.32	1.6	µg/kg dry	8.01	ND	91.4	52.1-148			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B319614 - SOP 465-PFAAS										
Matrix Spike (B319614-MS1)	Source: 22J1383-14			Prepared: 10/19/22 Analyzed: 10/26/22						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	7.39	1.6	µg/kg dry	7.61	ND	97.1	64-140			
Perfluoropentanesulfonic acid (PFPeS)	15.0	1.6	µg/kg dry	7.53	5.04	132 *	73-123			MS-22
Perfluoroundecanoic acid (PFUnA)	15.3	1.6	µg/kg dry	8.01	7.78	93.7	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	7.76	1.6	µg/kg dry	8.01	ND	96.9	54.6-133			
Perfluoroheptanoic acid (PFHpA)	9.70	1.6	µg/kg dry	8.01	1.16	107	71-131			
Perfluorooctanoic acid (PFOA)	10.2	1.6	µg/kg dry	8.01	3.16	88.0	69-133			
Perfluorooctanesulfonic acid (PFOS)	60.1	1.6	µg/kg dry	7.40	59.1	14.3 *	68-136			MS-19
Perfluorononanoic acid (PFNA)	9.13	1.6	µg/kg dry	8.01	1.08	101	72-129			
Matrix Spike Dup (B319614-MSD1)	Source: 22J1383-14			Prepared: 10/19/22 Analyzed: 10/26/22						
Perfluorobutanoic acid (PFBA)	11.7	1.5	µg/kg dry	7.79	3.42	106	71-135	0.542	30	
Perfluorobutanesulfonic acid (PFBS)	9.77	1.5	µg/kg dry	6.89	3.68	88.4	72-128	20.9	30	
Perfluoropentanoic acid (PFPeA)	9.60	1.5	µg/kg dry	7.79	3.50	78.3	69-132	14.2	30	
Perfluorohexanoic acid (PFHxA)	13.8	1.5	µg/kg dry	7.79	7.51	81.2	70-132	17.3	30	
11Cl-PF3OUdS (F53B Major)	5.78	1.5	µg/kg dry	7.34	ND	78.8	4.02-158	8.22	30	
9Cl-PF3ONS (F53B Minor)	5.69	1.5	µg/kg dry	7.26	ND	78.4	52.5-150	8.84	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	10.1	1.5	µg/kg dry	7.34	ND	137 *	50.7-124	6.84	30	MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	7.23	1.5	µg/kg dry	7.79	ND	92.9	29.2-146	10.5	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	7.73	1.5	µg/kg dry	7.48	ND	103	65-137	2.91	30	
Perfluorodecanoic acid (PFDA)	8.68	1.5	µg/kg dry	7.79	1.64	90.3	69-133	1.95	30	
Perfluorododecanoic acid (PFDoA)	7.21	1.5	µg/kg dry	7.79	0.757	82.8	69-135	7.78	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	5.87	1.5	µg/kg dry	6.93	ND	84.7	60.7-135	6.56	30	
Perfluoroheptanesulfonic acid (PFHpS)	7.38	1.5	µg/kg dry	7.45	0.964	86.2	70-132	12.5	30	
N-EtFOSAA	8.16	1.5	µg/kg dry	7.79	ND	105	61-139	8.34	30	
N-MeFOSAA	7.57	1.5	µg/kg dry	7.79	ND	97.2	63-144	2.56	30	
Perfluorotetradecanoic acid (PFTA)	7.02	1.5	µg/kg dry	7.79	0.314	86.1	69-133	7.20	30	
Perfluorotridecanoic acid (PFTrDA)	10.2	1.5	µg/kg dry	7.79	3.02	92.3	66-139	16.7	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	6.96	1.5	µg/kg dry	7.29	ND	95.4	62-145	3.42	30	
Perfluorodecanesulfonic acid (PFDS)	7.53	1.5	µg/kg dry	7.51	1.72	77.4	59-134	11.2	30	
Perfluorooctanesulfonamide (FOSA)	8.18	1.5	µg/kg dry	7.79	1.44	86.4	67-137	21.6	30	
Perfluorononanesulfonic acid (PFNS)	8.29	1.5	µg/kg dry	7.48	1.32	93.3	69-125	2.86	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	14.8	1.5	µg/kg dry	7.79	8.12	86.0	18.9-162	38.3 *	30	R-06
Perfluoro-1-butanedisulfonamide (FBSA)	12.3	1.5	µg/kg dry	7.79	6.01	81.3	49.8-135	8.59	30	
Perfluorohexanesulfonic acid (PFHxS)	46.6	1.5	µg/kg dry	7.14	45.5	15.0 *	67-130	25.3	30	MS-19
Perfluoro-4-oxapentanoic acid (PFMPA)	6.81	1.5	µg/kg dry	7.79	ND	87.3	62-155	11.2	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	7.01	1.5	µg/kg dry	7.79	ND	90.0	52.1-148	4.31	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	7.39	1.5	µg/kg dry	7.40	ND	99.8	64-140	0.0315	30	
Perfluoropentanesulfonic acid (PFPeS)	11.9	1.5	µg/kg dry	7.32	5.04	93.5	73-123	23.2	30	
Perfluoroundecanoic acid (PFUnA)	13.9	1.5	µg/kg dry	7.79	7.78	78.5	64-136	9.50	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	7.34	1.5	µg/kg dry	7.79	ND	94.3	54.6-133	5.51	30	
Perfluoroheptanoic acid (PFHpA)	9.55	1.5	µg/kg dry	7.79	1.16	108	71-131	1.61	30	
Perfluorooctanoic acid (PFOA)	10.2	1.5	µg/kg dry	7.79	3.16	90.4	69-133	0.0153	30	
Perfluorooctanesulfonic acid (PFOS)	51.0	1.5	µg/kg dry	7.20	59.1	-111 *	68-136	16.3	30	MS-19
Perfluorononanoic acid (PFNA)	8.70	1.5	µg/kg dry	7.79	1.08	97.9	72-129	4.82	30	

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B319615 - SOP 465-PFAAS

Blank (B319615-BLK1)

Prepared: 10/12/22 Analyzed: 10/26/22

Perfluorobutanoic acid (PFBA)	ND	0.44	µg/kg wet
Perfluorobutanesulfonic acid (PFBS)	ND	0.44	µg/kg wet
Perfluoropentanoic acid (PFPeA)	ND	0.44	µg/kg wet
Perfluorohexanoic acid (PFHxA)	ND	0.44	µg/kg wet
11Cl-PF3OUdS (F53B Major)	ND	0.44	µg/kg wet
9Cl-PF3ONS (F53B Minor)	ND	0.44	µg/kg wet
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.44	µg/kg wet
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.44	µg/kg wet
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.44	µg/kg wet
Perfluorodecanoic acid (PFDA)	ND	0.44	µg/kg wet
Perfluorododecanoic acid (PFDoA)	ND	0.44	µg/kg wet
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	ND	0.44	µg/kg wet
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.44	µg/kg wet
N-EtFOSAA	ND	0.44	µg/kg wet
N-MeFOSAA	ND	0.44	µg/kg wet
Perfluorotetradecanoic acid (PFTA)	ND	0.44	µg/kg wet
Perfluorotridecanoic acid (PFTrDA)	ND	0.44	µg/kg wet
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.44	µg/kg wet
Perfluorodecanesulfonic acid (PFDS)	ND	0.44	µg/kg wet
Perfluorooctanesulfonamide (FOSA)	ND	0.44	µg/kg wet
Perfluorononanesulfonic acid (PFNS)	ND	0.44	µg/kg wet
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.44	µg/kg wet
Perfluoro-1-butanefulfonamide (FBSA)	ND	0.44	µg/kg wet
Perfluorohexanesulfonic acid (PFHxS)	ND	0.44	µg/kg wet
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.44	µg/kg wet
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.44	µg/kg wet
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.44	µg/kg wet
Perfluoropentanesulfonic acid (PFPeS)	ND	0.44	µg/kg wet
Perfluoroundecanoic acid (PFUnA)	ND	0.44	µg/kg wet
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.44	µg/kg wet
Perfluoroheptanoic acid (PFHpA)	ND	0.44	µg/kg wet
Perfluorooctanoic acid (PFOA)	ND	0.44	µg/kg wet
Perfluorooctanesulfonic acid (PFOS)	ND	0.44	µg/kg wet
Perfluorononanoic acid (PFNA)	ND	0.44	µg/kg wet

LCS (B319615-BS1)

Prepared: 10/12/22 Analyzed: 10/26/22

Perfluorobutanoic acid (PFBA)	1.83	0.42	µg/kg wet	2.10	87.0	71-135
Perfluorobutanesulfonic acid (PFBS)	1.54	0.42	µg/kg wet	1.86	82.7	72-128
Perfluoropentanoic acid (PFPeA)	1.74	0.42	µg/kg wet	2.10	82.9	69-132
Perfluorohexanoic acid (PFHxA)	1.80	0.42	µg/kg wet	2.10	85.6	70-132
11Cl-PF3OUdS (F53B Major)	1.50	0.42	µg/kg wet	1.98	75.9	41.8-128
9Cl-PF3ONS (F53B Minor)	1.50	0.42	µg/kg wet	1.96	76.8	51.1-141
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	2.64	0.42	µg/kg wet	1.98	133 *	55.2-122
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.63	0.42	µg/kg wet	2.10	77.7	27.6-137
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.97	0.42	µg/kg wet	2.02	97.6	65-137
Perfluorodecanoic acid (PFDA)	1.77	0.42	µg/kg wet	2.10	84.3	69-133
Perfluorododecanoic acid (PFDoA)	1.62	0.42	µg/kg wet	2.10	76.9	69-135
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.48	0.42	µg/kg wet	1.87	79.1	56.7-133

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B319615 - SOP 465-PFAAS
LCS (B319615-BS1)

Prepared: 10/12/22 Analyzed: 10/26/22

Perfluoroheptanesulfonic acid (PFHpS)	1.58	0.42	µg/kg wet	2.01		78.8	70-132			
N-EtFOSAA	1.91	0.42	µg/kg wet	2.10		90.6	61-139			
N-MeFOSAA	1.87	0.42	µg/kg wet	2.10		88.8	63-144			
Perfluorotetradecanoic acid (PFTA)	1.67	0.42	µg/kg wet	2.10		79.6	69-133			
Perfluorotridecanoic acid (PFTTrDA)	1.73	0.42	µg/kg wet	2.10		82.0	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.67	0.42	µg/kg wet	1.97		84.8	62-145			
Perfluorodecanesulfonic acid (PFDS)	1.66	0.42	µg/kg wet	2.03		82.0	59-134			
Perfluorooctanesulfonamide (FOSA)	1.68	0.42	µg/kg wet	2.10		79.9	67-137			
Perfluorononanesulfonic acid (PFNS)	1.92	0.42	µg/kg wet	2.02		95.3	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	1.88	0.42	µg/kg wet	2.10		89.3	51.4-142			
Perfluoro-1-butanefulfonamide (FBSA)	1.71	0.42	µg/kg wet	2.10		81.1	53.5-129			
Perfluorohexanesulfonic acid (PFHxS)	1.55	0.42	µg/kg wet	1.93		80.7	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.64	0.42	µg/kg wet	2.10		78.0	57.8-127			
Perfluoro-5-oxahexanoic acid (PFMBA)	1.73	0.42	µg/kg wet	2.10		82.1	56.5-132			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.62	0.42	µg/kg wet	2.00		81.1	64-140			
Perfluoropentanesulfonic acid (PFPeS)	1.67	0.42	µg/kg wet	1.98		84.5	73-123			
Perfluoroundecanoic acid (PFUnA)	1.86	0.42	µg/kg wet	2.10		88.2	64-136			
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	1.75	0.42	µg/kg wet	2.10		83.3	54.5-128			
Perfluoroheptanoic acid (PFHpA)	1.95	0.42	µg/kg wet	2.10		92.8	71-131			
Perfluorooctanoic acid (PFOA)	1.80	0.42	µg/kg wet	2.10		85.8	69-133			
Perfluorooctanesulfonic acid (PFOS)	1.62	0.42	µg/kg wet	1.94		83.1	68-136			
Perfluorononanoic acid (PFNA)	1.81	0.42	µg/kg wet	2.10		86.1	72-129			

Matrix Spike (B319615-MS1)

Source: 22J1383-16

Prepared: 10/12/22 Analyzed: 10/26/22

Perfluorobutanoic acid (PFBA)	2.64	0.44	µg/kg dry	2.21	0.422	100	71-135			
Perfluorobutanesulfonic acid (PFBS)	1.83	0.44	µg/kg dry	1.96	ND	93.6	72-128			
Perfluoropentanoic acid (PFPeA)	2.58	0.44	µg/kg dry	2.21	0.533	92.6	69-132			
Perfluorohexanoic acid (PFHxA)	2.41	0.44	µg/kg dry	2.21	0.293	95.4	70-132			
11Cl-PF3OUdS (F53B Major)	1.76	0.44	µg/kg dry	2.09	ND	84.3	4.02-158			
9Cl-PF3ONS (F53B Minor)	1.80	0.44	µg/kg dry	2.06	ND	87.1	52.5-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.08	0.44	µg/kg dry	2.09	ND	148 *	50.7-124			MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.74	0.44	µg/kg dry	2.21	ND	78.7	29.2-146			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.20	0.44	µg/kg dry	2.13	ND	103	65-137			
Perfluorodecanoic acid (PFDA)	2.06	0.44	µg/kg dry	2.21	ND	93.2	69-133			
Perfluorododecanoic acid (PFDoA)	1.89	0.44	µg/kg dry	2.21	ND	85.4	69-135			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	1.73	0.44	µg/kg dry	1.97	ND	87.6	60.7-135			
Perfluoroheptanesulfonic acid (PFHpS)	3.70	0.44	µg/kg dry	2.12	1.42	108	70-132			
N-EtFOSAA	2.36	0.44	µg/kg dry	2.21	ND	107	61-139			
N-MeFOSAA	2.22	0.44	µg/kg dry	2.21	ND	100	63-144			
Perfluorotetradecanoic acid (PFTA)	1.98	0.44	µg/kg dry	2.21	ND	89.3	69-133			
Perfluorotridecanoic acid (PFTTrDA)	2.06	0.44	µg/kg dry	2.21	ND	93.2	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.99	0.44	µg/kg dry	2.07	ND	96.0	62-145			
Perfluorodecanesulfonic acid (PFDS)	1.90	0.44	µg/kg dry	2.13	ND	89.2	59-134			
Perfluorooctanesulfonamide (FOSA)	2.09	0.44	µg/kg dry	2.21	ND	94.6	67-137			
Perfluorononanesulfonic acid (PFNS)	2.43	0.44	µg/kg dry	2.13	ND	114	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	2.32	0.44	µg/kg dry	2.21	ND	105	18.9-162			
Perfluoro-1-butanefulfonamide (FBSA)	2.11	0.44	µg/kg dry	2.21	ND	95.1	49.8-135			
Perfluorohexanesulfonic acid (PFHxS)	3.72	0.44	µg/kg dry	2.03	1.57	106	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.94	0.44	µg/kg dry	2.21	ND	87.8	62-155			
Perfluoro-5-oxahexanoic acid (PFMBA)	2.02	0.44	µg/kg dry	2.21	ND	91.0	52.1-148			

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch B319615 - SOP 465-PFAAS										
Matrix Spike (B319615-MS1)	Source: 22J1383-16			Prepared: 10/12/22 Analyzed: 10/26/22						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.96	0.44	µg/kg dry	2.10	ND	93.1	64-140			
Perfluoropetanesulfonic acid (PFPeS)	2.06	0.44	µg/kg dry	2.08	ND	98.9	73-123			
Perfluoroundecanoic acid (PFUnA)	2.27	0.44	µg/kg dry	2.21	ND	102	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.07	0.44	µg/kg dry	2.21	ND	93.3	54.6-133			
Perfluoroheptanoic acid (PFHpA)	2.37	0.44	µg/kg dry	2.21	0.0993	103	71-131			
Perfluorooctanoic acid (PFOA)	3.13	0.44	µg/kg dry	2.21	0.955	98.2	69-133			
Perfluorooctanesulfonic acid (PFOS)	21.2	0.44	µg/kg dry	2.05	25.0	-185 *	68-136			MS-19
Perfluorononanoic acid (PFNA)	2.32	0.44	µg/kg dry	2.21	0.187	96.5	72-129			
Matrix Spike Dup (B319615-MSD1)	Source: 22J1383-16			Prepared: 10/12/22 Analyzed: 10/26/22						
Perfluorobutanoic acid (PFBA)	2.49	0.42	µg/kg dry	2.14	0.422	96.5	71-135	5.90	30	
Perfluorobutanesulfonic acid (PFBS)	1.76	0.42	µg/kg dry	1.89	ND	92.9	72-128	4.03	30	
Perfluoropentanoic acid (PFPeA)	2.42	0.42	µg/kg dry	2.14	0.533	88.1	69-132	6.53	30	
Perfluorohexanoic acid (PFHxA)	2.28	0.42	µg/kg dry	2.14	0.293	92.6	70-132	5.39	30	
11Cl-PF3OUdS (F53B Major)	1.75	0.42	µg/kg dry	2.02	ND	86.8	4.02-158	0.393	30	
9Cl-PF3ONS (F53B Minor)	1.68	0.42	µg/kg dry	2.00	ND	84.0	52.5-150	6.83	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	2.91	0.42	µg/kg dry	2.02	ND	144 *	50.7-124	5.61	30	MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.61	0.42	µg/kg dry	2.14	ND	75.1	29.2-146	8.04	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.10	0.42	µg/kg dry	2.06	ND	102	65-137	4.64	30	
Perfluorodecanoic acid (PFDA)	1.94	0.42	µg/kg dry	2.14	ND	90.4	69-133	6.29	30	
Perfluorododecanoic acid (PFDoA)	1.74	0.42	µg/kg dry	2.14	ND	81.1	69-135	8.49	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	1.64	0.42	µg/kg dry	1.91	ND	85.9	60.7-135	5.21	30	
Perfluoroheptanesulfonic acid (PFHpS)	3.32	0.42	µg/kg dry	2.05	1.42	93.0	70-132	10.8	30	
N-EtFOSAA	2.13	0.42	µg/kg dry	2.14	ND	99.3	61-139	10.5	30	
N-MeFOSAA	2.05	0.42	µg/kg dry	2.14	ND	95.9	63-144	7.59	30	
Perfluorotetradecanoic acid (PFTA)	1.86	0.42	µg/kg dry	2.14	ND	86.6	69-133	6.33	30	
Perfluorotridecanoic acid (PFTrDA)	1.95	0.42	µg/kg dry	2.14	ND	91.2	66-139	5.47	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.83	0.42	µg/kg dry	2.01	ND	91.1	62-145	8.54	30	
Perfluorodecanesulfonic acid (PFDS)	1.78	0.42	µg/kg dry	2.07	ND	86.2	59-134	6.65	30	
Perfluorooctanesulfonamide (FOSA)	1.94	0.42	µg/kg dry	2.14	ND	90.7	67-137	7.41	30	
Perfluorononanesulfonic acid (PFNS)	2.06	0.42	µg/kg dry	2.06	ND	100	69-125	16.4	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	2.12	0.42	µg/kg dry	2.14	ND	99.1	18.9-162	8.77	30	
Perfluoro-1-butanedisulfonamide (FBSA)	2.01	0.42	µg/kg dry	2.14	ND	93.9	49.8-135	4.55	30	
Perfluorohexanesulfonic acid (PFHxS)	3.28	0.42	µg/kg dry	1.96	1.57	87.2	67-130	12.5	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	1.82	0.42	µg/kg dry	2.14	ND	85.1	62-155	6.40	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	1.91	0.42	µg/kg dry	2.14	ND	89.2	52.1-148	5.35	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.72	0.42	µg/kg dry	2.04	ND	84.5	64-140	13.0	30	
Perfluoropetanesulfonic acid (PFPeS)	1.96	0.42	µg/kg dry	2.01	ND	97.3	73-123	4.94	30	
Perfluoroundecanoic acid (PFUnA)	2.12	0.42	µg/kg dry	2.14	ND	99.1	64-136	6.63	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.95	0.42	µg/kg dry	2.14	ND	91.1	54.6-133	5.65	30	
Perfluoroheptanoic acid (PFHpA)	2.22	0.42	µg/kg dry	2.14	0.0993	98.9	71-131	6.57	30	
Perfluorooctanoic acid (PFOA)	2.95	0.42	µg/kg dry	2.14	0.955	93.3	69-133	5.76	30	
Perfluorooctanesulfonic acid (PFOS)	23.8	0.42	µg/kg dry	1.98	25.0	-60.3 *	68-136	11.5	30	MS-19
Perfluorononanoic acid (PFNA)	2.11	0.42	µg/kg dry	2.14	0.187	89.6	72-129	9.76	30	

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320251 - SOP 454-PFAAS

Blank (B320251-BLK1)

Prepared: 10/19/22 Analyzed: 10/22/22

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

LCS (B320251-BS1)

Prepared: 10/19/22 Analyzed: 10/22/22

Perfluorobutanoic acid (PFBA)	9.49	2.0	ng/L	9.92	95.7	73-129
Perfluorobutanesulfonic acid (PFBS)	8.16	2.0	ng/L	8.78	93.0	72-130
Perfluoropentanoic acid (PFPeA)	9.44	2.0	ng/L	9.92	95.2	72-129
Perfluorohexanoic acid (PFHxA)	9.55	2.0	ng/L	9.92	96.3	72-129
11Cl-PF3OUdS (F53B Major)	5.98	2.0	ng/L	9.34	64.0	55.1-141
9Cl-PF3ONS (F53B Minor)	7.30	2.0	ng/L	9.24	78.9	59.6-146
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	9.67	2.0	ng/L	9.34	103	60.3-131
Hexafluoropropylene oxide dimer acid (HFPO-DA)	9.32	2.0	ng/L	9.92	94.0	37.6-167
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.1	2.0	ng/L	9.52	106	67-138
Perfluorodecanoic acid (PFDA)	9.57	2.0	ng/L	9.92	96.5	71-129
Perfluorododecanoic acid (PFDoA)	8.83	2.0	ng/L	9.92	89.0	72-134
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	8.18	2.0	ng/L	8.83	92.7	49.4-154

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QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320251 - SOP 454-PFAAS

LCS (B320251-BS1)

Prepared: 10/19/22 Analyzed: 10/22/22

Perfluoroheptanesulfonic acid (PFHpS)	8.13	2.0	ng/L	9.47		85.9	69-134			
N-EtFOSAA	10.2	2.0	ng/L	9.92		103	61-135			
N-MeFOSAA	10.6	2.0	ng/L	9.92		107	65-136			
Perfluorotetradecanoic acid (PFTA)	8.92	2.0	ng/L	9.92		90.0	71-132			
Perfluorotridecanoic acid (PFTTrDA)	10.0	2.0	ng/L	9.92		101	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.00	2.0	ng/L	9.27		97.1	63-143			
Perfluorodecanesulfonic acid (PFDS)	7.57	2.0	ng/L	9.57		79.1	53-142			
Perfluorooctanesulfonamide (FOSA)	9.76	2.0	ng/L	9.92		98.4	67-137			
Perfluorononanesulfonic acid (PFNS)	7.40	2.0	ng/L	9.52		77.7	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.77	2.0	ng/L	9.92		98.5	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	9.34	2.0	ng/L	9.92		94.1	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.45	2.0	ng/L	9.07		93.1	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	8.73	2.0	ng/L	9.92		88.1	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	8.85	2.0	ng/L	9.92		89.2	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.69	2.0	ng/L	9.42		92.2	64-140			
Perfluoropentanesulfonic acid (PFPeS)	8.48	2.0	ng/L	9.32		90.9	71-127			
Perfluoroundecanoic acid (PFUnA)	9.39	2.0	ng/L	9.92		94.7	69-133			
Nonafluoro-3,6-dioxahexanoic acid (NFDHA)	9.21	2.0	ng/L	9.92		92.9	58.5-143			
Perfluoroheptanoic acid (PFHpA)	9.08	2.0	ng/L	9.92		91.6	72-130			
Perfluorooctanoic acid (PFOA)	10.4	2.0	ng/L	9.92		105	71-133			
Perfluorooctanesulfonic acid (PFOS)	7.52	2.0	ng/L	9.17		82.0	65-140			
Perfluorononanoic acid (PFNA)	9.69	2.0	ng/L	9.92		97.8	69-130			

LCS Dup (B320251-BS1)

Prepared: 10/19/22 Analyzed: 10/22/22

Perfluorobutanoic acid (PFBA)	10.9	2.0	ng/L	9.78		111	73-129	13.8	30	
Perfluorobutanesulfonic acid (PFBS)	9.53	2.0	ng/L	8.66		110	72-130	15.5	30	
Perfluoropentanoic acid (PFPeA)	10.6	2.0	ng/L	9.78		108	72-129	11.2	30	
Perfluorohexanoic acid (PFHxA)	10.8	2.0	ng/L	9.78		111	72-129	12.4	30	
11Cl-PF3OUdS (F53B Major)	7.73	2.0	ng/L	9.22		83.9	55.1-141	25.5	30	
9Cl-PF3ONS (F53B Minor)	8.64	2.0	ng/L	9.12		94.7	59.6-146	16.8	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	11.6	2.0	ng/L	9.22		125	60.3-131	17.9	30	
Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.4	2.0	ng/L	9.78		116	37.6-167	19.9	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.7	2.0	ng/L	9.39		114	67-138	5.09	30	
Perfluorodecanoic acid (PFDA)	10.8	2.0	ng/L	9.78		110	71-129	11.8	30	
Perfluorododecanoic acid (PFDoA)	10.2	2.0	ng/L	9.78		105	72-134	14.7	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	9.34	2.0	ng/L	8.71		107	49.4-154	13.2	30	
Perfluoroheptanesulfonic acid (PFHpS)	9.73	2.0	ng/L	9.34		104	69-134	17.9	30	
N-EtFOSAA	12.7	2.0	ng/L	9.78		130	61-135	21.4	30	
N-MeFOSAA	13.7	2.0	ng/L	9.78		140	* 65-136	25.5	30	L-01
Perfluorotetradecanoic acid (PFTA)	10.4	2.0	ng/L	9.78		107	71-132	15.7	30	
Perfluorotridecanoic acid (PFTTrDA)	11.2	2.0	ng/L	9.78		114	65-144	11.1	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.2	2.0	ng/L	9.15		111	63-143	12.2	30	
Perfluorodecanesulfonic acid (PFDS)	9.07	2.0	ng/L	9.44		96.1	53-142	18.0	30	
Perfluorooctanesulfonamide (FOSA)	11.3	2.0	ng/L	9.78		116	67-137	14.9	30	
Perfluorononanesulfonic acid (PFNS)	9.61	2.0	ng/L	9.39		102	69-127	26.0	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	10.2	2.0	ng/L	9.78		104	61.7-156	4.53	30	
Perfluoro-1-butanefulfonamide (FBSA)	10.3	2.0	ng/L	9.78		106	61.3-145	10.3	30	
Perfluorohexanesulfonic acid (PFHxS)	9.24	2.0	ng/L	8.95		103	68-131	8.96	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	9.79	2.0	ng/L	9.78		100	59.8-147	11.4	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	9.91	2.0	ng/L	9.78		101	59.5-146	11.4	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320251 - SOP 454-PFAAS
LCS Dup (B320251-BSD1)

Prepared: 10/19/22 Analyzed: 10/22/22

6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.9	2.0	ng/L	9.29		117	64-140	22.2	30	
Perfluoropetanesulfonic acid (PFPeS)	9.74	2.0	ng/L	9.20		106	71-127	13.8	30	
Perfluoroundecanoic acid (PFUnA)	11.4	2.0	ng/L	9.78		116	69-133	19.0	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.8	2.0	ng/L	9.78		110	58.5-143	15.6	30	
Perfluoroheptanoic acid (PFHpA)	10.6	2.0	ng/L	9.78		108	72-130	15.1	30	
Perfluorooctanoic acid (PFOA)	11.5	2.0	ng/L	9.78		117	71-133	9.87	30	
Perfluorooctanesulfonic acid (PFOS)	9.13	2.0	ng/L	9.05		101	65-140	19.2	30	
Perfluorononanoic acid (PFNA)	11.0	2.0	ng/L	9.78		113	69-130	13.0	30	

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QUALITY CONTROL
Conventional Chemistry Parameters by EPA/PHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B319847 - % Solids

Duplicate (B319847-DUP2)		Source: 22J1383-16		Prepared & Analyzed: 10/13/22						
% Solids	98.3		% Wt		97.8			0.484	10	
Duplicate (B319847-DUP4)		Source: 22J1383-01		Prepared & Analyzed: 10/13/22						
% Solids	93.1		% Wt		93.0			0.143	10	
Duplicate (B319847-DUP5)		Source: 22J1383-02		Prepared & Analyzed: 10/13/22						
% Solids	88.9		% Wt		88.3			0.731	10	

Batch B319985 - % Solids

Duplicate (B319985-DUP1)		Source: 22J1383-14RE1		Prepared & Analyzed: 10/14/22						
% Solids	75.0		% Wt		73.6			1.90	10	

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FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-03	Sample received after recommended holding time was exceeded.
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
MS-12	Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-19	Sample to spike ratio is greater than or equal to 4:1. Spiked amount is not representative of the native amount in the sample. Appropriate or meaningful recoveries cannot be calculated.
MS-22	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.
MS-23	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is outside of the method specified criteria. Reduced precision anticipated for any reported result for this compound.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
PF-20	Quantifying ion signal to noise ratio is <10. Detection is suspect.
R-06	Matrix spike duplicate RPD is outside of control limits. Reduced precision is anticipated for reported result for this compound in this sample.
S-29	Extracted Internal Standard is outside of control limits.

