# SUFFOLK COUNTY FIREMATICS SITE
# 676 MAPLE STREET
# YAPHANK, NEW YORK
# SCTM ID: 0200-779.00-01.00-002.000
# NYSDEC SITE: 152246

## GROUNDWATER MONITORING REPORT

**SUBMITTED TO:**

New York State Department of Environmental Conservation
Division of Environmental Remediation
50 Circle Road
Stony Brook, New York 11790

**PREPARED FOR:**

Suffolk County
H. Lee Dennison Building
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PWGC Project Number: Job #SHD2305

**APRIL 2024**

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| Acronym/Abbreviation | Definition |
|---|---|
| 6:2FTS | 6:2-fluorotelomersulfonic acid |
| 8:2 FTS | 8:2 Fluorotelomer sulfonic acid |
| AFFF | Aqueous film forming foam |
| ESAs | Environmental Site Assessments |
| GVs | Guidance Values |
| GVMR | Groundwater Monitoring Report |
| GWSLs | Groundwater Screening Levels |
| HAL | Health Advisory Level |
| HDPE | High Density Polyethylene |
| FOSA | Perfluorooctanesulfonamide |
| LDC | Laboratory Data Consultants, Inc. |
| LNAPL | Light Non-Aqueous Phase Liquid |
| MCL | Maximum contaminant level |
| ng/L | Nanograms per liter |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| PFOA | Perfluorooctanoate |
| PFOS | Perfluorooctanesulfonic Acid |
| PFAS | Per- and polyfluoroalkyl substances |
| PFBA | Perfluorobutanoate |
| PFBS | Perfluorobutane sulfonate |
| PFDA | Perfluorodecanoic Acid |
| PFHpA | Perfluoroheptanoic Acid |
| PFHpS | Perfluoroheptanesulfonic Acid |
| PFHxA | Perfluorohexanoate |
| PFHxS | Perfluorohexane sulfonate |
| PFNA | Perfluorononanoic Acid |
| PFPeA | Perfluoropentanoate |
| PFUnA | Perfluoroundecanoic acid |
| PVC | Polyvinyl Chloride |
| PWGC | P.W. Grosser Consulting, Inc. |
| QA/QC | Quality Assurance/Quality Control |
| QEP | Qualified Environmental Professional |
| RI | Remedial Investigation |
| SCDHS | Suffolk County Department of Health Services |
| SRIR | Supplemental Remedial Investigation Report |
| USEPA | United States Environmental Protection Agency |
| York | York Analytical Laboratories, Inc. |

## 1.0 INTRODUCTION

P.W. Grosser Consulting, Inc. (PWGC) has prepared the following Groundwater Monitoring Report (GWMR) on behalf of the Suffolk County Department of Health Services (SCDHS) to summarize groundwater monitoring/sampling activities performed at onsite and offsite groundwater monitoring wells associated with the Suffolk County Firematics Site (hereinafter referred to as the "Site") located at 676 Maple Street in Yaphank, New York, Site ID 152246. The purpose of the investigation was to evaluate current per- and polyfluoroalkyl substances (PFAS) concentrations in groundwater associated with historical Site operations. A Site Location Map is included as **Figure 1** and a Site Plan is included as **Figure 2**.

### 1.1 Site Location and Description

The Site is located at 676 Maple Street in the hamlet of Yaphank, New York in the Town of Brookhaven, Suffolk County (Figure 1). The Site is identified on the Suffolk County Tax Map as: 0200-779.00-01.00-00100-002.000.

The Site consists of several buildings used for firefighting training activities, with and without the use of live fire, or for administrative support (offices, classrooms, etc.). The Site measures approximately 28 acres in size. The buildings located at the Site were constructed between 1959 and 2005 (**Figure 2**).

### 1.2 Site History

In 1959, the Fire Training Center at Yaphank was commissioned. Its facilities consisted of a training tower, smokehouse and oil pits, and formed the basis for the development of today's training complex. Between 1959 and 1981, the Class A residential burn building, the Railroad Tank Car, Pump Test building, Liquified Propane Gas (LPG) Training facility, maze facility and the classroom/administration building were constructed on the Site. Since then, various improvements to the facility have been undertaken, including a new Class A burn building and a railcar training prop. The old Class A building is being used for training new recruits and firefighter survival courses.

After nearby drinking water wells were found to contain perfluorooctane sulfonate (PFOS) and perfluorooctonoate (PFOA), the New York State Department of Environmental Conservation (NYSDEC) and SCDHS worked quickly to identify the source of contamination and determined the Firematics facility was a likely source. Impacted homes in the area were provided bottled water and Suffolk County has connected over 47 properties to the municipal water supply or provided point of entry treatment systems on impacted homes.


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## 1.3 Previous Environmental Investigations

Environmental Site Assessments (ESAs) were performed at the subject property to evaluate subsurface conditions. Results of the ESAs identified that subsurface soils and groundwater had been impacted with PFAS. Two hotspots of PFAS contamination appear to be present at the Site. One is located in the north-central portion, centered over a former HAZMAT Response training area, which was also used as a Foam Training Area from 2008 to 2016. The other hotspot is located farther to the west, located beneath a Flammable Liquids Pit and Car Fire Training Area. Both hotspots are located in areas where aqueous film forming foam (AFFF) was likely stored and/or implemented. Additionally, an unlined recharge basin is present in the southwestern portion of the Site, which receives water from the Foam Training Area as well as other locations on the site. This basin has been impacted by discharges containing PFAS or other compounds used on-site. A summary of the ESAs is presented below:

- "Suffolk County Department of Health Services Investigation" prepared by SCDHS and dated April 2016.
- "Remedial Investigation Report" prepared by PWGC and dated January 2021.
    - A "Supplemental Remedial Investigation Report" (SRIR) prepared by PWGC and dated June 2020 was included as an appendix to the Remedial Investigation Report.
- "Soil Delineation Investigation Report" prepared by PWGC and dated October 2023.

### *1.3.1 Groundwater Monitoring Well Installation – Remedial Investigation*

As part of PWGC's Remedial Investigation (RI), a total of twelve shallow (MW001 – MW012) monitoring wells (water table wells) and four deep (MW005D, MW006D, MW009D, & MW012D) monitoring wells (well cluster) were constructed on/in close proximity to the Site between April 3 and May 21, 2018. A rotary drill rig and/or Geoprobe® direct-push drill rig outfitted for rotary drilling were used to install the wells using standard drilling methods with hollow-stem augers. The wells were constructed of two-inch diameter, schedule 80 PVC casing and screen with 0.010-inch slot, except where access was limited and a track-mounted Geoprobe® was required. For these three locations (MW004, MW010, & MW011), the wells were constructed with one-inch diameter, schedule 80 PVC casing and screen with 0.010-inch slot.

The monitoring wells were constructed with a 10' screen section and riser to grade. The well annulus was filled with #2 Morie sand to 2' above the well screen. A 2' fine sand layer was installed above the well screen followed by a 2' bentonite seal (hydrated with PFAS free water). Above the bentonite layer, the annulus around the well was backfilled with soil cuttings (discussed and approved by the NYSDEC prior to backfilling). A concrete surface pad (2' by 2' by 6" and mixed with PFAS free water) was installed. The wells were finished with lockable test plugs and properly color-coded flush mount curb boxes (white circle

with black triangle), except for the three 1" pop-up wells which were finished with a 5' stainless-steel well casing cover and fitted with a padlock.

### *1.3.2 Groundwater Monitoring Well Sample Results – Remedial Investigation*

PFOS and PFOA results were compared to the New York State (NYS) Maximum Contaminant Level (MCL) of 10 ng/L (individually), NYSDEC Groundwater Screening Levels (GWSLs) of 100 ng/L for individual PFAS (not PFOA or PFOS) and 500 ng/L for total PFAS, and the United States Environmental Protection Agency (USEPA) Health Advisory Level (HAL) of 70 ng/l (individually or combined).

Individual PFOA and/or individual PFOS exceeded the NYS MCL of 10 ng/L in 13 of the 16 groundwater monitoring wells. Individual PFOS exceeded the USEPA HAL of 70 ng/L in 11 wells and individual PFOA exceeded the USEPA HAL of 70 ng/L in 7 wells. Combined PFOS/PFOA exceeded the USEPA HAL of 70 ng/L in 11 of the 16 groundwater monitoring wells.

PFOS results ranged from 2.31 ng/L in MW002 to 18,800 ng/L in MW009S. PFOA results ranged from 0.92 ng/L in MW009D to 6,450 ng/L in MW004.

Other PFAS compounds detected at or above the NYSDEC GWSL of 100 ng/L in the groundwater samples collected include: 6:2FTS, 8:2FTS, PFBS, PFBA, PFHpS, PFHpA, PFHxS, PFHxA, PFNA, PFPeA, and PFUnA.

Total PFAS concentrations ranged from 23.5 ng/L in MW009-Deep to 142,029 ng/L in MW004. Total PFAS concentrations at or above the NYSDEC GWSL of 500 ng/L were detected in samples MW004, MW005S, MW005D, MW006S, MW006D, MW008, MW009S, MW010, MW011, and MW-012S.

### *1.3.3 Groundwater Monitoring Well Installation – Supplemental Remedial Investigation*

Following review of the Remedial Investigation Report, NYSDEC provided comments which requested additional activities to further delineate the offsite extent of groundwater impacted PFAS in the vicinity of the Carmans River, Yaphank, New York. A total of six shallow monitoring wells (MW013 – MW018) and two deep wells (MW014D & MW015D) were installed between October 25, 2019 and March 26, 2020 using the same methods as the onsite monitoring wells.

### *1.3.4 Groundwater Monitoring Well Sample Results – Supplemental Remedial Investigation*

Groundwater monitoring well analytical results for PFOS and PFOA were compared to the NYSDEC May 2019 proposed MCL of 10 ng/L (individually) and USEPA HAL of 70 ng/L (individually or combined).


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PFOS were detected above laboratory MDLs in each of the 8 groundwater monitoring well samples. PFOS concentrations exceed the NYSDEC proposed MCL in three of the eight groundwater monitoring wells. Concentrations of PFOS ranged from 1.03 ng/L (MW013) to 23.9 ng/L (MW014S). PFOS concentrations did not exceed the USEPA HAL.

PFOA were detected above laboratory MDLs in each of the 8 groundwater monitoring well samples. PFOA concentrations exceeded the NYSDEC proposed MCL in one (MW016, located east of the Carmans River) of the eight groundwater monitoring wells. Concentrations of PFOA ranged from 1.73 ng/L (MW015D) to 16.8 ng/L (MW016). PFOA concentrations did not exceed the USEPA HAL.

Combined PFOS/PFOA results ranged from 3.72 ng/L (MW013) to 31.4 ng/L (MW014S). Other PFAS compounds detected in the groundwater monitoring well samples collected include: 6:2FTS, PFBS, PFBA, PFDA, PFHpS, PFHpA, PFHxS, PFHxA, PFNA, FOSA, PFPeA, and PFUnA. Total PFAS concentrations ranged from 20.8 ng/L (MW013) to 135 ng/L (MW014S).

Groundwater monitoring well sampling results from the RI and SRI are included on **Table 3.**


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## 2.0 GROUNDWATER MONITORING & SAMPLING

Between November 6 and November 8, 2023, PWGC mobilized to the Site to collect groundwater samples from the onsite shallow and deep groundwater monitoring wells, and from the four monitoring wells located on the western side of Carmans River (MW013, MW014 (shallow and deep), & MW017), to assess the current PFAS concentrations in groundwater.

### 2.1 Groundwater Monitoring Activities

Groundwater monitoring consisted of collecting and recording depth to water and total well depth measurements for the monitoring wells sampled. Water levels were collected using a Solinst Oil/Water Interface Probe. Light non-aqueous phase liquid (LNAPL) was not detected in the groundwater monitoring wells. Depth to water and groundwater elevation data are summarized on **Table 1** and a groundwater flow map is included as **Figure 2**. Based upon the field measurements, groundwater flows southeast towards Carmans River.

### 2.2 Groundwater Sampling

The groundwater samples from eleven of the twelve shallow onsite groundwater monitoring wells and four deep monitoring wells were collected between November 6 and November 8, 2023. One monitoring well, MW001, was obstructed by a fire training prop consisting of steel shipping containers staged on gravel and was inaccessible at the time of sampling. Near Carmans River, the three monitoring wells west of the river, between the river and the Site, were sampled to determine if PFAS concentrations approaching the river from the Site had changed since the last sampling event. The monitoring wells east of the river were not sampled.

#### *2.2.1 Sampling Protocol*

Groundwater samples were collected using a peristaltic pump fitted with dedicated high-density polyethylene (HDPE) tubing. Samples were collected in accordance with USEPA's Low Stress (Low Flow) Purging and Sampling Procedure for The Collection of Groundwater Samples from Monitoring Wells (September 2017) and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS), April 2023 guidance. A Horiba U-22 multi-parameter water quality meter outfitted with a flow through cell was utilized to monitor field parameters (turbidity, pH, temperature, and conductivity) at three-minute intervals. Upon stabilization of field parameters (three consecutive readings within allowable tolerances) groundwater samples were collected. Upon collection, groundwater samples were placed in pre-cleaned laboratory-supplied glassware and packed in a cooler on ice. Copies of the groundwater sampling data sheets containing the field parameters recorded and purge volumes for each sampling point are attached as **Appendix A**.


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Samples were placed into pre-cleaned, laboratory-supplied glassware provided by York Analytical Laboratories, Inc. (York). Samples were packed in coolers with ice and shipped to York under chain-of-custody seal.

The samples were analyzed for the presence of:

- PFAS by USEPA Method 1633.

### 2.2.2 *Analytical Results*

PFAS in groundwater are compared to the Guidance Values (GVs) and MCLs specified in the April 2023 update to Sampling, Analysis, and Assessment of PFAS and the MCLs Under NYSDEC's part 375 Remedial Programs. A total of 19 groundwater samples were collected. Analytical data are summarized in **Table 2**; laboratory reports are included as **Appendix B**.

PFOS was detected at concentrations that exceeded the NYSDEC GV (2.7 nanogram per liter (ng/L)) in each of the 19 groundwater samples with the exception of MW002. Of these, 14 also exceeded the MCL of 10 ng/L. PFOS concentrations ranged from non-detect (MW002) to 4,990 ng/L (MW008).

PFOA was detected at concentrations that exceeded the NYSDEC GV (6.7 ng/L) in ten of the 19 groundwater samples. Each of these concentrations were also greater than the MCL. PFOA concentrations ranged from non-detect (MW002) to 730 ng/L (MW004).

### 2.2.3 *Discussion of Results*

PFOS and PFOA were detected at elevated concentrations in the groundwater samples collected during the November 2023 sampling event. The highest concentrations were located in the north-central and southeastern portions of the Site (**Figure 3A**). Concentrations of PFOS and PFOA in samples collected from near the Carmans River did not change significantly from the previous sampling event (**Figure 3B**) .

PFOS and PFOA concentrations increased in wells (MW005S, MW006S, and MW011) downgradient of the source area and decreased in the wells (MW004, MW008 and MW009S) located within the source area.

## 2.3 Waste Management

Non-hazardous purge water generated during groundwater sampling was containerized into one 55-gallon drum and staged adjacent to the existing soil stockpile located at the northern end of the Site for future disposal.

## 3.0 QUALITY ASSURANCE/QUALITY CONTROL

The overall quality assurance/quality control (QA/QC) objective for the field investigation was to develop and implement procedures that provide data of known and documented quality. QA/QC characteristics for data include precision, accuracy, representativeness, completeness, and comparability. The purpose of the QA/QC activities developed for this Site was to verify the integrity of the work performed at the Site to assure that the data collected are of the appropriate type and quality needed for the intended use.

The QA/QC program included the preparation and analysis of field QA/QC samples including a field blank, field duplicate, and matrix spike duplicate. One field blank was collected, one field duplicate sample was collected alongside MW008, and a matrix spike duplicate was collected with MW005D. Third-party data validation was performed by Laboratory Data Consultants, Inc. (LDC) of Carlsbad, California. Full data validation was performed on 10% of the data. Copies of the Data Validation Reports/Data Usability Summary Reports are included as **Appendix C**. **Table 2** has been updated, as appropriate, based upon the data validator's review.


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## 4.0 CONCLUSIONS AND RECOMMENDATIONS

The purpose of the investigation was to evaluate the current groundwater concentrations of PFAS associated with historical Site operations both at the Site and downgradient of the Site towards the Carmans River. To perform this work, the following tasks were completed:

- Eleven of the twelve groundwater monitoring wells previously installed at the Site were sampled using USEPA's Low Stress (Low Flow) Purging and Sampling Procedure for The Collection of Groundwater Samples from Monitoring Wells (September 2017) and the NYSDEC Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS), April 2023 guidance document.
- The three previously installed groundwater monitoring wells located downgradient of the Site near Carmans River (on the west side of the river) were sampled using USEPA's low flow sampling guidelines for PFAS.
- A total of 19 groundwater samples were collected and analyzed.
    - PFOS/PFOA were not detected in one of the 19 groundwater samples (MW002).
    - PFOS was detected above its GV of 2.7 ng/L (and below the MCL of 10 ng/L) in four of the 19 groundwater samples.
    - PFOS was detected above the MCL of 10 ng/L in 14 of the 19 groundwater samples.
    - PFOA was detected but did not exceed its GV (6.7 ng/L) or MCL (10 ng/L), in eight of the 19 groundwater samples.
    - PFOA was detected above the MCL of 10 ng/L in ten of the 19 groundwater samples.
- Analytical results of the 19 groundwater samples were compared to analytical results previously reported in 2018 and 2020 during the RI and SRI, respectively.
    - Analytical results for PFOS decreased in 11 of the 19 groundwater samples, ranging from 26% (MW008) to 98% (MW005D).
        - PFOS concentrations increased in eight wells, ranging from 26% (MW012D) to 252% (MW013).
    - Analytical results for PFOA decreased in 13 of the 19 groundwater samples, ranging from 22% (MW012D) to 90% (MW005D).
        - PFOA concentrations increased in six wells, ranging from 6% (MW007) to 275% (MW010).

The highest concentrations of PFOS and PFOA were located in the north-central and southeastern portions of the Site (Figure 3A). Concentrations of PFOS and PFOA in samples collected from near the Carmans River did not change significantly from the previous sampling event (Figure 3B).

PFOS and PFOA concentrations increased in wells (MW005S, MW006S, and MW011) downgradient of the source area and decreased in the wells (MW004, MW008 and MW009S) located within the source area.


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PWGC recommends that annual groundwater monitoring be performed at the site until a final remedy is implemented.


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NYSDEC, Division of Water, June 1998, Addendum February 2023, Technical and Operational Guidance Series 1:1:1, Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations, June 1998.

NYSDEC, Division of Environmental Remediation, Guidelines for Sampling and Analysis of PFAS under NYSDEC's Part 375 Remedial Programs, April 2023.

USEPA, Low Stress (Low Flow) Purging and Sampling Procedure for The Collection of Groundwater Samples from Monitoring Wells, September 2017.

Suffolk County Department of Health Services, Suffolk County Department of Health Services Investigation, April 2016.

PWGC, Remedial Investigation Report, January 2021.

PWGC, Supplemental Remedial Investigation Report, June 2020.

PWGC, Soil Delineation Investigation Report, October 2023.



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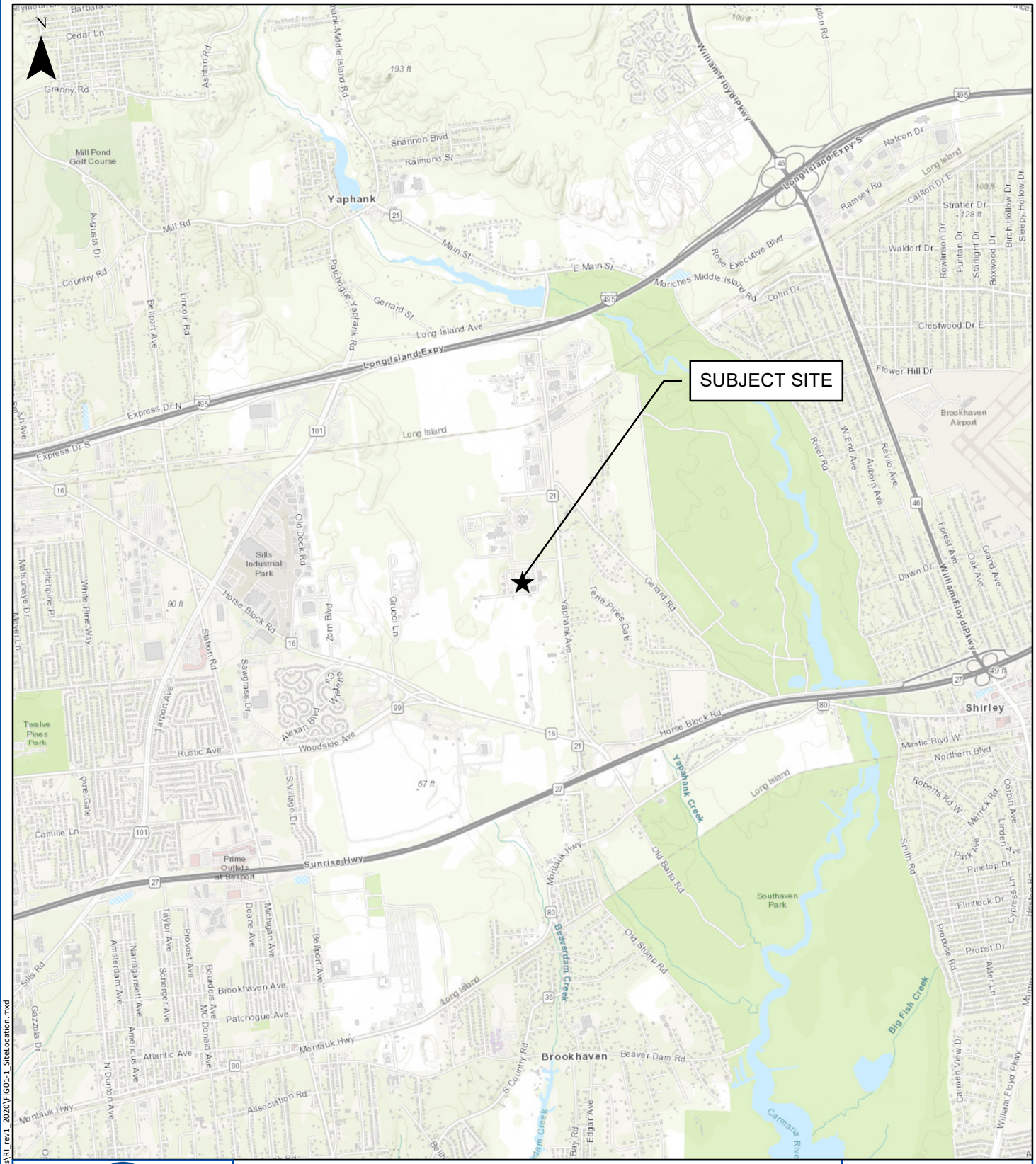
# FIGURES




# SITE LOCATION

676 MAPLE ST
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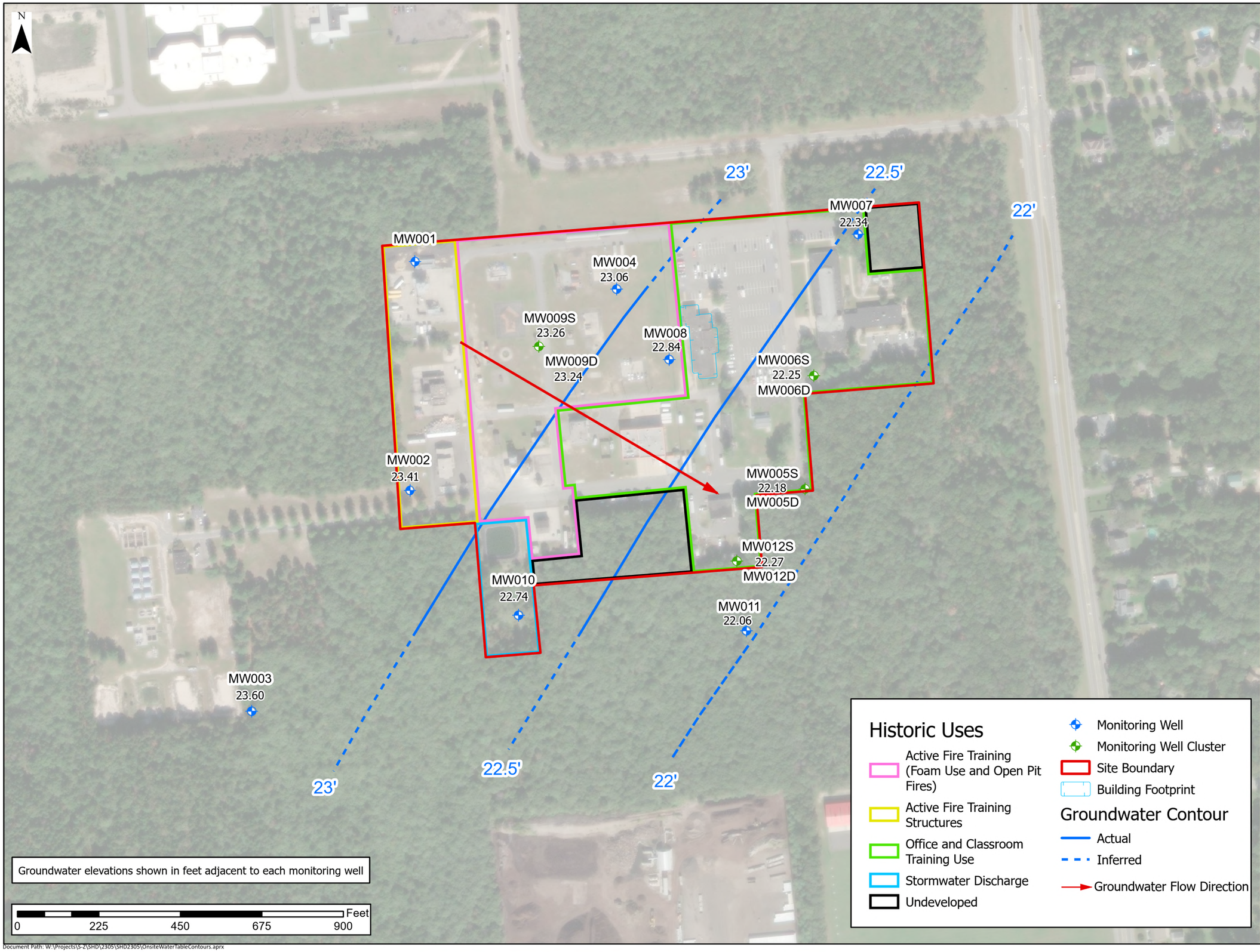


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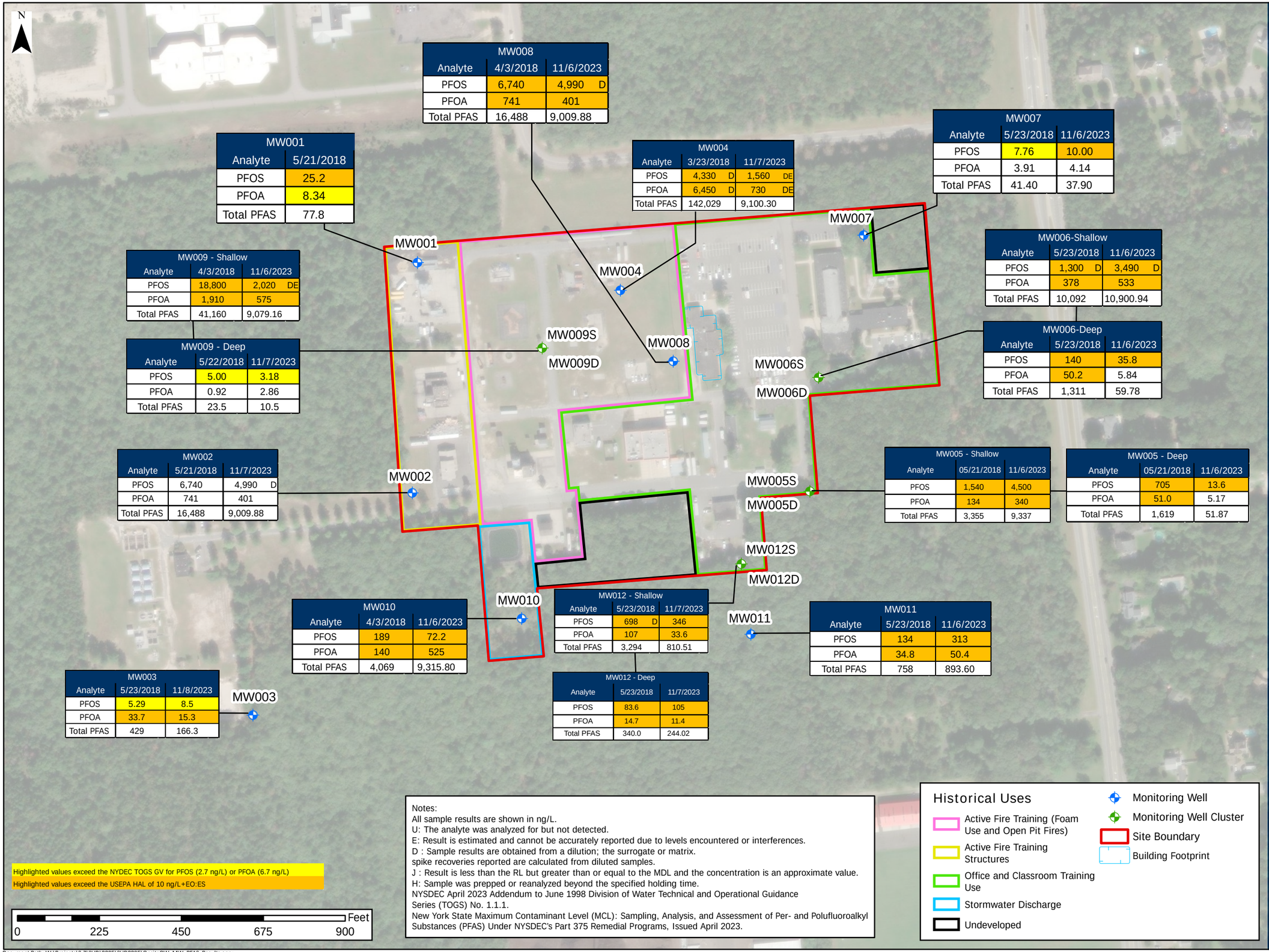
# Site Plan

Suffolk County Firematics
676 Maple St
Yaphank, NY

FIGURE NO:

2

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# Groundwater Sampling Results (Onsite)

Suffolk County Firematcs
676 Maple St
Yaphank, NY

FIGURE NO:

3A

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| MW014 - Deep | | |
|---|---|---|
| Analyte | 1/23/2020 | 11/8/2023 |
| PFOS | 16.7 J | 5.00 |
| PFOA | 2.65 J | 0.539 J |
| Total PFAS | 58.4 | 10.27 |

| MW017 | | |
|---|---|---|
| Analyte | 1/23/2020 | 11/8/2023 |
| PFOS | 12.9 | 4.82 |
| PFOA | 7.39 | 2.36 |
| Total PFAS | 55.7 | 9.29 |

| MW014 - Shallow | | |
|---|---|---|
| Analyte | 1/23/2020 | 11/8/2023 |
| PFOS | 23.9 H | 43.0 |
| PFOA | 7.46 H | 5.74 |
| Total PFAS | 135 | 110.27 |

MW015
(Deep/Shallow)

Carmans River

MW016

MW018

| MW013 | | |
|---|---|---|
| Analyte | 1/27/2020 | 11/8/2023 |
| PFOS | 1.03 J | 3.63 |
| PFOA | 2.69 | 1.10 J |
| Total PFAS | 19.5 | 10.35 |

Highlighted values exceed the NYDEC TOGS GV for PFOS (2.7 ng/L) or PFOA (6.7 ng/L)

Highlighted values exceed the USEPA HAL of 10 ng/L+EO:ES

0 180 360 540 720 900 Feet

Notes:
All sample results are shown in ng/L.
U: The analyte was analyzed for but not detected.
E: Result is estimated and cannot be accurately reported due to levels encountered or interferences.
D : Sample results are obtained from a dilution; the surrogate or matrix.
spike recoveries reported are calculated from diluted samples.
J : Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
H: Sample was prepped or reanalyzed beyond the specified holding time.
NYSDEC April 2023 Addendum to June 1998 Division of Water Technical and Operational Guidance Series (TOGS) No. 1.1.1.
New York State Maximum Contaminant Level (MCL): Sampling, Analysis, and Assessment of Per- and Polufluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, Issued April 2023.

Monitoring Well

Monitoring Cluster Well

PWGC
CLIENT DRIVEN SOLUTIONS
P.W. Grosser Consulting, Inc.
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DRAWING PREPARED FOR:

Suffolk County
H. Lee Dennison Building
100 Veterans Hwy.
Hauppauge, New York 11788

| REVISION | DATE | INITIAL | COMMENTS |
|---|---|---|---|
| | | | |

DRAWING INFORMATION:

| | | | |
|---|---|---|---|
| Project: | SHD1903 | Designed by: | MP |
| Date: | 1/2/2024 | Drawn by: | AM |
| Scale: | AS SHOWN | Approved by: | MP |

# Groundwater Sampling Results (Carmans River)

Supplemental Remedial Investigation
Yaphank, NY

FIGURE NO:

3B

Document Path: W:\Projects\S-Z\SHD\2305\SHD2305\CarmansMW_PFAS_Results.aprx

# TABLES


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BOHEMIA • MANHATTAN • SARATOGA SPRINGS • MONTICELLO, NY • SYRACUSE • SHELTON, CT

## Table 1

## Groundwater Monitoring Well
## Monitoring and Survey Data

| Station | Depth to Water 10-Nov-23 | Depth to Water 4-Jan-24 | Depth to Bottom of Screen (bgs) | Depth to Top of Screen (bgs) | Surface Elevation | Casing Elevation | Groundwater Elevation 10-Nov-23 | Groundwater Elevation 4-Jan-24 |
|---|---|---|---|---|---|---|---|---|
| MW001 | N/A | N/A | 25.00 | 15.00 | 42.43 | 42.30 | N/A | N/A |
| MW002 | 18.60 | 17.95 | 27.00 | 17.00 | 42.20 | 42.01 | 23.41 | 24.06 |
| MW003 | 22.77 | 22.08 | 25.00 | 15.00 | 42.90 | 46.37 | 23.60 | 24.29 |
| MW004 | 17.86 | 17.26 | 24.00 | 14.00 | 41.16 | 40.92 | 23.06 | 23.66 |
| MW005S | 17.02 | 16.40 | 25.00 | 15.00 | 39.48 | 39.23 | 22.21 | 22.83 |
| MW005D | 16.95 | 16.38 | 44.00 | 34.00 | 39.48 | 39.13 | 22.18 | 22.75 |
| MW006S | 18.44 | 17.81 | 24.00 | 14.00 | 41.00 | 40.79 | 22.35 | 22.98 |
| MW006D | 18.26 | 17.65 | 45.00 | 35.00 | 41.00 | 40.61 | 22.35 | 22.96 |
| MW007 | 17.89 | 17.32 | 26.00 | 16.00 | 40.50 | 40.23 | 22.34 | 22.91 |
| MW008 | 18.60 | 18.01 | 24.00 | 14.00 | 41.76 | 41.44 | 22.84 | 23.43 |
| MW009S | 18.36 | 17.79 | 24.00 | 14.00 | 41.88 | 41.62 | 23.26 | 23.83 |
| MW009D | 18.57 | 17.96 | 45.00 | 35.00 | 42.00 | 41.81 | 23.24 | 23.85 |
| MW010 | 6.54 | 5.92 | 12.00 | 2.00 | 25.86 | 29.28 | 22.74 | 23.36 |
| MW011 | 20.40 | 19.80 | 23.00 | 13.00 | 40.36 | 42.46 | 22.06 | 22.66 |
| MW012S | 17.55 | 16.92 | 24.00 | 14.00 | 40.05 | 39.82 | 22.27 | 22.90 |
| MW012D | 17.52 | 16.90 | 45.00 | 35.00 | 40.05 | 39.79 | 22.27 | 22.89 |
| MW013 | 5.69 | 5.80 | 15.00 | 5.00 | 8.13 | 7.95 | 2.26 | 2.15 |
| MW014S | 14.33 | 14.05 | 24.00 | 14.00 | 15.64 | 17.32 | 2.99 | 3.27 |
| MW014D | 12.41 | 12.15 | 90.00 | 80.00 | 15.60 | 15.39 | 2.98 | 3.24 |
| MW017 | 12.42 | 12.12 | 19.00 | 9.00 | 16.19 | 16.19 | 3.77 | 4.07 |

Note: Elevations are relative to the North American Vertical Datum (NAVD) 1988.

**Table 2**

**Groundwater Monitoring Well Sample Results**
**Per- and Polyfluoroalkyl Subtances (PFAS)**
**Groundwater Monitoring Report**
**Suffolk County Fire Training Facility**