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-109 (0-3) (22J1383-01) Lab File ID: 22J1383-01.d Analyzed: 10/26/22 09:58									
M8FOSA	230125.3	3.988567	275,634.00	3.980567	83	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	217085.5	2.51325	247,939.00	2.51325	88	50 - 150	0.0000	+/-0.50	
M2PFTA	982931.8	4.329683	974,549.00	4.329683	101	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	127396.8	3.810767	96,313.00	3.810767	132	50 - 150	0.0000	+/-0.50	
MPFBA	384601.5	1.0834	397,395.00	1.0834	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	78205.64	2.847483	87,686.00	2.847483	89	50 - 150	0.0000	+/-0.50	
M6PFDA	573596.3	3.811283	599,399.00	3.811283	96	50 - 150	0.0000	+/-0.50	
M3PFBS	106521.9	1.919817	107,617.00	1.911533	99	50 - 150	0.0083	+/-0.50	
M7PFUnA	635174.4	3.954033	653,751.00	3.954033	97	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	120656.7	3.461417	130,903.00	3.4614	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	331085	1.741117	341,369.00	1.731383	97	50 - 150	0.0097	+/-0.50	
M5PFHxA	677811.3	2.596983	694,531.00	2.596983	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	101708.4	3.2345	106,214.00	3.2345	96	50 - 150	0.0000	+/-0.50	
M4PFHpA	792894.7	3.195017	824,525.00	3.195017	96	50 - 150	0.0000	+/-0.50	
M8PFOA	807326.4	3.469917	847,028.00	3.469917	95	50 - 150	0.0000	+/-0.50	
M8PFOS	94806.61	3.660133	103,834.00	3.660133	91	50 - 150	0.0000	+/-0.50	
M9PFNA	635837.3	3.661183	682,902.00	3.661183	93	50 - 150	0.0000	+/-0.50	
MPFDoA	612366.4	4.08865	620,613.00	4.08865	99	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	181849.4	3.9615	182,266.00	3.9615	100	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	213375.6	3.889733	210,987.00	3.889733	101	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-109 (16-20) (22J1383-02) Lab File ID: 22J1383-02.d Analyzed: 10/26/22 10:05									
M8FOSA	265730.2	3.988567	275,634.00	3.980567	96	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	225469.6	2.51325	247,939.00	2.51325	91	50 - 150	0.0000	+/-0.50	
M2PFTA	1020076	4.329683	974,549.00	4.329683	105	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	111032.4	3.810767	96,313.00	3.810767	115	50 - 150	0.0000	+/-0.50	
MPFBA	391707.5	1.0834	397,395.00	1.0834	99	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	78529.02	2.847483	87,686.00	2.847483	90	50 - 150	0.0000	+/-0.50	
M6PFDA	606515.1	3.811283	599,399.00	3.811283	101	50 - 150	0.0000	+/-0.50	
M3PFBS	111096.2	1.911533	107,617.00	1.911533	103	50 - 150	0.0000	+/-0.50	
M7PFUnA	649926	3.954033	653,751.00	3.954033	99	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	133015.4	3.461417	130,903.00	3.4614	102	50 - 150	0.0000	+/-0.50	
M5PFPeA	337025.7	1.731383	341,369.00	1.731383	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	692405.7	2.596983	694,531.00	2.596983	100	50 - 150	0.0000	+/-0.50	
M3PFHxS	107709.9	3.2345	106,214.00	3.2345	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	851620.1	3.195017	824,525.00	3.195017	103	50 - 150	0.0000	+/-0.50	
M8PFOA	835598.6	3.469917	847,028.00	3.469917	99	50 - 150	0.0000	+/-0.50	
M8PFOS	83042.76	3.660133	103,834.00	3.660133	80	50 - 150	0.0000	+/-0.50	
M9PFNA	551410.6	3.661183	682,902.00	3.661183	81	50 - 150	0.0000	+/-0.50	
MPFDoA	650305.3	4.08865	620,613.00	4.08865	105	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	186651.7	3.9615	182,266.00	3.9615	102	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	228907.9	3.889733	210,987.00	3.889733	108	50 - 150	0.0000	+/-0.50	
SS-109 (16-20) (22J1383-02RE1) Lab File ID: 22J1383-02RE1.d Analyzed: 10/29/22 08:25									
M8PFOS	131116	3.612233	120,772.00	3.612233	109	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-110 (FM) (22J1383-03) Lab File ID: 22J1383-03.d Analyzed: 10/26/22 10:12									
M8FOSA	155766.3	3.988567	275,634.00	3.980567	57	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	184915.8	2.51325	247,939.00	2.51325	75	50 - 150	0.0000	+/-0.50	
M2PFTA	678531.3	4.329683	974,549.00	4.329683	70	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	140645.6	3.810767	96,313.00	3.810767	146	50 - 150	0.0000	+/-0.50	
MPFBA	226572.8	1.0834	397,395.00	1.0834	57	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	43924.5	2.847483	87,686.00	2.847483	50	50 - 150	0.0000	+/-0.50	
M6PFDA	354218.8	3.811283	599,399.00	3.811283	59	50 - 150	0.0000	+/-0.50	
M3PFBS	73135.01	1.911533	107,617.00	1.911533	68	50 - 150	0.0000	+/-0.50	
M7PFUnA	412911.1	3.954033	653,751.00	3.954033	63	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	140463	3.461417	130,903.00	3.4614	107	50 - 150	0.0000	+/-0.50	
M5PFPeA	209982.1	1.731383	341,369.00	1.731383	62	50 - 150	0.0000	+/-0.50	
M5PFHxA	441065.5	2.596983	694,531.00	2.596983	64	50 - 150	0.0000	+/-0.50	
M3PFHxS	65749.02	3.2345	106,214.00	3.2345	62	50 - 150	0.0000	+/-0.50	
M4PFHpA	522867.4	3.195017	824,525.00	3.195017	63	50 - 150	0.0000	+/-0.50	
M8PFOA	494118.8	3.469917	847,028.00	3.469917	58	50 - 150	0.0000	+/-0.50	
M8PFOS	60783.36	3.660133	103,834.00	3.660133	59	50 - 150	0.0000	+/-0.50	
M9PFNA	384412.9	3.661183	682,902.00	3.661183	56	50 - 150	0.0000	+/-0.50	
MPFDoA	424527.9	4.08865	620,613.00	4.08865	68	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	157787.4	3.9615	182,266.00	3.9615	87	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	171654.6	3.889733	210,987.00	3.889733	81	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-110 (0-3) (22J1383-04) Lab File ID: 22J1383-04.d Analyzed: 10/26/22 10:19									
M8FOSA	209928.5	3.988567	275,634.00	3.980567	76	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	192111.5	2.51325	247,939.00	2.51325	77	50 - 150	0.0000	+/-0.50	
M2PFTA	861399.5	4.329683	974,549.00	4.329683	88	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	90070.63	3.810767	96,313.00	3.810767	94	50 - 150	0.0000	+/-0.50	
MPFBA	288085.3	1.0834	397,395.00	1.0834	72	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	63521.47	2.847483	87,686.00	2.847483	72	50 - 150	0.0000	+/-0.50	
M6PFDA	476245.1	3.811283	599,399.00	3.811283	79	50 - 150	0.0000	+/-0.50	
M3PFBS	91310.91	1.911533	107,617.00	1.911533	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	564673.6	3.954033	653,751.00	3.954033	86	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	101792.5	3.4614	130,903.00	3.4614	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	267749.2	1.731383	341,369.00	1.731383	78	50 - 150	0.0000	+/-0.50	
M5PFHxA	559940.1	2.596983	694,531.00	2.596983	81	50 - 150	0.0000	+/-0.50	
M3PFHxS	89692.28	3.2345	106,214.00	3.2345	84	50 - 150	0.0000	+/-0.50	
M4PFHpA	682086.2	3.195017	824,525.00	3.195017	83	50 - 150	0.0000	+/-0.50	
M8PFOA	663541.4	3.469917	847,028.00	3.469917	78	50 - 150	0.0000	+/-0.50	
M8PFOS	73696.68	3.660133	103,834.00	3.660133	71	50 - 150	0.0000	+/-0.50	
M9PFNA	472003.4	3.661183	682,902.00	3.661183	69	50 - 150	0.0000	+/-0.50	
MPFDoA	577014.1	4.08865	620,613.00	4.08865	93	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	140193.7	3.9615	182,266.00	3.9615	77	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	182550.6	3.889733	210,987.00	3.889733	87	50 - 150	0.0000	+/-0.50	
SS-110 (0-3) (22J1383-04RE1) Lab File ID: 22J1383-04RE1.d Analyzed: 10/29/22 08:32									
M8PFOS	137338.7	3.612233	120,772.00	3.612233	114	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-110 (16-20) (22J1383-05) Lab File ID: 22J1383-05.d Analyzed: 10/26/22 10:27									
M8FOSA	230837.5	3.988567	275,634.00	3.980567	84	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	195252.6	2.51325	247,939.00	2.51325	79	50 - 150	0.0000	+/-0.50	
M2PFTA	873025.2	4.32155	974,549.00	4.329683	90	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	72855.28	3.810767	96,313.00	3.810767	76	50 - 150	0.0000	+/-0.50	
MPFBA	305538.1	1.0834	397,395.00	1.0834	77	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	69172.15	2.847483	87,686.00	2.847483	79	50 - 150	0.0000	+/-0.50	
M6PFDA	488356.6	3.811283	599,399.00	3.811283	81	50 - 150	0.0000	+/-0.50	
M3PFBS	93390.75	1.911533	107,617.00	1.911533	87	50 - 150	0.0000	+/-0.50	
M7PFUnA	579303.5	3.954033	653,751.00	3.954033	89	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	96520.11	3.4614	130,903.00	3.4614	74	50 - 150	0.0000	+/-0.50	
M5PFPeA	284551	1.731383	341,369.00	1.731383	83	50 - 150	0.0000	+/-0.50	
M5PFHxA	593115.1	2.596983	694,531.00	2.596983	85	50 - 150	0.0000	+/-0.50	
M3PFHxS	89001.3	3.2345	106,214.00	3.2345	84	50 - 150	0.0000	+/-0.50	
M4PFHpA	717814.8	3.195017	824,525.00	3.195017	87	50 - 150	0.0000	+/-0.50	
M8PFOA	688240.1	3.469917	847,028.00	3.469917	81	50 - 150	0.0000	+/-0.50	
M8PFOS	81219.55	3.660133	103,834.00	3.660133	78	50 - 150	0.0000	+/-0.50	
M9PFNA	502026.4	3.661183	682,902.00	3.661183	74	50 - 150	0.0000	+/-0.50	
MPFDoA	569982.1	4.08865	620,613.00	4.08865	92	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	148125	3.9615	182,266.00	3.9615	81	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	172191.7	3.889733	210,987.00	3.889733	82	50 - 150	0.0000	+/-0.50	
SS-110 (16-20) (22J1383-05RE1) Lab File ID: 22J1383-05RE1.d Analyzed: 10/29/22 08:40									
M8PFOS	127528.8	3.612233	120,772.00	3.612233	106	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-110 (5) (22J1383-06) Lab File ID: 22J1383-06.d Analyzed: 10/26/22 10:34									
M8FOSA	224139	3.988567	275,634.00	3.980567	81	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	183084	2.51325	247,939.00	2.51325	74	50 - 150	0.0000	+/-0.50	
M2PFTA	780660.6	4.329683	974,549.00	4.329683	80	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	66151.13	3.810767	96,313.00	3.810767	69	50 - 150	0.0000	+/-0.50	
MPFBA	287322.6	1.0834	397,395.00	1.0834	72	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	54866.79	2.847483	87,686.00	2.847483	63	50 - 150	0.0000	+/-0.50	
M6PFDA	463258	3.811283	599,399.00	3.811283	77	50 - 150	0.0000	+/-0.50	
M3PFBS	87087.84	1.911533	107,617.00	1.911533	81	50 - 150	0.0000	+/-0.50	
M7PFUnA	516071.7	3.954033	653,751.00	3.954033	79	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	95412.22	3.4614	130,903.00	3.4614	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	264150.8	1.731383	341,369.00	1.731383	77	50 - 150	0.0000	+/-0.50	
M5PFHxA	550813.4	2.596983	694,531.00	2.596983	79	50 - 150	0.0000	+/-0.50	
M3PFHxS	84168.42	3.2345	106,214.00	3.2345	79	50 - 150	0.0000	+/-0.50	
M4PFHpA	650231.2	3.195017	824,525.00	3.195017	79	50 - 150	0.0000	+/-0.50	
M8PFOA	638593.2	3.469917	847,028.00	3.469917	75	50 - 150	0.0000	+/-0.50	
M8PFOS	77063.42	3.660133	103,834.00	3.660133	74	50 - 150	0.0000	+/-0.50	
M9PFNA	495674.5	3.661183	682,902.00	3.661183	73	50 - 150	0.0000	+/-0.50	
MPFDoA	523016	4.08865	620,613.00	4.08865	84	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	134376.9	3.9615	182,266.00	3.9615	74	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	156243	3.889733	210,987.00	3.889733	74	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-110 (10) (22J1383-07) Lab File ID: 22J1383-07.d Analyzed: 10/26/22 10:41									
M8FOSA	241166.5	3.988567	275,634.00	3.980567	87	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	189797.3	2.51325	247,939.00	2.51325	77	50 - 150	0.0000	+/-0.50	
M2PFTA	807197.7	4.329683	974,549.00	4.329683	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	74071.98	3.810767	96,313.00	3.810767	77	50 - 150	0.0000	+/-0.50	
MPFBA	303138.7	1.0834	397,395.00	1.0834	76	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	63467.07	2.847483	87,686.00	2.847483	72	50 - 150	0.0000	+/-0.50	
M6PFDA	486823.6	3.811283	599,399.00	3.811283	81	50 - 150	0.0000	+/-0.50	
M3PFBS	91497.94	1.911533	107,617.00	1.911533	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	539068.6	3.954033	653,751.00	3.954033	82	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	92869.79	3.4614	130,903.00	3.4614	71	50 - 150	0.0000	+/-0.50	
M5PFPeA	272365.5	1.731383	341,369.00	1.731383	80	50 - 150	0.0000	+/-0.50	
M5PFHxA	571661.1	2.596967	694,531.00	2.596983	82	50 - 150	0.0000	+/-0.50	
M3PFHxS	83119.41	3.2345	106,214.00	3.2345	78	50 - 150	0.0000	+/-0.50	
M4PFHpA	684376.8	3.195017	824,525.00	3.195017	83	50 - 150	0.0000	+/-0.50	
M8PFOA	678617.9	3.469917	847,028.00	3.469917	80	50 - 150	0.0000	+/-0.50	
M8PFOS	81183.84	3.660133	103,834.00	3.660133	78	50 - 150	0.0000	+/-0.50	
M9PFNA	527168.9	3.661183	682,902.00	3.661183	77	50 - 150	0.0000	+/-0.50	
MPFDoA	541515.6	4.08865	620,613.00	4.08865	87	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	142427.5	3.9615	182,266.00	3.9615	78	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	167814.4	3.889733	210,987.00	3.889733	80	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-111 (0-3) (22J1383-08) Lab File ID: 22J1383-08.d Analyzed: 10/26/22 10:56									
M8FOSA	179045.2	3.988567	275,634.00	3.988567	65	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	180576	2.51325	247,939.00	2.51325	73	50 - 150	0.0000	+/-0.50	
M2PFTA	813635.6	4.329683	974,549.00	4.329683	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	109445.4	3.810767	96,313.00	3.810767	114	50 - 150	0.0000	+/-0.50	
MPFBA	236360.1	1.0834	397,395.00	1.075083	59	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	56649.97	2.847483	87,686.00	2.8393	65	50 - 150	0.0082	+/-0.50	
M6PFDA	425948.7	3.811283	599,399.00	3.811283	71	50 - 150	0.0000	+/-0.50	
M3PFBS	79687.06	1.911533	107,617.00	1.911533	74	50 - 150	0.0000	+/-0.50	
M7PFUnA	517354.4	3.954033	653,751.00	3.954033	79	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	115242	3.461417	130,903.00	3.461417	88	50 - 150	0.0000	+/-0.50	
M5PFPeA	228935.1	1.731383	341,369.00	1.731383	67	50 - 150	0.0000	+/-0.50	
M5PFHxA	476473.6	2.596983	694,531.00	2.596983	69	50 - 150	0.0000	+/-0.50	
M3PFHxS	73022.54	3.2345	106,214.00	3.226417	69	50 - 150	0.0081	+/-0.50	
M4PFHpA	565085.4	3.195017	824,525.00	3.195017	69	50 - 150	0.0000	+/-0.50	
M8PFOA	526417.8	3.469917	847,028.00	3.469917	62	50 - 150	0.0000	+/-0.50	
M8PFOS	68717.73	3.660133	103,834.00	3.660133	66	50 - 150	0.0000	+/-0.50	
M9PFNA	404550.3	3.661183	682,902.00	3.661183	59	50 - 150	0.0000	+/-0.50	
MPFDoA	512439	4.08865	620,613.00	4.08865	83	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	151991	3.9615	182,266.00	3.9615	83	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	178713.6	3.889733	210,987.00	3.889733	85	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-111 (16-20) (22J1383-09)									
Lab File ID: 22J1383-09.d Analyzed: 10/26/22 11:03									
M8FOSA	205932.5	3.988567	275,634.00	3.988567	75	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	174394.8	2.51325	247,939.00	2.51325	70	50 - 150	0.0000	+/-0.50	
M2PFTA	765382.8	4.329683	974,549.00	4.329683	79	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	68327.05	3.810767	96,313.00	3.810767	71	50 - 150	0.0000	+/-0.50	
MPFBA	255035.9	1.0834	397,395.00	1.075083	64	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	56108.65	2.847483	87,686.00	2.8393	64	50 - 150	0.0082	+/-0.50	
M6PFDA	423087	3.811283	599,399.00	3.811283	71	50 - 150	0.0000	+/-0.50	
M3PFBS	81393.83	1.911533	107,617.00	1.911533	76	50 - 150	0.0000	+/-0.50	
M7PFUnA	515451.6	3.954033	653,751.00	3.954033	79	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	88494.19	3.4614	130,903.00	3.461417	68	50 - 150	0.0000	+/-0.50	
M5PFPeA	249805.2	1.731383	341,369.00	1.731383	73	50 - 150	0.0000	+/-0.50	
M5PFHxA	522694.7	2.596983	694,531.00	2.596983	75	50 - 150	0.0000	+/-0.50	
M3PFHxS	74016.73	3.226417	106,214.00	3.226417	70	50 - 150	0.0000	+/-0.50	
M4PFHpA	607254.4	3.195017	824,525.00	3.195017	74	50 - 150	0.0000	+/-0.50	
M8PFOA	578394.3	3.469917	847,028.00	3.469917	68	50 - 150	0.0000	+/-0.50	
M8PFOS	68514.2	3.660133	103,834.00	3.660133	66	50 - 150	0.0000	+/-0.50	
M9PFNA	443060.5	3.661183	682,902.00	3.661183	65	50 - 150	0.0000	+/-0.50	
MPFDoA	502706.2	4.08865	620,613.00	4.08865	81	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	129518.4	3.9615	182,266.00	3.9615	71	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	148815.7	3.889733	210,987.00	3.889733	71	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-112 (0-3) (22J1383-10) Lab File ID: 22J1383-10.d Analyzed: 10/26/22 11:10									
M8FOSA	194072.8	3.988567	275,634.00	3.988567	70	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	176852	2.51325	247,939.00	2.51325	71	50 - 150	0.0000	+/-0.50	
M2PFTA	861367.2	4.329683	974,549.00	4.329683	88	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	89262.41	3.810767	96,313.00	3.810767	93	50 - 150	0.0000	+/-0.50	
MPFBA	261510.8	1.0834	397,395.00	1.075083	66	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	54112.96	2.847483	87,686.00	2.8393	62	50 - 150	0.0082	+/-0.50	
M6PFDA	451571.2	3.811283	599,399.00	3.811283	75	50 - 150	0.0000	+/-0.50	
M3PFBS	84298.27	1.911533	107,617.00	1.911533	78	50 - 150	0.0000	+/-0.50	
M7PFUnA	525128.1	3.954033	653,751.00	3.954033	80	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	95564.55	3.4614	130,903.00	3.461417	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	254118.6	1.731383	341,369.00	1.731383	74	50 - 150	0.0000	+/-0.50	
M5PFHxA	534584.3	2.596967	694,531.00	2.596983	77	50 - 150	0.0000	+/-0.50	
M3PFHxS	75968.63	3.2345	106,214.00	3.226417	72	50 - 150	0.0081	+/-0.50	
M4PFHpA	620664	3.195017	824,525.00	3.195017	75	50 - 150	0.0000	+/-0.50	
M8PFOA	604088.1	3.469917	847,028.00	3.469917	71	50 - 150	0.0000	+/-0.50	
M8PFOS	76677.8	3.660133	103,834.00	3.660133	74	50 - 150	0.0000	+/-0.50	
M9PFNA	459726.9	3.661183	682,902.00	3.661183	67	50 - 150	0.0000	+/-0.50	
MPFDoA	520561.7	4.08865	620,613.00	4.08865	84	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	158245	3.9615	182,266.00	3.9615	87	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	190667.7	3.889733	210,987.00	3.889733	90	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-112 (16-20) (22J1383-11)									
Lab File ID: 22J1383-11.d Analyzed: 10/26/22 11:17									
M8FOSA	197026	3.988567	275,634.00	3.988567	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	174849.9	2.51325	247,939.00	2.51325	71	50 - 150	0.0000	+/-0.50	
M2PFTA	812017.4	4.329683	974,549.00	4.329683	83	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	69173.74	3.810767	96,313.00	3.810767	72	50 - 150	0.0000	+/-0.50	
MPFBA	261396	1.0834	397,395.00	1.075083	66	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	58800.9	2.847483	87,686.00	2.8393	67	50 - 150	0.0082	+/-0.50	
M6PFDA	438847.8	3.811283	599,399.00	3.811283	73	50 - 150	0.0000	+/-0.50	
M3PFBS	82529.2	1.911533	107,617.00	1.911533	77	50 - 150	0.0000	+/-0.50	
M7PFUnA	511124.2	3.954033	653,751.00	3.954033	78	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	80993.53	3.461417	130,903.00	3.461417	62	50 - 150	0.0000	+/-0.50	
M5PFPeA	254147.6	1.731383	341,369.00	1.731383	74	50 - 150	0.0000	+/-0.50	
M5PFHxA	520136.7	2.596983	694,531.00	2.596983	75	50 - 150	0.0000	+/-0.50	
M3PFHxS	76659.54	3.2345	106,214.00	3.226417	72	50 - 150	0.0081	+/-0.50	
M4PFHpA	624114.8	3.195017	824,525.00	3.195017	76	50 - 150	0.0000	+/-0.50	
M8PFOA	577828.8	3.469917	847,028.00	3.469917	68	50 - 150	0.0000	+/-0.50	
M8PFOS	72630.51	3.660133	103,834.00	3.660133	70	50 - 150	0.0000	+/-0.50	
M9PFNA	467678.8	3.661183	682,902.00	3.661183	68	50 - 150	0.0000	+/-0.50	
MPFDoA	511341.9	4.08865	620,613.00	4.08865	82	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	134240.3	3.9615	182,266.00	3.9615	74	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	164787	3.889733	210,987.00	3.889733	78	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-113 (0-3) (22J1383-12) Lab File ID: 22J1383-12.d Analyzed: 10/26/22 11:25									
M8FOSA	189105	3.988567	275,634.00	3.988567	69	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	182719.9	2.51325	247,939.00	2.51325	74	50 - 150	0.0000	+/-0.50	
M2PFTA	901599.4	4.329683	974,549.00	4.329683	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	93670.77	3.810767	96,313.00	3.810767	97	50 - 150	0.0000	+/-0.50	
MPFBA	266555.3	1.0834	397,395.00	1.075083	67	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	57839.55	2.847483	87,686.00	2.8393	66	50 - 150	0.0082	+/-0.50	
M6PFDA	450105.6	3.811283	599,399.00	3.811283	75	50 - 150	0.0000	+/-0.50	
M3PFBS	87047.84	1.911533	107,617.00	1.911533	81	50 - 150	0.0000	+/-0.50	
M7PFUnA	543226.8	3.954033	653,751.00	3.954033	83	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	90366.7	3.461417	130,903.00	3.461417	69	50 - 150	0.0000	+/-0.50	
M5PFPeA	254404.2	1.731383	341,369.00	1.731383	75	50 - 150	0.0000	+/-0.50	
M5PFHxA	535494.1	2.596983	694,531.00	2.596983	77	50 - 150	0.0000	+/-0.50	
M3PFHxS	78765.7	3.2345	106,214.00	3.226417	74	50 - 150	0.0081	+/-0.50	
M4PFHpA	633754.8	3.195017	824,525.00	3.195017	77	50 - 150	0.0000	+/-0.50	
M8PFOA	600749.3	3.469917	847,028.00	3.469917	71	50 - 150	0.0000	+/-0.50	
M8PFOS	73842.79	3.66015	103,834.00	3.660133	71	50 - 150	0.0000	+/-0.50	
M9PFNA	485586.9	3.661183	682,902.00	3.661183	71	50 - 150	0.0000	+/-0.50	
MPFDoA	557320.1	4.08865	620,613.00	4.08865	90	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	163677.1	3.9615	182,266.00	3.9615	90	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	189579.1	3.889733	210,987.00	3.889733	90	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-113 (16-20) (22J1383-13) Lab File ID: 22J1383-13.d Analyzed: 10/26/22 11:32									
M8FOSA	200946.7	3.988567	275,634.00	3.988567	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	176131.6	2.51325	247,939.00	2.51325	71	50 - 150	0.0000	+/-0.50	
M2PFTA	824247.4	4.329683	974,549.00	4.329683	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	80991.59	3.810767	96,313.00	3.810767	84	50 - 150	0.0000	+/-0.50	
MPFBA	253734.9	1.075083	397,395.00	1.075083	64	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	54764.96	2.847483	87,686.00	2.8393	62	50 - 150	0.0082	+/-0.50	
M6PFDA	440135.2	3.811283	599,399.00	3.811283	73	50 - 150	0.0000	+/-0.50	
M3PFBS	88117.2	1.911533	107,617.00	1.911533	82	50 - 150	0.0000	+/-0.50	
M7PFUnA	531771.1	3.954033	653,751.00	3.954033	81	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	84785.73	3.4614	130,903.00	3.461417	65	50 - 150	0.0000	+/-0.50	
M5PFPeA	242977.8	1.731383	341,369.00	1.731383	71	50 - 150	0.0000	+/-0.50	
M5PFHxA	521019.4	2.596983	694,531.00	2.596983	75	50 - 150	0.0000	+/-0.50	
M3PFHxS	79075.89	3.226417	106,214.00	3.226417	74	50 - 150	0.0000	+/-0.50	
M4PFHpA	618518.3	3.195017	824,525.00	3.195017	75	50 - 150	0.0000	+/-0.50	
M8PFOA	618316.6	3.469917	847,028.00	3.469917	73	50 - 150	0.0000	+/-0.50	
M8PFOS	63435.12	3.660133	103,834.00	3.660133	61	50 - 150	0.0000	+/-0.50	
M9PFNA	390875.6	3.661183	682,902.00	3.661183	57	50 - 150	0.0000	+/-0.50	
MPFDoA	527786.1	4.08865	620,613.00	4.08865	85	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	120431.6	3.9615	182,266.00	3.9615	66	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	154959.4	3.889733	210,987.00	3.889733	73	50 - 150	0.0000	+/-0.50	
SS-113 (16-20) (22J1383-13RE1) Lab File ID: 22J1383-13RE1.d Analyzed: 10/29/22 08:47									
M8PFOS	133634.6	3.612233	120,772.00	3.612233	111	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-114 (FM) (22J1383-14) Lab File ID: 22J1383-14.d Analyzed: 10/26/22 11:39									
M8FOSA	118973.1	3.988567	275,634.00	3.988567	43	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	154454.1	2.505033	247,939.00	2.51325	62	50 - 150	-0.0082	+/-0.50	
M2PFTA	587073.6	4.329683	974,549.00	4.329683	60	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	112355.5	3.810767	96,313.00	3.810767	117	50 - 150	0.0000	+/-0.50	
MPFBA	170683.1	1.075083	397,395.00	1.075083	43	50 - 150	0.0000	+/-0.50	*
M3HFPO-DA	35715.72	2.8393	87,686.00	2.8393	41	50 - 150	0.0000	+/-0.50	*
M6PFDA	281463.3	3.811283	599,399.00	3.811283	47	50 - 150	0.0000	+/-0.50	*
M3PFBS	61169.88	1.911533	107,617.00	1.911533	57	50 - 150	0.0000	+/-0.50	
M7PFUnA	338429.2	3.954033	653,751.00	3.954033	52	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	109361.2	3.461417	130,903.00	3.461417	84	50 - 150	0.0000	+/-0.50	
M5PFPeA	173028.3	1.731383	341,369.00	1.731383	51	50 - 150	0.0000	+/-0.50	
M5PFHxA	362077.2	2.588767	694,531.00	2.596983	52	50 - 150	-0.0082	+/-0.50	
M3PFHxS	51481.04	3.226417	106,214.00	3.226417	48	50 - 150	0.0000	+/-0.50	*
M4PFHpA	414219.8	3.195017	824,525.00	3.195017	50	50 - 150	0.0000	+/-0.50	
M8PFOA	384947.7	3.469917	847,028.00	3.469917	45	50 - 150	0.0000	+/-0.50	*
M8PFOS	46951.51	3.66015	103,834.00	3.660133	45	50 - 150	0.0000	+/-0.50	*
M9PFNA	291514.4	3.661183	682,902.00	3.661183	43	50 - 150	0.0000	+/-0.50	*
MPFDoA	346849.1	4.08865	620,613.00	4.08865	56	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	113699.3	3.9615	182,266.00	3.9615	62	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	129592.6	3.88175	210,987.00	3.889733	61	50 - 150	-0.0080	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-114 (0-3) (22J1383-15) Lab File ID: 22J1383-15.d Analyzed: 10/26/22 11:46									
M8FOSA	204477	3.988567	275,634.00	3.988567	74	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	184144.1	2.51325	247,939.00	2.51325	74	50 - 150	0.0000	+/-0.50	
M2PFTA	879293.4	4.329683	974,549.00	4.329683	90	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	79288.98	3.810767	96,313.00	3.810767	82	50 - 150	0.0000	+/-0.50	
MPFBA	274066.4	1.075083	397,395.00	1.075083	69	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	56930.97	2.847483	87,686.00	2.8393	65	50 - 150	0.0082	+/-0.50	
M6PFDA	443635.5	3.811283	599,399.00	3.811283	74	50 - 150	0.0000	+/-0.50	
M3PFBS	90276.95	1.911533	107,617.00	1.911533	84	50 - 150	0.0000	+/-0.50	
M7PFUnA	547772.8	3.954033	653,751.00	3.954033	84	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	88510	3.4614	130,903.00	3.461417	68	50 - 150	0.0000	+/-0.50	
M5PFPeA	263217.1	1.731383	341,369.00	1.731383	77	50 - 150	0.0000	+/-0.50	
M5PFHxA	551753.6	2.596983	694,531.00	2.596983	79	50 - 150	0.0000	+/-0.50	
M3PFHxS	79509.02	3.226417	106,214.00	3.226417	75	50 - 150	0.0000	+/-0.50	
M4PFHpA	653486.6	3.195017	824,525.00	3.195017	79	50 - 150	0.0000	+/-0.50	
M8PFOA	623380.2	3.469917	847,028.00	3.469917	74	50 - 150	0.0000	+/-0.50	
M8PFOS	72293.02	3.660133	103,834.00	3.660133	70	50 - 150	0.0000	+/-0.50	
M9PFNA	451985.8	3.661183	682,902.00	3.661183	66	50 - 150	0.0000	+/-0.50	
MPFDoA	543955.7	4.08865	620,613.00	4.08865	88	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	137189.1	3.9615	182,266.00	3.9615	75	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	163554.8	3.889733	210,987.00	3.889733	78	50 - 150	0.0000	+/-0.50	
SS-114 (0-3) (22J1383-15RE1) Lab File ID: 22J1383-15RE1.d Analyzed: 10/29/22 08:54									
M8PFOS	136591	3.612233	120,772.00	3.612233	113	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-114 (16-20) (22J1383-16) Lab File ID: 22J1383-16.d Analyzed: 10/26/22 16:44									
M8FOSA	256486.4	3.988567	275,634.00	3.988567	93	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	197806.5	2.4886	247,939.00	2.4886	80	50 - 150	0.0000	+/-0.50	
M2PFTA	891915.6	4.313416	974,549.00	4.32155	92	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	77115.95	3.8028	96,313.00	3.8028	80	50 - 150	0.0000	+/-0.50	
MPFBA	367774.3	1.066783	397,395.00	1.066783	93	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	74881.45	2.822933	87,686.00	2.822933	85	50 - 150	0.0000	+/-0.50	
M6PFDA	529939.6	3.803317	599,399.00	3.803317	88	50 - 150	0.0000	+/-0.50	
M3PFBS	103850.4	1.894967	107,617.00	1.894967	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	570551.7	3.938033	653,751.00	3.946033	87	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	99496.64	3.445283	130,903.00	3.453267	76	50 - 150	-0.0080	+/-0.50	
M5PFPeA	319968.6	1.714833	341,369.00	1.714833	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	661477.3	2.572333	694,531.00	2.572333	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	97329.99	3.218333	106,214.00	3.218333	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	769701	3.178867	824,525.00	3.186933	93	50 - 150	-0.0081	+/-0.50	
M8PFOA	775144.9	3.461933	847,028.00	3.461933	92	50 - 150	0.0000	+/-0.50	
M8PFOS	85917.41	3.65215	103,834.00	3.65215	83	50 - 150	0.0000	+/-0.50	
M9PFNA	607587	3.6532	682,902.00	3.6532	89	50 - 150	0.0000	+/-0.50	
MPFDoA	584519.1	4.08065	620,613.00	4.08065	94	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	155405.9	3.9535	182,266.00	3.9535	85	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	183097.2	3.873767	210,987.00	3.873767	87	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-114 (5) (22J1383-17) Lab File ID: 22J1383-17.d Analyzed: 10/26/22 11:53									
M8FOSA	232275.7	3.988567	275,634.00	3.988567	84	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	205777.7	2.51325	247,939.00	2.51325	83	50 - 150	0.0000	+/-0.50	
M2PFTA	944998.6	4.329683	974,549.00	4.329683	97	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	73883.3	3.810767	96,313.00	3.810767	77	50 - 150	0.0000	+/-0.50	
MPFBA	314519.5	1.075083	397,395.00	1.075083	79	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	68027.91	2.8393	87,686.00	2.8393	78	50 - 150	0.0000	+/-0.50	
M6PFDA	502972.6	3.811283	599,399.00	3.811283	84	50 - 150	0.0000	+/-0.50	
M3PFBS	97339.26	1.911533	107,617.00	1.911533	90	50 - 150	0.0000	+/-0.50	
M7PFUnA	601378.9	3.954033	653,751.00	3.954033	92	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	96212.41	3.4614	130,903.00	3.461417	73	50 - 150	0.0000	+/-0.50	
M5PFPeA	298339	1.731383	341,369.00	1.731383	87	50 - 150	0.0000	+/-0.50	
M5PFHxA	624997.4	2.596967	694,531.00	2.596983	90	50 - 150	0.0000	+/-0.50	
M3PFHxS	86108.24	3.226417	106,214.00	3.226417	81	50 - 150	0.0000	+/-0.50	
M4PFHpA	739414.4	3.195017	824,525.00	3.195017	90	50 - 150	0.0000	+/-0.50	
M8PFOA	684215	3.469917	847,028.00	3.469917	81	50 - 150	0.0000	+/-0.50	
M8PFOS	88148.98	3.660133	103,834.00	3.660133	85	50 - 150	0.0000	+/-0.50	
M9PFNA	544233.8	3.661183	682,902.00	3.661183	80	50 - 150	0.0000	+/-0.50	
MPFDoA	595451.6	4.08865	620,613.00	4.08865	96	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	157288.8	3.9615	182,266.00	3.9615	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	183991.6	3.889733	210,987.00	3.889733	87	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-114 (10) (22J1383-18)		Lab File ID: 22J1383-18.d				Analyzed: 10/26/22 12:01			
M8FOSA	220204.2	3.988567	275,634.00	3.988567	80	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	193297.1	2.51325	247,939.00	2.51325	78	50 - 150	0.0000	+/-0.50	
M2PFTA	890370.6	4.329683	974,549.00	4.329683	91	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	69981.44	3.810767	96,313.00	3.810767	73	50 - 150	0.0000	+/-0.50	
MPFBA	292126.1	1.0834	397,395.00	1.075083	74	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	58516.41	2.8393	87,686.00	2.8393	67	50 - 150	0.0000	+/-0.50	
M6PFDA	479298.5	3.811283	599,399.00	3.811283	80	50 - 150	0.0000	+/-0.50	
M3PFBS	92561.76	1.911533	107,617.00	1.911533	86	50 - 150	0.0000	+/-0.50	
M7PFUnA	549322.5	3.954033	653,751.00	3.954033	84	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	92725.79	3.461417	130,903.00	3.461417	71	50 - 150	0.0000	+/-0.50	
M5PFPeA	273968.4	1.731383	341,369.00	1.731383	80	50 - 150	0.0000	+/-0.50	
M5PFHxA	590523.5	2.596983	694,531.00	2.596983	85	50 - 150	0.0000	+/-0.50	
M3PFHxS	84098.43	3.226417	106,214.00	3.226417	79	50 - 150	0.0000	+/-0.50	
M4PFHpA	677348.8	3.195017	824,525.00	3.195017	82	50 - 150	0.0000	+/-0.50	
M8PFOA	653123.5	3.469917	847,028.00	3.469917	77	50 - 150	0.0000	+/-0.50	
M8PFOS	78686.15	3.660133	103,834.00	3.660133	76	50 - 150	0.0000	+/-0.50	
M9PFNA	509984.4	3.661183	682,902.00	3.661183	75	50 - 150	0.0000	+/-0.50	
MPFDoA	550243.6	4.08865	620,613.00	4.08865	89	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	143086	3.9615	182,266.00	3.9615	79	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	172752.4	3.889733	210,987.00	3.889733	82	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-115 (0-3) (22J1383-19) Lab File ID: 22J1383-19.d Analyzed: 10/26/22 16:51									
M8FOSA	237972.4	3.988567	275,634.00	3.988567	86	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	210451	2.4886	247,939.00	2.4886	85	50 - 150	0.0000	+/-0.50	
M2PFTA	939733.9	4.313416	974,549.00	4.32155	96	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	125695.4	3.8028	96,313.00	3.8028	131	50 - 150	0.0000	+/-0.50	
MPFBA	387364.6	1.066783	397,395.00	1.066783	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	81151.34	2.822933	87,686.00	2.822933	93	50 - 150	0.0000	+/-0.50	
M6PFDA	546208.3	3.803317	599,399.00	3.803317	91	50 - 150	0.0000	+/-0.50	
M3PFBS	109150.4	1.894967	107,617.00	1.894967	101	50 - 150	0.0000	+/-0.50	
M7PFUnA	597478.8	3.938033	653,751.00	3.946033	91	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	132477.7	3.445283	130,903.00	3.453267	101	50 - 150	-0.0080	+/-0.50	
M5PFPeA	330972.9	1.714833	341,369.00	1.714833	97	50 - 150	0.0000	+/-0.50	
M5PFHxA	682997.9	2.572333	694,531.00	2.572333	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	95805.79	3.218333	106,214.00	3.218333	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	815464.8	3.178867	824,525.00	3.186933	99	50 - 150	-0.0081	+/-0.50	
M8PFOA	804225.9	3.461933	847,028.00	3.461933	95	50 - 150	0.0000	+/-0.50	
M8PFOS	88971.49	3.65215	103,834.00	3.65215	86	50 - 150	0.0000	+/-0.50	
M9PFNA	592985.4	3.6452	682,902.00	3.6532	87	50 - 150	-0.0080	+/-0.50	
MPFDoA	569747.1	4.072667	620,613.00	4.08065	92	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	183340.1	3.945517	182,266.00	3.9535	101	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	208268.2	3.873767	210,987.00	3.873767	99	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-115 (16-20) (22J1383-20)									
Lab File ID: 22J1383-20.d Analyzed: 10/26/22 16:58									
M8FOSA	216586.1	3.988567	275,634.00	3.988567	79	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	177738	2.4886	247,939.00	2.4886	72	50 - 150	0.0000	+/-0.50	
M2PFTA	779852.4	4.313416	974,549.00	4.32155	80	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	89711.81	3.8028	96,313.00	3.8028	93	50 - 150	0.0000	+/-0.50	
MPFBA	324273.6	1.066783	397,395.00	1.066783	82	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	67482.61	2.822933	87,686.00	2.822933	77	50 - 150	0.0000	+/-0.50	
M6PFDA	509926.2	3.803317	599,399.00	3.803317	85	50 - 150	0.0000	+/-0.50	
M3PFBS	93950.7	1.894967	107,617.00	1.894967	87	50 - 150	0.0000	+/-0.50	
M7PFUnA	521035.1	3.938033	653,751.00	3.946033	80	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	87592.25	3.445283	130,903.00	3.453267	67	50 - 150	-0.0080	+/-0.50	
M5PFPeA	289806.4	1.714833	341,369.00	1.714833	85	50 - 150	0.0000	+/-0.50	
M5PFHxA	592151.5	2.572333	694,531.00	2.572333	85	50 - 150	0.0000	+/-0.50	
M3PFHxS	85604.24	3.218333	106,214.00	3.218333	81	50 - 150	0.0000	+/-0.50	
M4PFHpA	704021.4	3.178867	824,525.00	3.186933	85	50 - 150	-0.0081	+/-0.50	
M8PFOA	661432.9	3.461933	847,028.00	3.461933	78	50 - 150	0.0000	+/-0.50	
M8PFOS	81025.51	3.65215	103,834.00	3.65215	78	50 - 150	0.0000	+/-0.50	
M9PFNA	529515.3	3.6452	682,902.00	3.6532	78	50 - 150	-0.0080	+/-0.50	
MPFDoA	515522.3	4.072667	620,613.00	4.08065	83	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	129000.3	3.945517	182,266.00	3.9535	71	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	151219.2	3.873767	210,987.00	3.873767	72	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-117 (0-3) (22J1383-21) Lab File ID: 22J1383-21.d Analyzed: 10/26/22 17:05									
M8FOSA	237929.4	3.988567	275,634.00	3.988567	86	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	199888.8	2.4886	247,939.00	2.4886	81	50 - 150	0.0000	+/-0.50	
M2PFTA	980818.1	4.313416	974,549.00	4.32155	101	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	112633	3.794833	96,313.00	3.8028	117	50 - 150	-0.0080	+/-0.50	
MPFBA	385351.8	1.066783	397,395.00	1.066783	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	81118.69	2.822933	87,686.00	2.822933	93	50 - 150	0.0000	+/-0.50	
M6PFDA	575738.6	3.79535	599,399.00	3.803317	96	50 - 150	-0.0080	+/-0.50	
M3PFBS	108091.4	1.894967	107,617.00	1.894967	100	50 - 150	0.0000	+/-0.50	
M7PFUnA	602311.7	3.93805	653,751.00	3.946033	92	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	120166.2	3.445283	130,903.00	3.453267	92	50 - 150	-0.0080	+/-0.50	
M5PFPeA	338694.9	1.714833	341,369.00	1.714833	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	694727.9	2.564133	694,531.00	2.572333	100	50 - 150	-0.0082	+/-0.50	
M3PFHxS	97380.08	3.218333	106,214.00	3.218333	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	812211.4	3.178867	824,525.00	3.186933	99	50 - 150	-0.0081	+/-0.50	
M8PFOA	815101.6	3.461933	847,028.00	3.461933	96	50 - 150	0.0000	+/-0.50	
M8PFOS	92860.24	3.65215	103,834.00	3.65215	89	50 - 150	0.0000	+/-0.50	
M9PFNA	603770.6	3.6452	682,902.00	3.6532	88	50 - 150	-0.0080	+/-0.50	
MPFDoA	624303.3	4.072667	620,613.00	4.08065	101	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	189000.4	3.945517	182,266.00	3.9535	104	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	228696.3	3.873767	210,987.00	3.873767	108	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-117 (16-20) (22J1383-22) Lab File ID: 22J1383-22.d Analyzed: 10/26/22 17:12									
M8FOSA	278241.1	3.988567	275,634.00	3.988567	101	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	216295.2	2.4886	247,939.00	2.4886	87	50 - 150	0.0000	+/-0.50	
M2PFTA	1033687	4.313416	974,549.00	4.32155	106	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	131719.1	3.794833	96,313.00	3.8028	137	50 - 150	-0.0080	+/-0.50	
MPFBA	414966.8	1.066783	397,395.00	1.066783	104	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	78216.64	2.822933	87,686.00	2.822933	89	50 - 150	0.0000	+/-0.50	
M6PFDA	625336.4	3.79535	599,399.00	3.803317	104	50 - 150	-0.0080	+/-0.50	
M3PFBS	116426.1	1.894967	107,617.00	1.894967	108	50 - 150	0.0000	+/-0.50	
M7PFUnA	678369.4	3.93805	653,751.00	3.946033	104	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	133272.2	3.445283	130,903.00	3.453267	102	50 - 150	-0.0080	+/-0.50	
M5PFPeA	363731.7	1.714833	341,369.00	1.714833	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	742052.3	2.572333	694,531.00	2.572333	107	50 - 150	0.0000	+/-0.50	
M3PFHxS	106946	3.218333	106,214.00	3.218333	101	50 - 150	0.0000	+/-0.50	
M4PFHpA	887027.8	3.178867	824,525.00	3.186933	108	50 - 150	-0.0081	+/-0.50	
M8PFOA	859390.3	3.461933	847,028.00	3.461933	101	50 - 150	0.0000	+/-0.50	
M8PFOS	95125.34	3.644167	103,834.00	3.65215	92	50 - 150	-0.0080	+/-0.50	
M9PFNA	636560.9	3.6452	682,902.00	3.6532	93	50 - 150	-0.0080	+/-0.50	
MPFDoA	655411.3	4.072667	620,613.00	4.08065	106	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	210875.2	3.945517	182,266.00	3.9535	116	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	240514.4	3.873767	210,987.00	3.873767	114	50 - 150	0.0000	+/-0.50	
SS-117 (16-20) (22J1383-22RE1) Lab File ID: 22J1383-22RE1.d Analyzed: 10/29/22 09:01									
M8PFOS	126431.8	3.612233	120,772.00	3.612233	105	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-118 (FM) (22J1383-23) Lab File ID: 22J1383-23.d Analyzed: 10/26/22 17:20									
M8FOSA	131425.8	3.988567	275,634.00	3.988567	48	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	187010.8	2.4804	247,939.00	2.4886	75	50 - 150	-0.0082	+/-0.50	
M2PFTA	512841.9	4.313416	974,549.00	4.32155	53	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	118867.1	3.794833	96,313.00	3.8028	123	50 - 150	-0.0080	+/-0.50	
MPFBA	207216.8	1.066783	397,395.00	1.066783	52	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	45593.34	2.81475	87,686.00	2.822933	52	50 - 150	-0.0082	+/-0.50	
M6PFDA	300620.3	3.79535	599,399.00	3.803317	50	50 - 150	-0.0080	+/-0.50	
M3PFBS	78659.63	1.886683	107,617.00	1.894967	73	50 - 150	-0.0083	+/-0.50	
M7PFUnA	340073.2	3.93805	653,751.00	3.946033	52	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	121897.5	3.445283	130,903.00	3.453267	93	50 - 150	-0.0080	+/-0.50	
M5PFPeA	226200.8	1.706567	341,369.00	1.714833	66	50 - 150	-0.0083	+/-0.50	
M5PFHxA	496830.9	2.564133	694,531.00	2.572333	72	50 - 150	-0.0082	+/-0.50	
M3PFHxS	68223.57	3.21025	106,214.00	3.218333	64	50 - 150	-0.0081	+/-0.50	
M4PFHpA	497573.7	3.178867	824,525.00	3.186933	60	50 - 150	-0.0081	+/-0.50	
M8PFOA	447255.3	3.453817	847,028.00	3.461933	53	50 - 150	-0.0081	+/-0.50	
M8PFOS	60294.75	3.644167	103,834.00	3.65215	58	50 - 150	-0.0080	+/-0.50	
M9PFNA	331320	3.6452	682,902.00	3.6532	49	50 - 150	-0.0080	+/-0.50	*
MPFDoA	328850.1	4.072667	620,613.00	4.08065	53	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	115117.5	3.945517	182,266.00	3.9535	63	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	123278.9	3.873767	210,987.00	3.873767	58	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-118 (16-20) (22J1383-25)									
Lab File ID: 22J1383-25.d Analyzed: 10/26/22 17:27									
M8FOSA	259666.7	3.988567	275,634.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	184703.7	2.4804	247,939.00	2.4886	74	50 - 150	-0.0082	+/-0.50	
M2PFTA	844845.1	4.313416	974,549.00	4.32155	87	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	81161.1	3.794833	96,313.00	3.8028	84	50 - 150	-0.0080	+/-0.50	
MPFBA	352374	1.066783	397,395.00	1.066783	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	79586.14	2.81475	87,686.00	2.822933	91	50 - 150	-0.0082	+/-0.50	
M6PFDA	527205.5	3.79535	599,399.00	3.803317	88	50 - 150	-0.0080	+/-0.50	
M3PFBS	103007.1	1.886667	107,617.00	1.894967	96	50 - 150	-0.0083	+/-0.50	
M7PFUnA	566039.9	3.93805	653,751.00	3.946033	87	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	104744.3	3.445283	130,903.00	3.453267	80	50 - 150	-0.0080	+/-0.50	
M5PFPeA	310564.3	1.706567	341,369.00	1.714833	91	50 - 150	-0.0083	+/-0.50	
M5PFHxA	639040.8	2.564117	694,531.00	2.572333	92	50 - 150	-0.0082	+/-0.50	
M3PFHxS	96220.73	3.218333	106,214.00	3.218333	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	766899.3	3.178867	824,525.00	3.186933	93	50 - 150	-0.0081	+/-0.50	
M8PFOA	763480.3	3.453817	847,028.00	3.461933	90	50 - 150	-0.0081	+/-0.50	
M8PFOS	84685.08	3.644167	103,834.00	3.65215	82	50 - 150	-0.0080	+/-0.50	
M9PFNA	569253.6	3.6452	682,902.00	3.6532	83	50 - 150	-0.0080	+/-0.50	
MPFDoA	555268.2	4.072667	620,613.00	4.08065	89	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	159043.3	3.945517	182,266.00	3.9535	87	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	193977.8	3.873767	210,987.00	3.873767	92	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-118 (5) (22J1383-26) Lab File ID: 22J1383-26.d Analyzed: 10/26/22 17:34									
M8FOSA	277930.7	3.988567	275,634.00	3.988567	101	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	198981.7	2.4804	247,939.00	2.4886	80	50 - 150	-0.0082	+/-0.50	
M2PFTA	926333.4	4.313416	974,549.00	4.32155	95	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	86884.88	3.794833	96,313.00	3.8028	90	50 - 150	-0.0080	+/-0.50	
MPFBA	373043.9	1.066783	397,395.00	1.066783	94	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	77835.05	2.81475	87,686.00	2.822933	89	50 - 150	-0.0082	+/-0.50	
M6PFDA	583418.5	3.79535	599,399.00	3.803317	97	50 - 150	-0.0080	+/-0.50	
M3PFBS	107591.4	1.886667	107,617.00	1.894967	100	50 - 150	-0.0083	+/-0.50	
M7PFUnA	594906.8	3.938033	653,751.00	3.946033	91	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	112707.2	3.445283	130,903.00	3.453267	86	50 - 150	-0.0080	+/-0.50	
M5PFPeA	330798	1.706567	341,369.00	1.714833	97	50 - 150	-0.0083	+/-0.50	
M5PFHxA	677377	2.564117	694,531.00	2.572333	98	50 - 150	-0.0082	+/-0.50	
M3PFHxS	101659.9	3.218333	106,214.00	3.218333	96	50 - 150	0.0000	+/-0.50	
M4PFHpA	793824.6	3.178867	824,525.00	3.186933	96	50 - 150	-0.0081	+/-0.50	
M8PFOA	822065.6	3.453817	847,028.00	3.461933	97	50 - 150	-0.0081	+/-0.50	
M8PFOS	92947.38	3.644167	103,834.00	3.65215	90	50 - 150	-0.0080	+/-0.50	
M9PFNA	599985.9	3.6452	682,902.00	3.6532	88	50 - 150	-0.0080	+/-0.50	
MPFDoA	594033.6	4.072667	620,613.00	4.08065	96	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	167282.7	3.945517	182,266.00	3.9535	92	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	197566.2	3.873767	210,987.00	3.873767	94	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-118 (10) (22J1383-27)			Lab File ID: 22J1383-27.d			Analyzed: 10/26/22 17:49			
M8FOSA	287246.1	3.988567	275,634.00	3.988567	104	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	191163.7	2.480383	247,939.00	2.4804	77	50 - 150	0.0000	+/-0.50	
M2PFTA	814361.5	4.313416	974,549.00	4.313416	84	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	77984.71	3.794833	96,313.00	3.794833	81	50 - 150	0.0000	+/-0.50	
MPFBA	371046.1	1.066783	397,395.00	1.066783	93	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	82141.03	2.81475	87,686.00	2.81475	94	50 - 150	0.0000	+/-0.50	
M6PFDA	539576.2	3.79535	599,399.00	3.79535	90	50 - 150	0.0000	+/-0.50	
M3PFBS	104083.4	1.886667	107,617.00	1.886667	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	569417.8	3.938033	653,751.00	3.93805	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	99012.09	3.445283	130,903.00	3.445283	76	50 - 150	0.0000	+/-0.50	
M5PFPeA	326510.9	1.706567	341,369.00	1.706567	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	651157.5	2.564117	694,531.00	2.564117	94	50 - 150	0.0000	+/-0.50	
M3PFHxS	92678.08	3.218333	106,214.00	3.21025	87	50 - 150	0.0081	+/-0.50	
M4PFHpA	765946.7	3.178867	824,525.00	3.178867	93	50 - 150	0.0000	+/-0.50	
M8PFOA	773833.9	3.453817	847,028.00	3.453817	91	50 - 150	0.0000	+/-0.50	
M8PFOS	90778.55	3.644167	103,834.00	3.644167	87	50 - 150	0.0000	+/-0.50	
M9PFNA	582963.8	3.6452	682,902.00	3.6452	85	50 - 150	0.0000	+/-0.50	
MPFDoA	532764.7	4.072667	620,613.00	4.072667	86	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	143376.7	3.945517	182,266.00	3.945517	79	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	171381.7	3.873767	210,987.00	3.873767	81	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-121 (0-3) (22J1383-28) Lab File ID: 22J1383-28.d Analyzed: 10/26/22 17:56									
M8FOSA	277457.3	3.988567	275,634.00	3.988567	101	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	222785.9	2.4804	247,939.00	2.4804	90	50 - 150	0.0000	+/-0.50	
M2PFTA	1003049	4.313416	974,549.00	4.313416	103	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	149308.6	3.794833	96,313.00	3.794833	155	50 - 150	0.0000	+/-0.50	*
MPFBA	403982.7	1.066783	397,395.00	1.066783	102	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	80483.16	2.81475	87,686.00	2.81475	92	50 - 150	0.0000	+/-0.50	
M6PFDA	605111	3.79535	599,399.00	3.79535	101	50 - 150	0.0000	+/-0.50	
M3PFBS	113478.4	1.886683	107,617.00	1.886667	105	50 - 150	0.0000	+/-0.50	
M7PFUnA	637912.3	3.93805	653,751.00	3.93805	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	176231.6	3.445283	130,903.00	3.445283	135	50 - 150	0.0000	+/-0.50	
M5PFPeA	351248.8	1.706567	341,369.00	1.706567	103	50 - 150	0.0000	+/-0.50	
M5PFHxA	704099.6	2.564133	694,531.00	2.564117	101	50 - 150	0.0000	+/-0.50	
M3PFHxS	102382.1	3.21025	106,214.00	3.21025	96	50 - 150	0.0000	+/-0.50	
M4PFHpA	828360.1	3.178867	824,525.00	3.178867	100	50 - 150	0.0000	+/-0.50	
M8PFOA	849865	3.453817	847,028.00	3.453817	100	50 - 150	0.0000	+/-0.50	
M8PFOS	96502.71	3.644167	103,834.00	3.644167	93	50 - 150	0.0000	+/-0.50	
M9PFNA	630120.6	3.6452	682,902.00	3.6452	92	50 - 150	0.0000	+/-0.50	
MPFDoA	632558.4	4.072667	620,613.00	4.072667	102	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	218702.7	3.945517	182,266.00	3.945517	120	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	258637.4	3.873767	210,987.00	3.873767	123	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-121 (16-20) (22J1383-29) Lab File ID: 22J1383-29.d Analyzed: 10/26/22 18:03									
M8FOSA	279330.8	3.988567	275,634.00	3.988567	101	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	200933	2.4804	247,939.00	2.4804	81	50 - 150	0.0000	+/-0.50	
M2PFTA	815514.8	4.313416	974,549.00	4.313416	84	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	81612.62	3.794833	96,313.00	3.794833	85	50 - 150	0.0000	+/-0.50	
MPFBA	387651.6	1.066783	397,395.00	1.066783	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	83543.96	2.81475	87,686.00	2.81475	95	50 - 150	0.0000	+/-0.50	
M6PFDA	552984.5	3.79535	599,399.00	3.79535	92	50 - 150	0.0000	+/-0.50	
M3PFBS	107075.5	1.886667	107,617.00	1.886667	99	50 - 150	0.0000	+/-0.50	
M7PFUnA	590134.8	3.938033	653,751.00	3.93805	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	102093.6	3.445283	130,903.00	3.445283	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	337277.2	1.706567	341,369.00	1.706567	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	672595	2.564117	694,531.00	2.564117	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	101943.4	3.21025	106,214.00	3.21025	96	50 - 150	0.0000	+/-0.50	
M4PFHpA	803826.3	3.178867	824,525.00	3.178867	97	50 - 150	0.0000	+/-0.50	
M8PFOA	815136.1	3.453817	847,028.00	3.453817	96	50 - 150	0.0000	+/-0.50	
M8PFOS	93419.21	3.644167	103,834.00	3.644167	90	50 - 150	0.0000	+/-0.50	
M9PFNA	607703.4	3.6452	682,902.00	3.6452	89	50 - 150	0.0000	+/-0.50	
MPFDoA	589611.9	4.072667	620,613.00	4.072667	95	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	155894.7	3.945517	182,266.00	3.945517	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	181005.7	3.873767	210,987.00	3.873767	86	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-122 (FM) (22J1383-30) Lab File ID: 22J1383-30.d Analyzed: 10/26/22 18:10									
M8FOSA	141153.8	3.988567	275,634.00	3.988567	51	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	211080.1	2.472183	247,939.00	2.4804	85	50 - 150	-0.0082	+/-0.50	
M2PFTA	614368.1	4.30535	974,549.00	4.313416	63	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	178493.1	3.794833	96,313.00	3.794833	185	50 - 150	0.0000	+/-0.50	*
MPFBA	257042.5	1.066783	397,395.00	1.066783	65	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	47121.55	2.806567	87,686.00	2.81475	54	50 - 150	-0.0082	+/-0.50	
M6PFDA	394328	3.79535	599,399.00	3.79535	66	50 - 150	0.0000	+/-0.50	
M3PFBS	84803.02	1.886683	107,617.00	1.886667	79	50 - 150	0.0000	+/-0.50	
M7PFUnA	384444.2	3.93805	653,751.00	3.93805	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	153370	3.4373	130,903.00	3.445283	117	50 - 150	-0.0080	+/-0.50	
M5PFPeA	246659.6	1.706567	341,369.00	1.706567	72	50 - 150	0.0000	+/-0.50	
M5PFHxA	526611.9	2.555917	694,531.00	2.564117	76	50 - 150	-0.0082	+/-0.50	
M3PFHxS	74682.08	3.21025	106,214.00	3.21025	70	50 - 150	0.0000	+/-0.50	
M4PFHpA	531356.6	3.170783	824,525.00	3.178867	64	50 - 150	-0.0081	+/-0.50	
M8PFOA	537831.7	3.453817	847,028.00	3.453817	63	50 - 150	0.0000	+/-0.50	
M8PFOS	66812.58	3.644167	103,834.00	3.644167	64	50 - 150	0.0000	+/-0.50	
M9PFNA	397499.6	3.6452	682,902.00	3.6452	58	50 - 150	0.0000	+/-0.50	
MPFDoA	368509	4.072667	620,613.00	4.072667	59	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	125841.7	3.937517	182,266.00	3.945517	69	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	164348.6	3.865617	210,987.00	3.873767	78	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-122 (0-3) (22J1383-31)			Lab File ID: 22J1383-31.d			Analyzed: 10/26/22 18:17			
M8FOSA	301827.7	3.988567	275,634.00	3.988567	110	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	208283.5	2.4804	247,939.00	2.4804	84	50 - 150	0.0000	+/-0.50	
M2PFTA	995874.7	4.30535	974,549.00	4.313416	102	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	115069.9	3.794833	96,313.00	3.794833	119	50 - 150	0.0000	+/-0.50	
MPFBA	422584.7	1.066783	397,395.00	1.066783	106	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	91772.56	2.81475	87,686.00	2.81475	105	50 - 150	0.0000	+/-0.50	
M6PFDA	625094.4	3.79535	599,399.00	3.79535	104	50 - 150	0.0000	+/-0.50	
M3PFBS	122140.1	1.886667	107,617.00	1.886667	113	50 - 150	0.0000	+/-0.50	
M7PFUnA	662651.4	3.938033	653,751.00	3.93805	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	114399.6	3.445283	130,903.00	3.445283	87	50 - 150	0.0000	+/-0.50	
M5PFPeA	375413.2	1.706567	341,369.00	1.706567	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	739313.6	2.564133	694,531.00	2.564117	106	50 - 150	0.0000	+/-0.50	
M3PFHxS	111174.3	3.21025	106,214.00	3.21025	105	50 - 150	0.0000	+/-0.50	
M4PFHpA	890063.9	3.170783	824,525.00	3.178867	108	50 - 150	-0.0081	+/-0.50	
M8PFOA	862567.9	3.453817	847,028.00	3.453817	102	50 - 150	0.0000	+/-0.50	
M8PFOS	104676.9	3.644167	103,834.00	3.644167	101	50 - 150	0.0000	+/-0.50	
M9PFNA	650566.1	3.6452	682,902.00	3.6452	95	50 - 150	0.0000	+/-0.50	
MPFDoA	665624.8	4.072667	620,613.00	4.072667	107	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	172805.6	3.945517	182,266.00	3.945517	95	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	233885	3.865617	210,987.00	3.873767	111	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-122 (16-20) (22J1383-32)			Lab File ID: 22J1383-32.d			Analyzed: 10/26/22 18:25			
M8FOSA	308344.8	3.988567	275,634.00	3.988567	112	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	198640.2	2.472183	247,939.00	2.4804	80	50 - 150	-0.0082	+/-0.50	
M2PFTA	921926.3	4.30535	974,549.00	4.313416	95	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	85360.74	3.794833	96,313.00	3.794833	89	50 - 150	0.0000	+/-0.50	
MPFBA	415795.9	1.066783	397,395.00	1.066783	105	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	89292.24	2.806567	87,686.00	2.81475	102	50 - 150	-0.0082	+/-0.50	
M6PFDA	611795.2	3.79535	599,399.00	3.79535	102	50 - 150	0.0000	+/-0.50	
M3PFBS	115956.2	1.886667	107,617.00	1.886667	108	50 - 150	0.0000	+/-0.50	
M7PFUnA	652551.5	3.938033	653,751.00	3.93805	100	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	97170.87	3.445283	130,903.00	3.445283	74	50 - 150	0.0000	+/-0.50	
M5PFPeA	367617.6	1.706567	341,369.00	1.706567	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	725915.8	2.555917	694,531.00	2.564117	105	50 - 150	-0.0082	+/-0.50	
M3PFHxS	104660.5	3.21025	106,214.00	3.21025	99	50 - 150	0.0000	+/-0.50	
M4PFHpA	873364	3.170783	824,525.00	3.178867	106	50 - 150	-0.0081	+/-0.50	
M8PFOA	856033.3	3.453817	847,028.00	3.453817	101	50 - 150	0.0000	+/-0.50	
M8PFOS	97674.39	3.644167	103,834.00	3.644167	94	50 - 150	0.0000	+/-0.50	
M9PFNA	631154.9	3.6452	682,902.00	3.6452	92	50 - 150	0.0000	+/-0.50	
MPFDoA	611144.8	4.072667	620,613.00	4.072667	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	157700.4	3.937517	182,266.00	3.945517	87	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	194198.5	3.865617	210,987.00	3.873767	92	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-122 (5) (22J1383-33) Lab File ID: 22J1383-33.d Analyzed: 10/26/22 18:32									
M8FOSA	272317.1	3.988567	275,634.00	3.988567	99	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	186529.3	2.472183	247,939.00	2.4804	75	50 - 150	-0.0082	+/-0.50	
M2PFTA	798687.5	4.30535	974,549.00	4.313416	82	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	79821.98	3.794833	96,313.00	3.794833	83	50 - 150	0.0000	+/-0.50	
MPFBA	380820.9	1.066783	397,395.00	1.066783	96	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	84081.52	2.806567	87,686.00	2.81475	96	50 - 150	-0.0082	+/-0.50	
M6PFDA	533351.3	3.79535	599,399.00	3.79535	89	50 - 150	0.0000	+/-0.50	
M3PFBS	106304.6	1.878383	107,617.00	1.886667	99	50 - 150	-0.0083	+/-0.50	
M7PFUnA	581902.3	3.93005	653,751.00	3.93805	89	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	87350.77	3.4373	130,903.00	3.445283	67	50 - 150	-0.0080	+/-0.50	
M5PFPeA	339041.7	1.706567	341,369.00	1.706567	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	664293.1	2.555917	694,531.00	2.564117	96	50 - 150	-0.0082	+/-0.50	
M3PFHxS	96937.75	3.21025	106,214.00	3.21025	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	788692.3	3.170783	824,525.00	3.178867	96	50 - 150	-0.0081	+/-0.50	
M8PFOA	784159.9	3.453817	847,028.00	3.453817	93	50 - 150	0.0000	+/-0.50	
M8PFOS	95011.03	3.644167	103,834.00	3.644167	92	50 - 150	0.0000	+/-0.50	
M9PFNA	605045.7	3.6452	682,902.00	3.6452	89	50 - 150	0.0000	+/-0.50	
MPFDoA	536937.3	4.064667	620,613.00	4.072667	87	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	151021.4	3.937517	182,266.00	3.945517	83	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	181990.8	3.865617	210,987.00	3.873767	86	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-1222 (10) (22J1383-34) Lab File ID: 22J1383-34.d Analyzed: 10/26/22 18:39									
M8FOSA	278165.6	3.988567	275,634.00	3.988567	101	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	186141.3	2.472183	247,939.00	2.4804	75	50 - 150	-0.0082	+/-0.50	
M2PFTA	782926.7	4.30535	974,549.00	4.313416	80	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	80506.25	3.794833	96,313.00	3.794833	84	50 - 150	0.0000	+/-0.50	
MPFBA	380760.2	1.066783	397,395.00	1.066783	96	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	84952.27	2.806567	87,686.00	2.81475	97	50 - 150	-0.0082	+/-0.50	
M6PFDA	557588.8	3.79535	599,399.00	3.79535	93	50 - 150	0.0000	+/-0.50	
M3PFBS	105681.2	1.878383	107,617.00	1.886667	98	50 - 150	-0.0083	+/-0.50	
M7PFUnA	571212.8	3.93005	653,751.00	3.93805	87	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	89791.08	3.4373	130,903.00	3.445283	69	50 - 150	-0.0080	+/-0.50	
M5PFPeA	330371.7	1.706567	341,369.00	1.706567	97	50 - 150	0.0000	+/-0.50	
M5PFHxA	655960.6	2.555917	694,531.00	2.564117	94	50 - 150	-0.0082	+/-0.50	
M3PFHxS	94634.74	3.21025	106,214.00	3.21025	89	50 - 150	0.0000	+/-0.50	
M4PFHpA	783153.8	3.170783	824,525.00	3.178867	95	50 - 150	-0.0081	+/-0.50	
M8PFOA	755037.8	3.453817	847,028.00	3.453817	89	50 - 150	0.0000	+/-0.50	
M8PFOS	90518.47	3.644167	103,834.00	3.644167	87	50 - 150	0.0000	+/-0.50	
M9PFNA	583000.8	3.6452	682,902.00	3.6452	85	50 - 150	0.0000	+/-0.50	
MPFDoA	542987.3	4.064667	620,613.00	4.072667	87	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	135713.2	3.937517	182,266.00	3.945517	74	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	173062.7	3.865617	210,987.00	3.873767	82	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Duplicate 2 (22J1383-35)		Lab File ID: 22J1383-35.d				Analyzed: 10/26/22 18:46			
M8FOSA	282145.6	3.988567	275,634.00	3.988567	102	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	211881.3	2.472183	247,939.00	2.4804	85	50 - 150	-0.0082	+/-0.50	
M2PFTA	1008314	4.30535	974,549.00	4.313416	103	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	110979.9	3.794833	96,313.00	3.794833	115	50 - 150	0.0000	+/-0.50	
MPFBA	427244.1	1.066783	397,395.00	1.066783	108	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	89688.88	2.806567	87,686.00	2.81475	102	50 - 150	-0.0082	+/-0.50	
M6PFDA	648563.6	3.79535	599,399.00	3.79535	108	50 - 150	0.0000	+/-0.50	
M3PFBS	121642.8	1.878383	107,617.00	1.886667	113	50 - 150	-0.0083	+/-0.50	
M7PFUnA	669224.4	3.93005	653,751.00	3.93805	102	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	109061.3	3.4373	130,903.00	3.445283	83	50 - 150	-0.0080	+/-0.50	
M5PFPeA	379707.2	1.698283	341,369.00	1.706567	111	50 - 150	-0.0083	+/-0.50	
M5PFHxA	748293.1	2.5477	694,531.00	2.564117	108	50 - 150	-0.0164	+/-0.50	
M3PFHxS	109208	3.21025	106,214.00	3.21025	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	878189.7	3.170783	824,525.00	3.178867	107	50 - 150	-0.0081	+/-0.50	
M8PFOA	874606.9	3.453817	847,028.00	3.453817	103	50 - 150	0.0000	+/-0.50	
M8PFOS	107361.7	3.644167	103,834.00	3.644167	103	50 - 150	0.0000	+/-0.50	
M9PFNA	665471.1	3.6452	682,902.00	3.6452	97	50 - 150	0.0000	+/-0.50	
MPFDoA	659298.9	4.064667	620,613.00	4.072667	106	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	196931.9	3.937517	182,266.00	3.945517	108	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	234563.8	3.865617	210,987.00	3.873767	111	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Duplicate 3 (22J1383-36)		Lab File ID: 22J1383-36.d				Analyzed: 10/26/22 18:53			
M8FOSA	284352	3.988567	275,634.00	3.988567	103	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	181155.2	2.463967	247,939.00	2.4804	73	50 - 150	-0.0164	+/-0.50	
M2PFTA	784385.8	4.30535	974,549.00	4.313416	80	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	88170.46	3.78685	96,313.00	3.794833	92	50 - 150	-0.0080	+/-0.50	
MPFBA	393705.5	1.066783	397,395.00	1.066783	99	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	88885.24	2.806567	87,686.00	2.81475	101	50 - 150	-0.0082	+/-0.50	
M6PFDA	570533.2	3.787383	599,399.00	3.79535	95	50 - 150	-0.0080	+/-0.50	
M3PFBS	109614.2	1.878383	107,617.00	1.886667	102	50 - 150	-0.0083	+/-0.50	
M7PFUnA	579916.3	3.93005	653,751.00	3.93805	89	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	90944.74	3.4373	130,903.00	3.445283	69	50 - 150	-0.0080	+/-0.50	
M5PFPeA	345111.4	1.698283	341,369.00	1.706567	101	50 - 150	-0.0083	+/-0.50	
M5PFHxA	677109.8	2.5477	694,531.00	2.564117	97	50 - 150	-0.0164	+/-0.50	
M3PFHxS	100003.9	3.21025	106,214.00	3.21025	94	50 - 150	0.0000	+/-0.50	
M4PFHpA	797619.8	3.170783	824,525.00	3.178867	97	50 - 150	-0.0081	+/-0.50	
M8PFOA	789585.1	3.445833	847,028.00	3.453817	93	50 - 150	-0.0080	+/-0.50	
M8PFOS	90006.96	3.636183	103,834.00	3.644167	87	50 - 150	-0.0080	+/-0.50	
M9PFNA	571443.1	3.637217	682,902.00	3.6452	84	50 - 150	-0.0080	+/-0.50	
MPFDoA	562649.5	4.064667	620,613.00	4.072667	91	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	152459.4	3.937517	182,266.00	3.945517	84	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	193940.7	3.865617	210,987.00	3.873767	92	50 - 150	-0.0082	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Equipment Blank (22J1383-37) Lab File ID: 22J1383-37.d Analyzed: 10/22/22 09:46									
M8FOSA	184441.5	3.996567	328,138.00	3.996567	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	133788.5	2.4146	189,245.00	2.4064	71	50 - 150	0.0082	+/-0.50	
M2PFTA	699351.2	4.27305	1,030,059.00	4.27305	68	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	135292.7	3.76295	107,857.00	3.76295	125	50 - 150	0.0000	+/-0.50	
MPFBA	357981.4	1.04185	470,407.00	1.04185	76	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	101492.2	2.749283	121,363.00	2.749283	84	50 - 150	0.0000	+/-0.50	
M6PFDA	528343	3.763467	703,999.00	3.763467	75	50 - 150	0.0000	+/-0.50	
M3PFBS	107170.9	1.83695	128,529.00	1.83695	83	50 - 150	0.0000	+/-0.50	
M7PFUnA	493035.2	3.906067	697,439.00	3.906067	71	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	51221.63	3.41245	79,376.00	3.4044	65	50 - 150	0.0081	+/-0.50	
M5PFPeA	320283.5	1.6652	407,535.00	1.656917	79	50 - 150	0.0083	+/-0.50	
M5PFHxA	651006.1	2.498417	794,423.00	2.490217	82	50 - 150	0.0082	+/-0.50	
M3PFHxS	93402.56	3.17765	129,092.00	3.169583	72	50 - 150	0.0081	+/-0.50	
M4PFHpA	745316.8	3.138483	955,392.00	3.1304	78	50 - 150	0.0081	+/-0.50	
M8PFOA	712164.3	3.421167	963,117.00	3.421183	74	50 - 150	0.0000	+/-0.50	
M8PFOS	84702.98	3.620217	119,440.00	3.620217	71	50 - 150	0.0000	+/-0.50	
M9PFNA	535620.5	3.613267	728,798.00	3.613267	73	50 - 150	0.0000	+/-0.50	
MPFDoA	457625.6	4.032683	640,609.00	4.040683	71	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	138804.8	3.913533	187,724.00	3.913533	74	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	167627	3.833783	221,800.00	3.833783	76	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B319614-BLK1)			Lab File ID: B319614-BLK1.d			Analyzed: 10/26/22 09:15			
M8FOSA	198481.5	3.988567	275,634.00	3.980567	72	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	176893	2.52145	247,939.00	2.51325	71	50 - 150	0.0082	+/-0.50	
M2PFTA	737580.1	4.329683	974,549.00	4.329683	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	69540.4	3.818733	96,313.00	3.810767	72	50 - 150	0.0080	+/-0.50	
MPFBA	304368	1.0834	397,395.00	1.0834	77	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	39700.95	2.847483	87,686.00	2.847483	45	50 - 150	0.0000	+/-0.50	*
M6PFDA	440678.9	3.811283	599,399.00	3.811283	74	50 - 150	0.0000	+/-0.50	
M3PFBS	82609.05	1.919817	107,617.00	1.911533	77	50 - 150	0.0083	+/-0.50	
M7PFUnA	485139.3	3.954033	653,751.00	3.954033	74	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	93827	3.4614	130,903.00	3.4614	72	50 - 150	0.0000	+/-0.50	
M5PFPeA	263568.6	1.741117	341,369.00	1.731383	77	50 - 150	0.0097	+/-0.50	
M5PFHxA	527200.5	2.605183	694,531.00	2.596983	76	50 - 150	0.0082	+/-0.50	
M3PFHxS	77834.93	3.2345	106,214.00	3.2345	73	50 - 150	0.0000	+/-0.50	
M4PFHpA	626237.9	3.195017	824,525.00	3.195017	76	50 - 150	0.0000	+/-0.50	
M8PFOA	651994.1	3.469917	847,028.00	3.469917	77	50 - 150	0.0000	+/-0.50	
M8PFOS	76361.68	3.660133	103,834.00	3.660133	74	50 - 150	0.0000	+/-0.50	
M9PFNA	527806.3	3.661183	682,902.00	3.661183	77	50 - 150	0.0000	+/-0.50	
MPFDoA	482159.7	4.08865	620,613.00	4.08865	78	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	132988.4	3.9615	182,266.00	3.9615	73	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	159926.9	3.889733	210,987.00	3.889733	76	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B319614-BS1) Lab File ID: B319614-BS1.d Analyzed: 10/26/22 09:07									
M8FOSA	261311.2	3.988567	275,634.00	3.980567	95	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	231625.6	2.52145	247,939.00	2.51325	93	50 - 150	0.0082	+/-0.50	
M2PFTA	955296.4	4.329683	974,549.00	4.329683	98	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	98319.8	3.810767	96,313.00	3.810767	102	50 - 150	0.0000	+/-0.50	
MPFBA	387878.3	1.0834	397,395.00	1.0834	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	67048.95	2.855667	87,686.00	2.847483	76	50 - 150	0.0082	+/-0.50	
M6PFDA	583704.1	3.811283	599,399.00	3.811283	97	50 - 150	0.0000	+/-0.50	
M3PFBS	107051.4	1.919817	107,617.00	1.911533	99	50 - 150	0.0083	+/-0.50	
M7PFUnA	609755	3.954033	653,751.00	3.954033	93	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	120774.9	3.461417	130,903.00	3.4614	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	336228.1	1.741117	341,369.00	1.731383	98	50 - 150	0.0097	+/-0.50	
M5PFHxA	677258.8	2.605183	694,531.00	2.596983	98	50 - 150	0.0082	+/-0.50	
M3PFHxS	103171.5	3.2345	106,214.00	3.2345	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	793618.7	3.195017	824,525.00	3.195017	96	50 - 150	0.0000	+/-0.50	
M8PFOA	832146.4	3.469917	847,028.00	3.469917	98	50 - 150	0.0000	+/-0.50	
M8PFOS	93484.88	3.66015	103,834.00	3.660133	90	50 - 150	0.0000	+/-0.50	
M9PFNA	662610.8	3.661183	682,902.00	3.661183	97	50 - 150	0.0000	+/-0.50	
MPFDoA	609850.7	4.09665	620,613.00	4.08865	98	50 - 150	0.0080	+/-0.50	
d5-NEtFOSAA	182838.5	3.9615	182,266.00	3.9615	100	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	212342.9	3.889733	210,987.00	3.889733	101	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B319614-MS1)			Lab File ID: B319614-MS1.d			Analyzed: 10/26/22 09:22			
M8FOSA	152164.6	3.988567	275,634.00	3.980567	55	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	225971	2.51325	247,939.00	2.51325	91	50 - 150	0.0000	+/-0.50	
M2PFTA	633155.8	4.329683	974,549.00	4.329683	65	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	158467.5	3.810767	96,313.00	3.810767	165	50 - 150	0.0000	+/-0.50	*
MPFBA	251192.6	1.0834	397,395.00	1.0834	63	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	43053.37	2.8393	87,686.00	2.847483	49	50 - 150	-0.0082	+/-0.50	*
M6PFDA	365223.8	3.811283	599,399.00	3.811283	61	50 - 150	0.0000	+/-0.50	
M3PFBS	86352.96	1.911533	107,617.00	1.911533	80	50 - 150	0.0000	+/-0.50	
M7PFUnA	386878.6	3.954033	653,751.00	3.954033	59	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	161695.1	3.461417	130,903.00	3.4614	124	50 - 150	0.0000	+/-0.50	
M5PFPeA	259999	1.731383	341,369.00	1.731383	76	50 - 150	0.0000	+/-0.50	
M5PFHxA	528659.3	2.596983	694,531.00	2.596983	76	50 - 150	0.0000	+/-0.50	
M3PFHxS	77356.36	3.226417	106,214.00	3.2345	73	50 - 150	-0.0081	+/-0.50	
M4PFHpA	566951.2	3.195017	824,525.00	3.195017	69	50 - 150	0.0000	+/-0.50	
M8PFOA	566123.1	3.469917	847,028.00	3.469917	67	50 - 150	0.0000	+/-0.50	
M8PFOS	71821.95	3.66015	103,834.00	3.660133	69	50 - 150	0.0000	+/-0.50	
M9PFNA	408416.8	3.661183	682,902.00	3.661183	60	50 - 150	0.0000	+/-0.50	
MPFDoA	381535.9	4.08865	620,613.00	4.08865	61	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	128394.8	3.9615	182,266.00	3.9615	70	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	144843.4	3.889733	210,987.00	3.889733	69	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B319614-MSD1)			Lab File ID: B319614-MSD1.d			Analyzed: 10/26/22 09:29			
M8FOSA	178733.6	3.988567	275,634.00	3.980567	65	50 - 150	0.0080	+/-0.50	
M2-4:2FTS	226899.5	2.51325	247,939.00	2.51325	92	50 - 150	0.0000	+/-0.50	
M2PFTA	742226.8	4.329683	974,549.00	4.329683	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	172058.6	3.810767	96,313.00	3.810767	179	50 - 150	0.0000	+/-0.50	*
MPFBA	281634.2	1.0834	397,395.00	1.0834	71	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	42643.14	2.8393	87,686.00	2.847483	49	50 - 150	-0.0082	+/-0.50	*
M6PFDA	406919	3.811283	599,399.00	3.811283	68	50 - 150	0.0000	+/-0.50	
M3PFBS	91672.99	1.911533	107,617.00	1.911533	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	450594.7	3.954033	653,751.00	3.954033	69	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	178687.4	3.461417	130,903.00	3.4614	137	50 - 150	0.0000	+/-0.50	
M5PFPeA	267301.7	1.731383	341,369.00	1.731383	78	50 - 150	0.0000	+/-0.50	
M5PFHxA	555192.6	2.596983	694,531.00	2.596983	80	50 - 150	0.0000	+/-0.50	
M3PFHxS	81601.66	3.226417	106,214.00	3.2345	77	50 - 150	-0.0081	+/-0.50	
M4PFHpA	623903.1	3.195017	824,525.00	3.195017	76	50 - 150	0.0000	+/-0.50	
M8PFOA	613674.6	3.469917	847,028.00	3.469917	72	50 - 150	0.0000	+/-0.50	
M8PFOS	77673.52	3.66015	103,834.00	3.660133	75	50 - 150	0.0000	+/-0.50	
M9PFNA	454671.1	3.661183	682,902.00	3.661183	67	50 - 150	0.0000	+/-0.50	
MPFDoA	445425.2	4.08865	620,613.00	4.08865	72	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	162934.6	3.9615	182,266.00	3.9615	89	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	174947.2	3.889733	210,987.00	3.889733	83	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B319615-BLK1)			Lab File ID: B319615-BLK1.d			Analyzed: 10/26/22 16:08			
M8FOSA	232570.5	3.988567	275,634.00	3.988567	84	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	179109.4	2.496817	247,939.00	2.4886	72	50 - 150	0.0082	+/-0.50	
M2PFTA	854727.1	4.313416	974,549.00	4.32155	88	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	71265.08	3.8028	96,313.00	3.8028	74	50 - 150	0.0000	+/-0.50	
MPFBA	344486.4	1.075083	397,395.00	1.066783	87	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	66491.32	2.822933	87,686.00	2.822933	76	50 - 150	0.0000	+/-0.50	
M6PFDA	526690.1	3.803317	599,399.00	3.803317	88	50 - 150	0.0000	+/-0.50	
M3PFBS	96801.91	1.894967	107,617.00	1.894967	90	50 - 150	0.0000	+/-0.50	
M7PFUnA	528983.7	3.946033	653,751.00	3.946033	81	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	98611.03	3.453267	130,903.00	3.453267	75	50 - 150	0.0000	+/-0.50	
M5PFPeA	306452.2	1.714833	341,369.00	1.714833	90	50 - 150	0.0000	+/-0.50	
M5PFHxA	625629.3	2.58055	694,531.00	2.572333	90	50 - 150	0.0082	+/-0.50	
M3PFHxS	92445.72	3.218333	106,214.00	3.218333	87	50 - 150	0.0000	+/-0.50	
M4PFHpA	719043.5	3.186933	824,525.00	3.186933	87	50 - 150	0.0000	+/-0.50	
M8PFOA	716358	3.461933	847,028.00	3.461933	85	50 - 150	0.0000	+/-0.50	
M8PFOS	81187.1	3.65215	103,834.00	3.65215	78	50 - 150	0.0000	+/-0.50	
M9PFNA	575815.3	3.653183	682,902.00	3.6532	84	50 - 150	0.0000	+/-0.50	
MPFDoA	561077	4.08065	620,613.00	4.08065	90	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	160524.3	3.9535	182,266.00	3.9535	88	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	184621.5	3.873767	210,987.00	3.873767	88	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B319615-BS1) Lab File ID: B319615-BS1.d Analyzed: 10/26/22 16:00									
M8FOSA	247187.3	3.988567	275,634.00	3.988567	90	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	196760	2.496817	247,939.00	2.4886	79	50 - 150	0.0082	+/-0.50	
M2PFTA	929571.9	4.313416	974,549.00	4.32155	95	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	74812.14	3.8028	96,313.00	3.8028	78	50 - 150	0.0000	+/-0.50	
MPFBA	364424.8	1.075083	397,395.00	1.066783	92	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	78317.42	2.822933	87,686.00	2.822933	89	50 - 150	0.0000	+/-0.50	
M6PFDA	529879.1	3.803317	599,399.00	3.803317	88	50 - 150	0.0000	+/-0.50	
M3PFBS	103695.4	1.894967	107,617.00	1.894967	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	598041	3.946033	653,751.00	3.946033	91	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	102678.3	3.453267	130,903.00	3.453267	78	50 - 150	0.0000	+/-0.50	
M5PFPeA	322521.9	1.714833	341,369.00	1.714833	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	666868.3	2.58055	694,531.00	2.572333	96	50 - 150	0.0082	+/-0.50	
M3PFHxS	98437.45	3.218333	106,214.00	3.218333	93	50 - 150	0.0000	+/-0.50	
M4PFHpA	765445.2	3.186933	824,525.00	3.186933	93	50 - 150	0.0000	+/-0.50	
M8PFOA	745942.8	3.461933	847,028.00	3.461933	88	50 - 150	0.0000	+/-0.50	
M8PFOS	89355.63	3.65215	103,834.00	3.65215	86	50 - 150	0.0000	+/-0.50	
M9PFNA	586998.2	3.653183	682,902.00	3.6532	86	50 - 150	0.0000	+/-0.50	
MPFDoA	583074.9	4.08065	620,613.00	4.08065	94	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	162008.8	3.9535	182,266.00	3.9535	89	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	194942.6	3.873767	210,987.00	3.873767	92	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B319615-MS1)			Lab File ID: B319615-MS1.d			Analyzed: 10/26/22 16:15			
M8FOSA	245133.9	3.988567	275,634.00	3.988567	89	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	201887.5	2.4886	247,939.00	2.4886	81	50 - 150	0.0000	+/-0.50	
M2PFTA	903118.9	4.313416	974,549.00	4.32155	93	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	76984.4	3.8028	96,313.00	3.8028	80	50 - 150	0.0000	+/-0.50	
MPFBA	366655.1	1.075083	397,395.00	1.066783	92	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	79883.52	2.822933	87,686.00	2.822933	91	50 - 150	0.0000	+/-0.50	
M6PFDA	524314.1	3.803317	599,399.00	3.803317	87	50 - 150	0.0000	+/-0.50	
M3PFBS	104166.6	1.894967	107,617.00	1.894967	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	577121.2	3.946033	653,751.00	3.946033	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	101576.5	3.445283	130,903.00	3.453267	78	50 - 150	-0.0080	+/-0.50	
M5PFPeA	318733	1.714833	341,369.00	1.714833	93	50 - 150	0.0000	+/-0.50	
M5PFHxA	654448.9	2.572333	694,531.00	2.572333	94	50 - 150	0.0000	+/-0.50	
M3PFHxS	95597.2	3.218333	106,214.00	3.218333	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	761258.5	3.178867	824,525.00	3.186933	92	50 - 150	-0.0081	+/-0.50	
M8PFOA	720671.2	3.461933	847,028.00	3.461933	85	50 - 150	0.0000	+/-0.50	
M8PFOS	88332.98	3.65215	103,834.00	3.65215	85	50 - 150	0.0000	+/-0.50	
M9PFNA	569767.2	3.6532	682,902.00	3.6532	83	50 - 150	0.0000	+/-0.50	
MPFDoA	594586.1	4.08065	620,613.00	4.08065	96	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	156372.7	3.9535	182,266.00	3.9535	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	189662.5	3.873767	210,987.00	3.873767	90	50 - 150	0.0000	+/-0.50	

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INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B319615-MSD1)			Lab File ID: B319615-MSD1.d			Analyzed: 10/26/22 16:22			
M8FOSA	249541.5	3.988567	275,634.00	3.988567	91	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	206569.8	2.4886	247,939.00	2.4886	83	50 - 150	0.0000	+/-0.50	
M2PFTA	969452.8	4.313416	974,549.00	4.32155	99	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	78568.01	3.8028	96,313.00	3.8028	82	50 - 150	0.0000	+/-0.50	
MPFBA	374794.5	1.075083	397,395.00	1.066783	94	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	80376.8	2.822933	87,686.00	2.822933	92	50 - 150	0.0000	+/-0.50	
M6PFDA	536457.4	3.803317	599,399.00	3.803317	89	50 - 150	0.0000	+/-0.50	
M3PFBS	107086.6	1.894967	107,617.00	1.894967	100	50 - 150	0.0000	+/-0.50	
M7PFUnA	591809.9	3.946033	653,751.00	3.946033	91	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	104543.9	3.445283	130,903.00	3.453267	80	50 - 150	-0.0080	+/-0.50	
M5PFPeA	326303.7	1.714833	341,369.00	1.714833	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	668699.7	2.572333	694,531.00	2.572333	96	50 - 150	0.0000	+/-0.50	
M3PFHxS	96489.13	3.218333	106,214.00	3.218333	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	784478.6	3.178867	824,525.00	3.186933	95	50 - 150	-0.0081	+/-0.50	
M8PFOA	742734.4	3.461933	847,028.00	3.461933	88	50 - 150	0.0000	+/-0.50	
M8PFOS	87463.59	3.65215	103,834.00	3.65215	84	50 - 150	0.0000	+/-0.50	
M9PFNA	596070.8	3.6532	682,902.00	3.6532	87	50 - 150	0.0000	+/-0.50	
MPFDoA	610752.7	4.08065	620,613.00	4.08065	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	165329.3	3.9535	182,266.00	3.9535	91	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	194960.6	3.873767	210,987.00	3.873767	92	50 - 150	0.0000	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B320251-BLK1)			Lab File ID: B320251-BLK1.d			Analyzed: 10/22/22 07:28			
M8FOSA	197388.8	3.996567	328,138.00	3.996567	60	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	147768.3	2.4064	189,245.00	2.4064	78	50 - 150	0.0000	+/-0.50	
M2PFTA	613287.8	4.27305	1,030,059.00	4.27305	60	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	116593.7	3.76295	107,857.00	3.76295	108	50 - 150	0.0000	+/-0.50	
MPFBA	401708.4	1.04185	470,407.00	1.04185	85	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	95293.23	2.749283	121,363.00	2.7411	79	50 - 150	0.0082	+/-0.50	
M6PFDA	520504.9	3.763467	703,999.00	3.763483	74	50 - 150	0.0000	+/-0.50	
M3PFBS	105435.5	1.83695	128,529.00	1.83695	82	50 - 150	0.0000	+/-0.50	
M7PFUnA	473028.3	3.906067	697,439.00	3.906067	68	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	60809.22	3.41245	79,376.00	3.41245	77	50 - 150	0.0000	+/-0.50	
M5PFPeA	335702.8	1.656917	407,535.00	1.6652	82	50 - 150	-0.0083	+/-0.50	
M5PFHxA	637831.7	2.490217	794,423.00	2.490217	80	50 - 150	0.0000	+/-0.50	
M3PFHxS	98079.3	3.17765	129,092.00	3.169583	76	50 - 150	0.0081	+/-0.50	
M4PFHpA	731906.2	3.1304	955,392.00	3.1304	77	50 - 150	0.0000	+/-0.50	
M8PFOA	744384	3.421167	963,117.00	3.421167	77	50 - 150	0.0000	+/-0.50	
M8PFOS	85410.57	3.620217	119,440.00	3.620217	72	50 - 150	0.0000	+/-0.50	
M9PFNA	540467.4	3.613267	728,798.00	3.613267	74	50 - 150	0.0000	+/-0.50	
MPFDoA	417859.8	4.040683	640,609.00	4.040683	65	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	131654.1	3.913533	187,724.00	3.913533	70	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	163175.2	3.833783	221,800.00	3.84175	74	50 - 150	-0.0080	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B320251-BS1)			Lab File ID: B320251-BS1.d			Analyzed: 10/22/22 07:13			
M8FOSA	241111.8	3.996567	328,138.00	3.996567	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	167447.4	2.4146	189,245.00	2.4064	88	50 - 150	0.0082	+/-0.50	
M2PFTA	802241.4	4.27305	1,030,059.00	4.27305	78	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	137349.1	3.76295	107,857.00	3.76295	127	50 - 150	0.0000	+/-0.50	
MPFBA	487656.9	1.04185	470,407.00	1.04185	104	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	107511	2.749283	121,363.00	2.7411	89	50 - 150	0.0082	+/-0.50	
M6PFDA	661051	3.763467	703,999.00	3.763483	94	50 - 150	0.0000	+/-0.50	
M3PFBS	130504.7	1.83695	128,529.00	1.83695	102	50 - 150	0.0000	+/-0.50	
M7PFUnA	607408.5	3.906067	697,439.00	3.906067	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	78728.21	3.41245	79,376.00	3.41245	99	50 - 150	0.0000	+/-0.50	
M5PFPeA	409274.7	1.6652	407,535.00	1.6652	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	792256.2	2.498417	794,423.00	2.490217	100	50 - 150	0.0082	+/-0.50	
M3PFHxS	117551.4	3.177667	129,092.00	3.169583	91	50 - 150	0.0081	+/-0.50	
M4PFHpA	922283.3	3.138483	955,392.00	3.1304	97	50 - 150	0.0081	+/-0.50	
M8PFOA	868703.4	3.421167	963,117.00	3.421167	90	50 - 150	0.0000	+/-0.50	
M8PFOS	111666.5	3.620217	119,440.00	3.620217	93	50 - 150	0.0000	+/-0.50	
M9PFNA	660670.2	3.613267	728,798.00	3.613267	91	50 - 150	0.0000	+/-0.50	
MPFDoA	530006.1	4.032683	640,609.00	4.040683	83	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	168679.8	3.913533	187,724.00	3.913533	90	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	213591.9	3.833783	221,800.00	3.84175	96	50 - 150	-0.0080	+/-0.50	

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

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS Dup (B320251-BSD1) Lab File ID: B320251-BSD1.d Analyzed: 10/22/22 07:21									
M8FOSA	217275.4	3.996567	328,138.00	3.996567	66	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	163873.4	2.4146	189,245.00	2.4064	87	50 - 150	0.0082	+/-0.50	
M2PFTA	739695.7	4.27305	1,030,059.00	4.27305	72	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	137540.3	3.76295	107,857.00	3.76295	128	50 - 150	0.0000	+/-0.50	
MPFBA	452503.4	1.04185	470,407.00	1.04185	96	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	100111.2	2.749283	121,363.00	2.7411	82	50 - 150	0.0082	+/-0.50	
M6PFDA	596399.8	3.763467	703,999.00	3.763483	85	50 - 150	0.0000	+/-0.50	
M3PFBS	119005.5	1.83695	128,529.00	1.83695	93	50 - 150	0.0000	+/-0.50	
M7PFUnA	552400.9	3.906067	697,439.00	3.906067	79	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	68754.2	3.41245	79,376.00	3.41245	87	50 - 150	0.0000	+/-0.50	
M5PFPeA	382996.1	1.656917	407,535.00	1.6652	94	50 - 150	-0.0083	+/-0.50	
M5PFHxA	721130.3	2.490217	794,423.00	2.490217	91	50 - 150	0.0000	+/-0.50	
M3PFHxS	109362.1	3.177667	129,092.00	3.169583	85	50 - 150	0.0081	+/-0.50	
M4PFHpA	837127.4	3.1304	955,392.00	3.1304	88	50 - 150	0.0000	+/-0.50	
M8PFOA	833496.1	3.421167	963,117.00	3.421167	87	50 - 150	0.0000	+/-0.50	
M8PFOS	97484.41	3.620217	119,440.00	3.620217	82	50 - 150	0.0000	+/-0.50	
M9PFNA	614471.4	3.613267	728,798.00	3.613267	84	50 - 150	0.0000	+/-0.50	
MPFDoA	477358.6	4.040683	640,609.00	4.040683	75	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	144129.6	3.913533	187,724.00	3.913533	77	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	180422.9	3.833783	221,800.00	3.84175	81	50 - 150	-0.0080	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-454 PFAS in Water</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanefulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropetanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P
<i>SOP-466 PFAS in Soil</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P

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

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-466 PFAS in Soil</i>	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanefulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

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

Company Name: Barnstable County		7-Day <input type="checkbox"/> 10-Day <input type="checkbox"/>		Field Filtered <input type="checkbox"/>	
Address: 3195 Main St. PO Box 427		PFAS 15-Day (std) <input checked="" type="checkbox"/> Due Date:		Lab to Filter <input type="checkbox"/>	
Phone:		Rush Approval Required		Orthophosphate Samples	
Project Name: BFTA		1-Day <input type="checkbox"/> 3-Day <input type="checkbox"/>		Field Filtered <input type="checkbox"/>	
Project Number: Barnstable, MA		2-Day <input type="checkbox"/> 4-Day <input type="checkbox"/>		Lab to Filter <input type="checkbox"/>	
Project Manager: Roger Thibault		Data Delivery			
Con-Test Quote Name/Number: 6206		Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/>		PCB ONLY	
Invoice Recipient: Pricilla Ellis - pellis@barnstablecounty.org		Other: <input type="checkbox"/> CLP Like Data Pkg Required: <input type="checkbox"/>		SOXHLET	
Sampled By: Matt Alger		Email To: Pellis@BETA-inc.com		NON SOXHLET	
Fax To #:		Con-Test Work Order#		Beginning Date/Time	
Client Sample ID / Description		Ending Date/Time		Conc Code	
19 SS-115 (0-3")		10.3.22 10:30		U	
20 SS-115 (16-20")		10.3.22 10:35		U	
21 SS-117 (0-3")		10.3.22 10:50		U	
22 SS-117 (16-20")		10.3.22 10:55		U	
23 SS-118 (FM)		10.3.22 11:00		U	
24 SS-118 (0-3")		10.3.22 11:05		U	
25 SS-118 (16-20")		10.3.22 11:10		U	
26 SS-118 (5')		10.3.22 11:15		U	
27 SS-118 (10')		10.3.22 11:20		U	
28 SS-121 (0-3")		10.3.22 11:45		U	
Relinquished by (signature)		Date/Time: 10-11-22 9:00		Client Comments:	
Received by (signature)		Date/Time: 10-10-22 10:35			
Relinquished by (signature)		Date/Time: 10-11-22 15:30		Special Requirements	
Received by (signature)		Date/Time: 10-11-22 15:35		MA MCP Required <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		MCP Certification Form Required <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		CT RCP Required <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		RCP Certification Form Required <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		MA State DW Required <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		PWSID #	
Received by (signature)		Date/Time: 10-11-22 17:30		Project Entity	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		Government <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		Federal <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		City <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		Municipality <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		21 J <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		Brownfield <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		AWRA <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		School <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		MBTA <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		WRTA <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		Other <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		Chromatogram <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30		A/HA-LAP, LLC <input type="checkbox"/>	
Received by (signature)		Date/Time: 10-11-22 17:30		Other (please define) <input type="checkbox"/>	
Relinquished by (signature)		Date/Time: 10-11-22 17:30			
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39 Spruce St.
East Longmeadow, MA. 01028
P: 413-525-2332
F: 413-525-6405
www.pacelabs.com

Pace PEOPLE ADVANCING SCIENCE
Doc# 277 Rev 6 July 2022

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

Client Barnstable County
Received By [Signature] Date 10/11/22 Time 1730

How were the samples received? In Cooler T No Cooler On Ice T No Ice
Direct From Sample Ambient Melted Ice

Were samples within Temperature? Within 2-6°C T By Gun # 5 Actual Temp - 2.5
By Blank # Actual Temp -

Was Custody Seal In tact? NA Were Samples Tampered with? NA
Was COC Relinquished? T Does Chain Agree With Samples? F

Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all pertinent Information? Client? T Analysis? T Sampler Name?
Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified?
Are there Rushes? F Who was notified?
Are there Short Holds? F Who was notified?

Samples are received within holding time? T Is there enough Volume? T
Is there Headspace where applicable? NA MS/MSD? T
Proper Media/Containers Used? T splitting samples require? F
Were trip blanks receive F On COC? F

Do All Samples Have the proper pH? NA Acid Base

Vials	#	Containers:	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic	16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic	8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint	2oz Amb/Clear
DI-		Other Plastic	31	Other Glass	Encore
Thiosulfate-		SOC Kit		Plastic Bag	Frozen:
Sulfuric-		Perchlorate		Ziplock	

Unused Media

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

Comments:


Did not receive sample SS-118 (0.3u)

CERTIFICATE OF ANALYSIS

Roger Thibault
Beta Engineering
701 George Washington Hwy 2nd FL
Lincoln, RI 02865

RE: Former BCFTA (6206.02)
ESS Laboratory Work Order Number: 22J0290

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.



Laurel Stoddard
Laboratory Director

REVIEWED*By ESS Laboratory at 1:41 pm, Oct 20, 2022***Analytical Summary**

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA

ESS Laboratory Work Order: 22J0290

SAMPLE RECEIPT

The following samples were received on October 11, 2022 for the analyses specified on the enclosed Chain of Custody Record.

<u>Lab Number</u>	<u>Sample Name</u>	<u>Matrix</u>	<u>Analysis</u>
22J0290-01	SS-101 0-3in	Soil	6010C, 9060
22J0290-02	SS-102 0-3in	Soil	6010C, 9060
22J0290-03	SS-103 0-3in	Soil	6010C, 9060
22J0290-04	SS-104 0-3in	Soil	6010C, 9060
22J0290-05	SS-105 0-3in	Soil	6010C, 9060
22J0290-06	SS-106 0-3in	Soil	6010C, 9060
22J0290-07	SS-107 0-3in	Soil	6010C, 9060
22J0290-08	SS-108 0-3in	Soil	6010C, 9060
22J0290-09	SS-109 0-3in	Soil	6010C, 9060
22J0290-10	SS-110 0-3in	Soil	6010C, 9060
22J0290-11	SS-111 0-3in	Soil	6010C, 9060
22J0290-12	SS-113 0-3in	Soil	6010C, 9060
22J0290-13	SS-114 0-3in	Soil	6010C, 9060
22J0290-14	SS-115 0-3in	Soil	6010C, 9060
22J0290-15	SS-117 0-3in	Soil	6010C, 9060
22J0290-16	SS-118 0-3in	Soil	6010C, 9060
22J0290-17	SS-121 0-3in	Soil	6010C, 9060
22J0290-18	SS-122 0-3in	Soil	6010C, 9060



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA

ESS Laboratory Work Order: 22J0290

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

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[Definitions of Quality Control Parameters](#)

[Semivolatile Organics Internal Standard Information](#)

[Semivolatile Organics Surrogate Information](#)

[Volatile Organics Internal Standard Information](#)

[Volatile Organics Surrogate Information](#)

[EPH and VPH Alkane Lists](#)



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA

ESS Laboratory Work Order: 22J0290

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint
6010C - ICP
6020A - ICP MS
7010 - Graphite Furnace
7196A - Hexavalent Chromium
7470A - Aqueous Mercury
7471B - Solid Mercury
8011 - EDB/DBCP/TCP
8015C - GRO/DRO
8081B - Pesticides
8082A - PCB
8100M - TPH
8151A - Herbicides
8260B - VOA
8270D - SVOA
8270D SIM - SVOA Low Level
9014 - Cyanide
9038 - Sulfate
9040C - Aqueous pH
9045D - Solid pH (Corrosivity)
9050A - Specific Conductance
9056A - Anions (IC)
9060A - TOC
9095B - Paint Filter
MADEP 04-1.1 - EPH
MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5030C - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-101 0-3in
Date Sampled: 10/04/22 07:30
Percent Solids: 83

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-01
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	4040 (5.36)		6010C		1	CEV	10/14/22 20:19	2.25	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-101 0-3in
Date Sampled: 10/04/22 07:30
Percent Solids: 83

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-01
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	39100 (93.9)		9060		1	CCP	10/19/22 6:45	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-102 0-3in
Date Sampled: 10/04/22 07:35
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-02
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	4070 (5.41)		6010C		1	CEV	10/14/22 20:21	2.04	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-102 0-3in
Date Sampled: 10/04/22 07:35
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-02
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	5370 (96.1)		9060		1	CCP	10/19/22 7:36	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-103 0-3in
Date Sampled: 10/04/22 07:40
Percent Solids: 95

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-03
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	9360 (4.80)		6010C		1	CEV	10/14/22 20:23	2.2	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-103 0-3in
Date Sampled: 10/04/22 07:40
Percent Solids: 95

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-03
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	2120 (95.8)		9060		1	CCP	10/19/22 7:52	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-104 0-3in
Date Sampled: 10/04/22 07:45
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-04
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	5550 (5.22)		6010C		1	CEV	10/14/22 20:33	2.1	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-104 0-3in
Date Sampled: 10/04/22 07:45
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-04
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	6980 (96.1)		9060		1	CCP	10/19/22 8:53	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-105 0-3in
Date Sampled: 10/04/22 07:50
Percent Solids: 95

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-05
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	4560 (5.15)		6010C		1	CEV	10/14/22 20:35	2.05	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-105 0-3in
Date Sampled: 10/04/22 07:50
Percent Solids: 95

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-05
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	5020 (94.3)		9060		1	CCP	10/19/22 9:09	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-106 0-3in
Date Sampled: 10/04/22 07:55
Percent Solids: 94

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-06
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	3450 (4.41)		6010C		1	CEV	10/14/22 20:37	2.42	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-106 0-3in
Date Sampled: 10/04/22 07:55
Percent Solids: 94

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-06
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	7080 (97.0)		9060		1	CCP	10/19/22 9:26	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-107 0-3in
Date Sampled: 10/04/22 08:00
Percent Solids: 93

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-07
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	3670 (5.04)		6010C		1	CEV	10/14/22 20:39	2.14	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-107 0-3in
Date Sampled: 10/04/22 08:00
Percent Solids: 93

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-07
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	7470 (93.8)		9060		1	CCP	10/19/22 9:42	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-108 0-3in
Date Sampled: 10/04/22 08:05
Percent Solids: 93

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-08
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	4340 (4.24)		6010C		1	CEV	10/14/22 20:41	2.54	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-108 0-3in
Date Sampled: 10/04/22 08:05
Percent Solids: 93

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-08
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	4830 (94.6)		9060		1	CCP	10/19/22 10:15	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-109 0-3in
Date Sampled: 10/03/22 08:30
Percent Solids: 90

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-09
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	6270 (4.64)		6010C		1	CEV	10/14/22 20:43	2.4	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-109 0-3in
Date Sampled: 10/03/22 08:30
Percent Solids: 90

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-09
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	17900 (96.9)		9060		1	CCP	10/19/22 11:05	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-110 0-3in
Date Sampled: 10/03/22 08:35
Percent Solids: 84

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-10
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	3960 (5.95)		6010C		1	CEV	10/14/22 20:45	2.01	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-110 0-3in
Date Sampled: 10/03/22 08:35
Percent Solids: 84

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-10
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	13600 (97.8)		9060		1	CCP	10/19/22 11:22	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-111 0-3in
Date Sampled: 10/03/22 08:40
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-11
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	1900 (4.73)		6010C		1	CEV	10/14/22 20:47	2.31	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-111 0-3in
Date Sampled: 10/03/22 08:40
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-11
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	13200 (95.0)		9060		1	CCP	10/19/22 11:38	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-113 0-3in
Date Sampled: 10/03/22 08:45
Percent Solids: 92

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-12
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	4300 (5.17)		6010C		1	CEV	10/14/22 20:49	2.11	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-113 0-3in
Date Sampled: 10/03/22 08:45
Percent Solids: 92

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-12
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	6350 (96.2)		9060		1	CCP	10/19/22 11:55	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-114 0-3in
Date Sampled: 10/03/22 08:50
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-13
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	4950 (5.46)		6010C		1	CEV	10/14/22 20:58	2.02	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-114 0-3in
Date Sampled: 10/03/22 08:50
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-13
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	5810 (98.4)		9060		1	CCP	10/19/22 12:12	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-115 0-3in
Date Sampled: 10/03/22 08:55
Percent Solids: 90

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-14
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	3110 (4.59)		6010C		1	CEV	10/14/22 21:00	2.43	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-115 0-3in
Date Sampled: 10/03/22 08:55
Percent Solids: 90

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-14
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	16200 (93.1)		9060		1	CCP	10/19/22 13:17	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-117 0-3in
Date Sampled: 10/03/22 09:00
Percent Solids: 97

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-15
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	14000 (4.43)		6010C		1	CEV	10/14/22 21:02	2.33	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-117 0-3in
Date Sampled: 10/03/22 09:00
Percent Solids: 97

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-15
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	12400 (96.1)		9060		1	CCP	10/19/22 13:34	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-118 0-3in
Date Sampled: 10/03/22 09:05
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-16
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	5440 (4.96)		6010C		1	CEV	10/14/22 21:04	2.21	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-118 0-3in
Date Sampled: 10/03/22 09:05
Percent Solids: 91

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-16
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	5310 (98.3)		9060		1	CCP	10/19/22 13:51	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-121 0-3in
Date Sampled: 10/03/22 09:20
Percent Solids: 89

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-17
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	5090 (5.06)		6010C		1	CEV	10/14/22 21:06	2.23	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-121 0-3in
Date Sampled: 10/03/22 09:20
Percent Solids: 89

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-17
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	10200 (92.8)		9060		1	CCP	10/19/22 16:04	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-122 0-3in
Date Sampled: 10/03/22 09:25
Percent Solids: 94

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-18
Sample Matrix: Soil
Units: mg/kg dry

Extraction Method: 3050B

Total Metals

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>I/V</u>	<u>F/V</u>	<u>Batch</u>
Iron	3170 (4.45)		6010C		1	CEV	10/14/22 21:08	2.38	100	DJ21420



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA
Client Sample ID: SS-122 0-3in
Date Sampled: 10/03/22 09:25
Percent Solids: 94

ESS Laboratory Work Order: 22J0290
ESS Laboratory Sample ID: 22J0290-18
Sample Matrix: Soil

Classical Chemistry

<u>Analyte</u>	<u>Results (MRL)</u>	<u>MDL</u>	<u>Method</u>	<u>Limit</u>	<u>DF</u>	<u>Analyst</u>	<u>Analyzed</u>	<u>Units</u>	<u>Batch</u>
Total Organic Carbon (Average)	9200 (94.1)		9060		1	CCP	10/19/22 14:24	mg/kg dry	[CALC]



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA

ESS Laboratory Work Order: 22J0290

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
---------	--------	-----	-------	-------------	---------------	------	-------------	-----	-----------	-----------

Total Metals

Batch DJ21420 - 30508

Blank

Iron	ND	5.00	mg/kg wet							
------	----	------	-----------	--	--	--	--	--	--	--

LCS

Iron	5300	14.5	mg/kg wet	5752		92	80-120			
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LCS Dup

Iron	5060	14.1	mg/kg wet	5752		88	80-120	5	20	
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Classical Chemistry

Batch DJ21371 - General Preparation

Blank

Total Organic Carbon (1)	ND	100	mg/kg							
Total Organic Carbon (2)	ND	100	mg/kg							

LCS

Total Organic Carbon (1)	9430	100	mg/kg	10000		94	80-120			
Total Organic Carbon (2)	9620	100	mg/kg	10000		96	80-120			

LCS Dup

Total Organic Carbon (1)	9520	100	mg/kg	10000		95	80-120	0.9	25	
Total Organic Carbon (2)	9530	100	mg/kg	10000		95	80-120	1	25	



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA

ESS Laboratory Work Order: 22J0290

Notes and Definitions

U	Analyte included in the analysis, but not detected
ND	Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
LOD	Limit of Detection
LOQ	Limit of Quantitation
DL	Detection Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.
NR	No Recovery
[CALC]	Calculated Analyte
SUB	Subcontracted analysis; see attached report
RL	Reporting Limit
EDL	Estimated Detection Limit
MF	Membrane Filtration
MPN	Most Probable Number
TNTC	Too numerous to Count
CFU	Colony Forming Units



CERTIFICATE OF ANALYSIS

Client Name: Beta Engineering
Client Project ID: Former BCFTA

ESS Laboratory Work Order: 22J0290

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179

<http://www.health.ri.gov/find/labs/analytical/ESS.pdf>

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750

http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutOfStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002

<http://www.maine.gov/dhhs/meedc/environmental-health/dwp/partners/labCert.shtml>

Massachusetts Potable and Non Potable Water: M-RI002

<http://public.dep.state.ma.us/Labcert/Labcert.aspx>

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424

<http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm>

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313

<http://www.wadsworth.org/labcert/elap/comm.html>

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006

http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

Pennsylvania: 68-01752

<http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx>

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Beta Engineering - ML/TB

Shipped/Delivered Via: ESS Courier

ESS Project ID: 22J0290
 Date Received: 10/11/2022
 Project Due Date: 10/18/2022
 Days for Project: 5 Day

1. Air bill manifest present? ☐ No
 Air No.: NA
2. Were custody seals present? ☐ No
3. Is radiation count <100 CPM? ☐ Yes
4. Is a Cooler Present? ☐ Yes
 Temp: 2.3 Iced with: Ice
5. Was COC signed and dated by client? ☐ Yes

6. Does COC match bottles? ☐ Yes
7. Is COC complete and correct? ☐ Yes
8. Were samples received intact? ☐ Yes
9. Were labs informed about short holds & rushes? Yes / No / NA
10. Were any analyses received outside of hold time? Yes / No

11. Any Subcontracting needed? Yes / No
 ESS Sample IDs: _____
 Analysis: _____
 TAT: _____

12. Were VOAs received? Yes / No
 a. Air bubbles in aqueous VOAs? Yes / No
 b. Does methanol cover soil completely? Yes / No / NA

13. Are the samples properly preserved? Yes / No

- a. If metals preserved upon receipt:
 b. Low Level VOA vials frozen:

Date: _____ Time: _____ By/Acid Lot#: _____
 Date: _____ Time: _____ By: _____

Sample Receiving Notes:

14. Was there a need to contact Project Manager? Yes / No

- a. Was there a need to contact the client? Yes / No

Who was contacted? _____ Date: _____ Time: _____ By: _____

Resolution: _____

Sample Number	Container ID	Proper Container	Air Bubbles Present	Sufficient Volume	Container Type	Preservative	Record pH (Cyanide and 608 Pesticides)
1	351155	Yes	N/A	Yes	4 oz. Jar	NP	
2	351156	Yes	N/A	Yes	4 oz. Jar	NP	
3	351157	Yes	N/A	Yes	4 oz. Jar	NP	
4	351158	Yes	N/A	Yes	4 oz. Jar	NP	
5	351159	Yes	N/A	Yes	4 oz. Jar	NP	
6	351160	Yes	N/A	Yes	4 oz. Jar	NP	
7	351161	Yes	N/A	Yes	4 oz. Jar	NP	
8	351162	Yes	N/A	Yes	4 oz. Jar	NP	
9	351163	Yes	N/A	Yes	4 oz. Jar	NP	
10	351164	Yes	N/A	Yes	4 oz. Jar	NP	
11	351165	Yes	N/A	Yes	4 oz. Jar	NP	
12	351166	Yes	N/A	Yes	4 oz. Jar	NP	
13	351167	Yes	N/A	Yes	4 oz. Jar	NP	
14	351168	Yes	N/A	Yes	4 oz. Jar	NP	
15	351169	Yes	N/A	Yes	4 oz. Jar	NP	
16	351170	Yes	N/A	Yes	4 oz. Jar	NP	
17	351171	Yes	N/A	Yes	4 oz. Jar	NP	

ESS Laboratory Sample and Cooler Receipt Checklist

Client: Beta Engineering - ML/TB

ESS Project ID: 22J0290

Date Received: 10/11/2022

18 351172 Yes N/A Yes 4 oz. Jar

NP

2nd Review

Were all containers scanned into storage/lab?