| Client Sample ID: | NYSDEC TOGS Standards and Guidance Values - GA (1) | NYDEC Part 375 PFAS Remedial Program Water Apr 2023 (2) | MW002 | | MW003 | | MW004 | | MW005S | | MW005D | | MW006S | | MW006D | | MW007 | | MW008 | | DUP001 | | MW009S | | MW009D | | MW010 | | MW011 | | MW012S | | MW012D | | MW013 | | MW014S | | MW014D | | MW017 | | Field Blank | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Laboratory ID: | | | 23K0473-06 | | 23K0669-01 | | 23K0473-01 | | 23K0422-04 | | 23K0422-05 | | 23K0422-02 | | 23K0422-03 | | 23K0422-01 | | 23K0422-06 | | 23K0422-08 | | 23K0473-03 | | 23K0473-02 | | 23K0473-07 | | 23K0422-08 | | 23K0473-05 | | 23K0473-04 | | 23K0699-05 | | 23K0699-04 | | 23K0669-03 | | 23K0669-04 | | 23K0422-09 | |
| Sampling Date: | | | 11/7/2023 | | 11/8/2023 | | 11/7/2023 | | 11/6/2023 | | 11/6/2023 | | 11/6/2023 | | 11/6/2023 | | 11/6/2023 | | 11/6/2023 | | 11/6/2023 | | 11/7/2023 | | 11/7/2023 | | 11/7/2023 | | 11/6/2023 | | 11/7/2023 | | 11/7/2023 | | 11/8/2023 | | 11/8/2023 | | 11/8/2023 | | 11/8/2023 | | 11/6/2023 | |
| **PFAS, EPA 1633 Target List (ng/L)** | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 11Cl-PF3OUdS | NS | NS | 1.38 | U | 1.34 | U | 1.38 | U | 13.8 | U | 1.38 | UJ | 1.38 | U | 1.38 | U | 1.38 | U | 1.38 | U | 1.38 | U | 1.38 | U | 1.33 | U | 1.38 | U | 1.38 | U | 1.38 | U | 1.30 | U | 1.30 | U | 1.35 | U | 1.24 | U | 1.38 | U |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | NS | NS | 2.05 | U | 2.00 | U | 183 | | 20.5 | J | 2.05 | U | 84.5 | | 2.05 | U | 2.05 | U | 183 | | 218 | | 25.4 | | 1.97 | U | 581 | | 8.81 | | 2.05 | U | 2.05 | U | 1.93 | U | 1.93 | U | 2.01 | U | 1.84 | U | 6.31 | J |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | NS | NS | 1.79 | U | 1.74 | U | 14.9 | | 17.9 | U | 1.79 | U | 1.79 | U | 1.79 | U | 1.79 | U | 1.79 | U | 1.79 | U | 2.70 | J | 1.72 | U | 3.88 | J | 1.79 | U | 1.79 | U | 1.79 | U | 1.69 | U | 1.69 | U | 1.76 | U | 1.61 | U | 1.79 | U |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | NS | NS | 1.06 | U | 1.03 | U | 974 | | 362 | | 1.06 | U | 3,300 | | 1.72 | J | 1.06 | U | 384 | | 408 | | 773 | | 1.09 | J | 809 | | 10.5 | | 2.73 | J | 1.06 | U | 0.999 | U | 1.00 | U | 1.04 | U | 0.953 | U | 1.06 | U |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | NS | NS | 9.47 | U | 9.22 | U | 9.47 | U | 94.7 | U | 9.47 | U | 9.47 | U | 9.47 | U | 9.47 | U | 9.47 | U | 9.47 | U | 9.47 | U | 9.10 | U | 9.47 | U | 9.47 | U | 9.47 | U | 9.47 | U | 8.93 | U | 8.93 | U | 9.29 | U | 8.51 | U | 9.47 | U |
| 3-Perfluoropentyl propanoic acid (FPePA) | NS | NS | 7.33 | U | 7.14 | U | 7.33 | U | 73.3 | U | 7.33 | UJ | 7.40 | J | 7.33 | U | 7.33 | U | 7.33 | U | 7.33 | U | 10.5 | J | 7.04 | U | 43.4 | | 7.33 | U | 7.33 | U | 7.33 | U | 6.91 | U | 6.92 | U | 7.19 | U | 6.59 | U | 7.33 | U |
| 3-Perfluoropropyl propanoic acid (FPrPA) | NS | NS | 2.03 | U | 1.98 | U | 5.92 | | 20.3 | U | 2.03 | UJ | 2.03 | U | 2.03 | U | 2.03 | U | 2.03 | U | 2.03 | U | 2.03 | UJ | 1.95 | U | 2.03 | U | 2.03 | U | 2.03 | U | 2.03 | U | 1.91 | U | 1.92 | U | 1.99 | U | 1.83 | U | 2.03 | U |
| 6CL-PF3ONS | NS | NS | 0.700 | U | 0.682 | U | 0.700 | U | 7.00 | U | 0.700 | UJ | 0.700 | U | 0.700 | U | 0.700 | U | 0.700 | U | 0.700 | U | 0.700 | U | 0.673 | U | 0.700 | U | 0.700 | U | 0.700 | U | 0.700 | U | 0.660 | UJ | 0.660 | U | 0.687 | U | 0.629 | U | 0.700 | U |
| ADONA | NS | NS | 0.53 | U | 0.516 | U | 0.530 | U | 5.30 | U | 0.530 | UJ | 0.53 | U | 0.53 | U | 0.530 | U | 0.53 | U | 0.530 | U | 0.53 | U | 0.509 | U | 0.530 | U | 0.530 | U | 0.530 | U | 0.530 | U | 0.500 | U | 0.500 | U | 0.52 | U | 0.476 | U | 0.530 | U |
| HFPO-DA (Gen-X) | NS | NS | 3.23 | U | 3.15 | U | 3.23 | U | 32.3 | U | 3.23 | U | 3.23 | U | 3.23 | U | 3.23 | U | 3.23 | U | 3.23 | U | 3.23 | UJ | 3.10 | U | 3.23 | U | 3.23 | U | 3.23 | U | 3.23 | U | 3.04 | U | 3.05 | U | 3.17 | U | 2.90 | U | 3.23 | U |
| N-EtFOSA | NS | NS | 1.80 | U | 1.75 | U | 1.80 | U | 18.0 | U | 1.80 | U | 1.80 | U | 1.80 | U | 1.80 | U | 1.80 | U | 1.80 | U | 1.80 | UJ | 1.73 | U | 1.80 | U | 1.80 | U | 1.80 | U | 1.80 | U | 1.70 | U | 1.70 | U | 1.77 | U | 1.62 | U | 1.80 | U |
| N-EtFOSAA | NS | NS | 1.03 | U | 1.01 | J | 1.03 | U | 10.3 | U | 1.03 | U | 1.03 | U | 1.03 | U | 1.03 | U | 1.03 | U | 1.03 | U | 1.03 | U | 0.990 | U | 2.77 | | 1.34 | J | 1.03 | U | 1.03 | U | 0.971 | U | 0.972 | U | 1.01 | U | 0.926 | U | 1.03 | U |
| N-EtFOSE | NS | NS | 3.99 | U | 3.89 | U | 3.99 | U | 39.9 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.83 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.76 | U | 3.76 | U | 3.91 | U | 3.59 | U | 37.6 | |
| N-MeFOSA | NS | NS | 1.58 | U | 1.54 | U | 1.58 | U | 15.8 | U | 1.58 | UJ | 1.58 | U | 1.58 | U | 1.58 | U | 1.58 | U | 1.58 | U | 1.58 | U | 1.52 | U | 1.58 | U | 1.58 | U | 1.58 | U | 1.58 | U | 1.49 | U | 1.49 | U | 1.55 | U | 1.42 | U | 1.58 | U |
| N-MeFOSAA | NS | NS | 0.790 | U | 5.12 | | 0.790 | U | 7.90 | U | 0.790 | U | 0.79 | U | 0.790 | U | 0.79 | U | 0.790 | U | 0.79 | U | 0.79 | U | 0.759 | U | 0.790 | U | 0.790 | U | 0.790 | U | 0.790 | U | 0.745 | U | 0.745 | U | 0.775 | U | 0.710 | U | 0.790 | U |
| N-MeFOSE | NS | NS | 3.99 | U | 3.89 | U | 3.99 | U | 39.9 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.83 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.99 | U | 3.76 | U | 3.76 | U | 3.91 | U | 3.59 | U | 13.3 | J |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | NS | NS | 0.500 | U | 0.487 | U | 0.500 | U | 5.00 | U | 0.500 | UJ | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | UJ | 0.480 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.500 | U | 0.471 | UJ | 0.472 | U | 0.491 | U | 0.450 | U | 0.500 | U |
| Perfluoro-1-decanesulfonic acid (PFDS) | NS | NS | 1.32 | U | 1.29 | U | 1.32 | U | 13.2 | U | 1.32 | U | 1.32 | U | 1.32 | U | 1.32 | U | 1.32 | U | 1.32 | U | 1.32 | U | 1.27 | U | 2.36 | | 1.32 | U | 1.32 | U | 1.32 | U | 1.24 | U | 1.25 | U | 1.30 | U | 1.19 | U | 1.32 | U |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | NS | NS | 0.91 | U | 0.89 | U | 93.5 | | 208 | | 0.910 | U | 96.7 | | 0.910 | U | 0.910 | U | 159 | | 177 | | 225 | | 0.874 | U | 2.78 | | 4.30 | | 7.37 | | 2.27 | | 0.858 | U | 0.950 | J | 0.893 | U | 0.818 | U | 0.910 | U |
| Perfluoro-1-nonanesulfonic acid (PFNS) | NS | NS | 0.860 | U | 0.838 | U | 12.6 | | 8.60 | U | 0.860 | UJ | 11.4 | | 0.860 | U | 0.860 | U | 2.76 | | 26.6 | | 8.03 | | 0.826 | U | 0.860 | U | 2.02 | | 1.02 | J | 0.860 | U | 0.811 | U | 0.811 | U | 0.844 | U | 0.773 | U | 0.860 | U |
| Perfluoro-1-octanesulfonamide (FOSA) | NS | NS | 0.880 | U | 0.857 | U | 14.6 | | 8.80 | U | 0.880 | U | 4.24 | | 0.880 | U | 0.880 | U | 5.02 | | 7.08 | | 9.02 | | 0.846 | U | 92.5 | | 18.4 | | 28.8 | | 0.880 | U | 0.829 | U | 0.830 | U | 0.863 | U | 0.791 | U | 0.880 | U |
| Perfluoro-1-pentanesulfonate (PFPeS) | NS | NS | 0.760 | U | 0.767 | J | 123 | | 232 | | 2.34 | | 96.3 | | 0.760 | U | 0.760 | U | 133 | | 153 | | 376 | | 0.730 | U | 13.4 | | 9.70 | | 18.3 | | 6.28 | | 0.716 | U | 2.25 | | 0.746 | U | 0.683 | U | 0.760 | U |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | NS | NS | 2.14 | U | 2.08 | U | 2.14 | U | 21.4 | U | 2.14 | U | 2.14 | U | 2.14 | U | 2.14 | U | 2.14 | U | 2.14 | U | 2.14 | UJ | 2.06 | U | 2.14 | U | 2.14 | U | 2.14 | U | 2.14 | U | 2.02 | UJ | 2.02 | U | 2.10 | U | 1.92 | U | 2.14 | U |
| Perfluoro-4-oxapentanoic acid (PFMPA) | NS | NS | 0.250 | U | 0.243 | U | 0.250 | U | 2.50 | U | 0.250 | R | 0.250 | U | 0.250 | U | 0.250 | U | 0.250 | U | 0.250 | U | 0.250 | R | 0.240 | U | 0.250 | U | 0.250 | U | 0.250 | U | 0.250 | U | 0.236 | UJ | 0.236 | U | 0.245 | U | 0.225 | U | 0.250 | U |
| Perfluoro-5-oxahexanoic acid (PFMBA) | NS | NS | 0.370 | U | 0.360 | U | 0.370 | U | 3.70 | U | 0.370 | UJ | 0.370 | U | 0.370 | U | 0.370 | U | 0.370 | U | 0.370 | U | 0.385 | J | 0.356 | U | 0.370 | U | 0.370 | U | 0.370 | U | 0.370 | U | 0.349 | UJ | 0.349 | U | 0.363 | U | 0.333 | U | 0.370 | U |
| Perfluorobutanesulfonic acid (PFBS) | NS | NS | 0.470 | U | 8.14 | | 62.0 | | 136 | | 1.83 | | 37.9 | | 0.703 | J | 1.54 | J | 43.4 | | 47.5 | | 203 | J | 0.452 | U | 22.0 | | 11.0 | | 25.9 | | 6.88 | | 0.443 | U | 2.93 | | 0.461 | U | 0.423 | U | 0.470 | U |
| Perfluorodecanoic acid (PFDA) | NS | NS | 0.750 | U | 1.24 | J | 25.5 | | 7.50 | U | 0.750 | U | 16.5 | | 0.750 | U | 1.06 | J | 19.2 | | 20.4 | | 4.77 | | 0.721 | U | 138 | | 3.37 | | 2.24 | | 1.68 | J | 0.707 | U | 0.708 | U | 0.736 | U | 0.674 | U | 0.750 | U |
| Perfluorododecanesulfonic acid (PFDoS) | NS | NS | 0.930 | U | 0.906 | U | 0.930 | U | 9.30 | U | 0.930 | UJ | 0.930 | U | 0.930 | U | 0.930 | U | 0.930 | U | 0.930 | U | 0.930 | UJ | 0.894 | U | 0.930 | U | 0.930 | U | 0.930 | U | 0.930 | U | 0.877 | U | 0.877 | U | 0.912 | U | 0.836 | U | 0.930 | U |
| Perfluorododecanoic acid (PFDoA) | NS | NS | 0.880 | U | 0.857 | U | 0.880 | U | 8.80 | U | 0.880 | U | 0.880 | U | 0.880 | U | 0.880 | U | 0.880 | U | 0.880 | U | 0.880 | U | 0.846 | U | 23.6 | | 0.880 | U | 0.880 | U | 0.880 | U | 0.829 | U | 0.830 | U | 0.863 | U | 0.791 | U | 0.880 | U |
| Perfluoroheptanoic acid (PFHpA) | NS | NS | 0.710 | U | 17.9 | | 442 | | 152 | | 2.55 | | 361 | | 1.67 | J | 2.70 | | 249 | | 284 | | 387 | | 0.682 | U | 673 | | 58.3 | | 36.7 | | 8.84 | | 0.669 | U | 3.95 | | 0.697 | U | 0.638 | U | 0.710 | U |
| Perfluorohexanesulfonic acid (PFHxS) | NS | NS | 2.76 | | 3.63 | | 979 | | 2,050 | | 13.5 | | 1,140 | | 6.45 | | 8.25 | | 1,270 | | 1,240 | | 2,070 | J | 0.744 | J | 89.0 | | 114 | | 179 | | 55.5 | | 1.00 | J | 21.4 | | 2.50 | | 0.891 | J | 0.680 | U |
| Perfluorohexanoic acid (PFHxA) | NS | NS | 0.350 | U | 71.4 | | 1,300 | | 490 | | 4.78 | J | 465 | | 1.91 | J | 2.69 | | 536 | | 562 | | 1,200 | J | 0.388 | J | 2,170 | | 83.0 | | 41.0 | | 15.0 | | 1.04 | J | 6.51 | | 0.546 | J | 1.22 | J | 0.350 | U |
| Perfluoro-n-butanoic acid (PFBA) | NS | NS | 0.330 | U | 31.6 | | 359 | | 110 | | 8.00 | UJ | 159 | | 2.23 | J | 2.33 | J | 150 | | 162 | | 214 | J | 1.76 | J | 336 | | 35.1 | | 19.5 | | 5.83 | J | 1.23 | J | 4.86 | J | 0.324 | U | 0.297 | U | 2.99 | J |
| Perfluorononanoic acid (PFNA) | NS | NS | 0.520 | U | 1.72 | J | 603 | | 338 | | 1.24 | J | 542 | | 1.88 | J | 1.83 | J | NT | | 1,200 | | 99.0 | | 0.500 | U | 106 | | 23.6 | | 23.1 | | 5.64 | | 0.929 | J | 3.22 | | 0.758 | J | 0.468 | U | 0.520 | U |
| Perfluorooctanesulfonic acid (PFOS) | 2.7 | 10 | 0.820 | U | **8.50** | | **1,560** | | **4,500** | | **13.6** | J | **3,490** | | **35.8** | | **10.3** | | **4,990** | | **4,570** | | **2,020** | J | **3.18** | | **72.2** | | **313** | | **346** | | **105** | | **3.63** | | **43.0** | | **5.00** | | **4.82** | | **4.97** | |
| Perfluorooctanoic acid (PFOA) | 6.7 | 10 | 0.420 | U | **15.3** | | **730** | | **340** | | **5.17** | | **533** | | **5.84** | | **4.14** | | **401** | | **425** | | **575** | | **2.86** | | **525** | | **50.4** | | **33.6** | | **11.4** | | **1.10** | J | **5.74** | | **0.539** | J | **2.36** | | 0.420 | U |
| Perfluoropentanoic acid (PFPeA) | NS | NS | 0.230 | U | 114 | | 1,590 | | 398 | | 4.11 | | 556 | | 1.58 | J | 3.07 | J | 440 | | 482 | | 867 | | 0.438 | J | 3,470 | | 123 | | 42.2 | | 19.7 | | 1.42 | J | 11.1 | | 0.926 | J | 0.207 | U | 0.351 | J |
| Perfluorotetradecanoic acid (PFTA) | NS | NS | 0.690 | U | 0.672 | U | 0.690 | U | 6.90 | U | 0.690 | U | 0.690 | U | 0.690 | U | 0.690 | U | 0.690 | U | 0.690 | U | 0.690 | U | 0.663 | U | 1.52 | J | 0.690 | U | 0.690 | U | 0.690 | U | 0.650 | U | 0.651 | U | 0.677 | U | 0.620 | U | 1.18 | J |
| Perfluorotridecanoic acid (PFTrDA) | NS | NS | 0.740 | U | 0.721 | U | 0.740 | U | 7.40 | U | 0.740 | U | 0.740 | U | 0.740 | U | 0.740 | U | 0.740 | U | 0.740 | U | 1.77 | J | 0.711 | U | 5.37 | | 2.01 | | 1.45 | J | 0.740 | U | 0.697 | U | 0.698 | U | 0.726 | U | 0.665 | U | 3.17 | |
| Perfluoroundecanoic acid (PFUnA) | NS | NS | 1.13 | U | 1.10 | U | 28.3 | | 11.3 | U | 1.13 | U | 11.2 | | 1.13 | U | 1.13 | U | 44.5 | | 34.4 | | 7.58 | | 1.09 | U | 133 | | 21.7 | | 1.60 | J | 1.13 | U | 1.07 | U | 4.36 | | 1.11 | U | 1.02 | U | 1.13 | U |
| **Total PFAS** | | | 2.76 | | 166.33 | | 9,100.32 | | 9,336.50 | | 57.12 | | 10,900.94 | | 59.783 | | 37.91 | | 9,009.88 | | 10,016.98 | | 9,079.16 | | 10.46 | | 9,315.78 | | 893.6 | | 810.51 | | 244.02 | | 10.35 | | 110.270 | | 10.27 | | 9.291 | | 69.871 | |

Notes:

(1) - NYSDEC April 2023 Addendum to June 1998 Division of Water Technical and Operational Guidance Series (TOGS) No. 1.1.1

(2) New York State Maximum Contaminant Level (MCL): Sampling, Analysis, and Assessment of Per- and Polufluoroalkyl Substances (PFAS) Under NYSDEC's Part 375 Remedial Programs, Issued April 2023.

NS - No Standard

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U - Indicates the analyte was analyzed for but not detected.

***J - Data Validation Qualifier - A QC analysis failed outside the primary aceptance limits and the data may be biased high or low or the direction of the bias may be indeterminable.***

***U - Data Validation Qualifier - The analyte was analyzed for, but due to blank contamination was falgged as nondetect. The result is usable as nondetect.***

***UJ - Data Validation Qualifier - The data may be biased low.***

***R - Data Validation Qualifier - Data rejected (R) on the basis of an unacceptable QC analysis and should be excluded from further review or consideration***

Highlighted values exceed NYSDEC TOGS Guidance Value

Highlighted values exceed NYS MCL of 10 ng/L

**Table 3**

**Groundwater Monitoring Well Sample Results**
**Per- and Polyfluoroalkyl Subtances (PFAS)**
**Remedial Investigation (RI) and Supplemental RI**
**Suffolk County Fire Training Facility**

| Client Sample ID: | NYSDEC AWQS (1) | NYSDEC GWSL (4) | MW001 | MW002 | MW003 | MW004 | MW005S | MW005D | MW006S | MW006D | MW007 | MW008 | MW009S | MW010 | MW011 | MW012S | MW012-Deep | MW013 | MW014S | MW014D | DUPE005 | MW015S | MW015D | MW016 | MW017 | MW018 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Laboratory ID: | | | 320-39607-1 | 320-39607-2 | 320-39741-1 | 320-37506-2 | 320-39607-3 | 320-37450-1 | 320-39741-3 | 320-39741-2 | 320-39741-4 | 320-37872-5 | 320-37872-6 | 320-39741-5 | 320-39741-8 | 320-39741-6 | 320-39741-7 | 320-58150-1 | 320-58098-1 | 320-58098-2 | 320-58098-6 | 320-58098-4 | 320-58098-5 | 320-58150-2 | 320-58098-3 | 320-59987-2 |
| Sampling Date: | | | 05/21/2018 | 05/21/2018 | 5/23/2018 | 03/23/2018 | 05/21/2018 | 03/20/2018 | 5/23/2018 | 5/23/2018 | 5/23/2018 | 04/03/2018 | 04/03/2018 | 5/23/2018 | 5/23/2018 | 5/23/2018 | 5/23/2018 | 1/27/2020 | 1/23/2020 | 1/23/2020 | 1/23/2020 | 1/23/2020 | 1/23/2020 | 1/27/2020 | 1/23/2020 | 4/2/2020 |
| **PFAS by EPA 537 (modified) (ng/L)** | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 6:2FTS | NS | 100 | 1.96 U | 8.75 J | 6.88 J | 98,700 D | 108 | 66.1 | 4,110 D | 574 D | 1.90 U | 1,550 | 8,340 | 2.85 J | 1,240 D | 78.0 | 6.81 J | 1.91 U | 1.90 U | 21.8 H | 1.86 *UJ* | 1.86 U | 1.78 U | 1.81 U | 8.56 J | 1.86 U | 1.80 U |
| 8:2FTS | NS | 100 | 1.96 U | 1.87 U | 2.00 U | 255 | 5.42 J | 4.98 J | 24.5 | 3.08 J | 1.90 U | 72.1 | 449 | 1.81 U | 902 D | 1.90 U | 2.04 U | 1.91 U | 1.90 U | 1.79 U H | 1.86 *UJ* | 1.86 U | 1.78 U | 1.81 U | 1.82 U | 1.86 U | 1.80 U |
| N-ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA) | NS | 100 | 1.86 U | 1.78 U | 1.90 U | 1.82 U | 1.82 U | 1.83 U | 1.89 U | 1.80 U | 1.81 U | 1.76 U | 1.98 U | 1.72 U | 7.73 J B | 1.81 U | 1.94 U | 1.82 U | 1.80 U | 1.70 U H | 1.76 *UJ* | 1.77 U | 1.69 U | 1.72 U | 1.73 U | 1.76 U | 1.71 U |
| N-methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA) | NS | 100 | 3.03 U | 2.90 U | 3.10 U | 2.97 U | 2.96 U | 2.98 U | 3.08 U | 2.93 U | 2.95 U | 2.87 U | 3.23 U | 2.81 U | 50.0 U | 2.95 U | 3.16 U | 2.96 U | 2.94 U | 2.78 U H | 2.88 *UJ* | 2.89 U | 2.75 U | 2.81 U | 2.82 U | 2.88 U | 2.79 U |
| Perfluorobutanesulfonic acid (PFBS) | NS | 100 | 1.03 J | 0.57 J | 6.24 | 121 | 43.5 | 38.4 | 45.8 | 5.91 | 1.32 J | 70.5 | 266 | 0.18 U | 7.36 | 4.67 | 35.1 | 11.5 | 0.19 U | 3.02 H | 1.22 J | 1.22 J | 5.48 | 0.65 J | 2.23 | 3.56 | 0.61 J |
| Perfluorobutanoic acid (PFBA) | NS | 100 | 3.28 | 0.47 J | 29.2 B | 805 D | 72.7 | 34.9 | 250 B | 34.4 B | 2.94 B | 242 | 243 | 0.47 J | 81.4 | 74.6 B | 302 B CI | 11.6 B | 0.33 *U* | 4.47 H B | 2.48 *J* | 1.80 J B | 8.31 B | 1.41 J B | 2.46 B | 1.93 B | 1.80 *U* |
| Perfluorodecanesulfonic acid (PFDS) | NS | 100 | 0.31 U | 0.30 U | 0.43 J | 0.31 U | 0.31 U | 0.31 U | 0.32 U | 0.30 U | 0.30 U | 0.30 U | 1.04 J | 0.29 U | 5.00 U | 0.30 U | 0.33 U | 0.31 U | 0.30 U | 0.29 U H | 0.30 *UJ* | 0.30 U | 0.28 U | 0.29 U | 0.29 U | 0.30 U | 0.29 U |
| Perfluorodecanoic acid (PFDA) | NS | 100 | 1.36 J | 0.29 U | 1.29 J | 25.4 | 2.37 | 0.97 J | 0.31 U | 0.29 U | 0.29 U | 18.7 | 41.1 | 0.28 U | 59.7 | 0.29 U | 2.72 | 1.38 J | 0.29 U | 0.44 J H | 0.29 *UJ* | 0.29 U | 0.62 J | 0.28 U | 0.28 U | 0.29 U | 0.28 U |
| Perfluorododecanoic acid (PFDoA) | NS | 100 | 0.54 U | 0.51 U | 0.55 U | 0.53 U | 0.53 U | 0.53 U | 0.55 U | 0.52 U | 0.52 U | 0.51 U | 0.57 U | 0.50 U | 22.2 | 0.52 U | 0.56 U | 0.53 U | 0.52 U | 0.49 U H | 0.51 *UJ* | 0.51 U | 0.49 U | 0.50 U | 0.50 U | 0.51 U | 0.5 U |
| Perfluoroheptanesulfonic Acid (PFHpS) | NS | 100 | 0.31 J | 0.18 U | 0.19 U | 263 | 36.1 | 11.3 | 31.1 | 5.40 | 0.18 U | 119 | 749 | 0.17 U | 4.49 | 1.88 J | 25.4 | 2.26 | 0.18 U | 0.70 J H | 0.31 J | 0.31 J | 0.20 J | 0.17 U | 0.17 U | 0.36 J | 0.17 U |
| Perfluoroheptanoic acid (PFHpA) | NS | 100 | 4.38 | 0.75 J | 20.0 | 2,530 D | 113 | 45.4 | 374 | 48.1 | 1.61 J | 532 | 481 | 0.36 J | 110 | 73.3 | 69.1 | 17.3 | 0.56 J | 5.76 H | 2.15 *J* | 1.92 | 8.13 | 1.33 J | 2.06 | 1.58 J | 1.09 J |
| Perfluorohexanesulfonic acid (PFHxS) | NS | 100 | 8.70 B | 7.39 B | 3.86 | 10,100 D B | 662 B | 308 B | 687 D | 86.4 | 8.12 | 2,580 B | 6,960 B | 2.00 B | 67.1 | 69.1 | 416 D | 112 | 0.16 *U* | 22.1 H B | 7.15 *J* | 7.58 B | 5.77 B | 1.88 B | 1.45 J B | 10.5 B | 1.80 *U* |
| Perfluorohexanoic acid (PFHxA) | NS | 100 | 4.94 | 1.38 J | 152 | 4,230 D | 274 | 175 | 1,140 D | 141 | 0.55 U | 980 | 1,410 | 0.53 U | 262 | 90.6 | 112 | 28.9 | 0.55 U | 12.0 H | 3.47 *J* | 3.75 | 18.9 | 3.36 | 4.57 | 1.72 J | 1.59 J |
| Perfluorononanoic acid (PFNA) | NS | 100 | 3.11 | 22.3 | 1.38 J | 10,400 D | 117 | 31.9 | 574 D | 61.9 | 1.23 J | 1,820 | 441 | 0.39 J | 71.8 | 10.5 | 1,370 D | 6.31 | 0.55 J | 7.85 H | 3.26 *J* | 2.95 | 0.56 J | 0.41 J | 0.49 J | 1.71 J | 0.33 J |
| Perfluorooctane Sulfonamide (FOSA) | NS | 100 | 0.34 U | 0.33 U | 0.35 U | 8.14 | 1.48 J | 1.34 J | 1.04 J B | 0.40 J B | 0.33 U | 4.48 | 6.39 | 0.32 U | 98.9 | 1.08 J B | 3.06 B | 0.33 U | 0.33 U | 0.31 U H | 0.56 J | 0.38 J B | 0.31 U | 0.32 U | 0.32 U | 0.32 U | 0.32 U |
| Perfluorooctanesulfonic acid (PFOS) | 70[2] | 10[3] | 25.2 | 2.31 | 5.29 | 4,330 D | 1,540 | 705 | 1,300 D | 140 | 7.76 | 6,740 | 18,800 | 5.00 | 189 | 134 | 698 D | 83.6 | 1.03 J | 23.9 H | 16.7 *J* | 16.9 | 4.47 | 3.05 | 4.97 | 12.9 | 4.67 *J* |
| Perfluorooctanoic acid (PFOA) | 70[2] | 10[3] | 8.34 | 2.53 | 33.7 | 6,450 D | 134 | 51.0 | 378 | 50.2 | 3.91 | 741 | 1,910 | 0.92 J | 140 | 34.8 | 107 | 14.7 | 2.69 | 7.46 H | 2.65 *J* | 2.59 | 9.15 | 1.73 J | 16.8 | 7.39 | 2.92 |
| Perfluoropentanoic acid (PFPeA) | NS | 100 | 4.50 | 1.03 J | 158 | 3,790 D | 234 | 136 | 1,150 D | 152 | 1.24 J | 955 | 1,020 | 0.49 J | 332 | 175 | 134 | 38.5 | 0.69 J | 12.4 H | 4.58 *J* | 4.42 | 29.7 | 3.93 | 3.80 | 1.78 J | 1.42 J |
| Perfluorotetradecanoic acid (PFTeA) | NS | 100 | 0.28 U | 0.27 U | 0.46 J | 0.28 U | 0.31 J | 0.28 U | 0.29 U | 0.27 U | 0.28 U | 0.27 U | 0.30 U | 0.26 U | 1.11 J | 0.28 U | 0.30 U | 0.28 U | 0.27 U | 0.26 U H | 0.27 *UJ* | 0.27 U | 0.26 U | 0.26 U | 0.26 U | 0.27 U | 0.26 U |
| Perfluorotridecanoic Acid (PFTriA) | NS | 100 | 1.27 U | 1.21 U | 1.30 U | 1.24 U | 1.24 U | 1.25 U | 1.29 U | 1.23 U | 1.24 U | 1.21 U | 1.36 U | 1.18 U | 50.8 | 1.24 U | 1.32 U | 1.24 U | 1.23 U | 1.17 U H | 1.21 *UJ* | 1.21 U | 1.15 U | 1.18 U | 1.18 U | 1.21 U | 1.17 U |
| Perfluoroundecanoic acid (PFUnA) | NS | 100 | 1.08 U | 1.03 U | 1.10 U | 14.4 | 4.01 | 1.06 U | 18.5 | 1.04 U | 1.05 U | 56.5 | 35.3 | 1.00 U | 366 | 1.05 U | 3.64 | 1.05 U | 1.04 U | 4.50 H | 2.95 *J* | 1.77 J | 0.98 U | 1.00 U | 1.00 U | 1.02 U | 0.99 U |
| Combined PFOS / PFOA | 70[2] | NS | 33.5 | 4.84 | 39.0 | 10,780 | 1,674 | 756 | 1,678 | 190 | 11.7 | 7,481 | 20,710 | 5.92 | 329 | 169 | 805 | 98.3 | 3.72 | 31.4 | 19.4 | 19.5 | 13.6 | 4.78 | 21.8 | 20.3 | 7.59 |
| Total PFAS | NS | 500 | 77.8 | 58.2 | 429 | 142,029 | 3,355 | 1,619 | 10,092 | 1,311 | 41.4 | 16,488 | 41,160 | 23.5 | 4,069 | 758 | 3,294 | 340 | 19.5 | 135 | 58.4 | 56.6 | 103 | 29.9 | 57.8 | 55.7 | 28.3 |

Notes:

(1) NYSDEC TOGS 1.1.1, Class GA Ambient Water Quality Standards and Guidance Values, Table 1, June 1998

(2) USEPA Health Advisory Level (HAL) of 70 ng/L combined or 70 ng/L individual

(3) NYS Maximum Contaminant Level (MCL) of 10 ng/L, August 2020

(4) NYSDEC Sampling, Analysis, and Assessment of PFAS Groundwater Screening Levels, October 2020.

NS - No Standard

B - Compound was found in the blank and sample.

CI - The peak identified by the data system exhibited chromatographic interference that could not be resolved. There is reason to suspect there may be a high bias.

D - Sample results are obtained from a dilution; the surrogate or matrix spike recoveries reported are calculated from diluted samples.

J - Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

U - Indicates the analyte was analyzed for but not detected.

Highlighted values exceed USEPA HAL of 70 ng/L

Highlighted values exceed NYS MCL of 10 ng/L

Highlighted indicates individual PFAS (not PFOA or PFOS) concentrations at or above 100 ng/L

Highlighted indicates total PFAS (including PFOA and PFOS) concentrations at or above 500 ng/L

# APPENDIX A


P.W. GROSSER CONSULTING, INC • P.W. GROSSER CONSULTING ENGINEER & HYDROGEOLOGIST, PC
631.589.6353 • WWW.PWGROSSER.COM • PWGC.INFO@PWGROSSER.COM
BOHEMIA • MANHATTAN • SARATOGA SPRINGS • MONTICELLO, NY • SYRACUSE • SHELTON, CT

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW002**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):19.91**<br>**Depth to Bottom (ft):27.81**<br>**Height of Water Column (ft): 7.9**<br>**Standing Water Volume (gal): 1.26** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:13:22** | **Start Purge Time:12:55**<br>**End Purge Time:13:21** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.72** | **Sample Method: Low Flow**<br>**Purge Time (min): 26**<br>**Casing Volumes Removed: 1.37** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 350 | 12:57 | 16.10 | 6.52 | 0.0 | 133 | 0.049 | 8.82 |
| 330 | 13:00 | 15.35 | 5.44 | 0.0 | 143 | 0.047 | 8.28 |
| 300 | 13:03 | 14.73 | 5.18 | 0.0 | 171 | 0.046 | 8.29 |
| 280 | 13:06 | 14.63 | 5.02 | 0.0 | 191 | 0.046 | 8.20 |
| 250 | 13:09 | 14.47 | 4.97 | 0.0 | 196 | 0.046 | 8.19 |
| 250 | 13:12 | 14.38 | 4.89 | 0.0 | 208 | 0.047 | 8.22 |
| 250 | 13:15 | 14.28 | 4.87 | 0.0 | 210 | 0.048 | 8.23 |
| 250 | 13:18 | 14.25 | 4.84 | 0.0 | 215 | 0.048 | 8.22 |
| 250 | 13:21 | 14.29 | 4.81 | 0.0 | 215 | 0.048 | 8.20 |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW003**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):22.72**<br>**Depth to Bottom (ft):28.51**<br>**Height of Water Column (ft): 5.79**<br>**Standing Water Volume (gal): 0.93** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.08.23**<br>**Sample Time:10:30** | **Start Purge Time:09:56**<br>**End Purge Time:10:23** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.78** | **Sample Method: Low Flow**<br>**Purge Time (min): 27**<br>**Casing Volumes Removed: 2.43** |
| **Sample Appearance: Clear** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/9/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes: Sulfuric odor** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 9:58 | 9.42 | 6.10 | 123.0 | 9 | 0.379 | 2.02 |
| 250 | 10:03 | 10.33 | 6.57 | 11.2 | -51 | 0.317 | 3.95 |
| 250 | 10:08 | 10.62 | 6.66 | 0.0 | -70 | 0.310 | 2.48 |
| 250 | 10:13 | 10.87 | 6.71 | 0.0 | -84 | 0.303 | 1.27 |
| 250 | 10:18 | 11.06 | 6.73 | 0.0 | -92 | 0.298 | 1.16 |
| 250 | 10:23 | 11.12 | 6.75 | 0.0 | -97 | 0.298 | 1.21 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW004**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):17.85**<br>**Depth to Bottom (ft):24.43**<br>**Height of Water Column (ft): 0.26**<br>**Standing Water Volume (gal):** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 1**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:08:14** | **Start Purge Time:07:56**<br>**End Purge Time: 08:11** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 0.99** | **Sample Method: Low Flow**<br>**Purge Time (min): 15**<br>**Casing Volumes Removed: 3.81** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 300 | 7:59 | 15.89 | 5.00 | 53.4 | 223 | 0.258 | 7.57 |
| 280 | 8:02 | 15.43 | 5.31 | 22.1 | 207 | 0.210 | 6.77 |
| 250 | 8:05 | 15.61 | 5.51 | 5.2 | 205 | 0.183 | 6.63 |
| 250 | 8:08 | 15.60 | 5.51 | 0.0 | 207 | 0.180 | 6.63 |
| 250 | 8:11 | 15.61 | 5.52 | 0.0 | 208 | 0.189 | 6.59 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW005S**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name: Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):16.99**<br>**Depth to Bottom (ft):25.45**<br>**Height of Water Column (ft): 8.46**<br>**Standing Water Volume (gal): 1.35** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:12:25** | **Start Purge Time:12:03**<br>**End Purge Time:12:23** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.32** | **Sample Method: Low Flow**<br>**Purge Time (min): 20**<br>**Casing Volumes Removed: 0.98** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 12:05 | 14.51 | 4.96 | 50.0 | 229 | 0.335 | 5.79 |
| 250 | 12:08 | 14.85 | 5.63 | 0.0 | 198 | 0.475 | 5.65 |
| 250 | 12:11 | 15.01 | 5.85 | 0.0 | 184 | 0.494 | 5.58 |
| 250 | 12:14 | 15.09 | 5.89 | 0.0 | 181 | 0.497 | 5.54 |
| 250 | 12:17 | 15.18 | 5.95 | 0.0 | 175 | 0.484 | 5.50 |
| 250 | 12:20 | 15.25 | 5.94 | 0.0 | 173 | 0.474 | 5.52 |
| 250 | 12:23 | 15.28 | 5.94 | 0.0 | 171 | 0.473 | 5.58 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW005D**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):16.87**<br>**Depth to Bottom (ft):44.05**<br>**Height of Water Column (ft): 27.18**<br>**Standing Water Volume (gal): 4.35** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:11:30** | **Start Purge Time:11:11**<br>**End Purge Time: 11:29** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.19** | **Sample Method: Low Flow**<br>**Purge Time (min): 18**<br>**Casing Volumes Removed: 0.27** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:MS/MSD Taken** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 350 | 11:11 | 13.58 | 4.63 | 158.0 | 233 | 0.177 | 7.86 |
| 300 | 11:14 | 13.47 | 4.82 | 44.2 | 225 | 0.120 | 5.98 |
| 250 | 11:17 | 13.49 | 4.90 | 5.2 | 227 | 0.107 | 5.96 |
| 250 | 11:20 | 13.47 | 4.92 | 0.0 | 228 | 0.102 | 5.88 |
| 250 | 11:23 | 13.51 | 4.95 | 0.0 | 229 | 0.096 | 6.85 |
| 250 | 11:26 | 13.57 | 4.97 | 0.0 | 229 | 0.093 | 6.58 |
| 250 | 11:29 | 13.68 | 4.99 | 0.0 | 231 | 0.090 | 6.43 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW006S**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):18.47**<br>**Depth to Bottom (ft):24.42**<br>**Height of Water Column (ft): 5.95**<br>**Standing Water Volume (gal): 0.95** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:09:40** | **Start Purge Time:09:10**<br>**End Purge Time:09:36** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.72** | **Sample Method: Low Flow**<br>**Purge Time (min): 26**<br>**Casing Volumes Removed: 1.81** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 9:12 | 14.85 | 6.08 | 103.0 | 141 | 0.702 | 6.74 |
| 250 | 9:15 | 15.56 | 6.04 | 70.3 | 148 | 0.717 | 6.54 |
| 250 | 9:18 | 15.72 | 6.03 | 38.4 | 151 | 0.726 | 6.72 |
| 250 | 9:21 | 15.67 | 6.04 | 28.5 | 152 | 0.737 | 6.62 |
| 250 | 9:24 | 15.69 | 6.05 | 14.3 | 154 | 0.737 | 6.74 |
| 250 | 9:27 | 15.70 | 6.05 | 7.9 | 154 | 0.741 | 6.69 |
| 250 | 9:30 | 15.76 | 6.06 | 5.7 | 155 | 0.743 | 6.69 |
| 250 | 9:33 | 15.89 | 6.08 | 2.4 | 155 | 0.744 | 6.57 |
| 250 | 9:36 | 15.82 | 6.09 | 2.2 | 155 | 0.748 | 6.62 |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW006D**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):18.22**<br>**Depth to Bottom (ft):45.34**<br>**Height of Water Column (ft): 27.12**<br>**Standing Water Volume (gal): 4.34** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:10:35** | **Start Purge Time:9:57**<br>**End Purge Time:10:33** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 2.38** | **Sample Method: Low Flow**<br>**Purge Time (min): 36**<br>**Casing Volumes Removed: 0.55** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 10:00 | 14.00 | 6.11 | 100.0 | 67 | 0.216 | 6.08 |
| 250 | 10:03 | 14.06 | 5.76 | 31.8 | 123 | 0.208 | 5.70 |
| 250 | 10:06 | 14.00 | 5.70 | 20.0 | 139 | 0.206 | 5.64 |
| 250 | 10:09 | 14.02 | 5.75 | 13.3 | 139 | 0.206 | 5.75 |
| 250 | 10:12 | 14.02 | 5.75 | 10.6 | 144 | 0.206 | 5.57 |
| 250 | 10:15 | 14.03 | 5.74 | 8.5 | 150 | 0.205 | 5.57 |
| 250 | 10:18 | 14.01 | 5.75 | 3.5 | 153 | 0.206 | 5.58 |
| 250 | 10:21 | 14.01 | 5.74 | 3.0 | 157 | 0.205 | 5.57 |
| 250 | 10:24 | 13.95 | 5.76 | 2.6 | 159 | 0.205 | 5.53 |
| 250 | 10:27 | 14.01 | 5.76 | 0.0 | 160 | 0.205 | 5.54 |
| 250 | 10:30 | 14.03 | 5.77 | 0.0 | 160 | 0.205 | 5.53 |
| 250 | 10:33 | 14.01 | 5.77 | 0.0 | 160 | 0.204 | 5.54 |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW007**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name: Yaphank Firematics** | **Sampled By: CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):17.88**<br>**Depth to Bottom (ft):26.76**<br>**Height of Water Column (ft): 8.88**<br>**Standing Water Volume (gal): 1.42** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:08:32** | **Start Purge Time:07:53**<br>**End Purge Time:08:30** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 2.18** | **Sample Method: Low Flow**<br>**Purge Time (min): 33**<br>**Casing Volumes Removed: 1.54** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 7:53 | 14.10 | 7.12 | 85.0 | 62 | 0.452 | 5.18 |
| 250 | 7:56 | 14.13 | 6.62 | 66.5 | 117 | 0.435 | 5.55 |
| 250 | 7:59 | 14.26 | 6.48 | 52.1 | 132 | 0.434 | 5.25 |
| 250 | 8:02 | 14.26 | 6.42 | 46.9 | 137 | 0.429 | 5.24 |
| 250 | 8:05 | 14.20 | 6.30 | 21.6 | 145 | 0.426 | 5.25 |
| 250 | 8:08 | 14.22 | 6.25 | 14.1 | 145 | 0.420 | 5.23 |
| 250 | 8:11 | 14.26 | 6.21 | 9.5 | 145 | 0.414 | 4.97 |
| 250 | 8:14 | 14.29 | 6.15 | 5.4 | 145 | 0.410 | 5.23 |
| 250 | 8:17 | 14.32 | 6.10 | 2.4 | 146 | 0.401 | 5.10 |
| 250 | 8:20 | 14.35 | 6.05 | 1.0 | 146 | 0.393 | 5.41 |
| 250 | 8:23 | 14.33 | 6.02 | 0 | 146 | 0.387 | 5.42 |
| 250 | 8:26 | 14.27 | 5.99 | 0 | 148 | 0.388 | 5.41 |
| 250 | 8:29 | 14.33 | 5.95 | 0 | 148 | 0.387 | 5.44 |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW008**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):18.51**<br>**Depth to Bottom (ft):24.77**<br>**Height of Water Column (ft): 6.26**<br>**Standing Water Volume (gal): 1.00** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:13:15** | **Start Purge Time:12:59**<br>**End Purge Time:13:14** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 0.99** | **Sample Method: Low Flow**<br>**Purge Time (min): 15**<br>**Casing Volumes Removed: 0.99** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes: Duplicate (DUP-001) Taken** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 380 | 12:59 | 15.86 | 5.88 | 52.1 | 152 | 0.119 | 4.91 |
| 350 | 13:02 | 15.80 | 5.74 | 0.0 | 158 | 0.121 | 4.22 |
| 280 | 13:05 | 15.75 | 5.64 | 0.0 | 161 | 0.120 | 3.99 |
| 250 | 13:08 | 15.89 | 5.63 | 0.0 | 161 | 0.119 | 3.81 |
| 250 | 13:11 | 16.03 | 5.62 | 0.0 | 161 | 0.118 | 3.86 |
| 250 | 13:14 | 15.99 | 5.60 | 0.0 | 161 | 0.118 | 3.85 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW009S**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):18.30**<br>**Depth to Bottom (ft):24.55**<br>**Height of Water Column (ft): 6.25**<br>**Standing Water Volume (gal): 1.00** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:09:30** | **Start Purge Time:09:10**<br>**End Purge Time: 9:26** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.06** | **Sample Method: Low Flow**<br>**Purge Time (min): 16**<br>**Casing Volumes Removed: 1.06** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 9:11 | 15.57 | 5.75 | 4.4 | 202 | 0.204 | 4.19 |
| 250 | 9:14 | 15.69 | 5.63 | 0.0 | 207 | 0.197 | 2.88 |
| 250 | 9:17 | 15.68 | 5.69 | 0.0 | 203 | 0.192 | 2.78 |
| 250 | 9:20 | 15.75 | 5.75 | 0.0 | 199 | 0.187 | 2.87 |
| 250 | 9:23 | 15.74 | 5.76 | 0.0 | 197 | 0.184 | 2.96 |
| 250 | 9:26 | 15.71 | 5.77 | 0.0 | 195 | 0.181 | 3.08 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW009D**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name: Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):18.57**<br>**Depth to Bottom (ft):45.71**<br>**Height of Water Column (ft): 27.14**<br>**Standing Water Volume (gal): 4.34** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:09:00** | **Start Purge Time:08:41**<br>**End Purge Time: 08:59** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.19** | **Sample Method: Low Flow**<br>**Purge Time (min): 18**<br>**Casing Volumes Removed: 0.27** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 370 | 8:41 | 15.01 | 5.59 | 36.8 | 197 | 0.075 | 8.10 |
| 350 | 8:44 | 14.76 | 5.42 | 22.4 | 212 | 0.073 | 7.19 |
| 300 | 8:47 | 14.31 | 5.31 | 14.1 | 222 | 0.063 | 9.78 |
| 280 | 8:50 | 13.98 | 5.28 | 5.6 | 224 | 0.062 | 7.26 |
| 250 | 8:53 | 13.92 | 5.29 | 0.0 | 226 | 0.063 | 6.93 |
| 250 | 8:56 | 13.90 | 5.27 | 0.0 | 228 | 0.063 | 6.92 |
| 250 | 8:59 | 13.90 | 5.29 | 0.0 | 226 | 0.064 | 6.76 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW010**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):6.50**<br>**Depth to Bottom (ft):15.01**<br>**Height of Water Column (ft): 8.51**<br>**Standing Water Volume (gal): 1.36** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 1**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:14:10** | **Start Purge Time:13:48**<br>**End Purge Time:14:10** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.45** | **Sample Method: Low Flow**<br>**Purge Time (min): 22**<br>**Casing Volumes Removed: 1.07** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes: Light brown/red tint at start of purge** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 350 | 13:49 | 17.31 | 5.67 | 636.0 | 142 | 0.110 | 2.48 |
| 300 | 13:52 | 17.61 | 5.73 | 206.0 | 120 | 0.095 | 0.65 |
| 250 | 13:55 | 17.78 | 5.72 | 65.5 | 118 | 0.091 | 0.45 |
| 250 | 13:58 | 17.84 | 5.72 | 1.9 | 116 | 0.088 | 0.33 |
| 250 | 14:01 | 17.88 | 5.75 | 0.0 | 114 | 0.087 | 0.30 |
| 250 | 14:04 | 17.88 | 5.77 | 0.0 | 112 | 0.086 | 0.31 |
| 250 | 14:07 | 17.90 | 5.73 | 0.0 | 112 | 0.086 | 0.30 |
| 250 | 14:10 | 17.90 | 5.77 | 0.0 | 112 | 0.086 | 0.29 |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW011**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name: Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):20.38**<br>**Depth to Bottom (ft):25.01**<br>**Height of Water Column (ft): 4.63**<br>**Standing Water Volume (gal): 0.74** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 1**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.06.23**<br>**Sample Time:14:36** | **Start Purge Time:14:03**<br>**End Purge Time:14:35** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 2.11** | **Sample Method: Low Flow**<br>**Purge Time (min): 32**<br>**Casing Volumes Removed: 2.85** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/7/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 300 | 14:05 | 16.47 | 6.01 | >1000 | 68 | 0.146 | 3.81 |
| 280 | 14:08 | 13.66 | 5.86 | 430.0 | 33 | 0.129 | 2.11 |
| 250 | 14:11 | 15.26 | 5.85 | 277.0 | 29 | 0.127 | 2.44 |
| 250 | 14:14 | 15.01 | 5.85 | 144.0 | 27 | 0.126 | 2.55 |
| 250 | 14:17 | 14.84 | 5.85 | 122.0 | 25 | 0.126 | 2.58 |
| 250 | 14:20 | 14.65 | 5.84 | 71.0 | 25 | 0.127 | 2.62 |
| 250 | 14:23 | 14.54 | 5.83 | 37.0 | 24 | 0.126 | 2.60 |
| 250 | 14:26 | 14.42 | 5.83 | 33.0 | 24 | 0.127 | 2.63 |
| 250 | 14:29 | 14.38 | 5.82 | 11.6 | 24 | 0.127 | 2.62 |
| 250 | 14:32 | 14.29 | 5.82 | 12.0 | 24 | 0.127 | 2.64 |
| 250 | 14:35 | 14.28 | 5.82 | 12.1 | 24 | 0.127 | 2.64 |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW012S**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):17.46**<br>**Depth to Bottom (ft):24.61**<br>**Height of Water Column (ft): 7.15**<br>**Standing Water Volume (gal): 1.14** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:11:26** | **Start Purge Time:10:35**<br>**End Purge Time:11:25** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 3.30** | **Sample Method: Low Flow**<br>**Purge Time (min): 50**<br>**Casing Volumes Removed: 2.89** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes: Light brown/red tint at start of purge** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 350 | 10:36 | 15.91 | 6.00 | 198.0 | 101 | 0.249 | 1.69 |
| 300 | 10:39 | 15.12 | 6.11 | 157.0 | -22 | 0.259 | 0.82 |
| 280 | 10:42 | 15.05 | 6.15 | 102.0 | -41 | 0.262 | 0.59 |
| 250 | 10:45 | 15.18 | 6.17 | 89.1 | -49 | 0.262 | 0.54 |
| 250 | 10:48 | 15.21 | 6.20 | 67.1 | -55 | 0.262 | 0.53 |
| 250 | 10:51 | 15.29 | 6.24 | 66.6 | -60 | 0.263 | 0.57 |
| 250 | 10:54 | 15.29 | 6.25 | 65.3 | -62 | 0.263 | 0.54 |
| 250 | 10:57 | 15.27 | 6.26 | 17.4 | -64 | 0.264 | 0.53 |
| 250 | 11:00 | 15.30 | 6.27 | 11.8 | -65 | 0.264 | 0.54 |
| 250 | 11:03 | 15.33 | 6.30 | 7.5 | -67 | 0.265 | 0.50 |
| 250 | 11:06 | 15.33 | 6.31 | 13.5 | -69 | 0.265 | 0.49 |
| 250 | 11:09 | 15.36 | 6.33 | 19.8 | -70 | 0.265 | 0.49 |
| 250 | 11:12 | 15.46 | 6.35 | 17 | -73 | 0.266 | 0.48 |
| 250 | 11:15 | 15.45 | 6.35 | 0 | -74 | 0.266 | 0.46 |
| 250 | 11:18 | 15.38 | 6.37 | 0 | -74 | 0.267 | 0.42 |
| 250 | 11:21 | 15.39 | 6.37 | 0 | -73 | 0.268 | 0.42 |
| 250 | 11:24 | 15.43 | 6.38 | 0 | -75 | 0.268 | 0.42 |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW012D**<br>**Site Address:676 Maple St. Yaphank**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):17.49**<br>**Depth to Bottom (ft):45.68**<br>**Height of Water Column (ft): 28.19**<br>**Standing Water Volume (gal): 4.51** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.07.23**<br>**Sample Time:10:27** | **Start Purge Time:10:10**<br>**End Purge Time:10:26** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.06** | **Sample Method: Low Flow**<br>**Purge Time (min): 16**<br>**Casing Volumes Removed: 0.24** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/8/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 300 | 10:11 | 15.53 | 5.75 | 0.0 | 185 | 0.104 | 4.75 |
| 300 | 10:14 | 15.02 | 5.57 | 0.0 | 198 | 0.105 | 4.08 |
| 280 | 10:17 | 14.56 | 5.53 | 0.0 | 201 | 0.106 | 4.07 |
| 250 | 10:20 | 14.42 | 5.50 | 0.0 | 203 | 0.107 | 4.55 |
| 250 | 10:23 | 14.39 | 5.45 | 0.0 | 206 | 0.107 | 4.40 |
| 250 | 10:26 | 14.33 | 5.50 | 0.0 | 204 | 0.106 | 4.45 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW013**<br>**Site Address: Wertheim**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):5.88**<br>**Depth to Bottom (ft):15.49**<br>**Height of Water Column (ft): 9.61**<br>**Standing Water Volume (gal): 1.54** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.08.23**<br>**Sample Time:15:05** | **Start Purge Time:14:30**<br>**End Purge Time:15:04** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 20**<br>**Actual Purge Volume (gal): 2.25** | **Sample Method: Low Flow**<br>**Purge Time (min): 34**<br>**Casing Volumes Removed: 1.46** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/9/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 14:49 | 13.43 | 5.73 | 103.0 | 101 | 0.098 | 2.19 |
| 250 | 14:52 | 13.64 | 5.18 | 0.7 | 151 | 0.082 | 0.70 |
| 250 | 14:55 | 13.54 | 5.06 | 0.0 | 160 | 0.079 | 0.64 |
| 250 | 14:58 | 13.37 | 4.96 | 0.0 | 167 | 0.077 | 0.58 |
| 250 | 15:01 | 13.36 | 4.89 | 0.0 | 171 | 0.076 | 0.54 |
| 250 | 15:04 | 13.32 | 4.87 | 0.0 | 173 | 0.075 | 0.51 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW014S**<br>**Site Address:15 Private Rd**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):14.25**<br>**Depth to Bottom (ft):25.77**<br>**Height of Water Column (ft): 11.52**<br>**Standing Water Volume (gal): 1.84** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.08.23**<br>**Sample Time:12:55** | **Start Purge Time:12:30**<br>**End Purge Time:12:54** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 1.59** | **Sample Method: Low Flow**<br>**Purge Time (min): 24**<br>**Casing Volumes Removed: 0.86** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/9/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 300 | 12:32 | 14.36 | 5.93 | 210.0 | 54 | 0.219 | 2.17 |
| 280 | 12:35 | 14.07 | 5.55 | 23.3 | 95 | 0.241 | 0.91 |
| 250 | 12:38 | 14.04 | 5.53 | 15.6 | 101 | 0.242 | 0.75 |
| 250 | 12:41 | 14.11 | 5.53 | 3.4 | 103 | 0.241 | 0.76 |
| 250 | 12:44 | 14.12 | 5.54 | 0.0 | 105 | 0.241 | 0.70 |
| 250 | 12:47 | 14.09 | 5.54 | 0.0 | 107 | 0.241 | 0.69 |
| 250 | 12:50 | 14.09 | 5.55 | 0.0 | 107 | 0.240 | 0.68 |
| 250 | 12:53 | 14.20 | 5.54 | 0.0 | 110 | 0.240 | 0.69 |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW014D**<br>**Site Address:15 Private Rd**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):12.43**<br>**Depth to Bottom (ft):92.02**<br>**Height of Water Column (ft): 79.59**<br>**Standing Water Volume (gal): 12.73** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.08.23**<br>**Sample Time:12:20** | **Start Purge Time:11:35**<br>**End Purge Time:12:20** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 2.97** | **Sample Method: Low Flow**<br>**Purge Time (min): 45**<br>**Casing Volumes Removed: 0.23** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/9/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 11:40 | 12.10 | 6.59 | 28.9 | -17 | 0.118 | 2.65 |
| 250 | 11:43 | 12.16 | 6.28 | 18.4 | 17 | 0.115 | 1.56 |
| 250 | 11:46 | 12.30 | 6.19 | 13.1 | 32 | 0.113 | 1.38 |
| 250 | 11:49 | 12.44 | 6.14 | 13.8 | 40 | 0.112 | 1.20 |
| 250 | 11:52 | 12.54 | 6.14 | 8.3 | 44 | 0.111 | 1.06 |
| 250 | 11:55 | 12.55 | 6.13 | 6.5 | 48 | 0.111 | 1.03 |
| 250 | 11:58 | 12.66 | 6.11 | 7.4 | 52 | 0.110 | 0.97 |
| 250 | 12:01 | 12.77 | 6.09 | 3.7 | 55 | 0.110 | 0.93 |
| 250 | 12:04 | 12.81 | 6.11 | 0.0 | 56 | 0.110 | 0.90 |
| 250 | 12:07 | 12.83 | 6.12 | 0.0 | 57 | 0.109 | 0.91 |
| 250 | 12:10 | 12.87 | 6.12 | 1.0 | 58 | 0.105 | 1.03 |
| 250 | 12:13 | 12.95 | 6.10 | 0.0 | 60 | 0.099 | 0.89 |
| 250 | 12:16 | 12.98 | 6.12 | 0.0 | 59 | 0.092 | 0.91 |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# P.W. GROSSER CONSULTING, Inc

## Groundwater Monitoring Well - Low Flow Sampling Log

| | |
|---|---|
| **Well Designation:MW017**<br>**Site Address:15 Private Rd**<br>**Project Name:Yaphank Firematics** | **Sampled By:CN/KM**<br>**Project Manager:ZY**<br>**Project Number:SHD2305** |
| | |
| **Reference Elevation (ft):**<br>**Depth to Product (ft):**<br>**Depth to Water (ft):12.73**<br>**Depth to Bottom (ft):19.69**<br>**Height of Water Column (ft): 6.96**<br>**Standing Water Volume (gal): 1.11** | **Well Use:**<br>**Product Elevation (ft):**<br>**Groundwater Elevation (ft):**<br>**Bottom Elevation (ft):**<br>**Well Diameter (in): 2**<br>**Calculated Purge Volume (gal):** |
| **Sample Date:11.08.23**<br>**Sample Time:13:32** | **Start Purge Time:13:17**<br>**End Purge Time:13:30** |
| **Purge Method: Peristaltic Pump**<br>**Purge Rate (mL/min): 250**<br>**Actual Purge Volume (gal): 0.86** | **Sample Method: Low Flow**<br>**Purge Time (min): 13**<br>**Casing Volumes Removed: 0.77** |
| **Sample Appearance:** | **Odors Observed:** |
| **Analytical Laboratory: York**<br>**Date Shipped: 11/9/2023**<br>**Analyses Requested: PFAS by EPA 1633** | **Notes:** |

**Field Indicator Parameters**

| Flow Rate (mL/min) | Time | Temp. (˚C) | pH | Turbidity NTU | ORP mV | Cond. (mS/cm) | DO mg/L |
|---|---|---|---|---|---|---|---|
| 250 | 13:18 | 14.43 | 5.48 | 54.0 | 130 | 0.398 | 1.38 |
| 250 | 13:21 | 14.36 | 5.51 | 29.0 | 127 | 0.400 | 0.70 |
| 250 | 13:24 | 14.15 | 5.54 | 27.7 | 126 | 0.399 | 0.57 |
| 250 | 13:27 | 14.09 | 5.57 | 0.0 | 123 | 0.395 | 0.48 |
| 250 | 13:30 | 14.09 | 5.60 | 0.0 | 121 | 0.392 | 0.48 |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

- Take readings every 5 minutes until well stabilized
- Flow Rate - between 200-500 mL/min
- NM = Not Measured
- Stabilized Parameters

**Temperature**: ±3% **pH**: ±0.1
**Turbidity**: ±10% **ORP**: ±10 mV
**Conductivity**: ±3% **DO**: ±10%

# APPENDIX B

# Technical Report

prepared for:

**P.W. Grosser Consulting**
630 Johnson Avenue, Suite 7
Bohemia NY, 11716
**Attention: Zeb Youngman**

Report Date: 11/17/2023
**Client Project ID: SHD2305**
York Project (SDG) No.: 23K0422

CT Cert. No. PH-0723 New Jersey Cert. No. CT005 and NY037 New York Cert. Nos. 10854 and 12058 PA Cert. No. 68-04440

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.YORKLAB.com (203) 325-1371 FAX (203) 357-0166 ClientServices@yorklab.com

Report Date: 11/17/2023
Client Project ID: SHD2305
York Project (SDG) No.: 23K0422

**P.W. Grosser Consulting**
630 Johnson Avenue, Suite 7
Bohemia NY, 11716
Attention: Zeb Youngman

## Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on November 07, 2023 and listed below. The project was identified as your project: **SHD2305**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

| York Sample ID | Client Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 23K0422-01 | MW007 | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-02 | MW006S | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-03 | MW006D | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-04 | MW005S | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-05 | MW005D | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-06 | MW008 | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-07 | MW011 | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-08 | DUP001 | Ground Water | 11/06/2023 | 11/07/2023 |
| 23K0422-09 | Field Blank | Ground Water | 11/06/2023 | 11/07/2023 |

## General Notes for York Project (SDG) No.: 23K0422

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

**Approved By:**

**Date:** 11/17/2023

Cassie L. Mosher
Laboratory Manager

## Sample Information

**Client Sample ID:** MW007 **York Sample ID:** 23K0422-01

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 8:32 am | 11/07/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **1.54** | J | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **2.69** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **2.70** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **8.25** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **4.14** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **10.3** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **1.83** | J | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **1.06** | J | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **3.07** | J | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **2.33** | J | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |

## Sample Information

**Client Sample ID:** MW007 **York Sample ID:** 23K0422-01

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 8:32 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:35 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *159 %* | *25-150* |
| *Surrogate: M5PFHxA* | *115 %* | *25-150* |
| *Surrogate: M4PFHpA* | *124 %* | *25-150* |
| *Surrogate: M3PFHxS* | *149 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW007** **York Sample ID:** **23K0422-01**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 8:32 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *100 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *116 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *99.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *83.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *41.7 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *10.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *113 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *126 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *81.7 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *66.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *61.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *36.8 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *33.0 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *118 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *63.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *36.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *24.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *83.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *32.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *50.4 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **MW006S** **York Sample ID:** **23K0422-02**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 9:40 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **37.9** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **465** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **361** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **1140** | | ng/L | 6.80 | 18.3 | 10 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 17:04 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **533** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **3490** | | ng/L | 8.20 | 18.6 | 10 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 17:04 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **542** | | ng/L | 5.20 | 20.0 | 10 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 17:04 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **16.5** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **11.2** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **556** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **4.24** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **96.7** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **3300** | | ng/L | 10.6 | 76.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:14 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **84.5** | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **159** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058 | | | |

## Sample Information

**Client Sample ID:** **MW006S** **York Sample ID:** **23K0422-02**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 9:40 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **96.3** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **11.4** | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 914637-49-3 | *** 3-Perfluoropentyl propanoic acid (FPePA)** | **7.40** | J | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 13:51 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *122 %* | *25-150* |
| *Surrogate: M3PFBS* | *119 %* | *25-150* |
| *Surrogate: M3PFBS* | *163 %* | *25-150* |
| *Surrogate: M5PFHxA* | *97.9 %* | *25-150* |
| *Surrogate: M5PFHxA* | *102 %* | *25-150* |
| *Surrogate: M5PFHxA* | *110 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW006S** **York Sample ID:** **23K0422-02**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 9:40 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M4PFHpA* | *105 %* | | | *25-150* | | | | | | |
| | *Surrogate: M4PFHpA* | *125 %* | | | *25-150* | | | | | | |
| | *Surrogate: M4PFHpA* | *106 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3PFHxS* | *121 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3PFHxS* | *114 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3PFHxS* | *120 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *98.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *97.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *103 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *97.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *109 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *108 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *91.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *95.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *109 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *77.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *99.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *72.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *63.1 %* | | | *10-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *54.9 %* | | | *10-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *52.0 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *93.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *1.65 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *91.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *71.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *94.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *133 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *110 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *92.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *124 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *84.7 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *92.0 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *122 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *76.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *65.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *118 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *64.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *64.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *113 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *161 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *70.9 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *199 %* | | | *25-200* | | | | | | |

## Sample Information

**Client Sample ID:** MW006S

**York Sample ID:** 23K0422-02

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 9:40 am | 11/07/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M2-8:2 FTS* | *41.3 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *52.4 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *41.7 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *128 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *88.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *101 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *48.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *77.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *166 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *39.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *73.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *38.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *110 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *76.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *54.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *96.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *116 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *79.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *80.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *36.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *93.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *82.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *54.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *114 %* | | | *25-150* | | | | | | |

# Sample Information

**Client Sample ID:** **MW006D** **York Sample ID:** **23K0422-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 10:35 am | 11/07/2023 |

## PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **0.703** | J | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **1.91** | J | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **1.67** | J | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **6.45** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **5.84** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **35.8** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **1.88** | J | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **1.58** | J | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **1.72** | J | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **2.23** | J | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058 | | | |

## Sample Information

**Client Sample ID:** **MW006D** **York Sample ID:** **23K0422-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 10:35 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:07 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *137 %* | *25-150* |
| *Surrogate: M5PFHxA* | *114 %* | *25-150* |
| *Surrogate: M4PFHpA* | *116 %* | *25-150* |
| *Surrogate: M3PFHxS* | *122 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *100 %* | *25-150* |
| *Surrogate: M6PFDA* | *103 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW006D** **York Sample ID:** **23K0422-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 10:35 am | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *87.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *63.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *38.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *96.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *101 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *125 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *70.0 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *65.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *55.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *32.5 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *30.0 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *111 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *55.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *21.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *49.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *70.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *37.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *48.1 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **MW005S** **York Sample ID:** **23K0422-04**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 12:25 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **136** | | ng/L | 4.70 | 17.7 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **490** | | ng/L | 3.50 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **152** | | ng/L | 7.10 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **2050** | | ng/L | 6.80 | 18.3 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **340** | | ng/L | 4.20 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **4500** | | ng/L | 8.20 | 18.6 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **338** | | ng/L | 5.20 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 7.50 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 11.3 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 8.80 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 7.40 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 6.90 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 7.90 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 10.3 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **398** | | ng/L | 2.30 | 40.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 8.80 | 20.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **208** | | ng/L | 9.10 | 19.1 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 13.2 | 19.3 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **362** | | ng/L | 10.6 | 76.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **20.5** | J | ng/L | 20.5 | 76.8 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **110** | | ng/L | 3.30 | 80.0 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 5.00 | 35.6 | 1 | EPA 1633 Draft 3 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058 | | | |

## Sample Information

**Client Sample ID:** **MW005S** **York Sample ID:** **23K0422-04**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 12:25 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 21.4 | 40.0 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 2.50 | 40.0 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 3.70 | 40.0 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **232** | | ng/L | 7.60 | 18.8 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 17.9 | 75.0 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 32.3 | 80.0 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 13.8 | 75.6 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 7.00 | 74.8 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 5.30 | 75.6 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 9.30 | 19.4 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 8.60 | 19.2 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 20.3 | 50.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 73.3 | 250 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 94.7 | 250 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 39.9 | 200 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 15.8 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 39.9 | 200 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 18.0 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/16/2023 21:30 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *101 %* | *25-150* |
| *Surrogate: M5PFHxA* | *101 %* | *25-150* |
| *Surrogate: M4PFHpA* | *118 %* | *25-150* |
| *Surrogate: M3PFHxS* | *113 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *82.3 %* | *25-150* |
| *Surrogate: M6PFDA* | *103 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW005S** **York Sample ID:** **23K0422-04**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 12:25 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *107 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *81.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *43.6 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *5.24 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *89.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *99.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *84.3 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *56.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *59.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *59.7 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *46.3 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *102 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *71.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *62.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *56.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *115 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *29.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *45.0 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **MW005D** **York Sample ID:** **23K0422-05**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 12:25 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **1.83** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **4.78** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **2.55** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **13.5** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **5.17** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **13.6** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **1.24** | J | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **4.11** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **2.75** | J | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |

## Sample Information

**Client Sample ID:** **MW005D** **York Sample ID:** **23K0422-05**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 12:25 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **2.34** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 14:39 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *138 %* | *25-150* |
| *Surrogate: M5PFHxA* | *105 %* | *25-150* |
| *Surrogate: M4PFHpA* | *113 %* | *25-150* |
| *Surrogate: M3PFHxS* | *119 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *98.2 %* | *25-150* |
| *Surrogate: M6PFDA* | *110 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW005D** **York Sample ID:** **23K0422-05**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 12:25 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *93.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *75.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *53.4 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *93.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *90.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *121 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *69.1 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *59.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *56.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *32.7 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *27.1 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *96.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *50.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *22.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *36.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *61.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *51.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *64.2 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **MW008** **York Sample ID:** **23K0422-06**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 1:15 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **43.4** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **536** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **249** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **1270** | | ng/L | 6.80 | 18.3 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 17:37 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **401** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **4990** | | ng/L | 8.20 | 18.6 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 17:37 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **19.2** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **44.5** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **440** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **5.02** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **159** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **384** | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **183** | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **150** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |

## Sample Information

**Client Sample ID:** **MW008** **York Sample ID:** **23K0422-06**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 1:15 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **133** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **2.76** | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:00 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *116 %* | *25-150* |
| *Surrogate: M3PFBS* | *213 %* | *25-150* |
| *Surrogate: M5PFHxA* | *101 %* | *25-150* |
| *Surrogate: M5PFHxA* | *114 %* | *25-150* |
| *Surrogate: M4PFHpA* | *116 %* | *25-150* |
| *Surrogate: M4PFHpA* | *126 %* | *25-150* |
| *Surrogate: M3PFHxS* | *124 %* | *25-150* |
| *Surrogate: M3PFHxS* | *131 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW008** **York Sample ID:** **23K0422-06**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 1:15 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *102 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *96.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *109 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *111 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *78.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *96.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *71.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *67.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *44.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *45.7 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *99.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *100 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *92.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *114 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *119 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *141 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *84.3 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *202 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *73.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *156 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *70.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *166 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *54.1 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *64.6 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *52.1 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *51.7 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *104 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *109 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *55.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *149 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *55.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *49.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *217 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *83.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *118 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *91.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *64.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *124 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *92.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *160 %* | | | *25-150* | | | | | | |

# Sample Information

**Client Sample ID:** MW011 **York Sample ID:** 23K0422-07

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 2:36 pm | 11/07/2023 |

## PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **11.0** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **83.0** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **58.3** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **114** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **50.4** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **313** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **23.6** | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **3.37** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **21.7** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 72629-94-8 | **Perfluorotridecanoic acid (PFTrDA)** | **2.01** | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 2991-50-6 | **N-EtFOSAA** | **1.34** | J | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **123** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **18.4** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **4.30** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **10.5** | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **8.81** | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **35.1** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |

## Sample Information

**Client Sample ID:** MW011 **York Sample ID:** 23K0422-07

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 2:36 pm | 11/07/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **9.70** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **2.02** | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:16 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *82.3 %* | *25-150* |
| *Surrogate: M5PFHxA* | *71.6 %* | *25-150* |
| *Surrogate: M4PFHpA* | *72.3 %* | *25-150* |
| *Surrogate: M3PFHxS* | *82.9 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *63.6 %* | *25-150* |
| *Surrogate: M6PFDA* | *60.3 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW011** **York Sample ID:** **23K0422-07**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 2:36 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *53.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *40.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *33.9 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *66.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *64.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *80.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *44.3 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *37.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *39.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *24.0 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *14.3 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *64.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *63.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *22.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *45.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *51.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *53.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *63.3 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **DUP001** **York Sample ID:** **23K0422-08**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 3:00 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **47.5** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **562** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **284** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **1240** | | ng/L | 6.80 | 18.3 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 17:53 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **425** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **4570** | | ng/L | 8.20 | 18.6 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 17:53 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **1200** | | ng/L | 5.20 | 20.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 17:53 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **20.4** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **34.4** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **482** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **7.08** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **177** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **408** | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **218** | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **162** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |

## Sample Information

**Client Sample ID:** **DUP001** **York Sample ID:** **23K0422-08**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 3:00 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **153** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **26.6** | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:32 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *128 %* | *25-150* |
| *Surrogate: M3PFBS* | *175 %* | *25-150* |
| *Surrogate: M5PFHxA* | *108 %* | *25-150* |
| *Surrogate: M5PFHxA* | *111 %* | *25-150* |
| *Surrogate: M4PFHpA* | *128 %* | *25-150* |
| *Surrogate: M4PFHpA* | *112 %* | *25-150* |

## Sample Information

**Client Sample ID:** DUP001 **York Sample ID:** 23K0422-08

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 3:00 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M3PFHxS* | *137 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3PFHxS* | *106 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *97.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *98.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *109 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *113 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *76.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *82.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *72.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *76.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *47.1 %* | | | *10-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *45.5 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *99.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *104 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *122 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *118 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *127 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *119 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *83.1 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *159 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *93.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *160 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *72.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *139 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *71.3 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *59.8 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *51.4 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *42.8 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *93.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *111 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *45.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *142 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *32.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *76.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *184 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *131 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *115 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *94.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *67.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *120 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *83.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *160 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **DUP001** **York Sample ID:** **23K0422-08**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 3:00 pm | 11/07/2023 |

# Sample Information

**Client Sample ID:** **Field Blank** **York Sample ID:** **23K0422-09**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 1:30 pm | 11/07/2023 |

## PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | ND | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | ND | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | ND | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | ND | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | ND | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **4.97** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 375-95-1 | Perfluorononanoic acid (PFNA) | ND | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 72629-94-8 | **Perfluorotridecanoic acid (PFTrDA)** | **3.17** | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 376-06-7 | *** Perfluorotetradecanoic acid (PFTA)** | **1.18** | J | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **0.351** | J | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **6.31** | J | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **2.99** | J | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |

## Sample Information

**Client Sample ID:** **Field Blank** **York Sample ID:** **23K0422-09**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 1:30 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 24448-09-7 | * **N-MeFOSE** | **13.3** | J | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 1691-99-2 | * **N-EtFOSE** | **37.6** | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 16:48 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *42.4 %* | *25-150* |
| *Surrogate: M5PFHxA* | *48.0 %* | *25-150* |
| *Surrogate: M4PFHpA* | *61.8 %* | *25-150* |
| *Surrogate: M3PFHxS* | *61.2 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *54.1 %* | *25-150* |
| *Surrogate: M6PFDA* | *48.3 %* | *25-150* |

## Sample Information

**Client Sample ID:** **Field Blank** **York Sample ID:** **23K0422-09**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0422 | SHD2305 | Ground Water | November 6, 2023 1:30 pm | 11/07/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *32.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *16.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *1.51 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *0.927 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *38.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *14.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *33.1 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *21.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *15.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *18.9 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *13.3 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *58.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *18.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *16.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *28.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *42.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *0.242 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *0.0258 %* | | | *25-150* | | | | | | |

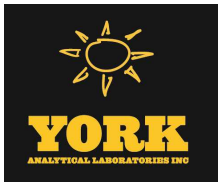
# Analytical Batch Summary

**Batch ID:** BK30905 **Preparation Method:** EPA 1633 Prep **Prepared By:** KFH

| YORK Sample ID | Client Sample ID | Preparation Date |
|---|---|---|
| 23K0422-01 | MW007 | 11/14/23 |
| 23K0422-02 | MW006S | 11/14/23 |
| 23K0422-02RE1 | MW006S | 11/14/23 |
| 23K0422-03 | MW006D | 11/14/23 |
| 23K0422-04 | MW005S | 11/14/23 |
| 23K0422-04RE1 | MW005S | 11/14/23 |
| 23K0422-05 | MW005D | 11/14/23 |
| 23K0422-06 | MW008 | 11/14/23 |
| 23K0422-06RE1 | MW008 | 11/14/23 |
| 23K0422-07 | MW011 | 11/14/23 |
| 23K0422-08 | DUP001 | 11/14/23 |
| 23K0422-08RE1 | DUP001 | 11/14/23 |
| 23K0422-09 | Field Blank | 11/14/23 |
| BK30905-BLK1 | Blank | 11/14/23 |
| BK30905-BS1 | LCS | 11/14/23 |
| BK30905-BS2 | LCS | 11/14/23 |
| BK30905-MS1 | Matrix Spike | 11/14/23 |
| BK30905-MSD1 | Matrix Spike Dup | 11/14/23 |

**Batch ID:** BK31074 **Preparation Method:** EPA 1633 Prep **Prepared By:** K H

| YORK Sample ID | Client Sample ID | Preparation Date |
|---|---|---|
| 23K0422-02RE2 | MW006S | 11/16/23 |
| 23K0422-04RE2 | MW005S | 11/16/23 |
| BK31074-BLK1 | Blank | 11/16/23 |
| BK31074-BS1 | LCS | 11/16/23 |
| BK31074-DUP1 | Duplicate | 11/16/23 |




## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK30905-BLK1)** | | | | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 |
| Perfluorobutanesulfonic acid (PFBS) | ND | 3.54 | ng/L | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroheptanoic acid (PFHpA) | ND | 4.00 | " | | | | | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 3.66 | " | | | | | | | | |
| Perfluorooctanoic acid (PFOA) | ND | 4.00 | " | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 3.72 | " | | | | | | | | |
| Perfluorononanoic acid (PFNA) | ND | 4.00 | " | | | | | | | | |
| Perfluorodecanoic acid (PFDA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | ND | 4.00 | " | | | | | | | | |
| Perfluorododecanoic acid (PFDoA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotetradecanoic acid (PFTA) | ND | 4.00 | " | | | | | | | | |
| N-MeFOSAA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSAA | ND | 4.00 | " | | | | | | | | |
| Perfluoropentanoic acid (PFPeA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 4.00 | " | | | | | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 3.82 | " | | | | | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 3.86 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | ND | 15.2 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | ND | 15.4 | " | | | | | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 3.64 | 16.0 | " | | | | | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 7.12 | " | | | | | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 3.76 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | ND | 15.0 | " | | | | | | | | |
| HFPO-DA (Gen-X) | ND | 16.0 | " | | | | | | | | |
| 11CL-PF3OUdS | ND | 15.1 | " | | | | | | | | |
| 9CL-PF3ONS | ND | 15.0 | " | | | | | | | | |
| ADONA | ND | 15.1 | " | | | | | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 3.88 | " | | | | | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 3.84 | " | | | | | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 10.0 | " | | | | | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 50.0 | " | | | | | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 50.0 | " | | | | | | | | |
| N-MeFOSE | ND | 40.0 | " | | | | | | | | |
| N-MeFOSA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSE | ND | 40.0 | " | | | | | | | | |
| N-EtFOSA | ND | 4.00 | " | | | | | | | | |
| *Surrogate: M3PFBS* | *32.2* | | *"* | *46.6* | | *69.2* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *40.6* | | *"* | *50.0* | | *81.1* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *66.4* | | *"* | *50.0* | | *133* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *60.4* | | *"* | *47.4* | | *127* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *50.9* | | *"* | *50.0* | | *102* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *28.6* | | *"* | *25.0* | | *114* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *34.2* | | *"* | *25.0* | | *137* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *31.5* | | *"* | *25.0* | | *126* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK30905-BLK1)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| *Surrogate: M2PFTeDA* | *25.2* | | *ng/L* | *25.0* | | *101* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.87* | | *"* | *200* | | *0.937* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *48.1* | | *"* | *47.9* | | *100* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *24.8* | | *"* | *100* | | *24.8* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *56.5* | | *"* | *50.0* | | *113* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *100* | | *"* | *100* | | *100* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *120* | | *"* | *100* | | *120* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *36.7* | | *"* | *95.1* | | *38.6* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *42.6* | | *"* | *96.0* | | *44.4* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *29.7* | | *"* | *25.0* | | *119* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *28.6* | | *"* | *93.8* | | *30.5* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *46.7* | | *"* | *50.0* | | *93.5* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *64.9* | | *"* | *50.0* | | *130* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *141* | | *"* | *200* | | *70.5* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *1020* | | *"* | *500* | | *205* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *1030* | | *"* | *500* | | *205* | *25-150* | | | | |
| **LCS (BK30905-BS1)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 89.0 | 3.54 | ng/L | 70.8 | | 126 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 82.4 | 4.00 | " | 80.0 | | 103 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 70.2 | 4.00 | " | 80.0 | | 87.7 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 81.3 | 3.66 | " | 73.2 | | 111 | 50-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 96.3 | 4.00 | " | 80.0 | | 120 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 23.5 | 3.72 | " | 74.4 | | 31.6 | 50-150 | Low Bias | | | |
| Perfluorononanoic acid (PFNA) | 88.7 | 4.00 | " | 80.0 | | 111 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 80.5 | 4.00 | " | 80.0 | | 101 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 97.2 | 4.00 | " | 80.0 | | 122 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 94.5 | 4.00 | " | 80.0 | | 118 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 122 | 4.00 | " | 80.0 | | 153 | 50-150 | High Bias | | | |
| Perfluorotetradecanoic acid (PFTA) | 100 | 4.00 | " | 80.0 | | 125 | 50-150 | | | | |
| N-MeFOSAA | 108 | 4.00 | " | 80.0 | | 135 | 50-150 | | | | |
| N-EtFOSAA | 91.8 | 4.00 | " | 80.0 | | 115 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 171 | 8.00 | " | 160 | | 107 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 96.8 | 4.00 | " | 80.0 | | 121 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 88.5 | 3.82 | " | 76.4 | | 116 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 118 | 3.86 | " | 77.2 | | 153 | 50-150 | High Bias | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 373 | 15.2 | " | 304 | | 123 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 381 | 15.4 | " | 307 | | 124 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 79.6 | 16.0 | " | 320 | | 24.9 | 50-150 | Low Bias | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 116 | 7.12 | " | 142 | | 81.8 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 106 | 8.00 | " | 160 | | 66.0 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 11.5 | 8.00 | " | 160 | | 7.17 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 497 | 8.00 | " | 160 | | 311 | 50-150 | High Bias | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 65.9 | 3.76 | " | 75.2 | | 87.7 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 310 | 15.0 | " | 300 | | 103 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 149 | 16.0 | " | 160 | | 93.1 | 50-150 | | | | |
| 11CL-PF3OUdS | 324 | 15.1 | " | 151 | | 214 | 50-150 | High Bias | | | |
| 9CL-PF3ONS | 288 | 15.0 | " | 150 | | 192 | 50-150 | High Bias | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK30905-BS1)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| ADONA | 324 | 15.1 | ng/L | 151 | | 214 | 50-150 | High Bias | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 86.9 | 3.88 | " | 77.6 | | 112 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 106 | 3.84 | " | 76.8 | | 138 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 115 | 10.0 | " | 320 | | 35.9 | 50-150 | Low Bias | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 1730 | 50.0 | " | 1600 | | 108 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 2180 | 50.0 | " | 1600 | | 137 | 50-150 | | | | |
| N-MeFOSE | 829 | 40.0 | " | 800 | | 104 | 50-150 | | | | |
| N-MeFOSA | 69.9 | 4.00 | " | 80.0 | | 87.4 | 50-150 | | | | |
| N-EtFOSE | 840 | 40.0 | " | 800 | | 105 | 50-150 | | | | |
| N-EtFOSA | 67.2 | 4.00 | " | 80.0 | | 84.0 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *16.9* | | *"* | *46.6* | | *36.3* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *22.5* | | *"* | *50.0* | | *45.1* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *43.1* | | *"* | *50.0* | | *86.1* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *49.3* | | *"* | *47.4* | | *104* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *40.4* | | *"* | *50.0* | | *80.8* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *25.1* | | *"* | *25.0* | | *100* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *26.8* | | *"* | *25.0* | | *107* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *25.5* | | *"* | *25.0* | | *102* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *16.8* | | *"* | *25.0* | | *67.3* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.09* | | *"* | *200* | | *0.543* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *41.0* | | *"* | *47.9* | | *85.7* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *4.36* | | *"* | *100* | | *4.36* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *39.7* | | *"* | *50.0* | | *79.5* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *64.1* | | *"* | *100* | | *64.1* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *75.4* | | *"* | *100* | | *75.4* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *36.1* | | *"* | *95.1* | | *38.0* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *33.8* | | *"* | *96.0* | | *35.3* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *23.5* | | *"* | *25.0* | | *94.0* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *21.0* | | *"* | *93.8* | | *22.4* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *29.4* | | *"* | *50.0* | | *58.8* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *32.4* | | *"* | *50.0* | | *64.7* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *70.6* | | *"* | *200* | | *35.3* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *452* | | *"* | *500* | | *90.5* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *543* | | *"* | *500* | | *109* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK30905-BS2)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 16.9 | 3.54 | ng/L | 14.2 | | 120 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 15.3 | 4.00 | " | 16.0 | | 95.5 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 13.6 | 4.00 | " | 16.0 | | 84.9 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 3.25 | 3.66 | " | 14.6 | | 22.2 | 50-150 | Low Bias | | | |
| Perfluorooctanoic acid (PFOA) | 19.4 | 4.00 | " | 16.0 | | 122 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 5.15 | 3.72 | " | 14.9 | | 34.6 | 50-150 | Low Bias | | | |
| Perfluorononanoic acid (PFNA) | 17.1 | 4.00 | " | 16.0 | | 107 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 14.8 | 4.00 | " | 16.0 | | 92.3 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 18.0 | 4.00 | " | 16.0 | | 112 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 18.9 | 4.00 | " | 16.0 | | 118 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 22.8 | 4.00 | " | 16.0 | | 143 | 50-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 15.7 | 4.00 | " | 16.0 | | 98.3 | 50-150 | | | | |
| N-MeFOSAA | 18.1 | 4.00 | " | 16.0 | | 113 | 50-150 | | | | |
| N-EtFOSAA | 17.7 | 4.00 | " | 16.0 | | 111 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 34.4 | 8.00 | " | 32.0 | | 107 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 21.8 | 4.00 | " | 16.0 | | 136 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 17.5 | 3.82 | " | 15.3 | | 114 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 21.5 | 3.86 | " | 15.4 | | 139 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 72.0 | 15.2 | " | 60.8 | | 118 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 66.4 | 15.4 | " | 61.4 | | 108 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 24.3 | 16.0 | " | 64.0 | | 37.9 | 50-150 | Low Bias | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 22.4 | 7.12 | " | 28.5 | | 78.7 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 19.8 | 8.00 | " | 32.0 | | 61.8 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 1.88 | 8.00 | " | 32.0 | | 5.89 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 72.4 | 8.00 | " | 32.0 | | 226 | 50-150 | High Bias | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 14.2 | 3.76 | " | 15.0 | | 94.7 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 70.5 | 15.0 | " | 60.0 | | 118 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 31.3 | 16.0 | " | 32.0 | | 97.9 | 50-150 | | | | |
| 11CL-PF3OUdS | 56.2 | 15.1 | " | 30.2 | | 186 | 50-150 | High Bias | | | |
| 9CL-PF3ONS | 50.2 | 15.0 | " | 29.9 | | 168 | 50-150 | High Bias | | | |
| ADONA | 63.5 | 15.1 | " | 30.2 | | 210 | 50-150 | High Bias | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 18.0 | 3.88 | " | 15.5 | | 116 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 19.7 | 3.84 | " | 15.4 | | 128 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 16.9 | 10.0 | " | 64.0 | | 26.4 | 50-150 | Low Bias | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 281 | 50.0 | " | 320 | | 87.8 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 353 | 50.0 | " | 320 | | 110 | 50-150 | | | | |
| N-MeFOSE | 177 | 40.0 | " | 160 | | 110 | 50-150 | | | | |
| N-MeFOSA | 17.2 | 4.00 | " | 16.0 | | 108 | 50-150 | | | | |
| N-EtFOSE | 156 | 40.0 | " | 160 | | 97.8 | 50-150 | | | | |
| N-EtFOSA | 9.93 | 4.00 | " | 16.0 | | 62.1 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *24.1* | | " | *46.6* | | *51.8* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *29.2* | | " | *50.0* | | *58.5* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *48.8* | | " | *50.0* | | *97.6* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *58.0* | | " | *47.4* | | *122* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *43.9* | | " | *50.0* | | *87.7* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *28.7* | | " | *25.0* | | *115* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *26.8* | | " | *25.0* | | *107* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *24.7* | | " | *25.0* | | *99.0* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *18.2* | | " | *25.0* | | *72.8* | *10-150* | | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

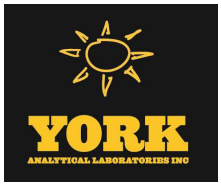
## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK30905-BS2)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.28* | | *ng/L* | *200* | | *0.638* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *42.9* | | *"* | *47.9* | | *89.7* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *10.4* | | *"* | *100* | | *10.4* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *36.2* | | *"* | *50.0* | | *72.4* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *73.9* | | *"* | *100* | | *73.9* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *73.6* | | *"* | *100* | | *73.7* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *35.5* | | *"* | *95.1* | | *37.3* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *32.9* | | *"* | *96.0* | | *34.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *25.5* | | *"* | *25.0* | | *102* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *22.1* | | *"* | *93.8* | | *23.6* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *26.3* | | *"* | *50.0* | | *52.6* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *43.4* | | *"* | *50.0* | | *86.9* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *81.3* | | *"* | *200* | | *40.6* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *453* | | *"* | *500* | | *90.7* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *536* | | *"* | *500* | | *107* | *25-150* | | | | |
| **Matrix Spike (BK30905-MS1)** | *Source sample: 23K0422-05 (MW005D) | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 40.8 | 1.77 | ng/L | 35.4 | 1.83 | 110 | 25-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 42.2 | 2.00 | " | 40.0 | 4.78 | 93.6 | 25-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 38.1 | 2.00 | " | 40.0 | 2.55 | 88.8 | 25-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 46.3 | 1.83 | " | 36.6 | 13.5 | 89.7 | 25-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 50.9 | 2.00 | " | 40.0 | 5.17 | 114 | 25-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 52.4 | 1.86 | " | 37.2 | 13.6 | 104 | 25-150 | | | | |
| Perfluorononanoic acid (PFNA) | 38.8 | 2.00 | " | 40.0 | 1.24 | 93.9 | 25-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 35.5 | 2.00 | " | 40.0 | ND | 88.7 | 25-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 45.2 | 2.00 | " | 40.0 | ND | 113 | 25-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 42.9 | 2.00 | " | 40.0 | ND | 107 | 25-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 43.8 | 2.00 | " | 40.0 | ND | 110 | 25-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 42.4 | 2.00 | " | 40.0 | ND | 106 | 25-150 | | | | |
| N-MeFOSAA | 47.4 | 2.00 | " | 40.0 | ND | 119 | 25-150 | | | | |
| N-EtFOSAA | 43.7 | 2.00 | " | 40.0 | ND | 109 | 25-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 82.2 | 4.00 | " | 80.0 | 4.11 | 97.6 | 25-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 48.3 | 2.00 | " | 40.0 | ND | 121 | 25-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 45.7 | 1.91 | " | 38.2 | ND | 120 | 25-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 35.8 | 1.93 | " | 38.6 | ND | 92.8 | 25-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 160 | 7.60 | " | 152 | ND | 105 | 25-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 174 | 7.68 | " | 154 | ND | 113 | 25-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 146 | 8.00 | " | 160 | 2.75 | 89.8 | 25-150 | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 64.1 | 3.56 | " | 71.2 | ND | 90.1 | 25-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 69.6 | 4.00 | " | 80.0 | ND | 87.0 | 25-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 14.6 | 4.00 | " | 80.0 | ND | 18.3 | 25-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 109 | 4.00 | " | 80.0 | ND | 136 | 25-150 | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 42.2 | 1.88 | " | 37.6 | 2.34 | 106 | 25-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 139 | 7.50 | " | 150 | ND | 92.9 | 25-150 | | | | |
| HFPO-DA (Gen-X) | 67.1 | 8.00 | " | 80.0 | ND | 83.9 | 25-150 | | | | |
| 11CL-PF3OUdS | 77.7 | 7.56 | " | 75.6 | ND | 103 | 25-150 | | | | |
| 9CL-PF3ONS | 79.2 | 7.48 | " | 74.8 | ND | 106 | 25-150 | | | | |
| ADONA | 117 | 7.56 | " | 75.6 | ND | 155 | 25-150 | High Bias | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Matrix Spike (BK30905-MS1)** | *Source sample: 23K0422-05 (MW005D) | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 42.4 | 1.94 | ng/L | 38.8 | ND | 109 | 25-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 46.5 | 1.92 | " | 38.4 | ND | 121 | 25-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 55.4 | 5.00 | " | 160 | ND | 34.6 | 25-150 | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 391 | 25.0 | " | 800 | ND | 48.8 | 25-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 405 | 25.0 | " | 800 | ND | 50.7 | 25-150 | | | | |
| N-MeFOSE | 372 | 20.0 | " | 400 | ND | 93.0 | 25-150 | | | | |
| N-MeFOSA | 35.1 | 2.00 | " | 40.0 | ND | 87.6 | 25-150 | | | | |
| N-EtFOSE | 363 | 20.0 | " | 400 | ND | 90.7 | 25-150 | | | | |
| N-EtFOSA | 28.7 | 2.00 | " | 40.0 | ND | 71.7 | 25-150 | | | | |
| *Surrogate: M3PFBS* | *25.4* | | *"* | *23.3* | | *109* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *23.3* | | *"* | *25.0* | | *93.1* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *24.9* | | *"* | *25.0* | | *99.4* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *25.3* | | *"* | *23.7* | | *107* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *20.6* | | *"* | *25.0* | | *82.5* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *11.4* | | *"* | *12.5* | | *91.0* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *10.1* | | *"* | *12.5* | | *81.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *9.05* | | *"* | *12.5* | | *72.4* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *7.85* | | *"* | *12.5* | | *62.8* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *6.13* | | *"* | *100* | | *6.13* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *18.9* | | *"* | *24.0* | | *79.0* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *28.6* | | *"* | *50.0* | | *57.2* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *14.8* | | *"* | *25.0* | | *59.2* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *28.1* | | *"* | *50.0* | | *56.2* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *26.8* | | *"* | *50.0* | | *53.7* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *16.1* | | *"* | *47.6* | | *33.9* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *13.2* | | *"* | *48.0* | | *27.6* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *10.4* | | *"* | *12.5* | | *83.5* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *26.4* | | *"* | *46.9* | | *56.3* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *7.65* | | *"* | *25.0* | | *30.6* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *10.9* | | *"* | *25.0* | | *43.4* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *50.9* | | *"* | *100* | | *50.9* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *243* | | *"* | *250* | | *97.1* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *252* | | *"* | *250* | | *101* | *25-150* | | | | |




## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Matrix Spike Dup (BK30905-MSD1)** | *Source sample: 23K0422-05 (MW005D) | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | |
| Perfluorobutanesulfonic acid (PFBS) | 43.8 | 1.77 | ng/L | 35.4 | 1.83 | 119 | 25-150 | | 7.07 | 35 | |
| Perfluorohexanoic acid (PFHxA) | 46.0 | 2.00 | " | 40.0 | 4.78 | 103 | 25-150 | | 8.60 | 35 | |
| Perfluoroheptanoic acid (PFHpA) | 37.2 | 2.00 | " | 40.0 | 2.55 | 86.7 | 25-150 | | 2.24 | 35 | |
| Perfluorohexanesulfonic acid (PFHxS) | 53.5 | 1.83 | " | 36.6 | 13.5 | 109 | 25-150 | | 14.4 | 35 | |
| Perfluorooctanoic acid (PFOA) | 54.9 | 2.00 | " | 40.0 | 5.17 | 124 | 25-150 | | 7.42 | 35 | |
| Perfluorooctanesulfonic acid (PFOS) | 53.2 | 1.86 | " | 37.2 | 13.6 | 106 | 25-150 | | 1.54 | 35 | |
| Perfluorononanoic acid (PFNA) | 43.8 | 2.00 | " | 40.0 | 1.24 | 106 | 25-150 | | 12.0 | 35 | |
| Perfluorodecanoic acid (PFDA) | 48.3 | 2.00 | " | 40.0 | ND | 121 | 25-150 | | 30.6 | 35 | |
| Perfluoroundecanoic acid (PFUnA) | 46.5 | 2.00 | " | 40.0 | ND | 116 | 25-150 | | 2.85 | 35 | |
| Perfluorododecanoic acid (PFDoA) | 51.3 | 2.00 | " | 40.0 | ND | 128 | 25-150 | | 17.9 | 35 | |
| Perfluorotridecanoic acid (PFTrDA) | 56.0 | 2.00 | " | 40.0 | ND | 140 | 25-150 | | 24.4 | 35 | |
| Perfluorotetradecanoic acid (PFTA) | 44.9 | 2.00 | " | 40.0 | ND | 112 | 25-150 | | 5.78 | 35 | |
| N-MeFOSAA | 51.8 | 2.00 | " | 40.0 | ND | 129 | 25-150 | | 8.75 | 35 | |
| N-EtFOSAA | 50.0 | 2.00 | " | 40.0 | ND | 125 | 25-150 | | 13.5 | 35 | |
| Perfluoropentanoic acid (PFPeA) | 87.7 | 4.00 | " | 80.0 | 4.11 | 105 | 25-150 | | 6.54 | 35 | |
| Perfluoro-1-octanesulfonamide (FOSA) | 52.1 | 2.00 | " | 40.0 | ND | 130 | 25-150 | | 7.72 | 35 | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 46.1 | 1.91 | " | 38.2 | ND | 121 | 25-150 | | 0.913 | 35 | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 46.8 | 1.93 | " | 38.6 | ND | 121 | 25-150 | | 26.5 | 35 | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 186 | 7.60 | " | 152 | ND | 123 | 25-150 | | 15.3 | 35 | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 168 | 7.68 | " | 154 | ND | 109 | 25-150 | | 3.32 | 35 | |
| Perfluoro-n-butanoic acid (PFBA) | 166 | 8.00 | " | 160 | 2.75 | 102 | 25-150 | | 12.5 | 35 | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 68.8 | 3.56 | " | 71.2 | ND | 96.6 | 25-150 | | 7.02 | 30 | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 61.0 | 4.00 | " | 80.0 | ND | 76.3 | 25-150 | | 13.2 | 30 | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 22.7 | 4.00 | " | 80.0 | ND | 28.4 | 25-150 | | 43.3 | 30 | Non-dir. |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 94.8 | 4.00 | " | 80.0 | ND | 119 | 25-150 | | 13.8 | 30 | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 48.3 | 1.88 | " | 37.6 | 2.34 | 122 | 25-150 | | 13.4 | 30 | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 161 | 7.50 | " | 150 | ND | 107 | 25-150 | | 14.2 | 30 | |
| HFPO-DA (Gen-X) | 71.5 | 8.00 | " | 80.0 | ND | 89.3 | 25-150 | | 6.23 | 30 | |
| 11CL-PF3OUdS | 65.2 | 7.56 | " | 75.6 | ND | 86.2 | 25-150 | | 17.5 | 30 | |
| 9CL-PF3ONS | 74.8 | 7.48 | " | 74.8 | ND | 100 | 25-150 | | 5.71 | 30 | |
| ADONA | 112 | 7.56 | " | 75.6 | ND | 148 | 25-150 | | 4.16 | 30 | |
| Perfluorododecanesulfonic acid (PFDoS) | 35.6 | 1.94 | " | 38.8 | ND | 91.9 | 25-150 | | 17.4 | 30 | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 52.6 | 1.92 | " | 38.4 | ND | 137 | 25-150 | | 12.3 | 30 | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 64.1 | 5.00 | " | 160 | ND | 40.1 | 25-150 | | 14.5 | 30 | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 414 | 25.0 | " | 800 | ND | 51.7 | 25-150 | | 5.80 | 30 | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 420 | 25.0 | " | 800 | ND | 52.5 | 25-150 | | 3.54 | 30 | |
| N-MeFOSE | 405 | 20.0 | " | 400 | ND | 101 | 25-150 | | 8.38 | 30 | |
| N-MeFOSA | 42.9 | 2.00 | " | 40.0 | ND | 107 | 25-150 | | 20.2 | 30 | |
| N-EtFOSE | 378 | 20.0 | " | 400 | ND | 94.5 | 25-150 | | 4.10 | 30 | |
| N-EtFOSA | 20.1 | 2.00 | " | 40.0 | ND | 50.1 | 25-150 | | 35.4 | 30 | Non-dir. |
| *Surrogate: M3PFBS* | *31.5* | | *"* | *23.3* | | *135* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *27.4* | | *"* | *25.0* | | *110* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *28.8* | | *"* | *25.0* | | *115* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *29.6* | | *"* | *23.7* | | *125* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *23.8* | | *"* | *25.0* | | *95.3* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *12.3* | | *"* | *12.5* | | *98.2* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *12.2* | | *"* | *12.5* | | *97.5* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *8.60* | | *"* | *12.5* | | *68.8* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *6.62* | | *"* | *12.5* | | *52.9* | *10-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Matrix Spike Dup (BK30905-MSD1)** | *Source sample: 23K0422-05 (MW005D) | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *8.89* | | *ng/L* | *100* | | *8.89* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *23.6* | | *"* | *24.0* | | *98.4* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *48.0* | | *"* | *50.0* | | *96.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *18.7* | | *"* | *25.0* | | *74.7* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *34.4* | | *"* | *50.0* | | *68.8* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *32.9* | | *"* | *50.0* | | *65.9* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *18.4* | | *"* | *47.6* | | *38.7* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *16.9* | | *"* | *48.0* | | *35.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *13.0* | | *"* | *12.5* | | *104* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *31.6* | | *"* | *46.9* | | *67.5* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *6.43* | | *"* | *25.0* | | *25.7* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *6.18* | | *"* | *25.0* | | *24.7* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *67.9* | | *"* | *100* | | *67.9* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *244* | | *"* | *250* | | *97.7* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *234* | | *"* | *250* | | *93.8* | *25-150* | | | | |
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK31074-BLK1)** | | | | | | | | | Prepared & Analyzed: 11/16/2023 | | |
| Perfluorobutanesulfonic acid (PFBS) | ND | 3.54 | ng/L | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroheptanoic acid (PFHpA) | ND | 4.00 | " | | | | | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 3.66 | " | | | | | | | | |
| Perfluorooctanoic acid (PFOA) | ND | 4.00 | " | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 3.72 | " | | | | | | | | |
| Perfluorononanoic acid (PFNA) | ND | 4.00 | " | | | | | | | | |
| Perfluorodecanoic acid (PFDA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | ND | 4.00 | " | | | | | | | | |
| Perfluorododecanoic acid (PFDoA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotetradecanoic acid (PFTA) | ND | 4.00 | " | | | | | | | | |
| N-MeFOSAA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSAA | ND | 4.00 | " | | | | | | | | |
| Perfluoropentanoic acid (PFPeA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 4.00 | " | | | | | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 3.82 | " | | | | | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 3.86 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | ND | 15.2 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | ND | 15.4 | " | | | | | | | | |
| Perfluoro-n-butanoic acid (PFBA) | ND | 16.0 | " | | | | | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 7.12 | " | | | | | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 3.76 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | ND | 15.0 | " | | | | | | | | |
| HFPO-DA (Gen-X) | ND | 16.0 | " | | | | | | | | |
| 11CL-PF3OUdS | ND | 15.1 | " | | | | | | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK31074-BLK1)** | | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| 9CL-PF3ONS | ND | 15.0 | ng/L | | | | | | | | |
| ADONA | ND | 15.1 | " | | | | | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 3.88 | " | | | | | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 3.84 | " | | | | | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 10.0 | " | | | | | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 50.0 | " | | | | | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 50.0 | " | | | | | | | | |
| N-MeFOSE | ND | 40.0 | " | | | | | | | | |
| N-MeFOSA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSE | ND | 40.0 | " | | | | | | | | |
| N-EtFOSA | ND | 4.00 | " | | | | | | | | |
| *Surrogate: M3PFBS* | *38.1* | | " | *38.8* | | *98.2* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *41.4* | | " | *41.7* | | *99.4* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *51.9* | | " | *41.7* | | *124* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *44.9* | | " | *39.5* | | *114* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *35.4* | | " | *41.7* | | *84.9* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *22.8* | | " | *20.8* | | *110* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *22.8* | | " | *20.8* | | *110* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *20.8* | | " | *20.8* | | *99.8* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *14.7* | | " | *20.8* | | *70.9* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.80* | | " | *167* | | *1.08* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *31.9* | | " | *39.9* | | *80.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *53.6* | | " | *83.3* | | *64.3* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *35.3* | | " | *41.7* | | *84.8* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *53.5* | | " | *83.3* | | *64.3* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *55.0* | | " | *83.3* | | *66.0* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *36.7* | | " | *79.2* | | *46.4* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *34.5* | | " | *80.0* | | *43.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *21.2* | | " | *20.8* | | *102* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *50.1* | | " | *78.2* | | *64.0* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *33.1* | | " | *41.7* | | *79.4* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *31.1* | | " | *41.7* | | *74.6* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *185* | | " | *167* | | *111* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *265* | | " | *417* | | *63.5* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *352* | | " | *417* | | *84.5* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31074-BS1)** | | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 79.9 | 3.54 | ng/L | 70.8 | | 113 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 71.6 | 4.00 | " | 80.0 | | 89.5 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 59.8 | 4.00 | " | 80.0 | | 74.8 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 70.9 | 3.66 | " | 73.2 | | 96.8 | 50-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 82.1 | 4.00 | " | 80.0 | | 103 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 78.1 | 3.72 | " | 74.4 | | 105 | 50-150 | | | | |
| Perfluorononanoic acid (PFNA) | 75.4 | 4.00 | " | 80.0 | | 94.3 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 71.3 | 4.00 | " | 80.0 | | 89.1 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 82.7 | 4.00 | " | 80.0 | | 103 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 87.3 | 4.00 | " | 80.0 | | 109 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 103 | 4.00 | " | 80.0 | | 129 | 50-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 81.8 | 4.00 | " | 80.0 | | 102 | 50-150 | | | | |
| N-MeFOSAA | 89.8 | 4.00 | " | 80.0 | | 112 | 50-150 | | | | |
| N-EtFOSAA | 78.9 | 4.00 | " | 80.0 | | 98.7 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 153 | 8.00 | " | 160 | | 95.8 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 95.4 | 4.00 | " | 80.0 | | 119 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 80.5 | 3.82 | " | 76.4 | | 105 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 88.6 | 3.86 | " | 77.2 | | 115 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 355 | 15.2 | " | 304 | | 117 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 348 | 15.4 | " | 307 | | 113 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 165 | 16.0 | " | 320 | | 51.5 | 50-150 | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 110 | 7.12 | " | 142 | | 77.1 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 93.4 | 8.00 | " | 160 | | 58.4 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 4.41 | 8.00 | " | 160 | | 2.76 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 215 | 8.00 | " | 160 | | 135 | 50-150 | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 67.2 | 3.76 | " | 75.2 | | 89.4 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 295 | 15.0 | " | 300 | | 98.5 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 133 | 16.0 | " | 160 | | 83.0 | 50-150 | | | | |
| 11CL-PF3OUdS | 135 | 15.1 | " | 151 | | 89.4 | 50-150 | | | | |
| 9CL-PF3ONS | 154 | 15.0 | " | 150 | | 103 | 50-150 | | | | |
| ADONA | 149 | 15.1 | " | 151 | | 98.7 | 50-150 | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 69.7 | 3.88 | " | 77.6 | | 89.8 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 97.1 | 3.84 | " | 76.8 | | 126 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 195 | 10.0 | " | 320 | | 60.8 | 50-150 | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 1540 | 50.0 | " | 1600 | | 96.4 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 1850 | 50.0 | " | 1600 | | 116 | 50-150 | | | | |
| N-MeFOSE | 680 | 40.0 | " | 800 | | 85.0 | 50-150 | | | | |
| N-MeFOSA | 69.2 | 4.00 | " | 80.0 | | 86.5 | 50-150 | | | | |
| N-EtFOSE | 696 | 40.0 | " | 800 | | 87.0 | 50-150 | | | | |
| N-EtFOSA | 58.7 | 4.00 | " | 80.0 | | 73.4 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *39.8* | | *"* | *38.8* | | *103* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *46.6* | | *"* | *41.7* | | *112* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *55.2* | | *"* | *41.7* | | *132* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *52.0* | | *"* | *39.5* | | *132* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *43.9* | | *"* | *41.7* | | *105* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *23.5* | | *"* | *20.8* | | *113* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *23.1* | | *"* | *20.8* | | *111* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *21.1* | | *"* | *20.8* | | *101* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *16.2* | | *"* | *20.8* | | *78.1* | *10-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31074-BS1)** | | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *2.02* | | *ng/L* | *167* | | *1.21* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *37.0* | | *"* | *39.9* | | *92.8* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *48.7* | | *"* | *83.3* | | *58.4* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *37.4* | | *"* | *41.7* | | *89.6* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *60.1* | | *"* | *83.3* | | *72.2* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *64.9* | | *"* | *83.3* | | *77.9* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *49.2* | | *"* | *79.2* | | *62.2* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *49.2* | | *"* | *80.0* | | *61.6* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *23.7* | | *"* | *20.8* | | *114* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *59.5* | | *"* | *78.2* | | *76.2* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *32.6* | | *"* | *41.7* | | *78.1* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *33.3* | | *"* | *41.7* | | *79.8* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *217* | | *"* | *167* | | *130* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *317* | | *"* | *417* | | *76.1* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *377* | | *"* | *417* | | *90.3* | *25-150* | | | | |
| **Duplicate (BK31074-DUP1)** | *Source sample: 23K0602-07 (Duplicate) | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | ND | 1.65 | ng/L | | ND | | | | | 30 | |
| Perfluorohexanoic acid (PFHxA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoroheptanoic acid (PFHpA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 1.71 | " | | ND | | | | | 30 | |
| Perfluorooctanoic acid (PFOA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 1.74 | " | | ND | | | | | 30 | |
| Perfluorononanoic acid (PFNA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorodecanoic acid (PFDA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoroundecanoic acid (PFUnA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorododecanoic acid (PFDoA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorotetradecanoic acid (PFTA) | ND | 1.87 | " | | ND | | | | | 30 | |
| N-MeFOSAA | ND | 1.87 | " | | ND | | | | | 30 | |
| N-EtFOSAA | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoropentanoic acid (PFPeA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 1.79 | " | | ND | | | | | 30 | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 1.80 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | ND | 7.10 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | ND | 7.18 | " | | ND | | | | | 30 | |
| Perfluoro-n-butanoic acid (PFBA) | ND | 7.48 | " | | ND | | | | | 30 | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 3.33 | " | | ND | | | | | 30 | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 1.76 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | ND | 7.01 | " | | ND | | | | | 30 | |
| HFPO-DA (Gen-X) | ND | 7.48 | " | | ND | | | | | 30 | |
| 11CL-PF3OUdS | ND | 7.07 | " | | ND | | | | | 30 | |
| 9CL-PF3ONS | ND | 6.99 | " | | ND | | | | | 30 | |
| ADONA | ND | 7.07 | " | | ND | | | | | 30 | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **Duplicate (BK31074-DUP1)** | *Source sample: 23K0602-07 (Duplicate) | | | | | | | | Prepared & Analyzed: 11/16/2023 | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 1.81 | ng/L | | ND | | | | | 30 | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 1.79 | " | | ND | | | | | 30 | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 4.67 | " | | ND | | | | | 30 | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 23.4 | " | | ND | | | | | 30 | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 23.4 | " | | ND | | | | | 30 | |
| N-MeFOSE | ND | 18.7 | " | | ND | | | | | 30 | |
| N-MeFOSA | ND | 1.87 | " | | ND | | | | | 30 | |
| N-EtFOSE | 4.22 | 18.7 | " | | ND | | | | | 30 | |
| N-EtFOSA | ND | 1.87 | " | | ND | | | | | 30 | |
| *Surrogate: M3PFBS* | *18.7* | | *"* | *18.1* | | *103* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *20.5* | | *"* | *19.5* | | *105* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *24.8* | | *"* | *19.5* | | *127* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *22.9* | | *"* | *18.5* | | *124* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *19.7* | | *"* | *19.5* | | *101* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *9.88* | | *"* | *9.72* | | *102* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *10.3* | | *"* | *9.72* | | *106* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *9.08* | | *"* | *9.72* | | *93.4* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *7.31* | | *"* | *9.72* | | *75.2* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *0.617* | | *"* | *78.1* | | *0.790* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *16.5* | | *"* | *18.6* | | *88.6* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *11.7* | | *"* | *38.9* | | *30.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *17.7* | | *"* | *19.5* | | *91.0* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *26.1* | | *"* | *38.9* | | *67.1* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *26.7* | | *"* | *38.9* | | *68.5* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *21.5* | | *"* | *37.0* | | *58.2* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *18.4* | | *"* | *37.4* | | *49.1* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *10.1* | | *"* | *9.72* | | *104* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *26.1* | | *"* | *36.6* | | *71.4* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *14.8* | | *"* | *19.5* | | *75.7* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *20.2* | | *"* | *19.5* | | *104* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *96.1* | | *"* | *78.1* | | *123* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *145* | | *"* | *195* | | *74.4* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *157* | | *"* | *195* | | *80.3* | *25-150* | | | | |

## Sample and Data Qualifiers Relating to This Work Order

J — Detected below the Reporting Limit but greater than or equal to the Method Detection Limit (MDL/LOD) or in the case of a TIC, the result is an estimated concentration.

## Definitions and Other Explanations

| | |
|---|---|
| * | Analyte is not certified or the state of the samples origination does not offer certification for the Analyte. |
| ND | NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL) |
| RL | REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve. |
| LOQ | LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses. |
| LOD | LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846. |
| MDL | METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods. |
| Reported to | This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only. |
| NR | Not reported |
| RPD | Relative Percent Difference |
| Wet | The data has been reported on an as-received (wet weight) basis |
| Low Bias | Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias. |
| High Bias | High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias. |
| Non-Dir. | Non-dir. flag (Non-Directional Bias ) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons. |

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

# Field Chain-of-Custody Record

YORK ANALYTICAL LABORATORIES INC

York Analytical Laboratories, Inc. (YORK)'s Standard Terms & Conditions are listed on the back side of this document.
This document serves as your written authorization for YORK to proceed with the analyses requested below.
Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 23K0422

120 Research Drive Stratford, CT 06615 | 132-02 89th Ave Queens, NY 11418 | 56 Church Hill Rd. #2 Newtown, CT 06470 | clientservices@yorklab.com | www.yorklab.com | 800-306-YORK



| YOUR Information | Report To: | Invoice To: | YOUR Project Number | Turn-Around Time |
|---|---|---|---|---|
| Company: PWGrosser Consulting | Company: | Company: | SHD2305 | RUSH - Next Day |
| Address: 630 Johnson Ave Bohemia, NY 11716 | Address: | Address: | YOUR Project Name | RUSH - Two Day |
| Phone.: 631 589 6353 | Phone.: | Phone.: | | RUSH - Three Day |
| Contact: Zeb Youngman | Contact: | Contact: | | RUSH - Four Day |
| E-mail: zyoungman@pwgrosser.com | E-mail: | E-mail: | YOUR PO#: | RUSH - Five Day |
| | | | | Standard (6-9 Day) X |
| | | | | PFAS Standard is 7-10 Days |

*Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.*

**Samples Collected by:** (print AND sign your name)

**Matrix Codes**

S - soil / solid
GW - groundwater
DW - drinking water
WW - wastewater
O - Oil | Other

**Samples From**

New York
New Jersey
Connecticut
Pennsylvania
Other:

**Report / EDD Type** (circle selections)

Summary Report | CT RCP | EQuIS (Standard)
QA Report | CT RCP DQA/DUE | NYSDEC EQuIS
CMDP | NJDEP Reduced Deliverables | NJDKQP
Standard Excel EDD | NJDEP SRP HazSite
NY ASP B Package | Other:

**YORK Reg. Comp.**

Compared to the following Regulation(s): (please fill in)

| Sample Identification | Sample Matrix | Date/Time Sampled | Analyses Requested | Container Type | No. |
|---|---|---|---|---|---|
| MW007 | GW | 11/6/23 0832 | EPA 1633 | | 2 |
| MW006S | | 11.6.23 0940 | | | 2 |
| MW006D | | 11.6.23 1035 | | | 2 |
| MW005S | | 11.6.23 1225 | | | 2 |
| MW005D/MS/MSD | | 11.6.23 1130 | | | 6 |
| MW008 | | 11.6.23 1315 | | | 2 |
| MW011 | | 11.6.23 1436 | | | 2 |
| DUP001 | | 11.6.23 | | | 2 |
| FIELD BLANK | | 11.6.23 1330 | | | 2 |

**Comments:**

Samples iced/chilled at time of lab pickup? circle Yes or No

**Preservation:** (check all that apply)

HCl ___ MeOH ___ HNO3 ___ H2SO4 ___ NaOH ___
ZnAc ___ Ascorbic Acid ___ Other: ___

**Special Instruction**

Field Filtered
Lab to Filter

| 1. Samples Relinquished by / Company | Date/Time | 1. Samples Received by / Company | Date/Time | 2. Samples Relinquished by / Company | Date/Time |
|---|---|---|---|---|---|
| KYLIE McCLAY | 11-06-23 1525 | KBalyork | 11/7/23 1405PM | KBalyork | 11/7/23 |
| 2. Samples Received by / Company | Date/Time | 3. Samples Relinquished by / Company | Date/Time | 3. Samples Received by / Company | Date/Time |
| | | | | | |
| 4. Samples Relinquished by / Company | Date/Time | 4. Samples Received by / Company | Date/Time | Samples Received in LAB by | Date/Time / Temperature |
| | | | | | 11/7/23 18:10 1.1 Degrees C |

# Technical Report

prepared for:

**P.W. Grosser Consulting**
630 Johnson Avenue, Suite 7
Bohemia NY, 11716
**Attention: Zeb Youngman**

Report Date: 11/17/2023
**Client Project ID: SHD2305**
York Project (SDG) No.: 23K0473

CT Cert. No. PH-0723 New Jersey Cert. No. CT005 and NY037 New York Cert. Nos. 10854 and 12058 PA Cert. No. 68-04440

120 RESEARCH DRIVE STRATFORD, CT 06615 ■ 132-02 89th AVENUE RICHMOND HILL, NY 11418
www.YORKLAB.com (203) 325-1371 FAX (203) 357-0166 ClientServices@yorklab.com

Report Date: 11/17/2023
Client Project ID: SHD2305
York Project (SDG) No.: 23K0473

**P.W. Grosser Consulting**
630 Johnson Avenue, Suite 7
Bohemia NY, 11716
Attention: Zeb Youngman

## Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on November 08, 2023 and listed below. The project was identified as your project: **SHD2305**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

| York Sample ID | Client Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 23K0473-01 | MW004 | Ground Water | 11/07/2023 | 11/08/2023 |
| 23K0473-02 | MW009D | Ground Water | 11/07/2023 | 11/08/2023 |
| 23K0473-03 | MW009S | Ground Water | 11/07/2023 | 11/08/2023 |
| 23K0473-04 | MW012D | Ground Water | 11/07/2023 | 11/08/2023 |
| 23K0473-05 | MW012S | Ground Water | 11/07/2023 | 11/08/2023 |
| 23K0473-06 | MW002 | Ground Water | 11/07/2023 | 11/08/2023 |
| 23K0473-07 | MW010 | Ground Water | 11/07/2023 | 11/08/2023 |

## General Notes for York Project (SDG) No.: 23K0473

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

**Approved By:** **Date:** 11/17/2023

Cassie L. Mosher
Laboratory Manager

## Sample Information

**Client Sample ID:** MW004 **York Sample ID:** 23K0473-01

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 8:14 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **62.0** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **1300** | | ng/L | 3.50 | 20.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:18 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **442** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **979** | | ng/L | 6.80 | 18.3 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:18 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **730** | | ng/L | 4.20 | 20.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:18 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **1560** | | ng/L | 8.20 | 18.6 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:18 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **603** | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **25.5** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **28.3** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **1590** | | ng/L | 2.30 | 40.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:18 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **14.6** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **93.5** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **974** | | ng/L | 10.6 | 76.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:18 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **183** | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **359** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |

## Sample Information

**Client Sample ID:** **MW004** **York Sample ID:** **23K0473-01**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 8:14 am | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **123** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 757124-72-4 | **1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)** | **14.9** | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **12.6** | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 356-02-5 | *** 3-Perfluoropropyl propanoic acid (FPrPA)** | **5.92** | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 18:41 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *105 %* | *25-150* |
| *Surrogate: M3PFBS* | *148 %* | *25-150* |
| *Surrogate: M5PFHxA* | *110 %* | *25-150* |
| *Surrogate: M5PFHxA* | *101 %* | *25-150* |
| *Surrogate: M4PFHpA* | *106 %* | *25-150* |
| *Surrogate: M4PFHpA* | *116 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW004** **York Sample ID:** **23K0473-01**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 8:14 am | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M3PFHxS* | *111 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3PFHxS* | *115 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *85.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *87.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *106 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *95.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *96.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *85.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *70.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *87.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *60.9 %* | | | *10-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *55.6 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *9.75 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *14.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *74.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *97.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *93.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *83.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *66.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *103 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *63.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *80.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *61.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *85.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *506 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *418 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *63.8 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *55.8 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *119 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *102 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *77.8 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW004 **York Sample ID:** 23K0473-01

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 8:14 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M2-4:2 FTS* | *135 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *77.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *56.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *107 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *104 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *129 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *147 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *60.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *117 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *56.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *138 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW009D **York Sample ID:** 23K0473-02

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:00 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | ND | | ng/L | 0.452 | 1.70 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **0.388** | J | ng/L | 0.336 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | ND | | ng/L | 0.682 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **0.744** | J | ng/L | 0.653 | 1.76 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **2.86** | | ng/L | 0.404 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **3.18** | | ng/L | 0.788 | 1.79 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 375-95-1 | Perfluorononanoic acid (PFNA) | ND | | ng/L | 0.500 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.721 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.09 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |

## Sample Information

**Client Sample ID:** MW009D

**York Sample ID:** 23K0473-02

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:00 am | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.846 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.711 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.663 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.759 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 0.990 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **0.438** | J | ng/L | 0.221 | 3.84 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.846 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.874 | 1.84 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.27 | 1.85 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **1.09** | J | ng/L | 1.02 | 7.30 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 1.97 | 7.38 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **1.76** | J | ng/L | 0.317 | 7.69 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.480 | 3.42 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.06 | 3.84 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.240 | 3.84 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.356 | 3.84 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.730 | 1.81 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.72 | 7.21 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.10 | 7.69 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.33 | 7.26 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.673 | 7.19 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.509 | 7.26 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.894 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |

## Sample Information

**Client Sample ID:** **MW009D** **York Sample ID:** **23K0473-02**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:00 am | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.826 | 1.84 | 1 | EPA 1633 Draft 3 Certifications: NJDEP-NY037 | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 1.95 | 4.80 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.04 | 24.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.10 | 24.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.83 | 19.2 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.52 | 1.92 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.83 | 19.2 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.73 | 1.92 | 1 | EPA 1633 Draft 3 Certifications: | 11/16/2023 10:40 | 11/17/2023 12:11 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *100 %* | *25-150* |
| *Surrogate: M5PFHxA* | *107 %* | *25-150* |
| *Surrogate: M4PFHpA* | *138 %* | *25-150* |
| *Surrogate: M3PFHxS* | *110 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *95.6 %* | *25-150* |
| *Surrogate: M6PFDA* | *102 %* | *25-150* |
| *Surrogate: M7PFUdA* | *107 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *89.0 %* | *25-150* |
| *Surrogate: M2PFTeDA* | *57.4 %* | *10-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *97.5 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *91.8 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *120 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *78.8 %* | *10-150* |
| *Surrogate: d3-N-MeFOSAA* | *60.3 %* | *25-150* |
| *Surrogate: d5-N-EtFOSAA* | *65.2 %* | *25-150* |
| *Surrogate: M2-6:2 FTS* | *52.8 %* | *25-200* |
| *Surrogate: M2-8:2 FTS* | *43.5 %* | *25-200* |
| *Surrogate: M9PFNA* | *112 %* | *25-150* |
| *Surrogate: M2-4:2 FTS* | *58.9 %* | *25-150* |
| *Surrogate: d-N-MeFOSA* | *56.2 %* | *25-150* |
| *Surrogate: d-N-EtFOSA* | *87.3 %* | *25-150* |

## Sample Information

**Client Sample ID:** MW009D **York Sample ID:** 23K0473-02

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:00 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M3HFPO-DA* | *112 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *61.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *84.0 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW009S **York Sample ID:** 23K0473-03

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:30 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **203** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **1200** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **1200** | | ng/L | 3.50 | 20.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:34 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **387** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **2070** | | ng/L | 6.80 | 18.3 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:34 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **575** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **2020** | | ng/L | 8.20 | 18.6 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:34 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **99.0** | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **4.77** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **7.58** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 72629-94-8 | **Perfluorotridecanoic acid (PFTrDA)** | **1.77** | J | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |

## Sample Information

**Client Sample ID:** **MW009S** **York Sample ID:** **23K0473-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:30 am | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **867** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **9.02** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **225** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **773** | | ng/L | 10.6 | 76.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:34 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **25.4** | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **214** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 863090-89-5 | **Perfluoro-5-oxahexanoic acid (PFMBA)** | **0.385** | J | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **376** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 757124-72-4 | **1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)** | **2.70** | J | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **8.03** | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 914637-49-3 | *** 3-Perfluoropentyl propanoic acid (FPePA)** | **10.5** | J | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |

## Sample Information

**Client Sample ID:** MW009S

**York Sample ID:** 23K0473-03

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:30 am | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 19:14 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *111 %* | *25-150* |
| *Surrogate: M3PFBS* | *159 %* | *25-150* |
| *Surrogate: M5PFHxA* | *93.1 %* | *25-150* |
| *Surrogate: M5PFHxA* | *93.3 %* | *25-150* |
| *Surrogate: M4PFHpA* | *111 %* | *25-150* |
| *Surrogate: M4PFHpA* | *107 %* | *25-150* |
| *Surrogate: M3PFHxS* | *94.1 %* | *25-150* |
| *Surrogate: M3PFHxS* | *108 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *92.9 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *78.3 %* | *25-150* |
| *Surrogate: M6PFDA* | *90.3 %* | *25-150* |
| *Surrogate: M6PFDA* | *98.6 %* | *25-150* |
| *Surrogate: M7PFUdA* | *85.8 %* | *25-150* |
| *Surrogate: M7PFUdA* | *82.9 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *72.3 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *65.9 %* | *25-150* |
| *Surrogate: M2PFTeDA* | *59.7 %* | *10-150* |
| *Surrogate: M2PFTeDA* | *55.9 %* | *10-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *9.87 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *5.42 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *105 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *103 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *119 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW009S** **York Sample ID:** **23K0473-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 9:30 am | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *98.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *74.2 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *108 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *51.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *78.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *57.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *83.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *191 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *206 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *45.2 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *55.3 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *88.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *103 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *78.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *202 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *65.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *86.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *113 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *120 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *114 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *131 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *44.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *93.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *61.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *111 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** **MW012D** **York Sample ID:** **23K0473-04**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 10:27 am | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|

## Sample Information

**Client Sample ID:** **MW012D** **York Sample ID:** **23K0473-04**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 10:27 am | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **6.88** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **15.0** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **8.84** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **55.5** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **11.4** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **105** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **5.64** | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **1.68** | J | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **19.7** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **2.27** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **5.83** | J | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |

## Sample Information

**Client Sample ID:** MW012D

**York Sample ID:** 23K0473-04

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 10:27 am | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **6.28** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:30 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *105 %* | *25-150* |
| *Surrogate: M5PFHxA* | *104 %* | *25-150* |
| *Surrogate: M4PFHpA* | *104 %* | *25-150* |
| *Surrogate: M3PFHxS* | *110 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *94.9 %* | *25-150* |
| *Surrogate: M6PFDA* | *100 %* | *25-150* |
| *Surrogate: M7PFUdA* | *94.6 %* | *25-150* |

## Sample Information

**Client Sample ID:** MW012D **York Sample ID:** 23K0473-04

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 10:27 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *75.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *57.5 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *81.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *88.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *116 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *79.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *55.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *58.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *43.9 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *34.4 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *93.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *97.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *60.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *85.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *115 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *64.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *77.3 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW012S **York Sample ID:** 23K0473-05

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 11:26 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **25.9** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **41.0** | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **36.7** | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **179** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |

## Sample Information

**Client Sample ID:** MW012S

**York Sample ID:** 23K0473-05

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 11:26 am | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **33.6** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **346** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **23.1** | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **2.24** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **1.60** | J | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 72629-94-8 | **Perfluorotridecanoic acid (PFTrDA)** | **1.45** | J | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **42.2** | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **28.8** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **7.37** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **2.73** | J | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **19.5** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **18.3** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |

## Sample Information

**Client Sample ID:** MW012S

**York Sample ID:** 23K0473-05

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 11:26 am | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 68259-12-1 | *** Perfluoro-1-nonanesulfonic acid (PFNS)** | **1.02** | J | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 19:46 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *85.0 %* | *25-150* |
| *Surrogate: M5PFHxA* | *121 %* | *25-150* |
| *Surrogate: M4PFHpA* | *112 %* | *25-150* |
| *Surrogate: M3PFHxS* | *116 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *98.8 %* | *25-150* |
| *Surrogate: M6PFDA* | *109 %* | *25-150* |
| *Surrogate: M7PFUdA* | *82.4 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *50.0 %* | *25-150* |
| *Surrogate: M2PFTeDA* | *25.4 %* | *10-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *8.01 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *94.0 %* | *25-150* |

## Sample Information

**Client Sample ID:** MW012S **York Sample ID:** 23K0473-05

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 11:26 am | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *93.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *74.9 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *50.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *45.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *76.9 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *34.0 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *105 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *178 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *29.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *24.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *120 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *6.57 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *17.0 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW002 **York Sample ID:** 23K0473-06

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 1:22 pm | 11/08/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | ND | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | ND | | ng/L | 0.350 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | ND | | ng/L | 0.710 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **2.76** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | ND | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | ND | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 375-95-1 | Perfluorononanoic acid (PFNA) | ND | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |

## Sample Information

**Client Sample ID:** MW002 **York Sample ID:** 23K0473-06

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 1:22 pm | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | ND | | ng/L | 0.230 | 4.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3 Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3 Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.06 | 7.60 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.05 | 7.68 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 375-22-4 | Perfluoro-n-butanoic acid (PFBA) | ND | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3 Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |

## Sample Information

**Client Sample ID:** MW002 **York Sample ID:** 23K0473-06

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 1:22 pm | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3 Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:02 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *112 %* | *25-150* |
| *Surrogate: M5PFHxA* | *99.4 %* | *25-150* |
| *Surrogate: M4PFHpA* | *108 %* | *25-150* |
| *Surrogate: M3PFHxS* | *119 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *91.6 %* | *25-150* |
| *Surrogate: M6PFDA* | *89.6 %* | *25-150* |
| *Surrogate: M7PFUdA* | *78.8 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *73.0 %* | *25-150* |
| *Surrogate: M2PFTeDA* | *52.1 %* | *10-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *0.872 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *71.6 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *49.9 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *67.7 %* | *10-150* |
| *Surrogate: d3-N-MeFOSAA* | *48.2 %* | *25-150* |
| *Surrogate: d5-N-EtFOSAA* | *48.6 %* | *25-150* |
| *Surrogate: M2-6:2 FTS* | *46.5 %* | *25-200* |
| *Surrogate: M2-8:2 FTS* | *34.6 %* | *25-200* |
| *Surrogate: M9PFNA* | *94.5 %* | *25-150* |
| *Surrogate: M2-4:2 FTS* | *72.3 %* | *25-150* |

## Sample Information

**Client Sample ID:** MW002 **York Sample ID:** 23K0473-06

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 1:22 pm | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: d-N-MeFOSA* | *57.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *71.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *108 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *52.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *61.9 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW010 **York Sample ID:** 23K0473-07

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 2:10 pm | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **22.0** | | ng/L | 0.470 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **2170** | | ng/L | 3.50 | 20.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:50 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **673** | | ng/L | 7.10 | 20.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:50 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **89.0** | | ng/L | 0.680 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **525** | | ng/L | 0.420 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **72.2** | | ng/L | 0.820 | 1.86 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **106** | | ng/L | 0.520 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **138** | | ng/L | 0.750 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **133** | | ng/L | 1.13 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 307-55-1 | **Perfluorododecanoic acid (PFDoA)** | **23.6** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 72629-94-8 | **Perfluorotridecanoic acid (PFTrDA)** | **5.37** | | ng/L | 0.740 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 376-06-7 | *** Perfluorotetradecanoic acid (PFTA)** | **1.52** | J | ng/L | 0.690 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |

## Sample Information

**Client Sample ID:** **MW010** **York Sample ID:** **23K0473-07**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 2:10 pm | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.790 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 2991-50-6 | **N-EtFOSAA** | **2.77** | | ng/L | 1.03 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **3470** | | ng/L | 2.30 | 40.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:50 | ESJ |
| 754-91-6 | *** Perfluoro-1-octanesulfonamide (FOSA)** | **92.5** | | ng/L | 0.880 | 2.00 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **2.78** | | ng/L | 0.910 | 1.91 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 335-77-3 | *** Perfluoro-1-decanesulfonic acid (PFDS)** | **2.36** | | ng/L | 1.32 | 1.93 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 27619-97-2 | **1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)** | **809** | | ng/L | 10.6 | 76.0 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:50 | ESJ |
| 39108-34-4 | **1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS)** | **581** | | ng/L | 20.5 | 76.8 | 10 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/16/2023 22:50 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **336** | | ng/L | 0.330 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.500 | 3.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.14 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.250 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.370 | 4.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **13.4** | | ng/L | 0.760 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 757124-72-4 | **1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS)** | **3.88** | J | ng/L | 1.79 | 7.50 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.23 | 8.00 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.38 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.700 | 7.48 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.530 | 7.56 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.930 | 1.94 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.860 | 1.92 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 2.03 | 5.00 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |

## Sample Information

**Client Sample ID:** **MW010** **York Sample ID:** **23K0473-07**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 2:10 pm | 11/08/2023 |

### PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 914637-49-3 | *** 3-Perfluoropentyl propanoic acid (FPePA)** | **43.4** | | ng/L | 7.33 | 25.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.47 | 25.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.58 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.99 | 20.0 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.80 | 2.00 | 1 | EPA 1633 Draft 3 Certifications: | 11/14/2023 12:11 | 11/15/2023 20:18 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *96.2 %* | *25-150* |
| *Surrogate: M3PFBS* | *95.0 %* | *25-150* |
| *Surrogate: M5PFHxA* | *90.7 %* | *25-150* |
| *Surrogate: M5PFHxA* | *99.3 %* | *25-150* |
| *Surrogate: M4PFHpA* | *123 %* | *25-150* |
| *Surrogate: M4PFHpA* | *108 %* | *25-150* |
| *Surrogate: M3PFHxS* | *116 %* | *25-150* |
| *Surrogate: M3PFHxS* | *123 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *90.1 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *89.5 %* | *25-150* |
| *Surrogate: M6PFDA* | *98.0 %* | *25-150* |
| *Surrogate: M6PFDA* | *86.8 %* | *25-150* |
| *Surrogate: M7PFUdA* | *74.0 %* | *25-150* |
| *Surrogate: M7PFUdA* | *73.9 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *75.9 %* | *25-150* |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *60.2 %* | *25-150* |
| *Surrogate: M2PFTeDA* | *57.7 %* | *10-150* |
| *Surrogate: M2PFTeDA* | *50.1 %* | *10-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *5.34 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *0.941 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *67.8 %* | *25-150* |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *80.0 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW010** **York Sample ID:** **23K0473-07**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0473 | SHD2305 | Ground Water | November 7, 2023 2:10 pm | 11/08/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *50.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *37.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *76.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *73.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *51.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *48.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *48.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *48.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *184 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *169 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *82.2 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *78.5 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *98.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: M9PFNA* | *97.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *74.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *142 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *71.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *60.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *79.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *68.3 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *109 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *157 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *37.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *51.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *50.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *58.3 %* | | | *25-150* | | | | | | |

# Analytical Batch Summary

**Batch ID:** BK30905 **Preparation Method:** EPA 1633 Prep **Prepared By:** KFH

| YORK Sample ID | Client Sample ID | Preparation Date |
|---|---|---|
| 23K0473-01 | MW004 | 11/14/23 |
| 23K0473-01RE1 | MW004 | 11/14/23 |
| 23K0473-02 | MW009D | 11/14/23 |
| 23K0473-03 | MW009S | 11/14/23 |
| 23K0473-03RE1 | MW009S | 11/14/23 |
| 23K0473-04 | MW012D | 11/14/23 |
| 23K0473-05 | MW012S | 11/14/23 |
| 23K0473-06 | MW002 | 11/14/23 |
| 23K0473-07 | MW010 | 11/14/23 |
| 23K0473-07RE1 | MW010 | 11/14/23 |
| BK30905-BLK1 | Blank | 11/14/23 |
| BK30905-BS1 | LCS | 11/14/23 |
| BK30905-BS2 | LCS | 11/14/23 |
| BK30905-MS1 | Matrix Spike | 11/14/23 |
| BK30905-MSD1 | Matrix Spike Dup | 11/14/23 |

**Batch ID:** BK31074 **Preparation Method:** EPA 1633 Prep **Prepared By:** K H

| YORK Sample ID | Client Sample ID | Preparation Date |
|---|---|---|
| 23K0473-02RE1 | MW009D | 11/16/23 |
| BK31074-BLK1 | Blank | 11/16/23 |
| BK31074-BS1 | LCS | 11/16/23 |
| BK31074-DUP1 | Duplicate | 11/16/23 |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK30905-BLK1)** | | | | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 |
| Perfluorobutanesulfonic acid (PFBS) | ND | 3.54 | ng/L | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroheptanoic acid (PFHpA) | ND | 4.00 | " | | | | | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 3.66 | " | | | | | | | | |
| Perfluorooctanoic acid (PFOA) | ND | 4.00 | " | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 3.72 | " | | | | | | | | |
| Perfluorononanoic acid (PFNA) | ND | 4.00 | " | | | | | | | | |
| Perfluorodecanoic acid (PFDA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | ND | 4.00 | " | | | | | | | | |
| Perfluorododecanoic acid (PFDoA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotetradecanoic acid (PFTA) | ND | 4.00 | " | | | | | | | | |
| N-MeFOSAA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSAA | ND | 4.00 | " | | | | | | | | |
| Perfluoropentanoic acid (PFPeA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 4.00 | " | | | | | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 3.82 | " | | | | | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 3.86 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | 15.2 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | 15.4 | " | | | | | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 3.64 | 16.0 | " | | | | | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 7.12 | " | | | | | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 3.76 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | 15.0 | " | | | | | | | | |
| HFPO-DA (Gen-X) | ND | 16.0 | " | | | | | | | | |
| 11CL-PF3OUdS | ND | 15.1 | " | | | | | | | | |
| 9CL-PF3ONS | ND | 15.0 | " | | | | | | | | |
| ADONA | ND | 15.1 | " | | | | | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 3.88 | " | | | | | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 3.84 | " | | | | | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 10.0 | " | | | | | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 50.0 | " | | | | | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 50.0 | " | | | | | | | | |
| N-MeFOSE | ND | 40.0 | " | | | | | | | | |
| N-MeFOSA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSE | ND | 40.0 | " | | | | | | | | |
| N-EtFOSA | ND | 4.00 | " | | | | | | | | |
| *Surrogate: M3PFBS* | *32.2* | | " | *46.6* | | *69.2* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *40.6* | | " | *50.0* | | *81.1* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *66.4* | | " | *50.0* | | *133* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *60.4* | | " | *47.4* | | *127* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *50.9* | | " | *50.0* | | *102* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *28.6* | | " | *25.0* | | *114* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK30905-BLK1)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| *Surrogate: M7PFUdA* | *34.2* | | *ng/L* | *25.0* | | *137* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *31.5* | | *"* | *25.0* | | *126* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *25.2* | | *"* | *25.0* | | *101* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.87* | | *"* | *200* | | *0.937* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *48.1* | | *"* | *47.9* | | *100* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *24.8* | | *"* | *100* | | *24.8* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *56.5* | | *"* | *50.0* | | *113* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *100* | | *"* | *100* | | *100* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *120* | | *"* | *100* | | *120* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *36.7* | | *"* | *95.1* | | *38.6* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *42.6* | | *"* | *96.0* | | *44.4* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *29.7* | | *"* | *25.0* | | *119* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *28.6* | | *"* | *93.8* | | *30.5* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *46.7* | | *"* | *50.0* | | *93.5* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *64.9* | | *"* | *50.0* | | *130* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *141* | | *"* | *200* | | *70.5* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *1020* | | *"* | *500* | | *205* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *1030* | | *"* | *500* | | *205* | *25-150* | | | | |
| **LCS (BK30905-BS1)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 89.0 | 3.54 | ng/L | 70.8 | | 126 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 82.4 | 4.00 | " | 80.0 | | 103 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 70.2 | 4.00 | " | 80.0 | | 87.7 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 81.3 | 3.66 | " | 73.2 | | 111 | 50-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 96.3 | 4.00 | " | 80.0 | | 120 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 23.5 | 3.72 | " | 74.4 | | 31.6 | 50-150 | Low Bias | | | |
| Perfluorononanoic acid (PFNA) | 88.7 | 4.00 | " | 80.0 | | 111 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 80.5 | 4.00 | " | 80.0 | | 101 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 97.2 | 4.00 | " | 80.0 | | 122 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 94.5 | 4.00 | " | 80.0 | | 118 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 122 | 4.00 | " | 80.0 | | 153 | 50-150 | High Bias | | | |
| Perfluorotetradecanoic acid (PFTA) | 100 | 4.00 | " | 80.0 | | 125 | 50-150 | | | | |
| N-MeFOSAA | 108 | 4.00 | " | 80.0 | | 135 | 50-150 | | | | |
| N-EtFOSAA | 91.8 | 4.00 | " | 80.0 | | 115 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 171 | 8.00 | " | 160 | | 107 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 96.8 | 4.00 | " | 80.0 | | 121 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 88.5 | 3.82 | " | 76.4 | | 116 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 118 | 3.86 | " | 77.2 | | 153 | 50-150 | High Bias | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 373 | 15.2 | " | 304 | | 123 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 381 | 15.4 | " | 307 | | 124 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 79.6 | 16.0 | " | 320 | | 24.9 | 50-150 | Low Bias | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 116 | 7.12 | " | 142 | | 81.8 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 106 | 8.00 | " | 160 | | 66.0 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 11.5 | 8.00 | " | 160 | | 7.17 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 497 | 8.00 | " | 160 | | 311 | 50-150 | High Bias | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK30905-BS1)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 65.9 | 3.76 | ng/L | 75.2 | | 87.7 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 310 | 15.0 | " | 300 | | 103 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 149 | 16.0 | " | 160 | | 93.1 | 50-150 | | | | |
| 11CL-PF3OUdS | 324 | 15.1 | " | 151 | | 214 | 50-150 | High Bias | | | |
| 9CL-PF3ONS | 288 | 15.0 | " | 150 | | 192 | 50-150 | High Bias | | | |
| ADONA | 324 | 15.1 | " | 151 | | 214 | 50-150 | High Bias | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 86.9 | 3.88 | " | 77.6 | | 112 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 106 | 3.84 | " | 76.8 | | 138 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 115 | 10.0 | " | 320 | | 35.9 | 50-150 | Low Bias | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 1730 | 50.0 | " | 1600 | | 108 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 2180 | 50.0 | " | 1600 | | 137 | 50-150 | | | | |
| N-MeFOSE | 829 | 40.0 | " | 800 | | 104 | 50-150 | | | | |
| N-MeFOSA | 69.9 | 4.00 | " | 80.0 | | 87.4 | 50-150 | | | | |
| N-EtFOSE | 840 | 40.0 | " | 800 | | 105 | 50-150 | | | | |
| N-EtFOSA | 67.2 | 4.00 | " | 80.0 | | 84.0 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *16.9* | | " | *46.6* | | *36.3* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *22.5* | | " | *50.0* | | *45.1* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *43.1* | | " | *50.0* | | *86.1* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *49.3* | | " | *47.4* | | *104* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *40.4* | | " | *50.0* | | *80.8* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *25.1* | | " | *25.0* | | *100* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *26.8* | | " | *25.0* | | *107* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *25.5* | | " | *25.0* | | *102* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *16.8* | | " | *25.0* | | *67.3* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.09* | | " | *200* | | *0.543* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *41.0* | | " | *47.9* | | *85.7* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *4.36* | | " | *100* | | *4.36* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *39.7* | | " | *50.0* | | *79.5* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *64.1* | | " | *100* | | *64.1* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *75.4* | | " | *100* | | *75.4* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *36.1* | | " | *95.1* | | *38.0* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *33.8* | | " | *96.0* | | *35.3* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *23.5* | | " | *25.0* | | *94.0* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *21.0* | | " | *93.8* | | *22.4* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *29.4* | | " | *50.0* | | *58.8* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *32.4* | | " | *50.0* | | *64.7* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *70.6* | | " | *200* | | *35.3* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *452* | | " | *500* | | *90.5* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *543* | | " | *500* | | *109* | *25-150* | | | | |