Are barcode labels on correct containers?

Are all Flashpoint stickers attached/container ID # circled?

Are all Hex Chrome stickers attached?

Are all QC stickers attached?

Are VOA stickers attached if bubbles noted?

Initials

TD

Yes / No

Yes / No / NA

Yes / No / NA

Yes / No / NA

Yes / No / NA

Completed

By:

[Signature]

Date & Time:

10/11/22

1824

Reviewed

By:

Date & Time:

10/11/22

2025



ESS Lab # <u>2250290</u>	Page <u>1</u> of <u>3</u>
ELECTRONIC DELIVERABLES (Final Reports are PDF)	
<input type="checkbox"/> Limit Checker	<input type="checkbox"/> State Forms
<input type="checkbox"/> Excel	<input type="checkbox"/> State Upload
<input type="checkbox"/> CLP-Like Package	<input type="checkbox"/> Other (Specify) →
	<input type="checkbox"/> EQuIS
	<input type="checkbox"/> Enviro Data

PROJECT INFORMATION

Client:	BETA Group, Inc.
Address:	701 George Washington Highway Lincoln, RI 02865
Phone:	401.333.2382
Email Distribution List:	Rthibault@BETA-inc.com; Coien@BETA-inc.com

Project Name:	Former BCFTA	Client acknowledges that sampling is compliant with all EPA / State regulatory programs
Project Location:	Barnstable	
Project Number:	6206.02	
Project Manager:	Roger Thibault	
Bill to:	BETA	
PO#:		
Quote#:		

REQUESTED ANALYSES

Address: 701 George Washington Highway Lincoln, RI 02865			Project Name: Former BCFTA			Client acknowledges that sampling is compliant with all EPA / State regulatory programs	Total Organic Carbon	Total Iron																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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Chain needs to be filled out neatly and completely for on time delivery.

Laboratory Use Only




Comments: * Please specify "Other" preservative and containers types in this space

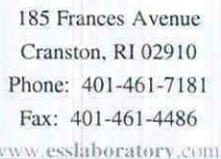
Cooler Temperature ($^{\circ}\text{C}$): $\frac{2.3}{1.9}$

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration

☐ Lab Filter

Relinquished by (Signature)				Date	Time	Received by (Signature)		Relinquished by (Signature)		Date	Time	Received by (Signature)	
				10-4-22	16:00	Lincoln Fridge		Fridge		10/11/18	10:09	 10/11/18	
Relinquished by (Signature)				Date	Time	Received by (Signature)		Relinquished by (Signature)		Date	Time	Received by (Signature)	
				10/11/18	17:55	Taylor Daur							



ESS Lab # 7270290 Page 2 of 3

ELECTRONIC DELIVERABLES (Final Reports are PDF)		
<input type="checkbox"/> Limit Checker	<input type="checkbox"/> State Forms	<input type="checkbox"/> EQuIS
<input type="checkbox"/> Excel	<input type="checkbox"/> State Upload	<input type="checkbox"/> Enviro Data
<input type="checkbox"/> CLP-Like Package	<input type="checkbox"/> Other (Specify) →	

PROJECT INFORMATION

REQUESTED ANALYSES

Client:	BETA Group, Inc.
Address:	701 George Washington Highway Lincoln, RI 02865
Phone:	401.333.2382
Email Distribution List:	Rthibault@BETA-inc.com; Cojen@BETA-inc.com

Project Name:	Former BCFTA	Client acknowledges that sampling is compliant with all EPA / State regulatory programs
Project Location:	Barnstable	
Project Number:	6206.02	
Project Manager:	Roger Thibault	
Bill to:	BETA	
PO#:		
Quote#:		

Client acknowledges that sampling is compliant with all EPA / State regulatory programs	
---	--

[illegible]

Chain needs to be filled out neatly and completely for on time delivery.



Laboratory Use Only

Comments: * Please specify "Other" preservative and containers types in this space

All samples submitted are subject to ESS Laboratory's payment terms and conditions.

Dissolved Filtration

Cooler Temperature (°C): 2.3
10☐ Lab Filter

Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	10-4-22	16:00	Lincoln Fridge	Fridge	10/11/12	10:05	 10/11/12
Relinquished by (Signature)	Date	Time	Received by (Signature)	Relinquished by (Signature)	Date	Time	Received by (Signature)
	10/11/12	17:55					



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/29
Report #: R7274347
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2N3179

Received: 2022/08/17, 12:05

Sample Matrix: Water
Samples Received: 7

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Low level PFOS and PFOA by SPE/LCMS (1)	7	2022/08/25	2022/08/27	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Report Date: 2022/08/29
Report #: R7274347
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2N3179

Received: 2022/08/17, 12:05

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TLV435	TLV436	TLV437	TLV438	TLV439	TLV440			
Sampling Date		2022/08/11 11:00	2022/08/11 11:30	2022/08/11 14:30	2022/08/11 15:00	2022/08/12 09:30	2022/08/12 10:00			
COC Number		na	na	na	na	na	na			
	UNITS	GWS-1-S	GWS-1-D	GWS-2-S	GWS-2-D	GWS-3-S	GWS-3-D	RDL	MDL	QC Batch
Perfluorinated Compounds										
Perfluorobutanoic acid (PFBA)	ng/L	0.74	1.4	<0.67	2.0	<0.67	<0.67	2.0	0.67	8187729
Perfluoropentanoic acid (PFPeA)	ng/L	<0.52	<0.52	0.76	1.5	2.1	<0.52	2.0	0.52	8187729
Perfluorohexanoic acid (PFHxA)	ng/L	<0.70	<0.70	<0.70	<0.70	1.1	2.6	2.0	0.70	8187729
Perfluoroheptanoic acid (PFHpA)	ng/L	<0.51	<0.51	<0.51	<0.51	<0.51	<0.51	2.0	0.51	8187729
Perfluorooctanoic acid (PFOA)	ng/L	1.3	0.70	0.55	0.66	0.84	1.0	2.0	0.49	8187729
Perfluorononanoic acid (PFNA)	ng/L	<0.80	<0.80	<0.80	<0.80	<0.80	<0.80	2.0	0.80	8187729
Perfluorodecanoic acid (PFDA)	ng/L	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	2.0	0.64	8187729
Perfluoroundecanoic acid (PFUnA)	ng/L	<0.77	<0.77	<0.77	<0.77	<0.77	<0.77	2.0	0.77	8187729
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	2.0	0.59	8187729
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	<0.48	<0.48	<0.48	<0.48	<0.48	2.0	0.48	8187729
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	<0.37	<0.37	<0.37	<0.37	<0.37	2.0	0.37	8187729
Perfluorobutanesulfonic acid (PFBS)	ng/L	<0.47	<0.47	<0.47	0.65	<0.47	<0.47	2.0	0.47	8187729
Perfluoropentanesulfonic acid (PFPeS)	ng/L	<0.73	<0.73	<0.73	<0.73	<0.73	<0.73	2.0	0.73	8187729
Perfluorohexanesulfonic acid (PFHxS)	ng/L	1.0	1.1	0.86	4.5	0.75	1.2	2.0	0.53	8187729
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	<0.57	<0.57	<0.57	<0.57	<0.57	<0.57	2.0	0.57	8187729
Perfluorooctanesulfonic acid (PFOS)	ng/L	<0.43	3.1	<0.43	4.5	<0.43	1.7	2.0	0.43	8187729
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.64	<0.64	<0.64	<0.64	<0.64	<0.64	2.0	0.64	8187729
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	<0.53	<0.53	<0.53	<0.53	<0.53	2.0	0.53	8187729
Perfluorooctane Sulfonamide (PFOSA)	ng/L	<0.81	<0.81	<0.81	<0.81	<0.81	<0.81	4.0	0.81	8187729
6:2 Fluorotelomer sulfonic acid	ng/L	<0.59	<0.59	<0.59	<0.59	<0.59	<0.59	4.0	0.59	8187729
8:2 Fluorotelomer sulfonic acid	ng/L	<0.75	<0.75	<0.75	<0.75	<0.75	<0.75	4.0	0.75	8187729
Surrogate Recovery (%)										
13C2-6:2-Fluorotelomersulfonic Acid	%	71	91	74	91	70	80	N/A	N/A	8187729
13C2-8:2-Fluorotelomersulfonic Acid	%	108	119	102	119	109	100	N/A	N/A	8187729
13C2-Perfluorodecanoic acid	%	100	111	99	109	102	101	N/A	N/A	8187729
13C2-Perfluorododecanoic acid	%	93	103	93	101	95	92	N/A	N/A	8187729
13C2-Perfluorohexanoic acid	%	89	107	84	99	90	99	N/A	N/A	8187729
13C2-perfluorotetradecanoic acid	%	58	77	75	86	68	70	N/A	N/A	8187729
13C2-Perfluoroundecanoic acid	%	99	106	95	105	101	96	N/A	N/A	8187729
13C3-Perfluorobutanesulfonic acid	%	94	109	88	102	95	102	N/A	N/A	8187729
13C4-Perfluorobutanoic acid	%	103	117	100	114	105	103	N/A	N/A	8187729
13C4-Perfluoroheptanoic acid	%	95	113	92	106	95	102	N/A	N/A	8187729
13C4-Perfluorooctanesulfonic acid	%	100	116	101	112	104	107	N/A	N/A	8187729
RDL = Reportable Detection Limit										
QC Batch = Quality Control Batch										
N/A = Not Applicable										



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TLV435	TLV436	TLV437	TLV438	TLV439	TLV440			
Sampling Date		2022/08/11 11:00	2022/08/11 11:30	2022/08/11 14:30	2022/08/11 15:00	2022/08/12 09:30	2022/08/12 10:00			
COC Number		na	na	na	na	na	na			
	UNITS	GWS-1-S	GWS-1-D	GWS-2-S	GWS-2-D	GWS-3-S	GWS-3-D	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	94	114	94	108	96	102	N/A	N/A	8187729
13C5-Perfluorononanoic acid	%	101	115	98	111	100	104	N/A	N/A	8187729
13C5-Perfluoropentanoic acid	%	83	104	76	92	85	100	N/A	N/A	8187729
13C8-Perfluorooctane Sulfonamide	%	82	85	75	92	74	62	N/A	N/A	8187729
18O2-Perfluorohexanesulfonic acid	%	100	116	96	112	103	106	N/A	N/A	8187729
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable										



RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TLV441			
Sampling Date		2022/08/11 12:00			
COC Number		na			
	UNITS	EQUIPMENT BLANK	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ng/L	<0.67	2.0	0.67	8187729
Perfluoropentanoic acid (PFPeA)	ng/L	0.88	2.0	0.52	8187729
Perfluorohexanoic acid (PFHxA)	ng/L	1.3	2.0	0.70	8187729
Perfluoroheptanoic acid (PFHpA)	ng/L	<0.51	2.0	0.51	8187729
Perfluorooctanoic acid (PFOA)	ng/L	<0.49	2.0	0.49	8187729
Perfluorononanoic acid (PFNA)	ng/L	<0.80	2.0	0.80	8187729
Perfluorodecanoic acid (PFDA)	ng/L	<0.64	2.0	0.64	8187729
Perfluoroundecanoic acid (PFUnA)	ng/L	<0.77	2.0	0.77	8187729
Perfluorododecanoic acid (PFDoA)	ng/L	<0.59	2.0	0.59	8187729
Perfluorotridecanoic acid (PFTRDA)	ng/L	<0.48	2.0	0.48	8187729
Perfluorotetradecanoic acid (PFTEDA)	ng/L	<0.37	2.0	0.37	8187729
Perfluorobutanesulfonic acid (PFBS)	ng/L	<0.47	2.0	0.47	8187729
Perfluoropentanesulfonic acid (PFPeS)	ng/L	<0.73	2.0	0.73	8187729
Perfluorohexanesulfonic acid (PFHxS)	ng/L	<0.53	2.0	0.53	8187729
Perfluoroheptanesulfonic acid (PFHpS)	ng/L	<0.57	2.0	0.57	8187729
Perfluorooctanesulfonic acid (PFOS)	ng/L	<0.43	2.0	0.43	8187729
Perfluorononanesulfonic acid (PFNS)	ng/L	<0.64	2.0	0.64	8187729
Perfluorodecanesulfonic acid (PFDS)	ng/L	<0.53	2.0	0.53	8187729
Perfluorooctane Sulfonamide (PFOSA)	ng/L	<0.81	4.0	0.81	8187729
6:2 Fluorotelomer sulfonic acid	ng/L	<0.59	4.0	0.59	8187729
8:2 Fluorotelomer sulfonic acid	ng/L	<0.75	4.0	0.75	8187729
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	97	N/A	N/A	8187729
13C2-8:2-Fluorotelomersulfonic Acid	%	95	N/A	N/A	8187729
13C2-Perfluorodecanoic acid	%	78	N/A	N/A	8187729
13C2-Perfluorododecanoic acid	%	99	N/A	N/A	8187729
13C2-Perfluorohexanoic acid	%	105	N/A	N/A	8187729
13C2-perfluorotetradecanoic acid	%	97	N/A	N/A	8187729
13C2-Perfluoroundecanoic acid	%	105	N/A	N/A	8187729
13C3-Perfluorobutanesulfonic acid	%	103	N/A	N/A	8187729
13C4-Perfluorobutanoic acid	%	106	N/A	N/A	8187729
13C4-Perfluoroheptanoic acid	%	108	N/A	N/A	8187729
13C4-Perfluorooctanesulfonic acid	%	87	N/A	N/A	8187729
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					
N/A = Not Applicable					



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

RESULTS OF ANALYSES OF WATER

Bureau Veritas ID		TLV441			
Sampling Date		2022/08/11 12:00			
COC Number		na			
	UNITS	EQUIPMENT BLANK	RDL	MDL	QC Batch
13C4-Perfluorooctanoic acid	%	92	N/A	N/A	8187729
13C5-Perfluorononanoic acid	%	79	N/A	N/A	8187729
13C5-Perfluoropentanoic acid	%	103	N/A	N/A	8187729
13C8-Perfluorooctane Sulfonamide	%	81	N/A	N/A	8187729
18O2-Perfluorohexanesulfonic acid	%	110	N/A	N/A	8187729
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

TEST SUMMARY

Bureau Veritas ID: TLV435
Sample ID: GWS-1-S
Matrix: Water

Collected: 2022/08/11
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan

Bureau Veritas ID: TLV436
Sample ID: GWS-1-D
Matrix: Water

Collected: 2022/08/11
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan

Bureau Veritas ID: TLV437
Sample ID: GWS-2-S
Matrix: Water

Collected: 2022/08/11
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan

Bureau Veritas ID: TLV438
Sample ID: GWS-2-D
Matrix: Water

Collected: 2022/08/11
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan

Bureau Veritas ID: TLV439
Sample ID: GWS-3-S
Matrix: Water

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan

Bureau Veritas ID: TLV440
Sample ID: GWS-3-D
Matrix: Water

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan

Bureau Veritas ID: TLV441
Sample ID: EQUIPMENT BLANK
Matrix: Water

Collected: 2022/08/11
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Low level PFOS and PFOA by SPE/LCMS	LCMS	8187729	2022/08/25	2022/08/27	Adnan Khan



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

GENERAL COMMENTS

Results relate only to the items tested.



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8187729	AKH	Spiked Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/27		96	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/27		98	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/27		100	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/27		88	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/27		105	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/27		86	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/27		93	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/27		105	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/27		106	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/27		104	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/27		102	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/27		104	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/27		106	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/27		106	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/27		43	%	20 - 130
				18O2-Perfluorohexanesulfonic acid	2022/08/27		105	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/27		102	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/27		102	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/27		103	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/27		103	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/27		102	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/27		101	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/27		102	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/27		106	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/27		109	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/27		104	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/27		109	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/27		103	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/08/27		102	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/27		103	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/27		99	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/27		103	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/08/27		93	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/27		96	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/27		104	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/27		100	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/27		108	%	70 - 130
8187729	AKH	Spiked Blank DUP		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/27		94	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/27		107	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/27		106	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/27		97	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/27		110	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/27		93	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/27		100	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/27		110	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/27		111	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/27		112	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/27		109	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/27		112	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/27		111	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/27		111	%	50 - 150



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8187729	AKH	RPD		13C8-Perfluorooctane Sulfonamide	2022/08/27		52	%	20 - 130
				18O2-Perfluorohexanesulfonic acid	2022/08/27		111	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/27		102	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/27		102	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/27		103	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/27		100	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/27		101	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/27		102	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/27		100	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/27		105	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/27		104	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/27		103	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/27		106	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/27		104	%	70 - 130
				Perfluoropentanesulfonic acid PFPes	2022/08/27		102	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/27		101	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/27		95	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/27		101	%	70 - 130
				Perfluorononanesulfonic acid (PFNS)	2022/08/27		91	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/27		95	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/27		96	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/27		98	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/27		102	%	70 - 130
				Perfluorobutanoic acid (PFBA)	2022/08/27	0.38		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/27	0.64		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/27	0.098		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/27	3.0		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/27	1.9		%	30
				Perfluorononanoic acid (PFNA)	2022/08/27	0.13		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/27	2.4		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/27	1.1		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/27	5.0		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/27	0.83		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/27	2.7		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/27	0.60		%	30
				Perfluoropentanesulfonic acid PFPes	2022/08/27	0.27		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/27	1.4		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/27	4.2		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/27	1.6		%	30
				Perfluorononanesulfonic acid (PFNS)	2022/08/27	2.2		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/27	0.98		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/27	7.4		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/27	1.9		%	30
				8:2 Fluorotelomer sulfonic acid	2022/08/27	5.4		%	30
8187729	AKH	Method Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/27		99	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/27		99	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/27		96	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/27		86	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/27		106	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/27		81	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/27		89	%	50 - 150



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
			13C3-Perfluorobutanesulfonic acid	2022/08/27		104	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/08/27		106	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/08/27		108	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/08/27		100	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/08/27		105	%	50 - 150
			13C5-Perfluorononanoic acid	2022/08/27		103	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/08/27		107	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/08/27		37	%	20 - 130
			18O2-Perfluorohexanesulfonic acid	2022/08/27		104	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/08/27	<0.67		ng/L	
			Perfluoropentanoic acid (PFPeA)	2022/08/27	<0.52		ng/L	
			Perfluorohexanoic acid (PFHxA)	2022/08/27	<0.70		ng/L	
			Perfluoroheptanoic acid (PFHpA)	2022/08/27	<0.51		ng/L	
			Perfluorooctanoic acid (PFOA)	2022/08/27	<0.49		ng/L	
			Perfluorononanoic acid (PFNA)	2022/08/27	<0.80		ng/L	
			Perfluorodecanoic acid (PFDA)	2022/08/27	<0.64		ng/L	
			Perfluoroundecanoic acid (PFUnA)	2022/08/27	<0.77		ng/L	
			Perfluorododecanoic acid (PFDoA)	2022/08/27	<0.59		ng/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/08/27	<0.48		ng/L	
			Perfluorotetradecanoic acid (PFTEDA)	2022/08/27	<0.37		ng/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/08/27	<0.47		ng/L	
			Perfluoropentanesulfonic acid (PFPeS)	2022/08/27	<0.73		ng/L	
			Perfluorohexanesulfonic acid (PFHxS)	2022/08/27	<0.53		ng/L	
			Perfluoroheptanesulfonic acid (PFHpS)	2022/08/27	<0.57		ng/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/08/27	<0.43		ng/L	
			Perfluorononanesulfonic acid (PFNS)	2022/08/27	<0.64		ng/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/08/27	<0.53		ng/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/08/27	<0.81		ng/L	
			6:2 Fluorotelomer sulfonic acid	2022/08/27	<0.59		ng/L	
			8:2 Fluorotelomer sulfonic acid	2022/08/27	<0.75		ng/L	

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.



6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

ENV COC - 00014v3

Page 1 of 1

Page 1 of 1



Bureau Veritas Job #: C2N3179
Report Date: 2022/08/29

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Colm McNamara", written over a horizontal line.

Colm McNamara, Senior Analyst, Liquid Chromatography

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

November 21, 2022

Priscilla Ellis
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22J1461

Enclosed are results of analyses for samples as received by the laboratory on October 11, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/21/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J1461

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
GWS-4-S	22J1461-01	Ground Water		SOP-454 PFAS	
GWS-4-D	22J1461-02	Ground Water		SOP-454 PFAS	
GWS-5	22J1461-03	Ground Water		SOP-454 PFAS	
GWS-6-S	22J1461-04	Ground Water		SOP-454 PFAS	
GWS-6-D	22J1461-05	Ground Water		SOP-454 PFAS	
GWS-7-S	22J1461-06	Ground Water		SOP-454 PFAS	
GWS-7-D	22J1461-07	Ground Water		SOP-454 PFAS	
GWS-8-S	22J1461-08	Ground Water		SOP-454 PFAS	
GWS-8-D	22J1461-09	Ground Water		SOP-454 PFAS	
GWS-9-S	22J1461-10	Ground Water		SOP-454 PFAS	
GWS-9-D	22J1461-11	Ground Water		SOP-454 PFAS	
GWS-10-S	22J1461-12	Ground Water		SOP-454 PFAS	
GWS-10-D	22J1461-13	Ground Water		SOP-454 PFAS	
GWS-11-S	22J1461-14	Ground Water		SOP-454 PFAS	
GWS-11-D	22J1461-15	Ground Water		SOP-454 PFAS	
EB-2	22J1461-16	Ground Water		SOP-454 PFAS	
EB-3	22J1461-17	Ground Water		SOP-454 PFAS	

CASE NARRATIVE SUMMARY

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

SOP-454 PFAS**Qualifications:****L-01**

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B320800-BS1

MS-22

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.

Analyte & Samples(s) Qualified:**N-EtFOSAA**

B320800-MSD1

PF-17

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

Analyte & Samples(s) Qualified:**M2-6:2FTS**

22J1461-06[GWS-7-S]

PF-18

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

Analyte & Samples(s) Qualified:**M2PFTA**

B320800-MS1, B320800-MSD1

MPFDoA

B320800-MS1, B320800-MSD1

PF-19

Sample re-analyzed at a dilution that was re-fortified with internal standard.

Analyte & Samples(s) Qualified:

22J1461-01RE1[GWS-4-S], 22J1461-03RE1[GWS-5], 22J1461-15RE1[GWS-11-D]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**d3-NMeFOSAA**

22J1461-03[GWS-5]

M2-4:2FTS

22J1461-08[GWS-8-S]

M2-6:2FTS

22J1461-03[GWS-5]

M2-8:2FTS

22J1461-03[GWS-5]

M2PFTA

22J1461-04[GWS-6-S], 22J1461-10[GWS-9-S], 22J1461-17[EB-3]

M8FOSA

22J1461-04[GWS-6-S], 22J1461-09[GWS-8-D], 22J1461-10[GWS-9-S], B320800-MS1

MPFDoA

22J1461-10[GWS-9-S]

Z-01

Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Bias is on the high side.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B320800-MS1, B320800-MSD1

N-MeFOSAA

B320800-MS1, B320800-MSD1

Z-01a

Sample extracted at a dilution due to matrix.

Analyte & Samples(s) Qualified:

22J1461-01[GWS-4-S], 22J1461-02[GWS-4-D], 22J1461-03[GWS-5], 22J1461-04[GWS-6-S], 22J1461-05[GWS-6-D], 22J1461-06[GWS-7-S], 22J1461-07[GWS-7-D], 22J1461-08[GWS-8-S], 22J1461-09[GWS-8-D], 22J1461-11[GWS-9-D], 22J1461-12[GWS-10-S], 22J1461-13[GWS-10-D], 22J1461-15[GWS-11-D]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Lisa A. Worthington
Technical Representative

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-4-S

Sampled: 10/4/2022 09:00

Sample ID: 22J1461-01

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	34	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorobutanesulfonic acid (PFBS)	11	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoropentanoic acid (PFPeA)	89	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorohexanoic acid (PFHxA)	110	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	12	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorodecanoic acid (PFDA)	12	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoroheptanesulfonic acid (PFHpS)	17	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
N-EtFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
N-MeFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorononanesulfonic acid (PFNS)	6.9	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	42	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoro-1-butanefulfonamide (FBFA)	12	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorohexanesulfonic acid (PFHxS)	120	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	41	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoropentanesulfonic acid (PFPeS)	13	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoroundecanoic acid (PFUnA)	30	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluoroheptanoic acid (PFHpA)	72	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorooctanoic acid (PFOA)	64	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB
Perfluorooctanesulfonic acid (PFOS)	1300	42	ng/L	10		SOP-454 PFAS	10/29/22	11/19/22 13:18	RRB
Perfluorononanoic acid (PFNA)	110	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:05	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-4-D

Sampled: 10/4/2022 09:50

Sample ID: 22J1461-02

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorohexanoic acid (PFHxA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoro-1-butanessulfonamide (FBSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorooctanoic acid (PFOA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorooctanesulfonic acid (PFOS)	7.5	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:12	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-5

Sampled: 10/4/2022 13:15

Sample ID: 22J1461-03

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	20	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorobutanesulfonic acid (PFBS)	7.4	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoropentanoic acid (PFPeA)	48	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorohexanoic acid (PFHxA)	55	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	4.9	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	11	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorodecanoic acid (PFDA)	26	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoroheptanesulfonic acid (PFHpS)	6.7	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
N-EtFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
N-MeFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorodecanesulfonic acid (PFDS)	18	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorooctanesulfonamide (FOSA)	7.9	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorononanesulfonic acid (PFNS)	15	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	27	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorohexanesulfonic acid (PFHxS)	110	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	8.6	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoropentanesulfonic acid (PFPeS)	10	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoroundecanoic acid (PFUnA)	230	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluoroheptanoic acid (PFHpA)	35	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorooctanoic acid (PFOA)	27	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB
Perfluorooctanesulfonic acid (PFOS)	760	42	ng/L	10		SOP-454 PFAS	10/29/22	11/19/22 13:25	RRB
Perfluorononanoic acid (PFNA)	69	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:19	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-6-S

Sampled: 10/5/2022 10:00

Sample ID: 22J1461-04

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorohexanoic acid (PFHxA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorooctanoic acid (PFOA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:26	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-6-D

Sampled: 10/5/2022 10:30

Sample ID: 22J1461-05

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorohexanoic acid (PFHxA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorodecanoic acid (PFDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
N-EtFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
N-MeFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorooctanoic acid (PFOA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorooctanesulfonic acid (PFOS)	5.6	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB
Perfluorononanoic acid (PFNA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:34	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-7-S

Sampled: 10/5/2022 08:45

Sample ID: 22J1461-06

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.3	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoropentanoic acid (PFPeA)	9.2	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorohexanoic acid (PFHxA)	27	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorodecanoic acid (PFDA)	7.0	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
N-EtFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
N-MeFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorooctanoic acid (PFOA)	20	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorooctanesulfonic acid (PFOS)	8.7	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB
Perfluorononanoic acid (PFNA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:41	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-7-D

Sampled: 10/5/2022 09:15

Sample ID: 22J1461-07

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorohexanoic acid (PFHxA)	9.7	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorooctanoic acid (PFOA)	9.2	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorooctanesulfonic acid (PFOS)	15	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:48	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-8-S

Sampled: 10/4/2022 11:30

Sample ID: 22J1461-08

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoropentanoic acid (PFPeA)	5.1	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorohexanoic acid (PFHxA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorohexanesulfonic acid (PFHxS)	4.3	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorooctanoic acid (PFOA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorooctanesulfonic acid (PFOS)	22	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 20:55	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-8-D

Sampled: 10/4/2022 11:45

Sample ID: 22J1461-09

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoropentanoic acid (PFPeA)	6.9	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorohexanoic acid (PFHxA)	7.3	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorohexanesulfonic acid (PFHxS)	7.7	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluoroheptanoic acid (PFHpA)	4.9	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorooctanoic acid (PFOA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorooctanesulfonic acid (PFOS)	37	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:02	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-9-S

Sampled: 10/5/2022 10:45

Sample ID: 22J1461-10

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
N-EtFOSAA	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
N-MeFOSAA	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:10	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-9-D

Sampled: 10/5/2022 11:00

Sample ID: 22J1461-11

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorohexanoic acid (PFHxA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoroundecanoic acid (PFUnA)	7.6	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorooctanoic acid (PFOA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorooctanesulfonic acid (PFOS)	4.2	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:24	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-10-S

Sampled: 10/5/2022 12:50

Sample ID: 22J1461-12

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorohexanoic acid (PFHxA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorodecanoic acid (PFDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
N-EtFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
N-MeFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Nonfluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorooctanoic acid (PFOA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB
Perfluorononanoic acid (PFNA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:32	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-10-D

Sampled: 10/5/2022 13:10

Sample ID: 22J1461-13

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoropentanoic acid (PFPeA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorohexanoic acid (PFHxA)	4.6	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoroundecanoic acid (PFUnA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluoroheptanoic acid (PFHpA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorooctanoic acid (PFOA)	6.7	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorooctanesulfonic acid (PFOS)	7.8	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB
Perfluorononanoic acid (PFNA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:39	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-11-S

Sampled: 10/5/2022 14:10

Sample ID: 22J1461-14

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	6.8	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorobutanesulfonic acid (PFBS)	4.8	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoropentanoic acid (PFPeA)	20	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorohexanoic acid (PFHxA)	25	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorodecanoic acid (PFDA)	6.6	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
N-EtFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
N-MeFOSAA	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	7.6	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorohexanesulfonic acid (PFHxS)	72	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoropentanesulfonic acid (PFPeS)	6.2	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoroundecanoic acid (PFUnA)	48	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluoroheptanoic acid (PFHpA)	24	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorooctanoic acid (PFOA)	16	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorooctanesulfonic acid (PFOS)	300	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB
Perfluorononanoic acid (PFNA)	19	4.2	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:46	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: GWS-11-D

Sampled: 10/5/2022 14:25

Sample ID: 22J1461-15

Sample Matrix: Ground Water

Sample Flags: Z-01a

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoropentanoic acid (PFPeA)	11	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorohexanoic acid (PFHxA)	14	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
11Cl-PF3OUdS (F53B Major)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
9Cl-PF3ONS (F53B Minor)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorodecanoic acid (PFDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorododecanoic acid (PFDoA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
N-EtFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
N-MeFOSAA	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorotetradecanoic acid (PFTA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorooctanesulfonamide (FOSA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorononanesulfonic acid (PFNS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	6.8	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorohexanesulfonic acid (PFHxS)	31	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	4.1	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoroundecanoic acid (PFUnA)	19	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluoroheptanoic acid (PFHpA)	14	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorooctanoic acid (PFOA)	15	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB
Perfluorooctanesulfonic acid (PFOS)	460	41	ng/L	10		SOP-454 PFAS	10/29/22	11/19/22 13:32	RRB
Perfluorononanoic acid (PFNA)	21	4.1	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 21:53	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: EB-2

Sampled: 10/4/2022 12:10

Sample ID: 22J1461-16

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorodecanoic acid (PFDA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
N-EtFOSAA	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
N-MeFOSAA	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorooctanoic acid (PFOA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB
Perfluorononanoic acid (PFNA)	ND	1.8	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:00	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J1461

Date Received: 10/11/2022

Field Sample #: EB-3

Sampled: 10/5/2022 14:30

Sample ID: 22J1461-17

Sample Matrix: Ground Water

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoropentanoic acid (PFPeA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorohexanoic acid (PFHxA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
11Cl-PF3OUdS (F53B Major)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
9Cl-PF3ONS (F53B Minor)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorodecanoic acid (PFDA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorododecanoic acid (PFDoA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
N-EtFOSAA	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
N-MeFOSAA	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorotetradecanoic acid (PFTA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorooctanesulfonamide (FOSA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorononanesulfonic acid (PFNS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoro-1-butanesulfonamide (FBSA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoroundecanoic acid (PFUnA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluoroheptanoic acid (PFHpA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorooctanoic acid (PFOA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB
Perfluorononanoic acid (PFNA)	ND	1.9	ng/L	1		SOP-454 PFAS	10/29/22	11/17/22 22:08	RRB

Sample Extraction Data

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

Lab Number [Field ID]	Batch	Initial [mL]	Final [mL]	Date
22J1461-01 [GWS-4-S]	B320800	120	1.00	10/29/22
22J1461-01RE1 [GWS-4-S]	B320800	120	1.00	10/29/22
22J1461-02 [GWS-4-D]	B320800	121	1.00	10/29/22
22J1461-03 [GWS-5]	B320800	120	1.00	10/29/22
22J1461-03RE1 [GWS-5]	B320800	120	1.00	10/29/22
22J1461-04 [GWS-6-S]	B320800	121	1.00	10/29/22
22J1461-05 [GWS-6-D]	B320800	119	1.00	10/29/22
22J1461-06 [GWS-7-S]	B320800	119	1.00	10/29/22
22J1461-07 [GWS-7-D]	B320800	122	1.00	10/29/22
22J1461-08 [GWS-8-S]	B320800	122	1.00	10/29/22
22J1461-09 [GWS-8-D]	B320800	122	1.00	10/29/22
22J1461-10 [GWS-9-S]	B320800	280	1.00	10/29/22
22J1461-11 [GWS-9-D]	B320800	122	1.00	10/29/22
22J1461-12 [GWS-10-S]	B320800	120	1.00	10/29/22
22J1461-13 [GWS-10-D]	B320800	121	1.00	10/29/22
22J1461-14 [GWS-11-S]	B320800	119	1.00	10/29/22
22J1461-15 [GWS-11-D]	B320800	122	1.00	10/29/22
22J1461-15RE1 [GWS-11-D]	B320800	122	1.00	10/29/22
22J1461-16 [EB-2]	B320800	284	1.00	10/29/22
22J1461-17 [EB-3]	B320800	266	1.00	10/29/22

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320800 - SOP 454-PFAAS
Blank (B320800-BLK1)

Prepared: 10/29/22 Analyzed: 11/17/22

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

LCS (B320800-BS1)

Prepared: 10/29/22 Analyzed: 11/17/22

Perfluorobutanoic acid (PFBA)	10.7	1.9	ng/L	9.45	113	73-129	
Perfluorobutanesulfonic acid (PFBS)	9.50	1.9	ng/L	8.36	114	72-130	
Perfluoropentanoic acid (PFPeA)	10.8	1.9	ng/L	9.45	114	72-129	
Perfluorohexanoic acid (PFHxA)	10.8	1.9	ng/L	9.45	115	72-129	
11Cl-PF3OUdS (F53B Major)	7.85	1.9	ng/L	8.90	88.2	55.1-141	
9Cl-PF3ONS (F53B Minor)	8.60	1.9	ng/L	8.81	97.7	59.6-146	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	12.6	1.9	ng/L	8.90	141	* 60.3-131	L-01
Hexafluoropropylene oxide dimer acid (HFPO-DA)	10.3	1.9	ng/L	9.45	109	37.6-167	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	10.1	1.9	ng/L	9.07	112	67-138	
Perfluorodecanoic acid (PFDA)	10.1	1.9	ng/L	9.45	107	71-129	
Perfluorododecanoic acid (PFDoA)	9.64	1.9	ng/L	9.45	102	72-134	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	9.59	1.9	ng/L	8.41	114	49.4-154	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320800 - SOP 454-PFAAS
LCS (B320800-BS1)

Prepared: 10/29/22 Analyzed: 11/17/22

Perfluoroheptanesulfonic acid (PFHpS)	10.6	1.9	ng/L	9.02		117	69-134			
N-EtFOSAA	12.7	1.9	ng/L	9.45		134	61-135			
N-MeFOSAA	12.5	1.9	ng/L	9.45		132	65-136			
Perfluorotetradecanoic acid (PFTA)	9.99	1.9	ng/L	9.45		106	71-132			
Perfluorotridecanoic acid (PFTTrDA)	10.1	1.9	ng/L	9.45		107	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	10.2	1.9	ng/L	8.84		116	63-143			
Perfluorodecanesulfonic acid (PFDS)	9.02	1.9	ng/L	9.12		99.0	53-142			
Perfluorooctanesulfonamide (FOSA)	10.8	1.9	ng/L	9.45		115	67-137			
Perfluorononanesulfonic acid (PFNS)	9.54	1.9	ng/L	9.07		105	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	9.38	1.9	ng/L	9.45		99.3	61.7-156			
Perfluoro-1-butanefulfonamide (FBSA)	11.0	1.9	ng/L	9.45		116	61.3-145			
Perfluorohexanesulfonic acid (PFHxS)	8.54	1.9	ng/L	8.65		98.8	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	11.0	1.9	ng/L	9.45		116	59.8-147			
Perfluoro-5-oxahexanoic acid (PFMBA)	10.9	1.9	ng/L	9.45		115	59.5-146			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	10.2	1.9	ng/L	8.98		113	64-140			
Perfluoropentanesulfonic acid (PFPeS)	9.29	1.9	ng/L	8.88		105	71-127			
Perfluoroundecanoic acid (PFUnA)	10.6	1.9	ng/L	9.45		112	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	12.0	1.9	ng/L	9.45		127	58.5-143			
Perfluoroheptanoic acid (PFHpA)	11.0	1.9	ng/L	9.45		117	72-130			
Perfluorooctanoic acid (PFOA)	11.1	1.9	ng/L	9.45		118	71-133			
Perfluorooctanesulfonic acid (PFOS)	9.34	1.9	ng/L	8.74		107	65-140			
Perfluorononanoic acid (PFNA)	11.8	1.9	ng/L	9.45		125	69-130			

Matrix Spike (B320800-MS1)
Source: 22J1461-10

Prepared: 10/29/22 Analyzed: 11/17/22

Perfluorobutanoic acid (PFBA)	9.33	1.7	ng/L	8.64	ND	108	73-129			
Perfluorobutanesulfonic acid (PFBS)	8.51	1.7	ng/L	7.65	ND	111	72-130			
Perfluoropentanoic acid (PFPeA)	9.71	1.7	ng/L	8.64	ND	112	72-129			
Perfluorohexanoic acid (PFHxA)	9.70	1.7	ng/L	8.64	ND	112	72-129			
11Cl-PF3OUdS (F53B Major)	5.18	1.7	ng/L	8.14	ND	63.6	58.3-140			
9Cl-PF3ONS (F53B Minor)	7.84	1.7	ng/L	8.06	ND	97.4	61.4-144			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	10.9	1.7	ng/L	8.14	ND	134	* 62.4-128			Z-01
Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.5	1.7	ng/L	8.64	ND	133	36.7-171			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.17	1.7	ng/L	8.30	ND	111	67-138			
Perfluorodecanoic acid (PFDA)	9.32	1.7	ng/L	8.64	ND	108	71-129			
Perfluorododecanoic acid (PFDoA)	9.70	1.7	ng/L	8.64	ND	112	72-134			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	8.62	1.7	ng/L	7.69	ND	112	54.3-149			
Perfluoroheptanesulfonic acid (PFHpS)	10.1	1.7	ng/L	8.26	ND	123	69-134			
N-EtFOSAA	11.4	1.7	ng/L	8.64	ND	131	61-135			
N-MeFOSAA	12.4	1.7	ng/L	8.64	ND	143	* 65-136			Z-01
Perfluorotetradecanoic acid (PFTA)	9.90	1.7	ng/L	8.64	ND	115	71-132			
Perfluorotridecanoic acid (PFTTrDA)	12.2	1.7	ng/L	8.64	ND	141	65-144			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.08	1.7	ng/L	8.08	ND	112	63-143			
Perfluorodecanesulfonic acid (PFDS)	5.77	1.7	ng/L	8.34	ND	69.2	53-142			
Perfluorooctanesulfonamide (FOSA)	9.16	1.7	ng/L	8.64	ND	106	67-137			
Perfluorononanesulfonic acid (PFNS)	7.49	1.7	ng/L	8.30	ND	90.2	69-127			
Perfluoro-1-hexanesulfonamide (FHxSA)	6.63	1.7	ng/L	8.64	ND	76.7	64.2-154			
Perfluoro-1-butanefulfonamide (FBSA)	9.21	1.7	ng/L	8.64	ND	107	65.9-140			
Perfluorohexanesulfonic acid (PFHxS)	8.64	1.7	ng/L	7.91	0.696	100	68-131			
Perfluoro-4-oxapentanoic acid (PFMPA)	10.4	1.7	ng/L	8.64	ND	121	61.9-143			
Perfluoro-5-oxahexanoic acid (PFMBA)	9.89	1.7	ng/L	8.64	ND	114	61.4-142			

QUALITY CONTROL

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320800 - SOP 454-PFAAS

Matrix Spike (B320800-MS1)	Source: 22J1461-10			Prepared: 10/29/22 Analyzed: 11/17/22						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.48	1.7	ng/L	8.21	ND	115	64-140			
Perfluoropetanesulfonic acid (PFPeS)	8.72	1.7	ng/L	8.13	ND	107	71-127			
Perfluoroundecanoic acid (PFUnA)	10.7	1.7	ng/L	8.64	ND	124	69-133			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	10.7	1.7	ng/L	8.64	ND	124	62-138			
Perfluoroheptanoic acid (PFHpA)	9.55	1.7	ng/L	8.64	ND	110	72-130			
Perfluorooctanoic acid (PFOA)	11.3	1.7	ng/L	8.64	0.971	120	71-133			
Perfluorooctanesulfonic acid (PFOS)	9.61	1.7	ng/L	8.00	1.16	106	65-140			
Perfluorononanoic acid (PFNA)	10.3	1.7	ng/L	8.64	ND	119	69-130			

Matrix Spike Dup (B320800-MSD1)	Source: 22J1461-10			Prepared: 10/29/22 Analyzed: 11/17/22						
Perfluorobutanoic acid (PFBA)	9.53	1.8	ng/L	8.82	ND	108	73-129	2.18	30	
Perfluorobutanesulfonic acid (PFBS)	8.84	1.8	ng/L	7.81	ND	113	72-130	3.84	30	
Perfluoropentanoic acid (PFPeA)	10.1	1.8	ng/L	8.82	ND	114	72-129	3.91	30	
Perfluorohexanoic acid (PFHxA)	10.2	1.8	ng/L	8.82	ND	116	72-129	5.15	30	
11Cl-PF3OUdS (F53B Major)	5.16	1.8	ng/L	8.31	ND	62.1	58.3-140	0.495	30	
9Cl-PF3ONS (F53B Minor)	8.50	1.8	ng/L	8.22	ND	103	61.4-144	8.06	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	11.4	1.8	ng/L	8.31	ND	137 *	62.4-128	4.39	30	Z-01
Hexafluoropropylene oxide dimer acid (HFPO-DA)	11.3	1.8	ng/L	8.82	ND	128	36.7-171	1.25	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	9.39	1.8	ng/L	8.47	ND	111	67-138	2.32	30	
Perfluorodecanoic acid (PFDA)	9.77	1.8	ng/L	8.82	ND	111	71-129	4.72	30	
Perfluorododecanoic acid (PFDoA)	10.3	1.8	ng/L	8.82	ND	117	72-134	6.36	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	8.77	1.8	ng/L	7.85	ND	112	54.3-149	1.69	30	
Perfluoroheptanesulfonic acid (PFHpS)	10.8	1.8	ng/L	8.42	ND	128	69-134	5.91	30	
N-EtFOSAA	12.8	1.8	ng/L	8.82	ND	145 *	61-135	12.0	30	MS-22
N-MeFOSAA	12.4	1.8	ng/L	8.82	ND	141 *	65-136	0.496	30	Z-01
Perfluorotetradecanoic acid (PFTA)	10.3	1.8	ng/L	8.82	ND	116	71-132	3.66	30	
Perfluorotridecanoic acid (PFTrDA)	10.7	1.8	ng/L	8.82	ND	122	65-144	12.6	30	
4:2 Fluorotelomersulfonic acid (4:2FTS A)	9.08	1.8	ng/L	8.25	ND	110	63-143	0.0519	30	
Perfluorodecanesulfonic acid (PFDS)	5.82	1.8	ng/L	8.51	ND	68.3	53-142	0.751	30	
Perfluorooctanesulfonamide (FOSA)	10.3	1.8	ng/L	8.82	ND	116	67-137	11.3	30	
Perfluorononanesulfonic acid (PFNS)	7.92	1.8	ng/L	8.47	ND	93.5	69-127	5.61	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	8.05	1.8	ng/L	8.82	ND	91.2	64.2-154	19.3	30	
Perfluoro-1-butanedisulfonamide (FBSA)	9.65	1.8	ng/L	8.82	ND	109	65.9-140	4.72	30	
Perfluorohexanesulfonic acid (PFHxS)	8.72	1.8	ng/L	8.07	0.696	99.4	68-131	0.912	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	10.8	1.8	ng/L	8.82	ND	122	61.9-143	3.50	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	10.6	1.8	ng/L	8.82	ND	120	61.4-142	6.66	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	9.36	1.8	ng/L	8.38	ND	112	64-140	1.23	30	
Perfluoropetanesulfonic acid (PFPeS)	8.68	1.8	ng/L	8.29	ND	105	71-127	0.554	30	
Perfluoroundecanoic acid (PFUnA)	10.3	1.8	ng/L	8.82	ND	117	69-133	3.38	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	11.3	1.8	ng/L	8.82	ND	129	62-138	5.92	30	
Perfluoroheptanoic acid (PFHpA)	9.61	1.8	ng/L	8.82	ND	109	72-130	0.639	30	
Perfluorooctanoic acid (PFOA)	11.5	1.8	ng/L	8.82	0.971	119	71-133	0.986	30	
Perfluorooctanesulfonic acid (PFOS)	10.4	1.8	ng/L	8.16	1.16	114	65-140	8.16	30	
Perfluorononanoic acid (PFNA)	10.2	1.8	ng/L	8.82	ND	115	69-130	1.22	30	

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
MS-22	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
PF-18	Duplicate analysis confirmed Extracted Internal Standard failure due to matrix effects.
PF-19	Sample re-analyzed at a dilution that was re-fortified with internal standard.
S-29	Extracted Internal Standard is outside of control limits.
Z-01	Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Bias is on the high side.
Z-01a	Sample extracted at a dilution due to matrix.

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-4-S (22J1461-01) Lab File ID: 22J1461-01.d Analyzed: 11/17/22 20:05									
M8FOSA	244988.6	4.00455	346,385.00	4.00455	71	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	94462.69	2.5461	109,737.00	2.5461	86	50 - 150	0.0000	+/-0.50	
M2PFTA	969925.1	4.345917	1,292,137.00	4.354033	75	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	102849.8	3.82705	112,241.00	3.82705	92	50 - 150	0.0000	+/-0.50	
MPFBA	458805.7	1.100017	492,821.00	1.100017	93	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	90617.76	2.872033	86,273.00	2.872033	105	50 - 150	0.0000	+/-0.50	
M6PFDA	615434.1	3.82755	655,128.00	3.82755	94	50 - 150	0.0000	+/-0.50	
M3PFBS	117700.7	1.9364	115,162.00	1.944683	102	50 - 150	-0.0083	+/-0.50	
M7PFUnA	654337.6	3.970017	810,885.00	3.97	81	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	62343.48	3.469383	79,510.00	3.477367	78	50 - 150	-0.0080	+/-0.50	
M5PFPeA	393931.5	1.757717	379,474.00	1.766017	104	50 - 150	-0.0083	+/-0.50	
M5PFHxA	684532.6	2.629833	700,021.00	2.629833	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	109298.5	3.242583	117,396.00	3.242583	93	50 - 150	0.0000	+/-0.50	
M4PFHpA	808251.6	3.21145	889,842.00	3.21145	91	50 - 150	0.0000	+/-0.50	
M8PFOA	758065.8	3.485883	793,515.00	3.485883	96	50 - 150	0.0000	+/-0.50	
M8PFOS	88452.45	3.668117	114,275.00	3.6761	77	50 - 150	-0.0080	+/-0.50	
M9PFNA	520553.8	3.66915	671,708.00	3.677133	77	50 - 150	-0.0080	+/-0.50	
MPFDoA	739315.9	4.104633	918,237.00	4.112617	81	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	193225.7	3.977483	226,108.00	3.977483	85	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	219659.8	3.9059	276,720.00	3.9059	79	50 - 150	0.0000	+/-0.50	
GWS-4-S (22J1461-01RE1) Lab File ID: 22J1461-01RE1.d Analyzed: 11/19/22 13:18									
M8PFOS	124161.2	3.628183	149,026.00	3.628183	83	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-4-D (22J1461-02)		Lab File ID: 22J1461-02.d				Analyzed: 11/17/22 20:12			
M8FOSA	242238.7	4.00455	346,385.00	4.00455	70	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	69959.38	2.546083	109,737.00	2.5461	64	50 - 150	0.0000	+/-0.50	
M2PFTA	907341.4	4.345917	1,292,137.00	4.354033	70	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	90153.88	3.82705	112,241.00	3.82705	80	50 - 150	0.0000	+/-0.50	
MPFBA	479651.2	1.100017	492,821.00	1.100017	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	86745.24	2.872033	86,273.00	2.872033	101	50 - 150	0.0000	+/-0.50	
M6PFDA	582758.6	3.827533	655,128.00	3.82755	89	50 - 150	0.0000	+/-0.50	
M3PFBS	117958	1.9364	115,162.00	1.944683	102	50 - 150	-0.0083	+/-0.50	
M7PFUnA	680986.1	3.97	810,885.00	3.97	84	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	53162.08	3.469383	79,510.00	3.477367	67	50 - 150	-0.0080	+/-0.50	
M5PFPeA	405945.9	1.766017	379,474.00	1.766017	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	681480.4	2.629817	700,021.00	2.629833	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	103673.6	3.242583	117,396.00	3.242583	88	50 - 150	0.0000	+/-0.50	
M4PFHpA	799566.3	3.21145	889,842.00	3.21145	90	50 - 150	0.0000	+/-0.50	
M8PFOA	747284.1	3.485883	793,515.00	3.485883	94	50 - 150	0.0000	+/-0.50	
M8PFOS	106022.4	3.6761	114,275.00	3.6761	93	50 - 150	0.0000	+/-0.50	
M9PFNA	586982.4	3.66915	671,708.00	3.677133	87	50 - 150	-0.0080	+/-0.50	
MPFDoA	672535.8	4.104617	918,237.00	4.112617	73	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	174259.8	3.977483	226,108.00	3.977483	77	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	212778.1	3.9059	276,720.00	3.9059	77	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-5 (22J1461-03) Lab File ID: 22J1461-03.d Analyzed: 11/17/22 20:19									
M8FOSA	216099.8	4.00455	346,385.00	4.00455	62	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	147253.8	2.537883	109,737.00	2.5461	134	50 - 150	-0.0082	+/-0.50	
M2PFTA	834846.6	4.345917	1,292,137.00	4.354033	65	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	177896	3.82705	112,241.00	3.82705	158	50 - 150	0.0000	+/-0.50	*
MPFBA	383294.9	1.100017	492,821.00	1.100017	78	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	51622.33	2.86385	86,273.00	2.872033	60	50 - 150	-0.0082	+/-0.50	
M6PFDA	433233.1	3.82755	655,128.00	3.82755	66	50 - 150	0.0000	+/-0.50	
M3PFBS	105415.1	1.9364	115,162.00	1.944683	92	50 - 150	-0.0083	+/-0.50	
M7PFUnA	628989.5	3.970017	810,885.00	3.97	78	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	142947.8	3.469383	79,510.00	3.477367	180	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	361636.4	1.757717	379,474.00	1.766017	95	50 - 150	-0.0083	+/-0.50	
M5PFHxA	629456.6	2.621617	700,021.00	2.629833	90	50 - 150	-0.0082	+/-0.50	
M3PFHxS	98768.19	3.242583	117,396.00	3.242583	84	50 - 150	0.0000	+/-0.50	
M4PFHpA	710380.5	3.203083	889,842.00	3.21145	80	50 - 150	-0.0084	+/-0.50	
M8PFOA	673823.2	3.4779	793,515.00	3.485883	85	50 - 150	-0.0080	+/-0.50	
M8PFOS	86011.16	3.668117	114,275.00	3.6761	75	50 - 150	-0.0080	+/-0.50	
M9PFNA	494123.9	3.66915	671,708.00	3.677133	74	50 - 150	-0.0080	+/-0.50	
MPFDoA	678128.4	4.104633	918,237.00	4.112617	74	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	188930.3	3.977483	226,108.00	3.977483	84	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	129838.8	3.9059	276,720.00	3.9059	47	50 - 150	0.0000	+/-0.50	*
GWS-5 (22J1461-03RE1) Lab File ID: 22J1461-03RE1.d Analyzed: 11/19/22 13:25									
M8PFOS	131716.5	3.628183	149,026.00	3.628183	88	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-6-S (22J1461-04)		Lab File ID: 22J1461-04.d				Analyzed: 11/17/22 20:26			
M8FOSA	158824.6	4.00455	346,385.00	4.00455	46	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	62124.6	2.546083	109,737.00	2.5461	57	50 - 150	0.0000	+/-0.50	
M2PFTA	296795.2	4.345917	1,292,137.00	4.354033	23	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	89470.21	3.82705	112,241.00	3.82705	80	50 - 150	0.0000	+/-0.50	
MPFBA	434452	1.100017	492,821.00	1.100017	88	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	79431.56	2.872033	86,273.00	2.872033	92	50 - 150	0.0000	+/-0.50	
M6PFDA	523424.6	3.827533	655,128.00	3.82755	80	50 - 150	0.0000	+/-0.50	
M3PFBS	110673	1.944683	115,162.00	1.944683	96	50 - 150	0.0000	+/-0.50	
M7PFUnA	552254.6	3.97	810,885.00	3.97	68	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	54213.45	3.469383	79,510.00	3.477367	68	50 - 150	-0.0080	+/-0.50	
M5PFPeA	373494.7	1.766017	379,474.00	1.766017	98	50 - 150	0.0000	+/-0.50	
M5PFHxA	634804.3	2.629817	700,021.00	2.629833	91	50 - 150	0.0000	+/-0.50	
M3PFHxS	100603.5	3.242583	117,396.00	3.242583	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	736055.2	3.21145	889,842.00	3.21145	83	50 - 150	0.0000	+/-0.50	
M8PFOA	689727	3.485883	793,515.00	3.485883	87	50 - 150	0.0000	+/-0.50	
M8PFOS	89526.27	3.668117	114,275.00	3.6761	78	50 - 150	-0.0080	+/-0.50	
M9PFNA	541038	3.66915	671,708.00	3.677133	81	50 - 150	-0.0080	+/-0.50	
MPFDoA	488431.6	4.104617	918,237.00	4.112617	53	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	154670	3.977483	226,108.00	3.977483	68	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	186666.6	3.897717	276,720.00	3.9059	67	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-6-D (22J1461-05)		Lab File ID: 22J1461-05.d				Analyzed: 11/17/22 20:34			
M8FOSA	232669.3	4.00455	346,385.00	4.00455	67	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	65680	2.537883	109,737.00	2.5461	60	50 - 150	-0.0082	+/-0.50	
M2PFTA	887216.8	4.345917	1,292,137.00	4.354033	69	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	94940.54	3.82705	112,241.00	3.82705	85	50 - 150	0.0000	+/-0.50	
MPFBA	479545.6	1.100017	492,821.00	1.100017	97	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	93059.8	2.872033	86,273.00	2.872033	108	50 - 150	0.0000	+/-0.50	
M6PFDA	593323.1	3.82755	655,128.00	3.82755	91	50 - 150	0.0000	+/-0.50	
M3PFBS	119766	1.9364	115,162.00	1.944683	104	50 - 150	-0.0083	+/-0.50	
M7PFUnA	717275.4	3.97	810,885.00	3.97	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	57336.19	3.469383	79,510.00	3.477367	72	50 - 150	-0.0080	+/-0.50	
M5PFPeA	399193.4	1.757717	379,474.00	1.766017	105	50 - 150	-0.0083	+/-0.50	
M5PFHxA	685651.9	2.621617	700,021.00	2.629833	98	50 - 150	-0.0082	+/-0.50	
M3PFHxS	106527	3.242583	117,396.00	3.242583	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	783829.7	3.21145	889,842.00	3.21145	88	50 - 150	0.0000	+/-0.50	
M8PFOA	746611.4	3.485883	793,515.00	3.485883	94	50 - 150	0.0000	+/-0.50	
M8PFOS	105987.1	3.668117	114,275.00	3.6761	93	50 - 150	-0.0080	+/-0.50	
M9PFNA	573170.2	3.66915	671,708.00	3.677133	85	50 - 150	-0.0080	+/-0.50	
MPFDoA	668586.9	4.104633	918,237.00	4.112617	73	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	173479.6	3.977483	226,108.00	3.977483	77	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	212832	3.897717	276,720.00	3.9059	77	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-7-S (22J1461-06)		Lab File ID: 22J1461-06.d				Analyzed: 11/17/22 20:41			
M8FOSA	258496.9	4.00455	346,385.00	4.00455	75	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	83137.67	2.537883	109,737.00	2.5461	76	50 - 150	-0.0082	+/-0.50	
M2PFTA	995612.4	4.345917	1,292,137.00	4.354033	77	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	98032.13	3.82705	112,241.00	3.82705	87	50 - 150	0.0000	+/-0.50	
MPFBA	465889.6	1.0917	492,821.00	1.100017	95	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	79846.87	2.86385	86,273.00	2.872033	93	50 - 150	-0.0082	+/-0.50	
M6PFDA	570444.3	3.82755	655,128.00	3.82755	87	50 - 150	0.0000	+/-0.50	
M3PFBS	114177.1	1.9364	115,162.00	1.944683	99	50 - 150	-0.0083	+/-0.50	
M7PFUnA	712925	3.970017	810,885.00	3.97	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	152773.8	3.469383	79,510.00	3.477367	192	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	398991.1	1.757717	379,474.00	1.766017	105	50 - 150	-0.0083	+/-0.50	
M5PFHxA	692122.1	2.621617	700,021.00	2.629833	99	50 - 150	-0.0082	+/-0.50	
M3PFHxS	108302.4	3.242583	117,396.00	3.242583	92	50 - 150	0.0000	+/-0.50	
M4PFHpA	798707.4	3.21145	889,842.00	3.21145	90	50 - 150	0.0000	+/-0.50	
M8PFOA	807781.9	3.485883	793,515.00	3.485883	102	50 - 150	0.0000	+/-0.50	
M8PFOS	104927.3	3.668117	114,275.00	3.6761	92	50 - 150	-0.0080	+/-0.50	
M9PFNA	585577.7	3.66915	671,708.00	3.677133	87	50 - 150	-0.0080	+/-0.50	
MPFDoA	722566.1	4.104633	918,237.00	4.112617	79	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	192808.1	3.977483	226,108.00	3.977483	85	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	227974.5	3.897717	276,720.00	3.9059	82	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-7-D (22J1461-07)		Lab File ID: 22J1461-07.d				Analyzed: 11/17/22 20:48			
M8FOSA	233985.5	4.00455	346,385.00	4.00455	68	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	71877.89	2.537883	109,737.00	2.5461	66	50 - 150	-0.0082	+/-0.50	
M2PFTA	943240.6	4.345917	1,292,137.00	4.354033	73	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	92188.95	3.82705	112,241.00	3.82705	82	50 - 150	0.0000	+/-0.50	
MPFBA	421132.1	1.100017	492,821.00	1.100017	85	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	71133.72	2.86385	86,273.00	2.872033	82	50 - 150	-0.0082	+/-0.50	
M6PFDA	536414.3	3.82755	655,128.00	3.82755	82	50 - 150	0.0000	+/-0.50	
M3PFBS	106674.9	1.9364	115,162.00	1.944683	93	50 - 150	-0.0083	+/-0.50	
M7PFUnA	685313.1	3.970017	810,885.00	3.97	85	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	84136.46	3.469383	79,510.00	3.477367	106	50 - 150	-0.0080	+/-0.50	
M5PFPeA	362431.1	1.757717	379,474.00	1.766017	96	50 - 150	-0.0083	+/-0.50	
M5PFHxA	615261	2.621617	700,021.00	2.629833	88	50 - 150	-0.0082	+/-0.50	
M3PFHxS	101343.6	3.242583	117,396.00	3.242583	86	50 - 150	0.0000	+/-0.50	
M4PFHpA	704167.1	3.203083	889,842.00	3.21145	79	50 - 150	-0.0084	+/-0.50	
M8PFOA	715209.5	3.4779	793,515.00	3.485883	90	50 - 150	-0.0080	+/-0.50	
M8PFOS	94823.42	3.668117	114,275.00	3.6761	83	50 - 150	-0.0080	+/-0.50	
M9PFNA	547150.4	3.66915	671,708.00	3.677133	81	50 - 150	-0.0080	+/-0.50	
MPFDoA	661623.3	4.104633	918,237.00	4.112617	72	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	190698.2	3.977483	226,108.00	3.977483	84	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	219316.2	3.897717	276,720.00	3.9059	79	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-8-S (22J1461-08)		Lab File ID: 22J1461-08.d				Analyzed: 11/17/22 20:55			
M8FOSA	175967.7	4.00455	346,385.00	4.00455	51	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	54068.8	2.537883	109,737.00	2.5461	49	50 - 150	-0.0082	+/-0.50	*
M2PFTA	736570.6	4.345917	1,292,137.00	4.354033	57	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	77431.05	3.82705	112,241.00	3.82705	69	50 - 150	0.0000	+/-0.50	
MPFBA	337335.1	1.0917	492,821.00	1.100017	68	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	62532.17	2.86385	86,273.00	2.872033	72	50 - 150	-0.0082	+/-0.50	
M6PFDA	454618.6	3.82755	655,128.00	3.82755	69	50 - 150	0.0000	+/-0.50	
M3PFBS	92918.47	1.9364	115,162.00	1.944683	81	50 - 150	-0.0083	+/-0.50	
M7PFUnA	539327.9	3.97	810,885.00	3.97	67	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	40446.88	3.469383	79,510.00	3.477367	51	50 - 150	-0.0080	+/-0.50	
M5PFPeA	296701.9	1.757717	379,474.00	1.766017	78	50 - 150	-0.0083	+/-0.50	
M5PFHxA	520883.6	2.621617	700,021.00	2.629833	74	50 - 150	-0.0082	+/-0.50	
M3PFHxS	78797.46	3.2345	117,396.00	3.242583	67	50 - 150	-0.0081	+/-0.50	
M4PFHpA	602252	3.203083	889,842.00	3.21145	68	50 - 150	-0.0084	+/-0.50	
M8PFOA	558745.3	3.4779	793,515.00	3.485883	70	50 - 150	-0.0080	+/-0.50	
M8PFOS	80965.9	3.668117	114,275.00	3.6761	71	50 - 150	-0.0080	+/-0.50	
M9PFNA	416610.3	3.66915	671,708.00	3.677133	62	50 - 150	-0.0080	+/-0.50	
MPFDoA	558221.6	4.104633	918,237.00	4.112617	61	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	144244.9	3.977483	226,108.00	3.977483	64	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	168071	3.897717	276,720.00	3.9059	61	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-8-D (22J1461-09)		Lab File ID: 22J1461-09.d				Analyzed: 11/17/22 21:02			
M8FOSA	165098.3	4.00455	346,385.00	4.00455	48	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	59800.36	2.537883	109,737.00	2.5461	54	50 - 150	-0.0082	+/-0.50	
M2PFTA	735597.4	4.345917	1,292,137.00	4.354033	57	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	77777.69	3.82705	112,241.00	3.82705	69	50 - 150	0.0000	+/-0.50	
MPFBA	347792.7	1.0917	492,821.00	1.100017	71	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	59940.36	2.86385	86,273.00	2.872033	69	50 - 150	-0.0082	+/-0.50	
M6PFDA	455218.4	3.81925	655,128.00	3.82755	69	50 - 150	-0.0083	+/-0.50	
M3PFBS	94613.31	1.9364	115,162.00	1.944683	82	50 - 150	-0.0083	+/-0.50	
M7PFUnA	568477.7	3.97	810,885.00	3.97	70	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	44580.63	3.469383	79,510.00	3.477367	56	50 - 150	-0.0080	+/-0.50	
M5PFPeA	299114.5	1.757717	379,474.00	1.766017	79	50 - 150	-0.0083	+/-0.50	
M5PFHxA	535571.6	2.621617	700,021.00	2.629833	77	50 - 150	-0.0082	+/-0.50	
M3PFHxS	83888.08	3.2345	117,396.00	3.242583	71	50 - 150	-0.0081	+/-0.50	
M4PFHpA	617571.8	3.203083	889,842.00	3.21145	69	50 - 150	-0.0084	+/-0.50	
M8PFOA	540843.1	3.4779	793,515.00	3.485883	68	50 - 150	-0.0080	+/-0.50	
M8PFOS	79352.29	3.668117	114,275.00	3.6761	69	50 - 150	-0.0080	+/-0.50	
M9PFNA	424348.1	3.66915	671,708.00	3.677133	63	50 - 150	-0.0080	+/-0.50	
MPFDoA	582409	4.104633	918,237.00	4.112617	63	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	153473	3.977483	226,108.00	3.977483	68	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	195334.8	3.897717	276,720.00	3.9059	71	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-9-S (22J1461-10)		Lab File ID: 22J1461-10.d				Analyzed: 11/17/22 21:10			
M8FOSA	172392.8	4.00455	346,385.00	4.00455	50	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	61543.41	2.537883	109,737.00	2.5461	56	50 - 150	-0.0082	+/-0.50	
M2PFTA	397653.6	4.345917	1,292,137.00	4.354033	31	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	80309.73	3.82705	112,241.00	3.82705	72	50 - 150	0.0000	+/-0.50	
MPFBA	324628.8	1.100017	492,821.00	1.100017	66	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	64891.79	2.872033	86,273.00	2.872033	75	50 - 150	0.0000	+/-0.50	
M6PFDA	452010.1	3.81925	655,128.00	3.82755	69	50 - 150	-0.0083	+/-0.50	
M3PFBS	96690.45	1.9364	115,162.00	1.944683	84	50 - 150	-0.0083	+/-0.50	
M7PFUnA	528552.1	3.97	810,885.00	3.97	65	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	47366.92	3.469383	79,510.00	3.477367	60	50 - 150	-0.0080	+/-0.50	
M5PFPeA	309288.9	1.757717	379,474.00	1.766017	82	50 - 150	-0.0083	+/-0.50	
M5PFHxA	541967.1	2.621617	700,021.00	2.629833	77	50 - 150	-0.0082	+/-0.50	
M3PFHxS	78745.23	3.242583	117,396.00	3.242583	67	50 - 150	0.0000	+/-0.50	
M4PFHpA	602061.6	3.203083	889,842.00	3.21145	68	50 - 150	-0.0084	+/-0.50	
M8PFOA	549473.5	3.4779	793,515.00	3.485883	69	50 - 150	-0.0080	+/-0.50	
M8PFOS	76608.94	3.668117	114,275.00	3.6761	67	50 - 150	-0.0080	+/-0.50	
M9PFNA	417431.9	3.66915	671,708.00	3.677133	62	50 - 150	-0.0080	+/-0.50	
MPFDoA	434838.7	4.104633	918,237.00	4.112617	47	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	120738.2	3.977483	226,108.00	3.977483	53	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	154054.7	3.897717	276,720.00	3.9059	56	50 - 150	-0.0082	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-9-D (22J1461-11) Lab File ID: 22J1461-11.d Analyzed: 11/17/22 21:24									
M8FOSA	233719.9	4.00455	346,385.00	4.00455	67	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	75076.77	2.537883	109,737.00	2.537883	68	50 - 150	0.0000	+/-0.50	
M2PFTA	803662.6	4.345917	1,292,137.00	4.345917	62	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	103773.2	3.82705	112,241.00	3.82705	92	50 - 150	0.0000	+/-0.50	
MPFBA	419509.3	1.100017	492,821.00	1.100017	85	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	63408.28	2.872033	86,273.00	2.86385	73	50 - 150	0.0082	+/-0.50	
M6PFDA	492605.2	3.81925	655,128.00	3.81925	75	50 - 150	0.0000	+/-0.50	
M3PFBS	97907.02	1.9364	115,162.00	1.9364	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	617497.8	3.97	810,885.00	3.97	76	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	63962.52	3.469383	79,510.00	3.469383	80	50 - 150	0.0000	+/-0.50	
M5PFPeA	362400	1.757717	379,474.00	1.757717	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	608784.9	2.621617	700,021.00	2.621617	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	87229.88	3.242583	117,396.00	3.2345	74	50 - 150	0.0081	+/-0.50	
M4PFHpA	673261.7	3.203083	889,842.00	3.203083	76	50 - 150	0.0000	+/-0.50	
M8PFOA	648794.6	3.4779	793,515.00	3.4779	82	50 - 150	0.0000	+/-0.50	
M8PFOS	82955.65	3.668117	114,275.00	3.668117	73	50 - 150	0.0000	+/-0.50	
M9PFNA	483701.9	3.66915	671,708.00	3.66915	72	50 - 150	0.0000	+/-0.50	
MPFDoA	660894.7	4.104633	918,237.00	4.104633	72	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	172700.9	3.977483	226,108.00	3.977483	76	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	191415.5	3.897717	276,720.00	3.897717	69	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-10-S (22J1461-12)		Lab File ID: 22J1461-12.d				Analyzed: 11/17/22 21:32			
M8FOSA	193706.6	4.00455	346,385.00	4.00455	56	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	59183.74	2.537883	109,737.00	2.537883	54	50 - 150	0.0000	+/-0.50	
M2PFTA	816806.8	4.3378	1,292,137.00	4.345917	63	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	74849.33	3.82705	112,241.00	3.82705	67	50 - 150	0.0000	+/-0.50	
MPFBA	373342.3	1.0917	492,821.00	1.100017	76	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	83644.14	2.86385	86,273.00	2.86385	97	50 - 150	0.0000	+/-0.50	
M6PFDA	488002.7	3.81925	655,128.00	3.81925	74	50 - 150	0.0000	+/-0.50	
M3PFBS	97388.75	1.9364	115,162.00	1.9364	85	50 - 150	0.0000	+/-0.50	
M7PFUnA	600618.9	3.97	810,885.00	3.97	74	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	43567.18	3.469383	79,510.00	3.469383	55	50 - 150	0.0000	+/-0.50	
M5PFPeA	320395.3	1.757717	379,474.00	1.757717	84	50 - 150	0.0000	+/-0.50	
M5PFHxA	554741.4	2.621617	700,021.00	2.621617	79	50 - 150	0.0000	+/-0.50	
M3PFHxS	85356.66	3.2345	117,396.00	3.2345	73	50 - 150	0.0000	+/-0.50	
M4PFHpA	630795.8	3.203083	889,842.00	3.203083	71	50 - 150	0.0000	+/-0.50	
M8PFOA	596188.8	3.4779	793,515.00	3.4779	75	50 - 150	0.0000	+/-0.50	
M8PFOS	83103.45	3.668117	114,275.00	3.668117	73	50 - 150	0.0000	+/-0.50	
M9PFNA	471961.9	3.66915	671,708.00	3.66915	70	50 - 150	0.0000	+/-0.50	
MPFDoA	620910.4	4.104633	918,237.00	4.104633	68	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	165630.9	3.977483	226,108.00	3.977483	73	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	208091.8	3.897717	276,720.00	3.897717	75	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-10-D (22J1461-13)		Lab File ID: 22J1461-13.d				Analyzed: 11/17/22 21:39			
M8FOSA	258608.2	4.00455	346,385.00	4.00455	75	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	63838.36	2.537883	109,737.00	2.537883	58	50 - 150	0.0000	+/-0.50	
M2PFTA	937632.2	4.345917	1,292,137.00	4.345917	73	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	88028.09	3.818717	112,241.00	3.82705	78	50 - 150	-0.0083	+/-0.50	
MPFBA	447902.5	1.0917	492,821.00	1.100017	91	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	82231	2.86385	86,273.00	2.86385	95	50 - 150	0.0000	+/-0.50	
M6PFDA	561910.7	3.81925	655,128.00	3.81925	86	50 - 150	0.0000	+/-0.50	
M3PFBS	114738.8	1.9364	115,162.00	1.9364	100	50 - 150	0.0000	+/-0.50	
M7PFUnA	703437.3	3.97	810,885.00	3.97	87	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	53774.71	3.469383	79,510.00	3.469383	68	50 - 150	0.0000	+/-0.50	
M5PFPeA	376798.6	1.757717	379,474.00	1.757717	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	650561.1	2.621617	700,021.00	2.621617	93	50 - 150	0.0000	+/-0.50	
M3PFHxS	99005.5	3.2345	117,396.00	3.2345	84	50 - 150	0.0000	+/-0.50	
M4PFHpA	741488.3	3.203083	889,842.00	3.203083	83	50 - 150	0.0000	+/-0.50	
M8PFOA	696341.8	3.4779	793,515.00	3.4779	88	50 - 150	0.0000	+/-0.50	
M8PFOS	96119.51	3.668117	114,275.00	3.668117	84	50 - 150	0.0000	+/-0.50	
M9PFNA	533018.8	3.66915	671,708.00	3.66915	79	50 - 150	0.0000	+/-0.50	
MPFDoA	696996.6	4.104633	918,237.00	4.104633	76	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	193219.7	3.969483	226,108.00	3.977483	85	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	227244.7	3.897717	276,720.00	3.897717	82	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-11-S (22J1461-14) Lab File ID: 22J1461-14.d Analyzed: 11/17/22 21:46									
M8FOSA	239530.8	4.00455	346,385.00	4.00455	69	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	68236.16	2.537883	109,737.00	2.537883	62	50 - 150	0.0000	+/-0.50	
M2PFTA	843203.3	4.3378	1,292,137.00	4.345917	65	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	81098.32	3.818733	112,241.00	3.82705	72	50 - 150	-0.0083	+/-0.50	
MPFBA	416303.9	1.0917	492,821.00	1.100017	84	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	83511.88	2.86385	86,273.00	2.86385	97	50 - 150	0.0000	+/-0.50	
M6PFDA	522927.3	3.81925	655,128.00	3.81925	80	50 - 150	0.0000	+/-0.50	
M3PFBS	105390.5	1.9364	115,162.00	1.9364	92	50 - 150	0.0000	+/-0.50	
M7PFUnA	626540.8	3.962017	810,885.00	3.97	77	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	44853.16	3.469383	79,510.00	3.469383	56	50 - 150	0.0000	+/-0.50	
M5PFPeA	362841.8	1.757717	379,474.00	1.757717	96	50 - 150	0.0000	+/-0.50	
M5PFHxA	612989.7	2.621617	700,021.00	2.621617	88	50 - 150	0.0000	+/-0.50	
M3PFHxS	91656.17	3.2345	117,396.00	3.2345	78	50 - 150	0.0000	+/-0.50	
M4PFHpA	694663.3	3.203083	889,842.00	3.203083	78	50 - 150	0.0000	+/-0.50	
M8PFOA	657991	3.4779	793,515.00	3.4779	83	50 - 150	0.0000	+/-0.50	
M8PFOS	90512.23	3.668117	114,275.00	3.668117	79	50 - 150	0.0000	+/-0.50	
M9PFNA	484493.6	3.66915	671,708.00	3.66915	72	50 - 150	0.0000	+/-0.50	
MPFDoA	595465	4.104633	918,237.00	4.104633	65	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	163262.1	3.969483	226,108.00	3.977483	72	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	204506.1	3.897717	276,720.00	3.897717	74	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
GWS-11-D (22J1461-15) Lab File ID: 22J1461-15.d Analyzed: 11/17/22 21:53									
M8FOSA	232671.1	4.00455	346,385.00	4.00455	67	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	73561.13	2.537883	109,737.00	2.537883	67	50 - 150	0.0000	+/-0.50	
M2PFTA	807073.6	4.3378	1,292,137.00	4.345917	62	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	88402.58	3.818733	112,241.00	3.82705	79	50 - 150	-0.0083	+/-0.50	
MPFBA	435042.6	1.0917	492,821.00	1.100017	88	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	79098.52	2.86385	86,273.00	2.86385	92	50 - 150	0.0000	+/-0.50	
M6PFDA	537096.9	3.81925	655,128.00	3.81925	82	50 - 150	0.0000	+/-0.50	
M3PFBS	109934	1.9364	115,162.00	1.9364	95	50 - 150	0.0000	+/-0.50	
M7PFUnA	630739.1	3.962017	810,885.00	3.97	78	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	53287.24	3.469383	79,510.00	3.469383	67	50 - 150	0.0000	+/-0.50	
M5PFPeA	374969.5	1.757717	379,474.00	1.757717	99	50 - 150	0.0000	+/-0.50	
M5PFHxA	652741.8	2.621617	700,021.00	2.621617	93	50 - 150	0.0000	+/-0.50	
M3PFHxS	96530.42	3.242583	117,396.00	3.2345	82	50 - 150	0.0081	+/-0.50	
M4PFHpA	736464.1	3.203083	889,842.00	3.203083	83	50 - 150	0.0000	+/-0.50	
M8PFOA	667730	3.4779	793,515.00	3.4779	84	50 - 150	0.0000	+/-0.50	
M8PFOS	86796.74	3.668117	114,275.00	3.668117	76	50 - 150	0.0000	+/-0.50	
M9PFNA	488137.3	3.66915	671,708.00	3.66915	73	50 - 150	0.0000	+/-0.50	
MPFDoA	607748.7	4.104633	918,237.00	4.104633	66	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	175826	3.969483	226,108.00	3.977483	78	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	212405.7	3.897717	276,720.00	3.897717	77	50 - 150	0.0000	+/-0.50	
GWS-11-D (22J1461-15RE1) Lab File ID: 22J1461-15RE1.d Analyzed: 11/19/22 13:32									
M8PFOS	136942.9	3.636167	149,026.00	3.628183	92	50 - 150	0.0080	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
EB-2 (22J1461-16) Lab File ID: 22J1461-16.d Analyzed: 11/17/22 22:00									
M8FOSA	295849.5	4.00455	346,385.00	4.00455	85	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	89214.9	2.537883	109,737.00	2.537883	81	50 - 150	0.0000	+/-0.50	
M2PFTA	1167625	4.3378	1,292,137.00	4.345917	90	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	124742.3	3.818717	112,241.00	3.82705	111	50 - 150	-0.0083	+/-0.50	
MPFBA	530228.3	1.0917	492,821.00	1.100017	108	50 - 150	-0.0083	+/-0.50	
M3HFPO-DA	104731.4	2.86385	86,273.00	2.86385	121	50 - 150	0.0000	+/-0.50	
M6PFDA	631550.5	3.81925	655,128.00	3.81925	96	50 - 150	0.0000	+/-0.50	
M3PFBS	131645.6	1.9364	115,162.00	1.9364	114	50 - 150	0.0000	+/-0.50	
M7PFUnA	832921.8	3.962017	810,885.00	3.97	103	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	58600.81	3.469383	79,510.00	3.469383	74	50 - 150	0.0000	+/-0.50	
M5PFPeA	430202.7	1.757717	379,474.00	1.757717	113	50 - 150	0.0000	+/-0.50	
M5PFHxA	763875.3	2.621617	700,021.00	2.621617	109	50 - 150	0.0000	+/-0.50	
M3PFHxS	113314.5	3.2345	117,396.00	3.2345	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	869047.6	3.203083	889,842.00	3.203083	98	50 - 150	0.0000	+/-0.50	
M8PFOA	820301.1	3.4779	793,515.00	3.4779	103	50 - 150	0.0000	+/-0.50	
M8PFOS	108098.7	3.668117	114,275.00	3.668117	95	50 - 150	0.0000	+/-0.50	
M9PFNA	607642.4	3.66915	671,708.00	3.66915	90	50 - 150	0.0000	+/-0.50	
MPFDoA	793133.4	4.096633	918,237.00	4.104633	86	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	224277.2	3.969483	226,108.00	3.977483	99	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	237215.3	3.897717	276,720.00	3.897717	86	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
EB-3 (22J1461-17)		Lab File ID: 22J1461-17.d				Analyzed: 11/17/22 22:08			
M8FOSA	221409.2	4.00455	346,385.00	4.00455	64	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	88883.37	2.537883	109,737.00	2.537883	81	50 - 150	0.0000	+/-0.50	
M2PFTA	393430.1	4.3378	1,292,137.00	4.345917	30	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	119044.2	3.818717	112,241.00	3.82705	106	50 - 150	-0.0083	+/-0.50	
MPFBA	500965.8	1.100017	492,821.00	1.100017	102	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	94861.2	2.86385	86,273.00	2.86385	110	50 - 150	0.0000	+/-0.50	
M6PFDA	575417.2	3.81925	655,128.00	3.81925	88	50 - 150	0.0000	+/-0.50	
M3PFBS	121693.9	1.9364	115,162.00	1.9364	106	50 - 150	0.0000	+/-0.50	
M7PFUnA	623080.9	3.962017	810,885.00	3.97	77	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	55990.44	3.469383	79,510.00	3.469383	70	50 - 150	0.0000	+/-0.50	
M5PFPeA	404663.8	1.757717	379,474.00	1.757717	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	711905.5	2.621617	700,021.00	2.621617	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	106104	3.2345	117,396.00	3.2345	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	781651.1	3.203083	889,842.00	3.203083	88	50 - 150	0.0000	+/-0.50	
M8PFOA	718169.7	3.4779	793,515.00	3.4779	91	50 - 150	0.0000	+/-0.50	
M8PFOS	98598.58	3.668117	114,275.00	3.668117	86	50 - 150	0.0000	+/-0.50	
M9PFNA	542655.1	3.66915	671,708.00	3.66915	81	50 - 150	0.0000	+/-0.50	
MPFDoA	599002.3	4.096633	918,237.00	4.104633	65	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	174382.7	3.969483	226,108.00	3.977483	77	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	221505.1	3.897717	276,720.00	3.897717	80	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B320800-BLK1)			Lab File ID: B320800-BLK1.d			Analyzed: 11/17/22 19:43			
M8FOSA	253624	4.00455	346,385.00	4.00455	73	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	93719.67	2.546083	109,737.00	2.5461	85	50 - 150	0.0000	+/-0.50	
M2PFTA	970987	4.345917	1,292,137.00	4.354033	75	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	116766.4	3.82705	112,241.00	3.82705	104	50 - 150	0.0000	+/-0.50	
MPFBA	498177.7	1.100017	492,821.00	1.100017	101	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	95079.83	2.872033	86,273.00	2.872033	110	50 - 150	0.0000	+/-0.50	
M6PFDA	627832	3.827533	655,128.00	3.82755	96	50 - 150	0.0000	+/-0.50	
M3PFBS	119478.2	1.944683	115,162.00	1.944683	104	50 - 150	0.0000	+/-0.50	
M7PFUnA	690710.3	3.97	810,885.00	3.97	85	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	67268.18	3.477367	79,510.00	3.477367	85	50 - 150	0.0000	+/-0.50	
M5PFPeA	406465.5	1.766017	379,474.00	1.766017	107	50 - 150	0.0000	+/-0.50	
M5PFHxA	709878.5	2.629817	700,021.00	2.629833	101	50 - 150	0.0000	+/-0.50	
M3PFHxS	106522.5	3.242583	117,396.00	3.242583	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	818826.9	3.21145	889,842.00	3.21145	92	50 - 150	0.0000	+/-0.50	
M8PFOA	778427.4	3.485883	793,515.00	3.485883	98	50 - 150	0.0000	+/-0.50	
M8PFOS	101995.4	3.6761	114,275.00	3.6761	89	50 - 150	0.0000	+/-0.50	
M9PFNA	583167.9	3.677133	671,708.00	3.677133	87	50 - 150	0.0000	+/-0.50	
MPFDoA	711091.6	4.112617	918,237.00	4.112617	77	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	189377.6	3.977483	226,108.00	3.977483	84	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	231059.1	3.9059	276,720.00	3.9059	83	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B320800-BS1)			Lab File ID: B320800-BS1.d			Analyzed: 11/17/22 19:36			
M8FOSA	267091.8	4.00455	346,385.00	4.00455	77	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	99346.39	2.5461	109,737.00	2.5461	91	50 - 150	0.0000	+/-0.50	
M2PFTA	991478.9	4.345917	1,292,137.00	4.354033	77	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	119954.6	3.82705	112,241.00	3.82705	107	50 - 150	0.0000	+/-0.50	
MPFBA	521057.3	1.100017	492,821.00	1.100017	106	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	96927.55	2.872033	86,273.00	2.872033	112	50 - 150	0.0000	+/-0.50	
M6PFDA	637498.5	3.82755	655,128.00	3.82755	97	50 - 150	0.0000	+/-0.50	
M3PFBS	124962.1	1.944683	115,162.00	1.944683	109	50 - 150	0.0000	+/-0.50	
M7PFUnA	735136.1	3.97	810,885.00	3.97	91	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	69974.66	3.477367	79,510.00	3.477367	88	50 - 150	0.0000	+/-0.50	
M5PFPeA	431535.5	1.766017	379,474.00	1.766017	114	50 - 150	0.0000	+/-0.50	
M5PFHxA	724148.9	2.629817	700,021.00	2.629833	103	50 - 150	0.0000	+/-0.50	
M3PFHxS	120034.8	3.242583	117,396.00	3.242583	102	50 - 150	0.0000	+/-0.50	
M4PFHpA	830579.1	3.21145	889,842.00	3.21145	93	50 - 150	0.0000	+/-0.50	
M8PFOA	815457.6	3.485883	793,515.00	3.485883	103	50 - 150	0.0000	+/-0.50	
M8PFOS	113524.9	3.6761	114,275.00	3.6761	99	50 - 150	0.0000	+/-0.50	
M9PFNA	601345.6	3.677133	671,708.00	3.677133	90	50 - 150	0.0000	+/-0.50	
MPFDoA	724664.5	4.112617	918,237.00	4.112617	79	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	198249.2	3.977483	226,108.00	3.977483	88	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	241517.6	3.9059	276,720.00	3.9059	87	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B320800-MS1)		Lab File ID: B320800-MS1.d				Analyzed: 11/17/22 19:50			
M8FOSA	125782.9	4.00455	346,385.00	4.00455	36	50 - 150	0.0000	+/-0.50	*
M2-4:2FTS	72457.45	2.5461	109,737.00	2.5461	66	50 - 150	0.0000	+/-0.50	
M2PFTA	388918.6	4.345917	1,292,137.00	4.354033	30	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	97854.97	3.82705	112,241.00	3.82705	87	50 - 150	0.0000	+/-0.50	
MPFBA	381044	1.100017	492,821.00	1.100017	77	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	65853.97	2.872033	86,273.00	2.872033	76	50 - 150	0.0000	+/-0.50	
M6PFDA	494518.8	3.82755	655,128.00	3.82755	75	50 - 150	0.0000	+/-0.50	
M3PFBS	107436.2	1.944683	115,162.00	1.944683	93	50 - 150	0.0000	+/-0.50	
M7PFUnA	511253.9	3.97	810,885.00	3.97	63	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	53860.34	3.477367	79,510.00	3.477367	68	50 - 150	0.0000	+/-0.50	
M5PFPeA	349226	1.766017	379,474.00	1.766017	92	50 - 150	0.0000	+/-0.50	
M5PFHxA	609191.3	2.629817	700,021.00	2.629833	87	50 - 150	0.0000	+/-0.50	
M3PFHxS	99090.94	3.242583	117,396.00	3.242583	84	50 - 150	0.0000	+/-0.50	
M4PFHpA	713990.4	3.21145	889,842.00	3.21145	80	50 - 150	0.0000	+/-0.50	
M8PFOA	650814.4	3.485883	793,515.00	3.485883	82	50 - 150	0.0000	+/-0.50	
M8PFOS	91052.67	3.6761	114,275.00	3.6761	80	50 - 150	0.0000	+/-0.50	
M9PFNA	489126.6	3.677133	671,708.00	3.677133	73	50 - 150	0.0000	+/-0.50	
MPFDoA	417722.5	4.104633	918,237.00	4.112617	45	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	128858	3.977483	226,108.00	3.977483	57	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	162788.6	3.9059	276,720.00	3.9059	59	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-454 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B320800-MSD1)			Lab File ID: B320800-MSD1.d			Analyzed: 11/17/22 19:57			
M8FOSA	186093.6	4.00455	346,385.00	4.00455	54	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	70950.14	2.5461	109,737.00	2.5461	65	50 - 150	0.0000	+/-0.50	
M2PFTA	448546.4	4.345917	1,292,137.00	4.354033	35	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	93064.73	3.82705	112,241.00	3.82705	83	50 - 150	0.0000	+/-0.50	
MPFBA	393663.9	1.100017	492,821.00	1.100017	80	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	70127.89	2.872033	86,273.00	2.872033	81	50 - 150	0.0000	+/-0.50	
M6PFDA	498703.8	3.82755	655,128.00	3.82755	76	50 - 150	0.0000	+/-0.50	
M3PFBS	111403.5	1.9364	115,162.00	1.944683	97	50 - 150	-0.0083	+/-0.50	
M7PFUnA	540615.9	3.97	810,885.00	3.97	67	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	53433.34	3.469383	79,510.00	3.477367	67	50 - 150	-0.0080	+/-0.50	
M5PFPeA	356908.6	1.766017	379,474.00	1.766017	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	635028.4	2.629817	700,021.00	2.629833	91	50 - 150	0.0000	+/-0.50	
M3PFHxS	100261.4	3.242583	117,396.00	3.242583	85	50 - 150	0.0000	+/-0.50	
M4PFHpA	738039.1	3.21145	889,842.00	3.21145	83	50 - 150	0.0000	+/-0.50	
M8PFOA	699224.1	3.485883	793,515.00	3.485883	88	50 - 150	0.0000	+/-0.50	
M8PFOS	91983.05	3.6761	114,275.00	3.6761	80	50 - 150	0.0000	+/-0.50	
M9PFNA	534963.4	3.677133	671,708.00	3.677133	80	50 - 150	0.0000	+/-0.50	
MPFDoA	401756.5	4.104633	918,237.00	4.112617	44	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	118149.7	3.977483	226,108.00	3.977483	52	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	168386.9	3.9059	276,720.00	3.9059	61	50 - 150	0.0000	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