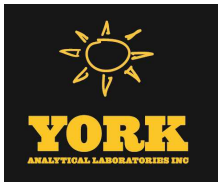
| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK30905-BS2)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 16.9 | 3.54 | ng/L | 14.2 | | 120 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 15.3 | 4.00 | " | 16.0 | | 95.5 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 13.6 | 4.00 | " | 16.0 | | 84.9 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 3.25 | 3.66 | " | 14.6 | | 22.2 | 50-150 | Low Bias | | | |
| Perfluorooctanoic acid (PFOA) | 19.4 | 4.00 | " | 16.0 | | 122 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 5.15 | 3.72 | " | 14.9 | | 34.6 | 50-150 | Low Bias | | | |
| Perfluorononanoic acid (PFNA) | 17.1 | 4.00 | " | 16.0 | | 107 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 14.8 | 4.00 | " | 16.0 | | 92.3 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 18.0 | 4.00 | " | 16.0 | | 112 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 18.9 | 4.00 | " | 16.0 | | 118 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 22.8 | 4.00 | " | 16.0 | | 143 | 50-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 15.7 | 4.00 | " | 16.0 | | 98.3 | 50-150 | | | | |
| N-MeFOSAA | 18.1 | 4.00 | " | 16.0 | | 113 | 50-150 | | | | |
| N-EtFOSAA | 17.7 | 4.00 | " | 16.0 | | 111 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 34.4 | 8.00 | " | 32.0 | | 107 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 21.8 | 4.00 | " | 16.0 | | 136 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 17.5 | 3.82 | " | 15.3 | | 114 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 21.5 | 3.86 | " | 15.4 | | 139 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 72.0 | 15.2 | " | 60.8 | | 118 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 66.4 | 15.4 | " | 61.4 | | 108 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 24.3 | 16.0 | " | 64.0 | | 37.9 | 50-150 | Low Bias | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 22.4 | 7.12 | " | 28.5 | | 78.7 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 19.8 | 8.00 | " | 32.0 | | 61.8 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 1.88 | 8.00 | " | 32.0 | | 5.89 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 72.4 | 8.00 | " | 32.0 | | 226 | 50-150 | High Bias | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 14.2 | 3.76 | " | 15.0 | | 94.7 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 70.5 | 15.0 | " | 60.0 | | 118 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 31.3 | 16.0 | " | 32.0 | | 97.9 | 50-150 | | | | |
| 11CL-PF3OUdS | 56.2 | 15.1 | " | 30.2 | | 186 | 50-150 | High Bias | | | |
| 9CL-PF3ONS | 50.2 | 15.0 | " | 29.9 | | 168 | 50-150 | High Bias | | | |
| ADONA | 63.5 | 15.1 | " | 30.2 | | 210 | 50-150 | High Bias | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 18.0 | 3.88 | " | 15.5 | | 116 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 19.7 | 3.84 | " | 15.4 | | 128 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 16.9 | 10.0 | " | 64.0 | | 26.4 | 50-150 | Low Bias | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 281 | 50.0 | " | 320 | | 87.8 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 353 | 50.0 | " | 320 | | 110 | 50-150 | | | | |
| N-MeFOSE | 177 | 40.0 | " | 160 | | 110 | 50-150 | | | | |
| N-MeFOSA | 17.2 | 4.00 | " | 16.0 | | 108 | 50-150 | | | | |
| N-EtFOSE | 156 | 40.0 | " | 160 | | 97.8 | 50-150 | | | | |
| N-EtFOSA | 9.93 | 4.00 | " | 16.0 | | 62.1 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *24.1* | | " | *46.6* | | *51.8* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *29.2* | | " | *50.0* | | *58.5* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *48.8* | | " | *50.0* | | *97.6* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *58.0* | | " | *47.4* | | *122* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *43.9* | | " | *50.0* | | *87.7* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *28.7* | | " | *25.0* | | *115* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *26.8* | | " | *25.0* | | *107* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK30905-BS2)** | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *24.7* | | *ng/L* | *25.0* | | *99.0* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *18.2* | | *"* | *25.0* | | *72.8* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.28* | | *"* | *200* | | *0.638* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *42.9* | | *"* | *47.9* | | *89.7* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *10.4* | | *"* | *100* | | *10.4* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *36.2* | | *"* | *50.0* | | *72.4* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *73.9* | | *"* | *100* | | *73.9* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *73.6* | | *"* | *100* | | *73.7* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *35.5* | | *"* | *95.1* | | *37.3* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *32.9* | | *"* | *96.0* | | *34.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *25.5* | | *"* | *25.0* | | *102* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *22.1* | | *"* | *93.8* | | *23.6* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *26.3* | | *"* | *50.0* | | *52.6* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *43.4* | | *"* | *50.0* | | *86.9* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *81.3* | | *"* | *200* | | *40.6* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *453* | | *"* | *500* | | *90.7* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *536* | | *"* | *500* | | *107* | *25-150* | | | | |
| **Matrix Spike (BK30905-MS1)** | *Source sample: 23K0422-05 (Matrix Spike) | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 40.8 | 1.77 | ng/L | 35.4 | 1.83 | 110 | 25-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 42.2 | 2.00 | " | 40.0 | 4.78 | 93.6 | 25-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 38.1 | 2.00 | " | 40.0 | 2.55 | 88.8 | 25-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 46.3 | 1.83 | " | 36.6 | 13.5 | 89.7 | 25-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 50.9 | 2.00 | " | 40.0 | 5.17 | 114 | 25-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 52.4 | 1.86 | " | 37.2 | 13.6 | 104 | 25-150 | | | | |
| Perfluorononanoic acid (PFNA) | 38.8 | 2.00 | " | 40.0 | 1.24 | 93.9 | 25-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 35.5 | 2.00 | " | 40.0 | ND | 88.7 | 25-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 45.2 | 2.00 | " | 40.0 | ND | 113 | 25-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 42.9 | 2.00 | " | 40.0 | ND | 107 | 25-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 43.8 | 2.00 | " | 40.0 | ND | 110 | 25-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 42.4 | 2.00 | " | 40.0 | ND | 106 | 25-150 | | | | |
| N-MeFOSAA | 47.4 | 2.00 | " | 40.0 | ND | 119 | 25-150 | | | | |
| N-EtFOSAA | 43.7 | 2.00 | " | 40.0 | ND | 109 | 25-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 82.2 | 4.00 | " | 80.0 | 4.11 | 97.6 | 25-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 48.3 | 2.00 | " | 40.0 | ND | 121 | 25-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 45.7 | 1.91 | " | 38.2 | ND | 120 | 25-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 35.8 | 1.93 | " | 38.6 | ND | 92.8 | 25-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 160 | 7.60 | " | 152 | ND | 105 | 25-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 174 | 7.68 | " | 154 | ND | 113 | 25-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 146 | 8.00 | " | 160 | 2.75 | 89.8 | 25-150 | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 64.1 | 3.56 | " | 71.2 | ND | 90.1 | 25-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 69.6 | 4.00 | " | 80.0 | ND | 87.0 | 25-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 14.6 | 4.00 | " | 80.0 | ND | 18.3 | 25-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 109 | 4.00 | " | 80.0 | ND | 136 | 25-150 | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 42.2 | 1.88 | " | 37.6 | 2.34 | 106 | 25-150 | | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Matrix Spike (BK30905-MS1)** | *Source sample: 23K0422-05 (Matrix Spike) | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 139 | 7.50 | ng/L | 150 | ND | 92.9 | 25-150 | | | | |
| HFPO-DA (Gen-X) | 67.1 | 8.00 | " | 80.0 | ND | 83.9 | 25-150 | | | | |
| 11CL-PF3OUdS | 77.7 | 7.56 | " | 75.6 | ND | 103 | 25-150 | | | | |
| 9CL-PF3ONS | 79.2 | 7.48 | " | 74.8 | ND | 106 | 25-150 | | | | |
| ADONA | 117 | 7.56 | " | 75.6 | ND | 155 | 25-150 | High Bias | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 42.4 | 1.94 | " | 38.8 | ND | 109 | 25-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 46.5 | 1.92 | " | 38.4 | ND | 121 | 25-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 55.4 | 5.00 | " | 160 | ND | 34.6 | 25-150 | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 391 | 25.0 | " | 800 | ND | 48.8 | 25-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 405 | 25.0 | " | 800 | ND | 50.7 | 25-150 | | | | |
| N-MeFOSE | 372 | 20.0 | " | 400 | ND | 93.0 | 25-150 | | | | |
| N-MeFOSA | 35.1 | 2.00 | " | 40.0 | ND | 87.6 | 25-150 | | | | |
| N-EtFOSE | 363 | 20.0 | " | 400 | ND | 90.7 | 25-150 | | | | |
| N-EtFOSA | 28.7 | 2.00 | " | 40.0 | ND | 71.7 | 25-150 | | | | |
| *Surrogate: M3PFBS* | *25.4* | | " | *23.3* | | *109* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *23.3* | | " | *25.0* | | *93.1* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *24.9* | | " | *25.0* | | *99.4* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *25.3* | | " | *23.7* | | *107* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *20.6* | | " | *25.0* | | *82.5* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *11.4* | | " | *12.5* | | *91.0* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *10.1* | | " | *12.5* | | *81.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *9.05* | | " | *12.5* | | *72.4* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *7.85* | | " | *12.5* | | *62.8* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *6.13* | | " | *100* | | *6.13* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *18.9* | | " | *24.0* | | *79.0* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *28.6* | | " | *50.0* | | *57.2* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *14.8* | | " | *25.0* | | *59.2* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *28.1* | | " | *50.0* | | *56.2* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *26.8* | | " | *50.0* | | *53.7* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *16.1* | | " | *47.6* | | *33.9* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *13.2* | | " | *48.0* | | *27.6* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *10.4* | | " | *12.5* | | *83.5* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *26.4* | | " | *46.9* | | *56.3* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *7.65* | | " | *25.0* | | *30.6* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *10.9* | | " | *25.0* | | *43.4* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *50.9* | | " | *100* | | *50.9* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *243* | | " | *250* | | *97.1* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *252* | | " | *250* | | *101* | *25-150* | | | | |




## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Matrix Spike Dup (BK30905-MSD1)** | *Source sample: 23K0422-05 (Matrix Spike Dup) | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | |
| Perfluorobutanesulfonic acid (PFBS) | 43.8 | 1.77 | ng/L | 35.4 | 1.83 | 119 | 25-150 | | 7.07 | 35 | |
| Perfluorohexanoic acid (PFHxA) | 46.0 | 2.00 | " | 40.0 | 4.78 | 103 | 25-150 | | 8.60 | 35 | |
| Perfluoroheptanoic acid (PFHpA) | 37.2 | 2.00 | " | 40.0 | 2.55 | 86.7 | 25-150 | | 2.24 | 35 | |
| Perfluorohexanesulfonic acid (PFHxS) | 53.5 | 1.83 | " | 36.6 | 13.5 | 109 | 25-150 | | 14.4 | 35 | |
| Perfluorooctanoic acid (PFOA) | 54.9 | 2.00 | " | 40.0 | 5.17 | 124 | 25-150 | | 7.42 | 35 | |
| Perfluorooctanesulfonic acid (PFOS) | 53.2 | 1.86 | " | 37.2 | 13.6 | 106 | 25-150 | | 1.54 | 35 | |
| Perfluorononanoic acid (PFNA) | 43.8 | 2.00 | " | 40.0 | 1.24 | 106 | 25-150 | | 12.0 | 35 | |
| Perfluorodecanoic acid (PFDA) | 48.3 | 2.00 | " | 40.0 | ND | 121 | 25-150 | | 30.6 | 35 | |
| Perfluoroundecanoic acid (PFUnA) | 46.5 | 2.00 | " | 40.0 | ND | 116 | 25-150 | | 2.85 | 35 | |
| Perfluorododecanoic acid (PFDoA) | 51.3 | 2.00 | " | 40.0 | ND | 128 | 25-150 | | 17.9 | 35 | |
| Perfluorotridecanoic acid (PFTrDA) | 56.0 | 2.00 | " | 40.0 | ND | 140 | 25-150 | | 24.4 | 35 | |
| Perfluorotetradecanoic acid (PFTA) | 44.9 | 2.00 | " | 40.0 | ND | 112 | 25-150 | | 5.78 | 35 | |
| N-MeFOSAA | 51.8 | 2.00 | " | 40.0 | ND | 129 | 25-150 | | 8.75 | 35 | |
| N-EtFOSAA | 50.0 | 2.00 | " | 40.0 | ND | 125 | 25-150 | | 13.5 | 35 | |
| Perfluoropentanoic acid (PFPeA) | 87.7 | 4.00 | " | 80.0 | 4.11 | 105 | 25-150 | | 6.54 | 35 | |
| Perfluoro-1-octanesulfonamide (FOSA) | 52.1 | 2.00 | " | 40.0 | ND | 130 | 25-150 | | 7.72 | 35 | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 46.1 | 1.91 | " | 38.2 | ND | 121 | 25-150 | | 0.913 | 35 | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 46.8 | 1.93 | " | 38.6 | ND | 121 | 25-150 | | 26.5 | 35 | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 186 | 7.60 | " | 152 | ND | 123 | 25-150 | | 15.3 | 35 | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 168 | 7.68 | " | 154 | ND | 109 | 25-150 | | 3.32 | 35 | |
| Perfluoro-n-butanoic acid (PFBA) | 166 | 8.00 | " | 160 | 2.75 | 102 | 25-150 | | 12.5 | 35 | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 68.8 | 3.56 | " | 71.2 | ND | 96.6 | 25-150 | | 7.02 | 30 | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 61.0 | 4.00 | " | 80.0 | ND | 76.3 | 25-150 | | 13.2 | 30 | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 22.7 | 4.00 | " | 80.0 | ND | 28.4 | 25-150 | | 43.3 | 30 | Non-dir. |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 94.8 | 4.00 | " | 80.0 | ND | 119 | 25-150 | | 13.8 | 30 | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 48.3 | 1.88 | " | 37.6 | 2.34 | 122 | 25-150 | | 13.4 | 30 | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 161 | 7.50 | " | 150 | ND | 107 | 25-150 | | 14.2 | 30 | |
| HFPO-DA (Gen-X) | 71.5 | 8.00 | " | 80.0 | ND | 89.3 | 25-150 | | 6.23 | 30 | |
| 11CL-PF3OUdS | 65.2 | 7.56 | " | 75.6 | ND | 86.2 | 25-150 | | 17.5 | 30 | |
| 9CL-PF3ONS | 74.8 | 7.48 | " | 74.8 | ND | 100 | 25-150 | | 5.71 | 30 | |
| ADONA | 112 | 7.56 | " | 75.6 | ND | 148 | 25-150 | | 4.16 | 30 | |
| Perfluorododecanesulfonic acid (PFDoS) | 35.6 | 1.94 | " | 38.8 | ND | 91.9 | 25-150 | | 17.4 | 30 | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 52.6 | 1.92 | " | 38.4 | ND | 137 | 25-150 | | 12.3 | 30 | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 64.1 | 5.00 | " | 160 | ND | 40.1 | 25-150 | | 14.5 | 30 | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 414 | 25.0 | " | 800 | ND | 51.7 | 25-150 | | 5.80 | 30 | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 420 | 25.0 | " | 800 | ND | 52.5 | 25-150 | | 3.54 | 30 | |
| N-MeFOSE | 405 | 20.0 | " | 400 | ND | 101 | 25-150 | | 8.38 | 30 | |
| N-MeFOSA | 42.9 | 2.00 | " | 40.0 | ND | 107 | 25-150 | | 20.2 | 30 | |
| N-EtFOSE | 378 | 20.0 | " | 400 | ND | 94.5 | 25-150 | | 4.10 | 30 | |
| N-EtFOSA | 20.1 | 2.00 | " | 40.0 | ND | 50.1 | 25-150 | | 35.4 | 30 | Non-dir. |
| *Surrogate: M3PFBS* | *31.5* | | " | *23.3* | | *135* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *27.4* | | " | *25.0* | | *110* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *28.8* | | " | *25.0* | | *115* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *29.6* | | " | *23.7* | | *125* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *23.8* | | " | *25.0* | | *95.3* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *12.3* | | " | *12.5* | | *98.2* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *12.2* | | " | *12.5* | | *97.5* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK30905 - EPA 1633 Prep** | | | | | | | | | | | |
| **Matrix Spike Dup (BK30905-MSD1)** | *Source sample: 23K0422-05 (Matrix Spike Dup) | | | | | | | | Prepared: 11/14/2023 Analyzed: 11/15/2023 | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *8.60* | | *ng/L* | *12.5* | | *68.8* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *6.62* | | *"* | *12.5* | | *52.9* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *8.89* | | *"* | *100* | | *8.89* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *23.6* | | *"* | *24.0* | | *98.4* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *48.0* | | *"* | *50.0* | | *96.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *18.7* | | *"* | *25.0* | | *74.7* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *34.4* | | *"* | *50.0* | | *68.8* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *32.9* | | *"* | *50.0* | | *65.9* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *18.4* | | *"* | *47.6* | | *38.7* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *16.9* | | *"* | *48.0* | | *35.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *13.0* | | *"* | *12.5* | | *104* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *31.6* | | *"* | *46.9* | | *67.5* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *6.43* | | *"* | *25.0* | | *25.7* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *6.18* | | *"* | *25.0* | | *24.7* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *67.9* | | *"* | *100* | | *67.9* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *244* | | *"* | *250* | | *97.7* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *234* | | *"* | *250* | | *93.8* | *25-150* | | | | |
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK31074-BLK1)** | | | | | | | | | Prepared & Analyzed: 11/16/2023 | | |
| Perfluorobutanesulfonic acid (PFBS) | ND | 3.54 | ng/L | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroheptanoic acid (PFHpA) | ND | 4.00 | " | | | | | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 3.66 | " | | | | | | | | |
| Perfluorooctanoic acid (PFOA) | ND | 4.00 | " | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 3.72 | " | | | | | | | | |
| Perfluorononanoic acid (PFNA) | ND | 4.00 | " | | | | | | | | |
| Perfluorodecanoic acid (PFDA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | ND | 4.00 | " | | | | | | | | |
| Perfluorododecanoic acid (PFDoA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotetradecanoic acid (PFTA) | ND | 4.00 | " | | | | | | | | |
| N-MeFOSAA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSAA | ND | 4.00 | " | | | | | | | | |
| Perfluoropentanoic acid (PFPeA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 4.00 | " | | | | | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 3.82 | " | | | | | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 3.86 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | 15.2 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | 15.4 | " | | | | | | | | |
| Perfluoro-n-butanoic acid (PFBA) | ND | 16.0 | " | | | | | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 7.12 | " | | | | | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 8.00 | " | | | | | | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK31074-BLK1)** | | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 8.00 | ng/L | | | | | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 3.76 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | 15.0 | " | | | | | | | | |
| HFPO-DA (Gen-X) | ND | 16.0 | " | | | | | | | | |
| 11CL-PF3OUdS | ND | 15.1 | " | | | | | | | | |
| 9CL-PF3ONS | ND | 15.0 | " | | | | | | | | |
| ADONA | ND | 15.1 | " | | | | | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 3.88 | " | | | | | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 3.84 | " | | | | | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 10.0 | " | | | | | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 50.0 | " | | | | | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 50.0 | " | | | | | | | | |
| N-MeFOSE | ND | 40.0 | " | | | | | | | | |
| N-MeFOSA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSE | ND | 40.0 | " | | | | | | | | |
| N-EtFOSA | ND | 4.00 | " | | | | | | | | |
| *Surrogate: M3PFBS* | *38.1* | | " | *38.8* | | *98.2* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *41.4* | | " | *41.7* | | *99.4* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *51.9* | | " | *41.7* | | *124* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *44.9* | | " | *39.5* | | *114* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *35.4* | | " | *41.7* | | *84.9* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *22.8* | | " | *20.8* | | *110* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *22.8* | | " | *20.8* | | *110* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *20.8* | | " | *20.8* | | *99.8* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *14.7* | | " | *20.8* | | *70.9* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *1.80* | | " | *167* | | *1.08* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *31.9* | | " | *39.9* | | *80.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *53.6* | | " | *83.3* | | *64.3* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *35.3* | | " | *41.7* | | *84.8* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *53.5* | | " | *83.3* | | *64.3* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *55.0* | | " | *83.3* | | *66.0* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *36.7* | | " | *79.2* | | *46.4* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *34.5* | | " | *80.0* | | *43.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *21.2* | | " | *20.8* | | *102* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *50.1* | | " | *78.2* | | *64.0* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *33.1* | | " | *41.7* | | *79.4* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *31.1* | | " | *41.7* | | *74.6* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *185* | | " | *167* | | *111* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *265* | | " | *417* | | *63.5* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *352* | | " | *417* | | *84.5* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31074-BS1)** | | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 79.9 | 3.54 | ng/L | 70.8 | | 113 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 71.6 | 4.00 | " | 80.0 | | 89.5 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 59.8 | 4.00 | " | 80.0 | | 74.8 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 70.9 | 3.66 | " | 73.2 | | 96.8 | 50-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 82.1 | 4.00 | " | 80.0 | | 103 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 78.1 | 3.72 | " | 74.4 | | 105 | 50-150 | | | | |
| Perfluorononanoic acid (PFNA) | 75.4 | 4.00 | " | 80.0 | | 94.3 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 71.3 | 4.00 | " | 80.0 | | 89.1 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 82.7 | 4.00 | " | 80.0 | | 103 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 87.3 | 4.00 | " | 80.0 | | 109 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 103 | 4.00 | " | 80.0 | | 129 | 50-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 81.8 | 4.00 | " | 80.0 | | 102 | 50-150 | | | | |
| N-MeFOSAA | 89.8 | 4.00 | " | 80.0 | | 112 | 50-150 | | | | |
| N-EtFOSAA | 78.9 | 4.00 | " | 80.0 | | 98.7 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 153 | 8.00 | " | 160 | | 95.8 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 95.4 | 4.00 | " | 80.0 | | 119 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 80.5 | 3.82 | " | 76.4 | | 105 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 88.6 | 3.86 | " | 77.2 | | 115 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 355 | 15.2 | " | 304 | | 117 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 348 | 15.4 | " | 307 | | 113 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 165 | 16.0 | " | 320 | | 51.5 | 50-150 | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 110 | 7.12 | " | 142 | | 77.1 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 93.4 | 8.00 | " | 160 | | 58.4 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 4.41 | 8.00 | " | 160 | | 2.76 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 215 | 8.00 | " | 160 | | 135 | 50-150 | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 67.2 | 3.76 | " | 75.2 | | 89.4 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 295 | 15.0 | " | 300 | | 98.5 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 133 | 16.0 | " | 160 | | 83.0 | 50-150 | | | | |
| 11CL-PF3OUdS | 135 | 15.1 | " | 151 | | 89.4 | 50-150 | | | | |
| 9CL-PF3ONS | 154 | 15.0 | " | 150 | | 103 | 50-150 | | | | |
| ADONA | 149 | 15.1 | " | 151 | | 98.7 | 50-150 | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 69.7 | 3.88 | " | 77.6 | | 89.8 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 97.1 | 3.84 | " | 76.8 | | 126 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 195 | 10.0 | " | 320 | | 60.8 | 50-150 | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 1540 | 50.0 | " | 1600 | | 96.4 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 1850 | 50.0 | " | 1600 | | 116 | 50-150 | | | | |
| N-MeFOSE | 680 | 40.0 | " | 800 | | 85.0 | 50-150 | | | | |
| N-MeFOSA | 69.2 | 4.00 | " | 80.0 | | 86.5 | 50-150 | | | | |
| N-EtFOSE | 696 | 40.0 | " | 800 | | 87.0 | 50-150 | | | | |
| N-EtFOSA | 58.7 | 4.00 | " | 80.0 | | 73.4 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *39.8* | | *"* | *38.8* | | *103* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *46.6* | | *"* | *41.7* | | *112* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *55.2* | | *"* | *41.7* | | *132* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *52.0* | | *"* | *39.5* | | *132* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *43.9* | | *"* | *41.7* | | *105* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *23.5* | | *"* | *20.8* | | *113* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *23.1* | | *"* | *20.8* | | *111* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31074-BS1)** | | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *21.1* | | *ng/L* | *20.8* | | *101* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *16.2* | | *"* | *20.8* | | *78.1* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *2.02* | | *"* | *167* | | *1.21* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *37.0* | | *"* | *39.9* | | *92.8* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *48.7* | | *"* | *83.3* | | *58.4* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *37.4* | | *"* | *41.7* | | *89.6* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *60.1* | | *"* | *83.3* | | *72.2* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *64.9* | | *"* | *83.3* | | *77.9* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *49.2* | | *"* | *79.2* | | *62.2* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *49.2* | | *"* | *80.0* | | *61.6* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *23.7* | | *"* | *20.8* | | *114* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *59.5* | | *"* | *78.2* | | *76.2* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *32.6* | | *"* | *41.7* | | *78.1* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *33.3* | | *"* | *41.7* | | *79.8* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *217* | | *"* | *167* | | *130* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *317* | | *"* | *417* | | *76.1* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *377* | | *"* | *417* | | *90.3* | *25-150* | | | | |
| **Duplicate (BK31074-DUP1)** | *Source sample: 23K0602-07 (Duplicate) | | | | | | | Prepared & Analyzed: 11/16/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | ND | 1.65 | ng/L | | ND | | | | | 30 | |
| Perfluorohexanoic acid (PFHxA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoroheptanoic acid (PFHpA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 1.71 | " | | ND | | | | | 30 | |
| Perfluorooctanoic acid (PFOA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 1.74 | " | | ND | | | | | 30 | |
| Perfluorononanoic acid (PFNA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorodecanoic acid (PFDA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoroundecanoic acid (PFUnA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorododecanoic acid (PFDoA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluorotetradecanoic acid (PFTA) | ND | 1.87 | " | | ND | | | | | 30 | |
| N-MeFOSAA | ND | 1.87 | " | | ND | | | | | 30 | |
| N-EtFOSAA | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoropentanoic acid (PFPeA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 1.87 | " | | ND | | | | | 30 | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 1.79 | " | | ND | | | | | 30 | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 1.80 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | 7.10 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | 7.18 | " | | ND | | | | | 30 | |
| Perfluoro-n-butanoic acid (PFBA) | ND | 7.48 | " | | ND | | | | | 30 | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 3.33 | " | | ND | | | | | 30 | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 3.74 | " | | ND | | | | | 30 | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 1.76 | " | | ND | | | | | 30 | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31074 - EPA 1633 Prep** | | | | | | | | | | | |
| **Duplicate (BK31074-DUP1)** | *Source sample: 23K0602-07 (Duplicate) | | | | | | | | Prepared & Analyzed: 11/16/2023 | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | 7.01 | ng/L | | ND | | | | | 30 | |
| HFPO-DA (Gen-X) | ND | 7.48 | " | | ND | | | | | 30 | |
| 11CL-PF3OUdS | ND | 7.07 | " | | ND | | | | | 30 | |
| 9CL-PF3ONS | ND | 6.99 | " | | ND | | | | | 30 | |
| ADONA | ND | 7.07 | " | | ND | | | | | 30 | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 1.81 | " | | ND | | | | | 30 | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 1.79 | " | | ND | | | | | 30 | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 4.67 | " | | ND | | | | | 30 | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 23.4 | " | | ND | | | | | 30 | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 23.4 | " | | ND | | | | | 30 | |
| N-MeFOSE | ND | 18.7 | " | | ND | | | | | 30 | |
| N-MeFOSA | ND | 1.87 | " | | ND | | | | | 30 | |
| N-EtFOSE | 4.22 | 18.7 | " | | ND | | | | | 30 | |
| N-EtFOSA | ND | 1.87 | " | | ND | | | | | 30 | |
| *Surrogate: M3PFBS* | *18.7* | | " | *18.1* | | *103* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *20.5* | | " | *19.5* | | *105* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *24.8* | | " | *19.5* | | *127* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *22.9* | | " | *18.5* | | *124* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *19.7* | | " | *19.5* | | *101* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *9.88* | | " | *9.72* | | *102* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *10.3* | | " | *9.72* | | *106* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *9.08* | | " | *9.72* | | *93.4* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *7.31* | | " | *9.72* | | *75.2* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *0.617* | | " | *78.1* | | *0.790* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *16.5* | | " | *18.6* | | *88.6* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *11.7* | | " | *38.9* | | *30.1* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *17.7* | | " | *19.5* | | *91.0* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *26.1* | | " | *38.9* | | *67.1* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *26.7* | | " | *38.9* | | *68.5* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *21.5* | | " | *37.0* | | *58.2* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *18.4* | | " | *37.4* | | *49.1* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *10.1* | | " | *9.72* | | *104* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *26.1* | | " | *36.6* | | *71.4* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *14.8* | | " | *19.5* | | *75.7* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *20.2* | | " | *19.5* | | *104* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *96.1* | | " | *78.1* | | *123* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *145* | | " | *195* | | *74.4* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *157* | | " | *195* | | *80.3* | *25-150* | | | | |

## Sample and Data Qualifiers Relating to This Work Order

J — Detected below the Reporting Limit but greater than or equal to the Method Detection Limit (MDL/LOD) or in the case of a TIC, the result is an estimated concentration.

## Definitions and Other Explanations

| | |
|---|---|
| * | Analyte is not certified or the state of the samples origination does not offer certification for the Analyte. |
| ND | NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL) |
| RL | REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve. |
| LOQ | LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses. |
| LOD | LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846. |
| MDL | METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods. |
| Reported to | This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only. |
| NR | Not reported |
| RPD | Relative Percent Difference |
| Wet | The data has been reported on an as-received (wet weight) basis |
| Low Bias | Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias. |
| High Bias | High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias. |
| Non-Dir. | Non-dir. flag (Non-Directional Bias ) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons. |

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

# Field Chain-of-Custody Record

YORK ANALYTICAL LABORATORIES INC

York Analytical Laboratories, Inc. (YORK)'s Standard Terms & Conditions are listed on the back side of this document.
This document serves as your written authorization for YORK to proceed with the analyses requested below.
Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No. 23K0473

120 Research Drive Stratford, CT 06615 | 132-02 89th Ave Queens, NY 11418 | 56 Church Hill Rd. #2 Newtown, CT 06470 | clientservices@yorklab.com | www.yorklab.com | 800-306-YORK



| YOUR Information | Report To: | Invoice To: |
|---|---|---|
| Company: Pwgrosser Consulting | Company: | Company: |
| Address: 630 Johnson Ave Bohemia, NY 11716 | Address: | Address: |
| Phone.: 631 589 6353 | Phone.: | Phone.: |
| Contact: Zeb Youngman | Contact: | Contact: |
| E-mail: zyoungman@pwgrosser.com | E-mail: | E-mail: |

**YOUR Project Number:** SHD2305

**YOUR Project Name:**

**YOUR PO#:**

**Turn-Around Time**

- RUSH - Next Day
- RUSH - Two Day
- RUSH - Three Day
- RUSH - Four Day
- RUSH - Five Day
- **Standard (6-9 Day)** X
- PFAS Standard is 7-10 Days

*Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.*

**Samples Collected by:** (print AND sign your name)

**Matrix Codes**

- S - soil / solid
- GW - groundwater
- DW - drinking water
- WW - wastewater
- O - Oil | Other

**Samples From**

- New York X
- New Jersey
- Connecticut
- Pennsylvania
- Other:

**Report / EDD Type** (circle selections)

- Summary Report
- QA Report
- CMDP
- Standard Excel EDD
- NY ASP B Package
- CT RCP
- CT RCP DQA/DUE
- NJDEP Reduced Deliverables
- Other:
- EQuIS (Standard)
- NYSDEC EQuIS
- NJDKQP
- NJDEP SRP HazSite

**YORK Reg. Comp.**

Compared to the following Regulation(s): (please fill in)

| Sample Identification | Sample Matrix | Date/Time Sampled | Analyses Requested | Container Type | No. |
|---|---|---|---|---|---|
| MW004 | GW | 11-7-23 0814 | EPA 1633 | | 2 |
| MW009D | | 0900 | | | 2 |
| MW009S | | 0930 | | | 2 |
| MW012D | | 1027 | | | 2 |
| MW012S | | 1136 | | | 2 |
| MW002 | | 1322 | | | 2 |
| MW010 | | 1410 | | | 2 |

**Comments:**

**Preservation:** (check all that apply)

HCl ____ MeOH ____ HNO3 ____ H2SO4 ____ NaOH ____
ZnAc ____ Ascorbic Acid ____ Other: ____

**Special Instruction**

- Field Filtered
- Lab to Filter

Samples iced/chilled at time of lab pickup? circle Yes or No

| 1. Samples Relinquished by / Company | Date/Time | 1. Samples Received by / Company | Date/Time | 2. Samples Relinquished by / Company | Date/Time |
|---|---|---|---|---|---|
| Chayse Nasiatka | 11-7-23 15:11 | | 11/8/23 950 | | @ 11-2C |
| 2. Samples Received by / Company | Date/Time | 3. Samples Relinquished by / Company | Date/Time | 3. Samples Received by / Company | Date/Time |
| | | | | lab sealed | |
| 4. Samples Relinquished by / Company | Date/Time | 4. Samples Received by / Company | Date/Time | Samples Received in LAB by | Date/Time / Temperature |
| | | | | | 11/9/23 5.2 Degrees C |

# Technical Report

prepared for:

**P.W. Grosser Consulting**
630 Johnson Avenue, Suite 7
Bohemia NY, 11716
**Attention: Zeb Youngman**

Report Date: 11/20/2023
**Client Project ID: SHD2305 15 Private Rd Wertheim**
York Project (SDG) No.: 23K0669

Report Date: 11/20/2023
Client Project ID: SHD2305 15 Private Rd Wertheim
York Project (SDG) No.: 23K0669

**P.W. Grosser Consulting**
630 Johnson Avenue, Suite 7
Bohemia NY, 11716
Attention: Zeb Youngman

## Purpose and Results

This report contains the analytical data for the sample(s) identified on the attached chain-of-custody received in our laboratory on November 09, 2023 and listed below. The project was identified as your project: **SHD2305 15 Private Rd Wertheim**.

The analyses were conducted utilizing appropriate EPA, Standard Methods, and ASTM methods as detailed in the data summary tables.

All samples were received in proper condition meeting the customary acceptance requirements for environmental samples except those indicated under the Sample and Analysis Qualifiers section of this report.

All analyses met the method and laboratory standard operating procedure requirements except as indicated by any data flags, the meaning of which are explained in the Sample and Data Qualifiers Relating to This Work Order section of this report and case narrative if applicable.

The results of the analyses, which are all reported on dry weight basis (soils) unless otherwise noted, are detailed in the following pages.

Please contact Client Services at 203.325.1371 with any questions regarding this report.

| York Sample ID | Client Sample ID | Matrix | Date Collected | Date Received |
|---|---|---|---|---|
| 23K0669-01 | MW003 | Water | 11/08/2023 | 11/09/2023 |
| 23K0669-02 | MW014D | Water | 11/08/2023 | 11/09/2023 |
| 23K0669-03 | MW014S | Water | 11/08/2023 | 11/09/2023 |
| 23K0669-04 | MW017 | Water | 11/08/2023 | 11/09/2023 |
| 23K0669-05 | MW013 | Water | 11/08/2023 | 11/09/2023 |

## General Notes for York Project (SDG) No.: 23K0669

1. The RLs and MDLs (Reporting Limit and Method Detection Limit respectively) reported are adjusted for any dilution necessary due to the levels of target and/or non-target analytes and matrix interference. The RL(REPORTING LIMIT) is based upon the lowest standard utilized for the calibration where applicable.
2. Samples are retained for a period of thirty days after submittal of report, unless other arrangements are made.
3. York's liability for the above data is limited to the dollar value paid to York for the referenced project.
4. This report shall not be reproduced without the written approval of York Analytical Laboratories, Inc.
5. All analyses conducted met method or Laboratory SOP requirements. See the Sample and Data Qualifiers Section for further information.
6. It is noted that no analyses reported herein were subcontracted to another laboratory, unless noted in the report.
7. This report reflects results that relate only to the samples submitted on the attached chain-of-custody form(s) received by York.
8. Analyses conducted at York Analytical Laboratories, Inc. Stratford, CT are indicated by NY Cert. No. 10854; those conducted at York Analytical Laboratories, Inc., Richmond Hill, NY are indicated by NY Cert. No. 12058.

**Approved By:**

**Date:** 11/20/2023

Cassie L. Mosher
Laboratory Manager

## Sample Information

**Client Sample ID:** **MW003** **York Sample ID:** **23K0669-01**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 10:30 am | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **8.14** | | ng/L | 0.458 | 1.72 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **71.4** | | ng/L | 0.341 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **17.9** | | ng/L | 0.691 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **3.63** | | ng/L | 0.662 | 1.78 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **15.3** | | ng/L | 0.409 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **8.50** | | ng/L | 0.799 | 1.81 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **1.72** | J | ng/L | 0.506 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-76-2 | **Perfluorodecanoic acid (PFDA)** | **1.24** | J | ng/L | 0.730 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.10 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.857 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.721 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.672 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 2355-31-9 | **N-MeFOSAA** | **5.12** | | ng/L | 0.769 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2991-50-6 | **N-EtFOSAA** | **1.01** | J | ng/L | 1.00 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **114** | | ng/L | 0.224 | 3.90 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.857 | 1.95 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.886 | 1.86 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.29 | 1.88 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.03 | 7.40 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.00 | 7.48 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **31.6** | | ng/L | 0.321 | 7.79 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |

## Sample Information

**Client Sample ID:** MW003 **York Sample ID:** 23K0669-01

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 10:30 am | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.487 | 3.47 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.08 | 3.90 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.243 | 3.90 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.360 | 3.90 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **0.767** | J | ng/L | 0.740 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.74 | 7.30 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.15 | 7.79 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.34 | 7.36 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.682 | 7.28 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.516 | 7.36 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.906 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.838 | 1.87 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 1.98 | 4.87 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.14 | 24.3 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.22 | 24.3 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.89 | 19.5 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.54 | 1.95 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.89 | 19.5 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.75 | 1.95 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:09 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *133 %* | *25-150* |
| *Surrogate: M5PFHxA* | *167 %* | *25-150* |
| *Surrogate: M4PFHpA* | *164 %* | *25-150* |
| *Surrogate: M3PFHxS* | *163 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW003** **York Sample ID:** **23K0669-01**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 10:30 am | 11/09/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *133 %* | | | *25-150* | | | | | | |
| | *Surrogate: M6PFDA* | *145 %* | | | *25-150* | | | | | | |
| | *Surrogate: M7PFUdA* | *167 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *137 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *71.9 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *12.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *141 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *145 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *100 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *85.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *89.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *171 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *104 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *144 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *218 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *69.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *59.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *170 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *53.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *63.5 %* | | | *25-150* | | | | | | |

# Sample Information

**Client Sample ID:** MW014D

**York Sample ID:** 23K0669-02

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 12:20 pm | 11/09/2023 |

## PFAS, EPA 1633 Target List

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | ND | | ng/L | 0.461 | 1.74 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **0.546** | J | ng/L | 0.343 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | ND | | ng/L | 0.697 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **2.50** | | ng/L | 0.667 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **0.539** | J | ng/L | 0.412 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **5.00** | | ng/L | 0.805 | 1.82 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **0.758** | J | ng/L | 0.510 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.736 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.11 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.863 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.726 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.677 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.775 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 1.01 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **0.926** | J | ng/L | 0.226 | 3.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.863 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.893 | 1.87 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.30 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.04 | 7.46 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 2.01 | 7.54 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 375-22-4 | Perfluoro-n-butanoic acid (PFBA) | ND | | ng/L | 0.324 | 7.85 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.491 | 3.49 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |

## Sample Information

**Client Sample ID:** MW014D **York Sample ID:** 23K0669-02

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 12:20 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.10 | 3.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.245 | 3.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.363 | 3.92 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.746 | 1.84 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.76 | 7.36 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.17 | 7.85 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.35 | 7.42 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.687 | 7.34 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.520 | 7.42 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.912 | 1.90 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.844 | 1.88 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 1.99 | 4.91 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 7.19 | 24.5 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 9.29 | 24.5 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.91 | 19.6 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.55 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.91 | 19.6 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.77 | 1.96 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:25 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *131 %* | *25-150* |
| *Surrogate: M5PFHxA* | *119 %* | *25-150* |
| *Surrogate: M4PFHpA* | *146 %* | *25-150* |
| *Surrogate: M3PFHxS* | *147 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *108 %* | *25-150* |
| *Surrogate: M6PFDA* | *116 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW014D** **York Sample ID:** **23K0669-02**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 12:20 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *111 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *68.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *19.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *9.85 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *92.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *116 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *70.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *43.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *38.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *82.7 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *69.8 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *102 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *91.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *33.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *21.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *141 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *7.48 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *13.0 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW014S

**York Sample ID:** 23K0669-03

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 12:55 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List**

**Log-in Notes:**

**Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | **Perfluorobutanesulfonic acid (PFBS)** | **2.93** | | ng/L | 0.443 | 1.67 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **6.51** | | ng/L | 0.330 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 375-85-9 | **Perfluoroheptanoic acid (PFHpA)** | **3.95** | | ng/L | 0.670 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **21.4** | | ng/L | 0.642 | 1.73 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **5.74** | | ng/L | 0.396 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **43.0** | | ng/L | 0.774 | 1.75 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **3.22** | | ng/L | 0.491 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.708 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 2058-94-8 | **Perfluoroundecanoic acid (PFUnA)** | **4.36** | | ng/L | 1.07 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.830 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.698 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.651 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.745 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 0.972 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **11.1** | | ng/L | 0.217 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.830 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 375-92-8 | *** Perfluoro-1-heptanesulfonic acid (PFHpS)** | **0.950** | J | ng/L | 0.858 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.25 | 1.82 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 1.00 | 7.17 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 1.93 | 7.25 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **4.86** | J | ng/L | 0.311 | 7.55 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.472 | 3.36 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |

## Sample Information

**Client Sample ID:** **MW014S** **York Sample ID:** **23K0669-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 12:55 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.02 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.236 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.349 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 2706-91-4 | **Perfluoro-1-pentanesulfonate (PFPeS)** | **2.25** | | ng/L | 0.717 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.69 | 7.08 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.05 | 7.55 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.30 | 7.13 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.660 | 7.06 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.500 | 7.13 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.877 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.811 | 1.81 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 1.92 | 4.72 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 6.92 | 23.6 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 8.93 | 23.6 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.76 | 18.9 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.49 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.76 | 18.9 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.70 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:41 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *142 %* | *25-150* |
| *Surrogate: M5PFHxA* | *140 %* | *25-150* |
| *Surrogate: M4PFHpA* | *152 %* | *25-150* |
| *Surrogate: M3PFHxS* | *155 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *136 %* | *25-150* |
| *Surrogate: M6PFDA* | *130 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW014S** **York Sample ID:** **23K0669-03**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 12:55 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *155 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *117 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *81.9 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *14.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *116 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *128 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *89.8 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *77.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *79.2 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *84.7 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *84.4 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *138 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *107 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *71.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *62.5 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *157 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *39.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *52.0 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW017 **York Sample ID:** 23K0669-04

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 1:32 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | ND | | ng/L | 0.423 | 1.59 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **1.22** | J | ng/L | 0.315 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | ND | | ng/L | 0.638 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **0.891** | J | ng/L | 0.611 | 1.65 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **2.36** | | ng/L | 0.378 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **4.82** | | ng/L | 0.737 | 1.67 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 375-95-1 | Perfluorononanoic acid (PFNA) | ND | | ng/L | 0.468 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.674 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.02 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.791 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.665 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.620 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.710 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 0.926 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | ND | | ng/L | 0.207 | 3.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.791 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.818 | 1.72 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.19 | 1.74 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 0.953 | 6.83 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 1.84 | 6.90 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 375-22-4 | Perfluoro-n-butanoic acid (PFBA) | ND | | ng/L | 0.297 | 7.19 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.450 | 3.20 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |

## Sample Information

**Client Sample ID:** MW017 **York Sample ID:** 23K0669-04

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 1:32 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 1.92 | 3.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.225 | 3.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.333 | 3.60 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.683 | 1.69 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.61 | 6.74 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 2.90 | 7.19 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.24 | 6.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.629 | 6.72 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.476 | 6.80 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.836 | 1.74 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.773 | 1.73 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 1.83 | 4.50 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 6.59 | 22.5 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 8.51 | 22.5 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.59 | 18.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.42 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.59 | 18.0 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.62 | 1.80 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 14:03 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *112 %* | *25-150* |
| *Surrogate: M5PFHxA* | *132 %* | *25-150* |
| *Surrogate: M4PFHpA* | *145 %* | *25-150* |
| *Surrogate: M3PFHxS* | *134 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *119 %* | *25-150* |
| *Surrogate: M6PFDA* | *137 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW017** **York Sample ID:** **23K0669-04**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 1:32 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *111 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *70.8 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *46.2 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *2.24 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *129 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *106 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *91.0 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *72.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *71.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *82.1 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *103 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *123 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *103 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *55.7 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *7.57 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *127 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *27.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *40.8 %* | | | *25-150* | | | | | | |

## Sample Information

**Client Sample ID:** MW013 **York Sample ID:** 23K0669-05

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 3:05 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | ND | | ng/L | 0.443 | 1.67 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-24-4 | **Perfluorohexanoic acid (PFHxA)** | **1.04** | J | ng/L | 0.330 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | ND | | ng/L | 0.669 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 355-46-4 | **Perfluorohexanesulfonic acid (PFHxS)** | **1.00** | J | ng/L | 0.641 | 1.72 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-67-1 | **Perfluorooctanoic acid (PFOA)** | **1.10** | J | ng/L | 0.396 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 1763-23-1 | **Perfluorooctanesulfonic acid (PFOS)** | **3.63** | | ng/L | 0.773 | 1.75 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-95-1 | **Perfluorononanoic acid (PFNA)** | **0.929** | J | ng/L | 0.490 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | ND | | ng/L | 0.707 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | ND | | ng/L | 1.07 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | ND | | ng/L | 0.829 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | ND | | ng/L | 0.697 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 376-06-7 | * Perfluorotetradecanoic acid (PFTA) | ND | | ng/L | 0.650 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 2355-31-9 | N-MeFOSAA | ND | | ng/L | 0.745 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2991-50-6 | N-EtFOSAA | ND | | ng/L | 0.971 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 2706-90-3 | **Perfluoropentanoic acid (PFPeA)** | **1.42** | J | ng/L | 0.217 | 3.77 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 754-91-6 | * Perfluoro-1-octanesulfonamide (FOSA) | ND | | ng/L | 0.829 | 1.89 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 375-92-8 | * Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | | ng/L | 0.858 | 1.80 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 335-77-3 | * Perfluoro-1-decanesulfonic acid (PFDS) | ND | | ng/L | 1.24 | 1.82 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NJDEP-NY037 | | | |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | ND | | ng/L | 0.999 | 7.16 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | ND | | ng/L | 1.93 | 7.24 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 375-22-4 | **Perfluoro-n-butanoic acid (PFBA)** | **1.23** | J | ng/L | 0.311 | 7.54 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058,NJDEP-NY037 | | | |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | | ng/L | 0.471 | 3.36 | 1 | EPA 1633 Draft 3 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| | | | | | | | | Certifications: NELAC-NY12058 | | | |

## Sample Information

**Client Sample ID:** MW013 **York Sample ID:** 23K0669-05

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 3:05 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | | ng/L | 2.02 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | ND | | ng/L | 0.236 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | ND | | ng/L | 0.349 | 3.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | ND | | ng/L | 0.716 | 1.77 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | ND | | ng/L | 1.69 | 7.07 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 13252-13-6 | HFPO-DA (Gen-X) | ND | | ng/L | 3.04 | 7.54 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 763051-92-9 | 11CL-PF3OUdS | ND | | ng/L | 1.30 | 7.13 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 756426-58-1 | 9CL-PF3ONS | ND | | ng/L | 0.660 | 7.05 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 919005-14-4 | ADONA | ND | | ng/L | 0.500 | 7.13 | 1 | EPA 1633 Draft 3<br>Certifications: NELAC-NY12058,NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 79780-39-5 | * Perfluorododecanesulfonic acid (PFDoS) | ND | | ng/L | 0.877 | 1.83 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 68259-12-1 | * Perfluoro-1-nonanesulfonic acid (PFNS) | ND | | ng/L | 0.811 | 1.81 | 1 | EPA 1633 Draft 3<br>Certifications: NJDEP-NY037 | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 356-02-5 | * 3-Perfluoropropyl propanoic acid (FPrPA) | ND | | ng/L | 1.91 | 4.71 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 914637-49-3 | * 3-Perfluoropentyl propanoic acid (FPePA) | ND | | ng/L | 6.91 | 23.6 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 812-70-4 | * 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | | ng/L | 8.93 | 23.6 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 24448-09-7 | * N-MeFOSE | ND | | ng/L | 3.76 | 18.9 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 31506-32-8 | * N-MeFOSA | ND | | ng/L | 1.49 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 1691-99-2 | * N-EtFOSE | ND | | ng/L | 3.76 | 18.9 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |
| 4151-50-2 | * N-EtFOSA | ND | | ng/L | 1.70 | 1.89 | 1 | EPA 1633 Draft 3<br>Certifications: | 11/19/2023 15:05 | 11/20/2023 01:57 | ESJ |

| Surrogate Recoveries | Result | Acceptance Range |
|---|---|---|
| *Surrogate: M3PFBS* | *142 %* | *25-150* |
| *Surrogate: M5PFHxA* | *154 %* | *25-150* |
| *Surrogate: M4PFHpA* | *169 %* | *25-150* |
| *Surrogate: M3PFHxS* | *164 %* | *25-150* |
| *Surrogate: Perfluoro-n-[13C8]octanoic aci* | *126 %* | *25-150* |
| *Surrogate: M6PFDA* | *111 %* | *25-150* |

## Sample Information

**Client Sample ID:** **MW013** **York Sample ID:** **23K0669-05**

| York Project (SDG) No. | Client Project ID | Matrix | Collection Date/Time | Date Received |
|---|---|---|---|---|
| 23K0669 | SHD2305 15 Private Rd Wertheim | Water | November 8, 2023 3:05 pm | 11/09/2023 |

**PFAS, EPA 1633 Target List** **Log-in Notes:** **Sample Notes:**

Sample Prepared by Method: EPA 1633 Prep

| CAS No. | Parameter | Result | Flag | Units | Reported to LOD/MDL | LOQ | Dilution | Reference Method | Date/Time Prepared | Date/Time Analyzed | Analyst |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *Surrogate: M7PFUdA* | *117 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[1,2-13C2]dodecan* | *102 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2PFTeDA* | *77.2 %* | | | *10-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C4]butanoic aci* | *119 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *118 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-n-[13C5]pentanoic ac* | *166 %* | | | *25-150* | | | | | | |
| | *Surrogate: Perfluoro-1-[13C8]octanesulfor* | *81.3 %* | | | *10-150* | | | | | | |
| | *Surrogate: d3-N-MeFOSAA* | *58.0 %* | | | *25-150* | | | | | | |
| | *Surrogate: d5-N-EtFOSAA* | *59.1 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-6:2 FTS* | *89.9 %* | | | *25-200* | | | | | | |
| | *Surrogate: M2-8:2 FTS* | *73.2 %* | | | *25-200* | | | | | | |
| | *Surrogate: M9PFNA* | *122 %* | | | *25-150* | | | | | | |
| | *Surrogate: M2-4:2 FTS* | *114 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-MeFOSA* | *67.6 %* | | | *25-150* | | | | | | |
| | *Surrogate: d-N-EtFOSA* | *50.9 %* | | | *25-150* | | | | | | |
| | *Surrogate: M3HFPO-DA* | *177 %* | | | *25-150* | | | | | | |
| | *Surrogate: d9-N-EtFOSE* | *40.4 %* | | | *25-150* | | | | | | |
| | *Surrogate: d7-N-MeFOSE* | *51.3 %* | | | *25-150* | | | | | | |

# Analytical Batch Summary

**Batch ID:** BK31244 **Preparation Method:** EPA 1633 Prep **Prepared By:** J D

| YORK Sample ID | Client Sample ID | Preparation Date |
|---|---|---|
| 23K0669-01 | MW003 | 11/19/23 |
| 23K0669-02 | MW014D | 11/19/23 |
| 23K0669-03 | MW014S | 11/19/23 |
| 23K0669-04 | MW017 | 11/19/23 |
| 23K0669-05 | MW013 | 11/19/23 |
| BK31244-BLK1 | Blank | 11/19/23 |
| BK31244-BS1 | LCS | 11/19/23 |
| BK31244-BS2 | LCS | 11/19/23 |
| BK31244-DUP1 | Duplicate | 11/19/23 |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31244 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK31244-BLK1)** | | | | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 |
| Perfluorobutanesulfonic acid (PFBS) | ND | 3.54 | ng/L | | | | | | | | |
| Perfluorohexanoic acid (PFHxA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroheptanoic acid (PFHpA) | ND | 4.00 | " | | | | | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | ND | 3.66 | " | | | | | | | | |
| Perfluorooctanoic acid (PFOA) | ND | 4.00 | " | | | | | | | | |
| Perfluorooctanesulfonic acid (PFOS) | ND | 3.72 | " | | | | | | | | |
| Perfluorononanoic acid (PFNA) | ND | 4.00 | " | | | | | | | | |
| Perfluorodecanoic acid (PFDA) | ND | 4.00 | " | | | | | | | | |
| Perfluoroundecanoic acid (PFUnA) | ND | 4.00 | " | | | | | | | | |
| Perfluorododecanoic acid (PFDoA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 4.00 | " | | | | | | | | |
| Perfluorotetradecanoic acid (PFTA) | ND | 4.00 | " | | | | | | | | |
| N-MeFOSAA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSAA | ND | 4.00 | " | | | | | | | | |
| Perfluoropentanoic acid (PFPeA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 4.00 | " | | | | | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 3.82 | " | | | | | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 3.86 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | ND | 15.2 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | ND | 15.4 | " | | | | | | | | |
| Perfluoro-n-butanoic acid (PFBA) | ND | 16.0 | " | | | | | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 7.12 | " | | | | | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 8.00 | " | | | | | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 3.76 | " | | | | | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | ND | 15.0 | " | | | | | | | | |
| HFPO-DA (Gen-X) | ND | 16.0 | " | | | | | | | | |
| 11CL-PF3OUdS | ND | 15.1 | " | | | | | | | | |
| 9CL-PF3ONS | ND | 15.0 | " | | | | | | | | |
| ADONA | ND | 15.1 | " | | | | | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 3.88 | " | | | | | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 3.84 | " | | | | | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 10.0 | " | | | | | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 50.0 | " | | | | | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 50.0 | " | | | | | | | | |
| N-MeFOSE | ND | 40.0 | " | | | | | | | | |
| N-MeFOSA | ND | 4.00 | " | | | | | | | | |
| N-EtFOSE | ND | 40.0 | " | | | | | | | | |
| N-EtFOSA | ND | 4.00 | " | | | | | | | | |
| *Surrogate: M3PFBS* | *53.6* | | *"* | *38.8* | | *138* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *59.8* | | *"* | *41.7* | | *143* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *73.8* | | *"* | *41.7* | | *177* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *64.3* | | *"* | *39.5* | | *163* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *56.0* | | *"* | *41.7* | | *134* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *27.5* | | *"* | *20.8* | | *132* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *32.5* | | *"* | *20.8* | | *156* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *25.9* | | *"* | *20.8* | | *124* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31244 - EPA 1633 Prep** | | | | | | | | | | | |
| **Blank (BK31244-BLK1)** | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | | |
| *Surrogate: M2PFTeDA* | *21.0* | | *ng/L* | *20.8* | | *101* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *11.6* | | *"* | *167* | | *6.96* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *50.6* | | *"* | *39.9* | | *127* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *92.6* | | *"* | *83.3* | | *111* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *43.4* | | *"* | *41.7* | | *104* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *71.2* | | *"* | *83.3* | | *85.4* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *81.5* | | *"* | *83.3* | | *97.9* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *72.5* | | *"* | *79.2* | | *91.6* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *69.0* | | *"* | *80.0* | | *86.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *28.3* | | *"* | *20.8* | | *136* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *75.5* | | *"* | *78.2* | | *96.5* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *30.3* | | *"* | *41.7* | | *72.7* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *31.6* | | *"* | *41.7* | | *75.8* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *267* | | *"* | *167* | | *160* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *237* | | *"* | *417* | | *56.7* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *283* | | *"* | *417* | | *67.8* | *25-150* | | | | |
| **LCS (BK31244-BS1)** | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 72.1 | 3.54 | ng/L | 70.8 | | 102 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 71.8 | 4.00 | " | 80.0 | | 89.8 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 64.8 | 4.00 | " | 80.0 | | 80.9 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 67.2 | 3.66 | " | 73.2 | | 91.7 | 50-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 83.8 | 4.00 | " | 80.0 | | 105 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 68.5 | 3.72 | " | 74.4 | | 92.1 | 50-150 | | | | |
| Perfluorononanoic acid (PFNA) | 76.5 | 4.00 | " | 80.0 | | 95.7 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 76.4 | 4.00 | " | 80.0 | | 95.5 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 75.8 | 4.00 | " | 80.0 | | 94.7 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 73.2 | 4.00 | " | 80.0 | | 91.6 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 88.0 | 4.00 | " | 80.0 | | 110 | 50-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 80.5 | 4.00 | " | 80.0 | | 101 | 50-150 | | | | |
| N-MeFOSAA | 78.1 | 4.00 | " | 80.0 | | 97.6 | 50-150 | | | | |
| N-EtFOSAA | 87.4 | 4.00 | " | 80.0 | | 109 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 151 | 8.00 | " | 160 | | 94.4 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 84.0 | 4.00 | " | 80.0 | | 105 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 75.5 | 3.82 | " | 76.4 | | 98.8 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 70.1 | 3.86 | " | 77.2 | | 90.9 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 326 | 15.2 | " | 304 | | 107 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 327 | 15.4 | " | 307 | | 106 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 263 | 16.0 | " | 320 | | 82.3 | 50-150 | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 126 | 7.12 | " | 142 | | 88.6 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 119 | 8.00 | " | 160 | | 74.2 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 19.8 | 8.00 | " | 160 | | 12.4 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 206 | 8.00 | " | 160 | | 129 | 50-150 | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 69.8 | 3.76 | " | 75.2 | | 92.8 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 281 | 15.0 | " | 300 | | 93.7 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 140 | 16.0 | " | 160 | | 87.3 | 50-150 | | | | |
| 11CL-PF3OUdS | 134 | 15.1 | " | 151 | | 88.5 | 50-150 | | | | |
| 9CL-PF3ONS | 168 | 15.0 | " | 150 | | 112 | 50-150 | | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31244 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31244-BS1)** | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | | |
| ADONA | 149 | 15.1 | ng/L | 151 | | 98.8 | 50-150 | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 54.1 | 3.88 | " | 77.6 | | 69.7 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 82.9 | 3.84 | " | 76.8 | | 108 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 293 | 10.0 | " | 320 | | 91.4 | 50-150 | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 1550 | 50.0 | " | 1600 | | 97.0 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 1390 | 50.0 | " | 1600 | | 87.1 | 50-150 | | | | |
| N-MeFOSE | 715 | 40.0 | " | 800 | | 89.3 | 50-150 | | | | |
| N-MeFOSA | 74.2 | 4.00 | " | 80.0 | | 92.8 | 50-150 | | | | |
| N-EtFOSE | 727 | 40.0 | " | 800 | | 90.9 | 50-150 | | | | |
| N-EtFOSA | 87.8 | 4.00 | " | 80.0 | | 110 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *55.7* | | " | *38.8* | | *144* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *57.8* | | " | *41.7* | | *139* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *62.6* | | " | *41.7* | | *150* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *70.2* | | " | *39.5* | | *178* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *49.7* | | " | *41.7* | | *119* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *28.9* | | " | *20.8* | | *139* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *31.1* | | " | *20.8* | | *149* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *27.8* | | " | *20.8* | | *134* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *20.7* | | " | *20.8* | | *99.3* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *8.61* | | " | *167* | | *5.16* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *51.6* | | " | *39.9* | | *129* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *71.6* | | " | *83.3* | | *86.0* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *44.1* | | " | *41.7* | | *106* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *75.5* | | " | *83.3* | | *90.6* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *72.7* | | " | *83.3* | | *87.3* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *78.8* | | " | *79.2* | | *99.4* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *79.8* | | " | *80.0* | | *99.7* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *31.2* | | " | *20.8* | | *150* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *84.1* | | " | *78.2* | | *108* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *29.6* | | " | *41.7* | | *71.1* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *23.0* | | " | *41.7* | | *55.3* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *242* | | " | *167* | | *145* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *249* | | " | *417* | | *59.8* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *306* | | " | *417* | | *73.3* | *25-150* | | | | |

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31244 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31244-BS2)** | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | | |
| Perfluorobutanesulfonic acid (PFBS) | 14.4 | 3.54 | ng/L | 14.2 | | 102 | 50-150 | | | | |
| Perfluorohexanoic acid (PFHxA) | 13.1 | 4.00 | " | 16.0 | | 81.6 | 50-150 | | | | |
| Perfluoroheptanoic acid (PFHpA) | 12.1 | 4.00 | " | 16.0 | | 75.5 | 50-150 | | | | |
| Perfluorohexanesulfonic acid (PFHxS) | 14.2 | 3.66 | " | 14.6 | | 96.7 | 50-150 | | | | |
| Perfluorooctanoic acid (PFOA) | 14.0 | 4.00 | " | 16.0 | | 87.7 | 50-150 | | | | |
| Perfluorooctanesulfonic acid (PFOS) | 15.1 | 3.72 | " | 14.9 | | 101 | 50-150 | | | | |
| Perfluorononanoic acid (PFNA) | 16.0 | 4.00 | " | 16.0 | | 100 | 50-150 | | | | |
| Perfluorodecanoic acid (PFDA) | 14.4 | 4.00 | " | 16.0 | | 90.1 | 50-150 | | | | |
| Perfluoroundecanoic acid (PFUnA) | 16.4 | 4.00 | " | 16.0 | | 102 | 50-150 | | | | |
| Perfluorododecanoic acid (PFDoA) | 14.2 | 4.00 | " | 16.0 | | 88.9 | 50-150 | | | | |
| Perfluorotridecanoic acid (PFTrDA) | 18.4 | 4.00 | " | 16.0 | | 115 | 50-150 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 16.5 | 4.00 | " | 16.0 | | 103 | 50-150 | | | | |
| N-MeFOSAA | 16.1 | 4.00 | " | 16.0 | | 101 | 50-150 | | | | |
| N-EtFOSAA | 17.5 | 4.00 | " | 16.0 | | 110 | 50-150 | | | | |
| Perfluoropentanoic acid (PFPeA) | 28.7 | 8.00 | " | 32.0 | | 89.6 | 50-150 | | | | |
| Perfluoro-1-octanesulfonamide (FOSA) | 17.9 | 4.00 | " | 16.0 | | 112 | 50-150 | | | | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | 15.0 | 3.82 | " | 15.3 | | 98.2 | 50-150 | | | | |
| Perfluoro-1-decanesulfonic acid (PFDS) | 16.5 | 3.86 | " | 15.4 | | 107 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | 65.5 | 15.2 | " | 60.8 | | 108 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | 67.3 | 15.4 | " | 61.4 | | 110 | 50-150 | | | | |
| Perfluoro-n-butanoic acid (PFBA) | 53.1 | 16.0 | " | 64.0 | | 83.0 | 50-150 | | | | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 23.9 | 7.12 | " | 28.5 | | 84.1 | 50-150 | | | | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 20.8 | 8.00 | " | 32.0 | | 64.9 | 50-150 | | | | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | 5.34 | 8.00 | " | 32.0 | | 16.7 | 50-150 | Low Bias | | | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | 35.7 | 8.00 | " | 32.0 | | 112 | 50-150 | | | | |
| Perfluoro-1-pentanesulfonate (PFPeS) | 14.0 | 3.76 | " | 15.0 | | 92.9 | 50-150 | | | | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | 58.9 | 15.0 | " | 60.0 | | 98.2 | 50-150 | | | | |
| HFPO-DA (Gen-X) | 30.1 | 16.0 | " | 32.0 | | 94.0 | 50-150 | | | | |
| 11CL-PF3OUdS | 27.0 | 15.1 | " | 30.2 | | 89.3 | 50-150 | | | | |
| 9CL-PF3ONS | 33.7 | 15.0 | " | 29.9 | | 113 | 50-150 | | | | |
| ADONA | 29.7 | 15.1 | " | 30.2 | | 98.4 | 50-150 | | | | |
| Perfluorododecanesulfonic acid (PFDoS) | 11.9 | 3.88 | " | 15.5 | | 76.7 | 50-150 | | | | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | 18.7 | 3.84 | " | 15.4 | | 122 | 50-150 | | | | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | 54.1 | 10.0 | " | 64.0 | | 84.5 | 50-150 | | | | |
| 3-Perfluoropentyl propanoic acid (FPePA) | 289 | 50.0 | " | 320 | | 90.4 | 50-150 | | | | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | 255 | 50.0 | " | 320 | | 79.7 | 50-150 | | | | |
| N-MeFOSE | 163 | 40.0 | " | 160 | | 102 | 50-150 | | | | |
| N-MeFOSA | 12.9 | 4.00 | " | 16.0 | | 80.6 | 50-150 | | | | |
| N-EtFOSE | 141 | 40.0 | " | 160 | | 88.3 | 50-150 | | | | |
| N-EtFOSA | 16.8 | 4.00 | " | 16.0 | | 105 | 50-150 | | | | |
| *Surrogate: M3PFBS* | *53.1* | | " | *38.8* | | *137* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *61.8* | | " | *41.7* | | *148* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *68.3* | | " | *41.7* | | *164* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *64.4* | | " | *39.5* | | *163* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *54.1* | | " | *41.7* | | *130* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *32.1* | | " | *20.8* | | *155* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *35.9* | | " | *20.8* | | *172* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *34.3* | | " | *20.8* | | *165* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *24.3* | | " | *20.8* | | *117* | *10-150* | | | | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31244 - EPA 1633 Prep** | | | | | | | | | | | |
| **LCS (BK31244-BS2)** | | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *13.0* | | *ng/L* | *167* | | *7.79* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *47.5* | | *"* | *39.9* | | *119* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *86.3* | | *"* | *83.3* | | *104* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *39.3* | | *"* | *41.7* | | *94.3* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *69.2* | | *"* | *83.3* | | *83.1* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *72.4* | | *"* | *83.3* | | *87.0* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *72.8* | | *"* | *79.2* | | *91.9* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *76.1* | | *"* | *80.0* | | *95.2* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *27.7* | | *"* | *20.8* | | *133* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *74.0* | | *"* | *78.2* | | *94.6* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *25.7* | | *"* | *41.7* | | *61.6* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *25.2* | | *"* | *41.7* | | *60.5* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *243* | | *"* | *167* | | *146* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *235* | | *"* | *417* | | *56.4* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *264* | | *"* | *417* | | *63.3* | *25-150* | | | | |
| **Duplicate (BK31244-DUP1)** | *Source sample: 23K0669-05 (MW013) | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | |
| Perfluorobutanesulfonic acid (PFBS) | ND | 1.66 | ng/L | | ND | | | | | 30 | |
| Perfluorohexanoic acid (PFHxA) | 0.942 | 1.88 | " | | 1.04 | | | | 10.2 | 30 | |
| Perfluoroheptanoic acid (PFHpA) | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluorohexanesulfonic acid (PFHxS) | 1.02 | 1.72 | " | | 1.00 | | | | 1.81 | 30 | |
| Perfluorooctanoic acid (PFOA) | 1.02 | 1.88 | " | | 1.10 | | | | 7.69 | 30 | |
| Perfluorooctanesulfonic acid (PFOS) | 3.52 | 1.75 | " | | 3.63 | | | | 2.97 | 30 | |
| Perfluorononanoic acid (PFNA) | ND | 1.88 | " | | 0.929 | | | | | 30 | |
| Perfluorodecanoic acid (PFDA) | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluoroundecanoic acid (PFUnA) | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluorododecanoic acid (PFDoA) | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluorotridecanoic acid (PFTrDA) | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluorotetradecanoic acid (PFTA) | ND | 1.88 | " | | ND | | | | | 30 | |
| N-MeFOSAA | ND | 1.88 | " | | ND | | | | | 30 | |
| N-EtFOSAA | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluoropentanoic acid (PFPeA) | 1.25 | 3.76 | " | | 1.42 | | | | 12.6 | 30 | |
| Perfluoro-1-octanesulfonamide (FOSA) | ND | 1.88 | " | | ND | | | | | 30 | |
| Perfluoro-1-heptanesulfonic acid (PFHpS) | ND | 1.80 | " | | ND | | | | | 30 | |
| Perfluoro-1-decanesulfonic acid (PFDS) | ND | 1.82 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 F | ND | 7.15 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 F | ND | 7.22 | " | | ND | | | | | 30 | |
| Perfluoro-n-butanoic acid (PFBA) | ND | 7.52 | " | | 1.23 | | | | | 30 | |
| Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | ND | 3.35 | " | | ND | | | | | 30 | |
| Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | ND | 3.76 | " | | ND | | | | | 30 | |
| Perfluoro-4-oxapentanoic acid (PFMPA) | ND | 3.76 | " | | ND | | | | | 30 | |
| Perfluoro-5-oxahexanoic acid (PFMBA) | ND | 3.76 | " | | ND | | | | | 30 | |
| Perfluoro-1-pentanesulfonate (PFPeS) | ND | 1.77 | " | | ND | | | | | 30 | |
| 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 F | ND | 7.05 | " | | ND | | | | | 30 | |
| HFPO-DA (Gen-X) | ND | 7.52 | " | | ND | | | | | 30 | |
| 11CL-PF3OUdS | ND | 7.11 | " | | ND | | | | | 30 | |
| 9CL-PF3ONS | ND | 7.04 | " | | ND | | | | | 30 | |
| ADONA | ND | 7.11 | " | | ND | | | | | 30 | |

## PFAS Target compounds by LC/MS-MS - Quality Control Data

## York Analytical Laboratories, Inc. - Stratford

| Analyte | Result | Reporting Limit | Units | Spike Level | Source* Result | %REC | %REC Limits | Flag | RPD | RPD Limit | Flag |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Batch BK31244 - EPA 1633 Prep** | | | | | | | | | | | |
| **Duplicate (BK31244-DUP1)** | *Source sample: 23K0669-05 (MW013) | | | | | | | | Prepared: 11/19/2023 Analyzed: 11/20/2023 | | |
| Perfluorododecanesulfonic acid (PFDoS) | ND | 1.82 | ng/L | | ND | | | | | 30 | |
| Perfluoro-1-nonanesulfonic acid (PFNS) | ND | 1.81 | " | | ND | | | | | 30 | |
| 3-Perfluoropropyl propanoic acid (FPrPA) | ND | 4.70 | " | | ND | | | | | 30 | |
| 3-Perfluoropentyl propanoic acid (FPePA) | ND | 23.5 | " | | ND | | | | | 30 | |
| 3-Perfluoroheptyl propanoic acid (FHpPA) | ND | 23.5 | " | | ND | | | | | 30 | |
| N-MeFOSE | ND | 18.8 | " | | ND | | | | | 30 | |
| N-MeFOSA | ND | 1.88 | " | | ND | | | | | 30 | |
| N-EtFOSE | ND | 18.8 | " | | ND | | | | | 30 | |
| N-EtFOSA | ND | 1.88 | " | | ND | | | | | 30 | |
| *Surrogate: M3PFBS* | *23.5* | | *"* | *18.2* | | *129* | *25-150* | | | | |
| *Surrogate: M5PFHxA* | *28.7* | | *"* | *19.6* | | *146* | *25-150* | | | | |
| *Surrogate: M4PFHpA* | *31.5* | | *"* | *19.6* | | *160* | *25-150* | | | | |
| *Surrogate: M3PFHxS* | *30.9* | | *"* | *18.6* | | *166* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C8]octanoic acid (M8PFOA)* | *25.6* | | *"* | *19.6* | | *130* | *25-150* | | | | |
| *Surrogate: M6PFDA* | *8.82* | | *"* | *9.78* | | *90.2* | *25-150* | | | | |
| *Surrogate: M7PFUdA* | *9.18* | | *"* | *9.78* | | *93.9* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA)* | *8.27* | | *"* | *9.78* | | *84.5* | *25-150* | | | | |
| *Surrogate: M2PFTeDA* | *6.05* | | *"* | *9.78* | | *61.8* | *10-150* | | | | |
| *Surrogate: Perfluoro-n-[13C4]butanoic acid (MPFBA)* | *3.46* | | *"* | *78.5* | | *4.40* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS)* | *17.0* | | *"* | *18.8* | | *90.5* | *25-150* | | | | |
| *Surrogate: Perfluoro-n-[13C5]pentanoic acid (M5PFPeA)* | *11.6* | | *"* | *39.2* | | *29.5* | *25-150* | | | | |
| *Surrogate: Perfluoro-1-[13C8]octanesulfonamide (M8FOSA)* | *14.0* | | *"* | *19.6* | | *71.3* | *10-150* | | | | |
| *Surrogate: d3-N-MeFOSAA* | *18.5* | | *"* | *39.2* | | *47.2* | *25-150* | | | | |
| *Surrogate: d5-N-EtFOSAA* | *20.0* | | *"* | *39.2* | | *51.1* | *25-150* | | | | |
| *Surrogate: M2-6:2 FTS* | *32.8* | | *"* | *37.2* | | *88.1* | *25-200* | | | | |
| *Surrogate: M2-8:2 FTS* | *20.6* | | *"* | *37.6* | | *54.7* | *25-200* | | | | |
| *Surrogate: M9PFNA* | *10.8* | | *"* | *9.78* | | *110* | *25-150* | | | | |
| *Surrogate: M2-4:2 FTS* | *43.7* | | *"* | *36.8* | | *119* | *25-150* | | | | |
| *Surrogate: d-N-MeFOSA* | *12.0* | | *"* | *19.6* | | *61.0* | *25-150* | | | | |
| *Surrogate: d-N-EtFOSA* | *8.69* | | *"* | *19.6* | | *44.3* | *25-150* | | | | |
| *Surrogate: M3HFPO-DA* | *121* | | *"* | *78.5* | | *154* | *25-150* | | | | |
| *Surrogate: d9-N-EtFOSE* | *60.6* | | *"* | *196* | | *30.9* | *25-150* | | | | |
| *Surrogate: d7-N-MeFOSE* | *85.6* | | *"* | *196* | | *43.7* | *25-150* | | | | |

## Sample and Data Qualifiers Relating to This Work Order

J — Detected below the Reporting Limit but greater than or equal to the Method Detection Limit (MDL/LOD) or in the case of a TIC, the result is an estimated concentration.

## Definitions and Other Explanations

| | |
|---|---|
| * | Analyte is not certified or the state of the samples origination does not offer certification for the Analyte. |
| ND | NOT DETECTED - the analyte is not detected at the Reported to level (LOQ/RL or LOD/MDL) |
| RL | REPORTING LIMIT - the minimum reportable value based upon the lowest point in the analyte calibration curve. |
| LOQ | LIMIT OF QUANTITATION - the minimum concentration of a target analyte that can be reported within a specified degree of confidence. This is the lowest point in an analyte calibration curve that has been subjected to all steps of the processing/analysis and verified to meet defined criteria. This is based upon NELAC 2009 Standards and applies to all analyses. |
| LOD | LIMIT OF DETECTION - a verified estimate of the minimum concentration of a substance in a given matrix that an analytical process can reliably detect. This is based upon NELAC 2009 Standards and applies to all analyses conducted under the auspices of EPA SW-846. |
| MDL | METHOD DETECTION LIMIT - a statistically derived estimate of the minimum amount of a substance an analytical system can reliably detect with a 99% confidence that the concentration of the substance is greater than zero. This is based upon 40 CFR Part 136 Appendix B and applies only to EPA 600 and 200 series methods. |
| Reported to | This indicates that the data for a particular analysis is reported to either the LOD/MDL, or the LOQ/RL. In cases where the "Reported to" is located above the LOD/MDL, any value between this and the LOQ represents an estimated value which is "J" flagged accordingly. This applies to volatile and semi-volatile target compounds only. |
| NR | Not reported |
| RPD | Relative Percent Difference |
| Wet | The data has been reported on an as-received (wet weight) basis |
| Low Bias | Low Bias flag indicates that the recovery of the flagged analyte is below the laboratory or regulatory lower control limit. The data user should take note that this analyte may be biased low but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias. |
| High Bias | High Bias flag indicates that the recovery of the flagged analyte is above the laboratory or regulatory upper control limit. The data user should take note that this analyte may be biased high but should evaluate multiple lines of evidence including the LCS and site-specific MS/MSD data to draw bias conclusions. In cases where no site-specific MS/MSD was requested, only the LCS data can be used to evaluate such bias. |
| Non-Dir. | Non-dir. flag (Non-Directional Bias ) indicates that the Relative Percent Difference (RPD) (a measure of precision) among the MS and MSD data is outside the laboratory or regulatory control limit. This alerts the data user where the MS and MSD are from site-specific samples that the RPD is high due to either non-homogeneous distribution of target analyte between the MS/MSD or indicates poor reproducibility for other reasons. |

If EPA SW-846 method 8270 is included herein it is noted that the target compound N-nitrosodiphenylamine (NDPA) decomposes in the gas chromatographic inlet and cannot be separated from diphenylamine (DPA). These results could actually represent 100% DPA, 100% NDPA or some combination of the two. For this reason, York reports the combined result for n-nitrosodiphenylamine and diphenylamine for either of these compounds as a combined concentration as Diphenylamine.

If Total PCBs are detected and the target aroclors reported are "Not detected", the Total PCB value is reported due to the presence of either or both Aroclors 1262 and 1268 which are non-target aroclors for some regulatory lists.

2-chloroethylvinyl ether readily breaks down under acidic conditions. Samples that are acid preserved, including standards will exhibit breakdown. The data user should take note.

Certification for pH is no longer offered by NYDOH ELAP.

Semi-Volatile and Volatile analyses are reported down to the LOD/MDL, with values between the LOD/MDL and the LOQ being "J" flagged as estimated results.

For analyses by EPA SW-846-8270D, the Limit of Quantitation (LOQ) reported for benzidine is based upon the lowest standard used for calibration and is not a verified LOQ due to this compound's propensity for oxidative losses during extraction/concentration procedures and non-reproducible chromatographic performance.

# Field Chain-of-Custody Record

YORK ANALYTICAL LABORATORIES INC

York Analytical Laboratories, Inc. (YORK)'s Standard Terms & Conditions are listed on the back side of this document.
This document serves as your written authorization for YORK to proceed with the analyses requested below.
Your signature binds you to YORK's Standard Terms & Conditions.

YORK Project No.: 23K0669

120 Research Drive Stratford, CT 06615 132-02 89th Ave Queens, NY 11418 56 Church Hill Rd. #2 Newtown, CT 06470 clientservices@yorklab.com www.yorklab.com 800-306-YORK Page _____ of _____

| YOUR Information | Report To: | Invoice To: |
|---|---|---|
| Company: PW Grosser Consulting | Company: | Company: |
| Address: 630 Johnson Ave Bohemia NY 11716 | Address: | Address: |
| Phone.: 631 589 6353 | Phone.: | Phone.: |
| Contact: Zeb Youngman | Contact: | Contact: |
| E-mail: Zyoungman@pwgrosser.com | E-mail: | E-mail: |

**YOUR Project Number:** 5+102305

**YOUR Project Name:** 15 Private Rd Wertheim

**YOUR PO#:**

**Turn-Around Time**

- RUSH - Next Day
- RUSH - Two Day
- RUSH - Three Day
- RUSH - Four Day
- RUSH - Five Day
- **Standard (6-9 Day)** X

PFAS Standard is 7-10 Days

*Please print clearly and legibly. All information must be complete. Samples will not be logged in and the turn-around-time clock will not begin until any questions by YORK are resolved.*

**Samples Collected by:** (print AND sign your name)

**Matrix Codes**

- S - soil / solid
- GW - groundwater
- DW - drinking water
- WW - wastewater
- O - Oil | Other

**Samples From**

- New York X
- New Jersey
- Connecticut
- Pennsylvania
- Other:

**Report / EDD Type** (circle selections)

- Summary Report
- QA Report
- CMDP
- Standard Excel EDD
- NY ASP B Package
- CT RCP
- CT RCP DQA/DUE
- NJDEP Reduced Deliverables
- Other: _____
- EQuIS (Standard)
- NYSDEC EQuIS
- NJDKQP
- NJDEP SRP HazSite

**YORK Reg. Comp.**

Compared to the following Regulation(s): (please fill in)

| Sample Identification | Sample Matrix | Date/Time Sampled | Analyses Requested | Container Type | No. |
|---|---|---|---|---|---|
| MW003 | GW | 11.8.23 1030 | EPA 1633 | | 2 |
| MW014D | | 1220 | | | |
| MW014S | | 1255 | | | |
| MW017 | | 1332 | | | |
| MW013 | | 1505 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**Comments:**

Samples iced/chilled at time of lab pickup? circle Yes or No

**Preservation:** (check all that apply)

HCl ____ MeOH ____ HNO3 ____ H2SO4 ____ NaOH ____
ZnAc ____ Ascorbic Acid ____ Other: _____

**Special Instruction**

- Field Filtered
- Lab to Filter

| 1. Samples Relinquished by / Company | Date/Time | 1. Samples Received by / Company | Date/Time | 2. Samples Relinquished by / Company | Date/Time |
|---|---|---|---|---|---|
| Chayse Nasiotka | 11.8.23 1636 | KBarkyork | 11/9/23 130 PM | KBarkyork | 11/9/23 15:15 |
| 2. Samples Received by / Company | Date/Time | 3. Samples Relinquished by / Company | Date/Time | 3. Samples Received by / Company | Date/Time |
| | | | | | |
| 4. Samples Relinquished by / Company | Date/Time | 4. Samples Received by / Company | Date/Time | Samples Received in LAB by | Date/Time / Temperature |
| | | | | [illegible] | 11/9/23 15:15 / 1.5 Degrees C |

# APPENDIX C


P.W. GROSSER CONSULTING, INC • P.W. GROSSER CONSULTING ENGINEER & HYDROGEOLOGIST, PC
631.589.6353 • WWW.PWGROSSER.COM • PWGC.INFO@PWGROSSER.COM
BOHEMIA • MANHATTAN • SARATOGA SPRINGS • MONTICELLO, NY • SYRACUSE • SHELTON, CT

**LABORATORY DATA CONSULTANTS, INC.**
2701 Loker Ave. West, Suite 220, Carlsbad, CA 92010 Bus: 760-827-1100 Fax: 760-827-1099

P.W. Grosser Consulting
One Penn Plaza, 36th Floor
New York ,NY 10119
ATTN: Mr. Zeb Youngman
zyoungman@pwgrosser.com

April 3, 2024

SUBJECT: Firematics OW Monitoring- Data Validation

Dear Mr. Youngman,

Enclosed are the final validation reports for the fraction listed below. This SDG was received on December 12, 2023. Attachment 1 is a summary of the samples that were reviewed for each analysis.

**LDC Project #58138:**

| **SDG #** | **Fraction** |
|---|---|
| 23K0422 | PFAS |
| 23K0473 | |
| 23K0669 | |

The data validation was performed under Category B guidelines. The analysis was validated using the following documents, as applicable to each method:

- Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs (April 2023)
- USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review, EPA 540-R-20-005 (November 2020)

Please feel free to contact us if you have any questions.

Sincerely,

Pei Geng
pgeng@lab-data.com
Project Manager/Senior Chemist

164 pages-DL (1 sample per SDG or 10%) Attachment 1

**Category B** **LDC# 58138 (P.W. Grosser Consulting - Bohemia, NY / Firematics GW Monitoring)** **Project# SHD2305**

| LDC | SDG# | DATE REC'D | (3) DATE DUE | PFAs (1633) | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Matrix: | Water/Soil | | | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S | W | S |
| A | 23K0422 | 12/12/23 | 01/04/24 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 23K0473 | 12/12/23 | 01/04/24 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 23K0669 | 12/12/23 | 01/04/24 | 1 | 0 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Total | TR/PG | | | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |

Shaded cells indicate Category B validation (all other cells are Category A validation). These sample counts do not include MS, MSD, or DUP's.

**Site:** Firematics GW Monitoring
**Laboratory:** York Analytical Laboratories, Inc., Stratford, CT
**Report No.:** 23K0422
**Reviewer:** Stella Cuenco and Pei Geng/Laboratory Data Consultants for P.W. Grosser Consulting
**Date:** April 2, 2024

**Samples Reviewed and Evaluation Summary**

| FIELD ID | LAB ID | FRACTIONS VALIDATED |
|---|---|---|
| MW005D | 23K0422-05 | PFAS |
| MW005DMS | 23K0422-05MS | PFAS |
| MW005DMSD | 23K0422-05MSD | PFAS |

Associated QC Samples(s):
Field/Trip Blanks: Field Blank
Field Duplicate pair: None Associated

The above-listed water sample was collected on November 6, 2023 and was analyzed for perfluoroalkyl and polyfluoroalkyl substances (PFAS) by draft method 1633. The data validation was performed in accordance with the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs (April 2023) and the USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* EPA 540-R-20-005 (November 2020), modified as necessary to accommodate the non-CLP methodologies used.

The organic data were evaluated based on the following parameters:

- Data Completeness
- Holding Times and Sample Preservation
- Liquid Chromatography/Mass Spectrometry (LC/MS) Instrument Performance Check
- Initial and Continuing Calibrations
- Blanks
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- Laboratory Duplicate Results
- Laboratory Control Sample (LCS) Results
- Internal Standards
- Field Duplicate Results
- Quantitation Limits and Data Assessment
- Sample Quantitation and Compound Identification

## Overall Evaluation of Data and Potential Usability Issues

All results are usable as reported or usable with minor qualification due to sample matrix or laboratory quality control outliers with the exception listed below.

The PFAS nondetect result for perfluoro-4-oxapentanoic acid (PFMPA) in sample MW005D was rejected (R) due to low LCS percent recoveries. The result is not usable for project objectives, which may have a major impact on the data usability.

The validation findings were based on the following information.

## Data Completeness

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

## Holding Times and Sample Preservation

All criteria were met.

## LC/MS Instrument Performance Check

All criteria were met.

## Initial and Continuing Calibrations

Initial calibration:

All criteria were met.

Continuing calibration:

Compounds that did not meet criteria are summarized in the following table.

| Date | Instrument ID | Compound | %D | Associated Samples | | Validation Action |
|---|---|---|---|---|---|---|
| 10/02/23 | QQQ32167.d | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 117 | MW005D | XX | UJ nondetects |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 93.7 | | XX | UJ nondetects |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 121 | | XX | UJ nondetects |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 116 | | XX | UJ nondetects |

| Date | Instrument ID | Compound | %D | Associated Samples | | Validation Action |
|---|---|---|---|---|---|---|
| 10/02/23 | QQQ32183.d | 11CL-PF3OUdS | 68.8 | MW005D | XX | UJ nondetects |
| | | 3-Perfluoroheptyl propanoic acid (FHpPA) | 40.9 | | XX | UJ nondetects |
| | | 3-Perfluoropentyl propanoic acid (FPePA) | 45.1 | | XX | UJ nondetects |
| | | 3-Perfluoropropyl propanoic acid (FPrPA) | 50.7 | | XX | UJ nondetects |
| | | 9CL-PF3ONS | 48.0 | | XX | UJ nondetects |
| | | ADONA | 105 | | XX | UJ nondetects |
| | | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 61.4 | | XX | UJ nondetects |
| | | Perfluorononanesulfonic acid (PFNS) | 52.2 | | XX | UJ nondetects |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 89.9 | | XX | UJ nondetects |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 132 | | XX | UJ nondetects |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 118 | | XX | UJ nondetects |
| | | Perfluorododecanesulfonic acid (PFDoS) | 62.1 | | XX | UJ nondetects |

X = Initial calibration (IC) relative standard deviation (%RSD) > 20; estimate (J/UJ) positive and nondetect results.
XX = Continuing calibration (CC) percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
SS = Second source verification percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
ICAL = Calibration Standard percent recovery (%R) outside of 70-130% or 50-150% for the lowest standard; estimate (J/UJ) positive and nondetect results.
ISC = Instrument sensitivity check (ISC) percent recovery (%R) outside of 70-130%; estimate (J/UJ) positive and nondetect results.

The results for the compounds listed above were estimated due to continuing calibration exceedances. The bias cannot be determined. The results can be used for project objectives as nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

## Blanks

Contamination was detected in the associated PFAS method blank samples. The presence of blank contamination indicates that false positives may exist for these compounds in the associated samples. Action Levels (ALs) were established at 10x blank concentration for contaminants. The following table summarizes the contamination detected.

| Blank ID | Compound | Level Detected | Action Level | Associated Samples |
|---|---|---|---|---|
| BK30905-BLK1 | Perfluorobutanoic acid (PFBA) | 3.64 ng/L | 36.4 ng/L | MW005D |

Sample results were qualified as follows:

- If sample concentration was < the reporting limit (RL) and ≤ the Action Level, qualify the result as a nondetect (U) at the RL.
- If sample concentration was > the RL and ≤ the Action Level, qualify the result as not detected (U) at the reported concentration.
- If the sample concentration was > the RL and > the Action Level, qualification of the data was not required.

Qualified sample results are listed in the table below.

| Sample ID | Compound | Level Detected | Validation Action |
|---|---|---|---|
| MW005D | Perfluorobutanoic acid (PFBA) | 2.75 ng/L | 8.00U ng/L |

This result can be used for project objectives as a nondetect (U) which may have a minor impact on the data usability.

Contamination was detected in the field blank sample Field Blank for PFAS analysis. The presence of blank contamination indicates that false positives may exist for these compounds in the associated samples. Action Levels (ALs) were established at the reporting limit (RL) for contaminants. The following table summarizes the contamination detected.

| Field Blank ID | Compound | Level Detected | Action Level | Associated Samples |
|---|---|---|---|---|
| Field Blank | Perfluorooctanesulfonic acid (PFOS) | 4.97 ng/L | 49.7 ng/L | MW005D |
| | Perfluorotridecanoic acid (PFTrDA) | 3.17 ng/L | 31.7 ng/L | |
| | Perfluorotetradecanoic acid (PFTA) | 1.18 ng/L | 11.8 ng/L | |
| | Perfluoropentanoic acid (PFPeA) | 0.351 ng/L | 3.5 ng/L | |
| | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 6.31 ng/L | 63.1 ng/L | |
| | Perfluorobutanoic acid (PFBA) | 2.99 ng/L | 29.9 ng/L | |
| | N-MeFOSE | 13.3 ng/L | 133.0 ng/L | |
| | N-EtFOSE | 37.6 ng/L | 376.0 ng/L | |

Sample results were qualified as follows:

- If sample concentration was < the reporting limit (RL) and ≤ the Action Level, qualify the result as a nondetect (U) at the RL.
- If sample concentration was > the RL and ≤ the Action Level, qualify the result as not detected (U) at the reported concentration.

Qualified sample results are listed in the table below.

| Sample ID | Compound | Level Detected | Validation Action |
|---|---|---|---|
| MW005D | Perfluorooctanesulfonic acid (PFOS) | 13.6 ng/L | 13.6J ng/L |
| | Perfluorobutanoic acid (PFBA) | 2.75 ng/L | 8.00U ng/L |

Thes results can be used for project objectives as nondetects (U) which may have a minor impact on the data usability.

## MS/MSD Results

MS/MSD analyses were performed on sample MW005D for PFAS analysis. The following table lists the MS/MSD percent recoveries (%R) outside of control limits in the PFAS analysis and the resulting validation actions.

| MS ID | Compound | MS %R (Limits) | MS/D %R (Limits) | Affected Sample | Validation Action |
|---|---|---|---|---|---|
| MW005DMS/MSD | ADONA | 155 (25-150) | - | MW005D | None |
| MW005DMS/MSD | Perfluoro-4-oxapentanoic acid (PFMPA) | 18.3 (25-150) | 43.3 (25-150) | MW005D | UJ nondetects |

- Within control limits

Validation action was not required for ADONA due to high MS/MSD percent recovery as positive results only are affected and this compound was not detected in the associated sample.

The perfluoro-4-oxapentanoic acid (PFMPA) results may be biased low due to low MS/MSD percent recoveries. The result can be used for project objectives as a nondetect with an estimated quantitation limit (UJ) which may have a minor impact on the data usability.

The following table lists the MS/MSD relative percent differences (RPD) outside of control limits in the PFAS analysis and the resulting validation actions.

| MS ID | Compound | RPD (Limits) | Affected Sample | Validation Action |
|---|---|---|---|---|
| MW005DMS/MSD | N-EtFOSA | 35.4 (≤30) | MW005D | None |
| | Perfluoro-4-oxapentanoic acid (PFMPA) | 43.3 (≤30) | | None |

Validation action was not required for N-EtFOSA and perfluoro-4-oxapentanoic acid (PFMPA) due to MS/MSD relative percent difference exceedances as positive results only are affected and these compounds were not detected in the associated sample.

## Laboratory Duplicate Results

Laboratory duplicates were not associated with this sample set. Validation action was not required on this basis.

## LCS Results

The following table lists the LCS percent recoveries (%R) outside of control limits in the PFAS analysis and the resulting validation actions.

| LCS ID | Compound | LCS %R (Limits) | Affected Sample | Validation Action |
|---|---|---|---|---|
| BK30905-BS1 | 11CL-PF3OUdS | 214 (50-150) | MW005D | None |
| | 9CL-PF3ONS | 192 (50-150) | | None |
| | ADONA | 214 (50-150) | | None |
| | Perfluorodecanesulfonic acid (PFDS) | 153 (50-150) | | None |
| | Perfluoro-5-oxahexanoic acid (PFMBA) | 311 (50-150) | | None |
| | Perfluorotridecanoic acid (PFTrDA) | 153 (50-150) | | None |
| BK30905-BS1 | 3-Perfluoropropyl propanoic acid (FPrPA) | 35.9 (50-150) | MW005D | J detects/UJ nondetects |
| | Perfluorobutanoic acid (PFBA) | 24.9 (50-150) | | J detects/UJ nondetects |
| | Perfluorooctanesulfonic acid (PFOS) | 31.6 (50-150) | | J detects/UJ nondetects |
| BK30905-BS1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 7.17 (50-150) | MW005D | R nondetects |
| BK30905-BS2 | 11CL-PF3OUdS | 186 (50-150) | MW005D | None |
| | 9CL-PF3ONS | 168 (50-150) | | None |
| | ADONA | 210 (50-150) | | None |
| | Perfluoro-5-oxahexanoic acid (PFMBA) | 226 (50-150) | | None |
| BK30905-BS2 | 3-Perfluoropropyl propanoic acid (FPrPA) | 26.4 (50-150) | MW005D | J detects/UJ nondetects |
| | Perfluorohexanoic acid (PFHxA) | 22.2 (50-150) | | J detects/UJ nondetects |
| | Perfluorobutanoic acid (PFBA) | 37.9 (50-150) | | J detects/UJ nondetects |
| | Perfluorooctanesulfonic acid (PFOS) | 34.6 (50-150) | | J detects/UJ nondetects |

| LCS ID | Compound | LCS %R (Limits) | Affected Sample | Validation Action |
|---|---|---|---|---|
| BK30905-BS2 | Perfluoro-4-oxapentanoic acid (PFMPA) | 5.89 (50-150) | MW005D | R nondetects |

Validation action was not required for the compounds listed above due to high LCS percent recoveries as positive results only are affected and these compounds were not detected in the associated sample.

The 3-perfluoropropyl propanoic acid (FPrPA), perfluorobutanoic acid (PFBA), perfluorooctanesulfonic acid (PFOS), and perfluorohexanoic acid (PFHxA) results may be biased low due to low LCS percent recoveries. The results can be used for project objectives as nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

The PFAS nondetect result for perfluoro-4-oxapentanoic acid (PFMPA) in sample MW005D was rejected (R) due to low LCS percent recoveries. The result is not usable for project objectives, which may have a major impact on the data usability.

## Internal Standards

The following table lists the internal standard percent recoveries (%R) of control limits in the PFAS analysis and the resulting validation actions.

| Sample | Internal Standard | %R (Limits) | Affected Compounds | Validation Action |
|---|---|---|---|---|
| MW005D | d-N-MeFOSA | 22.9 (25-150) | N-MeFOSA | UJ nondetects |

The N-MeFOSA result may be biased low due to low internal standard percent recovery. The result can be used for project objectives as a nondetect with an estimated quantitation limit (UJ) which may have a minor impact on the data usability.

## Field Duplicate Results

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

## Quantitation Limits and Data Assessment

Results were reported which were below the reporting limit (RL) and above the method detection limit (MDL) in the PFAS analysis. These results were qualified as estimated (J) by the laboratory.

Dilutions were not required for PFAS analysis.

## Sample Quantitation and Compound Identification

Calculations were spot-checked; no discrepancies were noted.

## DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

JN - The analysis indicates the presence of a compound that has been "tentatively identified" (N) and the associated numerical value represents its approximate (J) concentration.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

**FORM I** **ORGANIC ANALYSIS DATA SHEET**

**EPA 1633 Draft 3**

**MW005D**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | York Analytical Laboratories, Inc. - Stratford | | SDG: | 23K0422 | |
| Client: | P.W. Grosser Consulting | | Project: | SHD2305 | |
| Matrix: | Ground Water | Laboratory ID: | 23K0422-05 | File ID: | QQQ32180.d |
| Sampled: | 11/06/23 12:25 | Prepared: | 11/14/23 12:11 | Analyzed: | 11/15/23 14:39 |
| Solids: | | Preparation: | EPA 1633 Prep | Initial/Final: | 500 mL / 5 mL |
| Batch: | BK30905 | Sequence: S3K1554 | | Calibration: SJ30009 | Instrument: LCQQQ |

| CAS NO. | COMPOUND | DILUTION | CONC. (ng/L) | Q |
|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1 | 1.83 | |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 1 | 4.78 | |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1 | 2.55 | |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 1 | 13.5 | |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1 | 5.17 | |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 1 | 13.6 | |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1 | 1.24 | J |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1 | 2.00 | U |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1 | 2.00 | U |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1 | 2.00 | U |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | 1 | 2.00 | U |
| 376-06-7 | Perfluorotetradecanoic acid (PFTA) | 1 | 2.00 | U |
| 2355-31-9 | N-MeFOSAA | 1 | 2.00 | U |
| 2991-50-6 | N-EtFOSAA | 1 | 2.00 | U |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 1 | 4.11 | |
| 754-91-6 | Perfluoro-1-octanesulfonamide (FOSA) | 1 | 2.00 | U |
| 375-92-8 | Perfluoro-1-heptanesulfonic acid (PFHpS) | 1 | 1.91 | U |
| 335-77-3 | Perfluoro-1-decanesulfonic acid (PFDS) | 1 | 1.93 | U |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 1 | 7.60 | U |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 1 | 7.68 | U |
| 375-22-4 | Perfluoro-n-butanoic acid (PFBA) | 1 | 2.75 | J 8.00 |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 1 | 3.56 | U |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 1 | 4.00 | U |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 1 | 4.00 | U |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | 1 | 4.00 | U |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | 1 | 2.34 | |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 1 | 7.50 | U |
| 13252-13-6 | HFPO-DA (Gen-X) | 1 | 8.00 | U |
| 763051-92-9 | 11CL-PF3OUdS | 1 | 7.56 | U |
| 756426-58-1 | 9CL-PF3ONS | 1 | 7.48 | U |
| 919005-14-4 | ADONA | 1 | 7.56 | U |
| 79780-39-5 | Perfluorododecanesulfonic acid (PFDoS) | 1 | 1.94 | U |
| 68259-12-1 | Perfluoro-1-nonanesulfonic acid (PFNS) | 1 | 1.92 | U |
| 356-02-5 | 3-Perfluoropropyl propanoic acid (FPrPA) | 1 | 5.00 | U |
| 914637-49-3 | 3-Perfluoropentyl propanoic acid (FPePA) | 1 | 25.0 | U |
| 812-70-4 | 3-Perfluoroheptyl propanoic acid (FHpPA) | 1 | 25.0 | U |
| 24448-09-7 | N-MeFOSE | 1 | 20.0 | U |
| 31506-32-8 | N-MeFOSA | 1 | 2.00 | U |
| 1691-99-2 | N-EtFOSE | 1 | 20.0 | U |
| 4151-50-2 | N-EtFOSA | 1 | 2.00 | U |

PG



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LDC #: 58138A96 **VALIDATION COMPLETENESS WORKSHEET** Date: 3/7/24

SDG #: 23K0422 Category B Page: 1 of 1

Laboratory: York Analytical Laboratories, Inc., Stratford, CT Reviewer: [illegible]

2nd Reviewer: [illegible]

**METHOD:** LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Draft Method 1633)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | LC/MS Instrument performance check | A | |
| III. | Initial calibration/ICV | A / A | 1st IQ ≤ 30 |
| IV. | Continuing calibration/ISC | SW/N | D ≤ 30 |
| V. | Laboratory Blanks | SW | |
| V.I | Field blanks | SW | Field Blank |
| VII. | Matrix spike/Matrix spike duplicates | SW | |
| VIII. | Laboratory control samples | SW | LCS, LL LCS |
| IX. | Field duplicates | N | |
| X. | Internal Standards | SW | EIS, NIS |
| XI. | Target analyte quantitation | A | <RL |
| XII. | Target analyte identification | A | |
| XIII. | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | MW005D | 23K0422-05 | Water | 11/06/23 |
| 2 | MW005DMS | 23K0422-05MS | Water | 11/06/23 |
| 3 | MW005DMSD | 23K0422-05MSD | Water | 11/06/23 |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |
| 11 | | | | |
| 12 | | | | |

Notes:

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | BK30905 | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

**Method:** LC/MS PFAS (EPA Draft Method 1633)

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| **I. Technical holding times** | | | | |
| Were all technical holding times met? | √ | | | |
| Were cooler temperature criteria met? | √ | | | |
| **II. LC/MS Instrument performance check** | | | | |
| Were the instrument performance reviewed and found to be within the validation criteria? | √ | | | |
| **III. Initial calibration and Initial calibration verification** | | | | |
| Did the laboratory perform a 6-point calibration prior to sample analysis? | √ | | | |
| Were all percent relative standard deviations (%RSD) < 20%? | | | √ | |
| Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination ($r^2$) criteria of > 0.990? | √ | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? Were the lowest point signal-to-noise ratio > 3:1? | √ | | | |
| Were the retention time (RT) windows properly established? | √ | | | |
| Was an initial calibration verification (ICV) standard analyzed after each initial calibration for each instrument? | √ | | | |
| Were all ICV percent differences (%D) of the initial calibration verification < 30%? | √ | | | |
| **IV. Continuing calibration, Instrument sensitivity check and Bile salt interference check** | | | | |
| Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence? | √ | | | |
| Were all percent differences (%D) of the continuing calibration < 30%? | | √ | | |
| Were all the RTs within the acceptance windows? | √ | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? | √ | | | |
| Were all percent differences (%D) of the Instrument Sensitivity Check < 30%? | | | √ | |
| Were the RTs for the bile salt peaks outside the RT window of PFOS by at least one minute? | | | √ | |
| **V. Laboratory Blanks** | | | | |
| Was a laboratory blank associated with every sample in this SDG? | √ | | | |
| Was there contamination in the laboratory blanks? | √ | | | |
| **VI. Field blanks** | | | | |
| Were field blanks identified in this SDG? | √ | | | |
| Were target analytes detected in the field blanks? | √ | | | |
| **VII. Matrix spike/Matrix spike duplicates** | | | | |
| Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG? | √ | | | |
| Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? | | √ | | |

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| **VIII. Laboratory control samples** | | | | |
| Were an LCS and low level LCS analyzed per extraction batch for this SDG? | √ | | | |
| Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits? | | √ | | |
| **IX. Field duplicates** | | | | |
| Were field duplicate pairs identified in this SDG? | | √ | | |
| Were target analytes detected in the field duplicates? | | | √ | |
| **X. *Internal Standards*** | | | | |
| Were extracted internal standard (EIS) percent recoveries (%R) within QC limits? | | √ | | |
| Were non-extracted internal standard (NIS) areas >30% of the average area of the calibration standards? | √ | | | |
| Were NIS retention times within 0.4 minutes of the initial calibration midpoint? | √ | | | |
| **XI. Target analyte quantitation** | | | | |
| Did the laboratory reporting limits (i.e. MDL, RL) meet the QAPP? | | | √ | |
| Did reported results include both branched and linear isomers? | √ | | | |
| Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the analyte? | √ | | | |
| Were analyte retention times within 0.1 minutes of the associated EIS for analytes with a labeled analog? | √ | | | |
| Were analyte quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation? | √ | | | |
| **XII. Target analyte identification** | | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? | √ | | | |
| Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA? | √ | | | |
| Were ion ratios within QC limits? | √ | | | |
| **XIII. Overall assessment of Data** | | | | |
| Overall assessment of data was found to be acceptable. | √ | | | |

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Continuing calibrations were analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence. Instrument sensitivity checks (ISC) were analyzed prior to sample analysis, and every 12 hours. Percent differences (%D) were ≤30 % with the following exception:

| Date | Standard ID | Analyte | Finding %D (Limit: ≤30.0%) | Associated Sample | Qualifications |
|---|---|---|---|---|---|
| 10/2/2023 | QQQ32167.d | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 117 | 1 (ND) | J/UJ/A |
| | (CCV) | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 93.7 | | |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 121 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 116 | | |
| | | | | | |
| 10/2/2023 | QQQ32183.d | 11CL-PF3OUdS | 68.8 | 1 (ND) | |
| | (CCV ending) | 3-Perfluoroheptyl propanoic acid (FHpPA) | 40.9 | | |
| | | 3-Perfluoropentyl propanoic acid (FPePA) | 45.1 | | |
| | | 3-Perfluoropropyl propanoic acid (FPrPA) | 50.7 | | |
| | | 9CL-PF3ONS | 48.0 | | |
| | | ADONA | 105 | | |
| | | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 61.4 | | |
| | | Perfluorononanesulfonic acid (PFNS) | 52.2 | | |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 89.9 | | |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 132 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 118 | | |
| | | Perfluorododecanesulfonic acid (PFDoS) | 62.1 | | |

LDC #: 58138A96

# VALIDATION FINDINGS WORKSHEET
## Blanks


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

**Blank extraction date:** 11/14/23 **Associated samples:** All

| Analyte | Blank ID (ng/L) | Sample Identification | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | BK30905-BLK1 | 10X | 1 | | | | | |
| Perfluorobutanoic acid (PFBA) | 3.64 | 36.4 | 2.75/8.00U | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |

LDC #: 58138A96

# VALIDATION FINDINGS WORKSHEET
## Field Blanks


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

**Sampling date:** 11/06/23 **Associated samples:** All

| Analyte | Blank ID (ng/L) | Sample Identification | | | | |
|---|---|---|---|---|---|---|
| | Field Blank | 10X | 1* | | | |
| Perfluorooctanesulfonic acid (PFOS) | 4.97 | 49.7 | 13.6/J | | | |
| Perfluorotridecanoic acid (PFTrDA) | 3.17 | 31.7 | | | | |
| Perfluorotetradecanoic acid (PFTA) | 1.18 | 11.8 | | | | |
| Perfluoropentanoic acid (PFPeA) | 0.351 | 3.5 | | | | |
| 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 6.31 | 63.1 | | | | |
| Perfluorobutanoic acid (PFBA) | 2.99 | 29.9 | 2.75/8.00U | | | |
| N-MeFOSE | 13.3 | 133.0 | | | | |
| N-EtFOSE | 37.6 | 376.0 | | | | |
| | | | | | | |

*Using professional judgment, associated results were qualified as estimated due to presence of PFOS in the FB above the LOQ. (Text)

LDC #: 58138A96

# VALIDATION FINDINGS WORKSHEET
## Matrix Spike/Matrix Spike Duplicates


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Matrix spike (MS) and matrix spike duplicate (MSD) sample analysis was performed on an associated project sample.
Percent recoveries (%R) and %RPD were within QC limits with the exceptions identified below.

| # | MS/MSD ID | Analyte | MS %R (25-150) | MSD %R (25-150) | RPD (≤30) | Associated Samples | Qualifications |
|---|---|---|---|---|---|---|---|
| | 2/3 | ADONA | 155 | | | 1 (ND) | Jdets/A |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 18.3 | 43.3 | | | J/UJ/A |
| | | N-EtFOSA | | | 35.4 | | Jdets/A |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | | | 43.3 | | ↓ |

# VALIDATION FINDINGS WORKSHEET
## Laboratory Control Samples (LCS)

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Laboratory control samples (LCS) were analyzed in this SDG.
Percent recoveries (%R) and %RPD were within QC limits with the exceptions identified below.

| # | LCS ID | Analyte | LCS %R (50-150) | Associated Samples | Qualifications |
|---|---|---|---|---|---|
| | BK30905-BS1 | 11CL-PF3OUdS | 214 | 1 (ND) | Jdets/P |
| | (LCS) | 9CL-PF3ONS | 192 | | |
| | | ADONA | 214 | | |
| | | Perfluorodecanesulfonic acid (PFDS) | 153 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 311 | | |
| | | Perfluorotridecanoic acid (PFTrDA) | 153 | | |
| | | 3-Perfluoropropyl propanoic acid (FPrPA) | 35.9 | | J/UJ/P |
| | | Perfluorobutanoic acid (PFBA) | 24.9 | det | |
| | | Perfluorooctanesulfonic acid (PFOS) | 31.6 | det | |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 7.17 | ND | J/R/P |
| | | | | | |
| | BK30905-BS2 | 11CL-PF3OUdS | 186 | 1 (ND) | Jdets/P |
| | (LL LCS) | 9CL-PF3ONS | 168 | | |
| | | ADONA | 210 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 226 | | |
| | | 3-Perfluoropropyl propanoic acid (FPrPA) | 26.4 | | J/UJ/P |
| | | Perfluorohexanoic acid (PFHxA) | 22.2 | det | |
| | | Perfluorobutanoic acid (PFBA) | 37.9 | det | |
| | | Perfluorooctanesulfonic acid (PFOS) | 34.6 | det | |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 5.89 | ND | J/R/P |
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# VALIDATION FINDINGS WORKSHEET
## Internal Standards

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Extracted internal standard recoveries (%R) were within QC limits with the exceptions identified below.

| # | Sample ID | Internal Standard | %R (25-150) | Qualifications See attached |
|---|---|---|---|---|
| ND | 1 | d-N-MeFOSA | 22.9 | J/UJ/P |
| | | | | N-MeFOSA |

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFHxA | 1 | 0.094962166 | 0.08 | 0.006 |
| | | 2 | 0.21296982 | 0.20 | 0.04 |
| | | 3 | 0.529761199 | 0.50 | 0.25 |
| | | 4 | 1.031134163 | 1.00 | 1.00 |
| | | 5 | 2.162185668 | 2.00 | 4.00 |
| | | 6 | 5.483545557 | 5.00 | 25.00 |
| | | 7 | 11.03745538 | 10.00 | 100.00 |
| | | 8 | 26.79503037 | 25.00 | 625.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9999804 | | 0.99997110 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 1.114182 | -0.00168262 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999980 | | 0.99997110 |

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# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | HFPO-DA | 1 | 0.008673798 | 0.32 | 0.102 |
| | | 2 | 0.019080716 | 0.80 | 0.64 |
| | | 3 | 0.047022081 | 2.00 | 4.00 |
| | | 4 | 0.099039044 | 4.00 | 16.00 |
| | | 5 | 0.184719405 | 8.00 | 64.00 |
| | | 6 | 0.475833718 | 20.00 | 400.00 |
| | | 7 | 0.877468646 | 40.00 | 1600.00 |
| | | 8 | 2.307707486 | 100.00 | 10000.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9997561 | | 0.99964810 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 0.022165 | 8.864990E-06 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999756 | | 0.99964810 |

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFOA | 1 | 0.08022883 | 0.08 | 0.006 |
| | | 2 | 0.213807769 | 0.20 | 0.04 |
| | | 3 | 0.517994463 | 0.50 | 0.25 |
| | | 4 | 1.001518622 | 1.00 | 1.00 |
| | | 5 | 1.99402823 | 2.00 | 4.00 |
| | | 6 | 5.256509363 | 5.00 | 25.00 |
| | | 7 | 9.865266106 | 10.00 | 100.00 |
| | | 8 | 26.15891391 | 25.00 | 625.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | |
| Std Err of Y Est | | | | |
| R Squared | | 0.9998456 | | 0.99977540 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 0.981088 | 0.0025773 | | |
| Std Err of Coef. | | | | |
| | | | | |
| Correlation Coefficient | | 0.999923 | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999846 | | 0.99977540 |

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification

**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFOS | 1 | 0.200638638 | 0.07 | 0.006 |
| | | 2 | 0.427253794 | 0.19 | 0.03 |
| | | 3 | 0.961348445 | 0.46 | 0.22 |
| | | 4 | 1.713927856 | 0.93 | 0.86 |
| | | 5 | 3.650516987 | 1.86 | 3.44 |
| | | 6 | 9.873552426 | 4.64 | 21.53 |
| | | 7 | 19.14970646 | 9.28 | 86.12 |
| | | 8 | 50.89325843 | 23.20 | 538.24 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| 0.9998976 | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9999289 | | 0.99989760 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 2.011814 | 0.00780744 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999929 | | 0.99989760 |

LDC #: 58138A96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the analytes identified below using the following calculation:

% Difference = 100 * (aveRRF - RRF)/aveRRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
aveRRF = initial calib average RRF
RRF = continuing calib RRF
Ax = Area of analyte
Cx = Concentration of analyte,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

| # | Standard ID | Calibration Date | Analyte (IS) | Conc | Reported Conc | Recalculated Conc | Reported %D | Recalculated %D |
|---|---|---|---|---|---|---|---|---|
| 1 | QQQ32167.d | 11/15/2023 | PFHxA (13C5-PFHxA) | 2.50 | 2.41 | 2.42 | 3.4 | 3.4 |
| | | | HFPO-DA (13C3-HFPO-DA) | 10.00 | 11.0 | 11.0 | 10.2 | 10.3 |
| | | | PFOA (13C8-PFOA) | 2.50 | 2.72 | 2.72 | 8.9 | 8.9 |
| | | | PFOS (13C8-PFOS) | 2.32 | 2.39 | 2.39 | 3.0 | 3.0 |
| 2 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |
| 3 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |

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# VALIDATION FINDINGS WORKSHEET
## Matrix Spike/Matrix Spike Duplicates Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent recoveries (%R) and relative percent differences (RPD) of the matrix spike and matrix spike duplicate were recalculated for the analytes identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * (SSC - SC)/SA

Where: SSC = Spiked concentration
SA = Spike added
SC = Sample concentration
MS = Matrix spike recovery
MSD = Matrix spike duplicate recovery

RPD = | MS - MSD | * 2/(MS + MSD)

MS/MSD ID: 2/3

| Analyte | SA (ng/L) | | SC (ng/L) | SSC (ng/L) | | MS Percent Recovery | | MSD Percent Recovery | | MS/MSD RPD | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | MS | MSD | | MS | MSD | Reported | Recalc. | Reported | Recalc. | Reported | Recalc. |
| PFHxA | 40.0 | 40.0 | 4.78 | 42.2 | 46.0 | 93.6 | 93.6 | 103 | 103 | 8.60 | 8.62 |
| HFPO-DA | 80.0 | 80.0 | 0 | 67.1 | 71.5 | 83.9 | 83.9 | 89.3 | 89.4 | 6.23 | 6.35 |
| PFOA | 40.0 | 40.0 | 5 | 50.9 | 54.9 | 114 | 114 | 124 | 124 | 7.42 | 7.56 |
| PFOS | 37.2 | 37.2 | 13.6 | 52.4 | 53.2 | 104 | 104 | 106 | 106 | 1.54 | 1.52 |
| | | | | | | | | | | | |
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LDC #: 58138A96

# VALIDATION FINDINGS WORKSHEET
## LCS Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control duplicate were recalculated for the analytes identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * SSC/SA

Where:
SSC = Spiked concentration
SA = Spike added
LCS = Laboratory control spike recovery
LCSD = Laboratory control spike duplicate recovery

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS/LCSD ID: BK30905-BS1

| Analyte | SA (ng/L) | | SSC (ng/L) | | LCS Percent Recovery | | LCSD Percent Recovery | | LCS/LCSD RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LCS | LCSD | LCS | LCSD | Reported | Recalc. | Reported | Recalc. | Reported | Recalc. |
| PFHxA | 80.0 | | 82.4 | | 103 | 103 | | | | |
| HFPO-DA | 160 | | 149 | | 93.1 | 93.1 | | | | |
| PFOA | 80.0 | | 96.3 | | 120 | 120 | | | | |
| PFOS | 74.4 | | 23.5 | | 31.6 | 31.6 | | | | |
| | | | | | | | | | | |

LDC #: 58138A96

# VALIDATION FINDINGS WORKSHEET
## Sample Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

Analyte results for all Level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax)\,(Cis)\,(Vt)\,(DF)}{(Ais)\,(RRF)\,(Wt)\,(\%S)} \quad \text{or} \quad \frac{(Ax)\,(Cis)\,(Vt)\,(DF)}{(Ais)\,(RRF)\,(Vo)}$$

Where:

Ax = Area or height of the peak for the analyte to be measured
Ais = Area or height of the peak for the internal standard
Cis = Concentration of the internal standard
DF = Dilution factor
Vt = Volume of extract in milliliters (mL)
RRF = Average relative response factor
Vo = Volume of sample in liters (L)
Wt = Weight of sample in grams (g)
%S = Percent solids

| Sample # | Analyte | Ax | Ais | Cis | DF | RRF | Vt (mL) | Vo (mL) | %S | Calculated Concentration (ng/L) | Reported Concentration (ng/L) | % Diff |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PFOS | 2488 | 2263 | 2.5 | 1 | curve | 5 | 500 | | 13.6 | 13.6 | |
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**Site:** Firematics GW Monitoring
**Laboratory:** York Analytical Laboratories, Inc., Stratford, CT
**Report No.:** 23K0473
**Reviewer:** Stella Cuenco and Pei Geng/Laboratory Data Consultants for P.W. Grosser Consulting
**Date:** April 2, 2024

**Samples Reviewed and Evaluation Summary**

| FIELD ID | LAB ID | FRACTIONS VALIDATED |
|---|---|---|
| MW009S | 23K0473-03 | PFAS |
| MW009SDL | 23K0473-03DL | PFAS |

Associated QC Samples(s):
Field/Trip Blanks: None Associated
Field Duplicate pair: None Associated

The above-listed water sample was collected on November 7, 2023 and was analyzed for perfluoroalkyl and polyfluoroalkyl substances (PFAS) by draft method 1633. The data validation was performed in accordance with the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs (April 2023) and the USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* EPA 540-R-20-005 (November 2020), modified as necessary to accommodate the non-CLP methodologies used.

The organic data were evaluated based on the following parameters:

- Data Completeness
- Holding Times and Sample Preservation
- Liquid Chromatography/Mass Spectrometry (LC/MS) Instrument Performance Check
- Initial and Continuing Calibrations
- Blanks
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- Laboratory Duplicate Results
- Laboratory Control Sample (LCS) Results
- Internal Standards
- Field Duplicate Results
- Quantitation Limits and Data Assessment
- Sample Quantitation and Compound Identification

## Overall Evaluation of Data and Potential Usability Issues

All results are usable as reported or usable with minor qualification due to sample matrix or laboratory quality control outliers with the exception listed below.

The PFAS nondetect result for perfluoro-4-oxapentanoic acid (PFMPA) in sample MW009S was rejected (R) due to low LCS percent recoveries. The result is not usable for project objectives, which may have a major impact on the data usability.

The validation findings were based on the following information.

## Data Completeness

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

## Holding Times and Sample Preservation

All criteria were met.

## LC/MS Instrument Performance Check

All criteria were met.

## Initial and Continuing Calibrations

Initial calibration:

All criteria were met.

Continuing calibration:

Compounds that did not meet criteria are summarized in the following table.

| Date | Instrument ID | Compound | %D | Associated Samples | | Validation Action |
|---|---|---|---|---|---|---|
| 10/02/23 | QQQ32193.d | HFPO-DA (Gen-X) | 30.1 | MW009S | XX | J detects/UJ nondetects |
| | | N-EtFOSA | 33.0 | | XX | J detects/UJ nondetects |
| | | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 84.5 | | XX | J detects/UJ nondetects |
| | | Perfluorononanesulfonic acid (PFNS) | 49.5 | | XX | J detects/UJ nondetects |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 83.9 | | XX | J detects/UJ nondetects |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 124 | | XX | J detects/UJ nondetects |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 118 | | XX | J detects/UJ nondetects |
| | | Perfluorododecanesulfonic acid (PFDoS) | 43.4 | | XX | J detects/UJ nondetects |
| 10/02/23 | QQQ32205.d | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 98.3 | MW009S | XX | J detects/UJ nondetects |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 69.3 | | XX | J detects/UJ nondetects |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 119 | | XX | J detects/UJ nondetects |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 115 | | XX | J detects/UJ nondetects |

X = Initial calibration (IC) relative standard deviation (%RSD) > 20; estimate (J/UJ) positive and nondetect results.
XX = Continuing calibration (CC) percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
SS = Second source verification percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
ICAL = Calibration Standard percent recovery (%R) outside of 70-130% or 50-150% for the lowest standard; estimate (J/UJ) positive and nondetect results.
ISC = Instrument sensitivity check (ISC) percent recovery (%R) outside of 70-130%; estimate (J/UJ) positive and nondetect results.

The results for the compounds listed above were estimated due to continuing calibration exceedances. The bias cannot be determined. The results can be used for project objectives as estimated values (J) or nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

## Blanks

Contamination was detected in the associated PFAS method blank samples. The presence of blank contamination indicates that false positives may exist for these compounds in the associated samples. Action Levels (ALs) were established at 10x blank concentration for contaminants. The following table summarizes the contamination detected.

| Blank ID | Compound | Level Detected | Action Level | Associated Samples |
|---|---|---|---|---|
| BK30905-BLK1 | Perfluorobutanoic acid (PFBA) | 3.64 ng/L | 36.4 ng/L | MW009S |

Sample results were qualified as follows:

- If sample concentration was < the reporting limit (RL) and ≤ the Action Level, qualify the result as a nondetect (U) at the RL.
- If sample concentration was > the RL and ≤ the Action Level, qualify the result as not detected (U) at the reported concentration.
- If the sample concentration was > the RL and > the Action Level, qualification of the data was not required.

No samples were qualified since the associated sample results were nondetect.

A field blank was not associated with this sample set. Validation action was not required on this basis.

## MS/MSD Results

MS/MSD analyses were performed on sample MW005D for PFAS analysis. Validation action was not required for MS/MSD percent recoveries (%R) and relative percent differences (RPD) outside of QC limits since there were no associated samples in this SDG.

## Laboratory Duplicate Results

Laboratory duplicates were not associated with this sample set. Validation action was not required on this basis.

## LCS Results

The following table lists the LCS percent recoveries (%R) outside of control limits in the PFAS analysis and the resulting validation actions.

| LCS ID | Compound | LCS %R (Limits) | Affected Sample | Validation Action |
|---|---|---|---|---|
| BK30905-BS1 | 11CL-PF3OUdS | 214 (50-150) | MW009S | None |
| | 9CL-PF3ONS | 192 (50-150) | | None |
| | ADONA | 214 (50-150) | | None |
| | Perfluorodecanesulfonic acid (PFDS) | 153 (50-150) | | None |
| BK30905-BS1 | Perfluoro-5-oxahexanoic acid (PFMBA) | 311 (50-150) | MW009S | J detects |
| | Perfluorotridecanoic acid (PFTrDA) | 153 (50-150) | | J detects |
| BK30905-BS1 | 3-Perfluoropropyl propanoic acid (FPrPA) | 35.9 (50-150) | MW009S | J detects/UJ nondetects |
| | Perfluorobutanoic acid (PFBA) | 24.9 (50-150) | | J detects/UJ nondetects |
| BK30905-BS1 | Perfluorooctanesulfonic acid (PFOS) | 31.6 (50-150) | MW009SDL | J detects |
| BK30905-BS1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 7.17 (50-150) | MW009S | R nondetects |
| BK30905-BS2 | 11CL-PF3OUdS | 186 (50-150) | MW009S | None |
| | 9CL-PF3ONS | 168 (50-150) | | None |
| | ADONA | 210 (50-150) | | None |
| BK30905-BS2 | Perfluoro-5-oxahexanoic acid (PFMBA) | 226 (50-150) | MW009S | J detects |
| BK30905-BS2 | 3-Perfluoropropyl propanoic acid (FPrPA) | 26.4 (50-150) | MW009S | J detects/UJ nondetects |
| | Perfluorobutanoic acid (PFBA) | 37.9 (50-150) | | J detects/UJ nondetects |
| BK30905-BS2 | Perfluorohexanoic acid (PFHxA) | 22.2 (50-150) | MW009S<br>MW009SDL | J detects |
| BK30905-BS2 | Perfluorooctanesulfonic acid (PFOS) | 34.6 (50-150) | MW009SDL | J detects |
| BK30905-BS2 | Perfluoro-4-oxapentanoic acid (PFMPA) | 5.89 (50-150) | MW009S | R nondetects |

Validation action was not required for the compounds listed above due to high LCS percent recoveries as positive results only are affected and these compounds were not detected in the associated sample.

The perfluoro-5-oxahexanoic acid (PFMBA) and perfluorotridecanoic acid (PFTrDA) results may be biased high due to high LCS percent recoveries. The results can be used for project objectives as estimated values (J) which may have a minor impact on the data usability.

The 3-perfluoropropyl propanoic acid (FPrPA), perfluorobutanoic acid (PFBA), perfluorohexanoic acid (PFHxA), and perfluorooctanesulfonic acid (PFOS) results may be biased low due to low LCS percent recoveries. The results can be used for project objectives as nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

The PFAS nondetect result for perfluoro-4-oxapentanoic acid (PFMPA) in sample MW009S was rejected (R) due to low LCS percent recoveries. The result is not usable for project objectives, which may have a major impact on the data usability.

## Internal Standards

The following table lists the internal standard percent recoveries (%R) of control limits in the PFAS analysis and the resulting validation actions.

| Sample | Internal Standard | %R (Limits) | Affected Compounds | Validation Action |
|---|---|---|---|---|
| MW009S | M3PFBS | 159 (25-150) | Perfluorobutanesulfonic acid (PFBS) | J detects |
| | M2-4:2 FTS | 202 (25-150) | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | J detects |
| MW009S | MPFBA | 5.42 (25-150) | Perfluorobutanoic acid (PFBA) | J detects |

The perfluorobutanesulfonic acid (PFBS) and 1H,1H,2H,2H-perfluorohexanesulfonic acid (4:2 FTS) result may be biased high due to high internal standard percent recoveries. The results can be used for project objectives as estimated values (J) which may have a minor impact on the data usability.

The perfluorobutanoic acid (PFBA) result may be biased low due to low internal standard percent recovery. The result can be used for project objectives as a nondetect with an estimated quantitation limit (UJ) which may have a minor impact on the data usability.

## Field Duplicate Results

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

## Quantitation Limits and Data Assessment

Results were reported which were below the reporting limit (RL) and above the method detection limit (MDL) in the PFAS analysis. These results were qualified as estimated (J) by the laboratory.

Due to high target compound levels or difficult sample matrix, select samples were analyzed at dilutions. The following table lists the sample dilutions which were performed and the results reported. RLs were elevated accordingly.

| Sample | PFAS Analysis Reported |
|---|---|
| MW009SDL | 10-fold dilution due to nature of sample matrix for PFHxA, PFHxs, PFOS, and 6:2 FTS |

## Sample Quantitation and Compound Identification

Calculations were spot-checked; no discrepancies were noted.

All target analyte identifications were within validation criteria with the following exceptions:

| Sample | Analyte | Ion Ratio (Limits) | Validation Action |
|---|---|---|---|
| MW009S | Perfluoroundecanoic acid (PFUnA) | 517.6 (50-150) | J detects |

The perfluorooctanesulfonic acid (PFOS) result was estimated due to low ion ratio. The bias cannot be determined. The result can be used for project objectives as an estimated value (J) which may have a minor impact on the data usability.

All target analyte quantitations met validation criteria with the following exceptions:

| Sample | Analyte | Finding | Criteria | Validation Action |
|---|---|---|---|---|
| MW009SDL | Perfluorohexanoic acid (PFHxA)<br>Perfluorohexanesulfonic acid (PFHxS)<br>Perfluorooctanesulfonic acid (PFOS) | Sample result exceeded calibration range. | Reported result should be within calibration range. | J detects<br>J detects<br>J detects |

The results for the compounds listed above were estimated due to results exceeding the calibration range. The bias cannot be determined. The results can be used for project objectives as estimated values (J) which may have a minor impact on the data usability.

In the case where more than one result was reported for an individual sample, the least technically acceptable results were deemed not reportable as follows:

| Sample | Analyte | Reason | Validation Action |
|---|---|---|---|
| MW009S | Perfluorohexanoic acid (PFHxA) | Results exceeded calibration range. | Not reportable |

## DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

JN - The analysis indicates the presence of a compound that has been "tentatively identified" (N) and the associated numerical value represents its approximate (J) concentration.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

**FORM I** **ORGANIC ANALYSIS DATA SHEET**

**EPA 1633 Draft 3**

**MW009S**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | York Analytical Laboratories, Inc. - Stratford | | | SDG: | 23K0473 |
| Client: | P.W. Grosser Consulting | | | Project: | SHD2305 |
| Matrix: | Ground Water | Laboratory ID: | 23K0473-03 | File ID: | QQQ32197.d |
| Sampled: | 11/07/23 09:30 | Prepared: | 11/14/23 12:11 | Analyzed: | 11/15/23 19:14 |
| Solids: | | Preparation: | EPA 1633 Prep | Initial/Final: | 500 mL / 5 mL |
| Batch: | BK30905 | Sequence: | S3K1554 | Calibration: | SJ30009 |
| Instrument: | LCQQQ | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC. (ng/L) | Q |
|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1 | 203 | J |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 1 | 1200 | E NR * |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1 | 387 | |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1 | 575 | |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1 | 99.0 | |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1 | 4.77 | |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1 | 7.58 | |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1 | 2.00 | U UJ |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | 1 | 1.77 | J J |
| 376-06-7 | Perfluorotetradecanoic acid (PFTA) | 1 | 2.00 | U UJ |
| 2355-31-9 | N-MeFOSAA | 1 | 2.00 | U |
| 2991-50-6 | N-EtFOSAA | 1 | 2.00 | U |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 1 | 867 | |
| 754-91-6 | Perfluoro-1-octanesulfonamide (FOSA) | 1 | 9.02 | |
| 375-92-8 | Perfluoro-1-heptanesulfonic acid (PFHpS) | 1 | 225 | |
| 335-77-3 | Perfluoro-1-decanesulfonic acid (PFDS) | 1 | 1.93 | U UJ |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 1 | 25.4 | |
| 375-22-4 | Perfluoro-n-butanoic acid (PFBA) | 1 | 214 | J |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 1 | 3.56 | U UJ |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 1 | 4.00 | U UJ |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 1 | 4.00 | U R |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | 1 | 0.385 | J J |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | 1 | 376 | |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 1 | 2.70 | J J |
| 13252-13-6 | HFPO-DA (Gen-X) | 1 | 8.00 | U UJ |
| 763051-92-9 | 11CL-PF3OUdS | 1 | 7.56 | U UJ |
| 756426-58-1 | 9CL-PF3ONS | 1 | 7.48 | U |
| 919005-14-4 | ADONA | 1 | 7.56 | U |
| 79780-39-5 | Perfluorododecanesulfonic acid (PFDoS) | 1 | 1.94 | U UJ |
| 68259-12-1 | Perfluoro-1-nonanesulfonic acid (PFNS) | 1 | 8.03 | J |
| 356-02-5 | 3-Perfluoropropyl propanoic acid (FPrPA) | 1 | 5.00 | U UJ |
| 914637-49-3 | 3-Perfluoropentyl propanoic acid (FPePA) | 1 | 10.5 | J J |
| 812-70-4 | 3-Perfluoroheptyl propanoic acid (FHpPA) | 1 | 25.0 | U UJ |
| 24448-09-7 | N-MeFOSE | 1 | 20.0 | U |
| 31506-32-8 | N-MeFOSA | 1 | 2.00 | U |
| 1691-99-2 | N-EtFOSE | 1 | 20.0 | U |
| 4151-50-2 | N-EtFOSA | 1 | 2.00 | U UJ |

| SYSTEM MONITORING COMPOUND | ADDED (ng/L) | CONC (ng/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| M3PFBS | 23.3 | 37.1 | 159 | 25 - 150 | * |

* Not reportable



PG

APR 0 1 2024

**FORM I** **ORGANIC ANALYSIS DATA SHEET**

**EPA 1633 Draft 3**

**MW009S**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | York Analytical Laboratories, Inc. - Stratford | | SDG: | 23K0473 | |
| Client: | P.W. Grosser Consulting | | Project: | SHD2305 | |
| Matrix: | Ground Water | Laboratory ID: | 23K0473-03RE1 | File ID: | QQQ32268.d |
| Sampled: | 11/07/23 09:30 | Prepared: | 11/14/23 12:11 | Analyzed: | 11/16/23 22:34 |
| Solids: | | Preparation: | EPA 1633 Prep | Initial/Final: | 500 mL / 5 mL |
| Batch: | BK30905 | Sequence: S3K1638 | | Calibration: SJ30009 | Instrument: LCQQQ |

| CAS NO. | COMPOUND | DILUTION | CONC. (ng/L) | Q |
|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 10 | 1200 | DE |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 10 | 2070 | DE |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 10 | 2020 | DE |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 10 | 773 | D |

| SYSTEM MONITORING COMPOUND | ADDED (ng/L) | CONC (ng/L) | % REC | QC LIMITS | Q |
|---|---|---|---|---|---|
| M3PFBS | 23.3 | 25.8 | 111 | 25 - 150 | |
| M5PFHxA | 25.0 | 23.3 | 93.1 | 25 - 150 | |
| M4PFHpA | 25.0 | 27.8 | 111 | 25 - 150 | |
| M3PFHxS | 23.7 | 22.3 | 94.1 | 25 - 150 | |
| Perfluoro-n-[13C8]octanoic acid (M8PFOA) | 25.0 | 19.6 | 78.3 | 25 - 150 | |
| M6PFDA | 12.5 | 11.3 | 90.3 | 25 - 150 | |
| M7PFUdA | 12.5 | 10.7 | 85.8 | 25 - 150 | |
| Perfluoro-n-[1,2-13C2]dodecanoic acid (MPFDoA) | 12.5 | 9.03 | 72.3 | 25 - 150 | |
| M2PFTeDA | 12.5 | 7.46 | 59.7 | 10 - 150 | |
| Perfluoro-n-[13C4]butanoic acid (MPFBA) | 100 | 9.87 | 9.87 | 25 - 150 | * |
| Perfluoro-1-[13C8]octanesulfonic acid (M8PFOS) | 24.0 | 25.1 | 105 | 25 - 150 | |
| Perfluoro-n-[13C5]pentanoic acid (M5PFPeA) | 50.0 | 49.3 | 98.6 | 25 - 150 | |
| Perfluoro-1-[13C8]octanesulfonamide (M8FOSA) | 25.0 | 18.5 | 74.2 | 10 - 150 | |
| d3-N-MeFOSAA | 50.0 | 25.8 | 51.7 | 25 - 150 | |
| d5-N-EtFOSAA | 50.0 | 28.6 | 57.1 | 25 - 150 | |
| M2-6:2 FTS | 47.6 | 90.7 | 191 | 25 - 200 | |
| M2-8:2 FTS | 48.0 | 21.7 | 45.2 | 25 - 200 | |
| M9PFNA | 12.5 | 11.1 | 88.9 | 25 - 150 | |
| M2-4:2 FTS | 46.9 | 36.6 | 78.0 | 25 - 150 | |
| d-N-MeFOSA | 25.0 | 16.2 | 65.0 | 25 - 150 | |
| d-N-EtFOSA | 25.0 | 28.2 | 113 | 25 - 150 | |
| M3HFPO-DA | 100 | 114 | 114 | 25 - 150 | |
| d9-N-EtFOSE | 250 | 110 | 44.0 | 25 - 150 | |
| d7-N-MeFOSE | 250 | 153 | 61.4 | 25 - 150 | |

| INTERNAL STANDARD | AREA | RT | REF AREA | REF RT | Q |
|---|---|---|---|---|---|
| MPFOA | 43170.62 | 7.520566 | 47363.33 | 7.539433 | |
| MPFOS | 8416.336 | 8.179367 | 9966.608 | 8.18865 | |

* Values outside of QC limits

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APR 0 1 2024

LDC #: 58138B96 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/7/24
SDG #: 23K0473 Category B Page: 1 of
Laboratory: York Analytical Laboratories, Inc., Stratford, CT Reviewer:
2nd Reviewer:

**METHOD:** LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 1633)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A/A | |
| II. | LC/MS Instrument performance check | A | |
| III. | Initial calibration/ICV | A/A | r² ICV≤30 |
| IV. | Continuing calibration/ISC | SW/N | D≤30 |
| V. | Laboratory Blanks | SW | |
| V.I | Field blanks | N | |
| VII. | Matrix spike/Matrix spike duplicates | SW | MW009SD, %Rc/RPDs out – NQ |
| VIII. | Laboratory control samples | SW | LCS, LLLCS |
| IX. | Field duplicates | N | |
| X. | Internal Standards | SW | |
| XI. | Target analyte quantitation | SW | <RL |
| XII. | Target analyte identification | SW | |
| XIII | Overall assessment of data | A | |

Note: A = Acceptable; N = Not provided/applicable; SW = See worksheet; ND = No compounds detected; R = Rinsate; FB = Field blank; D = Duplicate; TB = Trip blank; EB = Equipment blank; SB=Source blank; OTHER:

| | Client ID | | Lab ID | Matrix | Date |
|---|---|---|---|---|---|
| 1 | MW009S | ~~10X~~ | 23K0473-03 | Water | 11/07/23 |
| 2 | ↓ DL | 10X (HxA, HxS, OS, 6:2 FTS only) | ↓ DL | ↓ | ↓ |
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Notes:

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|---|---|---|---|---|---|---|---|
| | BK30905 | | | | | | |
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LDC #: 58138B96

**VALIDATION FINDINGS CHECKLIST**


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| **I. Technical holding times** | | | | |
| Were all technical holding times met? | √ | | | |
| Were cooler temperature criteria met? | √ | | | |
| **II. LC/MS Instrument performance check** | | | | |
| Were the instrument performance reviewed and found to be within the validation criteria? | √ | | | |
| **III. Initial calibration and Initial calibration verification** | | | | |
| Did the laboratory perform a 6-point calibration prior to sample analysis? | √ | | | |
| Were all percent relative standard deviations (%RSD) < 20%? | | | √ | |
| Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination ($r^2$) criteria of > 0.990? | √ | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? Were the lowest point signal-to-noise ratio > 3:1? | √ | | | |
| Were the retention time (RT) windows properly established? | √ | | | |
| Was an initial calibration verification (ICV) standard analyzed after each initial calibration for each instrument? | √ | | | |
| Were all ICV percent differences (%D) of the initial calibration verification < 30%? | √ | | | |
| **IV. Continuing calibration, Instrument sensitivity check and Bile salt interference check** | | | | |
| Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence? | √ | | | |
| Were all percent differences (%D) of the continuing calibration < 30%? | | √ | | |
| Were all the RTs within the acceptance windows? | √ | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? | √ | | | |
| Were all percent differences (%D) of the Instrument Sensitivity Check < 30%? | | | √ | |
| Were the RTs for the bile salt peaks outside the RT window of PFOS by at least one minute? | | | √ | |
| **V. Laboratory Blanks** | | | | |
| Was a laboratory blank associated with every sample in this SDG? | √ | | | |
| Was there contamination in the laboratory blanks? | √ | | | |
| **VI. Field blanks** | | | | |
| Were field blanks identified in this SDG? | | √ | | |
| Were target analytes detected in the field blanks? | | | √ | |
| **VII. Matrix spike/Matrix spike duplicates** | | | | |
| Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG? | √ | | | |
| Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? | | √ | | |

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| **VIII. Laboratory control samples** | | | | |
| Were an LCS and low level LCS analyzed per extraction batch for this SDG? | √ | | | |
| Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits? | | √ | | |
| **IX. Field duplicates** | | | | |
| Were field duplicate pairs identified in this SDG? | | √ | | |
| Were target analytes detected in the field duplicates? | | | √ | |
| **X. *Internal Standards*** | | | | |
| Were extracted internal standard (EIS) percent recoveries (%R) within QC limits? | | √ | | |
| Were non-extracted internal standard (NIS) areas >30% of the average area of the calibration standards? | √ | | | |
| Were NIS retention times within 0.4 minutes of the initial calibration midpoint? | √ | | | |
| **XI. Target analyte quantitation** | | | | |
| Did the laboratory reporting limits (i.e. MDL, RL) meet the QAPP? | | | √ | |
| Did reported results include both branched and linear isomers? | √ | | | |
| Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the analyte? | √ | | | |
| Were analyte retention times within 0.1 minutes of the associated EIS for analytes with a labeled analog? | √ | | | |
| Were analyte quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation? | √ | | | |
| **XII. Target analyte identification** | | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? | √ | | | |
| Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA? | √ | | | |
| Were ion ratios within QC limits? | ~~√~~ | √ | | |
| **XIII. Overall assessment of Data** | | | | |
| Overall assessment of data was found to be acceptable. | √ | | | |

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Continuing calibrations were analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence. Instrument sensitivity checks (ISC) were analyzed prior to sample analysis, and every 12 hours. Percent differences (%D) were ≤30 % with the following exception:

| Date | Standard ID | Analyte | Finding %D (Limit: ≤30.0%) | Associated Sample | Qualifications |
|---|---|---|---|---|---|
| 10/2/2023 | QQQ32193.d | HFPO-DA (Gen-X) | 30.1 | 1 (det/ND) | J/UJ/A |
| | (CCV) | N-EtFOSA | 33.0 | | |
| | | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 84.5 | | |
| | | Perfluorononanesulfonic acid (PFNS) | 49.5 | | |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 83.9 | | |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 124 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 118 | | |
| | | Perfluorododecanesulfonic acid (PFDoS) | 43.4 | | |
| | | | | | |
| 10/2/2023 | QQQ32205.d | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 98.3 | 1 (det/ND) | J/UJ/A |
| | (CCV ending) | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 69.3 | | |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 119 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 115 | | |
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LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Blanks


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

**Blank extraction date:** 11/14/23 **Associated samples:** 1

| Analyte | Blank ID (ng/L) | Sample Identification | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | BK30905-BLK1 | 10X | | | | | | |
| Perfluorobutanoic acid (PFBA) | 3.64 | 36.4 | | | | | | |
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LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Laboratory Control Samples (LCS)


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Laboratory control samples (LCS) were analyzed in this SDG.
Percent recoveries (%R) and %RPD were within QC limits with the exceptions identified below.

| # | LCS ID | Analyte | LCS %R (50-150) | Associated Samples | Qualifications |
|---|---|---|---|---|---|
| | BK30905-BS1 | 11CL-PF3OUdS | 214 | 1 (ND) | Jdets/P |
| | (LCS) | 9CL-PF3ONS | 192 | | |
| | | ADONA | 214 | | |
| | | Perfluorodecanesulfonic acid (PFDS) | 153 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 311 | 1 (det) | |
| | | Perfluorotridecanoic acid (PFTrDA) | 153 | 1 (det) | |
| | | 3-Perfluoropropyl propanoic acid (FPrPA) | 35.9 | 1 (ND) | J/UJ/P |
| | | Perfluorobutanoic acid (PFBA) | 24.9 | 1 (det) | |
| | | Perfluorooctanesulfonic acid (PFOS) | 31.6 | 2 (det) | |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 7.17 | ND | J/R/P |
| | | | | | |
| | BK30905-BS2 | 11CL-PF3OUdS | 186 | 1 (ND) | Jdets/P |
| | (LL LCS) | 9CL-PF3ONS | 168 | | |
| | | ADONA | 210 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 226 | 1 (det) | |
| | | 3-Perfluoropropyl propanoic acid (FPrPA) | 26.4 | 1 (ND) | J/UJ/P |
| | | Perfluorohexanoic acid (PFHxA) | 22.2 | 1,2 (det) | |
| | | Perfluorobutanoic acid (PFBA) | 37.9 | 1 (det) | |
| | | Perfluorooctanesulfonic acid (PFOS) | 34.6 | 2 (det) | |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 5.89 | 1 (ND) | J/R/P |
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LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Internal Standards


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Extracted internal standard recoveries (%R) were within QC limits with the exceptions identified below.

| # | Sample ID | Internal Standard | %R (25-150) | Qualifications See attached |
|---|---|---|---|---|
| det | 1 | M3PFBS | 159 | Jdets/P |
| | | MPFBA | 5.42 | J/R/P |
| | | M2-4:2 FTS | 202 | Jdets/P |
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| | | | Assoc'n | |
| | | M3PFBS | Perfluorobutanesulfonic acid (PFBS) | |
| | | MPFBA | Perfluorobutanoic acid (PFBA) | |
| | | M2-4:2 FTS | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | |
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LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Target Analyte Identification


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

| Sample ID | Analyte | Ion ratio (50-150%) | Qualification |
|---|---|---|---|
| 1 | Perfluoroundecanoic acid (PFUnA) | 517.6 | Jdets/P |
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LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Target Analyte Quantitation


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

| Sample ID | Analyte | Finding | Qualification |
|---|---|---|---|
| ~~1~~ | ~~Perfluorohexanoic acid (PFHxA)~~ | ~~> calib range~~ | ~~Jdets/A~~ |
| | | | |
| 2 | Perfluorohexanoic acid (PFHxA) | > calib range | Jdets/A |
| | Perfluorohexanesulfonic acid (PFHxS) | | |
| | Perfluorooctanesulfonic acid (PFOS) | | |
| | ~~1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS)~~ | | |
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LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Overall Assessment of Data


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

| Sample ID | Analyte | Finding | Qualification |
|---|---|---|---|
| 1 | Perfluorohexanoic acid (PFHxA) | > calib range | NR |

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification

**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFHxA | 1 | 0.094962166 | 0.08 | 0.006 |
| | | 2 | 0.21296982 | 0.20 | 0.04 |
| | | 3 | 0.529761199 | 0.50 | 0.25 |
| | | 4 | 1.031134163 | 1.00 | 1.00 |
| | | 5 | 2.162185668 | 2.00 | 4.00 |
| | | 6 | 5.483545557 | 5.00 | 25.00 |
| | | 7 | 11.03745538 | 10.00 | 100.00 |
| | | 8 | 26.79503037 | 25.00 | 625.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9999804 | | 0.99997110 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 1.114182 | -0.00168262 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999980 | | 0.99997110 |

LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification


Reviewer: SC

**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | HFPO-DA | 1 | 0.008673798 | 0.32 | 0.102 |
| | | 2 | 0.019080716 | 0.80 | 0.64 |
| | | 3 | 0.047022081 | 2.00 | 4.00 |
| | | 4 | 0.099039044 | 4.00 | 16.00 |
| | | 5 | 0.184719405 | 8.00 | 64.00 |
| | | 6 | 0.475833718 | 20.00 | 400.00 |
| | | 7 | 0.877468646 | 40.00 | 1600.00 |
| | | 8 | 2.307707486 | 100.00 | 10000.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9997561 | | 0.99964810 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 0.022165 | 8.864990E-06 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999756 | | 0.99964810 |

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFOA | 1 | 0.08022883 | 0.08 | 0.006 |
| | | 2 | 0.213807769 | 0.20 | 0.04 |
| | | 3 | 0.517994463 | 0.50 | 0.25 |
| | | 4 | 1.001518622 | 1.00 | 1.00 |
| | | 5 | 1.99402823 | 2.00 | 4.00 |
| | | 6 | 5.256509363 | 5.00 | 25.00 |
| | | 7 | 9.865266106 | 10.00 | 100.00 |
| | | 8 | 26.15891391 | 25.00 | 625.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | |
| Std Err of Y Est | | | | |
| R Squared | | 0.9998456 | | 0.99977540 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 0.981088 | 0.0025773 | | |
| Std Err of Coef. | | | | |
| | | | | |
| Correlation Coefficient | | 0.999923 | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999846 | | 0.99977540 |

LDC #:58138B96

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification


Reviewer: SC

**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFOS | 1 | 0.200638638 | 0.07 | 0.006 |
| | | 2 | 0.427253794 | 0.19 | 0.03 |
| | | 3 | 0.961348445 | 0.46 | 0.22 |
| | | 4 | 1.713927856 | 0.93 | 0.86 |
| | | 5 | 3.650516987 | 1.86 | 3.44 |
| | | 6 | 9.873552426 | 4.64 | 21.53 |
| | | 7 | 19.14970646 | 9.28 | 86.12 |
| | | 8 | 50.89325843 | 23.20 | 538.24 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| 0.9998976 | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9999289 | | 0.99989760 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 2.011814 | 0.00780744 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999929 | | 0.99989760 |

LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the analytes identified below using the following calculation:

% Difference = 100 * (aveRRF - RRF)/aveRRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
aveRRF = initial calib average RRF
RRF = continuing calib RRF
Ax = Area of analyte
Cx = Concentration of analyte,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

| # | Standard ID | Calibration Date | Analyte (IS) | Conc | Reported Conc | Recalculated Conc | Reported %D | Recalculated %D |
|---|---|---|---|---|---|---|---|---|
| 1 | QQQ32193.d | 11/15/2023 | PFHxA (13C5-PFHxA) | 2.50 | 2.35 | 2.35 | 6.0 | 6.0 |
| | | | HFPO-DA (13C3-HFPO-DA) | 10.00 | 13.0 | 13.0 | 30.1 | 30.3 |
| | | | PFOA (13C8-PFOA) | 2.50 | 2.60 | 2.60 | 4.2 | 4.2 |
| | | | PFOS (13C8-PFOS) | 2.32 | 2.31 | 2.31 | 0.4 | 0.4 |
| 2 | QQQ32265.d | 11/16/2023 | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | 2.32 | 2.66 | 2.66 | 14.7 | 14.7 |
| 3 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |

LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## LCS Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control duplicate were recalculated for the analytes identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * SSC/SA

Where:
SSC = Spiked concentration
SA = Spike added
LCS = Laboratory control spike recovery
LCSD = Laboratory control spike duplicate recovery

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS/LCSD ID: BK30905-BS1

| Analyte | SA (ng/L) | | SSC (ng/L) | | LCS Percent Recovery | | LCSD Percent Recovery | | LCS/LCSD RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LCS | LCSD | LCS | LCSD | Reported | Recalc. | Reported | Recalc. | Reported | Recalc. |
| PFHxA | 80.0 | | 82.4 | | 103 | 103 | | | | |
| HFPO-DA | 160 | | 149 | | 93.1 | 93.1 | | | | |
| PFOA | 80.0 | | 96.3 | | 120 | 120 | | | | |
| PFOS | 74.4 | | 23.5 | | 31.6 | 31.6 | | | | |
| | | | | | | | | | | |

LDC #: 58138B96

# VALIDATION FINDINGS WORKSHEET
## Sample Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

Analyte results for all Level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax)\,(Cis)\,(Vt)\,(DF)}{(Ais)\,(RRF)\,(Wt)\,(\%S)} \text{ or } \frac{(Ax)\,(Cis)\,(Vt)\,(DF)}{(Ais)\,(RRF)\,(Vo)}$$

Where:

Ax = Area or height of the peak for the analyte to be measured
Ais = Area or height of the peak for the internal standard
Cis = Concentration of the internal standard
DF = Dilution factor
Vt = Volume of extract in milliliters (mL)
RRF = Average relative response factor
Vo = Volume of sample in liters (L)
Wt = Weight of sample in grams (g)
%S = Percent solids

| Sample # | Analyte | Ax | Ais | Cis | DF | RRF | Vt (mL) | Vo (mL) | %S | Calculated Concentration (ng/L) | Reported Concentration (ng/L) | % Diff |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PFOA | 700593 | 29268 | 2.5 | 1 | curve | 5 | 500 | | 575 | 575 | |
| | | | | | | | | | | | | |
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| | |
|---|---|
| **Site:** | Firematics GW Monitoring |
| **Laboratory:** | York Analytical Laboratories, Inc., Stratford, CT |
| **Report No.:** | 23K0669 |
| **Reviewer:** | Stella Cuenco and Pei Geng/Laboratory Data Consultants for P.W. Grosser Consulting |
| **Date:** | April 2, 2024 |

**Samples Reviewed and Evaluation Summary**

| FIELD ID | LAB ID | FRACTIONS VALIDATED |
|---|---|---|
| MW013 | 23K0669-05 | PFAS |
| MW013DUP | 23K0669-05DUP | PFAS |

Associated QC Samples(s):
Field/Trip Blanks: None Associated
Field Duplicate pair: None Associated

The above-listed water sample was collected on November 8, 2023 and was analyzed for perfluoroalkyl and polyfluoroalkyl substances (PFAS) by draft method 1633. The data validation was performed in accordance with the Sampling, Analysis, and Assessment of Per- and Polyfluoroalkyl Substances (PFAS) under NYSDEC's Part 375 Remedial Programs (April 2023) and the USEPA *Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review,* EPA 540-R-20-005 (November 2020), modified as necessary to accommodate the non-CLP methodologies used.

The organic data were evaluated based on the following parameters:

- Data Completeness
- Holding Times and Sample Preservation
- Liquid Chromatography/Mass Spectrometry (LC/MS) Instrument Performance Check
- Initial and Continuing Calibrations
- Blanks
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) Results
- Laboratory Duplicate Results
- Laboratory Control Sample (LCS) Results
- Internal Standards
- Field Duplicate Results
- Quantitation Limits and Data Assessment
- Sample Quantitation and Compound Identification

## Overall Evaluation of Data and Potential Usability Issues

All results are usable as reported or usable with minor qualification due to laboratory quality control outliers.

The validation findings were based on the following information.

## Data Completeness

The data package was complete as defined under the requirements for the NYSDEC ASP category B laboratory deliverables.

## Holding Times and Sample Preservation

All criteria were met.

## LC/MS Instrument Performance Check

All criteria were met.

## Initial and Continuing Calibrations

Initial calibration:

All criteria were met.

Continuing calibration:

Compounds that did not meet criteria are summarized in the following table.

| Date | Instrument ID | Compound | %D | Associated Samples | | Validation Action |
|---|---|---|---|---|---|---|
| 11/19/23 | QQQ32379.d | 9CL-PF3ONS | 40.3 | MW013 | XX | UJ nondetects |
| | | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 111 | | XX | UJ nondetects |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 54.1 | | XX | UJ nondetects |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 134 | | XX | UJ nondetects |
| | | Perfluoro-5oxahexanoic acid (PFMBA) | 112 | | XX | UJ nondetects |
| 11/20/23 | QQQ32391.d | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 115 | MW013 | XX | UJ nondetects |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 106 | | XX | UJ nondetects |
| | | Perfluoro-4-oxapentanoic acid (PFMPA) | 134 | | XX | UJ nondetects |
| 10/02/23 | QQQ32205.d | Perfluoro-5oxahexanoic acid (PFMBA) | 119 | MW013 | XX | UJ nondetects |

X = Initial calibration (IC) relative standard deviation (%RSD) > 20; estimate (J/UJ) positive and nondetect results.
XX = Continuing calibration (CC) percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
SS = Second source verification percent difference (%D) > 30; estimate (J/UJ) positive and nondetect results.
ICAL = Calibration Standard percent recovery (%R) outside of 70-130% or 50-150% for the lowest standard; estimate (J/UJ) positive and nondetect results.
ISC = Instrument sensitivity check (ISC) percent recovery (%R) outside of 70-130%; estimate (J/UJ) positive and nondetect results.

The results for the compounds listed above were estimated due to continuing calibration exceedances. The bias cannot be determined. The results can be used for project objectives as nondetects with estimated quantitation limits (UJ) which may have a minor impact on the data usability.

## Blanks

Contamination was not detected in the method blanks.

A field blank was not associated with this sample set. Validation action was not required on this basis.

## MS/MSD Results

MS/MSD analyses were not associated with this sample set. Validation action was not required on this basis.

## Laboratory Duplicate Results

Laboratory duplicates were performed on sample MW013 for PFAS analysis. All criteria were met.

## LCS Results

The following table lists the LCS percent recoveries (%R) outside of control limits in the PFAS analysis and the resulting validation actions.

| LCS ID | Compound | LCS %R (Limits) | Affected Sample | Validation Action |
|---|---|---|---|---|
| BK31244-BS1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 12.4 (50-150) | MW013 | None |
| BK31244-BS2 | Perfluoro-4-oxapentanoic acid (PFMPA) | 16.7 (50-150) | MW013 | None |

Validation action was not required for perfluoro-4-oxapentanoic acid (PFMPA) due to high LCS percent recoveries as positive results only are affected and this compound was not detected in the associated sample.

## Internal Standards

The following table lists the internal standard percent recoveries (%R) of control limits in the PFAS analysis and the resulting validation actions.

| Sample | Internal Standard | %R (Limits) | Affected Compounds | Validation Action |
|---|---|---|---|---|
| MW013 | M5PFHxA | 154 (25-150) | Perfluorohexanoic acid (PFHxA) | J detects |
| | M3PFHxS | 164 (25-150) | Perfluorohexanesulfonic acid (PFHxS) | J detects |
| | M5PFPeA | 166 (25-150) | Perfluoropentanoic acid (PFPeA) | J detects |
| MW013 | M4PFHpA | 169 (25-150) | Perfluoroheptanoic acid (PFHpA) | None |
| | M3PFHxS | 164 (25-150) | Perfluoropentanesulfonate (PFPeS) | None |
| | M3HFPO-DA | 177 (25-150) | HFPO-DA (Gen-X) | None |

The perfluorohexanoic acid (PFHxA), perfluorohexanesulfonic acid (PFHxS), and perfluoropentanoic acid (PFPeA) results may be biased high due to high internal standard percent recoveries. The results can be used for project objectives as estimated values (J) which may have a minor impact on the data usability.

Validation action was not required for perfluoroheptanoic acid (PFHpA), perfluoropentanesulfonate (PFPeS), and HFPO-DA (Gen-X) due to high internal standard percent recoveries as positive results only are affected and these compounds were not detected in the associated sample.

## Field Duplicate Results

A field duplicate pair was not associated with this sample set. Validation action was not required on this basis.

## Quantitation Limits and Data Assessment

Results were reported which were below the reporting limit (RL) and above the method detection limit (MDL) in the PFAS analysis. These results were qualified as estimated (J) by the laboratory.

Dilutions were not required for PFAS analysis.

## Sample Quantitation and Compound Identification

Calculations were spot-checked; no discrepancies were noted.

## DATA VALIDATION QUALIFIERS

U - The analyte was analyzed for, but due to blank contamination was flagged as nondetect (U). The result is usable as a nondetect.

J - Data are flagged (J) when a QC analysis fails outside the primary acceptance limits. The qualified "J" data are not excluded from further review or consideration. However, only one flag (J) is applied to a sample result, even though several associated QC analyses may fail. The 'J' data may be biased high or low or the direction of the bias may be indeterminable.

UJ - The analyte was not detected above the reported sample quantitation limit. Data are flagged (UJ) when a QC analysis fails outside the primary acceptance limits. The qualified "UJ" data are not excluded from further review or consideration. However, only one flag is applied to a sample result, even though several associated QC analyses may fail. The 'UJ' data may be biased low.

JN - The analysis indicates the presence of a compound that has been "tentatively identified" (N) and the associated numerical value represents its approximate (J) concentration.

R - Data rejected (R) on the basis of an unacceptable QC analysis should be excluded from further review or consideration. Data are rejected when associated QC analysis results exceed the expanded control limits of the QC criteria. The rejected data are known to contain significant errors based on documented information. The data user must not use the rejected data to make environmental decisions. The presence or absence of the analyte cannot be verified.

**FORM I** **ORGANIC ANALYSIS DATA SHEET**

**EPA 1633 Draft 3**

**MW013**

| | | | | | |
|---|---|---|---|---|---|
| Laboratory: | York Analytical Laboratories, Inc. - Stratford | | | SDG: | 23K0669 |
| Client: | P.W. Grosser Consulting | | | Project: | SHD2305 15 Private Rd Wertheim |
| Matrix: | Water | Laboratory ID: | 23K0669-05 | File ID: | QQQ32388.d |
| Sampled: | 11/08/23 15:05 | Prepared: | 11/19/23 15:05 | Analyzed: | 11/20/23 01:57 |
| Solids: | | Preparation: | EPA 1633 Prep | Initial/Final: | 530.49 mL / 5 mL |
| Batch: | BK31244 | Sequence: | S3K1906 | Calibration: | SJ30009 |
| Instrument: | LCQQQ | | | | |

| CAS NO. | COMPOUND | DILUTION | CONC. (ng/L) | Q |
|---|---|---|---|---|
| 375-73-5 | Perfluorobutanesulfonic acid (PFBS) | 1 | 1.67 | U |
| 307-24-4 | Perfluorohexanoic acid (PFHxA) | 1 | 1.04 | J |
| 375-85-9 | Perfluoroheptanoic acid (PFHpA) | 1 | 1.89 | U |
| 355-46-4 | Perfluorohexanesulfonic acid (PFHxS) | 1 | 1.00 | J |
| 335-67-1 | Perfluorooctanoic acid (PFOA) | 1 | 1.10 | J |
| 1763-23-1 | Perfluorooctanesulfonic acid (PFOS) | 1 | 3.63 | |
| 375-95-1 | Perfluorononanoic acid (PFNA) | 1 | 0.929 | J |
| 335-76-2 | Perfluorodecanoic acid (PFDA) | 1 | 1.89 | U |
| 2058-94-8 | Perfluoroundecanoic acid (PFUnA) | 1 | 1.89 | U |
| 307-55-1 | Perfluorododecanoic acid (PFDoA) | 1 | 1.89 | U |
| 72629-94-8 | Perfluorotridecanoic acid (PFTrDA) | 1 | 1.89 | U |
| 376-06-7 | Perfluorotetradecanoic acid (PFTA) | 1 | 1.89 | U |
| 2355-31-9 | N-MeFOSAA | 1 | 1.89 | U |
| 2991-50-6 | N-EtFOSAA | 1 | 1.89 | U |
| 2706-90-3 | Perfluoropentanoic acid (PFPeA) | 1 | 1.42 | J |
| 754-91-6 | Perfluoro-1-octanesulfonamide (FOSA) | 1 | 1.89 | U |
| 375-92-8 | Perfluoro-1-heptanesulfonic acid (PFHpS) | 1 | 1.80 | U |
| 335-77-3 | Perfluoro-1-decanesulfonic acid (PFDS) | 1 | 1.82 | U |
| 27619-97-2 | 1H,1H,2H,2H-Perfluorooctanesulfonic acid (6:2 FTS) | 1 | 7.16 | U |
| 39108-34-4 | 1H,1H,2H,2H-Perfluorodecanesulfonic acid (8:2 FTS) | 1 | 7.24 | U |
| 375-22-4 | Perfluoro-n-butanoic acid (PFBA) | 1 | 1.23 | J |
| 113507-82-7 | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 1 | 3.36 | U |
| 151772-58-6 | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 1 | 3.77 | U |
| 377-73-1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 1 | 3.77 | U |
| 863090-89-5 | Perfluoro-5-oxahexanoic acid (PFMBA) | 1 | 3.77 | U |
| 2706-91-4 | Perfluoro-1-pentanesulfonate (PFPeS) | 1 | 1.77 | U |
| 757124-72-4 | 1H,1H,2H,2H-Perfluorohexanesulfonic acid (4:2 FTS) | 1 | 7.07 | U |
| 13252-13-6 | HFPO-DA (Gen-X) | 1 | 7.54 | U |
| 763051-92-9 | 11CL-PF3OUdS | 1 | 7.13 | U |
| 756426-58-1 | 9CL-PF3ONS | 1 | 7.05 | U |
| 919005-14-4 | ADONA | 1 | 7.13 | U |
| 79780-39-5 | Perfluorododecanesulfonic acid (PFDoS) | 1 | 1.83 | U |
| 68259-12-1 | Perfluoro-1-nonanesulfonic acid (PFNS) | 1 | 1.81 | U |
| 356-02-5 | 3-Perfluoropropyl propanoic acid (FPrPA) | 1 | 4.71 | U |
| 914637-49-3 | 3-Perfluoropentyl propanoic acid (FPePA) | 1 | 23.6 | U |
| 812-70-4 | 3-Perfluoroheptyl propanoic acid (FHpPA) | 1 | 23.6 | U |
| 24448-09-7 | N-MeFOSE | 1 | 18.9 | U |
| 31506-32-8 | N-MeFOSA | 1 | 1.89 | U |
| 1691-99-2 | N-EtFOSE | 1 | 18.9 | U |
| 4151-50-2 | N-EtFOSA | 1 | 1.89 | U |

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LDC #: 58138C96 **VALIDATION COMPLETENESS WORKSHEET** Date: 2/1/24
SDG #: 23K0669 Category B Page: 1 of 1
Laboratory: York Analytical Laboratories, Inc., Stratford, CT Reviewer: JC
2nd Reviewer:

**METHOD:** LC/MS Perfluoroalkyl & Polyfluoroalkyl Substances (EPA Method 1633)

The samples listed below were reviewed for each of the following validation areas. Validation findings are noted in attached validation findings worksheets.

| | Validation Area | | Comments |
|---|---|---|---|
| I. | Sample receipt/Technical holding times | A / A | |
| II. | LC/MS Instrument performance check | A | |
| III. | Initial calibration/ICV | A / A | r² ICV ≤ 30 |
| IV. | Continuing calibration/ISC | SW/N | D ≤ 30 |
| V. | Laboratory Blanks | A | |
| V.I | Field blanks | N | |
| VII. | Matrix spike/Matrix spike duplicates /DUP | N/A | |
| VIII. | Laboratory control samples | SW | LCS, LL LCS |
| IX. | Field duplicates | N | |
| X. | Internal Standards | SW | |
| XI. | Target analyte quantitation | A | <RL |
| XII. | Target analyte identification | A | |
| XIII | Overall assessment of data | A | |

Note: A = Acceptable ND = No compounds detected D = Duplicate SB=Source blank
N = Not provided/applicable R = Rinsate TB = Trip blank OTHER:
SW = See worksheet FB = Field blank EB = Equipment blank

| | Client ID | Lab ID | Matrix | Date |
|---|---|---|---|---|
| 1 | MW013 | 23K0669-05 | Water | 11/08/23 |
| 2 | MW013DUP | 23K0669-05DUP | Water | 11/08/23 |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
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Notes:

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| | BK 3/24 | | | | | | |
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**Method:** LC/MS PFAS (EPA Draft Method 1633)

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| **I. Technical holding times** | | | | |
| Were all technical holding times met? | √ | | | |
| Were cooler temperature criteria met? | √ | | | |
| **II. LC/MS Instrument performance check** | | | | |
| Were the instrument performance reviewed and found to be within the validation criteria? | √ | | | |
| **III. Initial calibration and Initial calibration verification** | | | | |
| Did the laboratory perform a 6-point calibration prior to sample analysis? | √ | | | |
| Were all percent relative standard deviations (%RSD) < 20%? | | | √ | |
| Was a curve fit used for evaluation? If yes, did the initial calibration meet the coefficient of determination ($r^2$) criteria of > 0.990? | √ | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? Were the lowest point signal-to-noise ratio > 3:1? | √ | | | |
| Were the retention time (RT) windows properly established? | √ | | | |
| Was an initial calibration verification (ICV) standard analyzed after each initial calibration for each instrument? | √ | | | |
| Were all ICV percent differences (%D) of the initial calibration verification < 30%? | √ | | | |
| **IV. Continuing calibration, Instrument sensitivity check and Bile salt interference check** | | | | |
| Was a continuing calibration analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence? | √ | | | |
| Were all percent differences (%D) of the continuing calibration < 30%? | | √ | | |
| Were all the RTs within the acceptance windows? | √ | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? | √ | | | |
| Were all percent differences (%D) of the Instrument Sensitivity Check < 30%? | | | √ | |
| Were the RTs for the bile salt peaks outside the RT window of PFOS by at least one minute? | | | √ | |
| **V. Laboratory Blanks** | | | | |
| Was a laboratory blank associated with every sample in this SDG? | √ | | | |
| Was there contamination in the laboratory blanks? | | √ | | |
| **VI. Field blanks** | | | | |
| Were field blanks identified in this SDG? | | √ | | |
| Were target analytes detected in the field blanks? | | | √ | |
| **VII. Matrix spike/Matrix spike duplicates/Lab Duplicates** | | | | |
| Were matrix spike (MS) and matrix spike duplicate (MSD) analyzed in this SDG? | √ | | | DUP |
| Were the MS/MSD percent recoveries (%R) and the relative percent differences (RPD) within the QC limits? | √ | | | DUP |

| Validation Area | Yes | No | NA | Findings/Comments |
|---|---|---|---|---|
| **VIII. Laboratory control samples** | | | | |
| Were an LCS and low level LCS analyzed per extraction batch for this SDG? | √ | | | |
| Were the LCS percent recoveries (%R) and relative percent difference (RPD) within the QC limits? | | √ | | |
| **IX. Field duplicates** | | | | |
| Were field duplicate pairs identified in this SDG? | | √ | | |
| Were target analytes detected in the field duplicates? | | | √ | |
| **X. *Internal Standards*** | | | | |
| Were extracted internal standard (EIS) percent recoveries (%R) within QC limits? | | √ | | |
| Were non-extracted internal standard (NIS) areas >30% of the average area of the calibration standards? | √ | | | |
| Were NIS retention times within 0.4 minutes of the initial calibration midpoint? | √ | | | |
| **XI. Target analyte quantitation** | | | | |
| Did the laboratory reporting limits (i.e. MDL, RL) meet the QAPP? | | | √ | |
| Did reported results include both branched and linear isomers? | √ | | | |
| Were the correct ion transition, labeled compound and relative response factor (RRF) used to quantitate the analyte? | √ | | | |
| Were analyte retention times within 0.1 minutes of the associated EIS for analytes with a labeled analog? | √ | | | |
| Were analyte quantitation and reporting limits adjusted to reflect all sample dilutions and dry weight factors applicable to Stage 4 validation? | √ | | | |
| **XII. Target analyte identification** | | | | |
| Was the signal to noise (S/N) ratio for all analytes within the validation criteria? | √ | | | |
| Were two transitions and the ion transition ratio per analyte monitored and documented with the exception of PFBA and PFPeA? | √ | | | |
| Were ion ratios within QC limits? | √ | | | |
| **XIII. Overall assessment of Data** | | | | |
| Overall assessment of data was found to be acceptable. | √ | | | |

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Continuing calibrations were analyzed prior to sample analysis, after every 10 samples and at the end of the analytical sequence. Instrument sensitivity checks (ISC) were analyzed prior to sample analysis, and every 12 hours. Percent differences (%D) were ≤30 % with the following exception:

| Date | Standard ID | Analyte | Finding %D (Limit: ≤30.0%) | Associated Sample | Qualifications |
|---|---|---|---|---|---|
| 11/19/2023 | QQQ32379.d | 9CL-PF3ONS | 40.3 | 1 (ND) | J/UJ/A |
| | (CCV) | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 111 | | |
| | | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 54.1 | | |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 134 | | |
| | | Perfluoro-5-oxahexanoic acid (PFMBA) | 112 | | |
| | | | | | |
| 11/20/2023 | QQQ32391.d | Perfluoro(2-ethoxyethane)sulfonic acid (PFEESA) | 115 | 1 (ND) | J/UJ/A |
| | (CCV ending) | Perfluoro-3,6-dioxaheptanoic acid (NFDHA) | 106 | | |
| | | 'Perfluoro-4-oxapentanoic acid (PFMPA) | 134 | | |
| 10/2/2023 | QQQ32205.d | Perfluoro-5-oxahexanoic acid (PFMBA) | 119 | | |
| | (CCV ending) | | | | |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Laboratory Control Samples (LCS)


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Laboratory control samples (LCS) were analyzed in this SDG.
Percent recoveries (%R) and %RPD were within QC limits with the exceptions identified below.

| # | LCS ID | Analyte | LCS %R (50-150) | Associated Samples | Qualifications |
|---|---|---|---|---|---|
| | BK31244-BS1 | Perfluoro-4-oxapentanoic acid (PFMPA) | 12.4 | 1 (ND) | J/UJ/P |
| | (LCS) | | | | |
| | | | | | |
| | BK31244-BS2 | Perfluoro-4-oxapentanoic acid (PFMPA) | 16.7 | 1 (ND) | J/UJ/P |
| | (LL LCS) | | | | |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Internal Standards


Reviewer: SC

**Method:** LC/MS PFAS (EPA Draft Method 1633)

Extracted internal standard recoveries (%R) were within QC limits with the exceptions identified below.

| # | Sample ID | Internal Standard | %R (25-150) | Qualifications |
|---|---|---|---|---|
| | 1 | M5PFHxA | 154 | Jdets/P |
| | | M4PFHpA | 169 | ↓ |
| | | M3PFHxS | 164 | ↓ |
| | | M5PFPeA | 166 | ↓ |
| | | M3HFPO-DA | 177 | ↓ |
| | | | | |
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| | | | | |
| | | | Assoc'n | |
| det | | M5PFHxA | Perfluorohexanoic acid (PFHxA) | |
| ND | | M4PFHpA | Perfluoroheptanoic acid (PFHpA) | |
| det | | M3PFHxS | Perfluorohexanesulfonic acid (PFHxS) | |
| ND | | M3PFHxS | Perfluoropentanesulfonate (PFPeS) | |
| det | | M5PFPeA | Perfluoropentanoic acid (PFPeA) | |
| ND | | M3HFPO-DA | HFPO-DA (Gen-X) | |
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LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification


Reviewer: SC

**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFHxA | 1 | 0.094962166 | 0.08 | 0.006 |
| | | 2 | 0.21296982 | 0.20 | 0.04 |
| | | 3 | 0.529761199 | 0.50 | 0.25 |
| | | 4 | 1.031134163 | 1.00 | 1.00 |
| | | 5 | 2.162185668 | 2.00 | 4.00 |
| | | 6 | 5.483545557 | 5.00 | 25.00 |
| | | 7 | 11.03745538 | 10.00 | 100.00 |
| | | 8 | 26.79503037 | 25.00 | 625.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9999804 | | 0.99997110 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 1.114182 | -0.00168262 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999980 | | 0.99997110 |

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | HFPO-DA | 1 | 0.008673798 | 0.32 | 0.102 |
| | | 2 | 0.019080716 | 0.80 | 0.64 |
| | | 3 | 0.047022081 | 2.00 | 4.00 |
| | | 4 | 0.099039044 | 4.00 | 16.00 |
| | | 5 | 0.184719405 | 8.00 | 64.00 |
| | | 6 | 0.475833718 | 20.00 | 400.00 |
| | | 7 | 0.877468646 | 40.00 | 1600.00 |
| | | 8 | 2.307707486 | 100.00 | 10000.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | 0 |
| Std Err of Y Est | | | | |
| R Squared | | 0.9997561 | | 0.99964810 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 0.022165 | 8.864990E-06 | | |
| Std Err of Coef. | | | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999756 | | 0.99964810 |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Initial Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

| Date | Analyte | Level | (Y) Response ratio | (X) Conc. Ratio | ($X^2$) Conc. Ratio |
|---|---|---|---|---|---|
| 10/2/2023 LCQQQ | PFOA | 1 | 0.08022883 | 0.08 | 0.006 |
| | | 2 | 0.213807769 | 0.20 | 0.04 |
| | | 3 | 0.517994463 | 0.50 | 0.25 |
| | | 4 | 1.001518622 | 1.00 | 1.00 |
| | | 5 | 1.99402823 | 2.00 | 4.00 |
| | | 6 | 5.256509363 | 5.00 | 25.00 |
| | | 7 | 9.865266106 | 10.00 | 100.00 |
| | | 8 | 26.15891391 | 25.00 | 625.00 |

| Regression Output | | Recalculated | | Reported |
|---|---|---|---|---|
| Constant | c | 0.0000 | c | |
| Std Err of Y Est | | | | |
| R Squared | | 0.9998456 | | 0.99977540 |
| Degrees of Freedom | | | | |
| | b | a | b | a |
| X Coefficient(s) | 0.981088 | 0.0025773 | | |
| Std Err of Coef. | | | | |
| | | | | |
| Correlation Coefficient | | 0.999923 | | |
| Coefficient of Determination ($r^2$) | $r^2$ | 0.999846 | | 0.99977540 |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the analytes identified below using the following calculation:

% Difference = 100 * (aveRRF - RRF)/aveRRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
aveRRF = initial calib average RRF
RRF = continuing calib RRF
Ax = Area of analyte
Cx = Concentration of analyte,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

| # | Standard ID | Calibration Date | Analyte (IS) | Conc | Reported Conc | Recalculated Conc | Reported %D | Recalculated %D |
|---|---|---|---|---|---|---|---|---|
| 1 | QQQ32379.d | 11/19/2023 | PFHxA (13C5-PFHxA) | 2.50 | 2.32 | 2.32 | 7.2 | 7.2 |
| | | | HFPO-DA (13C3-HFPO-DA) | 10.00 | 11.7 | 11.7 | 16.9 | 17.0 |
| | | | PFOA (13C8-PFOA) | 2.50 | 2.88 | 2.88 | 15.4 | 15.4 |
| | | | PFOS (13C8-PFOS) | 2.32 | 2.45 | 2.45 | 5.7 | 5.7 |
| 2 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |
| 3 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Continuing Calibration Calculation Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent difference (%D) of the initial calibration average Relative Response Factors (RRFs) and the continuing calibration RRFs were recalculated for the analytes identified below using the following calculation:

% Difference = 100 * (aveRRF - RRF)/aveRRF
RRF = (Ax)(Cis)/(Ais)(Cx)

Where:
aveRRF = initial calib average RRF
RRF = continuing calib RRF
Ax = Area of analyte
Cx = Concentration of analyte,
Ais = Area of associated internal standard
Cis = Concentration of internal standard

| # | Standard ID | Calibration Date | Analyte (IS) | Conc | Reported Conc | Recalculated Conc | Reported %D | Recalculated %D |
|---|---|---|---|---|---|---|---|---|
| 1 | QQQ32379.d | 11/19/2023 | PFHxA (13C5-PFHxA) | 2.50 | 2.32 | 2.32 | 7.2 | 7.2 |
| | | | HFPO-DA (13C3-HFPO-DA) | 10.00 | 11.7 | 11.7 | 16.9 | 17.0 |
| | | | PFOA (13C8-PFOA) | 2.50 | 2.88 | 2.88 | 15.4 | 15.4 |
| | | | PFOS (13C8-PFOS) | 2.32 | 2.45 | 2.45 | 5.7 | 5.7 |
| 2 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |
| 3 | | | PFHxA (13C5-PFHxA) | | | | | |
| | | | HFPO-DA (13C3-HFPO-DA) | | | | | |
| | | | PFOA (13C8-PFOA) | | | | | |
| | | | PFOS (13C8-PFOS) | | | | | |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## LCS Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

The percent recoveries (%R) and relative percent differences (RPD) of the laboratory control sample and laboratory control duplicate were recalculated for the analytes identified below using the following calculation:

SSC = (Area spike) (Conc IS) / (Area IS) (average RRF spike)
%Recovery = 100 * SSC/SA

Where:
SSC = Spiked concentration
SA = Spike added
LCS = Laboratory control spike recovery
LCSD = Laboratory control spike duplicate recovery

RPD = | LCS - LCSD | * 2/(LCS + LCSD)

LCS/LCSD ID: BK31244-BS1

| Analyte | SA (ng/L) | | SSC (ng/L) | | LCS Percent Recovery | | LCSD Percent Recovery | | LCS/LCSD RPD | |
|---|---|---|---|---|---|---|---|---|---|---|
| | LCS | LCSD | LCS | LCSD | Reported | Recalc. | Reported | Recalc. | Reported | Recalc. |
| PFHxA | 80.0 | | 71.8 | | 89.8 | 89.8 | | | | |
| HFPO-DA | 160 | | 140 | | 87.3 | 87.5 | | | | |
| PFOA | 80.0 | | 83.8 | | 105 | 105 | | | | |
| PFOS | 74.4 | | 68.5 | | 92.1 | 92.1 | | | | |
| | | | | | | | | | | |

LDC #: 58138C96

# VALIDATION FINDINGS WORKSHEET
## Sample Results Verification



**Method:** LC/MS PFAS EPA Draft Method 1633

Analyte results for all Level IV samples reported with a positive detect were recalculated and verified using the following equation:

$$\text{Concentration} = \frac{(Ax)\ (Cis)\ (Vt)\ (DF)}{(Ais)\ (RRF)\ (Vo)}$$

Where:

Ax = Area or height of the peak for the analyte to be measured
Ais = Area or height of the peak for the internal standard
Cis = Concentration of the internal standard
DF = Dilution factor
Vt = Volume of extract in milliters (mL)
RRF = Average relative response factor
Vo = Volume of sample in liters (L)
Wt = Weight of sample in grams (g)
%S = Percent solids

| Sample # | Analyte | Ax | Ais | Cis | DF | RRF | Vt (mL) | Vo (mL) | %S | Calculated Concentration (ng/L) | Reported Concentration (ng/L) | % Diff |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PFOS | 1231 | 3975 | 2.5 | 1 | curve | 5 | 530.49 | | 3.62 | 3.63 | |
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