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

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

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



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Company Name: Barnstable County
Address: 3195 Main St. PO Box 427
Phone: BFTA
Project Location: Barnstable, MA 6206
Project Number: Roger Thibault
Project Manager: Pricilla Ellis - pricilla@barnstablecounty.org
Con-Test Quote Number: Matt Alger
Invoice Recipient: Matt Alger
Sampled By:

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD
39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Page 1 of 2

ANALYSIS REQUESTED

Requested Turnaround Time

7-Day ☐ 10-Day ☐
PFAS 15-Day (std) ☒ Due Date:

1-Day ☐ 3-Day ☐
2-Day ☐ 4-Day ☐

Field Filtered
Lab to Filter

Orthophosphate Samples

Field Filtered
Lab to Filter

Field Filtered
Lab to Filter

Field Filtered
Lab to Filter

PCB ONLY

SOXHLET

NON SOXHLET

NON SOXHLET

Format: PDF ☒ EXCEL ☒

Other: ☐

CLP Like Data Pkg Required: ☐

Email To: Pricilla Ellis - pricilla@barnstablecounty.org
Fax To #:

Beginning Date/Time

Ending Date/Time

Matrix Code

Conc Code

COMP/GRAB

VIALS

GLASS

PLASTIC

BACTERIA

ENCORE

PFAS

PFAS

GWS-4-S

GWS-4-D

GWS-5

GWS-6-S

GWS-6-D

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Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Matrix Code	Conc Code	COMP/GRAB	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
1	10.4.22 9:00		GW	U	GRAB			NP		
2	10.4.22 9:50		GW	U	GRAB			NP		
3	10.4.22 13:15		GW	U	GRAB			NP		
4	10.5.22 10:00		GW	U	GRAB			NP		
5	10.5.22 10:30		GW	U	GRAB			NP		
6	10.5.22 8:45		GW	U	GRAB			NP		
7	10.5.22 9:15		GW	U	GRAB			NP		
8	10.4.22 11:30		GW	U	GRAB			NP		
9	10.4.22 11:45		GW	U	GRAB			NP		
10	10.5.22 10:45		GW	U	GRAB			NP		

Client Sample ID / Description	Beginning Date/Time	Ending Date/Time	Matrix Code	Conc Code	COMP/GRAB	VIALS	GLASS	PLASTIC	BACTERIA	ENCORE
1	10.4.22 9:00		GW	U	GRAB			NP		
2	10.4.22 9:50		GW	U	GRAB			NP		
3	10.4.22 13:15		GW	U	GRAB			NP		
4	10.5.22 10:00		GW	U	GRAB			NP		
5	10.5.22 10:30		GW	U	GRAB			NP		
6	10.5.22 8:45		GW	U	GRAB			NP		
7	10.5.22 9:15		GW	U	GRAB			NP		
8	10.4.22 11:30		GW	U	GRAB			NP		
9	10.4.22 11:45		GW	U	GRAB			NP		
10	10.5.22 10:45		GW	U	GRAB			NP		

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



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

Client Barnstable County
Received By [Signature] Date 10/16/22 Time 1730

How were the samples received? In Cooler T No Cooler On Ice T No Ice
Direct From Sample Ambient Melted Ice

Were samples within Temperature? Within 2-6°C T By Gun # 5 Actual Temp - 2.5
By Blank # Actual Temp -

Was Custody Seal In tact? Were Samples Tampered with?
Was COC Relinquished? T Does Chain Agree With Samples? T

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

Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all pertinent Information? Client? T Analysis? T Sampler Name?
Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T

Are there Lab to Filters? F Who was notified?

Are there Rushes? F Who was notified?

Are there Short Holds? F Who was notified?

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

Is there Headspace where applicable? MS/MSD? T

Proper Media/Containers Used? T splitting samples require F

Were trip blanks receive F On COC? F

Do All Samples Have the proper pH? Acid Base

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

Unused Media

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

Comments:



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Report Date: 2022/08/16
Report #: R7255861
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L6083

Received: 2022/08/02, 13:39

Sample Matrix: Soil
Samples Received: 1

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Moisture	1	N/A	2022/08/05	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	1	2022/08/11	2022/08/12	CAM SOP-00894	ASTM D7968-17a m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/16
Report #: R7255861
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2L6083

Received: 2022/08/02, 13:39

Encryption Key

Lori Dufour
Project Manager
16 Aug 2022 15:44:48

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TIH484			
Sampling Date		2022/07/27 12:30			
COC Number		na			
	UNITS	SED-X	RDL	MDL	QC Batch
Inorganics					
Moisture	%	94	1.0	0.50	8150173
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TIH484			
Sampling Date		2022/07/27 12:30			
COC Number		na			
	UNITS	SED-X	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ug/kg	<4.8	20	4.8	8161192
Perfluoropentanoic acid (PFPeA)	ug/kg	<4.6	20	4.6	8161192
Perfluorohexanoic acid (PFHxA)	ug/kg	5.7	20	3.2	8161192
Perfluoroheptanoic acid (PFHpA)	ug/kg	4.6	20	3.4	8161192
Perfluorooctanoic acid (PFOA)	ug/kg	4.7	20	4.0	8161192
Perfluorononanoic acid (PFNA)	ug/kg	14	20	5.4	8161192
Perfluorodecanoic acid (PFDA)	ug/kg	<4.8	20	4.8	8161192
Perfluoroundecanoic acid (PFUnA)	ug/kg	<50	200	50	8161192
Perfluorododecanoic acid (PFDoA)	ug/kg	<38	200	38	8161192
Perfluorotridecanoic acid (PFTRDA)	ug/kg	<44	200	44	8161192
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<60	200	60	8161192
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<3.4	20	3.4	8161192
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	9.6	20	6.0	8161192
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<3.4	20	3.4	8161192
Perfluorooctanesulfonic acid (PFOS)	ug/kg	100	20	5.4	8161192
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<5.4	20	5.4	8161192
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<40	200	40	8161192
EtFOSA	ug/kg	<62	200	62	8161192
MeFOSA	ug/kg	<78	200	78	8161192
EtFOSE	ug/kg	<58	200	58	8161192
MeFOSE	ug/kg	<44	200	44	8161192
6:2 Fluorotelomer sulfonic acid	ug/kg	<6.0	20	6.0	8161192
8:2 Fluorotelomer sulfonic acid	ug/kg	<6.0	20	6.0	8161192
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	90	N/A	N/A	8161192
13C2-8:2-Fluorotelomersulfonic Acid	%	71	N/A	N/A	8161192
13C2-Perfluorodecanoic acid	%	52	N/A	N/A	8161192
13C2-Perfluorododecanoic acid	%	101	N/A	N/A	8161192
13C2-Perfluorohexanoic acid	%	84	N/A	N/A	8161192
13C2-perfluorotetradecanoic acid	%	106	N/A	N/A	8161192
13C2-Perfluoroundecanoic acid	%	99	N/A	N/A	8161192
13C3-Perfluorobutanesulfonic acid	%	84	N/A	N/A	8161192
13C4-Perfluorobutanoic acid	%	85	N/A	N/A	8161192
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TIH484			
Sampling Date		2022/07/27 12:30			
COC Number		na			
	UNITS	SED-X	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	88	N/A	N/A	8161192
13C4-Perfluorooctanesulfonic acid	%	60	N/A	N/A	8161192
13C4-Perfluorooctanoic acid	%	82	N/A	N/A	8161192
13C5-Perfluorononanoic acid	%	73	N/A	N/A	8161192
13C5-Perfluoropentanoic acid	%	84	N/A	N/A	8161192
13C8-Perfluorooctane Sulfonamide	%	99	N/A	N/A	8161192
18O2-Perfluorohexanesulfonic acid	%	82	N/A	N/A	8161192
D3-MeFOSA	%	96	N/A	N/A	8161192
D5-EtFOSA	%	86	N/A	N/A	8161192
D7-MeFOSE	%	94	N/A	N/A	8161192
D9-EtFOSE	%	91	N/A	N/A	8161192
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TIH484
Sample ID: SED-X
Matrix: Soil

Collected: 2022/07/27
Shipped:
Received: 2022/08/02

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8150173	N/A	2022/08/05	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8161192	2022/08/11	2022/08/12	Patrick Yu Peng Li



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

GENERAL COMMENTS

Samples received above 10C. Client consented to proceed with analysis.

Sample TIH484 [SED-X] : Per- and polyfluoroalkyl substances (PFAS): Due to the nature of the sample matrix, sample require dilution. Detection limits were adjusted accordingly. Detection limits were also adjusted for high moisture content.

Results relate only to the items tested.



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8150173	AK7	RPD - Sample/Sample Dup	Moisture		2022/08/05	2.2		%	20
8161192	YPL	Matrix Spike	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/12		87	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/12		88	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/12		85	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/12		83	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/12		88	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/12		80	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/12		83	%	50 - 150
			13C3-Perfluorobutanesulfonic acid		2022/08/12		89	%	50 - 150
			13C4-Perfluorobutanoic acid		2022/08/12		87	%	50 - 150
			13C4-Perfluoroheptanoic acid		2022/08/12		86	%	50 - 150
			13C4-Perfluorooctanesulfonic acid		2022/08/12		85	%	50 - 150
			13C4-Perfluorooctanoic acid		2022/08/12		83	%	50 - 150
			13C5-Perfluorononanoic acid		2022/08/12		84	%	50 - 150
			13C5-Perfluoropentanoic acid		2022/08/12		86	%	50 - 150
			13C8-Perfluorooctane Sulfonamide		2022/08/12		82	%	50 - 150
			18O2-Perfluorohexanesulfonic acid		2022/08/12		88	%	50 - 150
			D3-MeFOSA		2022/08/12		67	%	25 - 150
			D5-EtFOSA		2022/08/12		65	%	25 - 150
			D7-MeFOSE		2022/08/12		74	%	25 - 150
			D9-EtFOSE		2022/08/12		76	%	25 - 150
			Perfluorobutanoic acid (PFBA)		2022/08/12		100	%	70 - 130
			Perfluoropentanoic acid (PFPeA)		2022/08/12		102	%	70 - 130
			Perfluorohexanoic acid (PFHxA)		2022/08/12		102	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)		2022/08/12		102	%	70 - 130
			Perfluorooctanoic acid (PFOA)		2022/08/12		102	%	70 - 130
			Perfluorononanoic acid (PFNA)		2022/08/12		104	%	70 - 130
			Perfluorodecanoic acid (PFDA)		2022/08/12		101	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)		2022/08/12		104	%	70 - 130
			Perfluorododecanoic acid (PFDoA)		2022/08/12		104	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)		2022/08/12		105	%	70 - 130
			Perfluorotetradecanoic acid (PFTEDA)		2022/08/12		102	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)		2022/08/12		100	%	70 - 130
			Perfluorohexanesulfonic acid (PFHxS)		2022/08/12		99	%	70 - 130
			Perfluoroheptanesulfonic acid (PFHpS)		2022/08/12		95	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)		2022/08/12		98	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)		2022/08/12		98	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)		2022/08/12		98	%	70 - 130
			EtFOSA		2022/08/12		102	%	70 - 130
			MeFOSA		2022/08/12		94	%	70 - 130
			EtFOSE		2022/08/12		96	%	70 - 130
			MeFOSE		2022/08/12		107	%	70 - 130
			6:2 Fluorotelomer sulfonic acid		2022/08/12		100	%	70 - 130
			8:2 Fluorotelomer sulfonic acid		2022/08/12		102	%	70 - 130
8161192	YPL	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/12		85	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/12		86	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/12		82	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/12		80	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/12		87	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/12		76	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/12		80	%	50 - 150



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C3-Perfluorobutanesulfonic acid	2022/08/12		88	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/12		86	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/12		86	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/12		83	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/12		82	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/12		83	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/12		86	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/12		78	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/12		86	%	50 - 150
				D3-MeFOSA	2022/08/12		54	%	25 - 150
				D5-EtFOSA	2022/08/12		53	%	25 - 150
				D7-MeFOSE	2022/08/12		73	%	25 - 150
				D9-EtFOSE	2022/08/12		74	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/12		99	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/12		99	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/12		102	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/12		100	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/12		102	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/12		102	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/12		101	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/12		105	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/12		103	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/12		104	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/12		101	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/12		102	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/12		99	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/12		94	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/12		100	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/12		98	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/12		98	%	70 - 130
				EtFOSA	2022/08/12		104	%	70 - 130
				MeFOSA	2022/08/12		95	%	70 - 130
				EtFOSE	2022/08/12		98	%	70 - 130
				MeFOSE	2022/08/12		111	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/12		99	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/12		97	%	70 - 130
8161192	YPL	Method Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/12		97	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/12		86	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/12		80	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/12		76	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/12		89	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/12		73	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/12		78	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/12		87	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/12		87	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/12		89	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/12		85	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/12		84	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/12		84	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/12		88	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/12		76	%	50 - 150



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8161192	YPL	RPD - Sample/Sample Dup		18O2-Perfluorohexanesulfonic acid	2022/08/12		88	%	50 - 150
				D3-MeFOSA	2022/08/12		51	%	25 - 150
				D5-EtFOSA	2022/08/12		50	%	25 - 150
				D7-MeFOSE	2022/08/12		69	%	25 - 150
				D9-EtFOSE	2022/08/12		70	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/12	<0.24		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/08/12	<0.23		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/08/12	<0.16		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/08/12	<0.17		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/08/12	<0.20		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/08/12	<0.27		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/08/12	<0.24		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/08/12	<0.25		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/08/12	<0.19		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/08/12	<0.22		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/12	<0.30		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/08/12	<0.17		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/12	<0.30		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/08/12	<0.17		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/08/12	<0.27		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/08/12	<0.27		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/12	<0.20		ug/kg	
				EtFOSA	2022/08/12	<0.31		ug/kg	
				MeFOSA	2022/08/12	<0.39		ug/kg	
				EtFOSE	2022/08/12	<0.29		ug/kg	
				MeFOSE	2022/08/12	<0.22		ug/kg	
				6:2 Fluorotelomer sulfonic acid	2022/08/12	<0.30		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/08/12	<0.30		ug/kg	
				Perfluorobutanoic acid (PFBA)	2022/08/12	NC		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/12	NC		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/12	NC		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/12	NC		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/12	NC		%	30
				Perfluorononanoic acid (PFNA)	2022/08/12	NC		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/12	NC		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/12	NC		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/12	NC		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/12	NC		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/12	NC		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/12	NC		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/12	NC		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/12	NC		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/12	NC		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/12	NC		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/12	NC		%	30
				EtFOSA	2022/08/12	NC		%	30
				MeFOSA	2022/08/12	NC		%	30
				EtFOSE	2022/08/12	NC		%	30
				MeFOSE	2022/08/12	NC		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/12	NC		%	30



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				8:2 Fluorotelomer sulfonic acid	2022/08/12	NC		%	30
Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.									
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.									
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.									
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.									
NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).									



Bureau Veritas Job #: C2L6083
Report Date: 2022/08/16

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Colm McNamara".

Colm McNamara, Senior Analyst, Liquid Chromatography

A handwritten signature in black ink, appearing to read "Cristina Carriere".

Cristina Carriere, Senior Scientific Specialist

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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6740 Campobello Road, Mississauga, Ontario L5N 2L8
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CHAIN OF CUSTODY RECORD

ENV COC - 00014v3

Page 1 of 1

[illegible]



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Report Date: 2022/09/08
Report #: R7287679
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acid Extractable Metals Analysis by ICP	3	2022/08/31	2022/09/01	CAM SOP-00408	EPA 6010D m
Moisture	3	N/A	2022/08/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	3	2022/08/30	2022/08/31	CAM SOP-00894	ASTM D7968-17a m
Total Organic Carbon in Soil	3	N/A	2022/09/07	CAM SOP-00468	BCMOE TOC Aug 2014

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Report Date: 2022/09/08
Report #: R7287679
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TNP121	TNP122	TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15	2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	FRP-109	RDL	MDL	QC Batch
Inorganics							
Moisture	%	26	19	95	1.0	0.50	8189754
Total Organic Carbon	mg/kg	24000	5500	310000	500	100	8196512
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP121	TNP122			TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15			2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	RDL	MDL	FRP-109	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ug/kg	<0.24	<0.24	1.0	0.24	<4.8	20	4.8	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	<0.23	<0.23	1.0	0.23	<4.6	20	4.6	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	<0.16	<0.16	1.0	0.16	<3.2	20	3.2	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	<0.17	<0.17	1.0	0.17	<3.4	20	3.4	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	0.21	<0.20	1.0	0.20	<4.0	20	4.0	8195799
Perfluorononanoic acid (PFNA)	ug/kg	1.4	1.1	1.0	0.27	<5.4	20	5.4	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	0.59	<0.24	1.0	0.24	<4.8	20	4.8	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	0.41	<0.25	1.0	0.25	23	20	5.0	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.19	<0.19	1.0	0.19	<3.8	20	3.8	8195799
Perfluorotridecanoic acid (PFTrDA)	ug/kg	<0.22	<0.22	1.0	0.22	37	20	4.4	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.30	<0.30	1.0	0.30	<6.0	20	6.0	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.17	<0.17	1.0	0.17	<3.4	20	3.4	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	0.59	<0.30	1.0	0.30	<6.0	20	6.0	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.17	<0.17	1.0	0.17	<3.4	20	3.4	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	26	18	1.0	0.27	270	20	54	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.27	<0.27	1.0	0.27	<5.4	20	5.4	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.20	<0.20	1.0	0.20	<4.0	20	4.0	8195799
EtFOSA	ug/kg	<0.31	<0.31	1.0	0.31	<6.2	20	6.2	8195799
MeFOSA	ug/kg	<0.39	<0.39	1.0	0.39	<7.8	20	7.8	8195799
EtFOSE	ug/kg	<0.29	<0.29	1.0	0.29	<5.8	20	5.8	8195799
MeFOSE	ug/kg	<0.22	<0.22	1.0	0.22	<4.4	20	4.4	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	1.0	0.30	<6.0	20	6.0	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	1.0	0.30	<6.0	20	6.0	8195799
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	95	99	N/A	N/A	95	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	93	91	N/A	N/A	93	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	86	87	N/A	N/A	88	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	74	61	N/A	N/A	76	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	91	97	N/A	N/A	93	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	58	31 (1)	N/A	N/A	65	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL). Laboratory spiked soil resulted in satisfactory recovery of the extracted internal standard analyte. When considered together, these QC data suggest that matrix interferences may be increasing the variability of the associated native analyte result (PFTrDA & PFTEDA).									



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP121	TNP122			TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15			2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	RDL	MDL	FRP-109	RDL	MDL	QC Batch
13C2-Perfluoroundecanoic acid	%	82	79	N/A	N/A	83	N/A	N/A	8195799
13C3-Perfluorobutanesulfonic acid	%	91	97	N/A	N/A	94	N/A	N/A	8195799
13C4-Perfluorobutanoic acid	%	94	98	N/A	N/A	93	N/A	N/A	8195799
13C4-Perfluoroheptanoic acid	%	95	98	N/A	N/A	95	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	88	88	N/A	N/A	87	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	91	95	N/A	N/A	95	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	86	88	N/A	N/A	88	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	90	95	N/A	N/A	92	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	77	73	N/A	N/A	77	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	89	94	N/A	N/A	91	N/A	N/A	8195799
D3-MeFOSA	%	47	37	N/A	N/A	41	N/A	N/A	8195799
D5-EtFOSA	%	46	33	N/A	N/A	38	N/A	N/A	8195799
D7-MeFOSE	%	54	56	N/A	N/A	45	N/A	N/A	8195799
D9-EtFOSE	%	50	52	N/A	N/A	42	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TNP121	TNP122	TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15	2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	FRP-109	RDL	MDL	QC Batch
Metals							
Acid Extractable Iron (Fe)	ug/g	620	3400	4500	50	N/A	8198380
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
N/A = Not Applicable							



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TNP121
Sample ID: SB-FRP 0-1'
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	8198380	2022/08/31	2022/09/01	Indira HarryPaul
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran
Total Organic Carbon in Soil	COMB	8196512	N/A	2022/09/07	Godwin Okereke

Bureau Veritas ID: TNP122
Sample ID: SB-FRP 1-2'
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	8198380	2022/08/31	2022/09/01	Indira HarryPaul
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran
Total Organic Carbon in Soil	COMB	8196512	N/A	2022/09/07	Godwin Okereke

Bureau Veritas ID: TNP132
Sample ID: FRP-109
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	8198380	2022/08/31	2022/09/01	Indira HarryPaul
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran
Total Organic Carbon in Soil	COMB	8196512	N/A	2022/09/07	Godwin Okereke



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

GENERAL COMMENTS

Version 1: Split report for sediment samples.

Bureau Veritas Laboratories is not NELAC/DOD-ELAP accredited for Iron and Total Organic Carbon. Analysis completed with client's consent

Incorrect containers were received for Iron and Total Organic Carbon. Client consented to proceed with analysis.

Sample TNP132 [FRP-109] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Results relate only to the items tested.



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8189754	JTS	RPD - Sample/Sample Dup	Moisture		2022/08/26	1.1		%	20
8195799	TTM	Matrix Spike(TNP125)	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/31		87	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/31		80	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/31		82	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/31		55	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/31		90	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/31		23 (1)	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/31		70	%	50 - 150
			13C3-Perfluorobutanesulfonic acid		2022/08/31		92	%	50 - 150
			13C4-Perfluorobutanoic acid		2022/08/31		93	%	50 - 150
			13C4-Perfluoroheptanoic acid		2022/08/31		90	%	50 - 150
			13C4-Perfluorooctanesulfonic acid		2022/08/31		81	%	50 - 150
			13C4-Perfluorooctanoic acid		2022/08/31		88	%	50 - 150
			13C5-Perfluorononanoic acid		2022/08/31		84	%	50 - 150
			13C5-Perfluoropentanoic acid		2022/08/31		90	%	50 - 150
			13C8-Perfluorooctane Sulfonamide		2022/08/31		71	%	50 - 150
			18O2-Perfluorohexanesulfonic acid		2022/08/31		87	%	50 - 150
			D3-MeFOSA		2022/08/31		39	%	25 - 150
			D5-EtFOSA		2022/08/31		35	%	25 - 150
			D7-MeFOSE		2022/08/31		57	%	25 - 150
			D9-EtFOSE		2022/08/31		54	%	25 - 150
			Perfluorobutanoic acid (PFBA)		2022/08/31		89	%	70 - 130
			Perfluoropentanoic acid (PFPeA)		2022/08/31		92	%	70 - 130
			Perfluorohexanoic acid (PFHxA)		2022/08/31		90	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)		2022/08/31		92	%	70 - 130
			Perfluorooctanoic acid (PFOA)		2022/08/31		92	%	70 - 130
			Perfluorononanoic acid (PFNA)		2022/08/31		91	%	70 - 130
			Perfluorodecanoic acid (PFDA)		2022/08/31		88	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)		2022/08/31		89	%	70 - 130
			Perfluorododecanoic acid (PFDoA)		2022/08/31		91	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)		2022/08/31		138 (2)	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)		2022/08/31		88	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)		2022/08/31		90	%	70 - 130
			Perfluorohexanesulfonic acid(PFHxS)		2022/08/31		90	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS		2022/08/31		85	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)		2022/08/31		96	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)		2022/08/31		74	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)		2022/08/31		86	%	70 - 130
			EtFOSA		2022/08/31		92	%	70 - 130
			MeFOSA		2022/08/31		94	%	70 - 130
			EtFOSE		2022/08/31		89	%	70 - 130
			MeFOSE		2022/08/31		95	%	70 - 130
			6:2 Fluorotelomer sulfonic acid		2022/08/31		89	%	70 - 130
			8:2 Fluorotelomer sulfonic acid		2022/08/31		89	%	70 - 130
8195799	TTM	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/31		92	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/31		88	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/31		90	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/31		82	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/31		89	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/31		80	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/31		84	%	50 - 150



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C3-Perfluorobutanesulfonic acid	2022/08/31		92	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/31		91	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/31		93	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/31		92	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/31		90	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/31		89	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/31		89	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/31		79	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/31		90	%	50 - 150
				D3-MeFOSA	2022/08/31		44	%	25 - 150
				D5-EtFOSA	2022/08/31		37	%	25 - 150
				D7-MeFOSE	2022/08/31		66	%	25 - 150
				D9-EtFOSE	2022/08/31		64	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31		88	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/31		90	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/31		89	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/31		89	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/31		89	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/31		90	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/31		89	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/31		88	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/31		92	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31		93	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31		88	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31		86	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31		88	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31		86	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31		89	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31		82	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31		86	%	70 - 130
				EtFOSA	2022/08/31		99	%	70 - 130
				MeFOSA	2022/08/31		89	%	70 - 130
				EtFOSE	2022/08/31		91	%	70 - 130
				MeFOSE	2022/08/31		91	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/31		87	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/31		90	%	70 - 130
	8195799	TTM	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/31		104	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/31		93	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/31		90	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/31		82	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/31		93	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/31		82	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/31		88	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/31		93	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/31		94	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/31		99	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/31		95	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/31		96	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/31		96	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/31		90	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/31		77	%	50 - 150



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8195799	TTM	RPD - Sample/Sample Dup		18O2-Perfluorohexanesulfonic acid	2022/08/31		96	%	50 - 150
				D3-MeFOSA	2022/08/31		34	%	25 - 150
				D5-EtFOSA	2022/08/31		30	%	25 - 150
				D7-MeFOSE	2022/08/31		63	%	25 - 150
				D9-EtFOSE	2022/08/31		64	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31	<0.24		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/08/31	<0.23		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/08/31	<0.16		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	<0.17		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/08/31	<0.20		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/08/31	<0.24		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	<0.25		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/08/31	<0.19		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	<0.22		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	<0.30		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	<0.17		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	<0.30		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	<0.17		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	<0.27		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	<0.20		ug/kg	
				EtFOSA	2022/08/31	<0.31		ug/kg	
				MeFOSA	2022/08/31	<0.39		ug/kg	
				EtFOSE	2022/08/31	<0.29		ug/kg	
				MeFOSE	2022/08/31	<0.22		ug/kg	
				6:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				Perfluorobutanoic acid (PFBA)	2022/08/31	NC		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/31	NC		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/31	NC		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	NC		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/31	NC		%	30
				Perfluorononanoic acid (PFNA)	2022/08/31	NC		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/31	NC		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	NC		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/31	NC		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	NC		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	NC		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	NC		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	NC		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	NC		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	NC		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	NC		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	NC		%	30
				EtFOSA	2022/08/31	NC		%	30
				MeFOSA	2022/08/31	NC		%	30
				EtFOSE	2022/08/31	NC		%	30
				MeFOSE	2022/08/31	NC		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30
				8:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8196512	OK	QC Standard	Total Organic Carbon	2022/09/07		103	%	75 - 125
8196512	OK	Method Blank	Total Organic Carbon	2022/09/07	<500		mg/kg	
8196512	OK	RPD - Sample/Sample Dup	Total Organic Carbon	2022/09/07	0.43		%	35
8198380	IHP	Matrix Spike	Acid Extractable Iron (Fe)	2022/09/01		NC	%	75 - 125
8198380	IHP	Spiked Blank	Acid Extractable Iron (Fe)	2022/09/01		102	%	80 - 120
8198380	IHP	Method Blank	Acid Extractable Iron (Fe)	2022/09/01	<50		ug/g	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked soil resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high for this specific analyte. For results that were not detected (ND), this potential bias has no impact.



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "A. Hamanov", written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "A. Robinson", written over a horizontal line.

Adam Robinson, Supervisor, LC/MS/MS

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



www.BVNA.com

6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

International Sample

Heat Treat Required

IRD

Page 1 of 1

Invoice Information				Report Information (if differs from invoice)				High Risk material Controlled Storage and Disposal														Regular Turnaround Time (TAT)			
Company: Barnstable County				Company: BETA Group, Inc				Quotation #:				24-Aug-22 11:59				Lori Dufour									
Contact Name: Priscilla Ellis/ Steve Tebo				Contact Name: Roger Thibault				P.O. #/ APER:				6206				C201362									
Street Address: 3195 Main St				Street Address: 701 George Washington Hwy				Project #:				BFTA				RJM ENV-645									
City: Barnstable Prov: Postal Code:				City: Lincoln Prov: Postal Code:				Site #:				Barnstable, MA													
Phone:				Phone:				Site Location:																	
Email: pellis@barnstablecounty.org				Email: Rthibault@BETA-inc.com; Lbouley@BETA-inc.com				Site Location Province:																	
Copies: stebo@barnstablecounty.org				Copies: stebo@barnstablecounty.org				Sampled By: Chris Oien, Laura Bouley, Amanda Ray																	
Regulatory Criteria <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> CCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> Reg 558* <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Table <input type="checkbox"/> PWQO <input type="checkbox"/> Other:				Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>				SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS														Rush Turnaround Time (TAT) <input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day			
Sample Identification Date Sampled: YY MM DD HH MM Matrix:				LAB FILTRATION REQUIRED BTEX/F1 P2 - F4 VOCs Reg 153 metals and inorganics Reg 153 ICPMS metals Reg 153 metals IIR, C-VI, ICPMS metals, HWS - B1 ASTM D7968-17A m US EPA 537.1m (PFAS)				# OF CONTAINERS SUBMITTED HOLD - DO NOT ANALYZE														Date Required: YY MM DD Comments			
1 SB-FRP 0-1'				22 08 18 14 10 Sediment																		1			
2 SB-FRP 1-2'				22 08 18 14 15 Sediment																		1			
3 MW-305 (0-2')				22 08 18 10 00 Soil																		1			
4 MW-305 (12-14')				22 08 18 10 15 Soil																		1			
5 MW-306 (0-2')				22 08 18 13 00 Soil																		1			
6 MW-306 (8-10')				22 08 17 13 00 Soil																		1			
7 Equipment Blank (Sed 1)				22 08 17 16 00 Water																		1			
8 SW-401 (FRP-107)				22 08 17 14 00 Water - Surface																		1			
9 SW-402 (FRP-107)				22 08 17 14 15 Water - Surface																		1			
10 SW-403				22 08 17 15 00 Water - Surface																		1			
11 SW-404				22 08 17 15 10 Water - Surface																		1			
12 FRP-109				22 08 18 7 00 Sediment																		1			
*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY																									
LAB USE ONLY Yes No Seal present Seal intact Cooling media present				LAB USE ONLY Yes No Seal present Seal intact Cooling media present				LAB USE ONLY Yes No Seal present Seal intact Cooling media present				Temperature reading by:													
Relinquished by: (Signature/ Print) Date: YY MM DD HH MM 1 [Signature] 2022 08 23 12 00				Received by: (Signature/ Print) Date: YY MM DD HH MM 1 [Signature] 2022 08 24 11 59				Special Instructions																	

461128



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: n/a

Report Date: 2022/09/08
Report #: R7287201
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C201371

Received: 2022/08/24, 11:59

Sample Matrix: Soil
Samples Received: 9

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Moisture	9	N/A	2022/08/25	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	9	2022/08/30	2022/08/31	CAM SOP-00894	ASTM D7968-17a m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: n/a

Report Date: 2022/09/08
Report #: R7287201
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C201371

Received: 2022/08/24, 11:59

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2O1371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TNP182	TNP183	TNP183	TNP185	TNP186	TNP187	TNP189			
Sampling Date		2022/08/18 10:00	2022/08/18 10:15	2022/08/18 10:15	2022/08/18 10:30	2022/08/18 10:45	2022/08/17 12:45	2022/08/17 13:30			
COC Number		n/a	n/a	n/a	n/a	n/a	n/a	n/a			
	UNITS	FRP-101	FRP-102	FRP-102 Lab-Dup	FRP-103	FRP-104	FRP-105	FRP-106	RDL	MDL	QC Batch

Inorganics											
Moisture	%	57	39	39	28	58	87	95	1.0	0.50	8187757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch
Lab-Dup = Laboratory Initiated Duplicate

Bureau Veritas ID		TNP190	TNP191	TNP192			
Sampling Date		2022/08/17 14:45	2022/08/18 14:55	2022/08/18 07:30			
COC Number		n/a	n/a	n/a			
	UNITS	FRP-107	FRP-108	FRP-110	RDL	MDL	QC Batch

Inorganics							
Moisture	%	86	94	95	1.0	0.50	8187757

RDL = Reportable Detection Limit
QC Batch = Quality Control Batch



Bureau Veritas Job #: C201371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP182			TNP183			TNP185			
Sampling Date		2022/08/18 10:00			2022/08/18 10:15			2022/08/18 10:30			
COC Number		n/a			n/a			n/a			
	UNITS	FRP-101	RDL	MDL	FRP-102	RDL	MDL	FRP-103	RDL	MDL	QC Batch
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	ug/kg	<0.72	3.0	0.72	<0.48	2.0	0.48	<0.24	1.0	0.24	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	2.6	3.0	0.69	<0.46	2.0	0.46	<0.23	1.0	0.23	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	2.2	3.0	0.48	0.57	2.0	0.32	<0.16	1.0	0.16	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	1.3	3.0	0.51	<0.34	2.0	0.34	<0.17	1.0	0.17	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	2.9	3.0	0.60	0.78	2.0	0.40	<0.20	1.0	0.20	8195799
Perfluorononanoic acid (PFNA)	ug/kg	7.1	3.0	0.81	7.6	2.0	0.54	<0.27	1.0	0.27	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	4.7	3.0	0.72	0.64	2.0	0.48	<0.24	1.0	0.24	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	53	3.0	0.75	3.7	2.0	0.50	2.2	1.0	0.25	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	2.1	3.0	0.57	<0.38	2.0	0.38	<0.19	1.0	0.19	8195799
Perfluorotridecanoic acid (PFTRDA)	ug/kg	7.6	3.0	0.66	<0.44	2.0	0.44	<0.22	1.0	0.22	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.90	3.0	0.90	<0.60	2.0	0.60	<0.30	1.0	0.30	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.51	3.0	0.51	<0.34	2.0	0.34	<0.17	1.0	0.17	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	11	3.0	0.90	3.0	2.0	0.60	<0.30	1.0	0.30	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.51	3.0	0.51	<0.34	2.0	0.34	<0.17	1.0	0.17	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	92	30	0.81	36	2.0	0.54	4.1	1.0	0.27	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.81	3.0	0.81	<0.54	2.0	0.54	<0.27	1.0	0.27	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.60	3.0	0.60	<0.40	2.0	0.40	<0.20	1.0	0.20	8195799
EtFOSA	ug/kg	<0.93	3.0	0.93	<0.62	2.0	0.62	<0.31	1.0	0.31	8195799
MeFOSA	ug/kg	<1.2	3.0	1.2	<0.78	2.0	0.78	<0.39	1.0	0.39	8195799
EtFOSE	ug/kg	<0.87	3.0	0.87	<0.58	2.0	0.58	<0.29	1.0	0.29	8195799
MeFOSE	ug/kg	<0.66	3.0	0.66	<0.44	2.0	0.44	<0.22	1.0	0.22	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.90	3.0	0.90	<0.60	2.0	0.60	<0.30	1.0	0.30	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	1.8	3.0	0.90	<0.60	2.0	0.60	<0.30	1.0	0.30	8195799
Surrogate Recovery (%)											
13C2-6:2-Fluorotelomersulfonic Acid	%	96	N/A	N/A	90	N/A	N/A	105	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	107	N/A	N/A	91	N/A	N/A	97	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	95	N/A	N/A	83	N/A	N/A	91	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	87	N/A	N/A	72	N/A	N/A	85	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	96	N/A	N/A	90	N/A	N/A	100	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	62	N/A	N/A	58	N/A	N/A	77	N/A	N/A	8195799
13C2-Perfluoroundecanoic acid	%	88	N/A	N/A	77	N/A	N/A	90	N/A	N/A	8195799
13C3-Perfluorobutanesulfonic acid	%	97	N/A	N/A	86	N/A	N/A	101	N/A	N/A	8195799
13C4-Perfluorobutanoic acid	%	97	N/A	N/A	90	N/A	N/A	101	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable											



Bureau Veritas Job #: C2O1371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP182			TNP183			TNP185			
Sampling Date		2022/08/18 10:00			2022/08/18 10:15			2022/08/18 10:30			
COC Number		n/a			n/a			n/a			
	UNITS	FRP-101	RDL	MDL	FRP-102	RDL	MDL	FRP-103	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	94	N/A	N/A	91	N/A	N/A	106	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	96	N/A	N/A	83	N/A	N/A	94	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	98	N/A	N/A	90	N/A	N/A	100	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	86	N/A	N/A	83	N/A	N/A	99	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	96	N/A	N/A	90	N/A	N/A	99	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	84	N/A	N/A	74	N/A	N/A	84	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	87	N/A	N/A	79	N/A	N/A	98	N/A	N/A	8195799
D3-MeFOSA	%	52	N/A	N/A	51	N/A	N/A	56	N/A	N/A	8195799
D5-EtFOSA	%	50	N/A	N/A	46	N/A	N/A	54	N/A	N/A	8195799
D7-MeFOSE	%	55	N/A	N/A	48	N/A	N/A	68	N/A	N/A	8195799
D9-EtFOSE	%	51	N/A	N/A	47	N/A	N/A	70	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable											



Bureau Veritas Job #: C201371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP186			TNP187			TNP189			
Sampling Date		2022/08/18 10:45			2022/08/17 12:45			2022/08/17 13:30			
COC Number		n/a			n/a			n/a			
	UNITS	FRP-104	RDL	MDL	FRP-105	RDL	MDL	FRP-106	RDL	MDL	QC Batch
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	ug/kg	<0.72	3.0	0.72	<2.4	10	2.4	<4.8	20	4.8	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	<0.69	3.0	0.69	<2.3	10	2.3	<4.6	20	4.6	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	<0.48	3.0	0.48	<1.6	10	1.6	<3.2	20	3.2	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	<0.51	3.0	0.51	<1.7	10	1.7	<3.4	20	3.4	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	<0.60	3.0	0.60	<2.0	10	2.0	<4.0	20	4.0	8195799
Perfluorononanoic acid (PFNA)	ug/kg	<0.81	3.0	0.81	<2.7	10	2.7	<5.4	20	5.4	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	<0.72	3.0	0.72	<2.4	10	2.4	<4.8	20	4.8	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	1.9	3.0	0.75	13	10	2.5	19	20	5.0	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.57	3.0	0.57	<1.9	10	1.9	<3.8	20	3.8	8195799
Perfluorotridecanoic acid (PFTRDA)	ug/kg	<0.66	3.0	0.66	11	10	2.2	41	20	4.4	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.90	3.0	0.90	<3.0	10	3.0	<6.0	20	6.0	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.51	3.0	0.51	<1.7	10	1.7	<3.4	20	3.4	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	<0.90	3.0	0.90	<3.0	10	3.0	<6.0	20	6.0	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.51	3.0	0.51	<1.7	10	1.7	<3.4	20	3.4	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	25	3.0	0.81	95	10	2.7	140	20	5.4	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.81	3.0	0.81	<2.7	10	2.7	<5.4	20	5.4	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.60	3.0	0.60	<2.0	10	2.0	<4.0	20	4.0	8195799
EtFOSA	ug/kg	<0.93	3.0	0.93	<3.1	10	3.1	<6.2	20	6.2	8195799
MeFOSA	ug/kg	<1.2	3.0	1.2	<3.9	10	3.9	<7.8	20	7.8	8195799
EtFOSE	ug/kg	<0.87	3.0	0.87	<2.9	10	2.9	<5.8	20	5.8	8195799
MeFOSE	ug/kg	<0.66	3.0	0.66	<2.2	10	2.2	<4.4	20	4.4	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.90	3.0	0.90	<3.0	10	3.0	<6.0	20	6.0	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.90	3.0	0.90	<3.0	10	3.0	<6.0	20	6.0	8195799
Surrogate Recovery (%)											
13C2-6:2-Fluorotelomersulfonic Acid	%	91	N/A	N/A	94	N/A	N/A	104	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	86	N/A	N/A	94	N/A	N/A	99	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	79	N/A	N/A	83	N/A	N/A	91	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	69	N/A	N/A	69	N/A	N/A	78	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	85	N/A	N/A	88	N/A	N/A	100	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	54	N/A	N/A	55	N/A	N/A	68	N/A	N/A	8195799
13C2-Perfluoroundecanoic acid	%	74	N/A	N/A	75	N/A	N/A	84	N/A	N/A	8195799
13C3-Perfluorobutanesulfonic acid	%	87	N/A	N/A	89	N/A	N/A	98	N/A	N/A	8195799
13C4-Perfluorobutanoic acid	%	88	N/A	N/A	89	N/A	N/A	99	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable											



Bureau Veritas Job #: C2O1371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP186			TNP187			TNP189			
Sampling Date		2022/08/18 10:45			2022/08/17 12:45			2022/08/17 13:30			
COC Number		n/a			n/a			n/a			
	UNITS	FRP-104	RDL	MDL	FRP-105	RDL	MDL	FRP-106	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	88	N/A	N/A	89	N/A	N/A	102	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	79	N/A	N/A	85	N/A	N/A	92	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	86	N/A	N/A	92	N/A	N/A	101	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	81	N/A	N/A	84	N/A	N/A	95	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	87	N/A	N/A	89	N/A	N/A	99	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	70	N/A	N/A	68	N/A	N/A	80	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	81	N/A	N/A	84	N/A	N/A	93	N/A	N/A	8195799
D3-MeFOSA	%	46	N/A	N/A	40	N/A	N/A	41	N/A	N/A	8195799
D5-EtFOSA	%	43	N/A	N/A	39	N/A	N/A	42	N/A	N/A	8195799
D7-MeFOSE	%	50	N/A	N/A	41	N/A	N/A	47	N/A	N/A	8195799
D9-EtFOSE	%	47	N/A	N/A	37	N/A	N/A	44	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable											



Bureau Veritas Job #: C201371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP190			TNP191	TNP192			
Sampling Date		2022/08/17 14:45			2022/08/18 14:55	2022/08/18 07:30			
COC Number		n/a			n/a	n/a			
	UNITS	FRP-107	RDL	MDL	FRP-108	FRP-110	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ug/kg	<24	100	24	<48	<48	200	48	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	<23	100	23	<46	<46	200	46	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	<16	100	16	<32	<32	200	32	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	<17	100	17	<34	<34	200	34	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	<20	100	20	<40	<40	200	40	8195799
Perfluorononanoic acid (PFNA)	ug/kg	<27	100	27	<54	<54	200	54	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	<24	100	24	<48	<48	200	48	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	<25	100	25	<50	<50	200	50	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	<19	100	19	<38	<38	200	38	8195799
Perfluorotridecanoic acid (PFTDA)	ug/kg	<22	100	22	<44	<44	200	44	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<30	100	30	<60	<60	200	60	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<17	100	17	<34	<34	200	34	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	<30	100	30	<60	<60	200	60	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<17	100	17	<34	<34	200	34	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	<27	100	27	<54	100	200	54	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<27	100	27	<54	<54	200	54	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<20	100	20	<40	<40	200	40	8195799
EtFOSA	ug/kg	<31	100	31	<62	<62	200	62	8195799
MeFOSA	ug/kg	<39	100	39	<78	<78	200	78	8195799
EtFOSE	ug/kg	<29	100	29	<58	<58	200	58	8195799
MeFOSE	ug/kg	<22	100	22	<44	<44	200	44	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<30	100	30	<60	<60	200	60	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	<30	100	30	<60	<60	200	60	8195799
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	116	N/A	N/A	119	116	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	113	N/A	N/A	114	112	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	113	N/A	N/A	115	113	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	116	N/A	N/A	117	111	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	117	N/A	N/A	116	114	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	112	N/A	N/A	109	107	N/A	N/A	8195799
13C2-Perfluoroundecanoic acid	%	116	N/A	N/A	116	113	N/A	N/A	8195799
13C3-Perfluorobutanesulfonic acid	%	115	N/A	N/A	116	116	N/A	N/A	8195799
13C4-Perfluorobutanoic acid	%	122	N/A	N/A	119	116	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C201371
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP190			TNP191	TNP192			
Sampling Date		2022/08/17 14:45			2022/08/18 14:55	2022/08/18 07:30			
COC Number		n/a			n/a	n/a			
	UNITS	FRP-107	RDL	MDL	FRP-108	FRP-110	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	130	N/A	N/A	131	128	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	118	N/A	N/A	118	113	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	122	N/A	N/A	121	120	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	119	N/A	N/A	120	117	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	118	N/A	N/A	119	115	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	105	N/A	N/A	105	103	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	117	N/A	N/A	118	117	N/A	N/A	8195799
D3-MeFOSA	%	89	N/A	N/A	90	85	N/A	N/A	8195799
D5-EtFOSA	%	87	N/A	N/A	91	86	N/A	N/A	8195799
D7-MeFOSE	%	88	N/A	N/A	89	85	N/A	N/A	8195799
D9-EtFOSE	%	85	N/A	N/A	86	83	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C201371
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Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TNP182
Sample ID: FRP-101
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP183
Sample ID: FRP-102
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP183 Dup
Sample ID: FRP-102
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/24	Min Yang

Bureau Veritas ID: TNP185
Sample ID: FRP-103
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP186
Sample ID: FRP-104
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP187
Sample ID: FRP-105
Matrix: Soil

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran



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Barnstable County
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Site Location: BARNSTABLE, MA
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TEST SUMMARY

Bureau Veritas ID: TNP189
Sample ID: FRP-106
Matrix: Soil

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP190
Sample ID: FRP-107
Matrix: Soil

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP191
Sample ID: FRP-108
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP192
Sample ID: FRP-110
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8187757	N/A	2022/08/25	Min Yang
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran



GENERAL COMMENTS

Sample TNP182 [FRP-101] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content and high concentration of the target analytes.

Sample TNP183 [FRP-102] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TNP186 [FRP-104] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TNP187 [FRP-105] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TNP189 [FRP-106] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TNP190 [FRP-107] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content and due to matrix interference(s).

Sample TNP191 [FRP-108] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content and due to matrix interference(s).

Sample TNP192 [FRP-110] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content and due to matrix interference(s).

Results relate only to the items tested.



Bureau Veritas Job #: C2O1371
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Site Location: BARNSTABLE, MA
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QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
	8187757	MBW	RPD - Sample/Sample Dup	Moisture	2022/08/24	0.25		%	20
	8195799	TTM	Matrix Spike	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/31		87	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/31		80	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/31		82	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/31		55	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/31		90	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/31		23 (1)	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/31		70	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/31		92	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/31		93	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/31		90	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/31		81	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/31		88	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/31		84	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/31		90	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/31		71	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/31		87	%	50 - 150
				D3-MeFOSA	2022/08/31		39	%	25 - 150
				D5-EtFOSA	2022/08/31		35	%	25 - 150
				D7-MeFOSE	2022/08/31		57	%	25 - 150
				D9-EtFOSE	2022/08/31		54	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31		89	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/31		92	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/31		90	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/31		92	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/31		92	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/31		91	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/31		88	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/31		89	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/31		91	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31		138 (2)	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31		88	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31		90	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31		90	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31		85	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31		96	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31		74	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31		86	%	70 - 130
				EtFOSA	2022/08/31		92	%	70 - 130
				MeFOSA	2022/08/31		94	%	70 - 130
				EtFOSE	2022/08/31		89	%	70 - 130
				MeFOSE	2022/08/31		95	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/31		89	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/31		89	%	70 - 130
	8195799	TTM	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/31		92	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/31		88	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/31		90	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/31		82	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/31		89	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/31		80	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/31		84	%	50 - 150



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Barnstable County
Client Project #: 6206
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C3-Perfluorobutanesulfonic acid	2022/08/31		92	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/31		91	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/31		93	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/31		92	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/31		90	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/31		89	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/31		89	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/31		79	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/31		90	%	50 - 150
				D3-MeFOSA	2022/08/31		44	%	25 - 150
				D5-EtFOSA	2022/08/31		37	%	25 - 150
				D7-MeFOSE	2022/08/31		66	%	25 - 150
				D9-EtFOSE	2022/08/31		64	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31		88	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/31		90	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/31		89	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/31		89	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/31		89	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/31		90	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/31		89	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/31		88	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/31		92	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31		93	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31		88	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31		86	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31		88	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31		86	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31		89	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31		82	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31		86	%	70 - 130
				EtFOSA	2022/08/31		99	%	70 - 130
				MeFOSA	2022/08/31		89	%	70 - 130
				EtFOSE	2022/08/31		91	%	70 - 130
				MeFOSE	2022/08/31		91	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/31		87	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/31		90	%	70 - 130
	8195799	TTM	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/31		104	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/31		93	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/31		90	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/31		82	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/31		93	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/31		82	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/31		88	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/31		93	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/31		94	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/31		99	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/31		95	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/31		96	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/31		96	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/31		90	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/31		77	%	50 - 150



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8195799	TTM	RPD - Sample/Sample Dup		18O2-Perfluorohexanesulfonic acid	2022/08/31		96	%	50 - 150
				D3-MeFOSA	2022/08/31		34	%	25 - 150
				D5-EtFOSA	2022/08/31		30	%	25 - 150
				D7-MeFOSE	2022/08/31		63	%	25 - 150
				D9-EtFOSE	2022/08/31		64	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31	<0.24		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/08/31	<0.23		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/08/31	<0.16		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	<0.17		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/08/31	<0.20		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/08/31	<0.24		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	<0.25		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/08/31	<0.19		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	<0.22		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	<0.30		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	<0.17		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	<0.30		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	<0.17		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	<0.27		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	<0.20		ug/kg	
				EtFOSA	2022/08/31	<0.31		ug/kg	
				MeFOSA	2022/08/31	<0.39		ug/kg	
				EtFOSE	2022/08/31	<0.29		ug/kg	
				MeFOSE	2022/08/31	<0.22		ug/kg	
				6:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				Perfluorobutanoic acid (PFBA)	2022/08/31	NC		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/31	NC		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/31	NC		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	NC		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/31	NC		%	30
				Perfluorononanoic acid (PFNA)	2022/08/31	NC		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/31	NC		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	NC		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/31	NC		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	NC		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	NC		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	NC		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	NC		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	NC		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	NC		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	NC		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	NC		%	30
				EtFOSA	2022/08/31	NC		%	30
				MeFOSA	2022/08/31	NC		%	30
				EtFOSE	2022/08/31	NC		%	30
				MeFOSE	2022/08/31	NC		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				8:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30
<p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).</p> <p>(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.</p> <p>(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked soil resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high for this specific analyte. For results that were not detected (ND), this potential bias has no impact.</p>									



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Barnstable County
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VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "A. Hamanov", written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "A. Robinson", written over a horizontal line.

Adam Robinson, Supervisor, LC/MS/MS

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6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266



Sample Heat Treat Required

High Risk material
Controlled Storage and Disposal

Page 1 of 1

24-Aug-22 11:59

Lori Dufour



C201371

RJM

ENV-645

Invoice Information				Report Information (If differs from invoice)				Controlled Storage and Disposal														24-Aug-22 11:59			
Invoice to: (if requires report) <input checked="" type="checkbox"/>																						Lori Dufour			
Company: Barnstable County				Company: BETA Group, Inc				Quotation #: 6206														Barnstable, MA			
Contact Name: Priscilla Ellis/ Steve Tebo				Contact Name: Roger Thibault				P.O. #/ AFER:														C201371			
Street Address: 3195 Main St				Street Address: 701 George Washington Hwy				Project #: 6206														RJM ENV-645			
City: Barnstable Prov: Postal Code:				City: Lincoln Prov: Postal Code:				Site #: BFTA																	
Phone:				Phone:				Site Location: Barnstable, MA																	
Email: pellis@barnstablecounty.org				Email: Rthibault@BETA-Inc.com; Lbouley@BETA-Inc.com				Site Location Province:																	
Copies: stebo@barnstablecounty.org				Copies: stebo@barnstablecounty.org				Sampled By: Chris Oien, Laura Bouley, Amanda Ray																	
Regulatory Criteria																						Regular Turnaround Time (TAT)			
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> LCCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> Reg 558* <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Table <input type="checkbox"/> MISA <input type="checkbox"/> Municipality <input type="checkbox"/> PWQO <input type="checkbox"/> Other:																						Rush Turnaround Time (TAT) Surcharges apply			
Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>																						Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day <input type="checkbox"/>			
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																						Date Required: YY MM DD			
Sample Identification				Date Sampled Time (24hr) Matrix																		Comments			
1 FRP-101				22 08 18 10 00 Sediment																					
2 FRP-102				22 08 18 10 15 Sediment																					
3 FRP-102 (Pore Water)				22 08 18 10 15 Water																					
4 FRP-103				22 08 18 10 30 Sediment																					
5 FRP-104				22 08 18 10 45 Sediment																					
6 FRP-105				22 08 17 12 45 Sediment																					
7 FRP-105 (Pore Water)				22 08 17 12 45 Water																					
8 FRP-106				22 08 17 13 30 Sediment																					
9 FRP-107				22 08 17 14 45 Sediment																					
10 FRP-108				22 08 18 14 55 Sediment																					
11 FRP-110				22 08 18 7 30 Sediment																					
12 FRP-110 (Pore Water)				22 08 18 7 45 Water																					
*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY																									
LAB USE ONLY				LAB USE ONLY				LAB USE ONLY				LAB USE ONLY				LAB USE ONLY				Temperature reading by:					
Seal present				Seal present				Seal present				Seal present				Seal present									
Seal intact				Seal intact				Seal intact				Seal intact				Seal intact									
Cooling media present				Cooling media present				Cooling media present				Cooling media present				Cooling media present									
Relinquished by: (Signature/ Print)				Date				Received by: (Signature/ Print)				Date				Special Instructions									
1 [Signature]				2022 08 23 12 00				2 [Signature]				2022 08 24 11 59													
2 [Signature]								3 [Signature]																	

461128

**Attention: Steven Tebo**

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Report Date: 2022/09/26
Report #: R7316713
Version: 1 - Final

CERTIFICATE OF ANALYSIS**BUREAU VERITAS JOB #: C205963****Received: 2022/08/27, 11:00**

Sample Matrix: Soil
Samples Received: 10

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Moisture	10	N/A	2022/08/31	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	10	2022/09/14	2022/09/15	CAM SOP-00894	ASTM D7968-17a m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/26
Report #: R7316713
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2O5963

Received: 2022/08/27, 11:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TON979	TON980	TON981	TON982	TON983	TON985	TON986			
Sampling Date		2022/08/24 08:30	2022/08/24 08:30	2022/08/24 10:10	2022/08/24 10:20	2022/08/24 11:00	2022/08/24 15:05	2022/08/24 14:40			
COC Number		na	na	na	na	na	na	na			
	UNITS	FRP-111	FRP-112	FRP-113	FRP-114	FRP-115	FRP-116	FRP-117	RDL	MDL	QC Batch

Inorganics

Moisture	%	95	95	95	76	94	95	95	1.0	0.50	8199117
----------	---	----	----	----	----	----	----	----	-----	------	---------

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Bureau Veritas ID		TON987	TON988	TON989			
Sampling Date		2022/08/24 13:50	2022/08/24 14:20	2022/08/24 14:00			
COC Number		na	na	na			
	UNITS	FRP-118	FRP-119	FRP-120	RDL	MDL	QC Batch

Inorganics

Moisture	%	95	96	95	1.0	0.50	8199117
----------	---	----	----	----	-----	------	---------

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON979				TON980		TON981			
Sampling Date		2022/08/24 08:30				2022/08/24 08:30		2022/08/24 10:10			
COC Number		na				na		na			
	UNITS	FRP-111	RDL	MDL	QC Batch	FRP-112	QC Batch	FRP-113	RDL	MDL	QC Batch
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	ug/kg	<2.8	20	2.8	8224668	<2.8	8224668	<2.8	20	2.8	8224668
Perfluoropentanoic acid (PFPeA)	ug/kg	<3.4	20	3.4	8224668	<3.4	8224668	6.0	20	3.4	8224668
Perfluorohexanoic acid (PFHxA)	ug/kg	3.5	20	3.0	8224668	3.3	8224668	<3.0	20	3.0	8224668
Perfluoroheptanoic acid (PFHpA)	ug/kg	<3.4	20	3.4	8224668	<3.4	8224668	<3.4	20	3.4	8224668
Perfluorooctanoic acid (PFOA)	ug/kg	4.9	20	3.4	8224668	4.1	8224668	3.5	20	3.4	8224668
Perfluorononanoic acid (PFNA)	ug/kg	10	20	2.8	8224668	9.4	8224668	11	20	2.8	8224668
Perfluorodecanoic acid (PFDA)	ug/kg	4.1	20	2.6	8224668	3.9	8224668	3.2	20	2.6	8224668
Perfluoroundecanoic acid (PFUnA)	ug/kg	35	20	4.4	8224668	32	8224668	17	20	4.4	8224668
Perfluorododecanoic acid (PFDoA)	ug/kg	8.9	20	3.2	8232123	9.4	8232123	<3.2	20	3.2	8232123
Perfluorotridecanoic acid (PFTRDA)	ug/kg	75	20	2.4	8232123	41 (1)	8232123	<24 (1)	200	24	8232123
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	4.9	20	2.6	8232123	<26 (1)	8232123	<26 (1)	200	26	8232123
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<3.0	20	3.0	8224668	<3.0	8224668	<3.0	20	3.0	8224668
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	8.7	20	2.4	8224668	8.7	8224668	7.9	20	2.4	8224668
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<4.2	20	4.2	8224668	<4.2	8224668	<4.2	20	4.2	8224668
Perfluorooctanesulfonic acid (PFOS)	ug/kg	310	20	7.2	8224668	240	8224668	350	20	7.2	8224668
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<4.2	20	4.2	8224668	<4.2	8224668	<4.2	20	4.2	8224668
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	2.7	20	2.0	8224668	2.4	8224668	<2.0	20	2.0	8232123
EtFOSA	ug/kg	<7.6	20	7.6	8232123	<7.6	8232123	<7.6	20	7.6	8232123
MeFOSA	ug/kg	<9.0	20	9.0	8232123	<9.0	8232123	<9.0	20	9.0	8232123
EtFOSE	ug/kg	<7.4	20	7.4	8224668	<7.4	8232123	<7.4	20	7.4	8232123
MeFOSE	ug/kg	<6.8	20	6.8	8224668	<6.8	8224668	<6.8	20	6.8	8224668
6:2 Fluorotelomer sulfonic acid	ug/kg	<4.8	20	4.8	8232123	<4.8	8232123	<4.8	20	4.8	8232123
8:2 Fluorotelomer sulfonic acid	ug/kg	5.9	20	5.2	8224668	<5.2	8224668	<5.2	20	5.2	8224668
Surrogate Recovery (%)											
13C2-6:2-Fluorotelomersulfonic Acid	%	106	N/A	N/A	8232123	104	8232123	101	N/A	N/A	8232123
13C2-8:2-Fluorotelomersulfonic Acid	%	101	N/A	N/A	8224668	93	8224668	89	N/A	N/A	8224668
13C2-Perfluorodecanoic acid	%	91	N/A	N/A	8224668	84	8224668	76	N/A	N/A	8224668
13C2-Perfluorododecanoic acid	%	84	N/A	N/A	8232123	57	8232123	49 (2)	N/A	N/A	8232123
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) The extracted internal standard analyte exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compound (PFTRDA PFTEDA). Results were reported from a sample dilution. Detection limit was adjusted accordingly (10x). (2) Extracted internal standard analyte recovery was below the defined lower control limit (LCL) which may result in increased variability of the associated native analyte result (PFDoA).											



BUREAU
VERITAS

Bureau Veritas Job #: C205963

Report Date: 2022/09/26

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON979				TON980		TON981			
Sampling Date		2022/08/24 08:30				2022/08/24 08:30		2022/08/24 10:10			
COC Number		na				na		na			
	UNITS	FRP-111	RDL	MDL	QC Batch	FRP-112	QC Batch	FRP-113	RDL	MDL	QC Batch
13C2-Perfluorohexanoic acid	%	98	N/A	N/A	8224668	93	8224668	87	N/A	N/A	8224668
13C2-perfluorotetradecanoic acid	%	56	N/A	N/A	8232123	88 (1)	8232123	91 (1)	N/A	N/A	8232123
13C2-Perfluoroundecanoic acid	%	71	N/A	N/A	8224668	64	8224668	59	N/A	N/A	8224668
13C3-Perfluorobutanesulfonic acid	%	99	N/A	N/A	8224668	93	8224668	88	N/A	N/A	8224668
13C4-Perfluorobutanoic acid	%	96	N/A	N/A	8224668	92	8224668	86	N/A	N/A	8224668
13C4-Perfluoroheptanoic acid	%	100	N/A	N/A	8224668	95	8224668	88	N/A	N/A	8224668
13C4-Perfluorooctanesulfonic acid	%	95	N/A	N/A	8224668	91	8224668	83	N/A	N/A	8224668
13C4-Perfluorooctanoic acid	%	99	N/A	N/A	8224668	93	8224668	87	N/A	N/A	8224668
13C5-Perfluorononanoic acid	%	94	N/A	N/A	8224668	89	8224668	83	N/A	N/A	8224668
13C5-Perfluoropentanoic acid	%	96	N/A	N/A	8224668	91	8224668	85	N/A	N/A	8224668
13C8-Perfluorooctane Sulfonamide	%	56	N/A	N/A	8224668	50	8224668	67	N/A	N/A	8232123
18O2-Perfluorohexanesulfonic acid	%	97	N/A	N/A	8224668	92	8224668	88	N/A	N/A	8224668
D3-MeFOSA	%	60	N/A	N/A	8232123	39	8232123	35	N/A	N/A	8232123
D5-EtFOSA	%	58	N/A	N/A	8232123	32	8232123	27	N/A	N/A	8232123
D7-MeFOSE	%	36	N/A	N/A	8224668	32	8224668	31	N/A	N/A	8224668
D9-EtFOSE	%	26	N/A	N/A	8224668	44	8232123	40	N/A	N/A	8232123

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

N/A = Not Applicable

(1) The extracted internal standard analyte exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compound (PFTrDA PFTeDA). Results were reported from a sample dilution. Detection limit was adjusted accordingly (10x).



Bureau Veritas Job #: C205963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON981				TON982				TON983			
Sampling Date		2022/08/24 10:10				2022/08/24 10:20				2022/08/24 11:00			
COC Number		na				na				na			
	UNITS	FRP-113 Lab-Dup	RDL	MDL	QC Batch	FRP-114	RDL	MDL	QC Batch	FRP-115	RDL	MDL	QC Batch

Perfluorinated Compounds

Perfluorobutanoic acid (PFBA)	ug/kg	<2.8	20	2.8	8224668	<0.70	5.0	0.70	8224668	<2.8	20	2.8	8232123
Perfluoropentanoic acid (PFPeA)	ug/kg	18	20	3.4	8224668	<0.85	5.0	0.85	8224668	6.3	20	3.4	8224668
Perfluorohexanoic acid (PFHxA)	ug/kg	<3.0	20	3.0	8224668	0.84	5.0	0.75	8224668	<3.0	20	3.0	8224668
Perfluoroheptanoic acid (PFHpA)	ug/kg	<3.4	20	3.4	8224668	<0.85	5.0	0.85	8224668	<3.4	20	3.4	8224668
Perfluorooctanoic acid (PFOA)	ug/kg	3.9	20	3.4	8224668	1.2	5.0	0.85	8224668	<3.4	20	3.4	8224668
Perfluorononanoic acid (PFNA)	ug/kg	10	20	2.8	8224668	2.0	5.0	0.70	8224668	6.0	20	2.8	8224668
Perfluorodecanoic acid (PFDA)	ug/kg	3.2	20	2.6	8224668	0.88	5.0	0.65	8224668	2.8	20	2.6	8224668
Perfluoroundecanoic acid (PFUnA)	ug/kg	17	20	4.4	8224668	6.1	5.0	1.1	8224668	41	20	4.4	8224668
Perfluorododecanoic acid (PFDoA)	ug/kg	<3.2	20	3.2	8232123	2.2	5.0	0.80	8224668	5.4	20	3.2	8224668
Perfluorotridecanoic acid (PFTrDA)	ug/kg	<24 (1)	200	24	8232123	20	5.0	0.60	8232123	86	20	2.4	8224668
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	<26 (1)	200	26	8232123	1.1	5.0	0.65	8232123	2.9	20	2.6	8224668
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<3.0	20	3.0	8224668	<0.75	5.0	0.75	8224668	<3.0	20	3.0	8224668
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	7.1	20	2.4	8224668	1.4	5.0	0.60	8224668	4.8	20	2.4	8224668
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<4.2	20	4.2	8224668	<1.1	5.0	1.1	8224668	<4.2	20	4.2	8224668
Perfluorooctanesulfonic acid (PFOS)	ug/kg	310	20	7.2	8224668	26	5.0	1.8	8224668	200	20	7.2	8224668
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<4.2	20	4.2	8224668	<1.1	5.0	1.1	8224668	<4.2	20	4.2	8224668
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<2.0	20	2.0	8232123	0.73	5.0	0.50	8224668	4.8	20	2.0	8224668
EtFOSA	ug/kg	<7.6	20	7.6	8232123	<1.9	5.0	1.9	8224668	<7.6	20	7.6	8224668
MeFOSA	ug/kg	<9.0	20	9.0	8232123	<2.3	5.0	2.3	8224668	<9.0	20	9.0	8224668
EtFOSE	ug/kg	<7.4	20	7.4	8232123	<1.9	5.0	1.9	8224668	<7.4	20	7.4	8224668
MeFOSE	ug/kg	<6.8	20	6.8	8224668	<1.7	5.0	1.7	8224668	<6.8	20	6.8	8224668
6:2 Fluorotelomer sulfonic acid	ug/kg	<4.8	20	4.8	8232123	<1.2	5.0	1.2	8232123	7.2	20	4.8	8232123
8:2 Fluorotelomer sulfonic acid	ug/kg	<5.2	20	5.2	8224668	<1.3	5.0	1.3	8224668	<5.2	20	5.2	8224668

Surrogate Recovery (%)

13C2-6:2-Fluorotelomersulfonic Acid	%	99	N/A	N/A	8232123	106	N/A	N/A	8232123	96	N/A	N/A	8232123
13C2-8:2-Fluorotelomersulfonic Acid	%	105	N/A	N/A	8224668	98	N/A	N/A	8224668	99	N/A	N/A	8224668
13C2-Perfluorodecanoic acid	%	89	N/A	N/A	8224668	87	N/A	N/A	8224668	88	N/A	N/A	8224668
13C2-Perfluorododecanoic acid	%	47 (2)	N/A	N/A	8232123	60	N/A	N/A	8224668	83	N/A	N/A	8224668

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) The extracted internal standard analyte exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compound (PFTrDA PFTeDA). Results were reported from a sample dilution. Detection limit was adjusted accordingly (10x).

(2) Extracted internal standard analyte recovery was below the defined lower control limit (LCL) which may result in increased variability of the associated native analyte result (PFDoA).



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON981				TON982				TON983			
Sampling Date		2022/08/24 10:10				2022/08/24 10:20				2022/08/24 11:00			
COC Number		na				na				na			
	UNITS	FRP-113 Lab-Dup	RDL	MDL	QC Batch	FRP-114	RDL	MDL	QC Batch	FRP-115	RDL	MDL	QC Batch
13C2-Perfluorohexanoic acid	%	90	N/A	N/A	8224668	88	N/A	N/A	8224668	85	N/A	N/A	8224668
13C2-perfluorotetradecanoic acid	%	89 (1)	N/A	N/A	8232123	37 (2)	N/A	N/A	8232123	58	N/A	N/A	8224668
13C2-Perfluoroundecanoic acid	%	84	N/A	N/A	8224668	78	N/A	N/A	8224668	85	N/A	N/A	8224668
13C3-Perfluorobutanesulfonic acid	%	91	N/A	N/A	8224668	91	N/A	N/A	8224668	87	N/A	N/A	8224668
13C4-Perfluorobutanoic acid	%	42 (3)	N/A	N/A	8224668	87	N/A	N/A	8224668	101	N/A	N/A	8232123
13C4-Perfluoroheptanoic acid	%	93	N/A	N/A	8224668	90	N/A	N/A	8224668	89	N/A	N/A	8224668
13C4-Perfluorooctanesulfonic acid	%	93	N/A	N/A	8224668	91	N/A	N/A	8224668	90	N/A	N/A	8224668
13C4-Perfluorooctanoic acid	%	92	N/A	N/A	8224668	89	N/A	N/A	8224668	88	N/A	N/A	8224668
13C5-Perfluorononanoic acid	%	89	N/A	N/A	8224668	86	N/A	N/A	8224668	86	N/A	N/A	8224668
13C5-Perfluoropentanoic acid	%	85	N/A	N/A	8224668	88	N/A	N/A	8224668	56	N/A	N/A	8224668
13C8-Perfluorooctane Sulfonamide	%	68	N/A	N/A	8232123	63	N/A	N/A	8224668	87	N/A	N/A	8224668
18O2-Perfluorohexanesulfonic acid	%	91	N/A	N/A	8224668	88	N/A	N/A	8224668	88	N/A	N/A	8224668
D3-MeFOSA	%	35	N/A	N/A	8232123	34	N/A	N/A	8224668	64	N/A	N/A	8224668
D5-EtFOSA	%	27	N/A	N/A	8232123	29	N/A	N/A	8224668	64	N/A	N/A	8224668
D7-MeFOSE	%	55	N/A	N/A	8224668	48	N/A	N/A	8224668	65	N/A	N/A	8224668
D9-EtFOSE	%	38	N/A	N/A	8232123	38	N/A	N/A	8224668	58	N/A	N/A	8224668

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) The extracted internal standard analyte exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compound (PFTeDA PFTeDA). Results were reported from a sample dilution. Detection limit was adjusted accordingly (10x).

(2) Extracted internal standard analyte recovery was below the defined lower control limit (LCL) which may result in increased variability of the associated native analyte result (PFTeDA PFTeDA).

(3) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON985	TON986		TON987			TON988			
Sampling Date		2022/08/24 15:05	2022/08/24 14:40		2022/08/24 13:50			2022/08/24 14:20			
COC Number		na	na		na			na			
	UNITS	FRP-116	FRP-117	QC Batch	FRP-118	RDL	MDL	FRP-119	RDL	MDL	QC Batch
Perfluorinated Compounds											
Perfluorobutanoic acid (PFBA)	ug/kg	<2.8	<2.8	8232123	<2.8	20	2.8	<2.8	20	2.8	8224668
Perfluoropentanoic acid (PFPeA)	ug/kg	5.1	3.7	8224668	<3.4	20	3.4	5.0	20	3.4	8224668
Perfluorohexanoic acid (PFHxA)	ug/kg	3.6	3.0	8224668	4.2	20	3.0	4.2	20	3.0	8224668
Perfluoroheptanoic acid (PFHpA)	ug/kg	4.1	<3.4	8224668	<3.4	20	3.4	4.2	20	3.4	8224668
Perfluorooctanoic acid (PFOA)	ug/kg	4.5	4.0	8224668	3.8	20	3.4	5.4	20	3.4	8224668
Perfluorononanoic acid (PFNA)	ug/kg	8.0	9.1	8224668	12	20	2.8	11	20	2.8	8224668
Perfluorodecanoic acid (PFDA)	ug/kg	2.9	3.7	8224668	3.4	20	2.6	5.0	20	2.6	8224668
Perfluoroundecanoic acid (PFUnA)	ug/kg	16	29	8224668	38	20	4.4	36	20	4.4	8224668
Perfluorododecanoic acid (PFDoA)	ug/kg	4.3	7.5	8224668	5.6	20	3.2	11	20	3.2	8224668
Perfluorotridecanoic acid (PFTrDA)	ug/kg	19	58	8224668	74	20	2.4	35	200	24	8232123
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<2.6	4.0	8224668	<2.6	20	2.6	<26	200	26	8232123
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<3.0	<3.0	8224668	<3.0	20	3.0	<3.0	20	3.0	8224668
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	5.0	7.6	8224668	9.2	20	2.4	9.4	20	2.4	8224668
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<4.2	<4.2	8224668	<4.2	20	4.2	<4.2	20	4.2	8224668
Perfluorooctanesulfonic acid (PFOS)	ug/kg	110	260	8224668	370	20	7.2	230	20	7.2	8224668
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<4.2	<4.2	8224668	<4.2	20	4.2	<4.2	20	4.2	8224668
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<2.0	2.6	8224668	4.1	20	2.0	2.7	20	2.0	8224668
EtFOSA	ug/kg	<7.6	<7.6	8224668	<7.6	20	7.6	<7.6	20	7.6	8224668
MeFOSA	ug/kg	<9.0	<9.0	8224668	<9.0	20	9.0	<9.0	20	9.0	8224668
EtFOSE	ug/kg	<7.4	<7.4	8224668	<7.4	20	7.4	<7.4	20	7.4	8224668
MeFOSE	ug/kg	<6.8	<6.8	8224668	<6.8	20	6.8	<6.8	20	6.8	8224668
6:2 Fluorotelomer sulfonic acid	ug/kg	<4.8	<4.8	8232123	<4.8	20	4.8	<4.8	20	4.8	8232123
8:2 Fluorotelomer sulfonic acid	ug/kg	<5.2	<5.2	8224668	<5.2	20	5.2	<5.2	20	5.2	8224668
Surrogate Recovery (%)											
13C2-6:2-Fluorotelomersulfonic Acid	%	97	110	8232123	102	N/A	N/A	100	N/A	N/A	8232123
13C2-8:2-Fluorotelomersulfonic Acid	%	100	105	8224668	97	N/A	N/A	93	N/A	N/A	8224668
13C2-Perfluorodecanoic acid	%	90	96	8224668	88	N/A	N/A	86	N/A	N/A	8224668
13C2-Perfluorododecanoic acid	%	88	90	8224668	78	N/A	N/A	57	N/A	N/A	8224668
13C2-Perfluorohexanoic acid	%	89	96	8224668	89	N/A	N/A	91	N/A	N/A	8224668
13C2-perfluorotetradecanoic acid	%	78	69	8224668	29 (1)	N/A	N/A	90	N/A	N/A	8232123
13C2-Perfluoroundecanoic acid	%	89	91	8224668	84	N/A	N/A	76	N/A	N/A	8224668
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL) which may result in increased variability of the associated native analyte result (PFTeDA PFTrDA).											



BUREAU
VERITAS

Bureau Veritas Job #: C205963

Report Date: 2022/09/26

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON985	TON986		TON987			TON988			
Sampling Date		2022/08/24 15:05	2022/08/24 14:40		2022/08/24 13:50			2022/08/24 14:20			
COC Number		na	na		na			na			
	UNITS	FRP-116	FRP-117	QC Batch	FRP-118	RDL	MDL	FRP-119	RDL	MDL	QC Batch
13C3-Perfluorobutanesulfonic acid	%	92	96	8224668	90	N/A	N/A	90	N/A	N/A	8224668
13C4-Perfluorobutanoic acid	%	102	113	8232123	86	N/A	N/A	89	N/A	N/A	8224668
13C4-Perfluoroheptanoic acid	%	92	98	8224668	91	N/A	N/A	91	N/A	N/A	8224668
13C4-Perfluorooctanesulfonic acid	%	93	100	8224668	90	N/A	N/A	90	N/A	N/A	8224668
13C4-Perfluorooctanoic acid	%	91	96	8224668	88	N/A	N/A	89	N/A	N/A	8224668
13C5-Perfluorononanoic acid	%	89	95	8224668	87	N/A	N/A	88	N/A	N/A	8224668
13C5-Perfluoropentanoic acid	%	75	90	8224668	87	N/A	N/A	88	N/A	N/A	8224668
13C8-Perfluorooctane Sulfonamide	%	91	94	8224668	74	N/A	N/A	65	N/A	N/A	8224668
18O2-Perfluorohexanesulfonic acid	%	91	95	8224668	90	N/A	N/A	89	N/A	N/A	8224668
D3-MeFOSA	%	73	68	8224668	42	N/A	N/A	40	N/A	N/A	8224668
D5-EtFOSA	%	65	64	8224668	43	N/A	N/A	33	N/A	N/A	8224668
D7-MeFOSE	%	75	76	8224668	62	N/A	N/A	50	N/A	N/A	8224668
D9-EtFOSE	%	70	70	8224668	54	N/A	N/A	42	N/A	N/A	8224668
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable											



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON989			
Sampling Date		2022/08/24 14:00			
COC Number		na			
	UNITS	FRP-120	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ug/kg	<2.8	20	2.8	8224668
Perfluoropentanoic acid (PFPeA)	ug/kg	<3.4	20	3.4	8224668
Perfluorohexanoic acid (PFHxA)	ug/kg	4.2	20	3.0	8224668
Perfluoroheptanoic acid (PFHpA)	ug/kg	<3.4	20	3.4	8224668
Perfluorooctanoic acid (PFOA)	ug/kg	4.9	20	3.4	8224668
Perfluorononanoic acid (PFNA)	ug/kg	12	20	2.8	8224668
Perfluorodecanoic acid (PFDA)	ug/kg	4.1	20	2.6	8224668
Perfluoroundecanoic acid (PFUnA)	ug/kg	38	20	4.4	8224668
Perfluorododecanoic acid (PFDoA)	ug/kg	10	20	3.2	8224668
Perfluorotridecanoic acid (PFTRDA)	ug/kg	51	200	24	8232123
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<26	200	26	8232123
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<3.0	20	3.0	8224668
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	11	20	2.4	8224668
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<4.2	20	4.2	8224668
Perfluorooctanesulfonic acid (PFOS)	ug/kg	460	20	7.2	8224668
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<4.2	20	4.2	8224668
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	3.8	20	2.0	8224668
EtFOSA	ug/kg	<7.6	20	7.6	8224668
MeFOSA	ug/kg	<9.0	20	9.0	8224668
EtFOSE	ug/kg	<7.4	20	7.4	8224668
MeFOSE	ug/kg	<6.8	20	6.8	8224668
6:2 Fluorotelomer sulfonic acid	ug/kg	<4.8	20	4.8	8232123
8:2 Fluorotelomer sulfonic acid	ug/kg	6.2	20	5.2	8224668
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	99	N/A	N/A	8232123
13C2-8:2-Fluorotelomersulfonic Acid	%	94	N/A	N/A	8224668
13C2-Perfluorodecanoic acid	%	87	N/A	N/A	8224668
13C2-Perfluorododecanoic acid	%	56	N/A	N/A	8224668
13C2-Perfluorohexanoic acid	%	90	N/A	N/A	8224668
13C2-perfluorotetradecanoic acid	%	88	N/A	N/A	8232123
13C2-Perfluoroundecanoic acid	%	76	N/A	N/A	8224668
13C3-Perfluorobutanesulfonic acid	%	90	N/A	N/A	8224668
13C4-Perfluorobutanoic acid	%	90	N/A	N/A	8224668
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON989			
Sampling Date		2022/08/24 14:00			
COC Number		na			
	UNITS	FRP-120	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	92	N/A	N/A	8224668
13C4-Perfluorooctanesulfonic acid	%	92	N/A	N/A	8224668
13C4-Perfluorooctanoic acid	%	90	N/A	N/A	8224668
13C5-Perfluorononanoic acid	%	88	N/A	N/A	8224668
13C5-Perfluoropentanoic acid	%	89	N/A	N/A	8224668
13C8-Perfluorooctane Sulfonamide	%	64	N/A	N/A	8224668
18O2-Perfluorohexanesulfonic acid	%	89	N/A	N/A	8224668
D3-MeFOSA	%	37	N/A	N/A	8224668
D5-EtFOSA	%	31	N/A	N/A	8224668
D7-MeFOSE	%	50	N/A	N/A	8224668
D9-EtFOSE	%	40	N/A	N/A	8224668
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C205963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TON979
Sample ID: FRP-111
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON980
Sample ID: FRP-112
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON981
Sample ID: FRP-113
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON981 Dup
Sample ID: FRP-113
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON982
Sample ID: FRP-114
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON983
Sample ID: FRP-115
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)



Bureau Veritas Job #: C205963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TON985
Sample ID: FRP-116
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON986
Sample ID: FRP-117
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON987
Sample ID: FRP-118
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON988
Sample ID: FRP-119
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)

Bureau Veritas ID: TON989
Sample ID: FRP-120
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8232123	2022/09/19	2022/09/19	Xinhe Xing (Helena)



GENERAL COMMENTS

Samples received with an elevated average temperature of 11.7C. Client consented to proceed with analysis.

Sample TON979 [FRP-111] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON980 [FRP-112] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON981 [FRP-113] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON982 [FRP-114] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON983 [FRP-115] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON985 [FRP-116] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON986 [FRP-117] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON987 [FRP-118] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON988 [FRP-119] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON989 [FRP-120] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Sample TON979, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON980, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON981, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON982, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON983, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON985, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON986, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON987, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON988, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON989, PFAS in soil by SPE/LCMS: Test repeated.

Results relate only to the items tested.



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
	8199117	JTS	RPD - Sample/Sample Dup	Moisture	2022/08/31	0		%	20
	8224668	XIN	Matrix Spike(TON981)	13C2-8:2-Fluorotelomersulfonic Acid	2022/09/15		93	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/15		85	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/15		51	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/15		90	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/15		11 (1)	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/15		74	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/15		90	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/15		88	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/15		92	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/15		89	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/15		90	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/15		88	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/15		89	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/15		55	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/15		91	%	50 - 150
				D3-MeFOSA	2022/09/15		26	%	25 - 150
				D5-EtFOSA	2022/09/15		19 (1)	%	25 - 150
				D7-MeFOSE	2022/09/15		41	%	25 - 150
				D9-EtFOSE	2022/09/15		28	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/15		109	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/15		109	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/15		109	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/15		114	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/15		102	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/15		108	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/15		101	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/15		99	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/15		NC	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/15		NC	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/15		NC	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/15		108	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/15		109	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/09/15		107	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/15		100	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/15		79	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/15		NC	%	70 - 130
				EtFOSA	2022/09/15		NC	%	70 - 130
				MeFOSA	2022/09/15		NC	%	70 - 130
				EtFOSE	2022/09/15		NC	%	70 - 130
				MeFOSE	2022/09/15		99	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/15		104	%	70 - 130
	8224668	XIN	Spiked Blank	13C2-8:2-Fluorotelomersulfonic Acid	2022/09/15		89	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/15		88	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/15		83	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/15		89	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/15		77	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/15		83	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/15		89	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/15		89	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/15		90	%	50 - 150



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C4-Perfluorooctanesulfonic acid	2022/09/15		90	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/15		89	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/15		88	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/15		89	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/15		77	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/15		90	%	50 - 150
				D3-MeFOSA	2022/09/15		48	%	25 - 150
				D5-EtFOSA	2022/09/15		43	%	25 - 150
				D7-MeFOSE	2022/09/15		64	%	25 - 150
				D9-EtFOSE	2022/09/15		62	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/15		105	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/15		104	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/15		106	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/15		111	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/15		99	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/15		105	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/15		97	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/15		98	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/15		97	%	70 - 130
				Perfluorotridecanoic acid (PFTDA)	2022/09/15		107	%	70 - 130
				Perfluorotetradecanoic acid (PFTEDA)	2022/09/15		100	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/15		105	%	70 - 130
				Perfluorohexanesulfonic acid (PFHxS)	2022/09/15		101	%	70 - 130
				Perfluoroheptanesulfonic acid (PFHpS)	2022/09/15		105	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/15		105	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/15		98	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/15		99	%	70 - 130
				EtFOSA	2022/09/15		104	%	70 - 130
				MeFOSA	2022/09/15		101	%	70 - 130
				EtFOSE	2022/09/15		96	%	70 - 130
				MeFOSE	2022/09/15		98	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/15		102	%	70 - 130
8224668	XIN	Method Blank		13C2-8:2-Fluorotelomersulfonic Acid	2022/09/15		90	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/15		84	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/15		79	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/15		86	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/15		74	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/15		81	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/15		84	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/15		87	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/15		86	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/15		85	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/15		85	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/15		84	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/15		86	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/15		75	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/15		84	%	50 - 150
				D3-MeFOSA	2022/09/15		46	%	25 - 150
				D5-EtFOSA	2022/09/15		42	%	25 - 150
				D7-MeFOSE	2022/09/15		58	%	25 - 150
				D9-EtFOSE	2022/09/15		51	%	25 - 150



Bureau Veritas Job #: C205963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				Perfluorobutanoic acid (PFBA)	2022/09/15	<1.0		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/09/15	<1.0		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/09/15	<1.0		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/09/15	<1.0		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/09/15	<1.0		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/09/15	<1.0		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/09/15	<1.0		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/09/15	<1.0		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/09/15	<1.0		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/09/15	<1.0		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/15	<1.0		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/09/15	<1.0		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/15	<1.0		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/09/15	<1.0		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/09/15	<1.0		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/09/15	<1.0		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/15	<1.0		ug/kg	
				EtFOSA	2022/09/15	<1.0		ug/kg	
				MeFOSA	2022/09/15	<1.0		ug/kg	
				EtFOSE	2022/09/15	<1.0		ug/kg	
				MeFOSE	2022/09/15	<1.0		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/09/15	<1.0		ug/kg	
8224668	XIN	RPD - Sample/Sample Dup		Perfluorobutanoic acid (PFBA)	2022/09/15	NC		%	30
				Perfluoropentanoic acid (PFPeA)	2022/09/15	NC		%	30
				Perfluorohexanoic acid (PFHxA)	2022/09/15	NC		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/09/15	NC		%	30
				Perfluorooctanoic acid (PFOA)	2022/09/15	NC		%	30
				Perfluorononanoic acid (PFNA)	2022/09/15	NC		%	30
				Perfluorodecanoic acid (PFDA)	2022/09/15	NC		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/09/15	NC		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/09/15	NC		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/15	NC		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/09/15	NC		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/09/15	12		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/09/15	NC		%	30
				MeFOSE	2022/09/15	NC		%	30
				8:2 Fluorotelomer sulfonic acid	2022/09/15	NC		%	30
8232123	XIN	Matrix Spike(TON981)		13C2-6:2-Fluorotelomersulfonic Acid	2022/09/19		106	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/19		73	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/19		26 (2)	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/19		80	%	50 - 150
				D3-MeFOSA	2022/09/19		47	%	25 - 150
				D5-EtFOSA	2022/09/19		41	%	25 - 150
				D9-EtFOSE	2022/09/19		54	%	25 - 150
				Perfluorododecanoic acid (PFDoA)	2022/09/19		113	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/19		208 (3)	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/19		114	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/19		115	%	70 - 130
				EtFOSA	2022/09/19		124	%	70 - 130
				MeFOSA	2022/09/19		112	%	70 - 130
				EtFOSE	2022/09/19		114	%	70 - 130



Bureau Veritas Job #: C2O5963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8232123	XIN	Spiked Blank	6:2 Fluorotelomer sulfonic acid	2022/09/19		118	%	70 - 130
			13C2-6:2-Fluorotelomersulfonic Acid	2022/09/19		101	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/09/19		95	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/19		95	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/09/19		102	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/09/19		93	%	50 - 150
			D3-MeFOSA	2022/09/19		63	%	25 - 150
			D5-EtFOSA	2022/09/19		60	%	25 - 150
			D9-EtFOSE	2022/09/19		75	%	25 - 150
			Perfluorobutanoic acid (PFBA)	2022/09/19		119	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2022/09/19		115	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2022/09/19		115	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/19		111	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/19		108	%	70 - 130
			EtFOSA	2022/09/19		127	%	70 - 130
			MeFOSA	2022/09/19		112	%	70 - 130
			EtFOSE	2022/09/19		114	%	70 - 130
			6:2 Fluorotelomer sulfonic acid	2022/09/19		115	%	70 - 130
			13C2-6:2-Fluorotelomersulfonic Acid	2022/09/19		108	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/09/19		97	%	50 - 150
8232123	XIN	Method Blank	13C2-perfluorotetradecanoic acid	2022/09/19		97	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/09/19		104	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/09/19		96	%	50 - 150
			D3-MeFOSA	2022/09/19		64	%	25 - 150
			D5-EtFOSA	2022/09/19		62	%	25 - 150
			D9-EtFOSE	2022/09/19		83	%	25 - 150
			Perfluorobutanoic acid (PFBA)	2022/09/19	<1.0		ug/kg	
			Perfluorododecanoic acid (PFDoA)	2022/09/19	<1.0		ug/kg	
			Perfluorotridecanoic acid (PFTRDA)	2022/09/19	<1.0		ug/kg	
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/19	<1.0		ug/kg	
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/19	<1.0		ug/kg	
			EtFOSA	2022/09/19	<1.0		ug/kg	
			MeFOSA	2022/09/19	<1.0		ug/kg	
			EtFOSE	2022/09/19	<1.0		ug/kg	
			6:2 Fluorotelomer sulfonic acid	2022/09/19	<1.0		ug/kg	
			Perfluorododecanoic acid (PFDoA)	2022/09/19	NC		%	30
			Perfluorotridecanoic acid (PFTRDA)	2022/09/19	NC (4)		%	30
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/19	NC (4)		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/19	NC		%	30
			EtFOSA	2022/09/19	NC		%	30
			MeFOSA	2022/09/19	NC		%	30
			EtFOSE	2022/09/19	NC		%	30
8232123	XIN	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonic acid	2022/09/19	<1.0		ug/kg	
			Perfluorododecanoic acid (PFDoA)	2022/09/19	NC		%	30
			Perfluorotridecanoic acid (PFTRDA)	2022/09/19	NC (4)		%	30
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/19	NC (4)		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/19	NC		%	30
			EtFOSA	2022/09/19	NC		%	30
			MeFOSA	2022/09/19	NC		%	30
			EtFOSE	2022/09/19	NC		%	30



Bureau Veritas Job #: C205963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				6:2 Fluorotelomer sulfonic acid	2022/09/19	NC		%	30
<p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).</p> <p>(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.</p> <p>(2) Extracted internal standard analyte recovery was below the defined lower control limit (LCL) which may result in increased variability of the associated native analyte result (PFTeDA PFTTrDA).</p> <p>(3) Recovery of the matrix spike was above the upper control limit. Laboratory spiked soil resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high. For results that were not detected (ND), this potential bias has no impact.</p> <p>(4) The extracted internal standard analyte exhibited low recovery and as such, may not have allowed for accurate recovery correction of the associated native compound (PFTTrDA PFTeDA). Results were reported from a sample dilution. Detection limit was adjusted accordingly (10x).</p>									



Bureau Veritas Job #: C205963
Report Date: 2022/09/26

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Anastassia Hamanov".

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "P.K. Patel".

Pinkal Patel, Senior Analyst

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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CHAIN OF CUSTODY RECORD

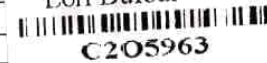
ENV COC - 00014v3

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information	
Company:	Barnstable County	Company:	BETA Group, Inc	Quotation #:	
Contact Name:	Priscilla Ellis/ Steve Tebo	Contact Name:	Roger Thibault	P.O. #/ A/E/R:	
Street Address:	3195 Main St	Street Address:	701 George Washington Hwy	Project #:	6206
City:	Barnstable	City:	Lincoln	Site #:	BFTA
Prov:		Prov:		Site Location:	Barnstable, MA
Postal Code:		Postal Code:		Site Location Province:	
Phone:		Phone:		Sampled By:	Chris Oien, Roger Thibault
Email:	pellis@barnstablecounty.org	Email:	Rthibault@BETA-Inc.com; Lbouley@BETA-Inc.com		
Copies:	stebo@barnstablecounty.org	Copies:	stebo@barnstablecounty.org		

27-Aug-22 11:00

Lori Dufour



C205963

MUM

ENV-613

Regulatory Criteria		Regular Turnaround Time (TAT)																													
<input type="checkbox"/> Table 1 <input type="checkbox"/> Table 2 <input type="checkbox"/> Table 3 <input type="checkbox"/> Table		<input type="checkbox"/> Res/Park <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Agri/other		<input type="checkbox"/> Med/Fine <input type="checkbox"/> Course <input type="checkbox"/> For RSC		<input type="checkbox"/> CCME <input type="checkbox"/> Reg 558* *min 3 day TAT <input type="checkbox"/> MISA <input type="checkbox"/> PWQO		<input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Storm Sewer Bylaw Municipality <input type="checkbox"/> Other:		<input type="checkbox"/> 5 to 7 Day <input type="checkbox"/> 10 Day <input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day																					
Include Criteria on Certificate of Analysis (check if yes):		Rush Turnaround Time (TAT) Surcharges apply																													
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS		Date: YY MM DD																													
Sample Identification		Date Sampled		Time (24hr)		Matrix		# OF CONTAINERS SUBMITTED																							
		YY MM DD HH MM						HOLD - DO NOT ANALYZE																							
								Comments																							
1 FRP-111		22 08 24 8 30		Sediment		1																									
2 FRP-112		22 08 24 8 30		Sediment		1																									
3 FRP-113		22 08 24 10 10		Sediment		1																									
4 FRP-114		22 08 24 10 20		Sediment		1																									
5 FRP-115		22 08 24 11 00		Sediment		1																									
6 FRP-115 (Pore Water)		22 08 24 11 00		Water		1 To be separated from sediment by lab																									
7 FRP-116		22 08 24 15 05		Sediment		1																									
8 FRP-117		22 08 24 14 40		Sediment		1																									
9 FRP-118		22 08 24 13 50		Sediment		1																									
10 FRP-119		22 08 24 14 20		Sediment		1																									
11 FRP-120		22 08 24 14 00		Sediment		1																									
12 FRP-120 (Pore Water)		22 08 24 14 00		Water		1 To be separated from sediment by lab																									

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY		Yes No		Seal present		Seal intact		Cooling media present		LAB USE ONLY		Yes No		Seal present		Seal intact		Cooling media present		LAB USE ONLY		Yes No		Seal present		Seal intact		Cooling media present		Temperature reading by:	
Relinquished by: (Signature/ Print)		Date		Time		Received by: (Signature/ Print)		Date		Time		Date		Time		Date		Time		Date		Time		Date		Time		Date		Time	
Ave BL		2022 08 26 12 00		1		AS DIPKA SINGH		2022 08 27 11 00		2																					





Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: NA

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/23
Report #: R7310316
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C205965

Received: 2022/08/27, 11:00

Sample Matrix: Soil
Samples Received: 3

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Moisture	3	N/A	2022/08/31	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	3	2022/09/08	2022/09/09	CAM SOP-00894	ASTM D7968-17a m

Sample Matrix: Water
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
PFAS in water by SPE/LCMS (1)	1	2022/09/07	2022/09/07	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: NA

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/23
Report #: R7310316
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2O5965

Received: 2022/08/27, 11:00

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

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Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2O5965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TON992	TON993	TON994			
Sampling Date		2022/08/24 12:20	2022/08/24 12:10	2022/08/24 12:10			
COC Number		NA	NA	NA			
	UNITS	FRP-121	FRP-122	FRP-DUP	RDL	MDL	QC Batch
Inorganics							
Moisture	%	95	95	94	1.0	0.50	8199117
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



Bureau Veritas Job #: C205965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON992			TON993	TON994			
Sampling Date		2022/08/24 12:20			2022/08/24 12:10	2022/08/24 12:10			
COC Number		NA			NA	NA			
	UNITS	FRP-121	MDL	QC Batch	FRP-122	FRP-DUP	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ug/kg	<4.8	4.8	8213841	<4.8	<4.8	20	4.8	8213841
Perfluoropentanoic acid (PFPeA)	ug/kg	<4.6	4.6	8213841	<4.6	<4.6	20	4.6	8213841
Perfluorohexanoic acid (PFHxA)	ug/kg	<3.2	3.2	8213841	<3.2	<3.2	20	3.2	8213841
Perfluoroheptanoic acid (PFHpA)	ug/kg	<3.4	3.4	8213841	<3.4	<3.4	20	3.4	8213841
Perfluorooctanoic acid (PFOA)	ug/kg	<4.0	4.0	8213841	<4.0	<4.0	20	4.0	8213841
Perfluorononanoic acid (PFNA)	ug/kg	7.0	5.4	8213841	<5.4	<5.4	20	5.4	8213841
Perfluorodecanoic acid (PFDA)	ug/kg	<4.8	4.8	8213841	<4.8	<4.8	20	4.8	8213841
Perfluoroundecanoic acid (PFUnA)	ug/kg	34	5.0	8213841	22	19	20	5.0	8213841
Perfluorododecanoic acid (PFDoA)	ug/kg	6.7	3.8	8213841	<3.8	<3.8	20	3.8	8213841
Perfluorotridecanoic acid (PFTRDA)	ug/kg	74	2.4	8222232	21	26	20	4.4	8213841
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	8.5	2.6	8222232	<6.0	<6.0	20	6.0	8213841
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<3.4	3.4	8213841	<3.4	<3.4	20	3.4	8213841
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	6.4	6.0	8213841	<6.0	<6.0	20	6.0	8213841
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<3.4	3.4	8213841	<3.4	<3.4	20	3.4	8213841
Perfluorooctanesulfonic acid (PFOS)	ug/kg	390	5.4	8213841	240	170	20	5.4	8213841
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<5.4	5.4	8213841	<5.4	<5.4	20	5.4	8213841
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<4.0	4.0	8213841	<4.0	<4.0	20	4.0	8213841
EtFOSA	ug/kg	<7.6	7.6	8222232	<7.6	<7.6	20	7.6	8222232
MeFOSA	ug/kg	<9.0	9.0	8222232	<9.0	<9.0	20	9.0	8222232
EtFOSE	ug/kg	<7.4	7.4	8222232	<7.4	<7.4	20	7.4	8222232
MeFOSE	ug/kg	<6.8	6.8	8222232	<4.4	<4.4	20	4.4	8213841
6:2 Fluorotelomer sulfonic acid	ug/kg	<4.8	4.8	8239781	<4.8	<4.8	20	4.8	8239781
8:2 Fluorotelomer sulfonic acid	ug/kg	<6.0	6.0	8213841	6.0	5.4	20	5.2	8222232
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	104	N/A	8239781	106	106	N/A	N/A	8239781
13C2-8:2-Fluorotelomersulfonic Acid	%	142	N/A	8213841	92	88	N/A	N/A	8222232
13C2-Perfluorodecanoic acid	%	88	N/A	8213841	94	93	N/A	N/A	8213841
13C2-Perfluorododecanoic acid	%	62	N/A	8213841	77	82	N/A	N/A	8213841
13C2-Perfluorohexanoic acid	%	95	N/A	8213841	103	97	N/A	N/A	8213841
13C2-perfluorotetradecanoic acid	%	72	N/A	8222232	63	67	N/A	N/A	8213841
13C2-Perfluoroundecanoic acid	%	79	N/A	8213841	85	88	N/A	N/A	8213841
13C3-Perfluorobutanesulfonic acid	%	90	N/A	8213841	97	93	N/A	N/A	8213841
13C4-Perfluorobutanoic acid	%	85	N/A	8213841	92	89	N/A	N/A	8213841
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C205965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TON992			TON993	TON994			
Sampling Date		2022/08/24 12:20			2022/08/24 12:10	2022/08/24 12:10			
COC Number		NA			NA	NA			
	UNITS	FRP-121	MDL	QC Batch	FRP-122	FRP-DUP	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	100	N/A	8213841	106	103	N/A	N/A	8213841
13C4-Perfluorooctanesulfonic acid	%	84	N/A	8213841	88	84	N/A	N/A	8213841
13C4-Perfluorooctanoic acid	%	97	N/A	8213841	103	100	N/A	N/A	8213841
13C5-Perfluorononanoic acid	%	99	N/A	8213841	106	104	N/A	N/A	8213841
13C5-Perfluoropentanoic acid	%	93	N/A	8213841	99	96	N/A	N/A	8213841
13C8-Perfluorooctane Sulfonamide	%	69	N/A	8213841	74	76	N/A	N/A	8213841
18O2-Perfluorohexanesulfonic acid	%	95	N/A	8213841	100	98	N/A	N/A	8213841
D3-MeFOSA	%	65	N/A	8222232	67	66	N/A	N/A	8222232
D5-EtFOSA	%	67	N/A	8222232	65	67	N/A	N/A	8222232
D7-MeFOSE	%	78	N/A	8222232	50	50	N/A	N/A	8213841
D9-EtFOSE	%	76	N/A	8222232	85	80	N/A	N/A	8222232
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TON995			
Sampling Date		2022/08/24 12:30			
COC Number		NA			
	UNITS	EQUIPMENT BLANK	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ug/L	<0.0039	0.020	0.0039	8209147
Perfluoropentanoic acid (PFPeA)	ug/L	<0.0067	0.020	0.0067	8209147
Perfluorohexanoic acid (PFHxA)	ug/L	<0.0053	0.020	0.0053	8209147
Perfluoroheptanoic acid (PFHpA)	ug/L	<0.0067	0.020	0.0067	8209147
Perfluorooctanoic acid (PFOA)	ug/L	<0.0050	0.020	0.0050	8209147
Perfluorononanoic acid (PFNA)	ug/L	<0.0051	0.020	0.0051	8209147
Perfluorodecanoic acid (PFDA)	ug/L	<0.0039	0.020	0.0039	8209147
Perfluoroundecanoic acid (PFUnA)	ug/L	<0.0062	0.020	0.0062	8209147
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	0.020	0.0080	8209147
Perfluorotridecanoic acid (PFTRDA)	ug/L	<0.0064	0.020	0.0064	8209147
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	0.020	0.0068	8209147
Perfluorobutanesulfonic acid (PFBS)	ug/L	<0.0056	0.020	0.0056	8209147
Perfluorohexanesulfonic acid (PFHxS)	ug/L	<0.0044	0.020	0.0044	8209147
Perfluoroheptanesulfonic acid PFHpS	ug/L	<0.0065	0.020	0.0065	8209147
Perfluorooctanesulfonic acid (PFOS)	ug/L	<0.0057	0.020	0.0057	8209147
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	0.020	0.0064	8209147
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0036	0.020	0.0036	8209147
EtFOSA	ug/L	<0.0070	0.020	0.0070	8209147
MeFOSA	ug/L	<0.0078	0.020	0.0078	8209147
EtFOSE	ug/L	<0.0071	0.020	0.0071	8209147
MeFOSE	ug/L	<0.0070	0.020	0.0070	8209147
6:2 Fluorotelomer sulfonic acid	ug/L	<0.0065	0.020	0.0065	8209147
8:2 Fluorotelomer sulfonic acid	ug/L	<0.0067	0.020	0.0067	8209147
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	91	N/A	N/A	8209147
13C2-8:2-Fluorotelomersulfonic Acid	%	92	N/A	N/A	8209147
13C2-Perfluorodecanoic acid	%	108	N/A	N/A	8209147
13C2-Perfluorododecanoic acid	%	98	N/A	N/A	8209147
13C2-Perfluorohexanoic acid	%	112	N/A	N/A	8209147
13C2-perfluorotetradecanoic acid	%	93	N/A	N/A	8209147
13C2-Perfluoroundecanoic acid	%	103	N/A	N/A	8209147
13C3-Perfluorobutanesulfonic acid	%	108	N/A	N/A	8209147
13C4-Perfluorobutanoic acid	%	112	N/A	N/A	8209147
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2O5965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TON995			
Sampling Date		2022/08/24 12:30			
COC Number		NA			
	UNITS	EQUIPMENT BLANK	RDL	MDL	QC Batch
13C4-Perfluoroheptanoic acid	%	114	N/A	N/A	8209147
13C4-Perfluorooctanesulfonic acid	%	108	N/A	N/A	8209147
13C4-Perfluorooctanoic acid	%	110	N/A	N/A	8209147
13C5-Perfluorononanoic acid	%	114	N/A	N/A	8209147
13C5-Perfluoropentanoic acid	%	108	N/A	N/A	8209147
13C8-Perfluorooctane Sulfonamide	%	109	N/A	N/A	8209147
18O2-Perfluorohexanesulfonic acid	%	111	N/A	N/A	8209147
D3-MeFOSA	%	82	N/A	N/A	8209147
D5-EtFOSA	%	87	N/A	N/A	8209147
D7-MeFOSE	%	102	N/A	N/A	8209147
D9-EtFOSE	%	99	N/A	N/A	8209147
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C205965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TON992
Sample ID: FRP-121
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8239781	2022/09/22	2022/09/22	Tonghui (Jenny) Chen

Bureau Veritas ID: TON993
Sample ID: FRP-122
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8239781	2022/09/22	2022/09/22	Tonghui (Jenny) Chen

Bureau Veritas ID: TON994
Sample ID: FRP-DUP
Matrix: Soil

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8199117	N/A	2022/08/31	Joe Thomas
PFAS in soil by SPE/LCMS	LCMS	8239781	2022/09/22	2022/09/22	Tonghui (Jenny) Chen

Bureau Veritas ID: TON995
Sample ID: EQUIPMENT BLANK
Matrix: Water

Collected: 2022/08/24
Shipped:
Received: 2022/08/27

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8209147	2022/09/07	2022/09/07	Adnan Khan



GENERAL COMMENTS

Samples received with an elevated average temperature of 11.7C. Client consented to proceed with analysis.

Sample TON992 [FRP-121] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content. Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TON993 [FRP-122] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content. Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TON994 [FRP-DUP] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content. Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TON992, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON993, PFAS in soil by SPE/LCMS: Test repeated.

Sample TON994, PFAS in soil by SPE/LCMS: Test repeated.

Results relate only to the items tested.



Bureau Veritas Job #: C2O5965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
	8199117	JTS	RPD - Sample/Sample Dup	Moisture	2022/08/31	0		%	20
	8209147	AKH	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/07		96	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/09/07		103	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/07		107	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/07		95	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/07		110	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/07		93	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/07		101	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/07		107	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/07		109	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/07		106	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/07		107	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/07		106	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/07		106	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/07		107	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/07		100	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/07		109	%	50 - 150
				D3-MeFOSA	2022/09/07		78	%	50 - 150
				D5-EtFOSA	2022/09/07		79	%	50 - 150
				D7-MeFOSE	2022/09/07		96	%	50 - 150
				D9-EtFOSE	2022/09/07		98	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/07		92	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/07		92	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/07		91	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/07		94	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/07		92	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/07		95	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/07		95	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/07		94	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/07		98	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/07		97	%	70 - 130
				Perfluorotetradecanoic acid (PFTEDA)	2022/09/07		96	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/07		94	%	70 - 130
				Perfluorohexanesulfonic acid (PFHxS)	2022/09/07		93	%	70 - 130
				Perfluoroheptanesulfonic acid (PFHpS)	2022/09/07		90	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/07		91	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/07		87	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/07		90	%	70 - 130
				EtFOSA	2022/09/07		98	%	70 - 130
				MeFOSA	2022/09/07		94	%	70 - 130
				EtFOSE	2022/09/07		88	%	70 - 130
				MeFOSE	2022/09/07		95	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/09/07		96	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/07		92	%	70 - 130
	8209147	AKH	Spiked Blank DUP	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/07		94	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/09/07		96	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/07		98	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/07		93	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/07		104	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/07		90	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/07		96	%	50 - 150



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Barnstable County
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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C3-Perfluorobutanesulfonic acid	2022/09/07		103	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/07		103	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/07		102	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/07		101	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/07		101	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/07		102	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/07		101	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/07		95	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/07		103	%	50 - 150
				D3-MeFOSA	2022/09/07		73	%	50 - 150
				D5-EtFOSA	2022/09/07		83	%	50 - 150
				D7-MeFOSE	2022/09/07		97	%	50 - 150
				D9-EtFOSE	2022/09/07		93	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/07		92	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/07		91	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/07		91	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/07		90	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/07		91	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/07		91	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/07		94	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/07		93	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/07		95	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/07		97	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/07		94	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/07		92	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/07		92	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/09/07		88	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/07		91	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/07		92	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/07		89	%	70 - 130
				EtFOSA	2022/09/07		95	%	70 - 130
				MeFOSA	2022/09/07		99	%	70 - 130
				EtFOSE	2022/09/07		94	%	70 - 130
				MeFOSE	2022/09/07		90	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/09/07		94	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/07		93	%	70 - 130
8209147	AKH	RPD		Perfluorobutanoic acid (PFBA)	2022/09/07	0.45		%	30
				Perfluoropentanoic acid (PFPeA)	2022/09/07	0.43		%	30
				Perfluorohexanoic acid (PFHxA)	2022/09/07	0.74		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/09/07	3.8		%	30
				Perfluorooctanoic acid (PFOA)	2022/09/07	1.3		%	30
				Perfluorononanoic acid (PFNA)	2022/09/07	3.6		%	30
				Perfluorodecanoic acid (PFDA)	2022/09/07	0.44		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/09/07	1.9		%	30
				Perfluorododecanoic acid (PFDoA)	2022/09/07	3.0		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/09/07	0.43		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/07	2.0		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/09/07	2.5		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/07	1.4		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/09/07	3.2		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/09/07	0.36		%	30



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8209147	AKH	Method Blank	Perfluorodecanesulfonic acid (PFDS)	2022/09/07	5.4			%	30
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/07	1.8			%	30
			EtFOSA	2022/09/07	3.1			%	30
			MeFOSA	2022/09/07	5.0			%	30
			EtFOSE	2022/09/07	6.4			%	30
			MeFOSE	2022/09/07	5.4			%	30
			6:2 Fluorotelomer sulfonic acid	2022/09/07	2.5			%	30
			8:2 Fluorotelomer sulfonic acid	2022/09/07	0.81			%	30
			13C2-6:2-Fluorotelomersulfonic Acid	2022/09/07			99	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2022/09/07			102	%	50 - 150
			13C2-Perfluorodecanoic acid	2022/09/07			99	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/09/07			93	%	50 - 150
			13C2-Perfluorohexanoic acid	2022/09/07			107	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/07			88	%	50 - 150
			13C2-Perfluoroundecanoic acid	2022/09/07			96	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2022/09/07			103	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/09/07			102	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/09/07			105	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/09/07			98	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/09/07			99	%	50 - 150
			13C5-Perfluorononanoic acid	2022/09/07			103	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/09/07			103	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/09/07			100	%	50 - 150
			18O2-Perfluorohexanesulfonic acid	2022/09/07			105	%	50 - 150
			D3-MeFOSA	2022/09/07			81	%	50 - 150
			D5-EtFOSA	2022/09/07			85	%	50 - 150
			D7-MeFOSE	2022/09/07			90	%	50 - 150
			D9-EtFOSE	2022/09/07			93	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/09/07	<0.0039			ug/L	
			Perfluoropentanoic acid (PFPeA)	2022/09/07	<0.0067			ug/L	
			Perfluorohexanoic acid (PFHxA)	2022/09/07	<0.0053			ug/L	
			Perfluoroheptanoic acid (PFHpA)	2022/09/07	<0.0067			ug/L	
			Perfluorooctanoic acid (PFOA)	2022/09/07	<0.0050			ug/L	
			Perfluorononanoic acid (PFNA)	2022/09/07	<0.0051			ug/L	
			Perfluorodecanoic acid (PFDA)	2022/09/07	<0.0039			ug/L	
			Perfluoroundecanoic acid (PFUnA)	2022/09/07	<0.0062			ug/L	
			Perfluorododecanoic acid (PFDoA)	2022/09/07	<0.0080			ug/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/09/07	<0.0064			ug/L	
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/07	<0.0068			ug/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/09/07	<0.0056			ug/L	
			Perfluorohexanesulfonic acid(PFHxS)	2022/09/07	<0.0044			ug/L	
			Perfluoroheptanesulfonic acid PFHpS	2022/09/07	<0.0065			ug/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/09/07	<0.0057			ug/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/09/07	<0.0064			ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/07	<0.0036			ug/L	
			EtFOSA	2022/09/07	<0.0070			ug/L	
			MeFOSA	2022/09/07	<0.0078			ug/L	
			EtFOSE	2022/09/07	<0.0071			ug/L	
			MeFOSE	2022/09/07	<0.0070			ug/L	
			6:2 Fluorotelomer sulfonic acid	2022/09/07	<0.0065			ug/L	
			8:2 Fluorotelomer sulfonic acid	2022/09/07	<0.0067			ug/L	



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8213841	XIN	Matrix Spike		13C2-8:2-Fluorotelomersulfonic Acid	2022/09/09		138	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/09		103	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/09		112	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/09		97	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/09		121	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/09		109	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/09		102	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/09		95	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/09		98	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/09		101	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/09		101	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/09		101	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/09		98	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/09		98	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/09		101	%	50 - 150
				D7-MeFOSE	2022/09/09		80	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/09		96	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/09		98	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/09		101	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/09		98	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/09		99	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/09		100	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/09		98	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/09		96	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/09		96	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/09		93	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/09		96	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/09		97	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/09		101	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/09/09		96	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/09		116	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/09		93	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/09		93	%	70 - 130
				MeFOSE	2022/09/09		103	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/09		103	%	70 - 130
8213841	XIN	Spiked Blank		13C2-8:2-Fluorotelomersulfonic Acid	2022/09/09		107	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/09		93	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/09		88	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/09		92	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/09		84	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/09		94	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/09		94	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/09		89	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/09		90	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/09		92	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/09		92	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/09		93	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/09		90	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/09		95	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/09		94	%	50 - 150
				D7-MeFOSE	2022/09/09		76	%	25 - 150



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QA/QC		QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
Batch	Init							
8213841	XIN	Method Blank	Perfluorobutanoic acid (PFBA)	2022/09/09		96	%	70 - 130
			Perfluoropentanoic acid (PFPeA)	2022/09/09		97	%	70 - 130
			Perfluorohexanoic acid (PFHxA)	2022/09/09		97	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)	2022/09/09		98	%	70 - 130
			Perfluorooctanoic acid (PFOA)	2022/09/09		97	%	70 - 130
			Perfluorononanoic acid (PFNA)	2022/09/09		96	%	70 - 130
			Perfluorodecanoic acid (PFDA)	2022/09/09		97	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)	2022/09/09		97	%	70 - 130
			Perfluorododecanoic acid (PFDoA)	2022/09/09		98	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)	2022/09/09		112	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/09		100	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)	2022/09/09		94	%	70 - 130
			Perfluorohexanesulfonic acid(PFHxS)	2022/09/09		93	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS	2022/09/09		94	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)	2022/09/09		98	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)	2022/09/09		90	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/09		93	%	70 - 130
			MeFOSE	2022/09/09		100	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2022/09/09		96	%	70 - 130
			13C2-8:2-Fluorotelomersulfonic Acid	2022/09/09		109	%	50 - 150
			13C2-Perfluorodecanoic acid	2022/09/09		98	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/09/09		92	%	50 - 150
			13C2-Perfluorohexanoic acid	2022/09/09		102	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/09		90	%	50 - 150
			13C2-Perfluoroundecanoic acid	2022/09/09		95	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2022/09/09		99	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/09/09		96	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/09/09		106	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/09/09		96	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/09/09		99	%	50 - 150
			13C5-Perfluorononanoic acid	2022/09/09		103	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/09/09		97	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/09/09		92	%	50 - 150
			18O2-Perfluorohexanesulfonic acid	2022/09/09		104	%	50 - 150
			D7-MeFOSE	2022/09/09		86	%	25 - 150
			Perfluorobutanoic acid (PFBA)	2022/09/09	<0.24		ug/kg	
			Perfluoropentanoic acid (PFPeA)	2022/09/09	<0.23		ug/kg	
			Perfluorohexanoic acid (PFHxA)	2022/09/09	<0.16		ug/kg	
			Perfluoroheptanoic acid (PFHpA)	2022/09/09	<0.17		ug/kg	
			Perfluorooctanoic acid (PFOA)	2022/09/09	<0.20		ug/kg	
			Perfluorononanoic acid (PFNA)	2022/09/09	<0.27		ug/kg	
			Perfluorodecanoic acid (PFDA)	2022/09/09	<0.24		ug/kg	
			Perfluoroundecanoic acid (PFUnA)	2022/09/09	<0.25		ug/kg	
Perfluorododecanoic acid (PFDoA)	2022/09/09	<0.19		ug/kg				
Perfluorotridecanoic acid (PFTRDA)	2022/09/09	<0.22		ug/kg				
Perfluorotetradecanoic acid(PFTEDA)	2022/09/09	<0.30		ug/kg				
Perfluorobutanesulfonic acid (PFBS)	2022/09/09	<0.17		ug/kg				
Perfluorohexanesulfonic acid(PFHxS)	2022/09/09	<0.30		ug/kg				
Perfluoroheptanesulfonic acid PFHpS	2022/09/09	<0.17		ug/kg				
Perfluorooctanesulfonic acid (PFOS)	2022/09/09	<0.27		ug/kg				
Perfluorodecanesulfonic acid (PFDS)	2022/09/09	<0.27		ug/kg				



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QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8213841	XIN	RPD - Sample/Sample Dup	Perfluorooctane Sulfonamide (PFOSA)	2022/09/09	<0.20		ug/kg	
			MeFOSE	2022/09/09	<0.22		ug/kg	
			8:2 Fluorotelomer sulfonic acid	2022/09/09	<0.30		ug/kg	
			Perfluorobutanoic acid (PFBA)	2022/09/09	NC		%	30
			Perfluoropentanoic acid (PFPeA)	2022/09/09	1.4		%	30
			Perfluorohexanoic acid (PFHxA)	2022/09/09	NC		%	30
			Perfluoroheptanoic acid (PFHpA)	2022/09/09	NC		%	30
			Perfluorooctanoic acid (PFOA)	2022/09/09	NC		%	30
			Perfluorononanoic acid (PFNA)	2022/09/09	NC		%	30
			Perfluorodecanoic acid (PFDA)	2022/09/09	NC		%	30
			Perfluoroundecanoic acid (PFUnA)	2022/09/09	NC		%	30
			Perfluorododecanoic acid (PFDoA)	2022/09/09	NC		%	30
			Perfluorotridecanoic acid (PFTRDA)	2022/09/09	NC		%	30
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/09	NC		%	30
			Perfluorobutanesulfonic acid (PFBS)	2022/09/09	NC		%	30
			Perfluorohexanesulfonic acid(PFHxS)	2022/09/09	18		%	30
			Perfluoroheptanesulfonic acid PFHpS	2022/09/09	NC		%	30
			Perfluorooctanesulfonic acid (PFOS)	2022/09/09	28		%	30
			Perfluorodecanesulfonic acid (PFDS)	2022/09/09	NC		%	30
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/09	NC		%	30
8222232	XIN	Matrix Spike	MeFOSE	2022/09/09	NC		%	30
			8:2 Fluorotelomer sulfonic acid	2022/09/09	NC		%	30
			13C2-8:2-Fluorotelomersulfonic Acid	2022/09/15		81	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/15		42 (1)	%	50 - 150
			Perfluorotridecanoic acid (PFTRDA)	2022/09/15		124	%	70 - 130
8222232	XIN	Spiked Blank	Perfluorotetradecanoic acid(PFTEDA)	2022/09/15		108	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2022/09/15		107	%	70 - 130
			13C2-8:2-Fluorotelomersulfonic Acid	2022/09/15		83	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/15		76	%	50 - 150
			D3-MeFOSA	2022/09/15		58	%	25 - 150
			D5-EtFOSA	2022/09/15		59	%	25 - 150
			D7-MeFOSE	2022/09/15		77	%	25 - 150
			D9-EtFOSE	2022/09/15		77	%	25 - 150
			Perfluorotridecanoic acid (PFTRDA)	2022/09/15		113	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/15		108	%	70 - 130
			EtFOSA	2022/09/15		104	%	70 - 130
			MeFOSA	2022/09/15		107	%	70 - 130
			EtFOSE	2022/09/15		105	%	70 - 130
			MeFOSE	2022/09/15		112	%	70 - 130
			8:2 Fluorotelomer sulfonic acid	2022/09/15		107	%	70 - 130
8222232	XIN	Method Blank	13C2-8:2-Fluorotelomersulfonic Acid	2022/09/15		82	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/15		78	%	50 - 150
			D3-MeFOSA	2022/09/15		54	%	25 - 150
			D5-EtFOSA	2022/09/15		53	%	25 - 150
			D7-MeFOSE	2022/09/15		74	%	25 - 150
			D9-EtFOSE	2022/09/15		68	%	25 - 150
			Perfluorotridecanoic acid (PFTRDA)	2022/09/15	<0.12		ug/kg	
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/15	<0.13		ug/kg	
			EtFOSA	2022/09/15	<0.38		ug/kg	
			MeFOSA	2022/09/15	<0.45		ug/kg	
			EtFOSE	2022/09/15	<0.37		ug/kg	



Bureau Veritas Job #: C2O5965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8222232	XIN	RPD - Sample/Sample Dup	MeFOSE	2022/09/15	<0.34		ug/kg	
			8:2 Fluorotelomer sulfonic acid	2022/09/15	<0.26		ug/kg	
			Perfluorotridecanoic acid (PFTRDA)	2022/09/15	NC		%	30
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/15	NC		%	30
			8:2 Fluorotelomer sulfonic acid	2022/09/15	NC		%	30
8239781	TJC	Matrix Spike	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/22		91	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/09/22		102	%	70 - 130
8239781	TJC	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/22		98	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/09/22		103	%	70 - 130
8239781	TJC	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/09/22		114	%	50 - 150
			6:2 Fluorotelomer sulfonic acid	2022/09/22	<0.24		ug/kg	
8239781	TJC	RPD - Sample/Sample Dup	6:2 Fluorotelomer sulfonic acid	2022/09/23	NC		%	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



Bureau Veritas Job #: C205965
Report Date: 2022/09/23

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

Anastassia Hamanov, Scientific Specialist

Colm McNamara, Senior Analyst, Liquid Chromatography

Pinkal Patel, Senior Analyst

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

CHAIN OF CUSTODY RECORD

ENV COC - 00014v3

Page 1 of 1

Invoice Information				Report Information (if differs from invoice)				Project Information			
Company: Barnstable County				Company: BETA Group, Inc				Quotation #:			
Contact Name: Priscilla Ellis/ Steve Tebo				Contact Name: Roger Thibault				P.O. #/ AFE#:			
Street Address: 3195 Main St				Street Address: 701 George Washington Hwy				Project #:			
City: Barnstable Prov: Postal Code:				City: Lincoln Prov: Postal Code:				Site #:			
Phone:				Phone:				Site Location:			
Email: pellis@barnstablecounty.org				Email: Rthibault@BETA-Inc.com; Lbouley@BETA-Inc.com				Site Location Province:			
Copies: stebo@barnstablecounty.org				Copies: stebo@barnstablecounty.org				Sampled By: Chris Dien, Roger Thibault			

27-Aug-22 11:00
Lori Dufour
C205965
MUM ENV-613

Regulatory Criteria										Regular Turnaround Time (TAT)											
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> CCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC <input type="checkbox"/> MISA <input type="checkbox"/> Municipality <input type="checkbox"/> Table <input type="checkbox"/> PWQO <input type="checkbox"/> Other: <input type="checkbox"/>										<input type="checkbox"/> 5 to 7 Day <input checked="" type="checkbox"/> 10 Day											
Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>										<input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day											
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS										Date Required: YY MM DD											
Sample Identification		Date Sampled		Time (24hr)		Matrix		# OF CONTAINERS SUBMITTED													
		YY	MM	DD	HH	MM		HOLD - DO NOT ANALYZE													
								Comments													
1	FRP-121	22	08	24	12	20	Sediment	1													
2	FRP-122	22	08	24	12	10	Sediment	1													
3	FRP-DUP	22	08	24	12	10	Sediment	1													
4	Equipment Blank	22	08	24	12	30	Water	1													
5								1													
6								1													
7								1													
8								1													
9								1													
10								1													
11								1													
12								1													

International Solid Sample Heat Treat Required
High Risk material
Controlled Storage and Disposal

*UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO BUREAU VERITAS STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS AND CONDITIONS WHICH ARE AVAILABLE FOR VIEWING AT WWW.BVNA.COM/TERMS-AND-CONDITIONS OR BY CALLING THE LABORATORY LISTED ABOVE TO OBTAIN A COPY

LAB USE ONLY		Yes		No		LAB USE ONLY		Yes		No		LAB USE ONLY		Yes		No		Temperature reading by:	
Seal present						Seal present						Seal present							
Seal intact						Seal intact						Seal intact							
Cooling media present						Cooling media present						Cooling media present							
Relinquished by: (Signature/ Print)		Date		Time		Received by: (Signature/ Print)		Date		Time		Special instructions							
1 [Signature]		2022 08 26		12 00		1 [Signature]		2022 08 27		11 00									
2						2													



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/08
Report #: R7287708
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Sample Matrix: Water
Samples Received: 5

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
PFAS in water by SPE/LCMS (1)	5	2022/09/07	2022/09/07	CAM SOP-00894	EPA 537.1 m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/08
Report #: R7287708
Version: 3 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Encryption Key

Lori Dufour
Project Manager
08 Sep 2022 15:17:48

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TNP127	TNP128	TNP129	TNP130			
Sampling Date		2022/08/17 16:00	2022/08/17 14:00	2022/08/17 14:15	2022/08/17 15:00			
	UNITS	EQUIPMENT BLANK (SED 1)	SW-401 (FRP-107)	SW-402 (FRP-107)	SW-403	RDL	MDL	QC Batch
Perfluorinated Compounds								
Perfluorobutanoic acid (PFBA)	ug/L	<0.0039	0.021	0.022	0.021	0.020	0.0039	8209147
Perfluoropentanoic acid (PFPeA)	ug/L	<0.0067	0.056	0.055	0.056	0.020	0.0067	8209147
Perfluorohexanoic acid (PFHxA)	ug/L	<0.0053	0.065	0.064	0.062	0.020	0.0053	8209147
Perfluoroheptanoic acid (PFHpA)	ug/L	<0.0067	0.069	0.069	0.068	0.020	0.0067	8209147
Perfluorooctanoic acid (PFOA)	ug/L	<0.0050	0.047	0.046	0.046	0.020	0.0050	8209147
Perfluorononanoic acid (PFNA)	ug/L	<0.0051	0.050	0.051	0.048	0.020	0.0051	8209147
Perfluorodecanoic acid (PFDA)	ug/L	<0.0039	0.0079	0.0075	0.0077	0.020	0.0039	8209147
Perfluoroundecanoic acid (PFUnA)	ug/L	<0.0062	0.0074	0.0078	0.0075	0.020	0.0062	8209147
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	<0.0080	<0.0080	<0.0080	0.020	0.0080	8209147
Perfluorotridecanoic acid (PFTRDA)	ug/L	<0.0064	<0.0064	<0.0064	<0.0064	0.020	0.0064	8209147
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	<0.0068	<0.0068	<0.0068	0.020	0.0068	8209147
Perfluorobutanesulfonic acid (PFBS)	ug/L	<0.0056	0.0059	0.0069	0.0067	0.020	0.0056	8209147
Perfluorohexanesulfonic acid (PFHxS)	ug/L	<0.0044	0.070	0.070	0.068	0.020	0.0044	8209147
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	<0.0065	0.0077	0.0077	0.0079	0.020	0.0065	8209147
Perfluorooctanesulfonic acid (PFOS)	ug/L	<0.0057	0.25	0.25	0.25	0.020	0.0057	8209147
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	<0.0064	<0.0064	<0.0064	0.020	0.0064	8209147
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0036	<0.0036	<0.0036	<0.0036	0.020	0.0036	8209147
EtFOSA	ug/L	<0.0070	<0.0070	<0.0070	<0.0070	0.020	0.0070	8209147
MeFOSA	ug/L	<0.0078	<0.0078	<0.0078	<0.0078	0.020	0.0078	8209147
EtFOSE	ug/L	<0.0071	<0.0071	<0.0071	<0.0071	0.020	0.0071	8209147
MeFOSE	ug/L	<0.0070	<0.0070	<0.0070	<0.0070	0.020	0.0070	8209147
6:2 Fluorotelomer sulfonic acid	ug/L	<0.0065	0.0076	0.0077	<0.0065	0.020	0.0065	8209147
8:2 Fluorotelomer sulfonic acid	ug/L	<0.0067	<0.0067	<0.0067	<0.0067	0.020	0.0067	8209147
Surrogate Recovery (%)								
13C2-6:2-Fluorotelomersulfonic Acid	%	102	93	101	102	N/A	N/A	8209147
13C2-8:2-Fluorotelomersulfonic Acid	%	110	90	96	95	N/A	N/A	8209147
13C2-Perfluorodecanoic acid	%	107	90	96	95	N/A	N/A	8209147
13C2-Perfluorododecanoic acid	%	97	71	71	76	N/A	N/A	8209147
13C2-Perfluorohexanoic acid	%	106	89	95	98	N/A	N/A	8209147
13C2-perfluorotetradecanoic acid	%	89	41 (1)	45 (1)	48 (1)	N/A	N/A	8209147
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL). Laboratory spiked water resulted in satisfactory recovery of the extracted internal standard analyte. When considered together, these QC data suggest that matrix interferences may be increasing the variability of the associated native analyte result (PFTeDA, PFTrDA).								



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TNP127	TNP128	TNP129	TNP130			
Sampling Date		2022/08/17 16:00	2022/08/17 14:00	2022/08/17 14:15	2022/08/17 15:00			
	UNITS	EQUIPMENT BLANK (SED 1)	SW-401 (FRP-107)	SW-402 (FRP-107)	SW-403	RDL	MDL	QC Batch
13C2-Perfluoroundecanoic acid	%	102	80	84	87	N/A	N/A	8209147
13C3-Perfluorobutanesulfonic acid	%	104	86	88	89	N/A	N/A	8209147
13C4-Perfluorobutanoic acid	%	105	96	101	101	N/A	N/A	8209147
13C4-Perfluoroheptanoic acid	%	104	90	96	95	N/A	N/A	8209147
13C4-Perfluorooctanesulfonic acid	%	105	85	92	93	N/A	N/A	8209147
13C4-Perfluorooctanoic acid	%	105	89	93	95	N/A	N/A	8209147
13C5-Perfluorononanoic acid	%	107	91	96	98	N/A	N/A	8209147
13C5-Perfluoropentanoic acid	%	103	93	96	98	N/A	N/A	8209147
13C8-Perfluorooctane Sulfonamide	%	98	82	91	89	N/A	N/A	8209147
18O2-Perfluorohexanesulfonic acid	%	105	87	92	92	N/A	N/A	8209147
D3-MeFOSA	%	72	64	66	75	N/A	N/A	8209147
D5-EtFOSA	%	77	66	73	72	N/A	N/A	8209147
D7-MeFOSE	%	95	86	81	85	N/A	N/A	8209147
D9-EtFOSE	%	94	72	76	80	N/A	N/A	8209147
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TNP131			
Sampling Date		2022/08/17 15:10			
	UNITS	SW-404	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ug/L	0.021	0.020	0.0039	8209147
Perfluoropentanoic acid (PFPeA)	ug/L	0.056	0.020	0.0067	8209147
Perfluorohexanoic acid (PFHxA)	ug/L	0.064	0.020	0.0053	8209147
Perfluoroheptanoic acid (PFHpA)	ug/L	0.068	0.020	0.0067	8209147
Perfluorooctanoic acid (PFOA)	ug/L	0.046	0.020	0.0050	8209147
Perfluorononanoic acid (PFNA)	ug/L	0.050	0.020	0.0051	8209147
Perfluorodecanoic acid (PFDA)	ug/L	0.0070	0.020	0.0039	8209147
Perfluoroundecanoic acid (PFUnA)	ug/L	0.0070	0.020	0.0062	8209147
Perfluorododecanoic acid (PFDoA)	ug/L	<0.0080	0.020	0.0080	8209147
Perfluorotridecanoic acid (PFTrDA)	ug/L	<0.0064	0.020	0.0064	8209147
Perfluorotetradecanoic acid (PFTEDA)	ug/L	<0.0068	0.020	0.0068	8209147
Perfluorobutanesulfonic acid (PFBS)	ug/L	0.0071	0.020	0.0056	8209147
Perfluorohexanesulfonic acid (PFHxS)	ug/L	0.068	0.020	0.0044	8209147
Perfluoroheptanesulfonic acid (PFHpS)	ug/L	0.0082	0.020	0.0065	8209147
Perfluorooctanesulfonic acid (PFOS)	ug/L	0.24	0.020	0.0057	8209147
Perfluorodecanesulfonic acid (PFDS)	ug/L	<0.0064	0.020	0.0064	8209147
Perfluorooctane Sulfonamide (PFOSA)	ug/L	<0.0036	0.020	0.0036	8209147
EtFOSA	ug/L	<0.0070	0.020	0.0070	8209147
MeFOSA	ug/L	<0.0078	0.020	0.0078	8209147
EtFOSE	ug/L	<0.0071	0.020	0.0071	8209147
MeFOSE	ug/L	<0.0070	0.020	0.0070	8209147
6:2 Fluorotelomer sulfonic acid	ug/L	<0.0065	0.020	0.0065	8209147
8:2 Fluorotelomer sulfonic acid	ug/L	<0.0067	0.020	0.0067	8209147
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	100	N/A	N/A	8209147
13C2-8:2-Fluorotelomersulfonic Acid	%	96	N/A	N/A	8209147
13C2-Perfluorodecanoic acid	%	96	N/A	N/A	8209147
13C2-Perfluorododecanoic acid	%	74	N/A	N/A	8209147
13C2-Perfluorohexanoic acid	%	95	N/A	N/A	8209147
13C2-perfluorotetradecanoic acid	%	45 (1)	N/A	N/A	8209147
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL). Laboratory spiked water resulted in satisfactory recovery of the extracted internal standard analyte. When considered together, these QC data suggest that matrix interferences may be increasing the variability of the associated native analyte result (PFTEDA, PFTrDA).					



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (WATER)

Bureau Veritas ID		TNP131			
Sampling Date		2022/08/17 15:10			
	UNITS	SW-404	RDL	MDL	QC Batch
13C2-Perfluoroundecanoic acid	%	86	N/A	N/A	8209147
13C3-Perfluorobutanesulfonic acid	%	91	N/A	N/A	8209147
13C4-Perfluorobutanoic acid	%	100	N/A	N/A	8209147
13C4-Perfluoroheptanoic acid	%	96	N/A	N/A	8209147
13C4-Perfluorooctanesulfonic acid	%	92	N/A	N/A	8209147
13C4-Perfluorooctanoic acid	%	95	N/A	N/A	8209147
13C5-Perfluorononanoic acid	%	95	N/A	N/A	8209147
13C5-Perfluoropentanoic acid	%	99	N/A	N/A	8209147
13C8-Perfluorooctane Sulfonamide	%	92	N/A	N/A	8209147
18O2-Perfluorohexanesulfonic acid	%	96	N/A	N/A	8209147
D3-MeFOSA	%	63	N/A	N/A	8209147
D5-EtFOSA	%	68	N/A	N/A	8209147
D7-MeFOSE	%	83	N/A	N/A	8209147
D9-EtFOSE	%	78	N/A	N/A	8209147
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TNP127
Sample ID: EQUIPMENT BLANK (SED 1)
Matrix: Water

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8209147	2022/09/07	2022/09/07	Adnan Khan

Bureau Veritas ID: TNP128
Sample ID: SW-401 (FRP-107)
Matrix: Water

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8209147	2022/09/07	2022/09/07	Adnan Khan

Bureau Veritas ID: TNP129
Sample ID: SW-402 (FRP-107)
Matrix: Water

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8209147	2022/09/07	2022/09/07	Adnan Khan

Bureau Veritas ID: TNP130
Sample ID: SW-403
Matrix: Water

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8209147	2022/09/07	2022/09/07	Adnan Khan

Bureau Veritas ID: TNP131
Sample ID: SW-404
Matrix: Water

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in water by SPE/LCMS	LCMS	8209147	2022/09/07	2022/09/07	Adnan Khan



GENERAL COMMENTS

Version 3: Split report for water and surface water samples.

Sample TNP127 [EQUIPMENT BLANK (SED 1)] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TNP128 [SW-401 (FRP-107)] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TNP129 [SW-402 (FRP-107)] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TNP130 [SW-403] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Sample TNP131 [SW-404] : Per- and polyfluoroalkyl substances (PFAS): Initial analyses of the sample was performed within the method defined hold time. The sample was reanalysed outside the method defined hold time (14 days) for QC purposes. Due to their chemical structure, PFAS are chemically and biologically stable in the environment and resist typical environmental degradation processes. Reanalyses outside the method defined hold time should not have a significant impact on the data.

Results relate only to the items tested.



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8209147	AKH	Spiked Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/09/07		96	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/09/07		103	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/07		107	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/07		95	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/07		110	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/07		93	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/07		101	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/07		107	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/09/07		109	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/07		106	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/07		107	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/07		106	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/07		106	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/07		107	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/07		100	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/07		109	%	50 - 150
				D3-MeFOSA	2022/09/07		78	%	50 - 150
				D5-EtFOSA	2022/09/07		79	%	50 - 150
				D7-MeFOSE	2022/09/07		96	%	50 - 150
				D9-EtFOSE	2022/09/07		98	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/07		92	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/07		92	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/07		91	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/07		94	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/07		92	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/07		95	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/07		95	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/07		94	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/07		98	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/07		97	%	70 - 130
				Perfluorotetradecanoic acid (PFTEDA)	2022/09/07		96	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/07		94	%	70 - 130
				Perfluorohexanesulfonic acid (PFHxS)	2022/09/07		93	%	70 - 130
				Perfluoroheptanesulfonic acid (PFHpS)	2022/09/07		90	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/07		91	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/07		87	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/07		90	%	70 - 130
				EtFOSA	2022/09/07		98	%	70 - 130
				MeFOSA	2022/09/07		94	%	70 - 130
				EtFOSE	2022/09/07		88	%	70 - 130
				MeFOSE	2022/09/07		95	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/09/07		96	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/07		92	%	70 - 130
8209147	AKH	Spiked Blank DUP		13C2-6:2-Fluorotelomersulfonic Acid	2022/09/07		94	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/09/07		96	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/09/07		98	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/09/07		93	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/09/07		104	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/09/07		90	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/09/07		96	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/09/07		103	%	50 - 150



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C4-Perfluorobutanoic acid	2022/09/07		103	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/09/07		102	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/09/07		101	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/09/07		101	%	50 - 150
				13C5-Perfluorononanoic acid	2022/09/07		102	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/09/07		101	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/09/07		95	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/09/07		103	%	50 - 150
				D3-MeFOSA	2022/09/07		73	%	50 - 150
				D5-EtFOSA	2022/09/07		83	%	50 - 150
				D7-MeFOSE	2022/09/07		97	%	50 - 150
				D9-EtFOSE	2022/09/07		93	%	50 - 150
				Perfluorobutanoic acid (PFBA)	2022/09/07		92	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/09/07		91	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/09/07		91	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/09/07		90	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/09/07		91	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/09/07		91	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/09/07		94	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/09/07		93	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/09/07		95	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/09/07		97	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/07		94	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/09/07		92	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/07		92	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/09/07		88	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/09/07		91	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/09/07		92	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/09/07		89	%	70 - 130
				EtFOSA	2022/09/07		95	%	70 - 130
				MeFOSA	2022/09/07		99	%	70 - 130
				EtFOSE	2022/09/07		94	%	70 - 130
				MeFOSE	2022/09/07		90	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/09/07		94	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/09/07		93	%	70 - 130
8209147	AKH	RPD		Perfluorobutanoic acid (PFBA)	2022/09/07	0.45		%	30
				Perfluoropentanoic acid (PFPeA)	2022/09/07	0.43		%	30
				Perfluorohexanoic acid (PFHxA)	2022/09/07	0.74		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/09/07	3.8		%	30
				Perfluorooctanoic acid (PFOA)	2022/09/07	1.3		%	30
				Perfluorononanoic acid (PFNA)	2022/09/07	3.6		%	30
				Perfluorodecanoic acid (PFDA)	2022/09/07	0.44		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/09/07	1.9		%	30
				Perfluorododecanoic acid (PFDoA)	2022/09/07	3.0		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/09/07	0.43		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/09/07	2.0		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/09/07	2.5		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/09/07	1.4		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/09/07	3.2		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/09/07	0.36		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/09/07	5.4		%	30



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8209147	AKH	Method Blank	Perfluorooctane Sulfonamide (PFOSA)	2022/09/07	1.8		%	30
			EtFOSA	2022/09/07	3.1		%	30
			MeFOSA	2022/09/07	5.0		%	30
			EtFOSE	2022/09/07	6.4		%	30
			MeFOSE	2022/09/07	5.4		%	30
			6:2 Fluorotelomer sulfonic acid	2022/09/07	2.5		%	30
			8:2 Fluorotelomer sulfonic acid	2022/09/07	0.81		%	30
			13C2-6:2-Fluorotelomersulfonic Acid	2022/09/07		99	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid	2022/09/07		102	%	50 - 150
			13C2-Perfluorodecanoic acid	2022/09/07		99	%	50 - 150
			13C2-Perfluorododecanoic acid	2022/09/07		93	%	50 - 150
			13C2-Perfluorohexanoic acid	2022/09/07		107	%	50 - 150
			13C2-perfluorotetradecanoic acid	2022/09/07		88	%	50 - 150
			13C2-Perfluoroundecanoic acid	2022/09/07		96	%	50 - 150
			13C3-Perfluorobutanesulfonic acid	2022/09/07		103	%	50 - 150
			13C4-Perfluorobutanoic acid	2022/09/07		102	%	50 - 150
			13C4-Perfluoroheptanoic acid	2022/09/07		105	%	50 - 150
			13C4-Perfluorooctanesulfonic acid	2022/09/07		98	%	50 - 150
			13C4-Perfluorooctanoic acid	2022/09/07		99	%	50 - 150
			13C5-Perfluorononanoic acid	2022/09/07		103	%	50 - 150
			13C5-Perfluoropentanoic acid	2022/09/07		103	%	50 - 150
			13C8-Perfluorooctane Sulfonamide	2022/09/07		100	%	50 - 150
			18O2-Perfluorohexanesulfonic acid	2022/09/07		105	%	50 - 150
			D3-MeFOSA	2022/09/07		81	%	50 - 150
			D5-EtFOSA	2022/09/07		85	%	50 - 150
			D7-MeFOSE	2022/09/07		90	%	50 - 150
			D9-EtFOSE	2022/09/07		93	%	50 - 150
			Perfluorobutanoic acid (PFBA)	2022/09/07	<0.0039		ug/L	
			Perfluoropentanoic acid (PFPeA)	2022/09/07	<0.0067		ug/L	
			Perfluorohexanoic acid (PFHxA)	2022/09/07	<0.0053		ug/L	
			Perfluoroheptanoic acid (PFHpA)	2022/09/07	<0.0067		ug/L	
			Perfluorooctanoic acid (PFOA)	2022/09/07	<0.0050		ug/L	
			Perfluorononanoic acid (PFNA)	2022/09/07	<0.0051		ug/L	
			Perfluorodecanoic acid (PFDA)	2022/09/07	<0.0039		ug/L	
			Perfluoroundecanoic acid (PFUnA)	2022/09/07	<0.0062		ug/L	
			Perfluorododecanoic acid (PFDoA)	2022/09/07	<0.0080		ug/L	
			Perfluorotridecanoic acid (PFTRDA)	2022/09/07	<0.0064		ug/L	
			Perfluorotetradecanoic acid(PFTEDA)	2022/09/07	<0.0068		ug/L	
			Perfluorobutanesulfonic acid (PFBS)	2022/09/07	<0.0056		ug/L	
			Perfluorohexanesulfonic acid(PFHxS)	2022/09/07	<0.0044		ug/L	
			Perfluoroheptanesulfonic acid PFHpS	2022/09/07	<0.0065		ug/L	
			Perfluorooctanesulfonic acid (PFOS)	2022/09/07	<0.0057		ug/L	
			Perfluorodecanesulfonic acid (PFDS)	2022/09/07	<0.0064		ug/L	
			Perfluorooctane Sulfonamide (PFOSA)	2022/09/07	<0.0036		ug/L	
			EtFOSA	2022/09/07	<0.0070		ug/L	
			MeFOSA	2022/09/07	<0.0078		ug/L	
			EtFOSE	2022/09/07	<0.0071		ug/L	
			MeFOSE	2022/09/07	<0.0070		ug/L	
			6:2 Fluorotelomer sulfonic acid	2022/09/07	<0.0065		ug/L	



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				8:2 Fluorotelomer sulfonic acid	2022/09/07	<0.0067		ug/L	
Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.									
Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.									
Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.									
Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.									



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Colm McNamara", written over a horizontal line.

Colm McNamara, Senior Analyst, Liquid Chromatography

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266



Sample
Heat Treat Required

IRD

Page 1 of 1

Invoice Information										Report Information (if differs from invoice)										High Risk Material Controlled Storage and Disposal										24-Aug-22 11:59 Lori Dufour C201362 RJM ENV-645									
Company: Barnstable County										Company: BETA Group, Inc										Quotation #:																			
Contact Name: Priscilla Ellis/ Steve Tebo										Contact Name: Roger Thibault										P.O. #/ AFER:																			
Street Address: 3195 Main St										Street Address: 701 George Washington Hwy										Project #:										6206									
City: Barnstable Prov: Postal Code:										City: Lincoln Prov: Postal Code:										Site #:										BFTA									
Phone:										Phone:										Site Location:										Barnstable, MA									
Email: pelis@barnstablecounty.org										Email: Rthibault@BETA-inc.com; Lbouley@BETA-inc.com										Site Location Province:																			
Copies: stebo@barnstablecounty.org										Copies: stebo@barnstablecounty.org										Sampled By:										Chris Oien, Laura Bouley, Amanda Ray									
Regulatory Criteria										1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22										Regular Turnaround Time (TAT)																			
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> CCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> Reg 558* <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> PWQO <input type="checkbox"/> Other: <input type="checkbox"/> Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>										OTHER										Rush Turnaround Time (TAT) Surcharges apply																			
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																				<input type="checkbox"/> 5 to 7 Day <input checked="" type="checkbox"/> 10 Day																			
Sample Identification										Date Sampled Time (24hr) Matrix										HOLD - DO NOT ANALYZE																			
YY MM DD HH MM										FIELD FILTERED FIELD PRESERVED LAB FILTRATION REQUIRED BTEX F1 P2 - F4 VOCs Reg 153 metals and inorganics Reg 153 ICPMS metals Reg 153 metals (for C-VI, ICPMS metals-HWS-8) ASTM D7968-17A m US EPA 537.1m (PFAS)										Date Required: YY MM DD																			
1 SB-FRP 0-1'										22 08 18 14 10 Sediment										1																			
2 SB-FRP 1-2'										22 08 18 14 15 Sediment										1																			
3 MW-305 (0-2')										22 08 18 10 00 Soil										1																			
4 MW-305 (12-14')										22 08 18 10 15 Soil										1																			
5 MW-306 (0-2')										22 08 18 13 00 Soil										1																			
6 MW-306 (8-10')										22 08 17 13 00 Soil										1																			
7 Equipment Blank (Sed 1)										22 08 17 16 00 Water										1																			
8 SW-401 (FRP-107)										22 08 17 14 00 Water - Surface										1																			
9 SW-402 (FRP-107)										22 08 17 14 15 Water - Surface										1																			
10 SW-403										22 08 17 15 00 Water - Surface										1																			
11 SW-404										22 08 17 15 10 Water - Surface										1																			
12 FRP-109										22 08 18 7 00 Sediment										1																			
LAB USE ONLY										LAB USE ONLY										LAB USE ONLY																			
Seal present Seal intact Cooling media present										Seal present Seal intact Cooling media present										Seal present Seal intact Cooling media present																			
Relinquished by: (Signature/ Print)										Received by: (Signature/ Print)										Special Instructions																			
2022 08 23 12 00										2022 08 24 11 59																													

461128



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Report Date: 2022/08/30
Report #: R7276228
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2N3163

Received: 2022/08/17, 12:05

Sample Matrix: Soil
Samples Received: 6

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Moisture	6	N/A	2022/08/18	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	6	2022/08/25	2022/08/26	CAM SOP-00894	ASTM D7968-17a m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

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Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: na

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/08/30
Report #: R7276228
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C2N3163

Received: 2022/08/17, 12:05

Encryption Key

Lori Dufour
Project Manager
30 Aug 2022 14:41:35

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

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BUREAU
VERITAS

Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TLV366	TLV367	TLV368	TLV369	TLV370			
Sampling Date		2022/08/12 12:45	2022/08/12 12:55	2022/08/12 13:15	2022/08/12 13:25	2022/08/12 13:40			
COC Number		na	na	na	na	na			
	UNITS	MW-301 (0-2')	MW-301 (12-14')	MW-302 (0-2')	MW-302 (12-14')	MW-303 (0-2')	RDL	MDL	QC Batch
Inorganics									
Moisture	%	5.0	5.3	5.5	2.6	2.4	1.0	0.50	8174016
RDL = Reportable Detection Limit									
QC Batch = Quality Control Batch									

Bureau Veritas ID		TLV371			
Sampling Date		2022/08/12 13:50			
COC Number		na			
	UNITS	MW-303 (12-14')	RDL	MDL	QC Batch
Inorganics					
Moisture	%	4.4	1.0	0.50	8174016
RDL = Reportable Detection Limit					
QC Batch = Quality Control Batch					



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TLV366	TLV367	TLV368	TLV369			
Sampling Date		2022/08/12 12:45	2022/08/12 12:55	2022/08/12 13:15	2022/08/12 13:25			
COC Number		na	na	na	na			
	UNITS	MW-301 (0-2')	MW-301 (12-14')	MW-302 (0-2')	MW-302 (12-14')	RDL	MDL	QC Batch
Perfluorinated Compounds								
Perfluorobutanoic acid (PFBA)	ug/kg	<0.24	<0.24	<0.24	<0.24	1.0	0.24	8186681
Perfluoropentanoic acid (PFPeA)	ug/kg	<0.23	<0.23	<0.23	<0.23	1.0	0.23	8186681
Perfluorohexanoic acid (PFHxA)	ug/kg	0.20	<0.16	<0.16	<0.16	1.0	0.16	8186681
Perfluoroheptanoic acid (PFHpA)	ug/kg	0.17	<0.17	<0.17	<0.17	1.0	0.17	8186681
Perfluorooctanoic acid (PFOA)	ug/kg	<0.20	<0.20	<0.20	<0.20	1.0	0.20	8186681
Perfluorononanoic acid (PFNA)	ug/kg	<0.27	<0.27	<0.27	<0.27	1.0	0.27	8186681
Perfluorodecanoic acid (PFDA)	ug/kg	<0.24	<0.24	<0.24	<0.24	1.0	0.24	8186681
Perfluoroundecanoic acid (PFUnA)	ug/kg	<0.25	<0.25	<0.25	<0.25	1.0	0.25	8186681
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.19	<0.19	<0.19	<0.19	1.0	0.19	8186681
Perfluorotridecanoic acid (PFTRDA)	ug/kg	<0.22	<0.22	<0.22	<0.22	1.0	0.22	8186681
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.30	<0.30	<0.30	<0.30	1.0	0.30	8186681
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.17	<0.17	<0.17	<0.17	1.0	0.17	8186681
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	1.4	<0.30	<0.30	<0.30	1.0	0.30	8186681
Perfluoroheptanesulfonic acid PFHpS	ug/kg	<0.17	<0.17	<0.17	<0.17	1.0	0.17	8186681
Perfluorooctanesulfonic acid (PFOS)	ug/kg	<0.27	<0.27	1.9	2.4	1.0	0.27	8186681
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.27	<0.27	<0.27	<0.27	1.0	0.27	8186681
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.20	<0.20	<0.20	<0.20	1.0	0.20	8186681
EtFOSA	ug/kg	<0.31	<0.31	<0.31	<0.31	1.0	0.31	8186681
MeFOSA	ug/kg	<0.39	<0.39	<0.39	<0.39	1.0	0.39	8186681
EtFOSE	ug/kg	<0.29	<0.29	<0.29	<0.29	1.0	0.29	8186681
MeFOSE	ug/kg	<0.22	<0.22	<0.22	<0.22	1.0	0.22	8186681
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	<0.30	0.50	1.0	0.30	8186681
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	<0.30	<0.30	1.0	0.30	8186681
Surrogate Recovery (%)								
13C2-6:2-Fluorotelomersulfonic Acid	%	119	118	118	124	N/A	N/A	8186681
13C2-8:2-Fluorotelomersulfonic Acid	%	125	116	121	118	N/A	N/A	8186681
13C2-Perfluorodecanoic acid	%	116	110	111	111	N/A	N/A	8186681
13C2-Perfluorododecanoic acid	%	90	94	100	95	N/A	N/A	8186681
13C2-Perfluorohexanoic acid	%	111	107	110	115	N/A	N/A	8186681
13C2-perfluorotetradecanoic acid	%	55	72	66	49 (1)	N/A	N/A	8186681
13C2-Perfluoroundecanoic acid	%	112	109	108	107	N/A	N/A	8186681
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								
N/A = Not Applicable								
(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.								



BUREAU
VERITAS

Bureau Veritas Job #: C2N3163

Report Date: 2022/08/30

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: MA

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TLV366	TLV367	TLV368	TLV369			
Sampling Date		2022/08/12 12:45	2022/08/12 12:55	2022/08/12 13:15	2022/08/12 13:25			
COC Number		na	na	na	na			
	UNITS	MW-301 (0-2')	MW-301 (12-14')	MW-302 (0-2')	MW-302 (12-14')	RDL	MDL	QC Batch
13C3-Perfluorobutanesulfonic acid	%	106	100	104	108	N/A	N/A	8186681
13C4-Perfluorobutanoic acid	%	101	100	102	106	N/A	N/A	8186681
13C4-Perfluoroheptanoic acid	%	115	110	112	117	N/A	N/A	8186681
13C4-Perfluorooctanesulfonic acid	%	105	99	101	103	N/A	N/A	8186681
13C4-Perfluorooctanoic acid	%	117	111	114	116	N/A	N/A	8186681
13C5-Perfluorononanoic acid	%	117	111	114	115	N/A	N/A	8186681
13C5-Perfluoropentanoic acid	%	109	106	107	111	N/A	N/A	8186681
13C8-Perfluorooctane Sulfonamide	%	114	108	111	105	N/A	N/A	8186681
18O2-Perfluorohexanesulfonic acid	%	104	101	102	107	N/A	N/A	8186681
D3-MeFOSA	%	60	59	67	56	N/A	N/A	8186681
D5-EtFOSA	%	53	50	57	52	N/A	N/A	8186681
D7-MeFOSE	%	75	76	81	76	N/A	N/A	8186681
D9-EtFOSE	%	74	76	77	72	N/A	N/A	8186681
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable								



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TLV370		TLV371			
Sampling Date		2022/08/12 13:40		2022/08/12 13:50			
COC Number		na		na			
	UNITS	MW-303 (0-2')	QC Batch	MW-303 (12-14')	RDL	MDL	QC Batch
Perfluorinated Compounds							
Perfluorobutanoic acid (PFBA)	ug/kg	<0.24	8186681	<0.24	1.0	0.24	8186681
Perfluoropentanoic acid (PFPeA)	ug/kg	0.27	8186681	<0.23	1.0	0.23	8186681
Perfluorohexanoic acid (PFHxA)	ug/kg	0.23	8186681	<0.16	1.0	0.16	8186681
Perfluoroheptanoic acid (PFHpA)	ug/kg	<0.17	8186681	<0.17	1.0	0.17	8186681
Perfluorooctanoic acid (PFOA)	ug/kg	0.34	8186681	<0.20	1.0	0.20	8186681
Perfluorononanoic acid (PFNA)	ug/kg	<0.27	8186681	<0.27	1.0	0.27	8186681
Perfluorodecanoic acid (PFDA)	ug/kg	<0.24	8186681	<0.24	1.0	0.24	8186681
Perfluoroundecanoic acid (PFUnA)	ug/kg	<0.25	8186681	<0.25	1.0	0.25	8186681
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.19	8186681	<0.19	1.0	0.19	8186681
Perfluorotridecanoic acid (PFTeDA)	ug/kg	<0.22	8194069	<0.22	1.0	0.22	8186681
Perfluorotetradecanoic acid (PFTeDA)	ug/kg	<0.30	8194069	<0.30	1.0	0.30	8186681
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.17	8186681	<0.17	1.0	0.17	8186681
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	<0.30	8186681	<0.30	1.0	0.30	8186681
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.17	8186681	<0.17	1.0	0.17	8186681
Perfluorooctanesulfonic acid (PFOS)	ug/kg	2.6	8186681	<0.27	1.0	0.27	8186681
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.27	8186681	<0.27	1.0	0.27	8186681
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.20	8186681	<0.20	1.0	0.20	8186681
EtFOSA	ug/kg	<0.31	8194069	<0.31	1.0	0.31	8186681
MeFOSA	ug/kg	<0.39	8186681	<0.39	1.0	0.39	8186681
EtFOSE	ug/kg	<0.29	8186681	<0.29	1.0	0.29	8186681
MeFOSE	ug/kg	<0.22	8186681	<0.22	1.0	0.22	8186681
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	8186681	<0.30	1.0	0.30	8186681
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	8186681	<0.30	1.0	0.30	8186681
Surrogate Recovery (%)							
13C2-6:2-Fluorotelomersulfonic Acid	%	112	8186681	124	N/A	N/A	8186681
13C2-8:2-Fluorotelomersulfonic Acid	%	110	8186681	120	N/A	N/A	8186681
13C2-Perfluorodecanoic acid	%	98	8186681	113	N/A	N/A	8186681
13C2-Perfluorododecanoic acid	%	58	8186681	106	N/A	N/A	8186681
13C2-Perfluorohexanoic acid	%	104	8186681	117	N/A	N/A	8186681
13C2-perfluorotetradecanoic acid	%	48 (1)	8194069	85	N/A	N/A	8186681
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
N/A = Not Applicable							
(1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL). Laboratory spiked soil resulted in satisfactory recovery of the extracted internal standard analyte. When considered together, these QC data suggest that matrix interferences may be increasing the variability of the associated native analyte result (PFTeDA, PFTeDA).							



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TLV370		TLV371			
Sampling Date		2022/08/12 13:40		2022/08/12 13:50			
COC Number		na		na			
	UNITS	MW-303 (0-2')	QC Batch	MW-303 (12-14')	RDL	MDL	QC Batch
13C2-Perfluoroundecanoic acid	%	87	8186681	108	N/A	N/A	8186681
13C3-Perfluorobutanesulfonic acid	%	98	8186681	108	N/A	N/A	8186681
13C4-Perfluorobutanoic acid	%	101	8186681	107	N/A	N/A	8186681
13C4-Perfluoroheptanoic acid	%	105	8186681	118	N/A	N/A	8186681
13C4-Perfluorooctanesulfonic acid	%	90	8186681	100	N/A	N/A	8186681
13C4-Perfluorooctanoic acid	%	105	8186681	118	N/A	N/A	8186681
13C5-Perfluorononanoic acid	%	104	8186681	117	N/A	N/A	8186681
13C5-Perfluoropentanoic acid	%	104	8186681	114	N/A	N/A	8186681
13C8-Perfluorooctane Sulfonamide	%	75	8186681	108	N/A	N/A	8186681
18O2-Perfluorohexanesulfonic acid	%	93	8186681	107	N/A	N/A	8186681
D3-MeFOSA	%	31	8186681	58	N/A	N/A	8186681
D5-EtFOSA	%	45	8194069	54	N/A	N/A	8186681
D7-MeFOSE	%	40	8186681	79	N/A	N/A	8186681
D9-EtFOSE	%	29	8186681	80	N/A	N/A	8186681
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable							



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

TEST SUMMARY

Bureau Veritas ID: TLV366
Sample ID: MW-301 (0-2')
Matrix: Soil

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8174016	N/A	2022/08/18	Mathew Bowles
PFAS in soil by SPE/LCMS	LCMS	8186681	2022/08/25	2022/08/26	Aby Thong

Bureau Veritas ID: TLV367
Sample ID: MW-301 (12-14')
Matrix: Soil

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8174016	N/A	2022/08/18	Mathew Bowles
PFAS in soil by SPE/LCMS	LCMS	8186681	2022/08/25	2022/08/26	Aby Thong

Bureau Veritas ID: TLV368
Sample ID: MW-302 (0-2')
Matrix: Soil

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8174016	N/A	2022/08/18	Mathew Bowles
PFAS in soil by SPE/LCMS	LCMS	8186681	2022/08/25	2022/08/26	Aby Thong

Bureau Veritas ID: TLV369
Sample ID: MW-302 (12-14')
Matrix: Soil

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8174016	N/A	2022/08/18	Mathew Bowles
PFAS in soil by SPE/LCMS	LCMS	8186681	2022/08/25	2022/08/26	Aby Thong

Bureau Veritas ID: TLV370
Sample ID: MW-303 (0-2')
Matrix: Soil

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8174016	N/A	2022/08/18	Mathew Bowles
PFAS in soil by SPE/LCMS	LCMS	8186681	2022/08/25	2022/08/26	Aby Thong

Bureau Veritas ID: TLV371
Sample ID: MW-303 (12-14')
Matrix: Soil

Collected: 2022/08/12
Shipped:
Received: 2022/08/17

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8174016	N/A	2022/08/18	Mathew Bowles
PFAS in soil by SPE/LCMS	LCMS	8186681	2022/08/25	2022/08/26	Aby Thong



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

GENERAL COMMENTS

Sample TLV370, PFAS in soil by SPE/LCMS: Test repeated.

Results relate only to the items tested.



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
	8174016	MUC	RPD - Sample/Sample Dup	Moisture	2022/08/18	3.0		%	20
	8186681	ATN	Matrix Spike	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/26		113	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/26		113	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/26		117	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/26		111	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/26		119	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/26		105	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/26		116	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/26		112	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/26		115	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/26		119	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/26		111	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/26		120	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/26		118	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/26		119	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/26		113	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/26		112	%	50 - 150
				D3-MeFOSA	2022/08/26		64	%	25 - 150
				D5-EtFOSA	2022/08/26		62	%	25 - 150
				D7-MeFOSE	2022/08/26		89	%	25 - 150
				D9-EtFOSE	2022/08/26		89	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/26		104	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/26		102	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/26		104	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/26		103	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/26		103	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/26		106	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/26		104	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/26		104	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/26		104	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/26		106	%	70 - 130
				Perfluorotetradecanoic acid (PFTEDA)	2022/08/26		104	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/26		104	%	70 - 130
				Perfluorohexanesulfonic acid (PFHxS)	2022/08/26		102	%	70 - 130
				Perfluoroheptanesulfonic acid (PFHpS)	2022/08/26		92	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/26		105	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/26		90	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/26		96	%	70 - 130
				EtFOSA	2022/08/26		104	%	70 - 130
				MeFOSA	2022/08/26		105	%	70 - 130
				EtFOSE	2022/08/26		108	%	70 - 130
				MeFOSE	2022/08/26		109	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/26		102	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/26		105	%	70 - 130
	8186681	ATN	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/26		100	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/26		101	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/26		103	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/26		96	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/26		106	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/26		95	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/26		99	%	50 - 150



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				13C3-Perfluorobutanesulfonic acid	2022/08/26		101	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/26		103	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/26		106	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/26		98	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/26		108	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/26		106	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/26		106	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/26		97	%	50 - 150
				18O2-Perfluorohexanesulfonic acid	2022/08/26		97	%	50 - 150
				D3-MeFOSA	2022/08/26		56	%	25 - 150
				D5-EtFOSA	2022/08/26		50	%	25 - 150
				D7-MeFOSE	2022/08/26		82	%	25 - 150
				D9-EtFOSE	2022/08/26		77	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/26		102	%	70 - 130
				Perfluoropentanoic acid (PFPeA)	2022/08/26		101	%	70 - 130
				Perfluorohexanoic acid (PFHxA)	2022/08/26		103	%	70 - 130
				Perfluoroheptanoic acid (PFHpA)	2022/08/26		102	%	70 - 130
				Perfluorooctanoic acid (PFOA)	2022/08/26		102	%	70 - 130
				Perfluorononanoic acid (PFNA)	2022/08/26		104	%	70 - 130
				Perfluorodecanoic acid (PFDA)	2022/08/26		104	%	70 - 130
				Perfluoroundecanoic acid (PFUnA)	2022/08/26		107	%	70 - 130
				Perfluorododecanoic acid (PFDoA)	2022/08/26		105	%	70 - 130
				Perfluorotridecanoic acid (PFTRDA)	2022/08/26		104	%	70 - 130
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/26		105	%	70 - 130
				Perfluorobutanesulfonic acid (PFBS)	2022/08/26		103	%	70 - 130
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/26		103	%	70 - 130
				Perfluoroheptanesulfonic acid PFHpS	2022/08/26		92	%	70 - 130
				Perfluorooctanesulfonic acid (PFOS)	2022/08/26		106	%	70 - 130
				Perfluorodecanesulfonic acid (PFDS)	2022/08/26		88	%	70 - 130
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/26		100	%	70 - 130
				EtFOSA	2022/08/26		107	%	70 - 130
				MeFOSA	2022/08/26		105	%	70 - 130
				EtFOSE	2022/08/26		105	%	70 - 130
				MeFOSE	2022/08/26		99	%	70 - 130
				6:2 Fluorotelomer sulfonic acid	2022/08/26		100	%	70 - 130
				8:2 Fluorotelomer sulfonic acid	2022/08/26		103	%	70 - 130
8186681	ATN	Method Blank		13C2-6:2-Fluorotelomersulfonic Acid	2022/08/26		119	%	50 - 150
				13C2-8:2-Fluorotelomersulfonic Acid	2022/08/26		114	%	50 - 150
				13C2-Perfluorodecanoic acid	2022/08/26		107	%	50 - 150
				13C2-Perfluorododecanoic acid	2022/08/26		103	%	50 - 150
				13C2-Perfluorohexanoic acid	2022/08/26		113	%	50 - 150
				13C2-perfluorotetradecanoic acid	2022/08/26		101	%	50 - 150
				13C2-Perfluoroundecanoic acid	2022/08/26		104	%	50 - 150
				13C3-Perfluorobutanesulfonic acid	2022/08/26		106	%	50 - 150
				13C4-Perfluorobutanoic acid	2022/08/26		106	%	50 - 150
				13C4-Perfluoroheptanoic acid	2022/08/26		113	%	50 - 150
				13C4-Perfluorooctanesulfonic acid	2022/08/26		104	%	50 - 150
				13C4-Perfluorooctanoic acid	2022/08/26		112	%	50 - 150
				13C5-Perfluorononanoic acid	2022/08/26		112	%	50 - 150
				13C5-Perfluoropentanoic acid	2022/08/26		110	%	50 - 150
				13C8-Perfluorooctane Sulfonamide	2022/08/26		101	%	50 - 150



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				18O2-Perfluorohexanesulfonic acid	2022/08/26		105	%	50 - 150
				D3-MeFOSA	2022/08/26		50	%	25 - 150
				D5-EtFOSA	2022/08/26		46	%	25 - 150
				D7-MeFOSE	2022/08/26		83	%	25 - 150
				D9-EtFOSE	2022/08/26		82	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/26	<0.24		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/08/26	<0.23		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/08/26	<0.16		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/08/26	<0.17		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/08/26	<0.20		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/08/26	<0.27		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/08/26	<0.24		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/08/26	<0.25		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/08/26	<0.19		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/08/26	<0.22		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/26	<0.30		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/08/26	<0.17		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/26	<0.30		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/08/26	<0.17		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/08/26	<0.27		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/08/26	<0.27		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/26	<0.20		ug/kg	
				EtFOSA	2022/08/26	<0.31		ug/kg	
				MeFOSA	2022/08/26	<0.39		ug/kg	
				EtFOSE	2022/08/26	<0.29		ug/kg	
				MeFOSE	2022/08/26	<0.22		ug/kg	
				6:2 Fluorotelomer sulfonic acid	2022/08/26	<0.30		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/08/26	<0.30		ug/kg	
8186681	ATN	RPD - Sample/Sample Dup	Perfluorobutanoic acid (PFBA)	2022/08/26	NC			%	30
			Perfluoropentanoic acid (PFPeA)	2022/08/26	NC			%	30
			Perfluorohexanoic acid (PFHxA)	2022/08/26	NC			%	30
			Perfluoroheptanoic acid (PFHpA)	2022/08/26	NC			%	30
			Perfluorooctanoic acid (PFOA)	2022/08/26	NC			%	30
			Perfluorononanoic acid (PFNA)	2022/08/26	NC			%	30
			Perfluorodecanoic acid (PFDA)	2022/08/26	NC			%	30
			Perfluoroundecanoic acid (PFUnA)	2022/08/26	NC			%	30
			Perfluorododecanoic acid (PFDoA)	2022/08/26	NC			%	30
			Perfluorotridecanoic acid (PFTRDA)	2022/08/26	NC			%	30
			Perfluorotetradecanoic acid(PFTEDA)	2022/08/26	NC			%	30
			Perfluorobutanesulfonic acid (PFBS)	2022/08/26	NC			%	30
			Perfluorohexanesulfonic acid(PFHxS)	2022/08/26	NC			%	30
			Perfluoroheptanesulfonic acid PFHpS	2022/08/26	NC			%	30
			Perfluorooctanesulfonic acid (PFOS)	2022/08/26	NC			%	30
			Perfluorodecanesulfonic acid (PFDS)	2022/08/26	NC			%	30
			Perfluorooctane Sulfonamide (PFOSA)	2022/08/26	NC			%	30
			6:2 Fluorotelomer sulfonic acid	2022/08/26	NC			%	30
			8:2 Fluorotelomer sulfonic acid	2022/08/26	NC			%	30
8194069	TTM	Matrix Spike	13C2-perfluorotetradecanoic acid	2022/08/30		71		%	50 - 150
			D5-EtFOSA	2022/08/30		47		%	25 - 150
			Perfluorotridecanoic acid (PFTRDA)	2022/08/30		123		%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2022/08/30		114		%	70 - 130



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8194069	TTM	Spiked Blank	EtFOSA	2022/08/30		118	%	70 - 130
			13C2-perfluorotetradecanoic acid	2022/08/30		76	%	50 - 150
			D5-EtFOSA	2022/08/30		45	%	25 - 150
			Perfluorotridecanoic acid (PFTRDA)	2022/08/30		121	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)	2022/08/30		115	%	70 - 130
			EtFOSA	2022/08/30		117	%	70 - 130
8194069	TTM	Method Blank	13C2-perfluorotetradecanoic acid	2022/08/30		77	%	50 - 150
			D5-EtFOSA	2022/08/30		39	%	25 - 150
			Perfluorotridecanoic acid (PFTRDA)	2022/08/30	<0.22		ug/kg	
			Perfluorotetradecanoic acid(PFTEDA)	2022/08/30	<0.30		ug/kg	
			EtFOSA	2022/08/30	<0.31		ug/kg	
8194069	TTM	RPD - Sample/Sample Dup	Perfluorotridecanoic acid (PFTRDA)	2022/08/30	NC		%	30
			Perfluorotetradecanoic acid(PFTEDA)	2022/08/30	NC		%	30

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).



Bureau Veritas Job #: C2N3163
Report Date: 2022/08/30

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: MA

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "A. Hamanov", written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "C. McNamara", written over a horizontal line.

Colm McNamara, Senior Analyst, Liquid Chromatography

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

ENV COC - 00014v3

Page 1 of 1

Page 1 of 1



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Report Date: 2022/09/08
Report #: R7287679
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Sample Matrix: Soil
Samples Received: 3

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Acid Extractable Metals Analysis by ICP	3	2022/08/31	2022/09/01	CAM SOP-00408	EPA 6010D m
Moisture	3	N/A	2022/08/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	3	2022/08/30	2022/08/31	CAM SOP-00894	ASTM D7968-17a m
Total Organic Carbon in Soil	3	N/A	2022/09/07	CAM SOP-00468	BCMOE TOC Aug 2014

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/08
Report #: R7287679
Version: 1 - Final

CERTIFICATE OF ANALYSIS

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TNP121	TNP122	TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15	2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	FRP-109	RDL	MDL	QC Batch
Inorganics							
Moisture	%	26	19	95	1.0	0.50	8189754
Total Organic Carbon	mg/kg	24000	5500	310000	500	100	8196512
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP121	TNP122			TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15			2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	RDL	MDL	FRP-109	RDL	MDL	QC Batch
Perfluorinated Compounds									
Perfluorobutanoic acid (PFBA)	ug/kg	<0.24	<0.24	1.0	0.24	<4.8	20	4.8	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	<0.23	<0.23	1.0	0.23	<4.6	20	4.6	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	<0.16	<0.16	1.0	0.16	<3.2	20	3.2	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	<0.17	<0.17	1.0	0.17	<3.4	20	3.4	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	0.21	<0.20	1.0	0.20	<4.0	20	4.0	8195799
Perfluorononanoic acid (PFNA)	ug/kg	1.4	1.1	1.0	0.27	<5.4	20	5.4	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	0.59	<0.24	1.0	0.24	<4.8	20	4.8	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	0.41	<0.25	1.0	0.25	23	20	5.0	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.19	<0.19	1.0	0.19	<3.8	20	3.8	8195799
Perfluorotridecanoic acid (PFTrDA)	ug/kg	<0.22	<0.22	1.0	0.22	37	20	4.4	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.30	<0.30	1.0	0.30	<6.0	20	6.0	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.17	<0.17	1.0	0.17	<3.4	20	3.4	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	0.59	<0.30	1.0	0.30	<6.0	20	6.0	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.17	<0.17	1.0	0.17	<3.4	20	3.4	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	26	18	1.0	0.27	270	20	54	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.27	<0.27	1.0	0.27	<5.4	20	5.4	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.20	<0.20	1.0	0.20	<4.0	20	4.0	8195799
EtFOSA	ug/kg	<0.31	<0.31	1.0	0.31	<6.2	20	6.2	8195799
MeFOSA	ug/kg	<0.39	<0.39	1.0	0.39	<7.8	20	7.8	8195799
EtFOSE	ug/kg	<0.29	<0.29	1.0	0.29	<5.8	20	5.8	8195799
MeFOSE	ug/kg	<0.22	<0.22	1.0	0.22	<4.4	20	4.4	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	1.0	0.30	<6.0	20	6.0	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	1.0	0.30	<6.0	20	6.0	8195799
Surrogate Recovery (%)									
13C2-6:2-Fluorotelomersulfonic Acid	%	95	99	N/A	N/A	95	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	93	91	N/A	N/A	93	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	86	87	N/A	N/A	88	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	74	61	N/A	N/A	76	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	91	97	N/A	N/A	93	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	58	31 (1)	N/A	N/A	65	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable (1) Extracted internal standard analyte recovery was below the defined lower control limit (LCL). Laboratory spiked soil resulted in satisfactory recovery of the extracted internal standard analyte. When considered together, these QC data suggest that matrix interferences may be increasing the variability of the associated native analyte result (PFTrDA & PFTEDA).									



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP121	TNP122			TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15			2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	RDL	MDL	FRP-109	RDL	MDL	QC Batch
13C2-Perfluoroundecanoic acid	%	82	79	N/A	N/A	83	N/A	N/A	8195799
13C3-Perfluorobutanesulfonic acid	%	91	97	N/A	N/A	94	N/A	N/A	8195799
13C4-Perfluorobutanoic acid	%	94	98	N/A	N/A	93	N/A	N/A	8195799
13C4-Perfluoroheptanoic acid	%	95	98	N/A	N/A	95	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	88	88	N/A	N/A	87	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	91	95	N/A	N/A	95	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	86	88	N/A	N/A	88	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	90	95	N/A	N/A	92	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	77	73	N/A	N/A	77	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	89	94	N/A	N/A	91	N/A	N/A	8195799
D3-MeFOSA	%	47	37	N/A	N/A	41	N/A	N/A	8195799
D5-EtFOSA	%	46	33	N/A	N/A	38	N/A	N/A	8195799
D7-MeFOSE	%	54	56	N/A	N/A	45	N/A	N/A	8195799
D9-EtFOSE	%	50	52	N/A	N/A	42	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable									



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

ELEMENTS BY ATOMIC SPECTROSCOPY (SOIL)

Bureau Veritas ID		TNP121	TNP122	TNP132			
Sampling Date		2022/08/18 14:10	2022/08/18 14:15	2022/08/18 07:00			
	UNITS	SB-FRP 0-1'	SB-FRP 1-2'	FRP-109	RDL	MDL	QC Batch
Metals							
Acid Extractable Iron (Fe)	ug/g	620	3400	4500	50	N/A	8198380
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							
N/A = Not Applicable							



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TNP121
Sample ID: SB-FRP 0-1'
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	8198380	2022/08/31	2022/09/01	Indira HarryPaul
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran
Total Organic Carbon in Soil	COMB	8196512	N/A	2022/09/07	Godwin Okereke

Bureau Veritas ID: TNP122
Sample ID: SB-FRP 1-2'
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	8198380	2022/08/31	2022/09/01	Indira HarryPaul
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran
Total Organic Carbon in Soil	COMB	8196512	N/A	2022/09/07	Godwin Okereke

Bureau Veritas ID: TNP132
Sample ID: FRP-109
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acid Extractable Metals Analysis by ICP	ICP	8198380	2022/08/31	2022/09/01	Indira HarryPaul
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran
Total Organic Carbon in Soil	COMB	8196512	N/A	2022/09/07	Godwin Okereke



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

GENERAL COMMENTS

Version 1: Split report for sediment samples.

Bureau Veritas Laboratories is not NELAC/DOD-ELAP accredited for Iron and Total Organic Carbon. Analysis completed with client's consent

Incorrect containers were received for Iron and Total Organic Carbon. Client consented to proceed with analysis.

Sample TNP132 [FRP-109] : Per- and polyfluoroalkyl substances (PFAS): Detection limits were adjusted for high moisture content.

Results relate only to the items tested.



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8189754	JTS	RPD - Sample/Sample Dup	Moisture		2022/08/26	1.1		%	20
8195799	TTM	Matrix Spike(TNP125)	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/31		87	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/31		80	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/31		82	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/31		55	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/31		90	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/31		23 (1)	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/31		70	%	50 - 150
			13C3-Perfluorobutanesulfonic acid		2022/08/31		92	%	50 - 150
			13C4-Perfluorobutanoic acid		2022/08/31		93	%	50 - 150
			13C4-Perfluoroheptanoic acid		2022/08/31		90	%	50 - 150
			13C4-Perfluorooctanesulfonic acid		2022/08/31		81	%	50 - 150
			13C4-Perfluorooctanoic acid		2022/08/31		88	%	50 - 150
			13C5-Perfluorononanoic acid		2022/08/31		84	%	50 - 150
			13C5-Perfluoropentanoic acid		2022/08/31		90	%	50 - 150
			13C8-Perfluorooctane Sulfonamide		2022/08/31		71	%	50 - 150
			18O2-Perfluorohexanesulfonic acid		2022/08/31		87	%	50 - 150
			D3-MeFOSA		2022/08/31		39	%	25 - 150
			D5-EtFOSA		2022/08/31		35	%	25 - 150
			D7-MeFOSE		2022/08/31		57	%	25 - 150
			D9-EtFOSE		2022/08/31		54	%	25 - 150
			Perfluorobutanoic acid (PFBA)		2022/08/31		89	%	70 - 130
			Perfluoropentanoic acid (PFPeA)		2022/08/31		92	%	70 - 130
			Perfluorohexanoic acid (PFHxA)		2022/08/31		90	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)		2022/08/31		92	%	70 - 130
			Perfluorooctanoic acid (PFOA)		2022/08/31		92	%	70 - 130
			Perfluorononanoic acid (PFNA)		2022/08/31		91	%	70 - 130
			Perfluorodecanoic acid (PFDA)		2022/08/31		88	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)		2022/08/31		89	%	70 - 130
			Perfluorododecanoic acid (PFDoA)		2022/08/31		91	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)		2022/08/31		138 (2)	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)		2022/08/31		88	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)		2022/08/31		90	%	70 - 130
			Perfluorohexanesulfonic acid(PFHxS)		2022/08/31		90	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS		2022/08/31		85	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)		2022/08/31		96	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)		2022/08/31		74	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)		2022/08/31		86	%	70 - 130
			EtFOSA		2022/08/31		92	%	70 - 130
			MeFOSA		2022/08/31		94	%	70 - 130
			EtFOSE		2022/08/31		89	%	70 - 130
			MeFOSE		2022/08/31		95	%	70 - 130
			6:2 Fluorotelomer sulfonic acid		2022/08/31		89	%	70 - 130
			8:2 Fluorotelomer sulfonic acid		2022/08/31		89	%	70 - 130
8195799	TTM	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/31		92	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/31		88	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/31		90	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/31		82	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/31		89	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/31		80	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/31		84	%	50 - 150



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits			
				13C3-Perfluorobutanesulfonic acid	2022/08/31		92	%	50 - 150			
				13C4-Perfluorobutanoic acid	2022/08/31		91	%	50 - 150			
				13C4-Perfluoroheptanoic acid	2022/08/31		93	%	50 - 150			
				13C4-Perfluorooctanesulfonic acid	2022/08/31		92	%	50 - 150			
				13C4-Perfluorooctanoic acid	2022/08/31		90	%	50 - 150			
				13C5-Perfluorononanoic acid	2022/08/31		89	%	50 - 150			
				13C5-Perfluoropentanoic acid	2022/08/31		89	%	50 - 150			
				13C8-Perfluorooctane Sulfonamide	2022/08/31		79	%	50 - 150			
				18O2-Perfluorohexanesulfonic acid	2022/08/31		90	%	50 - 150			
				D3-MeFOSA	2022/08/31		44	%	25 - 150			
				D5-EtFOSA	2022/08/31		37	%	25 - 150			
				D7-MeFOSE	2022/08/31		66	%	25 - 150			
				D9-EtFOSE	2022/08/31		64	%	25 - 150			
				Perfluorobutanoic acid (PFBA)	2022/08/31		88	%	70 - 130			
				Perfluoropentanoic acid (PFPeA)	2022/08/31		90	%	70 - 130			
				Perfluorohexanoic acid (PFHxA)	2022/08/31		89	%	70 - 130			
				Perfluoroheptanoic acid (PFHpA)	2022/08/31		89	%	70 - 130			
				Perfluorooctanoic acid (PFOA)	2022/08/31		89	%	70 - 130			
				Perfluorononanoic acid (PFNA)	2022/08/31		90	%	70 - 130			
				Perfluorodecanoic acid (PFDA)	2022/08/31		89	%	70 - 130			
				Perfluoroundecanoic acid (PFUnA)	2022/08/31		88	%	70 - 130			
				Perfluorododecanoic acid (PFDoA)	2022/08/31		92	%	70 - 130			
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31		93	%	70 - 130			
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31		88	%	70 - 130			
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31		86	%	70 - 130			
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31		88	%	70 - 130			
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31		86	%	70 - 130			
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31		89	%	70 - 130			
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31		82	%	70 - 130			
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31		86	%	70 - 130			
				EtFOSA	2022/08/31		99	%	70 - 130			
				MeFOSA	2022/08/31		89	%	70 - 130			
				EtFOSE	2022/08/31		91	%	70 - 130			
				MeFOSE	2022/08/31		91	%	70 - 130			
				6:2 Fluorotelomer sulfonic acid	2022/08/31		87	%	70 - 130			
				8:2 Fluorotelomer sulfonic acid	2022/08/31		90	%	70 - 130			
				8195799	TTM	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/31		104	%	50 - 150
							13C2-8:2-Fluorotelomersulfonic Acid	2022/08/31		93	%	50 - 150
							13C2-Perfluorodecanoic acid	2022/08/31		90	%	50 - 150
							13C2-Perfluorododecanoic acid	2022/08/31		82	%	50 - 150
							13C2-Perfluorohexanoic acid	2022/08/31		93	%	50 - 150
							13C2-perfluorotetradecanoic acid	2022/08/31		82	%	50 - 150
							13C2-Perfluoroundecanoic acid	2022/08/31		88	%	50 - 150
							13C3-Perfluorobutanesulfonic acid	2022/08/31		93	%	50 - 150
							13C4-Perfluorobutanoic acid	2022/08/31		94	%	50 - 150
13C4-Perfluoroheptanoic acid	2022/08/31		99				%	50 - 150				
13C4-Perfluorooctanesulfonic acid	2022/08/31		95				%	50 - 150				
13C4-Perfluorooctanoic acid	2022/08/31		96				%	50 - 150				
13C5-Perfluorononanoic acid	2022/08/31		96				%	50 - 150				
13C5-Perfluoropentanoic acid	2022/08/31		90				%	50 - 150				
13C8-Perfluorooctane Sulfonamide	2022/08/31		77				%	50 - 150				



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8195799	TTM	RPD - Sample/Sample Dup		18O2-Perfluorohexanesulfonic acid	2022/08/31		96	%	50 - 150
				D3-MeFOSA	2022/08/31		34	%	25 - 150
				D5-EtFOSA	2022/08/31		30	%	25 - 150
				D7-MeFOSE	2022/08/31		63	%	25 - 150
				D9-EtFOSE	2022/08/31		64	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31	<0.24		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/08/31	<0.23		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/08/31	<0.16		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	<0.17		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/08/31	<0.20		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/08/31	<0.24		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	<0.25		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/08/31	<0.19		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	<0.22		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	<0.30		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	<0.17		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	<0.30		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	<0.17		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	<0.27		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	<0.20		ug/kg	
				EtFOSA	2022/08/31	<0.31		ug/kg	
				MeFOSA	2022/08/31	<0.39		ug/kg	
				EtFOSE	2022/08/31	<0.29		ug/kg	
				MeFOSE	2022/08/31	<0.22		ug/kg	
				6:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				Perfluorobutanoic acid (PFBA)	2022/08/31	NC		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/31	NC		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/31	NC		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	NC		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/31	NC		%	30
				Perfluorononanoic acid (PFNA)	2022/08/31	NC		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/31	NC		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	NC		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/31	NC		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	NC		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	NC		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	NC		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	NC		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	NC		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	NC		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	NC		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	NC		%	30
				EtFOSA	2022/08/31	NC		%	30
				MeFOSA	2022/08/31	NC		%	30
				EtFOSE	2022/08/31	NC		%	30
				MeFOSE	2022/08/31	NC		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30
				8:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8196512	OK	QC Standard	Total Organic Carbon	2022/09/07		103	%	75 - 125
8196512	OK	Method Blank	Total Organic Carbon	2022/09/07	<500		mg/kg	
8196512	OK	RPD - Sample/Sample Dup	Total Organic Carbon	2022/09/07	0.43		%	35
8198380	IHP	Matrix Spike	Acid Extractable Iron (Fe)	2022/09/01		NC	%	75 - 125
8198380	IHP	Spiked Blank	Acid Extractable Iron (Fe)	2022/09/01		102	%	80 - 120
8198380	IHP	Method Blank	Acid Extractable Iron (Fe)	2022/09/01	<50		ug/g	

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked soil resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high for this specific analyte. For results that were not detected (ND), this potential bias has no impact.



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "A. Hamanov", written over a horizontal line.

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "A. Robinson", written over a horizontal line.

Adam Robinson, Supervisor, LC/MS/MS

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266



Sample
Heat Treat Required

IRD

Page 1 of 1

Invoice Information										Report Information (if differs from invoice)										High Risk Material										Controlled Storage and Disposal									
Invoice to: Barnstable County										Company: BETA Group, Inc										Quotation #:										24-Aug-22 11:59									
Contact Name: Priscilla Ellis/ Steve Tebo										Contact Name: Roger Thibault										P.O. #/ AFER:										Lori Dufour									
Street Address: 3195 Main St										Street Address: 701 George Washington Hwy										Project #:										6206									
City: Barnstable Prov: Postal Code:										City: Lincoln Prov: Postal Code:										Site #:										BFTA									
Phone:										Phone:										Site Location:										Barnstable, MA									
Email: pelis@barnstablecounty.org										Email: Rthibault@BETA-inc.com; Lbouley@BETA-inc.com										Site Location Province:										RJM ENV-645									
Copies: stebo@barnstablecounty.org										Copies: stebo@barnstablecounty.org										Sampled By:										Chris Oien, Laura Bouley, Amanda Ray									
Regulatory Criteria										1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22										Regular Turnaround Time (TAT)																			
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> CCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> Reg 558* <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> PWQO <input type="checkbox"/> Other: <input type="checkbox"/> Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>										OTHER										Rush Turnaround Time (TAT) Surcharges apply																			
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																				<input type="checkbox"/> 5 to 7 Day <input checked="" type="checkbox"/> 10 Day																			
Sample Identification										Date Sampled Time (24hr) Matrix										Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> 4 Day																			
YY MM DD HH MM										FIELD FILTERED FIELD PRESERVED LAB FILTRATION REQUIRED BTEX F1 P2 - F4 VOCs Reg 153 metals and inorganics Reg 153 ICPMS metals Reg 153 metals (for C-VI, ICPMS metals-HWS-8) ASTM D7968-17A m US EPA 537.1m (PFAS)										Date Required: YY MM DD																			
1 SB-FRP 0-1'										22 08 18 14 10 Sediment										Comments																			
2 SB-FRP 1-2'										22 08 18 14 15 Sediment																													
3 MW-305 (0-2')										22 08 18 10 00 Soil																													
4 MW-305 (12-14')										22 08 18 10 15 Soil																													
5 MW-306 (0-2')										22 08 18 13 00 Soil																													
6 MW-306 (8-10')										22 08 17 13 00 Soil																													
7 Equipment Blank (Sed 1)										22 08 17 16 00 Water																													
8 SW-401 (FRP-107)										22 08 17 14 00 Water - Surface																													
9 SW-402 (FRP-107)										22 08 17 14 15 Water - Surface																													
10 SW-403										22 08 17 15 00 Water - Surface																													
11 SW-404										22 08 17 15 10 Water - Surface																													
12 FRP-109										22 08 18 7 00 Sediment																													
LAB USE ONLY										LAB USE ONLY										LAB USE ONLY										Temperature reading by:									
Seal present Seal intact Cooling media present										Seal present Seal intact Cooling media present										Seal present Seal intact Cooling media present																			
Relinquished by: (Signature/ Print)										Received by: (Signature/ Print)										Special Instructions																			
2022 08 23 12 00										2022 08 24 11 59																													

461128



Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Report Date: 2022/09/08
Report #: R7287690
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Sample Matrix: Soil
Samples Received: 4

Analyses	Date		Date Analyzed	Laboratory Method	Analytical Method
	Quantity	Extracted			
Moisture	4	N/A	2022/08/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PFAS in soil by SPE/LCMS (1)	4	2022/08/30	2022/08/31	CAM SOP-00894	ASTM D7968-17a m

Remarks:

Bureau Veritas is accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Bureau Veritas are based upon recognized Provincial, Federal or US method compendia such as CCME, MELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Bureau Veritas' profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Bureau Veritas in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

Bureau Veritas liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Bureau Veritas has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Bureau Veritas, unless otherwise agreed in writing. Bureau Veritas is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by Bureau Veritas, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) Per- and polyfluoroalkyl substances (PFAS) identified as surrogates on the certificate of analysis represent the extracted internal standard.



Attention: Steven Tebo

Barnstable County
3195 Main Street
PO Box 427
Barnstable, MA
USA 02630

Your Project #: 6206
Site#: BFTA
Site Location: BARNSTABLE, MA
Your C.O.C. #: N/A

Report Date: 2022/09/08
Report #: R7287690
Version: 2 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BUREAU VERITAS JOB #: C201362

Received: 2022/08/24, 11:59

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Lori Dufour, Project Manager

Email: Lori.Dufour@bureauveritas.com

Phone# (905) 817-5700

=====

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports.
For Service Group specific validation please refer to the Validation Signature Page.



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

RESULTS OF ANALYSES OF SOIL

Bureau Veritas ID		TNP123	TNP124	TNP125	TNP126			
Sampling Date		2022/08/18 10:00	2022/08/18 10:15	2022/08/18 13:00	2022/08/17 13:00			
	UNITS	MW-305 (0-2')	MW-305 (12-14')	MW-306 (0-2')	MW-306 (8-10')	RDL	MDL	QC Batch
Inorganics								
Moisture	%	8.7	2.7	3.5	2.0	1.0	0.50	8189754
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP123	TNP124	TNP125	TNP125			
Sampling Date		2022/08/18 10:00	2022/08/18 10:15	2022/08/18 13:00	2022/08/18 13:00			
	UNITS	MW-305 (0-2')	MW-305 (12-14')	MW-306 (0-2')	MW-306 (0-2') Lab-Dup	RDL	MDL	QC Batch
Perfluorinated Compounds								
Perfluorobutanoic acid (PFBA)	ug/kg	<0.24	<0.24	<0.24	<0.24	1.0	0.24	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	<0.23	<0.23	<0.23	<0.23	1.0	0.23	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	0.27	<0.16	<0.16	<0.16	1.0	0.16	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	<0.17	<0.17	<0.17	<0.17	1.0	0.17	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	0.26	<0.20	<0.20	<0.20	1.0	0.20	8195799
Perfluorononanoic acid (PFNA)	ug/kg	<0.27	<0.27	<0.27	<0.27	1.0	0.27	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	<0.24	<0.24	<0.24	<0.24	1.0	0.24	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	2.0	<0.25	<0.25	<0.25	1.0	0.25	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.19	<0.19	<0.19	<0.19	1.0	0.19	8195799
Perfluorotridecanoic acid (PFTRDA)	ug/kg	<0.22	<0.22	<0.22	<0.22	1.0	0.22	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.30	<0.30	<0.30	<0.30	1.0	0.30	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.17	<0.17	<0.17	<0.17	1.0	0.17	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	7.8	0.35	<0.30	<0.30	1.0	0.30	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.17	<0.17	<0.17	<0.17	1.0	0.17	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	33	1.6	0.32	0.41	1.0	0.27	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.27	<0.27	<0.27	<0.27	1.0	0.27	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	0.57	<0.20	<0.20	<0.20	1.0	0.20	8195799
EtFOSA	ug/kg	<0.31	<0.31	<0.31	<0.31	1.0	0.31	8195799
MeFOSA	ug/kg	<0.39	<0.39	<0.39	<0.39	1.0	0.39	8195799
EtFOSE	ug/kg	<0.29	<0.29	<0.29	<0.29	1.0	0.29	8195799
MeFOSE	ug/kg	<0.22	<0.22	<0.22	<0.22	1.0	0.22	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	<0.30	<0.30	1.0	0.30	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	<0.30	<0.30	<0.30	1.0	0.30	8195799
Surrogate Recovery (%)								
13C2-6:2-Fluorotelomersulfonic Acid	%	79	100	103	98	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	95	96	94	91	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	87	93	92	90	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	80	88	84	82	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	92	96	100	90	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	79	87	82	74	N/A	N/A	8195799
13C2-Perfluoroundecanoic acid	%	78	92	90	89	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable								



**BUREAU
VERITAS**

Bureau Veritas Job #: C201362

Report Date: 2022/09/08

Barnstable County

Client Project #: 6206

Site Location: BARNSTABLE, MA

Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP123	TNP124	TNP125	TNP125			
Sampling Date		2022/08/18 10:00	2022/08/18 10:15	2022/08/18 13:00	2022/08/18 13:00			
	UNITS	MW-305 (0-2')	MW-305 (12-14')	MW-306 (0-2')	MW-306 (0-2') Lab-Dup	RDL	MDL	QC Batch
13C3-Perfluorobutanesulfonic acid	%	93	96	100	94	N/A	N/A	8195799
13C4-Perfluorobutanoic acid	%	88	97	99	95	N/A	N/A	8195799
13C4-Perfluoroheptanoic acid	%	86	99	103	96	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	83	95	98	94	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	94	96	99	94	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	81	96	96	91	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	91	95	95	92	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	79	85	83	83	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	81	95	98	92	N/A	N/A	8195799
D3-MeFOSA	%	58	55	55	51	N/A	N/A	8195799
D5-EtFOSA	%	58	53	50	48	N/A	N/A	8195799
D7-MeFOSE	%	55	71	67	64	N/A	N/A	8195799
D9-EtFOSE	%	57	74	67	64	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable								



PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP126			
Sampling Date		2022/08/17 13:00			
	UNITS	MW-306 (8-10')	RDL	MDL	QC Batch
Perfluorinated Compounds					
Perfluorobutanoic acid (PFBA)	ug/kg	<0.24	1.0	0.24	8195799
Perfluoropentanoic acid (PFPeA)	ug/kg	<0.23	1.0	0.23	8195799
Perfluorohexanoic acid (PFHxA)	ug/kg	<0.16	1.0	0.16	8195799
Perfluoroheptanoic acid (PFHpA)	ug/kg	<0.17	1.0	0.17	8195799
Perfluorooctanoic acid (PFOA)	ug/kg	<0.20	1.0	0.20	8195799
Perfluorononanoic acid (PFNA)	ug/kg	<0.27	1.0	0.27	8195799
Perfluorodecanoic acid (PFDA)	ug/kg	<0.24	1.0	0.24	8195799
Perfluoroundecanoic acid (PFUnA)	ug/kg	<0.25	1.0	0.25	8195799
Perfluorododecanoic acid (PFDoA)	ug/kg	<0.19	1.0	0.19	8195799
Perfluorotridecanoic acid (PFTRDA)	ug/kg	<0.22	1.0	0.22	8195799
Perfluorotetradecanoic acid (PFTEDA)	ug/kg	<0.30	1.0	0.30	8195799
Perfluorobutanesulfonic acid (PFBS)	ug/kg	<0.17	1.0	0.17	8195799
Perfluorohexanesulfonic acid (PFHxS)	ug/kg	<0.30	1.0	0.30	8195799
Perfluoroheptanesulfonic acid (PFHpS)	ug/kg	<0.17	1.0	0.17	8195799
Perfluorooctanesulfonic acid (PFOS)	ug/kg	<0.27	1.0	0.27	8195799
Perfluorodecanesulfonic acid (PFDS)	ug/kg	<0.27	1.0	0.27	8195799
Perfluorooctane Sulfonamide (PFOSA)	ug/kg	<0.20	1.0	0.20	8195799
EtFOSA	ug/kg	<0.31	1.0	0.31	8195799
MeFOSA	ug/kg	<0.39	1.0	0.39	8195799
EtFOSE	ug/kg	<0.29	1.0	0.29	8195799
MeFOSE	ug/kg	<0.22	1.0	0.22	8195799
6:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	1.0	0.30	8195799
8:2 Fluorotelomer sulfonic acid	ug/kg	<0.30	1.0	0.30	8195799
Surrogate Recovery (%)					
13C2-6:2-Fluorotelomersulfonic Acid	%	112	N/A	N/A	8195799
13C2-8:2-Fluorotelomersulfonic Acid	%	103	N/A	N/A	8195799
13C2-Perfluorodecanoic acid	%	100	N/A	N/A	8195799
13C2-Perfluorododecanoic acid	%	93	N/A	N/A	8195799
13C2-Perfluorohexanoic acid	%	103	N/A	N/A	8195799
13C2-perfluorotetradecanoic acid	%	98	N/A	N/A	8195799
13C2-Perfluoroundecanoic acid	%	98	N/A	N/A	8195799
13C3-Perfluorobutanesulfonic acid	%	104	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

PERFLUOROALKYL SUBSTANCES (SOIL)

Bureau Veritas ID		TNP126			
Sampling Date		2022/08/17 13:00			
	UNITS	MW-306 (8-10')	RDL	MDL	QC Batch
13C4-Perfluorobutanoic acid	%	103	N/A	N/A	8195799
13C4-Perfluoroheptanoic acid	%	111	N/A	N/A	8195799
13C4-Perfluorooctanesulfonic acid	%	105	N/A	N/A	8195799
13C4-Perfluorooctanoic acid	%	106	N/A	N/A	8195799
13C5-Perfluorononanoic acid	%	104	N/A	N/A	8195799
13C5-Perfluoropentanoic acid	%	100	N/A	N/A	8195799
13C8-Perfluorooctane Sulfonamide	%	93	N/A	N/A	8195799
18O2-Perfluorohexanesulfonic acid	%	104	N/A	N/A	8195799
D3-MeFOSA	%	56	N/A	N/A	8195799
D5-EtFOSA	%	54	N/A	N/A	8195799
D7-MeFOSE	%	76	N/A	N/A	8195799
D9-EtFOSE	%	78	N/A	N/A	8195799
RDL = Reportable Detection Limit QC Batch = Quality Control Batch N/A = Not Applicable					



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

TEST SUMMARY

Bureau Veritas ID: TNP123
Sample ID: MW-305 (0-2')
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP124
Sample ID: MW-305 (12-14')
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP125
Sample ID: MW-306 (0-2')
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP125 Dup
Sample ID: MW-306 (0-2')
Matrix: Soil

Collected: 2022/08/18
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran

Bureau Veritas ID: TNP126
Sample ID: MW-306 (8-10')
Matrix: Soil

Collected: 2022/08/17
Shipped:
Received: 2022/08/24

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Moisture	BAL	8189754	N/A	2022/08/26	Simrat Bhathal
PFAS in soil by SPE/LCMS	LCMS	8195799	2022/08/30	2022/08/31	Thanh Tam Tran



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

GENERAL COMMENTS

Version 2: Split report for soil samples.

Results relate only to the items tested.



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8189754	JTS	RPD - Sample/Sample Dup	Moisture		2022/08/26	1.1		%	20
8195799	TTM	Matrix Spike(TNP125)	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/31		87	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/31		80	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/31		82	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/31		55	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/31		90	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/31		23 (1)	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/31		70	%	50 - 150
			13C3-Perfluorobutanesulfonic acid		2022/08/31		92	%	50 - 150
			13C4-Perfluorobutanoic acid		2022/08/31		93	%	50 - 150
			13C4-Perfluoroheptanoic acid		2022/08/31		90	%	50 - 150
			13C4-Perfluorooctanesulfonic acid		2022/08/31		81	%	50 - 150
			13C4-Perfluorooctanoic acid		2022/08/31		88	%	50 - 150
			13C5-Perfluorononanoic acid		2022/08/31		84	%	50 - 150
			13C5-Perfluoropentanoic acid		2022/08/31		90	%	50 - 150
			13C8-Perfluorooctane Sulfonamide		2022/08/31		71	%	50 - 150
			18O2-Perfluorohexanesulfonic acid		2022/08/31		87	%	50 - 150
			D3-MeFOSA		2022/08/31		39	%	25 - 150
			D5-EtFOSA		2022/08/31		35	%	25 - 150
			D7-MeFOSE		2022/08/31		57	%	25 - 150
			D9-EtFOSE		2022/08/31		54	%	25 - 150
			Perfluorobutanoic acid (PFBA)		2022/08/31		89	%	70 - 130
			Perfluoropentanoic acid (PFPeA)		2022/08/31		92	%	70 - 130
			Perfluorohexanoic acid (PFHxA)		2022/08/31		90	%	70 - 130
			Perfluoroheptanoic acid (PFHpA)		2022/08/31		92	%	70 - 130
			Perfluorooctanoic acid (PFOA)		2022/08/31		92	%	70 - 130
			Perfluorononanoic acid (PFNA)		2022/08/31		91	%	70 - 130
			Perfluorodecanoic acid (PFDA)		2022/08/31		88	%	70 - 130
			Perfluoroundecanoic acid (PFUnA)		2022/08/31		89	%	70 - 130
			Perfluorododecanoic acid (PFDoA)		2022/08/31		91	%	70 - 130
			Perfluorotridecanoic acid (PFTRDA)		2022/08/31		138 (2)	%	70 - 130
			Perfluorotetradecanoic acid(PFTEDA)		2022/08/31		88	%	70 - 130
			Perfluorobutanesulfonic acid (PFBS)		2022/08/31		90	%	70 - 130
			Perfluorohexanesulfonic acid(PFHxS)		2022/08/31		90	%	70 - 130
			Perfluoroheptanesulfonic acid PFHpS		2022/08/31		85	%	70 - 130
			Perfluorooctanesulfonic acid (PFOS)		2022/08/31		96	%	70 - 130
			Perfluorodecanesulfonic acid (PFDS)		2022/08/31		74	%	70 - 130
			Perfluorooctane Sulfonamide (PFOSA)		2022/08/31		86	%	70 - 130
			EtFOSA		2022/08/31		92	%	70 - 130
			MeFOSA		2022/08/31		94	%	70 - 130
			EtFOSE		2022/08/31		89	%	70 - 130
			MeFOSE		2022/08/31		95	%	70 - 130
			6:2 Fluorotelomer sulfonic acid		2022/08/31		89	%	70 - 130
			8:2 Fluorotelomer sulfonic acid		2022/08/31		89	%	70 - 130
8195799	TTM	Spiked Blank	13C2-6:2-Fluorotelomersulfonic Acid		2022/08/31		92	%	50 - 150
			13C2-8:2-Fluorotelomersulfonic Acid		2022/08/31		88	%	50 - 150
			13C2-Perfluorodecanoic acid		2022/08/31		90	%	50 - 150
			13C2-Perfluorododecanoic acid		2022/08/31		82	%	50 - 150
			13C2-Perfluorohexanoic acid		2022/08/31		89	%	50 - 150
			13C2-perfluorotetradecanoic acid		2022/08/31		80	%	50 - 150
			13C2-Perfluoroundecanoic acid		2022/08/31		84	%	50 - 150



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits			
				13C3-Perfluorobutanesulfonic acid	2022/08/31		92	%	50 - 150			
				13C4-Perfluorobutanoic acid	2022/08/31		91	%	50 - 150			
				13C4-Perfluoroheptanoic acid	2022/08/31		93	%	50 - 150			
				13C4-Perfluorooctanesulfonic acid	2022/08/31		92	%	50 - 150			
				13C4-Perfluorooctanoic acid	2022/08/31		90	%	50 - 150			
				13C5-Perfluorononanoic acid	2022/08/31		89	%	50 - 150			
				13C5-Perfluoropentanoic acid	2022/08/31		89	%	50 - 150			
				13C8-Perfluorooctane Sulfonamide	2022/08/31		79	%	50 - 150			
				18O2-Perfluorohexanesulfonic acid	2022/08/31		90	%	50 - 150			
				D3-MeFOSA	2022/08/31		44	%	25 - 150			
				D5-EtFOSA	2022/08/31		37	%	25 - 150			
				D7-MeFOSE	2022/08/31		66	%	25 - 150			
				D9-EtFOSE	2022/08/31		64	%	25 - 150			
				Perfluorobutanoic acid (PFBA)	2022/08/31		88	%	70 - 130			
				Perfluoropentanoic acid (PFPeA)	2022/08/31		90	%	70 - 130			
				Perfluorohexanoic acid (PFHxA)	2022/08/31		89	%	70 - 130			
				Perfluoroheptanoic acid (PFHpA)	2022/08/31		89	%	70 - 130			
				Perfluorooctanoic acid (PFOA)	2022/08/31		89	%	70 - 130			
				Perfluorononanoic acid (PFNA)	2022/08/31		90	%	70 - 130			
				Perfluorodecanoic acid (PFDA)	2022/08/31		89	%	70 - 130			
				Perfluoroundecanoic acid (PFUnA)	2022/08/31		88	%	70 - 130			
				Perfluorododecanoic acid (PFDoA)	2022/08/31		92	%	70 - 130			
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31		93	%	70 - 130			
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31		88	%	70 - 130			
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31		86	%	70 - 130			
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31		88	%	70 - 130			
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31		86	%	70 - 130			
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31		89	%	70 - 130			
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31		82	%	70 - 130			
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31		86	%	70 - 130			
				EtFOSA	2022/08/31		99	%	70 - 130			
				MeFOSA	2022/08/31		89	%	70 - 130			
				EtFOSE	2022/08/31		91	%	70 - 130			
				MeFOSE	2022/08/31		91	%	70 - 130			
				6:2 Fluorotelomer sulfonic acid	2022/08/31		87	%	70 - 130			
				8:2 Fluorotelomer sulfonic acid	2022/08/31		90	%	70 - 130			
				8195799	TTM	Method Blank	13C2-6:2-Fluorotelomersulfonic Acid	2022/08/31		104	%	50 - 150
							13C2-8:2-Fluorotelomersulfonic Acid	2022/08/31		93	%	50 - 150
							13C2-Perfluorodecanoic acid	2022/08/31		90	%	50 - 150
							13C2-Perfluorododecanoic acid	2022/08/31		82	%	50 - 150
							13C2-Perfluorohexanoic acid	2022/08/31		93	%	50 - 150
							13C2-perfluorotetradecanoic acid	2022/08/31		82	%	50 - 150
							13C2-Perfluoroundecanoic acid	2022/08/31		88	%	50 - 150
							13C3-Perfluorobutanesulfonic acid	2022/08/31		93	%	50 - 150
							13C4-Perfluorobutanoic acid	2022/08/31		94	%	50 - 150
13C4-Perfluoroheptanoic acid	2022/08/31		99				%	50 - 150				
13C4-Perfluorooctanesulfonic acid	2022/08/31		95				%	50 - 150				
13C4-Perfluorooctanoic acid	2022/08/31		96				%	50 - 150				
13C5-Perfluorononanoic acid	2022/08/31		96				%	50 - 150				
13C5-Perfluoropentanoic acid	2022/08/31		90				%	50 - 150				
13C8-Perfluorooctane Sulfonamide	2022/08/31		77				%	50 - 150				



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
8195799	TTM	RPD - Sample/Sample Dup		18O2-Perfluorohexanesulfonic acid	2022/08/31		96	%	50 - 150
				D3-MeFOSA	2022/08/31		34	%	25 - 150
				D5-EtFOSA	2022/08/31		30	%	25 - 150
				D7-MeFOSE	2022/08/31		63	%	25 - 150
				D9-EtFOSE	2022/08/31		64	%	25 - 150
				Perfluorobutanoic acid (PFBA)	2022/08/31	<0.24		ug/kg	
				Perfluoropentanoic acid (PFPeA)	2022/08/31	<0.23		ug/kg	
				Perfluorohexanoic acid (PFHxA)	2022/08/31	<0.16		ug/kg	
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	<0.17		ug/kg	
				Perfluorooctanoic acid (PFOA)	2022/08/31	<0.20		ug/kg	
				Perfluorononanoic acid (PFNA)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanoic acid (PFDA)	2022/08/31	<0.24		ug/kg	
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	<0.25		ug/kg	
				Perfluorododecanoic acid (PFDoA)	2022/08/31	<0.19		ug/kg	
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	<0.22		ug/kg	
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	<0.30		ug/kg	
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	<0.17		ug/kg	
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	<0.30		ug/kg	
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	<0.17		ug/kg	
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	<0.27		ug/kg	
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	<0.27		ug/kg	
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	<0.20		ug/kg	
				EtFOSA	2022/08/31	<0.31		ug/kg	
				MeFOSA	2022/08/31	<0.39		ug/kg	
				EtFOSE	2022/08/31	<0.29		ug/kg	
				MeFOSE	2022/08/31	<0.22		ug/kg	
				6:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				8:2 Fluorotelomer sulfonic acid	2022/08/31	<0.30		ug/kg	
				Perfluorobutanoic acid (PFBA)	2022/08/31	NC		%	30
				Perfluoropentanoic acid (PFPeA)	2022/08/31	NC		%	30
				Perfluorohexanoic acid (PFHxA)	2022/08/31	NC		%	30
				Perfluoroheptanoic acid (PFHpA)	2022/08/31	NC		%	30
				Perfluorooctanoic acid (PFOA)	2022/08/31	NC		%	30
				Perfluorononanoic acid (PFNA)	2022/08/31	NC		%	30
				Perfluorodecanoic acid (PFDA)	2022/08/31	NC		%	30
				Perfluoroundecanoic acid (PFUnA)	2022/08/31	NC		%	30
				Perfluorododecanoic acid (PFDoA)	2022/08/31	NC		%	30
				Perfluorotridecanoic acid (PFTRDA)	2022/08/31	NC		%	30
				Perfluorotetradecanoic acid(PFTEDA)	2022/08/31	NC		%	30
				Perfluorobutanesulfonic acid (PFBS)	2022/08/31	NC		%	30
				Perfluorohexanesulfonic acid(PFHxS)	2022/08/31	NC		%	30
				Perfluoroheptanesulfonic acid PFHpS	2022/08/31	NC		%	30
				Perfluorooctanesulfonic acid (PFOS)	2022/08/31	NC		%	30
				Perfluorodecanesulfonic acid (PFDS)	2022/08/31	NC		%	30
				Perfluorooctane Sulfonamide (PFOSA)	2022/08/31	NC		%	30
				EtFOSA	2022/08/31	NC		%	30
				MeFOSA	2022/08/31	NC		%	30
				EtFOSE	2022/08/31	NC		%	30
				MeFOSE	2022/08/31	NC		%	30
				6:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30



Bureau Veritas Job #: C2O1362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

QUALITY ASSURANCE REPORT(CONT'D)

QA/QC	Batch	Init	QC Type	Parameter	Date Analyzed	Value	% Recovery	UNITS	QC Limits
				8:2 Fluorotelomer sulfonic acid	2022/08/31	NC		%	30
<p>Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.</p> <p>Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.</p> <p>Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.</p> <p>Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.</p> <p>NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).</p> <p>(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.</p> <p>(2) Recovery of the matrix spike was above the upper control limit. Laboratory spiked soil resulted in satisfactory recovery of the compound of interest. When considered together, these QC data suggest that matrix interferences may be biasing the data high for this specific analyte. For results that were not detected (ND), this potential bias has no impact.</p>									



Bureau Veritas Job #: C201362
Report Date: 2022/09/08

Barnstable County
Client Project #: 6206
Site Location: BARNSTABLE, MA
Sampler Initials: CO

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by:

A handwritten signature in black ink, appearing to read "Anastassia Hamanov".

Anastassia Hamanov, Scientific Specialist

A handwritten signature in black ink, appearing to read "Adam Robinson".

Adam Robinson, Supervisor, LC/MS/MS

Bureau Veritas has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per ISO/IEC 17025, signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



6740 Campobello Road, Mississauga, Ontario L5N 2L8
Phone: 905-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266



Sample
Heat Treat Required

IRD

Page 1 of 1

Invoice Information										Report Information (if differs from invoice)										High Risk Material										Controlled Storage and Disposal																																							
Invoice to: Barnstable County										Company: BETA Group, Inc										Quotation #:										24-Aug-22 11:59																																							
Contact Name: Priscilla Ellis/ Steve Tebo										Contact Name: Roger Thibault										P.O. #/ AFER:										Lori Dufour																																							
Street Address: 3195 Main St										Street Address: 701 George Washington Hwy										Project #:										6206																																							
City: Barnstable Prov: Postal Code:										City: Lincoln Prov: Postal Code:										Site #:										BFTA																																							
Phone:										Phone:										Site Location:										Barnstable, MA																																							
Email: pelis@barnstablecounty.org										Email: Rthibault@BETA-inc.com; Lbouley@BETA-inc.com										Site Location Province:										RJM ENV-645																																							
Copies: stebo@barnstablecounty.org										Copies: stebo@barnstablecounty.org										Sampled By:										Chris Oien, Laura Bouley, Amanda Ray																																							
Regulatory Criteria										1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22										Regular Turnaround Time (TAT)																																																	
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input type="checkbox"/> Med/Fine <input type="checkbox"/> CCME <input type="checkbox"/> Reg 406, Table: <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Course <input type="checkbox"/> Reg 558* <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/other <input type="checkbox"/> For RSC <input type="checkbox"/> *min 3 day TAT <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> PWQO <input type="checkbox"/> Other: <input type="checkbox"/> Include Criteria on Certificate of Analysis (check if yes): <input type="checkbox"/>										OTHER										Rush Turnaround Time (TAT) Surcharges apply																																																	
SAMPLES MUST BE KEPT COOL (<10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																				<input type="checkbox"/> 5 to 7 Day <input checked="" type="checkbox"/> 10 Day																																																	
Sample Identification										Date Sampled										Time (24hr)										Matrix																																							
YY MM DD HH MM										YY MM DD HH MM										Matrix										Date Required: YY MM DD																																							
1 SB-FRP 0-1'										22 08 18 14 10										Sediment										1																																							
2 SB-FRP 1-2'										22 08 18 14 15										Sediment										1																																							
3 MW-305 (0-2')										22 08 18 10 00										Soil										1																																							
4 MW-305 (12-14')										22 08 18 10 15										Soil										1																																							
5 MW-306 (0-2')										22 08 18 13 00										Soil										1																																							
6 MW-306 (8-10')										22 08 17 13 00										Soil										1																																							
7 Equipment Blank (Sed 1)										22 08 17 16 00										Water										1																																							
8 SW-401 (FRP-107)										22 08 17 14 00										Water - Surface										1																																							
9 SW-402 (FRP-107)										22 08 17 14 15										Water - Surface										1																																							
10 SW-403										22 08 17 15 00										Water - Surface										1																																							
11 SW-404										22 08 17 15 10										Water - Surface										1																																							
12 FRP-109										22 08 18 7 00										Sediment										1																																							
LAB USE ONLY										LAB USE ONLY										LAB USE ONLY										Temperature reading by:																																							
Seal present										Seal present										Seal present																																																	
Seal intact										Seal intact										Seal intact																																																	
Cooling media present										Cooling media present										Cooling media present																																																	
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2																																																																					

461128

November 21, 2022

Priscilla Ellis
Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630

Project Location: Barnstable, MA
Client Job Number:
Project Number: 6206
Laboratory Work Order Number: 22J2282

Enclosed are results of analyses for samples as received by the laboratory on October 17, 2022. If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Kaitlyn A. Feliciano
Project Manager

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Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/21/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J2282

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-101 (0-3in)	22J2282-01	Soil		SM 2540G SOP-466 PFAS	
SS-101 (16-20in)	22J2282-02	Soil		SM 2540G SOP-466 PFAS	
SS-102 (FM)	22J2282-03	Soil		SM 2540G SOP-466 PFAS	
SS-102 (0-3in)	22J2282-04	Soil		SM 2540G SOP-466 PFAS	
SS-102 (16-20in)	22J2282-05	Soil		SM 2540G SOP-466 PFAS	
SS-102 (5ft)	22J2282-06	Soil		SM 2540G SOP-466 PFAS	
SS-102 (10ft)	22J2282-07	Soil		SM 2540G SOP-466 PFAS	
SS-103 (0-3in)	22J2282-08	Soil		SM 2540G SOP-466 PFAS	
SS-103 (16-20in)	22J2282-09	Soil		SM 2540G SOP-466 PFAS	
SS-104 (0-3in)	22J2282-10	Soil		SM 2540G SOP-466 PFAS	
SS-104 (16-20in)	22J2282-11	Soil		SM 2540G SOP-466 PFAS	
SS-105 (FM)	22J2282-12	Soil		SM 2540G SOP-466 PFAS	
SS-105 (0-3in)	22J2282-13	Soil		SM 2540G SOP-466 PFAS	
SS-105 (16-20in)	22J2282-14	Soil		SM 2540G SOP-466 PFAS	
SS-106 (0-3in)	22J2282-15	Soil		SM 2540G SOP-466 PFAS	
SS-106 (16-20in)	22J2282-16	Soil		SM 2540G SOP-466 PFAS	
SS-106 (5ft)	22J2282-17	Soil		SM 2540G SOP-466 PFAS	
SS-106 (10ft)	22J2282-18	Soil		SM 2540G SOP-466 PFAS	
SS-107 (0-3in)	22J2282-19	Soil		SM 2540G SOP-466 PFAS	
SS-107 (16-20in)	22J2282-20	Soil		SM 2540G SOP-466 PFAS	

Barnstable County Regional Government of Cape Cod
3195 Main St, PO Box 427
Barnstable, MA 02630
ATTN: Priscilla Ellis

REPORT DATE: 11/21/2022

PURCHASE ORDER NUMBER: 23000936

PROJECT NUMBER: 6206

ANALYTICAL SUMMARY

WORK ORDER NUMBER: 22J2282

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

PROJECT LOCATION: Barnstable, MA

FIELD SAMPLE #	LAB ID:	MATRIX	SAMPLE DESCRIPTION	TEST	SUB LAB
SS-108 (0-3in)	22J2282-21	Soil		SM 2540G SOP-466 PFAS	
SS-108 (16-20in)	22J2282-22	Soil		SM 2540G SOP-466 PFAS	
MW-304 (0-4in)	22J2282-23	Soil		SM 2540G SOP-466 PFAS	
MW-304(12ft)	22J2282-24	Soil		SM 2540G SOP-466 PFAS	
MW-310(0-6in)	22J2282-25	Soil		SM 2540G SOP-466 PFAS	
MW-310 (12-13ft)	22J2282-26	Soil		SM 2540G SOP-466 PFAS	
Duplicate 4	22J2282-27	Soil		SM 2540G SOP-466 PFAS	
SS-118 (0-in)	22J2282-28	Soil		SM 2540G SOP-466 PFAS	

CASE NARRATIVE SUMMARY

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

SM 2540G**Qualifications:****H-03**

Sample received after recommended holding time was exceeded.

Analyte & Samples(s) Qualified:**% Solids**

22J2282-01[SS-101 (0-3in)], 22J2282-02[SS-101 (16-20in)], 22J2282-03[SS-102 (FM)], 22J2282-04[SS-102 (0-3in)], 22J2282-05[SS-102 (16-20in)], 22J2282-06[SS-102 (5ft)], 22J2282-07[SS-102 (10ft)], 22J2282-08[SS-103 (0-3in)], 22J2282-09[SS-103 (16-20in)], 22J2282-10[SS-104 (0-3in)], 22J2282-11[SS-104 (16-20in)], 22J2282-12[SS-105 (FM)], 22J2282-13[SS-105 (0-3in)], 22J2282-14[SS-105 (16-20in)], 22J2282-15[SS-106 (0-3in)], 22J2282-16[SS-106 (16-20in)], 22J2282-17[SS-106 (5ft)], 22J2282-18[SS-106 (10ft)], 22J2282-19[SS-107 (0-3in)], 22J2282-20[SS-107 (16-20in)], 22J2282-21[SS-108 (0-3in)], 22J2282-22[SS-108 (16-20in)], 22J2282-23[MW-304 (0-4in)], 22J2282-24[MW-304(12ft)], 22J2282-25[MW-310(0-6in)], 22J2282-26[MW-310 (12-13ft)], 22J2282-27[Duplicate 4], 22J2282-28[SS- 118 (0-in)]

SOP-466 PFAS**Qualifications:****L-01**

Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B320799-BS1

MS-12

Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.

Analyte & Samples(s) Qualified:**4,8-dioxa-3H-perfluorononanoic ac**

B320654-MS1, B320654-MSD1

Perfluorotridecanoic acid (PFTrDA)

22J2282-01[SS-101 (0-3in)], B320654-MS1, B320654-MSD1

MS-22

Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.

Analyte & Samples(s) Qualified:**Perfluorooctanesulfonic acid (PFO)**

22J2282-01[SS-101 (0-3in)], B320654-MS1

Perfluoroundecanoic acid (PFUnA)

22J2282-01[SS-101 (0-3in)], B320654-MS1

PF-17

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

Analyte & Samples(s) Qualified:**d3-NMeFOSAA**

22J2282-14[SS-105 (16-20in)]

d5-NEtFOSAA

22J2282-13[SS-105 (0-3in)], 22J2282-14[SS-105 (16-20in)], 22J2282-21[SS-108 (0-3in)]

M2-6:2FTS

22J2282-03[SS-102 (FM)], 22J2282-13[SS-105 (0-3in)], 22J2282-14[SS-105 (16-20in)], 22J2282-17[SS-106 (5ft)], 22J2282-18[SS-106 (10ft)], 22J2282-19[SS-107 (0-3in)], 22J2282-21[SS-108 (0-3in)], 22J2282-22[SS-108 (16-20in)], B320799-BLK1

M2-8:2FTS

22J2282-03[SS-102 (FM)], 22J2282-10[SS-104 (0-3in)]

M2PFTA

22J2282-14[SS-105 (16-20in)]

M3HFPO-DA

22J2282-14[SS-105 (16-20in)]

M3PFBS

22J2282-14[SS-105 (16-20in)]

M3PFHxS

22J2282-14[SS-105 (16-20in)]

M4PFHpA

22J2282-14[SS-105 (16-20in)]

M5PFHxA

22J2282-14[SS-105 (16-20in)]

M8PFOA

22J2282-14[SS-105 (16-20in)]

M9PFNA

22J2282-14[SS-105 (16-20in)]

MPFDoA

22J2282-14[SS-105 (16-20in)]

S-29

Extracted Internal Standard is outside of control limits.

Analyte & Samples(s) Qualified:**M2-6:2FTS**

22J2282-12[SS-105 (FM)], B320799-BS1

M2-8:2FTS

22J2282-27[Duplicate 4], B320799-BS1, S078769-CCV1, S079599-CCV1

M5PFPeA

22J2282-14[SS-105 (16-20in)]

M7PFUnA

22J2282-14[SS-105 (16-20in)]

M8PFOS

22J2282-14[SS-105 (16-20in)]

MPFBA

22J2282-14[SS-105 (16-20in)]

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

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.



Tod E. Kopyscinski
Laboratory Director

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (0-3in)

Sampled: 10/4/2022 07:30

Sample ID: 22J2282-01

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoropentanoic acid (PFPeA)	3.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorohexanoic acid (PFHxA)	2.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorodecanoic acid (PFDA)	5.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorododecanoic acid (PFDoA)	2.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorotetradecanoic acid (PFTA)	0.96	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorotridecanoic acid (PFTTrDA)	9.5	0.48	µg/kg dry	1	MS-12	SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorodecanesulfonic acid (PFDS)	0.91	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	1.9	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-1-butanedisulfonamide (FBSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	0.64	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoroundecanoic acid (PFUnA)	8.5	0.48	µg/kg dry	1	MS-22	SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluoroheptanoic acid (PFHpA)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorooctanoic acid (PFOA)	3.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorooctanesulfonic acid (PFOS)	9.4	0.48	µg/kg dry	1	MS-22	SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL
Perfluorononanoic acid (PFNA)	1.9	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:49	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (0-3in)

Sampled: 10/4/2022 07:30

Sample ID: 22J2282-01

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.6		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (16-20in)

Sampled: 10/4/2022 07:40

Sample ID: 22J2282-02

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.95	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoropentanoic acid (PFPeA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorohexanoic acid (PFHxA)	1.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.72	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorodecanoic acid (PFDA)	4.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorododecanoic acid (PFDoA)	1.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorotetradecanoic acid (PFTA)	0.56	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorotridecanoic acid (PFTrDA)	5.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorodecanesulfonic acid (PFDS)	0.79	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoroundecanoic acid (PFUnA)	7.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluoroheptanoic acid (PFHpA)	0.89	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorooctanoic acid (PFOA)	2.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorooctanesulfonic acid (PFOS)	9.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL
Perfluorononanoic acid (PFNA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 15:56	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-101 (16-20in)

Sampled: 10/4/2022 07:40

Sample ID: 22J2282-02

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.9		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (FM)

Sampled: 10/4/2022 07:45

Sample ID: 22J2282-03

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoropentanoic acid (PFPeA)	3.2	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorohexanoic acid (PFHxA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorodecanoic acid (PFDA)	0.89	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorododecanoic acid (PFDoA)	0.70	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorotridecanoic acid (PFTrDA)	2.7	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-1-butanedisulfonamide (FBSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorohexanesulfonic acid (PFHxS)	3.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoroundecanoic acid (PFUnA)	3.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluoroheptanoic acid (PFHpA)	0.96	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorooctanoic acid (PFOA)	1.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorooctanesulfonic acid (PFOS)	13	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL
Perfluorononanoic acid (PFNA)	0.82	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:03	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (FM)

Sampled: 10/4/2022 07:45

Sample ID: 22J2282-03

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.8		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (0-3in)

Sampled: 10/4/2022 07:50

Sample ID: 22J2282-04

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	4.9	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoropentanoic acid (PFPeA)	8.4	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorohexanoic acid (PFHxA)	4.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluoroheptanoic acid (PFHpA)	2.3	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorooctanoic acid (PFOA)	1.8	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorooctanesulfonic acid (PFOS)	24	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL
Perfluorononanoic acid (PFNA)	1.3	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:10	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (0-3in)

Sampled: 10/4/2022 07:50

Sample ID: 22J2282-04

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:34	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (16-20in)

Sampled: 10/4/2022 07:55

Sample ID: 22J2282-05

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoropentanoic acid (PFPeA)	1.8	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorohexanoic acid (PFHxA)	1.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.60	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluoroheptanoic acid (PFHpA)	0.72	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorooctanoic acid (PFOA)	0.50	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorooctanesulfonic acid (PFOS)	4.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL
Perfluorononanoic acid (PFNA)	0.53	0.47	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:17	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (16-20in)

Sampled: 10/4/2022 07:55

Sample ID: 22J2282-05

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (5ft)

Sampled: 10/4/2022 08:00

Sample ID: 22J2282-06

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorooctanesulfonic acid (PFOS)	4.1	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:25	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (5ft)

Sampled: 10/4/2022 08:00

Sample ID: 22J2282-06

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (10ft)

Sampled: 10/4/2022 08:05

Sample ID: 22J2282-07

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorodecanoic acid (PFDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
N-EtFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
N-MeFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorotridecanoic acid (PFTTrDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorooctanoic acid (PFOA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorooctanesulfonic acid (PFOS)	3.2	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL
Perfluorononanoic acid (PFNA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:32	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-102 (10ft)

Sampled: 10/4/2022 08:05

Sample ID: 22J2282-07

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (0-3in)

Sampled: 10/4/2022 08:10

Sample ID: 22J2282-08

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	3.6	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoropentanoic acid (PFPeA)	3.9	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorohexanoic acid (PFHxA)	1.9	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorodecanoic acid (PFDA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
N-EtFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
N-MeFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.3	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluoroheptanoic acid (PFHpA)	1.1	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorooctanoic acid (PFOA)	0.87	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorooctanesulfonic acid (PFOS)	15	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL
Perfluorononanoic acid (PFNA)	0.99	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:39	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (0-3in)

Sampled: 10/4/2022 08:10

Sample ID: 22J2282-08

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.4		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (16-20in)

Sampled: 10/4/2022 08:15

Sample ID: 22J2282-09

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.84	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoropentanoic acid (PFPeA)	1.1	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorohexanoic acid (PFHxA)	0.59	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorotridecanoic acid (PFTTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorohexanesulfonic acid (PFHxS)	0.68	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluoroheptanoic acid (PFHpA)	0.45	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorooctanoic acid (PFOA)	0.47	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorooctanesulfonic acid (PFOS)	6.1	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:46	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-103 (16-20in)

Sampled: 10/4/2022 08:15

Sample ID: 22J2282-09

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.9		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (0-3in)

Sampled: 10/4/2022 08:20

Sample ID: 22J2282-10

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.9	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoropentanoic acid (PFPeA)	3.3	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorohexanoic acid (PFHxA)	2.0	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluoroheptanoic acid (PFHpA)	0.79	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorooctanoic acid (PFOA)	1.2	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorooctanesulfonic acid (PFOS)	9.1	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL
Perfluorononanoic acid (PFNA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 16:53	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (0-3in)

Sampled: 10/4/2022 08:20

Sample ID: 22J2282-10

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	85.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:35	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (16-20in)

Sampled: 10/4/2022 08:25

Sample ID: 22J2282-11

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorodecanoic acid (PFDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
N-EtFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
N-MeFOSAA	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorooctanoic acid (PFOA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL
Perfluorononanoic acid (PFNA)	ND	0.44	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:08	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-104 (16-20in)

Sampled: 10/4/2022 08:25

Sample ID: 22J2282-11

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (FM)

Sampled: 10/4/2022 08:30

Sample ID: 22J2282-12

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.0	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoropentanoic acid (PFPeA)	4.8	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorohexanoic acid (PFHxA)	2.1	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	2.7	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorodecanoic acid (PFDA)	1.7	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorododecanoic acid (PFDoA)	2.6	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
N-EtFOSAA	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
N-MeFOSAA	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorotridecanoic acid (PFTrDA)	5.5	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.9	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.1	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoroundecanoic acid (PFUnA)	4.4	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluoroheptanoic acid (PFHpA)	1.3	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorooctanoic acid (PFOA)	2.6	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorooctanesulfonic acid (PFOS)	5.4	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL
Perfluorononanoic acid (PFNA)	ND	1.1	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:15	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (FM)

Sampled: 10/4/2022 08:30

Sample ID: 22J2282-12

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	71.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (0-3in)

Sampled: 10/4/2022 08:35

Sample ID: 22J2282-13

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.3	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoropentanoic acid (PFPeA)	1.8	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorohexanoic acid (PFHxA)	0.74	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorodecanoic acid (PFDA)	0.68	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorotridecanoic acid (PFTTrDA)	0.63	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoroundecanoic acid (PFUnA)	2.1	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorooctanoic acid (PFOA)	0.93	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorooctanesulfonic acid (PFOS)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB
Perfluorononanoic acid (PFNA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 12:58	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (0-3in)

Sampled: 10/4/2022 08:35

Sample ID: 22J2282-13

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.2		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (16-20in)

Sampled: 10/4/2022 08:40

Sample ID: 22J2282-14

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	0.53	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoropentanoic acid (PFPeA)	0.73	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorotridecanoic acid (PFTDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoroundecanoic acid (PFUnA)	1.4	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorooctanoic acid (PFOA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorooctanesulfonic acid (PFOS)	0.95	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:05	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-105 (16-20in)

Sampled: 10/4/2022 08:40

Sample ID: 22J2282-14

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.9		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (0-3in)

Sampled: 10/4/2022 08:45

Sample ID: 22J2282-15

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoropentanoic acid (PFPeA)	2.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorohexanoic acid (PFHxA)	1.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.4	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorodecanoic acid (PFDA)	0.70	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluoroheptanoic acid (PFHpA)	1.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorooctanoic acid (PFOA)	2.1	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorooctanesulfonic acid (PFOS)	3.8	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB
Perfluorononanoic acid (PFNA)	2.9	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:12	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (0-3in)

Sampled: 10/4/2022 08:45

Sample ID: 22J2282-15

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	88.5		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (16-20in)

Sampled: 10/4/2022 08:50

Sample ID: 22J2282-16

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoropentanoic acid (PFPeA)	1.0	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorohexanoic acid (PFHxA)	0.47	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorooctanoic acid (PFOA)	1.2	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorooctanesulfonic acid (PFOS)	5.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB
Perfluorononanoic acid (PFNA)	3.3	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:20	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (16-20in)

Sampled: 10/4/2022 08:50

Sample ID: 22J2282-16

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	93.7		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:36	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (5ft)

Sampled: 10/4/2022 08:55

Sample ID: 22J2282-17

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorooctanoic acid (PFOA)	1.3	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorooctanesulfonic acid (PFOS)	3.8	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB
Perfluorononanoic acid (PFNA)	1.5	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:34	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (5ft)

Sampled: 10/4/2022 08:55

Sample ID: 22J2282-17

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	97.0		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (10ft)

Sampled: 10/4/2022 09:00

Sample ID: 22J2282-18

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
N-EtFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
N-MeFOSAA	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:41	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-106 (10ft)

Sampled: 10/4/2022 09:00

Sample ID: 22J2282-18

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	99.1		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (0-3in)

Sampled: 10/4/2022 09:05

Sample ID: 22J2282-19

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoropentanoic acid (PFPeA)	2.7	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorohexanoic acid (PFHxA)	1.2	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorotridecanoic acid (PFTDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluoroheptanoic acid (PFHpA)	0.85	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorooctanoic acid (PFOA)	1.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorooctanesulfonic acid (PFOS)	7.1	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB
Perfluorononanoic acid (PFNA)	0.56	0.46	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:49	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (0-3in)

Sampled: 10/4/2022 09:05

Sample ID: 22J2282-19

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.1		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (16-20in)

Sampled: 10/4/2022 09:10

Sample ID: 22J2282-20

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
N-EtFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
N-MeFOSAA	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorooctanesulfonic acid (PFOS)	2.6	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 13:56	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-107 (16-20in)

Sampled: 10/4/2022 09:10

Sample ID: 22J2282-20

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	96.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (0-3in)

Sampled: 10/4/2022 09:15

Sample ID: 22J2282-21

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.1	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoropentanoic acid (PFPeA)	1.5	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorohexanoic acid (PFHxA)	0.74	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorooctanoic acid (PFOA)	0.94	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorooctanesulfonic acid (PFOS)	6.7	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB
Perfluorononanoic acid (PFNA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:03	RRB

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (0-3in)

Sampled: 10/4/2022 09:15

Sample ID: 22J2282-21

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	90.4		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (16-20in)

Sampled: 10/4/2022 09:20

Sample ID: 22J2282-22

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorobutanesulfonic acid (PFBS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoropentanoic acid (PFPeA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorohexanoic acid (PFHxA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
11Cl-PF3OUdS (F53B Major)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
9Cl-PF3ONS (F53B Minor)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorodecanoic acid (PFDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorododecanoic acid (PFDoA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
N-EtFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
N-MeFOSAA	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorotetradecanoic acid (PFTA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorotridecanoic acid (PFTTrDA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorodecanesulfonic acid (PFDS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorooctanesulfonamide (FOSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorononanesulfonic acid (PFNS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorohexanesulfonic acid (PFHxS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoropentanesulfonic acid (PFPeS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoroundecanoic acid (PFUnA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluoroheptanoic acid (PFHpA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorooctanoic acid (PFOA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorooctanesulfonic acid (PFOS)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB
Perfluorononanoic acid (PFNA)	ND	0.47	µg/kg dry	1		SOP-466 PFAS	10/31/22	11/18/22 14:10	RRB



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-108 (16-20in)

Sampled: 10/4/2022 09:20

Sample ID: 22J2282-22

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	95.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304 (0-4in)

Sampled: 10/3/2022 09:55

Sample ID: 22J2282-23

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoropentanoic acid (PFPeA)	0.77	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorohexanoic acid (PFHxA)	0.94	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorodecanoic acid (PFDA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
N-EtFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
N-MeFOSAA	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorotridecanoic acid (PFTTrDA)	0.96	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorooctanesulfonamide (FOSA)	0.61	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluoroheptanoic acid (PFHpA)	0.54	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorooctanoic acid (PFOA)	0.97	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorooctanesulfonic acid (PFOS)	11	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL
Perfluorononanoic acid (PFNA)	ND	0.51	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:22	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304 (0-4in)

Sampled: 10/3/2022 09:55

Sample ID: 22J2282-23

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	86.0		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:20	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304(12ft)

Sampled: 10/3/2022 10:00

Sample ID: 22J2282-24

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	0.59	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorodecanoic acid (PFDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
N-EtFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
N-MeFOSAA	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorooctanoic acid (PFOA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL
Perfluorononanoic acid (PFNA)	ND	0.49	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:30	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-304(12ft)

Sampled: 10/3/2022 10:00

Sample ID: 22J2282-24

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	92.3		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:20	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310(0-6in)

Sampled: 10/3/2022 11:00

Sample ID: 22J2282-25

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorotridecanoic acid (PFTTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorooctanoic acid (PFOA)	0.56	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorooctanesulfonic acid (PFOS)	4.5	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:37	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310(0-6in)

Sampled: 10/3/2022 11:00

Sample ID: 22J2282-25

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	91.6		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:21	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310 (12-13ft)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-26

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoropentanoic acid (PFPeA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorohexanoic acid (PFHxA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorodecanoic acid (PFDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
N-EtFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
N-MeFOSAA	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorotridecanoic acid (PFTTrDA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorohexanesulfonic acid (PFHxS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoroundecanoic acid (PFUnA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluoroheptanoic acid (PFHpA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorooctanoic acid (PFOA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorooctanesulfonic acid (PFOS)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL
Perfluorononanoic acid (PFNA)	ND	0.46	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:44	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: MW-310 (12-13ft)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-26

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	95.9		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:21	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: Duplicate 4

Sampled: 10/4/2022 09:25

Sample ID: 22J2282-27

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	2.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoropentanoic acid (PFPeA)	23	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorohexanoic acid (PFHxA)	2.4	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
11Cl-PF3OUdS (F53B Major)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
9Cl-PF3ONS (F53B Minor)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.1	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorodecanoic acid (PFDA)	3.8	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorododecanoic acid (PFDoA)	3.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
N-EtFOSAA	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
N-MeFOSAA	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorotetradecanoic acid (PFTA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorotridecanoic acid (PFTrDA)	7.9	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorooctanesulfonamide (FOSA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorononanesulfonic acid (PFNS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorohexanesulfonic acid (PFHxS)	2.5	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.3	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoroundecanoic acid (PFUnA)	6.3	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluoroheptanoic acid (PFHpA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorooctanoic acid (PFOA)	3.4	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorooctanesulfonic acid (PFOS)	7.8	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL
Perfluorononanoic acid (PFNA)	ND	1.6	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:51	DRL



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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: Duplicate 4

Sampled: 10/4/2022 09:25

Sample ID: 22J2282-27

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	61.3		% Wt	1	H-03	SM 2540G	10/29/22	10/29/22 14:37	WDC

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-118 (0-in)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-28

Sample Matrix: Soil

Semivolatile Organic Compounds by - LC/MS-MS

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
Perfluorobutanoic acid (PFBA)	1.5	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorobutanesulfonic acid (PFBS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoropentanoic acid (PFPeA)	1.6	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorohexanoic acid (PFHxA)	2.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
11Cl-PF3OUdS (F53B Major)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
9Cl-PF3ONS (F53B Minor)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorodecanoic acid (PFDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorododecanoic acid (PFDoA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
N-EtFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
N-MeFOSAA	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorotetradecanoic acid (PFTA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorotridecanoic acid (PFTrDA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorodecanesulfonic acid (PFDS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorooctanesulfonamide (FOSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorononanesulfonic acid (PFNS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-1-butanefulfonamide (FBFA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorohexanesulfonic acid (PFHxS)	1.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoropentanesulfonic acid (PFPeS)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoroundecanoic acid (PFUnA)	0.74	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluoroheptanoic acid (PFHpA)	0.55	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorooctanoic acid (PFOA)	1.4	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorooctanesulfonic acid (PFOS)	33	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL
Perfluorononanoic acid (PFNA)	3.0	0.48	µg/kg dry	1		SOP-466 PFAS	10/24/22	11/1/22 17:58	DRL

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

Project Location: Barnstable, MA

Sample Description:

Work Order: 22J2282

Date Received: 10/17/2022

Field Sample #: SS-118 (0-in)

Sampled: 10/3/2022 11:05

Sample ID: 22J2282-28

Sample Matrix: Soil

Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total)

Analyte	Results	RL	Units	Dilution	Flag/Qual	Method	Date Prepared	Date/Time Analyzed	Analyst
% Solids	87.1		% Wt	1	H-03	SM 2540G	10/29/22	11/1/22 7:21	WDC

Sample Extraction Data

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22J2282-01 [SS-101 (0-3in)]	B321538	10/29/22
22J2282-02 [SS-101 (16-20in)]	B321538	10/29/22
22J2282-03 [SS-102 (FM)]	B321538	10/29/22
22J2282-04 [SS-102 (0-3in)]	B321538	10/29/22
22J2282-05 [SS-102 (16-20in)]	B321538	10/29/22
22J2282-06 [SS-102 (5ft)]	B321538	10/29/22
22J2282-07 [SS-102 (10ft)]	B321538	10/29/22
22J2282-08 [SS-103 (0-3in)]	B321538	10/29/22
22J2282-09 [SS-103 (16-20in)]	B321538	10/29/22
22J2282-10 [SS-104 (0-3in)]	B321538	10/29/22
22J2282-11 [SS-104 (16-20in)]	B321538	10/29/22
22J2282-12 [SS-105 (FM)]	B321538	10/29/22
22J2282-13 [SS-105 (0-3in)]	B321538	10/29/22
22J2282-14 [SS-105 (16-20in)]	B321538	10/29/22
22J2282-15 [SS-106 (0-3in)]	B321538	10/29/22
22J2282-16 [SS-106 (16-20in)]	B321538	10/29/22
22J2282-17 [SS-106 (5ft)]	B321538	10/29/22
22J2282-18 [SS-106 (10ft)]	B321538	10/29/22
22J2282-19 [SS-107 (0-3in)]	B321538	10/29/22
22J2282-20 [SS-107 (16-20in)]	B321538	10/29/22
22J2282-21 [SS-108 (0-3in)]	B321538	10/29/22
22J2282-22 [SS-108 (16-20in)]	B321538	10/29/22
22J2282-27 [Duplicate 4]	B321538	10/29/22

Prep Method: % Solids Analytical Method: SM 2540G

Lab Number [Field ID]	Batch	Date
22J2282-23 [MW-304 (0-4in)]	B321558	10/29/22
22J2282-24 [MW-304(12ft)]	B321558	10/29/22
22J2282-25 [MW-310(0-6in)]	B321558	10/29/22
22J2282-26 [MW-310 (12-13ft)]	B321558	10/29/22
22J2282-28 [SS-118 (0-in)]	B321558	10/29/22

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J2282-01 [SS-101 (0-3in)]	B320654	5.90	5.00	10/24/22
22J2282-02 [SS-101 (16-20in)]	B320654	5.98	5.00	10/24/22
22J2282-03 [SS-102 (FM)]	B320654	5.90	5.00	10/24/22
22J2282-04 [SS-102 (0-3in)]	B320654	5.89	5.00	10/24/22
22J2282-05 [SS-102 (16-20in)]	B320654	5.82	5.00	10/24/22
22J2282-06 [SS-102 (5ft)]	B320654	5.55	5.00	10/24/22
22J2282-07 [SS-102 (10ft)]	B320654	5.98	5.00	10/24/22
22J2282-08 [SS-103 (0-3in)]	B320654	5.60	5.00	10/24/22
22J2282-09 [SS-103 (16-20in)]	B320654	5.85	5.00	10/24/22
22J2282-10 [SS-104 (0-3in)]	B320654	5.95	5.00	10/24/22
22J2282-11 [SS-104 (16-20in)]	B320654	5.62	5.00	10/24/22
22J2282-12 [SS-105 (FM)]	B320654	3.01	5.00	10/24/22
22J2282-23 [MW-304 (0-4in)]	B320654	5.60	5.00	10/24/22
22J2282-24 [MW-304(12ft)]	B320654	5.50	5.00	10/24/22
22J2282-25 [MW-310(0-6in)]	B320654	5.92	5.00	10/24/22
22J2282-26 [MW-310 (12-13ft)]	B320654	5.62	5.00	10/24/22
22J2282-27 [Duplicate 4]	B320654	2.60	5.00	10/24/22

Sample Extraction Data**Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS**

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J2282-28 [SS-118 (0-in)]	B320654	5.98	5.00	10/24/22

Prep Method: SOP 465-PFAAS Analytical Method: SOP-466 PFAS

Lab Number [Field ID]	Batch	Initial [g]	Final [mL]	Date
22J2282-13 [SS-105 (0-3in)]	B320799	5.65	5.00	10/31/22
22J2282-14 [SS-105 (16-20in)]	B320799	5.71	5.00	10/31/22
22J2282-15 [SS-106 (0-3in)]	B320799	5.96	5.00	10/31/22
22J2282-16 [SS-106 (16-20in)]	B320799	5.67	5.00	10/31/22
22J2282-17 [SS-106 (5ft)]	B320799	5.88	5.00	10/31/22
22J2282-18 [SS-106 (10ft)]	B320799	5.85	5.00	10/31/22
22J2282-19 [SS-107 (0-3in)]	B320799	5.90	5.00	10/31/22
22J2282-20 [SS-107 (16-20in)]	B320799	5.71	5.00	10/31/22
22J2282-21 [SS-108 (0-3in)]	B320799	5.81	5.00	10/31/22
22J2282-22 [SS-108 (16-20in)]	B320799	5.55	5.00	10/31/22

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320654 - SOP 465-PFAAS
Blank (B320654-BLK1)

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluorobutanoic acid (PFBA)	ND	0.45	µg/kg wet
Perfluorobutanesulfonic acid (PFBS)	ND	0.45	µg/kg wet
Perfluoropentanoic acid (PFPeA)	ND	0.45	µg/kg wet
Perfluorohexanoic acid (PFHxA)	ND	0.45	µg/kg wet
11Cl-PF3OUdS (F53B Major)	ND	0.45	µg/kg wet
9Cl-PF3ONS (F53B Minor)	ND	0.45	µg/kg wet
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.45	µg/kg wet
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.45	µg/kg wet
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.45	µg/kg wet
Perfluorodecanoic acid (PFDA)	ND	0.45	µg/kg wet
Perfluorododecanoic acid (PFDoA)	ND	0.45	µg/kg wet
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.45	µg/kg wet
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.45	µg/kg wet
N-EtFOSAA	ND	0.45	µg/kg wet
N-MeFOSAA	ND	0.45	µg/kg wet
Perfluorotetradecanoic acid (PFTA)	ND	0.45	µg/kg wet
Perfluorotridecanoic acid (PFTrDA)	ND	0.45	µg/kg wet
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.45	µg/kg wet
Perfluorodecanesulfonic acid (PFDS)	ND	0.45	µg/kg wet
Perfluorooctanesulfonamide (FOSA)	ND	0.45	µg/kg wet
Perfluorononanesulfonic acid (PFNS)	ND	0.45	µg/kg wet
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.45	µg/kg wet
Perfluoro-1-butanefulfonamide (FBSA)	ND	0.45	µg/kg wet
Perfluorohexanesulfonic acid (PFHxS)	ND	0.45	µg/kg wet
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.45	µg/kg wet
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.45	µg/kg wet
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.45	µg/kg wet
Perfluoropentanesulfonic acid (PFPeS)	ND	0.45	µg/kg wet
Perfluoroundecanoic acid (PFUnA)	ND	0.45	µg/kg wet
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.45	µg/kg wet
Perfluoroheptanoic acid (PFHpA)	ND	0.45	µg/kg wet
Perfluorooctanoic acid (PFOA)	ND	0.45	µg/kg wet
Perfluorooctanesulfonic acid (PFOS)	ND	0.45	µg/kg wet
Perfluorononanoic acid (PFNA)	ND	0.45	µg/kg wet

LCS (B320654-BS1)

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluorobutanoic acid (PFBA)	1.78	0.43	µg/kg wet	2.18	81.6	71-135
Perfluorobutanesulfonic acid (PFBS)	1.46	0.43	µg/kg wet	1.93	76.0	72-128
Perfluoropentanoic acid (PFPeA)	1.77	0.43	µg/kg wet	2.18	81.0	69-132
Perfluorohexanoic acid (PFHxA)	1.85	0.43	µg/kg wet	2.18	84.8	70-132
11Cl-PF3OUdS (F53B Major)	1.34	0.43	µg/kg wet	2.05	65.4	41.8-128
9Cl-PF3ONS (F53B Minor)	1.46	0.43	µg/kg wet	2.03	72.1	51.1-141
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	2.43	0.43	µg/kg wet	2.05	119	55.2-122
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.28	0.43	µg/kg wet	2.18	58.5	27.6-137
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.80	0.43	µg/kg wet	2.09	86.1	65-137
Perfluorodecanoic acid (PFDA)	1.66	0.43	µg/kg wet	2.18	76.3	69-133
Perfluorododecanoic acid (PFDoA)	1.56	0.43	µg/kg wet	2.18	71.5	69-135
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	1.39	0.43	µg/kg wet	1.94	71.7	56.7-133

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320654 - SOP 465-PFAAS
LCS (B320654-BS1)

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluoroheptanesulfonic acid (PFHpS)	1.71	0.43	µg/kg wet	2.08		81.9	70-132			
N-EtFOSAA	1.92	0.43	µg/kg wet	2.18		88.0	61-139			
N-MeFOSAA	1.84	0.43	µg/kg wet	2.18		84.5	63-144			
Perfluorotetradecanoic acid (PFTA)	1.61	0.43	µg/kg wet	2.18		73.8	69-133			
Perfluorotridecanoic acid (PFTDA)	1.83	0.43	µg/kg wet	2.18		84.1	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.70	0.43	µg/kg wet	2.04		83.3	62-145			
Perfluorodecanesulfonic acid (PFDS)	1.54	0.43	µg/kg wet	2.10		73.5	59-134			
Perfluorooctanesulfonamide (FOSA)	1.68	0.43	µg/kg wet	2.18		77.3	67-137			
Perfluorononanesulfonic acid (PFNS)	1.91	0.43	µg/kg wet	2.09		91.2	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	1.81	0.43	µg/kg wet	2.18		83.0	51.4-142			
Perfluoro-1-butanefulfonamide (FBSA)	1.89	0.43	µg/kg wet	2.18		86.7	53.5-129			
Perfluorohexanesulfonic acid (PFHxS)	1.55	0.43	µg/kg wet	2.00		77.5	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.52	0.43	µg/kg wet	2.18		69.9	57.8-127			
Perfluoro-5-oxahexanoic acid (PFMBA)	1.53	0.43	µg/kg wet	2.18		70.4	56.5-132			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.78	0.43	µg/kg wet	2.07		85.8	64-140			
Perfluoropentanesulfonic acid (PFPeS)	1.63	0.43	µg/kg wet	2.05		79.4	73-123			
Perfluoroundecanoic acid (PFUnA)	1.70	0.43	µg/kg wet	2.18		78.0	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	1.77	0.43	µg/kg wet	2.18		81.3	54.5-128			
Perfluoroheptanoic acid (PFHpA)	1.82	0.43	µg/kg wet	2.18		83.3	71-131			
Perfluorooctanoic acid (PFOA)	1.61	0.43	µg/kg wet	2.18		74.1	69-133			
Perfluorooctanesulfonic acid (PFOS)	1.60	0.43	µg/kg wet	2.01		79.5	68-136			
Perfluorononanoic acid (PFNA)	1.68	0.43	µg/kg wet	2.18		77.2	72-129			

Matrix Spike (B320654-MS1)
Source: 22J2282-01

Prepared: 10/24/22 Analyzed: 11/01/22

Perfluorobutanoic acid (PFBA)	3.91	0.48	µg/kg dry	2.41	1.46	101	71-135			
Perfluorobutanesulfonic acid (PFBS)	2.00	0.48	µg/kg dry	2.13	0.0904	89.4	72-128			
Perfluoropentanoic acid (PFPeA)	5.86	0.48	µg/kg dry	2.41	2.96	120	69-132			
Perfluorohexanoic acid (PFHxA)	5.32	0.48	µg/kg dry	2.41	2.70	109	70-132			
11Cl-PF3OUdS (F53B Major)	1.67	0.48	µg/kg dry	2.27	ND	73.6	4.02-158			
9Cl-PF3ONS (F53B Minor)	1.72	0.48	µg/kg dry	2.25	ND	76.4	52.5-150			
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.08	0.48	µg/kg dry	2.27	ND	135	* 50.7-124			MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.82	0.48	µg/kg dry	2.41	ND	75.5	29.2-146			
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.79	0.48	µg/kg dry	2.32	1.35	105	65-137			
Perfluorodecanoic acid (PFDA)	7.72	0.48	µg/kg dry	2.41	5.40	96.4	69-133			
Perfluorododecanoic acid (PFDoA)	5.06	0.48	µg/kg dry	2.41	2.58	103	69-135			
Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA)	1.76	0.48	µg/kg dry	2.15	ND	82.2	60.7-135			
Perfluoroheptanesulfonic acid (PFHpS)	2.29	0.48	µg/kg dry	2.31	ND	99.1	70-132			
N-EtFOSAA	2.47	0.48	µg/kg dry	2.41	ND	102	61-139			
N-MeFOSAA	2.24	0.48	µg/kg dry	2.41	ND	92.9	63-144			
Perfluorotetradecanoic acid (PFTA)	3.20	0.48	µg/kg dry	2.41	0.965	92.7	69-133			
Perfluorotridecanoic acid (PFTDA)	15.5	0.48	µg/kg dry	2.41	9.46	252	* 66-139			MS-12
4:2 Fluorotelomersulfonic acid (4:2FTS A)	2.14	0.48	µg/kg dry	2.26	ND	94.5	62-145			
Perfluorodecanesulfonic acid (PFDS)	3.12	0.48	µg/kg dry	2.33	0.915	94.9	59-134			
Perfluorooctanesulfonamide (FOSA)	2.58	0.48	µg/kg dry	2.41	0.429	89.1	67-137			
Perfluorononanesulfonic acid (PFNS)	2.56	0.48	µg/kg dry	2.32	0.341	95.6	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	4.34	0.48	µg/kg dry	2.41	1.94	99.2	18.9-162			
Perfluoro-1-butanefulfonamide (FBSA)	2.02	0.48	µg/kg dry	2.41	ND	83.7	49.8-135			
Perfluorohexanesulfonic acid (PFHxS)	5.04	0.48	µg/kg dry	2.21	2.35	121	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	1.86	0.48	µg/kg dry	2.41	ND	76.9	62-155			
Perfluoro-5-oxahexanoic acid (PFMBA)	1.91	0.48	µg/kg dry	2.41	ND	79.3	52.1-148			

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320654 - SOP 465-PFAAS

Matrix Spike (B320654-MS1)		Source: 22J2282-01		Prepared: 10/24/22 Analyzed: 11/01/22						
6:2 Fluorotelomersulfonic acid (6:2FTS A)	3.05	0.48	µg/kg dry	2.29	0.641	105	64-140			
Perfluoropetanesulfonic acid (PFPeS)	2.22	0.48	µg/kg dry	2.27	0.145	91.5	73-123			
Perfluoroundecanoic acid (PFUnA)	11.8	0.48	µg/kg dry	2.41	8.49	138 *	64-136			MS-22
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.18	0.48	µg/kg dry	2.41	ND	90.4	54.6-133			
Perfluoroheptanoic acid (PFHpA)	4.24	0.48	µg/kg dry	2.41	1.61	109	71-131			
Perfluorooctanoic acid (PFOA)	5.39	0.48	µg/kg dry	2.41	3.01	98.3	69-133			
Perfluorooctanesulfonic acid (PFOS)	13.0	0.48	µg/kg dry	2.23	9.41	160 *	68-136			MS-22
Perfluorononanoic acid (PFNA)	4.27	0.48	µg/kg dry	2.41	1.88	99.0	72-129			

Matrix Spike Dup (B320654-MSD1)		Source: 22J2282-01		Prepared: 10/24/22 Analyzed: 11/01/22						
Perfluorobutanoic acid (PFBA)	3.84	0.50	µg/kg dry	2.54	1.46	93.7	71-135	1.71	30	
Perfluorobutanesulfonic acid (PFBS)	2.11	0.50	µg/kg dry	2.24	0.0904	90.1	72-128	5.61	30	
Perfluoropentanoic acid (PFPeA)	5.45	0.50	µg/kg dry	2.54	2.96	98.0	69-132	7.32	30	
Perfluorohexanoic acid (PFHxA)	4.97	0.50	µg/kg dry	2.54	2.70	89.5	70-132	6.81	30	
11Cl-PF3OUdS (F53B Major)	1.78	0.50	µg/kg dry	2.39	ND	74.3	4.02-158	5.95	30	
9Cl-PF3ONS (F53B Minor)	1.81	0.50	µg/kg dry	2.37	ND	76.3	52.5-150	5.01	30	
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.26	0.50	µg/kg dry	2.39	ND	136 *	50.7-124	5.91	30	MS-12
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.99	0.50	µg/kg dry	2.54	ND	78.5	29.2-146	8.98	30	
8:2 Fluorotelomersulfonic acid (8:2FTS A)	3.97	0.50	µg/kg dry	2.44	1.35	107	65-137	4.69	30	
Perfluorodecanoic acid (PFDA)	7.77	0.50	µg/kg dry	2.54	5.40	93.4	69-133	0.576	30	
Perfluorododecanoic acid (PFDoA)	5.16	0.50	µg/kg dry	2.54	2.58	102	69-135	1.97	30	
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEA)	1.85	0.50	µg/kg dry	2.26	ND	82.0	60.7-135	4.87	30	
Perfluoroheptanesulfonic acid (PFHpS)	2.42	0.50	µg/kg dry	2.43	ND	99.6	70-132	5.52	30	
N-EtFOSAA	2.58	0.50	µg/kg dry	2.54	ND	102	61-139	4.56	30	
N-MeFOSAA	2.41	0.50	µg/kg dry	2.54	ND	94.8	63-144	7.14	30	
Perfluorotetradecanoic acid (PFTA)	3.23	0.50	µg/kg dry	2.54	0.965	89.1	69-133	0.748	30	
Perfluorotridecanoic acid (PFTTrDA)	13.3	0.50	µg/kg dry	2.54	9.46	153 *	66-139	15.1	30	MS-12
4:2 Fluorotelomersulfonic acid (4:2FTS A)	2.18	0.50	µg/kg dry	2.38	ND	91.8	62-145	2.14	30	
Perfluorodecanesulfonic acid (PFDS)	3.03	0.50	µg/kg dry	2.45	0.915	86.6	59-134	2.89	30	
Perfluorooctanesulfonamide (FOSA)	2.63	0.50	µg/kg dry	2.54	0.429	86.8	67-137	2.01	30	
Perfluorononanesulfonic acid (PFNS)	2.62	0.50	µg/kg dry	2.44	0.341	93.6	69-125	2.54	30	
Perfluoro-1-hexanesulfonamide (FHxSA)	4.22	0.50	µg/kg dry	2.54	1.94	89.7	18.9-162	2.75	30	
Perfluoro-1-butanedisulfonamide (FBSA)	2.13	0.50	µg/kg dry	2.54	ND	83.8	49.8-135	5.21	30	
Perfluorohexanesulfonic acid (PFHxS)	5.26	0.50	µg/kg dry	2.33	2.35	125	67-130	4.30	30	
Perfluoro-4-oxapentanoic acid (PFMPA)	1.99	0.50	µg/kg dry	2.54	ND	78.4	62-155	6.90	30	
Perfluoro-5-oxahexanoic acid (PFMBA)	2.03	0.50	µg/kg dry	2.54	ND	80.1	52.1-148	5.99	30	
6:2 Fluorotelomersulfonic acid (6:2FTS A)	2.84	0.50	µg/kg dry	2.41	0.641	91.3	64-140	7.04	30	
Perfluoropetanesulfonic acid (PFPeS)	2.31	0.50	µg/kg dry	2.39	0.145	90.9	73-123	4.09	30	
Perfluoroundecanoic acid (PFUnA)	11.2	0.50	µg/kg dry	2.54	8.49	105	64-136	5.80	30	
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.35	0.50	µg/kg dry	2.54	ND	92.7	54.6-133	7.55	30	
Perfluoroheptanoic acid (PFHpA)	3.99	0.50	µg/kg dry	2.54	1.61	93.7	71-131	6.01	30	
Perfluorooctanoic acid (PFOA)	5.57	0.50	µg/kg dry	2.54	3.01	100	69-133	3.27	30	
Perfluorooctanesulfonic acid (PFOS)	11.6	0.50	µg/kg dry	2.35	9.41	93.2	68-136	11.2	30	
Perfluorononanoic acid (PFNA)	4.17	0.50	µg/kg dry	2.54	1.88	90.1	72-129	2.40	30	

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320799 - SOP 465-PFAAS
Blank (B320799-BLK1)

Prepared: 10/31/22 Analyzed: 11/18/22

Perfluorobutanoic acid (PFBA)	ND	0.43	µg/kg wet
Perfluorobutanesulfonic acid (PFBS)	ND	0.43	µg/kg wet
Perfluoropentanoic acid (PFPeA)	ND	0.43	µg/kg wet
Perfluorohexanoic acid (PFHxA)	ND	0.43	µg/kg wet
11Cl-PF3OUdS (F53B Major)	ND	0.43	µg/kg wet
9Cl-PF3ONS (F53B Minor)	ND	0.43	µg/kg wet
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	ND	0.43	µg/kg wet
Hexafluoropropylene oxide dimer acid (HFPO-DA)	ND	0.43	µg/kg wet
8:2 Fluorotelomersulfonic acid (8:2FTS A)	ND	0.43	µg/kg wet
Perfluorodecanoic acid (PFDA)	ND	0.43	µg/kg wet
Perfluorododecanoic acid (PFDoA)	ND	0.43	µg/kg wet
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	ND	0.43	µg/kg wet
Perfluoroheptanesulfonic acid (PFHpS)	ND	0.43	µg/kg wet
N-EtFOSAA	ND	0.43	µg/kg wet
N-MeFOSAA	ND	0.43	µg/kg wet
Perfluorotetradecanoic acid (PFTA)	ND	0.43	µg/kg wet
Perfluorotridecanoic acid (PFTrDA)	ND	0.43	µg/kg wet
4:2 Fluorotelomersulfonic acid (4:2FTS A)	ND	0.43	µg/kg wet
Perfluorodecanesulfonic acid (PFDS)	ND	0.43	µg/kg wet
Perfluorooctanesulfonamide (FOSA)	ND	0.43	µg/kg wet
Perfluorononanesulfonic acid (PFNS)	ND	0.43	µg/kg wet
Perfluoro-1-hexanesulfonamide (FHxSA)	ND	0.43	µg/kg wet
Perfluoro-1-butanefulfonamide (FBSA)	ND	0.43	µg/kg wet
Perfluorohexanesulfonic acid (PFHxS)	ND	0.43	µg/kg wet
Perfluoro-4-oxapentanoic acid (PFMPA)	ND	0.43	µg/kg wet
Perfluoro-5-oxahexanoic acid (PFMBA)	ND	0.43	µg/kg wet
6:2 Fluorotelomersulfonic acid (6:2FTS A)	ND	0.43	µg/kg wet
Perfluoropentanesulfonic acid (PFPeS)	ND	0.43	µg/kg wet
Perfluoroundecanoic acid (PFUnA)	ND	0.43	µg/kg wet
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	ND	0.43	µg/kg wet
Perfluoroheptanoic acid (PFHpA)	ND	0.43	µg/kg wet
Perfluorooctanoic acid (PFOA)	ND	0.43	µg/kg wet
Perfluorooctanesulfonic acid (PFOS)	ND	0.43	µg/kg wet
Perfluorononanoic acid (PFNA)	ND	0.43	µg/kg wet

LCS (B320799-BS1)

Prepared: 10/31/22 Analyzed: 11/18/22

Perfluorobutanoic acid (PFBA)	2.01	0.42	µg/kg wet	2.13	94.3	71-135
Perfluorobutanesulfonic acid (PFBS)	1.80	0.42	µg/kg wet	1.89	95.5	72-128
Perfluoropentanoic acid (PFPeA)	2.09	0.42	µg/kg wet	2.13	97.8	69-132
Perfluorohexanoic acid (PFHxA)	2.10	0.42	µg/kg wet	2.13	98.3	70-132
11Cl-PF3OUdS (F53B Major)	1.62	0.42	µg/kg wet	2.01	80.5	41.8-128
9Cl-PF3ONS (F53B Minor)	1.66	0.42	µg/kg wet	1.99	83.6	51.1-141
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	3.20	0.42	µg/kg wet	2.01	159 *	55.2-122
Hexafluoropropylene oxide dimer acid (HFPO-DA)	1.92	0.42	µg/kg wet	2.13	89.9	27.6-137
8:2 Fluorotelomersulfonic acid (8:2FTS A)	1.84	0.42	µg/kg wet	2.05	89.7	65-137
Perfluorodecanoic acid (PFDA)	1.92	0.42	µg/kg wet	2.13	89.8	69-133
Perfluorododecanoic acid (PFDoA)	1.73	0.42	µg/kg wet	2.13	81.2	69-135
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	1.78	0.42	µg/kg wet	1.90	93.9	56.7-133

L-01

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

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B320799 - SOP 465-PFAAS
LCS (B320799-BS1)

Prepared: 10/31/22 Analyzed: 11/18/22

Perfluoroheptanesulfonic acid (PFHpS)	2.01	0.42	µg/kg wet	2.04		98.4	70-132			
N-EtFOSAA	2.12	0.42	µg/kg wet	2.13		99.1	61-139			
N-MeFOSAA	2.25	0.42	µg/kg wet	2.13		106	63-144			
Perfluorotetradecanoic acid (PFTa)	1.74	0.42	µg/kg wet	2.13		81.4	69-133			
Perfluorotridecanoic acid (PFTDA)	1.73	0.42	µg/kg wet	2.13		81.2	66-139			
4:2 Fluorotelomersulfonic acid (4:2FTS A)	1.85	0.42	µg/kg wet	2.00		92.8	62-145			
Perfluorodecanesulfonic acid (PFDS)	2.01	0.42	µg/kg wet	2.06		97.9	59-134			
Perfluorooctanesulfonamide (FOSA)	1.87	0.42	µg/kg wet	2.13		87.7	67-137			
Perfluorononanesulfonic acid (PFNS)	1.85	0.42	µg/kg wet	2.05		90.4	69-125			
Perfluoro-1-hexanesulfonamide (FHxSA)	1.86	0.42	µg/kg wet	2.13		87.2	51.4-142			
Perfluoro-1-butanefulfonamide (FBSA)	2.11	0.42	µg/kg wet	2.13		98.8	53.5-129			
Perfluorohexanesulfonic acid (PFHxS)	1.75	0.42	µg/kg wet	1.96		89.5	67-130			
Perfluoro-4-oxapentanoic acid (PFMPA)	2.09	0.42	µg/kg wet	2.13		97.7	57.8-127			
Perfluoro-5-oxahexanoic acid (PFMBA)	2.14	0.42	µg/kg wet	2.13		100	56.5-132			
6:2 Fluorotelomersulfonic acid (6:2FTS A)	1.99	0.42	µg/kg wet	2.03		97.9	64-140			
Perfluoropentanesulfonic acid (PFPeS)	1.86	0.42	µg/kg wet	2.01		92.7	73-123			
Perfluoroundecanoic acid (PFUnA)	1.96	0.42	µg/kg wet	2.13		91.7	64-136			
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	2.21	0.42	µg/kg wet	2.13		104	54.5-128			
Perfluoroheptanoic acid (PFHpA)	2.00	0.42	µg/kg wet	2.13		93.7	71-131			
Perfluorooctanoic acid (PFOA)	2.04	0.42	µg/kg wet	2.13		95.4	69-133			
Perfluorooctanesulfonic acid (PFOS)	1.83	0.42	µg/kg wet	1.97		92.7	68-136			
Perfluorononanoic acid (PFNA)	2.02	0.42	µg/kg wet	2.13		94.4	72-129			

QUALITY CONTROL
Conventional Chemistry Parameters by EPA/APHA/SW-846 Methods (Total) - Quality Control

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Batch B321538 - % Solids

Duplicate (B321538-DUP1)	Source: 22J2282-09		Prepared & Analyzed: 10/29/22							
% Solids	94.0		% Wt		93.9			0.153	10	
Duplicate (B321538-DUP2)	Source: 22J2282-10		Prepared & Analyzed: 10/29/22							
% Solids	86.1		% Wt		85.5			0.726	10	
Duplicate (B321538-DUP3)	Source: 22J2282-11		Prepared & Analyzed: 10/29/22							
% Solids	99.4		% Wt		99.3			0.0331	10	
Duplicate (B321538-DUP4)	Source: 22J2282-04		Prepared & Analyzed: 10/29/22							
% Solids	86.0		% Wt		86.0			0.0172	10	
Duplicate (B321538-DUP5)	Source: 22J2282-05		Prepared & Analyzed: 10/29/22							
% Solids	91.4		% Wt		91.0			0.384	10	
Duplicate (B321538-DUP6)	Source: 22J2282-06		Prepared & Analyzed: 10/29/22							
% Solids	99.0		% Wt		99.0			0.0748	10	
Duplicate (B321538-DUP7)	Source: 22J2282-07		Prepared & Analyzed: 10/29/22							
% Solids	93.8		% Wt		93.5			0.296	10	
Duplicate (B321538-DUP8)	Source: 22J2282-08		Prepared & Analyzed: 10/29/22							
% Solids	86.5		% Wt		86.4			0.0694	10	

Batch B321558 - % Solids

Duplicate (B321558-DUP1)	Source: 22J2282-23		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	88.3		% Wt		86.0			2.65	10	
Duplicate (B321558-DUP2)	Source: 22J2282-24		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	92.0		% Wt		92.3			0.386	10	
Duplicate (B321558-DUP3)	Source: 22J2282-25		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	89.6		% Wt		91.6			2.16	10	
Duplicate (B321558-DUP4)	Source: 22J2282-28		Prepared: 10/29/22 Analyzed: 11/01/22							
% Solids	85.5		% Wt		87.1			1.88	10	

FLAG/QUALIFIER SUMMARY

*	QC result is outside of established limits.
†	Wide recovery limits established for difficult compound.
‡	Wide RPD limits established for difficult compound.
#	Data exceeded client recommended or regulatory level
ND	Not Detected
RL	Reporting Limit is at the level of quantitation (LOQ)
DL	Detection Limit is the lower limit of detection determined by the MDL study
MCL	Maximum Contaminant Level
	Percent recoveries and relative percent differences (RPDs) are determined by the software using values in the calculation which have not been rounded.
	No results have been blank subtracted unless specified in the case narrative section.
H-03	Sample received after recommended holding time was exceeded.
L-01	Laboratory fortified blank/laboratory control sample recovery outside of control limits. Data validation is not affected since all results are "not detected" for all samples in this batch for this compound and bias is on the high side.
MS-12	Matrix spike recovery and matrix spike duplicate recovery outside of control limits. Possibility of sample matrix effects that lead to a high bias for reported result or non-homogeneous sample aliquots cannot be eliminated.
MS-22	Either matrix spike or MS duplicate is outside of control limits, but the other is within limits. RPD between the two MS/MSD results is within method specified criteria.
PF-17	Extracted Internal Standard recovery is outside of control limits. Data is not significantly affected since associated analyte is not detected and bias is on the high side.
S-29	Extracted Internal Standard is outside of control limits.

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-101 (0-3in) (22J2282-01) Lab File ID: 22J2282-01.d Analyzed: 11/01/22 15:49									
M8FOSA	259042.5	3.980583	270,500.00	3.988567	96	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	223069	2.463967	259,163.00	2.463967	86	50 - 150	0.0000	+/-0.50	
M2PFTA	973067.3	4.30535	1,040,441.00	4.30535	94	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	164943.6	3.786867	138,397.00	3.786867	119	50 - 150	0.0000	+/-0.50	
MPFBA	448795.7	1.066783	416,918.00	1.058467	108	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	97156.41	2.798383	101,833.00	2.798383	95	50 - 150	0.0000	+/-0.50	
M6PFDA	615995.4	3.787383	619,732.00	3.787383	99	50 - 150	0.0000	+/-0.50	
M3PFBS	122372.1	1.878383	118,352.00	1.878383	103	50 - 150	0.0000	+/-0.50	
M7PFUnA	653179.8	3.93005	666,280.00	3.93005	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	125226.4	3.4373	128,005.00	3.4373	98	50 - 150	0.0000	+/-0.50	
M5PFPeA	394499.8	1.698283	373,092.00	1.698283	106	50 - 150	0.0000	+/-0.50	
M5PFHxA	760100.9	2.5477	742,233.00	2.5477	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	108939.2	3.21025	109,331.00	3.201883	100	50 - 150	0.0084	+/-0.50	
M4PFHpA	862604.1	3.170783	853,747.00	3.170783	101	50 - 150	0.0000	+/-0.50	
M8PFOA	859843.2	3.445833	831,933.00	3.445833	103	50 - 150	0.0000	+/-0.50	
M8PFOS	103781.3	3.636183	101,247.00	3.636183	103	50 - 150	0.0000	+/-0.50	
M9PFNA	656305.3	3.637217	639,014.00	3.637217	103	50 - 150	0.0000	+/-0.50	
MPFDoA	646430.7	4.064667	642,225.00	4.064667	101	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	220237.6	3.937517	194,892.00	3.937517	113	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	248522.6	3.865617	237,657.00	3.865617	105	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-101 (16-20in) (22J2282-02) Lab File ID: 22J2282-02.d Analyzed: 11/01/22 15:56									
M8FOSA	268123.4	3.988567	270,500.00	3.988567	99	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	238767.1	2.463967	259,163.00	2.463967	92	50 - 150	0.0000	+/-0.50	
M2PFTA	1044932	4.30535	1,040,441.00	4.30535	100	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	195347	3.786867	138,397.00	3.786867	141	50 - 150	0.0000	+/-0.50	
MPFBA	463163.8	1.066783	416,918.00	1.058467	111	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	99632.34	2.798383	101,833.00	2.798383	98	50 - 150	0.0000	+/-0.50	
M6PFDA	665661	3.787383	619,732.00	3.787383	107	50 - 150	0.0000	+/-0.50	
M3PFBS	126604.7	1.878383	118,352.00	1.878383	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	719849.9	3.93005	666,280.00	3.93005	108	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	139543.6	3.4373	128,005.00	3.4373	109	50 - 150	0.0000	+/-0.50	
M5PFPeA	405957.4	1.698283	373,092.00	1.698283	109	50 - 150	0.0000	+/-0.50	
M5PFHxA	796680.8	2.5477	742,233.00	2.5477	107	50 - 150	0.0000	+/-0.50	
M3PFHxS	114805.5	3.21025	109,331.00	3.201883	105	50 - 150	0.0084	+/-0.50	
M4PFHpA	917771.4	3.170783	853,747.00	3.170783	107	50 - 150	0.0000	+/-0.50	
M8PFOA	895269	3.445833	831,933.00	3.445833	108	50 - 150	0.0000	+/-0.50	
M8PFOS	108154.6	3.636183	101,247.00	3.636183	107	50 - 150	0.0000	+/-0.50	
M9PFNA	696231.3	3.637217	639,014.00	3.637217	109	50 - 150	0.0000	+/-0.50	
MPFDoA	676994.1	4.064667	642,225.00	4.064667	105	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	260496.4	3.937517	194,892.00	3.937517	134	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	280138.3	3.865617	237,657.00	3.865617	118	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (FM) (22J2282-03)		Lab File ID: 22J2282-03.d				Analyzed: 11/01/22 16:03			
M8FOSA	226298.3	3.980583	270,500.00	3.988567	84	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	274880.1	2.463967	259,163.00	2.463967	106	50 - 150	0.0000	+/-0.50	
M2PFTA	910962	4.30535	1,040,441.00	4.30535	88	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	228088.1	3.786867	138,397.00	3.786867	165	50 - 150	0.0000	+/-0.50	*
MPFBA	455797.8	1.066783	416,918.00	1.058467	109	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	91142.7	2.798383	101,833.00	2.798383	90	50 - 150	0.0000	+/-0.50	
M6PFDA	577679.6	3.787383	619,732.00	3.787383	93	50 - 150	0.0000	+/-0.50	
M3PFBS	130266.2	1.878383	118,352.00	1.878383	110	50 - 150	0.0000	+/-0.50	
M7PFUnA	608283.7	3.93005	666,280.00	3.93005	91	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	212939.4	3.4373	128,005.00	3.4373	166	50 - 150	0.0000	+/-0.50	*
M5PFPeA	410087.8	1.698283	373,092.00	1.698283	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	792683.8	2.5477	742,233.00	2.5477	107	50 - 150	0.0000	+/-0.50	
M3PFHxS	111574.9	3.201883	109,331.00	3.201883	102	50 - 150	0.0000	+/-0.50	
M4PFHpA	899819.5	3.1627	853,747.00	3.170783	105	50 - 150	-0.0081	+/-0.50	
M8PFOA	852993.7	3.445833	831,933.00	3.445833	103	50 - 150	0.0000	+/-0.50	
M8PFOS	96170.17	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	646768.1	3.637217	639,014.00	3.637217	101	50 - 150	0.0000	+/-0.50	
MPFDoA	581819.9	4.064667	642,225.00	4.064667	91	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	249292.7	3.937517	194,892.00	3.937517	128	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	271523.5	3.865617	237,657.00	3.865617	114	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (0-3in) (22J2282-04)		Lab File ID: 22J2282-04.d				Analyzed: 11/01/22 16:10			
M8FOSA	263215.3	3.988567	270,500.00	3.988567	97	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	220399	2.463967	259,163.00	2.463967	85	50 - 150	0.0000	+/-0.50	
M2PFTA	969786.8	4.30535	1,040,441.00	4.30535	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	160340.9	3.78685	138,397.00	3.786867	116	50 - 150	0.0000	+/-0.50	
MPFBA	428922	1.066783	416,918.00	1.058467	103	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	91148.64	2.798383	101,833.00	2.798383	90	50 - 150	0.0000	+/-0.50	
M6PFDA	634527.9	3.787383	619,732.00	3.787383	102	50 - 150	0.0000	+/-0.50	
M3PFBS	118287	1.878383	118,352.00	1.878383	100	50 - 150	0.0000	+/-0.50	
M7PFUnA	655464.4	3.93005	666,280.00	3.93005	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	120372.5	3.4373	128,005.00	3.4373	94	50 - 150	0.0000	+/-0.50	
M5PFPeA	373922.4	1.698283	373,092.00	1.698283	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	729669.3	2.5477	742,233.00	2.5477	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	106186.2	3.201883	109,331.00	3.201883	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	836956.2	3.170783	853,747.00	3.170783	98	50 - 150	0.0000	+/-0.50	
M8PFOA	814717.3	3.445833	831,933.00	3.445833	98	50 - 150	0.0000	+/-0.50	
M8PFOS	96656.3	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	638251.9	3.637217	639,014.00	3.637217	100	50 - 150	0.0000	+/-0.50	
MPFDoA	616531.5	4.064667	642,225.00	4.064667	96	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	183562.8	3.937517	194,892.00	3.937517	94	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	244971	3.865617	237,657.00	3.865617	103	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (16-20in) (22J2282-05)			Lab File ID: 22J2282-05.d			Analyzed: 11/01/22 16:17			
M8FOSA	309821.5	3.988567	270,500.00	3.988567	115	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	272337.1	2.472183	259,163.00	2.463967	105	50 - 150	0.0082	+/-0.50	
M2PFTA	1001843	4.30535	1,040,441.00	4.30535	96	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	156606.2	3.794833	138,397.00	3.786867	113	50 - 150	0.0080	+/-0.50	
MPFBA	459470.5	1.066783	416,918.00	1.058467	110	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	105221.1	2.806567	101,833.00	2.798383	103	50 - 150	0.0082	+/-0.50	
M6PFDA	671687.2	3.79535	619,732.00	3.787383	108	50 - 150	0.0080	+/-0.50	
M3PFBS	127014.4	1.878383	118,352.00	1.878383	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	715521.2	3.938033	666,280.00	3.93005	107	50 - 150	0.0080	+/-0.50	
M2-6:2FTS	116594.2	3.445283	128,005.00	3.4373	91	50 - 150	0.0080	+/-0.50	
M5PFPeA	406184.6	1.698283	373,092.00	1.698283	109	50 - 150	0.0000	+/-0.50	
M5PFHxA	800881.2	2.5477	742,233.00	2.5477	108	50 - 150	0.0000	+/-0.50	
M3PFHxS	112096.7	3.21025	109,331.00	3.201883	103	50 - 150	0.0084	+/-0.50	
M4PFHpA	917100.6	3.170783	853,747.00	3.170783	107	50 - 150	0.0000	+/-0.50	
M8PFOA	907412.7	3.453817	831,933.00	3.445833	109	50 - 150	0.0080	+/-0.50	
M8PFOS	105547.7	3.644167	101,247.00	3.636183	104	50 - 150	0.0080	+/-0.50	
M9PFNA	681631.3	3.6452	639,014.00	3.637217	107	50 - 150	0.0080	+/-0.50	
MPFDoA	667448.1	4.064667	642,225.00	4.064667	104	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	209807.8	3.937517	194,892.00	3.937517	108	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	240709.6	3.865617	237,657.00	3.865617	101	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (5ft) (22J2282-06)		Lab File ID: 22J2282-06.d				Analyzed: 11/01/22 16:25			
M8FOSA	296491.5	3.988567	270,500.00	3.988567	110	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	237164.3	2.463967	259,163.00	2.463967	92	50 - 150	0.0000	+/-0.50	
M2PFTA	887165.6	4.30535	1,040,441.00	4.30535	85	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	131782.8	3.78685	138,397.00	3.786867	95	50 - 150	0.0000	+/-0.50	
MPFBA	417071.4	1.066783	416,918.00	1.058467	100	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	101762.3	2.798383	101,833.00	2.798383	100	50 - 150	0.0000	+/-0.50	
M6PFDA	623914.4	3.787383	619,732.00	3.787383	101	50 - 150	0.0000	+/-0.50	
M3PFBS	115139.1	1.878383	118,352.00	1.878383	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	630251.6	3.93005	666,280.00	3.93005	95	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	108355.6	3.4373	128,005.00	3.4373	85	50 - 150	0.0000	+/-0.50	
M5PFPeA	373970.6	1.698283	373,092.00	1.698283	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	720950.8	2.5477	742,233.00	2.5477	97	50 - 150	0.0000	+/-0.50	
M3PFHxS	104100.5	3.21025	109,331.00	3.201883	95	50 - 150	0.0084	+/-0.50	
M4PFHpA	823644.9	3.170783	853,747.00	3.170783	96	50 - 150	0.0000	+/-0.50	
M8PFOA	793751.6	3.445833	831,933.00	3.445833	95	50 - 150	0.0000	+/-0.50	
M8PFOS	95696.61	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	626971.1	3.637217	639,014.00	3.637217	98	50 - 150	0.0000	+/-0.50	
MPFDoA	607832.6	4.064667	642,225.00	4.064667	95	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	172031.9	3.937517	194,892.00	3.937517	88	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	204620.6	3.865617	237,657.00	3.865617	86	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-102 (10ft) (22J2282-07)		Lab File ID: 22J2282-07.d				Analyzed: 11/01/22 16:32			
M8FOSA	306117.5	3.988567	270,500.00	3.988567	113	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	235049.1	2.463967	259,163.00	2.463967	91	50 - 150	0.0000	+/-0.50	
M2PFTA	786476.3	4.30535	1,040,441.00	4.30535	76	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	136577.6	3.786867	138,397.00	3.786867	99	50 - 150	0.0000	+/-0.50	
MPFBA	415254.9	1.066783	416,918.00	1.058467	100	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	97548.16	2.798383	101,833.00	2.798383	96	50 - 150	0.0000	+/-0.50	
M6PFDA	607160.2	3.787383	619,732.00	3.787383	98	50 - 150	0.0000	+/-0.50	
M3PFBS	117047.3	1.878383	118,352.00	1.878383	99	50 - 150	0.0000	+/-0.50	
M7PFUnA	623684.9	3.93005	666,280.00	3.93005	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	109580.5	3.4373	128,005.00	3.4373	86	50 - 150	0.0000	+/-0.50	
M5PFPeA	371735.2	1.698283	373,092.00	1.698283	100	50 - 150	0.0000	+/-0.50	
M5PFHxA	724794.7	2.5477	742,233.00	2.5477	98	50 - 150	0.0000	+/-0.50	
M3PFHxS	107773.3	3.201883	109,331.00	3.201883	99	50 - 150	0.0000	+/-0.50	
M4PFHpA	832165	3.170783	853,747.00	3.170783	97	50 - 150	0.0000	+/-0.50	
M8PFOA	854491	3.445833	831,933.00	3.445833	103	50 - 150	0.0000	+/-0.50	
M8PFOS	94194.77	3.636183	101,247.00	3.636183	93	50 - 150	0.0000	+/-0.50	
M9PFNA	614875.4	3.637217	639,014.00	3.637217	96	50 - 150	0.0000	+/-0.50	
MPFDoA	597145.3	4.064667	642,225.00	4.064667	93	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	141085.9	3.937517	194,892.00	3.937517	72	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	179915.6	3.865617	237,657.00	3.865617	76	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-103 (0-3in) (22J2282-08)		Lab File ID: 22J2282-08.d				Analyzed: 11/01/22 16:39			
M8FOSA	306350.6	3.988567	270,500.00	3.988567	113	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	291585.6	2.463967	259,163.00	2.463967	113	50 - 150	0.0000	+/-0.50	
M2PFTA	1132241	4.30535	1,040,441.00	4.30535	109	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	179336.4	3.786867	138,397.00	3.786867	130	50 - 150	0.0000	+/-0.50	
MPFBA	486797.4	1.066783	416,918.00	1.058467	117	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	115855.8	2.798383	101,833.00	2.798383	114	50 - 150	0.0000	+/-0.50	
M6PFDA	715795.1	3.787383	619,732.00	3.787383	116	50 - 150	0.0000	+/-0.50	
M3PFBS	136853.4	1.878383	118,352.00	1.878383	116	50 - 150	0.0000	+/-0.50	
M7PFUnA	750838.8	3.93005	666,280.00	3.93005	113	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	130329.3	3.4373	128,005.00	3.4373	102	50 - 150	0.0000	+/-0.50	
M5PFPeA	434199.3	1.698283	373,092.00	1.698283	116	50 - 150	0.0000	+/-0.50	
M5PFHxA	850051.7	2.5477	742,233.00	2.5477	115	50 - 150	0.0000	+/-0.50	
M3PFHxS	121990.6	3.201883	109,331.00	3.201883	112	50 - 150	0.0000	+/-0.50	
M4PFHpA	964561.8	3.170783	853,747.00	3.170783	113	50 - 150	0.0000	+/-0.50	
M8PFOA	976149.6	3.445833	831,933.00	3.445833	117	50 - 150	0.0000	+/-0.50	
M8PFOS	115464.3	3.636183	101,247.00	3.636183	114	50 - 150	0.0000	+/-0.50	
M9PFNA	734031.8	3.637217	639,014.00	3.637217	115	50 - 150	0.0000	+/-0.50	
MPFDoA	719326.4	4.064667	642,225.00	4.064667	112	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	208888.8	3.937517	194,892.00	3.937517	107	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	303061.2	3.865617	237,657.00	3.865617	128	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-103 (16-20in) (22J2282-09)		Lab File ID: 22J2282-09.d				Analyzed: 11/01/22 16:46			
M8FOSA	330059.5	3.988567	270,500.00	3.988567	122	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	265637.2	2.463967	259,163.00	2.463967	102	50 - 150	0.0000	+/-0.50	
M2PFTA	1022427	4.30535	1,040,441.00	4.30535	98	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	150131.7	3.78685	138,397.00	3.786867	108	50 - 150	0.0000	+/-0.50	
MPFBA	473496.3	1.066783	416,918.00	1.058467	114	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	110334.2	2.798383	101,833.00	2.798383	108	50 - 150	0.0000	+/-0.50	
M6PFDA	695519.8	3.787383	619,732.00	3.787383	112	50 - 150	0.0000	+/-0.50	
M3PFBS	130521.7	1.878383	118,352.00	1.878383	110	50 - 150	0.0000	+/-0.50	
M7PFUnA	702410.9	3.93005	666,280.00	3.93005	105	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	127096.4	3.4373	128,005.00	3.4373	99	50 - 150	0.0000	+/-0.50	
M5PFPeA	415335.3	1.698283	373,092.00	1.698283	111	50 - 150	0.0000	+/-0.50	
M5PFHxA	814404.8	2.5477	742,233.00	2.5477	110	50 - 150	0.0000	+/-0.50	
M3PFHxS	114302.7	3.201883	109,331.00	3.201883	105	50 - 150	0.0000	+/-0.50	
M4PFHpA	949572.5	3.1627	853,747.00	3.170783	111	50 - 150	-0.0081	+/-0.50	
M8PFOA	913055.3	3.445833	831,933.00	3.445833	110	50 - 150	0.0000	+/-0.50	
M8PFOS	106894.8	3.636183	101,247.00	3.636183	106	50 - 150	0.0000	+/-0.50	
M9PFNA	708955.9	3.637217	639,014.00	3.637217	111	50 - 150	0.0000	+/-0.50	
MPFDoA	661763.6	4.064667	642,225.00	4.064667	103	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	199562.3	3.937517	194,892.00	3.937517	102	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	226112.8	3.865617	237,657.00	3.865617	95	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-104 (0-3in) (22J2282-10) Lab File ID: 22J2282-10.d Analyzed: 11/01/22 16:53									
M8FOSA	335024.9	3.988567	270,500.00	3.988567	124	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	315378.9	2.45575	259,163.00	2.463967	122	50 - 150	-0.0082	+/-0.50	
M2PFTA	1180131	4.30535	1,040,441.00	4.30535	113	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	210720	3.786867	138,397.00	3.786867	152	50 - 150	0.0000	+/-0.50	*
MPFBA	504004.5	1.066783	416,918.00	1.058467	121	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	113369.6	2.798383	101,833.00	2.798383	111	50 - 150	0.0000	+/-0.50	
M6PFDA	740925.3	3.787383	619,732.00	3.787383	120	50 - 150	0.0000	+/-0.50	
M3PFBS	144907.3	1.8701	118,352.00	1.878383	122	50 - 150	-0.0083	+/-0.50	
M7PFUnA	796599.3	3.93005	666,280.00	3.93005	120	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	155523.3	3.4373	128,005.00	3.4373	121	50 - 150	0.0000	+/-0.50	
M5PFPeA	451255.5	1.698283	373,092.00	1.698283	121	50 - 150	0.0000	+/-0.50	
M5PFHxA	888612.1	2.539483	742,233.00	2.5477	120	50 - 150	-0.0082	+/-0.50	
M3PFHxS	129761.4	3.201883	109,331.00	3.201883	119	50 - 150	0.0000	+/-0.50	
M4PFHpA	1046864	3.1627	853,747.00	3.170783	123	50 - 150	-0.0081	+/-0.50	
M8PFOA	1013292	3.445833	831,933.00	3.445833	122	50 - 150	0.0000	+/-0.50	
M8PFOS	122241.1	3.636183	101,247.00	3.636183	121	50 - 150	0.0000	+/-0.50	
M9PFNA	767214.3	3.637217	639,014.00	3.637217	120	50 - 150	0.0000	+/-0.50	
MPFDoA	773482.4	4.064667	642,225.00	4.064667	120	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	226086.3	3.937517	194,892.00	3.937517	116	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	300515.2	3.865617	237,657.00	3.865617	126	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-104 (16-20in) (22J2282-11)		Lab File ID: 22J2282-11.d				Analyzed: 11/01/22 17:08			
M8FOSA	242200	3.988567	270,500.00	3.988567	90	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	190216.9	2.45575	259,163.00	2.45575	73	50 - 150	0.0000	+/-0.50	
M2PFTA	736863.7	4.30535	1,040,441.00	4.30535	71	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	118454.9	3.786867	138,397.00	3.786867	86	50 - 150	0.0000	+/-0.50	
MPFBA	339771.6	1.066783	416,918.00	1.058467	81	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	70658	2.7902	101,833.00	2.7902	69	50 - 150	0.0000	+/-0.50	
M6PFDA	498657.9	3.787383	619,732.00	3.787383	80	50 - 150	0.0000	+/-0.50	
M3PFBS	91939.48	1.8701	118,352.00	1.8701	78	50 - 150	0.0000	+/-0.50	
M7PFUnA	507998.4	3.93005	666,280.00	3.93005	76	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	90287.28	3.4373	128,005.00	3.4293	71	50 - 150	0.0080	+/-0.50	
M5PFPeA	298433	1.690017	373,092.00	1.690017	80	50 - 150	0.0000	+/-0.50	
M5PFHxA	583490.6	2.539483	742,233.00	2.539483	79	50 - 150	0.0000	+/-0.50	
M3PFHxS	84360.05	3.201883	109,331.00	3.201883	77	50 - 150	0.0000	+/-0.50	
M4PFHpA	671410.8	3.1627	853,747.00	3.1627	79	50 - 150	0.0000	+/-0.50	
M8PFOA	650831.8	3.445833	831,933.00	3.445833	78	50 - 150	0.0000	+/-0.50	
M8PFOS	80109.98	3.636183	101,247.00	3.636183	79	50 - 150	0.0000	+/-0.50	
M9PFNA	510349	3.637217	639,014.00	3.637217	80	50 - 150	0.0000	+/-0.50	
MPFDoA	476187.3	4.064667	642,225.00	4.064667	74	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	140252	3.937517	194,892.00	3.937517	72	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	172772.9	3.85765	237,657.00	3.85765	73	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-105 (FM) (22J2282-12) Lab File ID: 22J2282-12.d Analyzed: 11/01/22 17:15									
M8FOSA	222438	3.988567	270,500.00	3.988567	82	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	276866.4	2.45575	259,163.00	2.45575	107	50 - 150	0.0000	+/-0.50	
M2PFTA	907563.1	4.297266	1,040,441.00	4.30535	87	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	199042.2	3.786867	138,397.00	3.786867	144	50 - 150	0.0000	+/-0.50	
MPFBA	381467.2	1.066783	416,918.00	1.058467	91	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	77810.74	2.7902	101,833.00	2.7902	76	50 - 150	0.0000	+/-0.50	
M6PFDA	527295.6	3.787383	619,732.00	3.787383	85	50 - 150	0.0000	+/-0.50	
M3PFBS	123210.4	1.8701	118,352.00	1.8701	104	50 - 150	0.0000	+/-0.50	
M7PFUnA	585397.3	3.93005	666,280.00	3.93005	88	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	194294.4	3.429317	128,005.00	3.4293	152	50 - 150	0.0000	+/-0.50	*
M5PFPeA	354370.7	1.690017	373,092.00	1.690017	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	704134.3	2.539483	742,233.00	2.539483	95	50 - 150	0.0000	+/-0.50	
M3PFHxS	106624.2	3.201883	109,331.00	3.201883	98	50 - 150	0.0000	+/-0.50	
M4PFHpA	804658.1	3.1627	853,747.00	3.1627	94	50 - 150	0.0000	+/-0.50	
M8PFOA	775248.1	3.445833	831,933.00	3.445833	93	50 - 150	0.0000	+/-0.50	
M8PFOS	96638.2	3.636183	101,247.00	3.636183	95	50 - 150	0.0000	+/-0.50	
M9PFNA	585275.1	3.637217	639,014.00	3.637217	92	50 - 150	0.0000	+/-0.50	
MPFDoA	570068.7	4.056667	642,225.00	4.064667	89	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	228139.2	3.929517	194,892.00	3.937517	117	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	243022.7	3.857667	237,657.00	3.85765	102	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-105 (0-3in) (22J2282-13) Lab File ID: 22J2282-13.d Analyzed: 11/18/22 12:58									
M8FOSA	409172.2	4.00455	402,195.00	4.00455	102	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	118297.5	2.5543	124,614.00	2.5543	95	50 - 150	0.0000	+/-0.50	
M2PFTA	1678129	4.345917	1,397,266.00	4.354033	120	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	179906.2	3.82705	185,971.00	3.82705	97	50 - 150	0.0000	+/-0.50	
MPFBA	584789.6	1.100017	537,852.00	1.100017	109	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	111970.8	2.880217	106,348.00	2.880217	105	50 - 150	0.0000	+/-0.50	
M6PFDA	861949.1	3.82755	802,144.00	3.82755	107	50 - 150	0.0000	+/-0.50	
M3PFBS	152063.7	1.944683	131,390.00	1.95315	116	50 - 150	-0.0085	+/-0.50	
M7PFUnA	1082633	3.97	897,290.00	3.978	121	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	180579.1	3.477367	96,655.00	3.477367	187	50 - 150	0.0000	+/-0.50	*
M5PFPeA	483246.8	1.766017	435,064.00	1.7743	111	50 - 150	-0.0083	+/-0.50	
M5PFHxA	892000.6	2.638533	826,757.00	2.638533	108	50 - 150	0.0000	+/-0.50	
M3PFHxS	147960	3.242583	129,892.00	3.250667	114	50 - 150	-0.0081	+/-0.50	
M4PFHpA	1036790	3.21145	979,162.00	3.21145	106	50 - 150	0.0000	+/-0.50	
M8PFOA	1057961	3.485883	924,207.00	3.485883	114	50 - 150	0.0000	+/-0.50	
M8PFOS	140010.8	3.6761	126,766.00	3.6761	110	50 - 150	0.0000	+/-0.50	
M9PFNA	792399.4	3.677133	728,352.00	3.677133	109	50 - 150	0.0000	+/-0.50	
MPFDoA	1151784	4.112617	995,275.00	4.112617	116	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	372139.6	3.977483	243,167.00	3.985467	153	50 - 150	-0.0080	+/-0.50	*
d3-NMeFOSAA	349505.1	3.9059	301,558.00	3.9059	116	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-105 (16-20in) (22J2282-14) Lab File ID: 22J2282-14.d Analyzed: 11/18/22 13:05									
M8FOSA	576281.3	3.99655	402,195.00	4.00455	143	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	171326	2.5461	124,614.00	2.5543	137	50 - 150	-0.0082	+/-0.50	
M2PFTA	2411134	4.345917	1,397,266.00	4.354033	173	50 - 150	-0.0081	+/-0.50	*
M2-8:2FTS	246327.7	3.82705	185,971.00	3.82705	132	50 - 150	0.0000	+/-0.50	
MPFBA	841685.8	1.100017	537,852.00	1.100017	156	50 - 150	0.0000	+/-0.50	*
M3HFPO-DA	167302.3	2.872033	106,348.00	2.880217	157	50 - 150	-0.0082	+/-0.50	*
M6PFDA	1196073	3.827533	802,144.00	3.82755	149	50 - 150	0.0000	+/-0.50	
M3PFBS	211853.1	1.944683	131,390.00	1.95315	161	50 - 150	-0.0085	+/-0.50	*
M7PFUnA	1424753	3.97	897,290.00	3.978	159	50 - 150	-0.0080	+/-0.50	*
M2-6:2FTS	277848.4	3.469383	96,655.00	3.477367	287	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	695874.9	1.766017	435,064.00	1.7743	160	50 - 150	-0.0083	+/-0.50	*
M5PFHxA	1252025	2.629817	826,757.00	2.638533	151	50 - 150	-0.0087	+/-0.50	*
M3PFHxS	200058.5	3.242583	129,892.00	3.250667	154	50 - 150	-0.0081	+/-0.50	*
M4PFHpA	1509759	3.21145	979,162.00	3.21145	154	50 - 150	0.0000	+/-0.50	*
M8PFOA	1470475	3.485883	924,207.00	3.485883	159	50 - 150	0.0000	+/-0.50	*
M8PFOS	200275.3	3.6761	126,766.00	3.6761	158	50 - 150	0.0000	+/-0.50	*
M9PFNA	1099048	3.677133	728,352.00	3.677133	151	50 - 150	0.0000	+/-0.50	*
MPFDoA	1582847	4.104633	995,275.00	4.112617	159	50 - 150	-0.0080	+/-0.50	*
d5-NEtFOSAA	389591.9	3.977483	243,167.00	3.985467	160	50 - 150	-0.0080	+/-0.50	*
d3-NMeFOSAA	455151.5	3.9059	301,558.00	3.9059	151	50 - 150	0.0000	+/-0.50	*

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (0-3in) (22J2282-15)		Lab File ID: 22J2282-15.d				Analyzed: 11/18/22 13:12			
M8FOSA	315657	3.99655	402,195.00	4.00455	78	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	94908.9	2.5461	124,614.00	2.5543	76	50 - 150	-0.0082	+/-0.50	
M2PFTA	1163012	4.345917	1,397,266.00	4.354033	83	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	153897.1	3.82705	185,971.00	3.82705	83	50 - 150	0.0000	+/-0.50	
MPFBA	422765.9	1.100017	537,852.00	1.100017	79	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98834.38	2.872033	106,348.00	2.880217	93	50 - 150	-0.0082	+/-0.50	
M6PFDA	599486.9	3.82755	802,144.00	3.82755	75	50 - 150	0.0000	+/-0.50	
M3PFBS	117489.7	1.9364	131,390.00	1.95315	89	50 - 150	-0.0168	+/-0.50	
M7PFUnA	855468.6	3.970017	897,290.00	3.978	95	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	133434.7	3.469383	96,655.00	3.477367	138	50 - 150	-0.0080	+/-0.50	
M5PFPeA	373648.3	1.757717	435,064.00	1.7743	86	50 - 150	-0.0166	+/-0.50	
M5PFHxA	682395.6	2.629817	826,757.00	2.638533	83	50 - 150	-0.0087	+/-0.50	
M3PFHxS	104308.4	3.242583	129,892.00	3.250667	80	50 - 150	-0.0081	+/-0.50	
M4PFHpA	803819.4	3.21145	979,162.00	3.21145	82	50 - 150	0.0000	+/-0.50	
M8PFOA	738884.1	3.485883	924,207.00	3.485883	80	50 - 150	0.0000	+/-0.50	
M8PFOS	112775.8	3.6761	126,766.00	3.6761	89	50 - 150	0.0000	+/-0.50	
M9PFNA	570111.9	3.67715	728,352.00	3.677133	78	50 - 150	0.0000	+/-0.50	
MPFDoA	926836.8	4.112617	995,275.00	4.112617	93	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	222595.9	3.977483	243,167.00	3.985467	92	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	256521.3	3.9059	301,558.00	3.9059	85	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (16-20in) (22J2282-16) Lab File ID: 22J2282-16.d Analyzed: 11/18/22 13:20									
M8FOSA	315091.9	3.99655	402,195.00	4.00455	78	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	90452.14	2.5461	124,614.00	2.5543	73	50 - 150	-0.0082	+/-0.50	
M2PFTA	949813.3	4.345917	1,397,266.00	4.354033	68	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	115082.2	3.82705	185,971.00	3.82705	62	50 - 150	0.0000	+/-0.50	
MPFBA	390829.5	1.100017	537,852.00	1.100017	73	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	83330.41	2.872033	106,348.00	2.880217	78	50 - 150	-0.0082	+/-0.50	
M6PFDA	548262.3	3.827533	802,144.00	3.82755	68	50 - 150	0.0000	+/-0.50	
M3PFBS	107977.2	1.9364	131,390.00	1.95315	82	50 - 150	-0.0168	+/-0.50	
M7PFUnA	701721.3	3.97	897,290.00	3.978	78	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	116666.7	3.469383	96,655.00	3.477367	121	50 - 150	-0.0080	+/-0.50	
M5PFPeA	346213.4	1.757717	435,064.00	1.7743	80	50 - 150	-0.0166	+/-0.50	
M5PFHxA	627381.9	2.629817	826,757.00	2.638533	76	50 - 150	-0.0087	+/-0.50	
M3PFHxS	94630.01	3.242583	129,892.00	3.250667	73	50 - 150	-0.0081	+/-0.50	
M4PFHpA	735976	3.21145	979,162.00	3.21145	75	50 - 150	0.0000	+/-0.50	
M8PFOA	671168.8	3.485883	924,207.00	3.485883	73	50 - 150	0.0000	+/-0.50	
M8PFOS	94035.47	3.6761	126,766.00	3.6761	74	50 - 150	0.0000	+/-0.50	
M9PFNA	497843.3	3.677133	728,352.00	3.677133	68	50 - 150	0.0000	+/-0.50	
MPFDoA	821752.4	4.104633	995,275.00	4.112617	83	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	176184.8	3.977483	243,167.00	3.985467	72	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	210863.1	3.9059	301,558.00	3.9059	70	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (5ft) (22J2282-17) Lab File ID: 22J2282-17.d Analyzed: 11/18/22 13:34									
M8FOSA	384977.7	3.99655	402,195.00	4.00455	96	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	118366.5	2.5461	124,614.00	2.5461	95	50 - 150	0.0000	+/-0.50	
M2PFTA	1199446	4.345917	1,397,266.00	4.354033	86	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	137037.6	3.82705	185,971.00	3.82705	74	50 - 150	0.0000	+/-0.50	
MPFBA	475880.1	1.100017	537,852.00	1.100017	88	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	98631.09	2.872033	106,348.00	2.872033	93	50 - 150	0.0000	+/-0.50	
M6PFDA	712211.3	3.82755	802,144.00	3.82755	89	50 - 150	0.0000	+/-0.50	
M3PFBS	131303.6	1.9364	131,390.00	1.944683	100	50 - 150	-0.0083	+/-0.50	
M7PFUnA	872578.6	3.97	897,290.00	3.970017	97	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	146908.5	3.469383	96,655.00	3.477367	152	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	410190.7	1.766017	435,064.00	1.766017	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	741681.6	2.629817	826,757.00	2.629833	90	50 - 150	0.0000	+/-0.50	
M3PFHxS	122807.3	3.242583	129,892.00	3.242583	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	899242.8	3.21145	979,162.00	3.21145	92	50 - 150	0.0000	+/-0.50	
M8PFOA	839136.1	3.485883	924,207.00	3.485883	91	50 - 150	0.0000	+/-0.50	
M8PFOS	119295.6	3.6761	126,766.00	3.6761	94	50 - 150	0.0000	+/-0.50	
M9PFNA	620106.6	3.66915	728,352.00	3.67715	85	50 - 150	-0.0080	+/-0.50	
MPFDoA	937550.9	4.104633	995,275.00	4.112617	94	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	188362.8	3.977483	243,167.00	3.977483	77	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	240812.5	3.9059	301,558.00	3.9059	80	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-106 (10ft) (22J2282-18) Lab File ID: 22J2282-18.d Analyzed: 11/18/22 13:41									
M8FOSA	392054.5	3.99655	402,195.00	4.00455	97	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	119665.8	2.537883	124,614.00	2.5461	96	50 - 150	-0.0082	+/-0.50	
M2PFTA	1353186	4.345917	1,397,266.00	4.354033	97	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	144269.5	3.82705	185,971.00	3.82705	78	50 - 150	0.0000	+/-0.50	
MPFBA	498177.4	1.100017	537,852.00	1.100017	93	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	106780.8	2.872033	106,348.00	2.872033	100	50 - 150	0.0000	+/-0.50	
M6PFDA	757791.6	3.82755	802,144.00	3.82755	94	50 - 150	0.0000	+/-0.50	
M3PFBS	136024.5	1.9364	131,390.00	1.944683	104	50 - 150	-0.0083	+/-0.50	
M7PFUnA	927448.4	3.97	897,290.00	3.970017	103	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	148196.3	3.469383	96,655.00	3.477367	153	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	438086.6	1.757717	435,064.00	1.766017	101	50 - 150	-0.0083	+/-0.50	
M5PFHxA	792581.1	2.621617	826,757.00	2.629833	96	50 - 150	-0.0082	+/-0.50	
M3PFHxS	125453.6	3.242583	129,892.00	3.242583	97	50 - 150	0.0000	+/-0.50	
M4PFHpA	951470.6	3.21145	979,162.00	3.21145	97	50 - 150	0.0000	+/-0.50	
M8PFOA	906395.6	3.485883	924,207.00	3.485883	98	50 - 150	0.0000	+/-0.50	
M8PFOS	128202.2	3.6761	126,766.00	3.6761	101	50 - 150	0.0000	+/-0.50	
M9PFNA	679356.2	3.677133	728,352.00	3.67715	93	50 - 150	0.0000	+/-0.50	
MPFDoA	1017849	4.104633	995,275.00	4.112617	102	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	231103.5	3.977483	243,167.00	3.977483	95	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	273679	3.9059	301,558.00	3.9059	91	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-107 (0-3in) (22J2282-19) Lab File ID: 22J2282-19.d Analyzed: 11/18/22 13:49									
M8FOSA	425903.6	3.99655	402,195.00	4.00455	106	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	120001.6	2.5461	124,614.00	2.5461	96	50 - 150	0.0000	+/-0.50	
M2PFTA	1411885	4.345917	1,397,266.00	4.354033	101	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	190596.3	3.82705	185,971.00	3.82705	102	50 - 150	0.0000	+/-0.50	
MPFBA	554428.8	1.100017	537,852.00	1.100017	103	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	119356.9	2.872033	106,348.00	2.872033	112	50 - 150	0.0000	+/-0.50	
M6PFDA	797580.1	3.82755	802,144.00	3.82755	99	50 - 150	0.0000	+/-0.50	
M3PFBS	150477.1	1.9364	131,390.00	1.944683	115	50 - 150	-0.0083	+/-0.50	
M7PFUnA	972103.8	3.97	897,290.00	3.970017	108	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	149169.7	3.469383	96,655.00	3.477367	154	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	477841.7	1.766017	435,064.00	1.766017	110	50 - 150	0.0000	+/-0.50	
M5PFHxA	859340.1	2.629817	826,757.00	2.629833	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	139470.2	3.242583	129,892.00	3.242583	107	50 - 150	0.0000	+/-0.50	
M4PFHpA	1021939	3.21145	979,162.00	3.21145	104	50 - 150	0.0000	+/-0.50	
M8PFOA	960666.7	3.485883	924,207.00	3.485883	104	50 - 150	0.0000	+/-0.50	
M8PFOS	135763	3.6761	126,766.00	3.6761	107	50 - 150	0.0000	+/-0.50	
M9PFNA	733558.4	3.677133	728,352.00	3.67715	101	50 - 150	0.0000	+/-0.50	
MPFDoA	1089265	4.104633	995,275.00	4.112617	109	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	239133.2	3.977483	243,167.00	3.977483	98	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	310433	3.9059	301,558.00	3.9059	103	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-107 (16-20in) (22J2282-20)		Lab File ID: 22J2282-20.d				Analyzed: 11/18/22 13:56			
M8FOSA	367107.5	3.99655	402,195.00	4.00455	91	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	116362.6	2.546083	124,614.00	2.5461	93	50 - 150	0.0000	+/-0.50	
M2PFTA	1207919	4.345917	1,397,266.00	4.354033	86	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	133032.6	3.82705	185,971.00	3.82705	72	50 - 150	0.0000	+/-0.50	
MPFBA	478759.4	1.100017	537,852.00	1.100017	89	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	95774.89	2.872033	106,348.00	2.872033	90	50 - 150	0.0000	+/-0.50	
M6PFDA	688428.1	3.82755	802,144.00	3.82755	86	50 - 150	0.0000	+/-0.50	
M3PFBS	129160.6	1.9364	131,390.00	1.944683	98	50 - 150	-0.0083	+/-0.50	
M7PFUnA	876905.9	3.97	897,290.00	3.970017	98	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	123180.4	3.469383	96,655.00	3.477367	127	50 - 150	-0.0080	+/-0.50	
M5PFPeA	412540.1	1.766017	435,064.00	1.766017	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	766774.5	2.629817	826,757.00	2.629833	93	50 - 150	0.0000	+/-0.50	
M3PFHxS	117555.3	3.242583	129,892.00	3.242583	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	892735.2	3.21145	979,162.00	3.21145	91	50 - 150	0.0000	+/-0.50	
M8PFOA	834933.1	3.485883	924,207.00	3.485883	90	50 - 150	0.0000	+/-0.50	
M8PFOS	120294.9	3.6761	126,766.00	3.6761	95	50 - 150	0.0000	+/-0.50	
M9PFNA	659545.6	3.677133	728,352.00	3.67715	91	50 - 150	0.0000	+/-0.50	
MPFDoA	968552.3	4.112617	995,275.00	4.112617	97	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	210087.3	3.977483	243,167.00	3.977483	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	252169.2	3.9059	301,558.00	3.9059	84	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-108 (0-3in) (22J2282-21) Lab File ID: 22J2282-21.d Analyzed: 11/18/22 14:03									
M8FOSA	475929.2	3.99655	402,195.00	4.00455	118	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	164432.4	2.5461	124,614.00	2.5461	132	50 - 150	0.0000	+/-0.50	
M2PFTA	1911164	4.345917	1,397,266.00	4.354033	137	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	268310.3	3.82705	185,971.00	3.82705	144	50 - 150	0.0000	+/-0.50	
MPFBA	622272.3	1.100017	537,852.00	1.100017	116	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	119664.5	2.872033	106,348.00	2.872033	113	50 - 150	0.0000	+/-0.50	
M6PFDA	959978.2	3.82755	802,144.00	3.82755	120	50 - 150	0.0000	+/-0.50	
M3PFBS	174205.2	1.9364	131,390.00	1.944683	133	50 - 150	-0.0083	+/-0.50	
M7PFUnA	1259931	3.970017	897,290.00	3.970017	140	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	267512.9	3.469383	96,655.00	3.477367	277	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	548386.1	1.757717	435,064.00	1.766017	126	50 - 150	-0.0083	+/-0.50	
M5PFHxA	995596.1	2.629817	826,757.00	2.629833	120	50 - 150	0.0000	+/-0.50	
M3PFHxS	166588	3.242583	129,892.00	3.242583	128	50 - 150	0.0000	+/-0.50	
M4PFHpA	1185831	3.21145	979,162.00	3.21145	121	50 - 150	0.0000	+/-0.50	
M8PFOA	1117943	3.485883	924,207.00	3.485883	121	50 - 150	0.0000	+/-0.50	
M8PFOS	155333.6	3.6761	126,766.00	3.6761	123	50 - 150	0.0000	+/-0.50	
M9PFNA	834422.3	3.677133	728,352.00	3.67715	115	50 - 150	0.0000	+/-0.50	
MPFDoA	1423314	4.104633	995,275.00	4.112617	143	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	367635.3	3.977483	243,167.00	3.977483	151	50 - 150	0.0000	+/-0.50	*
d3-NMeFOSAA	430063.8	3.9059	301,558.00	3.9059	143	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-108 (16-20in) (22J2282-22) Lab File ID: 22J2282-22.d Analyzed: 11/18/22 14:10									
M8FOSA	365511.2	3.99655	402,195.00	4.00455	91	50 - 150	-0.0080	+/-0.50	
M2-4:2FTS	112587.7	2.546083	124,614.00	2.5461	90	50 - 150	0.0000	+/-0.50	
M2PFTA	1175657	4.345917	1,397,266.00	4.354033	84	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	131940.7	3.82705	185,971.00	3.82705	71	50 - 150	0.0000	+/-0.50	
MPFBA	468415.4	1.100017	537,852.00	1.100017	87	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	97077.21	2.872033	106,348.00	2.872033	91	50 - 150	0.0000	+/-0.50	
M6PFDA	681934.4	3.82755	802,144.00	3.82755	85	50 - 150	0.0000	+/-0.50	
M3PFBS	126512.9	1.9364	131,390.00	1.944683	96	50 - 150	-0.0083	+/-0.50	
M7PFUnA	843652.6	3.97	897,290.00	3.970017	94	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	152890.2	3.469383	96,655.00	3.477367	158	50 - 150	-0.0080	+/-0.50	*
M5PFPeA	402260.3	1.757717	435,064.00	1.766017	92	50 - 150	-0.0083	+/-0.50	
M5PFHxA	733299.9	2.621617	826,757.00	2.629833	89	50 - 150	-0.0082	+/-0.50	
M3PFHxS	117321.1	3.242583	129,892.00	3.242583	90	50 - 150	0.0000	+/-0.50	
M4PFHpA	853827.4	3.21145	979,162.00	3.21145	87	50 - 150	0.0000	+/-0.50	
M8PFOA	842981.9	3.485883	924,207.00	3.485883	91	50 - 150	0.0000	+/-0.50	
M8PFOS	113174.2	3.6761	126,766.00	3.6761	89	50 - 150	0.0000	+/-0.50	
M9PFNA	599679.9	3.677133	728,352.00	3.67715	82	50 - 150	0.0000	+/-0.50	
MPFDoA	912967.3	4.104633	995,275.00	4.112617	92	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	202943.8	3.977483	243,167.00	3.977483	83	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	244954.4	3.9059	301,558.00	3.9059	81	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-304 (0-4in) (22J2282-23) Lab File ID: 22J2282-23.d Analyzed: 11/01/22 17:22									
M8FOSA	254960.6	3.988567	270,500.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	223203.3	2.45575	259,163.00	2.45575	86	50 - 150	0.0000	+/-0.50	
M2PFTA	870196.9	4.297266	1,040,441.00	4.30535	84	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	139399.6	3.786867	138,397.00	3.786867	101	50 - 150	0.0000	+/-0.50	
MPFBA	394448.3	1.066783	416,918.00	1.058467	95	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	90432.3	2.7902	101,833.00	2.7902	89	50 - 150	0.0000	+/-0.50	
M6PFDA	585285.9	3.787383	619,732.00	3.787383	94	50 - 150	0.0000	+/-0.50	
M3PFBS	108411	1.8701	118,352.00	1.8701	92	50 - 150	0.0000	+/-0.50	
M7PFUnA	598608.6	3.93005	666,280.00	3.93005	90	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	102921.9	3.4293	128,005.00	3.4293	80	50 - 150	0.0000	+/-0.50	
M5PFPeA	348969.3	1.690017	373,092.00	1.690017	94	50 - 150	0.0000	+/-0.50	
M5PFHxA	666523.3	2.539483	742,233.00	2.539483	90	50 - 150	0.0000	+/-0.50	
M3PFHxS	99136.04	3.201883	109,331.00	3.201883	91	50 - 150	0.0000	+/-0.50	
M4PFHpA	777680.3	3.1627	853,747.00	3.1627	91	50 - 150	0.0000	+/-0.50	
M8PFOA	764598.5	3.445833	831,933.00	3.445833	92	50 - 150	0.0000	+/-0.50	
M8PFOS	93790.9	3.636183	101,247.00	3.636183	93	50 - 150	0.0000	+/-0.50	
M9PFNA	595130.4	3.637217	639,014.00	3.637217	93	50 - 150	0.0000	+/-0.50	
MPFDoA	565443.7	4.056667	642,225.00	4.064667	88	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	174148.3	3.929517	194,892.00	3.937517	89	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	209574.7	3.85765	237,657.00	3.85765	88	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-304(12ft) (22J2282-24) Lab File ID: 22J2282-24.d Analyzed: 11/01/22 17:30									
M8FOSA	317805.6	3.988567	270,500.00	3.988567	117	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	264355.3	2.45575	259,163.00	2.45575	102	50 - 150	0.0000	+/-0.50	
M2PFTA	914988.4	4.297266	1,040,441.00	4.30535	88	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	156085.3	3.786867	138,397.00	3.786867	113	50 - 150	0.0000	+/-0.50	
MPFBA	449105.9	1.066783	416,918.00	1.058467	108	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	105659.7	2.7902	101,833.00	2.7902	104	50 - 150	0.0000	+/-0.50	
M6PFDA	661701.6	3.787383	619,732.00	3.787383	107	50 - 150	0.0000	+/-0.50	
M3PFBS	125605.6	1.8701	118,352.00	1.8701	106	50 - 150	0.0000	+/-0.50	
M7PFUnA	660828	3.92205	666,280.00	3.93005	99	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	124460	3.429317	128,005.00	3.4293	97	50 - 150	0.0000	+/-0.50	
M5PFPeA	402971	1.690017	373,092.00	1.690017	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	774921	2.539483	742,233.00	2.539483	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	112162.4	3.201883	109,331.00	3.201883	103	50 - 150	0.0000	+/-0.50	
M4PFHpA	892594.8	3.1627	853,747.00	3.1627	105	50 - 150	0.0000	+/-0.50	
M8PFOA	890502.3	3.445833	831,933.00	3.445833	107	50 - 150	0.0000	+/-0.50	
M8PFOS	105764.1	3.636183	101,247.00	3.636183	104	50 - 150	0.0000	+/-0.50	
M9PFNA	675126.4	3.637217	639,014.00	3.637217	106	50 - 150	0.0000	+/-0.50	
MPFDoA	640111.6	4.056667	642,225.00	4.064667	100	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	186271.8	3.929517	194,892.00	3.937517	96	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	232375.5	3.85765	237,657.00	3.85765	98	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-310(0-6in) (22J2282-25)			Lab File ID: 22J2282-25.d			Analyzed: 11/01/22 17:37			
M8FOSA	323591.3	3.988567	270,500.00	3.988567	120	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	298213.3	2.45575	259,163.00	2.45575	115	50 - 150	0.0000	+/-0.50	
M2PFTA	1090842	4.297266	1,040,441.00	4.30535	105	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	179206.5	3.778883	138,397.00	3.786867	129	50 - 150	-0.0080	+/-0.50	
MPFBA	502386.6	1.066783	416,918.00	1.058467	121	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	111970.2	2.7902	101,833.00	2.7902	110	50 - 150	0.0000	+/-0.50	
M6PFDA	743025	3.787383	619,732.00	3.787383	120	50 - 150	0.0000	+/-0.50	
M3PFBS	138806.5	1.8701	118,352.00	1.8701	117	50 - 150	0.0000	+/-0.50	
M7PFUnA	756578.9	3.92205	666,280.00	3.93005	114	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	129192	3.4293	128,005.00	3.4293	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	440944.8	1.690017	373,092.00	1.690017	118	50 - 150	0.0000	+/-0.50	
M5PFHxA	859512.6	2.539483	742,233.00	2.539483	116	50 - 150	0.0000	+/-0.50	
M3PFHxS	123028.1	3.201883	109,331.00	3.201883	113	50 - 150	0.0000	+/-0.50	
M4PFHpA	1002437	3.1627	853,747.00	3.1627	117	50 - 150	0.0000	+/-0.50	
M8PFOA	978878.5	3.445833	831,933.00	3.445833	118	50 - 150	0.0000	+/-0.50	
M8PFOS	113148.6	3.636183	101,247.00	3.636183	112	50 - 150	0.0000	+/-0.50	
M9PFNA	737086.1	3.637217	639,014.00	3.637217	115	50 - 150	0.0000	+/-0.50	
MPFDoA	730620.3	4.056667	642,225.00	4.064667	114	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	213733.1	3.929517	194,892.00	3.937517	110	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	272250.1	3.85765	237,657.00	3.85765	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
MW-310 (12-13ft) (22J2282-26) Lab File ID: 22J2282-26.d Analyzed: 11/01/22 17:44									
M8FOSA	338358.4	3.988567	270,500.00	3.988567	125	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	298338.1	2.447533	259,163.00	2.45575	115	50 - 150	-0.0082	+/-0.50	
M2PFTA	1007950	4.297266	1,040,441.00	4.30535	97	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	167992.7	3.778883	138,397.00	3.786867	121	50 - 150	-0.0080	+/-0.50	
MPFBA	482192.4	1.066783	416,918.00	1.058467	116	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	108364	2.7902	101,833.00	2.7902	106	50 - 150	0.0000	+/-0.50	
M6PFDA	699009.6	3.787383	619,732.00	3.787383	113	50 - 150	0.0000	+/-0.50	
M3PFBS	135211.9	1.8701	118,352.00	1.8701	114	50 - 150	0.0000	+/-0.50	
M7PFUnA	746117.4	3.92205	666,280.00	3.93005	112	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	135989.3	3.4293	128,005.00	3.4293	106	50 - 150	0.0000	+/-0.50	
M5PFPeA	428689.9	1.690017	373,092.00	1.690017	115	50 - 150	0.0000	+/-0.50	
M5PFHxA	824693.4	2.531267	742,233.00	2.539483	111	50 - 150	-0.0082	+/-0.50	
M3PFHxS	120199.4	3.201883	109,331.00	3.201883	110	50 - 150	0.0000	+/-0.50	
M4PFHpA	973256.2	3.1627	853,747.00	3.1627	114	50 - 150	0.0000	+/-0.50	
M8PFOA	970562.4	3.445833	831,933.00	3.445833	117	50 - 150	0.0000	+/-0.50	
M8PFOS	108653.3	3.636183	101,247.00	3.636183	107	50 - 150	0.0000	+/-0.50	
M9PFNA	718106.4	3.637217	639,014.00	3.637217	112	50 - 150	0.0000	+/-0.50	
MPFDoA	713990.9	4.056667	642,225.00	4.064667	111	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	200627.3	3.929517	194,892.00	3.937517	103	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	241008.5	3.85765	237,657.00	3.85765	101	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Duplicate 4 (22J2282-27)		Lab File ID: 22J2282-27.d				Analyzed: 11/01/22 17:51			
M8FOSA	245576.2	3.988567	270,500.00	3.988567	91	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	277955.8	2.44755	259,163.00	2.45575	107	50 - 150	-0.0082	+/-0.50	
M2PFTA	929064.4	4.297266	1,040,441.00	4.30535	89	50 - 150	-0.0081	+/-0.50	
M2-8:2FTS	209084.5	3.778883	138,397.00	3.786867	151	50 - 150	-0.0080	+/-0.50	*
MPFBA	406821.1	1.058467	416,918.00	1.058467	98	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	87224.32	2.782017	101,833.00	2.7902	86	50 - 150	-0.0082	+/-0.50	
M6PFDA	566624.7	3.779417	619,732.00	3.787383	91	50 - 150	-0.0080	+/-0.50	
M3PFBS	128632.3	1.861817	118,352.00	1.8701	109	50 - 150	-0.0083	+/-0.50	
M7PFUnA	622464.4	3.92205	666,280.00	3.93005	93	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	190590	3.429317	128,005.00	3.4293	149	50 - 150	0.0000	+/-0.50	
M5PFPeA	376251.3	1.690017	373,092.00	1.690017	101	50 - 150	0.0000	+/-0.50	
M5PFHxA	748844.3	2.531267	742,233.00	2.539483	101	50 - 150	-0.0082	+/-0.50	
M3PFHxS	114240.8	3.193817	109,331.00	3.201883	104	50 - 150	-0.0081	+/-0.50	
M4PFHpA	871890.4	3.154633	853,747.00	3.1627	102	50 - 150	-0.0081	+/-0.50	
M8PFOA	836339.9	3.445833	831,933.00	3.445833	101	50 - 150	0.0000	+/-0.50	
M8PFOS	97300.19	3.636183	101,247.00	3.636183	96	50 - 150	0.0000	+/-0.50	
M9PFNA	600733.5	3.629233	639,014.00	3.637217	94	50 - 150	-0.0080	+/-0.50	
MPFDoA	575706.2	4.056667	642,225.00	4.064667	90	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	242524	3.929517	194,892.00	3.937517	124	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	273966.4	3.857667	237,657.00	3.85765	115	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
SS-118 (0-in) (22J2282-28) Lab File ID: 22J2282-28.d Analyzed: 11/01/22 17:58									
M8FOSA	296433.9	3.988567	270,500.00	3.988567	110	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	250670	2.447533	259,163.00	2.45575	97	50 - 150	-0.0082	+/-0.50	
M2PFTA	832936.7	4.2892	1,040,441.00	4.30535	80	50 - 150	-0.0161	+/-0.50	
M2-8:2FTS	165625.2	3.778883	138,397.00	3.786867	120	50 - 150	-0.0080	+/-0.50	
MPFBA	427384.6	1.066783	416,918.00	1.058467	103	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	104427.7	2.782017	101,833.00	2.7902	103	50 - 150	-0.0082	+/-0.50	
M6PFDA	639987.1	3.779417	619,732.00	3.787383	103	50 - 150	-0.0080	+/-0.50	
M3PFBS	126104.7	1.861817	118,352.00	1.8701	107	50 - 150	-0.0083	+/-0.50	
M7PFUnA	657908.6	3.92205	666,280.00	3.93005	99	50 - 150	-0.0080	+/-0.50	
M2-6:2FTS	118292.9	3.4293	128,005.00	3.4293	92	50 - 150	0.0000	+/-0.50	
M5PFPeA	380095	1.690017	373,092.00	1.690017	102	50 - 150	0.0000	+/-0.50	
M5PFHxA	741685.2	2.531267	742,233.00	2.539483	100	50 - 150	-0.0082	+/-0.50	
M3PFHxS	113943.7	3.193817	109,331.00	3.201883	104	50 - 150	-0.0081	+/-0.50	
M4PFHpA	875387.3	3.154633	853,747.00	3.1627	103	50 - 150	-0.0081	+/-0.50	
M8PFOA	859864.4	3.437833	831,933.00	3.445833	103	50 - 150	-0.0080	+/-0.50	
M8PFOS	101333.4	3.6282	101,247.00	3.636183	100	50 - 150	-0.0080	+/-0.50	
M9PFNA	656812.6	3.629233	639,014.00	3.637217	103	50 - 150	-0.0080	+/-0.50	
MPFDoA	627295.6	4.056667	642,225.00	4.064667	98	50 - 150	-0.0080	+/-0.50	
d5-NEtFOSAA	172038.1	3.929517	194,892.00	3.937517	88	50 - 150	-0.0080	+/-0.50	
d3-NMeFOSAA	223901.3	3.8497	237,657.00	3.85765	94	50 - 150	-0.0080	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B320654-BLK1)			Lab File ID: B320654-BLK1.d			Analyzed: 11/01/22 15:27			
M8FOSA	254060.7	3.988567	270,500.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	184661.4	2.463967	259,163.00	2.463967	71	50 - 150	0.0000	+/-0.50	
M2PFTA	835261.8	4.30535	1,040,441.00	4.30535	80	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	109998	3.78685	138,397.00	3.786867	79	50 - 150	0.0000	+/-0.50	
MPFBA	393376.9	1.066783	416,918.00	1.058467	94	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	84946.2	2.798383	101,833.00	2.798383	83	50 - 150	0.0000	+/-0.50	
M6PFDA	586642.9	3.787383	619,732.00	3.787383	95	50 - 150	0.0000	+/-0.50	
M3PFBS	106939.5	1.878383	118,352.00	1.878383	90	50 - 150	0.0000	+/-0.50	
M7PFUnA	574922.3	3.93005	666,280.00	3.93005	86	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	89975.79	3.4373	128,005.00	3.4373	70	50 - 150	0.0000	+/-0.50	
M5PFPeA	345944.4	1.698283	373,092.00	1.698283	93	50 - 150	0.0000	+/-0.50	
M5PFHxA	662720	2.5477	742,233.00	2.5477	89	50 - 150	0.0000	+/-0.50	
M3PFHxS	92409.13	3.21025	109,331.00	3.201883	85	50 - 150	0.0084	+/-0.50	
M4PFHpA	767673.1	3.170783	853,747.00	3.170783	90	50 - 150	0.0000	+/-0.50	
M8PFOA	766853.4	3.445833	831,933.00	3.445833	92	50 - 150	0.0000	+/-0.50	
M8PFOS	88492.14	3.636183	101,247.00	3.636183	87	50 - 150	0.0000	+/-0.50	
M9PFNA	578643.7	3.637217	639,014.00	3.637217	91	50 - 150	0.0000	+/-0.50	
MPFDoA	567798.4	4.064667	642,225.00	4.064667	88	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	168270	3.937517	194,892.00	3.937517	86	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	195123.5	3.865617	237,657.00	3.865617	82	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B320654-BS1)			Lab File ID: B320654-BS1.d			Analyzed: 11/01/22 15:20			
M8FOSA	312652.7	3.988567	270,500.00	3.988567	116	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	202077.5	2.463967	259,163.00	2.463967	78	50 - 150	0.0000	+/-0.50	
M2PFTA	960827.6	4.30535	1,040,441.00	4.30535	92	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	129837.2	3.78685	138,397.00	3.786867	94	50 - 150	0.0000	+/-0.50	
MPFBA	462497.2	1.066783	416,918.00	1.058467	111	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	100920.9	2.798383	101,833.00	2.798383	99	50 - 150	0.0000	+/-0.50	
M6PFDA	658462.3	3.787383	619,732.00	3.787383	106	50 - 150	0.0000	+/-0.50	
M3PFBS	126384.1	1.878383	118,352.00	1.878383	107	50 - 150	0.0000	+/-0.50	
M7PFUnA	680376.1	3.93005	666,280.00	3.93005	102	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	105364.5	3.4373	128,005.00	3.4373	82	50 - 150	0.0000	+/-0.50	
M5PFPeA	402008.4	1.698283	373,092.00	1.698283	108	50 - 150	0.0000	+/-0.50	
M5PFHxA	774914.3	2.5477	742,233.00	2.5477	104	50 - 150	0.0000	+/-0.50	
M3PFHxS	111346.8	3.21025	109,331.00	3.201883	102	50 - 150	0.0084	+/-0.50	
M4PFHpA	900379.4	3.170783	853,747.00	3.170783	105	50 - 150	0.0000	+/-0.50	
M8PFOA	893111.6	3.445833	831,933.00	3.445833	107	50 - 150	0.0000	+/-0.50	
M8PFOS	103934.1	3.636183	101,247.00	3.636183	103	50 - 150	0.0000	+/-0.50	
M9PFNA	691828.4	3.637217	639,014.00	3.637217	108	50 - 150	0.0000	+/-0.50	
MPFDoA	648253.4	4.064667	642,225.00	4.064667	101	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	179303.6	3.937517	194,892.00	3.937517	92	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	230326.2	3.865617	237,657.00	3.865617	97	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike (B320654-MS1) Lab File ID: B320654-MS1.d Analyzed: 11/01/22 15:34									
M8FOSA	253964.4	3.988567	270,500.00	3.988567	94	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	222897.8	2.463967	259,163.00	2.463967	86	50 - 150	0.0000	+/-0.50	
M2PFTA	959453.2	4.30535	1,040,441.00	4.30535	92	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	165046.8	3.786867	138,397.00	3.786867	119	50 - 150	0.0000	+/-0.50	
MPFBA	443671.6	1.066783	416,918.00	1.058467	106	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	94494.5	2.806567	101,833.00	2.798383	93	50 - 150	0.0082	+/-0.50	
M6PFDA	619537	3.787383	619,732.00	3.787383	100	50 - 150	0.0000	+/-0.50	
M3PFBS	119633.9	1.878383	118,352.00	1.878383	101	50 - 150	0.0000	+/-0.50	
M7PFUnA	641709.9	3.93005	666,280.00	3.93005	96	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	125421	3.4373	128,005.00	3.4373	98	50 - 150	0.0000	+/-0.50	
M5PFPeA	388164.8	1.698283	373,092.00	1.698283	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	756532.3	2.5477	742,233.00	2.5477	102	50 - 150	0.0000	+/-0.50	
M3PFHxS	108119.5	3.21025	109,331.00	3.201883	99	50 - 150	0.0084	+/-0.50	
M4PFHpA	859781.5	3.170783	853,747.00	3.170783	101	50 - 150	0.0000	+/-0.50	
M8PFOA	862611.5	3.445833	831,933.00	3.445833	104	50 - 150	0.0000	+/-0.50	
M8PFOS	100630.3	3.636183	101,247.00	3.636183	99	50 - 150	0.0000	+/-0.50	
M9PFNA	641621.3	3.637217	639,014.00	3.637217	100	50 - 150	0.0000	+/-0.50	
MPFDoA	631452.4	4.064667	642,225.00	4.064667	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	212565.5	3.937517	194,892.00	3.937517	109	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	255354.8	3.865617	237,657.00	3.865617	107	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY

SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Matrix Spike Dup (B320654-MSD1)			Lab File ID: B320654-MSD1.d			Analyzed: 11/01/22 15:41			
M8FOSA	251530.4	3.988567	270,500.00	3.988567	93	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	229171.3	2.463967	259,163.00	2.463967	88	50 - 150	0.0000	+/-0.50	
M2PFTA	972666.4	4.30535	1,040,441.00	4.30535	93	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	168669.3	3.786867	138,397.00	3.786867	122	50 - 150	0.0000	+/-0.50	
MPFBA	447335.5	1.066783	416,918.00	1.058467	107	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	90381.45	2.798383	101,833.00	2.798383	89	50 - 150	0.0000	+/-0.50	
M6PFDA	601454.9	3.787383	619,732.00	3.787383	97	50 - 150	0.0000	+/-0.50	
M3PFBS	119018.9	1.878383	118,352.00	1.878383	101	50 - 150	0.0000	+/-0.50	
M7PFUnA	671762.6	3.93005	666,280.00	3.93005	101	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	128888.7	3.4373	128,005.00	3.4373	101	50 - 150	0.0000	+/-0.50	
M5PFPeA	386445.2	1.698283	373,092.00	1.698283	104	50 - 150	0.0000	+/-0.50	
M5PFHxA	751929.9	2.5477	742,233.00	2.5477	101	50 - 150	0.0000	+/-0.50	
M3PFHxS	106032.5	3.21025	109,331.00	3.201883	97	50 - 150	0.0084	+/-0.50	
M4PFHpA	860121.5	3.170783	853,747.00	3.170783	101	50 - 150	0.0000	+/-0.50	
M8PFOA	850895.8	3.445833	831,933.00	3.445833	102	50 - 150	0.0000	+/-0.50	
M8PFOS	103718.2	3.636183	101,247.00	3.636183	102	50 - 150	0.0000	+/-0.50	
M9PFNA	653048.1	3.637217	639,014.00	3.637217	102	50 - 150	0.0000	+/-0.50	
MPFDoA	629517.6	4.064667	642,225.00	4.064667	98	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	217967.7	3.937517	194,892.00	3.937517	112	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	264884.5	3.865617	237,657.00	3.865617	111	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
Blank (B320799-BLK1)			Lab File ID: B320799-BLK1.d			Analyzed: 11/18/22 11:53			
M8FOSA	477827.7	4.00455	402,195.00	4.00455	119	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	163603.9	2.562517	124,614.00	2.5543	131	50 - 150	0.0082	+/-0.50	
M2PFTA	1927639	4.354033	1,397,266.00	4.354033	138	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	271879.3	3.835	185,971.00	3.82705	146	50 - 150	0.0080	+/-0.50	
MPFBA	729235.3	1.100017	537,852.00	1.100017	136	50 - 150	0.0000	+/-0.50	
M3HFPO-DA	146563.4	2.880217	106,348.00	2.880217	138	50 - 150	0.0000	+/-0.50	
M6PFDA	1068229	3.827533	802,144.00	3.82755	133	50 - 150	0.0000	+/-0.50	
M3PFBS	188706	1.95315	131,390.00	1.95315	144	50 - 150	0.0000	+/-0.50	
M7PFUnA	1221808	3.978	897,290.00	3.978	136	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	215190.7	3.477367	96,655.00	3.477367	223	50 - 150	0.0000	+/-0.50	*
M5PFPeA	607516.4	1.7743	435,064.00	1.7743	140	50 - 150	0.0000	+/-0.50	
M5PFHxA	1098703	2.646767	826,757.00	2.638533	133	50 - 150	0.0082	+/-0.50	
M3PFHxS	173500.8	3.250667	129,892.00	3.250667	134	50 - 150	0.0000	+/-0.50	
M4PFHpA	1308564	3.219533	979,162.00	3.21145	134	50 - 150	0.0081	+/-0.50	
M8PFOA	1301931	3.485883	924,207.00	3.485883	141	50 - 150	0.0000	+/-0.50	
M8PFOS	170491.8	3.6761	126,766.00	3.6761	134	50 - 150	0.0000	+/-0.50	
M9PFNA	951200.8	3.677133	728,352.00	3.677133	131	50 - 150	0.0000	+/-0.50	
MPFDoA	1368912	4.112617	995,275.00	4.112617	138	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	325238.3	3.985467	243,167.00	3.985467	134	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	397609.9	3.9059	301,558.00	3.9059	132	50 - 150	0.0000	+/-0.50	

INTERNAL STANDARD AREA AND RT SUMMARY
SOP-466 PFAS

Internal Standard	Response	RT	Reference Response	Reference RT	Area %	Area % Limits	RT Diff	RT Diff Limit	Q
LCS (B320799-BS1)			Lab File ID: B320799-BS1.d			Analyzed: 11/18/22 11:46			
M8FOSA	375865.8	4.00455	402,195.00	4.00455	93	50 - 150	0.0000	+/-0.50	
M2-4:2FTS	116829.5	2.562517	124,614.00	2.5543	94	50 - 150	0.0082	+/-0.50	
M2PFTA	1312070	4.354033	1,397,266.00	4.354033	94	50 - 150	0.0000	+/-0.50	
M2-8:2FTS	294631	3.835017	185,971.00	3.82705	158	50 - 150	0.0080	+/-0.50	*
MPFBA	501233.2	1.108317	537,852.00	1.100017	93	50 - 150	0.0083	+/-0.50	
M3HFPO-DA	107216.7	2.8884	106,348.00	2.880217	101	50 - 150	0.0082	+/-0.50	
M6PFDA	773566	3.82755	802,144.00	3.82755	96	50 - 150	0.0000	+/-0.50	
M3PFBS	127275.4	1.95315	131,390.00	1.95315	97	50 - 150	0.0000	+/-0.50	
M7PFUnA	870748.7	3.978	897,290.00	3.978	97	50 - 150	0.0000	+/-0.50	
M2-6:2FTS	166419.6	3.477367	96,655.00	3.477367	172	50 - 150	0.0000	+/-0.50	*
M5PFPeA	414562.3	1.7743	435,064.00	1.7743	95	50 - 150	0.0000	+/-0.50	
M5PFHxA	771822.3	2.646767	826,757.00	2.638533	93	50 - 150	0.0082	+/-0.50	
M3PFHxS	124040.8	3.250667	129,892.00	3.250667	95	50 - 150	0.0000	+/-0.50	
M4PFHpA	925950.9	3.219533	979,162.00	3.21145	95	50 - 150	0.0081	+/-0.50	
M8PFOA	903259.3	3.485883	924,207.00	3.485883	98	50 - 150	0.0000	+/-0.50	
M8PFOS	123550.9	3.6761	126,766.00	3.6761	97	50 - 150	0.0000	+/-0.50	
M9PFNA	670313.8	3.677133	728,352.00	3.677133	92	50 - 150	0.0000	+/-0.50	
MPFDoA	912190.1	4.112617	995,275.00	4.112617	92	50 - 150	0.0000	+/-0.50	
d5-NEtFOSAA	224559.6	3.985467	243,167.00	3.985467	92	50 - 150	0.0000	+/-0.50	
d3-NMeFOSAA	279784	3.9059	301,558.00	3.9059	93	50 - 150	0.0000	+/-0.50	

CERTIFICATIONS
Certified Analyses included in this Report

Analyte	Certifications
<i>SOP-466 PFAS in Soil</i>	
Perfluorobutanoic acid (PFBA)	NH-P
Perfluorobutanesulfonic acid (PFBS)	NH-P
Perfluoropentanoic acid (PFPeA)	NH-P
Perfluorohexanoic acid (PFHxA)	NH-P
11Cl-PF3OUdS (F53B Major)	NH-P
9Cl-PF3ONS (F53B Minor)	NH-P
4,8-dioxa-3H-perfluorononanoic acid (ADONA)	NH-P
Hexafluoropropylene oxide dimer acid (HFPO-DA)	NH-P
8:2 Fluorotelomersulfonic acid (8:2FTS A)	NH-P
Perfluorodecanoic acid (PFDA)	NH-P
Perfluorododecanoic acid (PFDoA)	NH-P
Perfluoro(2-ethoxyethane)sulfonic acid (PFEEESA)	NH-P
Perfluoroheptanesulfonic acid (PFHpS)	NH-P
N-EtFOSAA	NH-P
N-MeFOSAA	NH-P
Perfluorotetradecanoic acid (PFTA)	NH-P
Perfluorotridecanoic acid (PFTrDA)	NH-P
4:2 Fluorotelomersulfonic acid (4:2FTS A)	NH-P
Perfluorodecanesulfonic acid (PFDS)	NH-P
Perfluorooctanesulfonamide (FOSA)	NH-P
Perfluorononanesulfonic acid (PFNS)	NH-P
Perfluoro-1-hexanesulfonamide (FHxSA)	NH-P
Perfluoro-1-butanedisulfonamide (FBSA)	NH-P
Perfluorohexanesulfonic acid (PFHxS)	NH-P
Perfluoro-4-oxapentanoic acid (PFMPA)	NH-P
Perfluoro-5-oxahexanoic acid (PFMBA)	NH-P
6:2 Fluorotelomersulfonic acid (6:2FTS A)	NH-P
Perfluoropentanesulfonic acid (PFPeS)	NH-P
Perfluoroundecanoic acid (PFUnA)	NH-P
Nonafluoro-3,6-dioxaheptanoic acid (NFDHA)	NH-P
Perfluoroheptanoic acid (PFHpA)	NH-P
Perfluorooctanoic acid (PFOA)	NH-P
Perfluorooctanesulfonic acid (PFOS)	NH-P
Perfluorononanoic acid (PFNA)	NH-P

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

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

2252282



Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com

Barnstable County
3195 Main St. PO Box 427

Project Name: BFTA

Project Location: Barnstable, MA

Project Number: 6206

Project Manager: Roger Thibault

Con-Test Quote Name/Number: Pricilla Ellis - pellis@barnstablecounty.org

Invoice Recipient: Matt Alger

Sampled By: Matt Alger

http://www.contestlabs.com

CHAIN OF CUSTODY RECORD

39 Spruce Street
East Longmeadow, MA 01028

Doc # 381 Rev 2_06262019

Requested Turnaround Time

7-Day ☐ 10-Day ☐ Due Date:

PFAS 15-Day (std) ☒ Rush Approval Required

1-Day ☐ 3-Day ☐ 4-Day ☐ Lab to Filter

2-Day ☐ Lab to Filter

Format: PDF ☒ EXCEL ☒

Other: SOXHLET ☐

CLP Like Data Pkg Required: ☐

Email To: ☐

Fax To #: ☐

ANALYSIS REQUESTED

NP

PFAS

VIALS

GLASS

PLASTIC

BACTERIA

ENCORE

Glassware in the fridge? ☒ N

Glassware in freezer? Y / N

Prepackaged Cooler? ☒ N

*Context is not responsible for missing samples from prepackaged coolers

1 Matrix Codes:

GW = Ground Water

WW = Waste Water

DW = Drinking Water

A = Air

S = Soil

SL = Sludge

SOL = Solid

O = Other (please define)

2 Preservation Codes:

I = Iced

H = HCL

M = Methanol

N = Nitric Acid

S = Sulfuric Acid

B = Sodium Bisulfate

X = Sodium Hydroxide

T = Sodium Thiosulfate

O = Other (please define)

Please use the following codes to indicate possible sample concentration within the Conc Code column above:

H - High; M - Medium; L - Low; C - Clean; U - Unknown

MA MCP Required

MCP Certification Form Required

CT RCP Required

RCP Certification Form Required

MA State DW Required

PWSID #

Project Entity

Government ☐

Federal ☐

City ☐

Municipality ☐

21 J ☐

Brownfield ☐

AMVRA ☐

School ☐

MBTA ☐

WRTA ☐

Other ☐

Chromatogram ☐

AIHA-LAP, LLC ☐

HEMAC and AIHA-LAP, LLC Accredited

Lab Comments:

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

ANALYSIS REQUESTED

[illegible]

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

39 Spruce St.
East Longmeadow, MA. 01028
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Pace PEOPLE ADVANCING SCIENCE
Doc# 277 Rev 6 July 2022

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

Client Barnstable County
Received By [Signature] Date 10/17/22 Time 1725

How were the samples received? In Cooler T No Cooler On Ice T No Ice
Direct From Sample Ambient Melted Ice

Were samples within Temperature? Within 2-6°C T By Gun # 3 Actual Temp - 3.5
By Blank # Actual Temp -

Was Custody Seal In tact? nk Were Samples Tampered with? nk
Was COC Relinquished? T Does Chain Agree With Samples? T

Are there broken/leaking/loose caps on any samples? F
Is COC in ink/ Legible? T Were samples received within holding time? T
Did COC include all Client? T Analysis? T Sampler Name? T
pertinent Information? Project? T ID's? T Collection Dates/Times? T

Are Sample labels filled out and legible? T
Are there Lab to Filters? F Who was notified?
Are there Rushes? F Who was notified?
Are there Short Holds? F Who was notified?

Samples are received within holding time? T Is there enough Volume? T
Is there Headspace where applicable? nk MS/MSD? F
Proper Media/Containers Used? T splitting samples require F
Were trip blanks receive F On COC? T

Do All Samples Have the proper pH? nk Acid Base

Vials	#	Containers:	#	#	#
Unp-		1 Liter Amb.		1 Liter Plastic	16 oz Amb.
HCL-		500 mL Amb.		500 mL Plastic	8oz Amb/Clear
Meoh-		250 mL Amb.		250 mL Plastic	4oz Amb/Clear
Bisulfate-		Col./Bacteria		Flashpoint	2oz Amb/Clear
DI-		Other Plastic	<u>200</u>	Other Glass	Encore
Thiosulfate-		SOC Kit		Plastic Bag	Frozen:
Sulfuric-		Perchlorate		Ziplock	

Unused Media

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

Comments: