# SUPPLEMENTAL SITE INVESTIGATION REPORT PER- AND POLYFLUOROALKYL SUBSTANCES EMERGING CONTAMINANT GROUNDWATER INVESTIGATION

## MONTANA AIR NATIONAL GUARD, GREAT FALLS

## GREAT FALLS, MONTANA

## AIR NATIONAL GUARD

## RESTORATION BRANCH

**APRIL 2021**

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## MONTANA AIR NATIONAL GUARD, GREAT FALLS GREAT FALLS, MONTANA

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## ACRONYMS AND ABBREVIATIONS

| | |
|---|---|
| µg/L | Micrograms per liter |
| AFFF | Aqueous film forming foam |
| ANG | Air National Guard |
| ANGB | Air National Guard Base |
| bgs | Below ground surface |
| CERCLA | Comprehensive Environmental Response, Compensation, and Liability Act |
| EA | EA Engineering, Science, and Technology, Inc., PBC |
| ERP | Environmental Restoration Program |
| ERPIMS | Environmental Resources Program Information Management System |
| ft | Feet/foot |
| fbgs | Feet below ground surface |
| FTA | Fire training area |
| MTDEQ | Montana Department of Environmental Quality |
| MTANG | Montana Air National Guard |
| ng/L | Nanograms per liter |
| ng/g | Nanograms per gram |
| NGB/A4VR | National Guard Bureau's, Environmental Division, Restoration Branch |
| PFAS | Per- and polyfluoroalkyl substances |
| PFOA | Perfluorooctanoic acid |
| PFOS | Perfluorooctane sulfonate |
| USEPA | United States Environmental Protection Agency |

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# EXECUTIVE SUMMARY

The objective of the emerging contaminant assessment conducted at the Montana Air National Guard, Great Falls, Montana, was to install and sample soil borings and monitoring wells to determine if there are per- and polyfluoroalkyl substances (PFAS) impacts to soil and groundwater from historical activities. EA was contracted to collect soil samples from four locations, to install seven groundwater monitoring wells, and to conduct a one-time groundwater sampling event. Work was completed in July 2020.

The analytes of greatest interest are perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA). Summed groundwater concentrations of PFOS and PFOA were greater than the screening level of 70 nanograms per liter in two wells, MW-3 and MW-6. The summed concentration in MW-3 was approximately 3 times higher than the summed concentration in MW-6. Concentrations of PFOS and PFOA were greater than the soil screening level of 126 nanograms per gram in all soil samples except the deepest interval from SB-4. Concentrations in the deepest intervals from SB-2 and SB-3 were notably higher than other soil samples.

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# 1. INTRODUCTION

EA Engineering, Science, and Technology, Inc., PBC (EA) has been contracted by the National Guard Bureau's Environmental Division Restoration Branch (NGB/A4VR) to perform Emerging Contaminant Assessments for the presence of per- and polyfluoroalkyl substances (PFAS) in soil and groundwater at the Montana Air National Guard Base (MTANGB) Great Falls, in Great Falls, Montana (Project Number ANGH20157008). The base location is presented in **Figure 1**.

Consistent with Department of Defense Instruction 4715.18 *Emerging Contaminants*, PFAS are considered to be emerging contaminants. Although these compounds are not yet listed as Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) hazardous substances, the Air National Guard (ANG) has decided to assess potential releases of these compounds to the environment. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in groundwater are regulated by the Montana Department of Environmental Quality (MTDEQ), which has adopted the U.S. Environmental Protection Agency (USEPA) Lifetime Health Advisory levels for PFOS and PFOA as MTDEQ-7 groundwater standards for the protection of human health.

EA has prepared this Supplemental Site Inspection Report to summarize the project objectives, scope of work, relevant background information, field sampling methodologies, and analytical results of the sampling activities.

## 1.1 PROJECT OBJECTIVES

The objective of this Supplemental Site Inspection Report is to review the soil and groundwater data collected during a one-time sampling event to determine if PFAS contaminants associated with both on- and off-base potential release locations may have migrated to potential downgradient receptors. Review of analytical results will facilitate ANG decisions on a path forward for the Base, which would include no further action or a recommendation of further action.

Activities performed in the development of this Supplemental Site Inspection Report included:

- Review of available information and completion of a site-specific work plan (EA 2020)
- Evaluation of the data obtained from groundwater and soil samples.

## 1.2 SCOPE OF WORK

The scope of work for this project consisted of the collection of eight soil samples from four soil borings within Environmental Restoration Program (ERP) Site 1 and the landfarm to evaluate any potential sources of contamination. In addition, the scope included the installation and development of seven new monitoring wells, with subsequent collection of groundwater samples during a one-time sampling event conducted in July 2020. Soil and groundwater samples were analyzed for PFAS. The seven monitoring wells were used to evaluate if any potential sources of PFAS contamination impact groundwater migrating toward potential receptor wells.

## 1.3 REPORT ORGANIZATION

This report is organized as follows:

- ***Chapter 1*** provides the purpose and scope of the emerging contaminant assessment.
- ***Chapter 2*** details background information for the installation and the site.
- ***Chapter 3*** details the investigation approach including soil sampling, monitoring well installation, monitoring well development, groundwater sampling, laboratory analysis, equipment decontamination and waste management, and data validation.
- ***Chapter 4*** details the investigation results.
- ***Chapter 5*** presents a summary of the investigation and the conclusions.

# 2. BACKGROUND

## 2.1 INSTALLATION BACKGROUND

Great Falls International Airport opened in the late 1920s as a municipal airport. The airport housed the 186th Fighter Squadron starting in 1947 when the area was leased to the United States government to support the war effort. In 1948, the airport was released back to the city of Great Falls for commercial air travel, but the ANG retained a lease on some space to accommodate the military's presence. The 186th played an active part in national defense missions until 2014 when the Base was converted to the 120th Airlift Wing of the Montana ANG. The Great Falls International Airport currently is an active joint municipality, supporting airfreight, civilian passengers, and the ANG (Leidos 2019).

## 2.2 SITE BACKGROUND

In July 2018, a Site Inspection was conducted at MTANG, Great Falls, by Leidos to identify potential sites of historical environmental releases of PFAS; specifically, from aqueous film forming foams (AFFF) that were used and stored at the Base. During the Preliminary Assessment, ten potential release locations were identified, eight of which were recommended for further action to monitor and characterize potential soil, surface water, sediment, and groundwater contamination (Leidos 2019).

Detectable levels of PFAS were observed in all groundwater, surface water, sediment, and soil samples collected. Detectable levels of PFAS were present in all samples collected from the boundary wells indicating that off-base migration is possible. It was recommended in the Site Inspection Report that monitoring wells be installed and sampled to better define the impacts of PFAS that could potentially migrate off-base or potentially migrate on-base from an off-base source.

There are also two off-base fire training areas (FTAs), ERP Site 1 and ERP Site 3, that were not investigated during the 2018 Site Inspection due to their off-base location. ERP Site 3 was previously determined to not pose a risk to human health or the environment. MTDEQ approved the site for closure in 2000 as it was determined that an industrial use of Site 3 as an airport facility is protective of the existing and proposed uses and would not pose an imminent and substantial endangerment to public health, safety, welfare, or the environment. Site 3 was not and has not been investigated for PFAS. ERP Site 1 was investigated, remediated in 1994, and approved for closure in 1995. However, the previous investigation did not include PFOS/PFOA analysis. Therefore, ERP Site 1 was also recommended for further evaluation in the 2018 Site Inspection.

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# 3. INVESTIGATION APPROACH AND METHODOLOGY

This report summarizes the results of the soil sampling and one-time groundwater sampling event of the seven newly installed monitoring wells at MTANG, Great Falls. Field activities included the collection of eight soil samples from four soil borings, the installation of seven monitoring wells, and subsequent groundwater sampling. Soil and groundwater samples were analyzed for PFAS. All field activities were conducted in accordance with the ANG-approved work plan (EA 2020), health and safety plan, (EA 2016), and relevant ANG protocols (ANG 2009).

## 3.1 MONITORING WELL INSTALLATION

EA and the Montana-licensed subcontractor, Boland Drilling, installed seven permanent flush-mounted monitoring wells to depths that varied from 48 to 101 feet (ft) below ground surface (bgs). Wells were installed 13-15 July 2020. Well locations were selectively planned in an arc downgradient of ERP Site 1 and the landfarm, and upgradient of potential receptor wells according to the assumed northwesterly groundwater flow direction from the 2018 Site Investigation. The monitoring well locations are shown in **Figure 2**. The seven new monitoring wells (MW-1 through MW-7) were drilled in order of anticipated PFAS concentrations (lowest anticipated concentration drilled first). A complete description of the well installations (including boring logs, well completion diagrams and well development logs) is in the Well Completion Report provided as Appendix A.

Each monitoring well was developed following standard development procedures as described in the Well Completion Report (Appendix A). Monitoring well development was conducted at least 24 hours after monitoring well completion to allow sufficient time for the grout mixture to cure.

Following well installation, the monitoring wells were surveyed by a state-registered surveyor to determine the geographical coordinates and elevation. The wells were surveyed to a vertical accuracy of 0.010 U.S. survey feet using the 1988 North American Vertical Datum and a horizontal accuracy to within 0.10 ft tied to the site datum. The elevations for the natural ground surface (not the top of the grout collar), the highest point on the riser casing rim of the uncapped well casing, and the protective casing for each well were surveyed. A survey mark was drawn on the well riser casing.

Each newly installed monitoring well was registered with the Montana Bureau of Mines and Geology Ground Water Information Center in accordance with Montana Department of Natural Resources and Conservation Board of Water Well Contractors requirements (Administrative Rules of Montana 36.21.639).

## 3.2 GROUNDWATER SAMPLING

Groundwater samples were collected from MW-1 through MW-7 at MTANG, Great Falls on 20 July 2020. Monitoring wells were purged before sample collection using a submersible Proactive 12-volt stainless steel Monsoon pump and low-flow purging techniques in accordance with the approved work plan (EA 2020), health and safety plan (EA 2016), *Field Sampling Protocol for Perfluorooctanoic Acid (PFOA), Perfluorooctane Sulfonate (PFOS) and*

*Perfluorobutane Sulfonate (PFBS)* (U.S. Air Force 2019), and relevant ANG protocols (ANG 2009).

During groundwater purging, water level drawdown and groundwater parameters (including pH, temperature, specific conductance, dissolved oxygen, oxidation-reduction potential, and turbidity) were measured using an inline water quality meter and recorded every 5 minutes until purging was complete. Data were recorded on low-flow purge data sheets, which are included in Appendix B.

Purging was considered complete when the monitored water quality parameters stabilized. Following purging, groundwater samples were collected using the same submersible pump and following low-flow-sampling protocols. Sampling equipment was decontaminated between wells; one field duplicate and one rinse blank were collected in addition to the seven parent samples.

## 3.3 SOIL BORINGS AND SOIL SAMPLING

EA was contracted to install four soil borings in addition to the seven monitoring wells. The soil boring locations were intended to be within the footprint of the former off-base FTA (ERP Site 1) and associated former landfarm as these are areas most likely to have been impacted by historical use of AFFF. Soil boring locations are depicted on **Figure 2**. The borings were drilled using hand augers to depth of refusal. Equipment was decontaminated onsite in accordance with sampling procedures.

All soil borings were logged for soil lithology using the Unified Soil Classification System. Descriptions of cores include color, moisture content, unified soil classification, secondary components, density, consistency, and any other observations of note. Soil boring logs are provided in Appendix C. Eight parent samples were collected on 21 July 2020, one from 0 to 6 inches in each boring and one from the bottom of each boring. One field duplicate, one rinse blank, one matrix spike, and one matrix spike duplicate were also collected. Following collection of soil samples, boreholes were abandoned by backfilling with the remaining native soil.

## 3.4 LABORATORY ANALYSES

Groundwater and soil samples were submitted under strict chain-of-custody procedures to Eurofins Lancaster Laboratories Environmental, LLC of Lancaster, Pennsylvania for analysis. Samples were analyzed for PFAS using USEPA Method 537 Rev. 1.1. Quality control samples were collected in the form of one duplicate sample per media, one rinse blank sample per media, and one matrix spike/matrix spike duplicate sample set per media.

## 3.5 MANAGEMENT OF INVESTIGATION-DERIVED WASTE

Investigation-derived waste, including drill cuttings, purge water and decontamination fluids generated during drilling, development and sampling were handled in accordance with Section 2 of Air Force Guidance Memorandum 1908-32-71, *AFFF-Related Waste Management Implementation Guidance*. Investigation-derived waste was containerized in Department of Transportation approved 55-gallon drums and properly labeled for temporary onsite storage as

coordinated with the Base Environmental Manager. Twenty drums of soil, five drums of liquid and one drum of activated carbon was generated during this investigation. Following containerization, the waste was sampled and characterized as non-hazardous based on the sampling results. All waste was transported offsite on 30 September 2020 and disposed of at the U.S. Ecology Subtitle C landfill in Grand View, Idaho on 01 October 2020 in accordance with all applicable local, state, and federal requirements. The non-hazardous waste manifest is included as Appendix D.

Personal protective equipment (such as nitrile gloves) and disposable sampling materials such as tubing was bagged and disposed of as general refuse.

## 3.6 DATA VALIDATION

Data validation was completed in accordance with the USEPA National Functional Guidelines for Superfund Organic Data Review (USEPA 2014) and per the ANG protocols (ANG 2009). The data validation report is provided in Appendix E

The validated analytical data was uploaded to the Air Force Environmental Resources Program Information Management System (ERPIMS) in accordance with the NGB/A7OR Memorandum dated 21 September 2010.

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# 4. RESULTS

The analytical laboratory report containing soil and groundwater data is provided in Appendix F.

## 4.1 SOIL RESULTS

Soil sample results are presented in **Table 1**. All soil samples contained detectable levels of PFAS, although PFOS is the only specific analyte found at concentrations greater than the screening level. PFOS was detected in all samples, and concentrations ranged from 29 to 1,500 nanograms per gram (ng/g). All concentrations except the minimum were greater than the screening level of 126 ng/g. The highest concentrations of PFOS were reported in the deepest samples from SB-2 and SB-3 (1,500 ng/g reported in both samples). These concentrations were approximately twice as high as the next highest concentration (830 ng/g found in the surface sample collected at SB-1). Analytical results are displayed on **Figure 3**.

## 4.2 GROUNDWATER RESULTS

Groundwater was generally encountered between the upper sandstone layer and underlying shale of the Flood Member Group, between 28 and 81 feet below ground surface (fbgs). Recharge was slow leading some wells to be drilled and screened deeper than the ultimate depths to groundwater, following well development, of approximately 20 to 48 fbgs. Groundwater flow, based upon the newly installed wells, generally flows to the north to northeast. This change in assumed groundwater flow caused MW-1, MW-2, MW-3 and MW-4 to be upgradient, MW-7 to be cross-gradient, and MW-5 and MW-6 to be downgradient of former Site 1 FTA AFFF release area.

Although flow is still directed toward the Missouri River, this variance from the groundwater depth and flow direction based upon wells closer to the administrative portion of Great Falls International Airport could be due to a smaller subset of wells for this study or slight variances in groundwater flow at different times of the year.

Review of the groundwater field parameters (Appendix B) denotes relatively consistent pH and conductivity, although dissolved oxygen (DO) concentrations did drop significantly in MW-3, MW-4, and MW-5. There were no observable signs of groundwater contamination, either visual or olfactory, nor was any light non-aqueous phase liquid present in the purge water or samples. These wells are located along the airport boundary, downgradient of an agricultural area where fertilizers could be responsible for anaerobic portions of the aquifer.

Groundwater sample results are presented in **Table 2**. All groundwater samples contained detectable levels of PFAS, although PFOS and PFOA are the only specific analytes found at concentrations greater than screening levels. USEPA has established a tapwater regional screening level of 0.04 micrograms per liter (µg/L) (equal to 40 ng/L). However, MTDEQ follows the USEPA Lifetime Health Advisory of 0.07 µg/L (or 70 ng/L). Therefore, the action level used in this report is 70 ng/L.

PFOS was detected in samples from 5 of the 7 wells; it was not detected in samples from MW-2 and MW-5. Detected concentrations of PFOS ranged from 0.69 to 130 ng/L. Only the concentrations in the parent sample and field duplicate collected at MW-3 were greater than the

screening level of 70 ng/L. The concentrations detected in MW-3 were approximately 4 times higher than the next highest concentration (33 ng/L found in MW-6).

PFOA was detected in all samples except MW-5. Detected concentrations ranged from 1.4 to 86 ng/L. Only the concentrations in the parent sample and field duplicated collected at MW-3 were greater than the screening level of 70 ng/L. The concentrations detected in MW-3 were approximately 2 times higher than the next highest concentration (48 ng/L found in MW-6).

EPA indicates that when both PFOA and PFOS are found in drinking water, the combined concentrations of PFOA and PFOS should be compared with the 70 ng/L health advisory level. When concentrations of PFOA and PFOS are summed, concentrations reported in MW-3 (216 ng/L) and MW-6 (81 ng/L) are greater than the health advisory level (**Table 2**). Analytical results are displayed on **Figure 4**.

## 4.3 DATA QUALITY

Samples (including quality assurance/quality control samples) were collected, stored, and shipped in accordance with standard operating procedures and the work plan (EA 2019). Samples were analyzed by Eurofins Lancaster Laboratories Environmental, LLC of Lancaster, Pennsylvania. The samples were received within the preservation guidelines for the associated method. The laboratory case narrative noted no major deficiencies. Data validation determined that the data are acceptable for use as qualified.

For the soil samples, the achieved detection limits for analytes reported as not detected ranged from 0.2 to 0.67 ng/g. Results greater than these values would have been reported as a detected with a J-qualifier. These detection limits are below the screening level of 126 ng/g. Therefore, the analyses were sufficiently sensitive for the project goals.

For the groundwater samples, the achieved detection limits for analytes reported as not detected ranged from 0.41 to 1.8 ng/L. Results greater than these values would have been reported as a detected with a J-qualifier. These detection limits are below the screening level of 70 ng/L. Therefore, the analyses were sufficiently sensitive for the project goals.

No PFAS were detected in either of the rinse blank samples, indicating that sampling equipment was properly cleaned between sample locations.

Some soil borings and well locations were modified based upon existing utilities or ground conditions; but otherwise, there were no deviations from the Work Plan.

# 5. SUMMARY

The objective of the emerging contaminant assessment conducted at the MTANG, Great Falls, was to install and sample seven monitoring wells, to collect soil at four locations, and to determine if there are PFAS impacts to soil and groundwater from historical activities. PFAS was detected in all monitoring wells and soil samples. The analytes of greatest interest are PFOS and PFOA. Summed groundwater concentrations of PFOS and PFOA were greater than the screening level of 70 ng/L in two wells, MW-3 and MW-6. The summed concentration in MW-3 was approximately 3 times higher than the summed concentration in MW-6. Concentrations of PFOS and PFOA were greater than the soil screening level of 126 ng/g in all soil samples except the deepest interval from SB-4. Concentrations in the deepest intervals from SB-2 and SB-3 were notably higher than other soil samples.

Additional groundwater monitoring is recommended to further evaluate seasonal groundwater conditions, including PFAS concentrations and groundwater flow direction.

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# 6. REFERENCES

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# Figures

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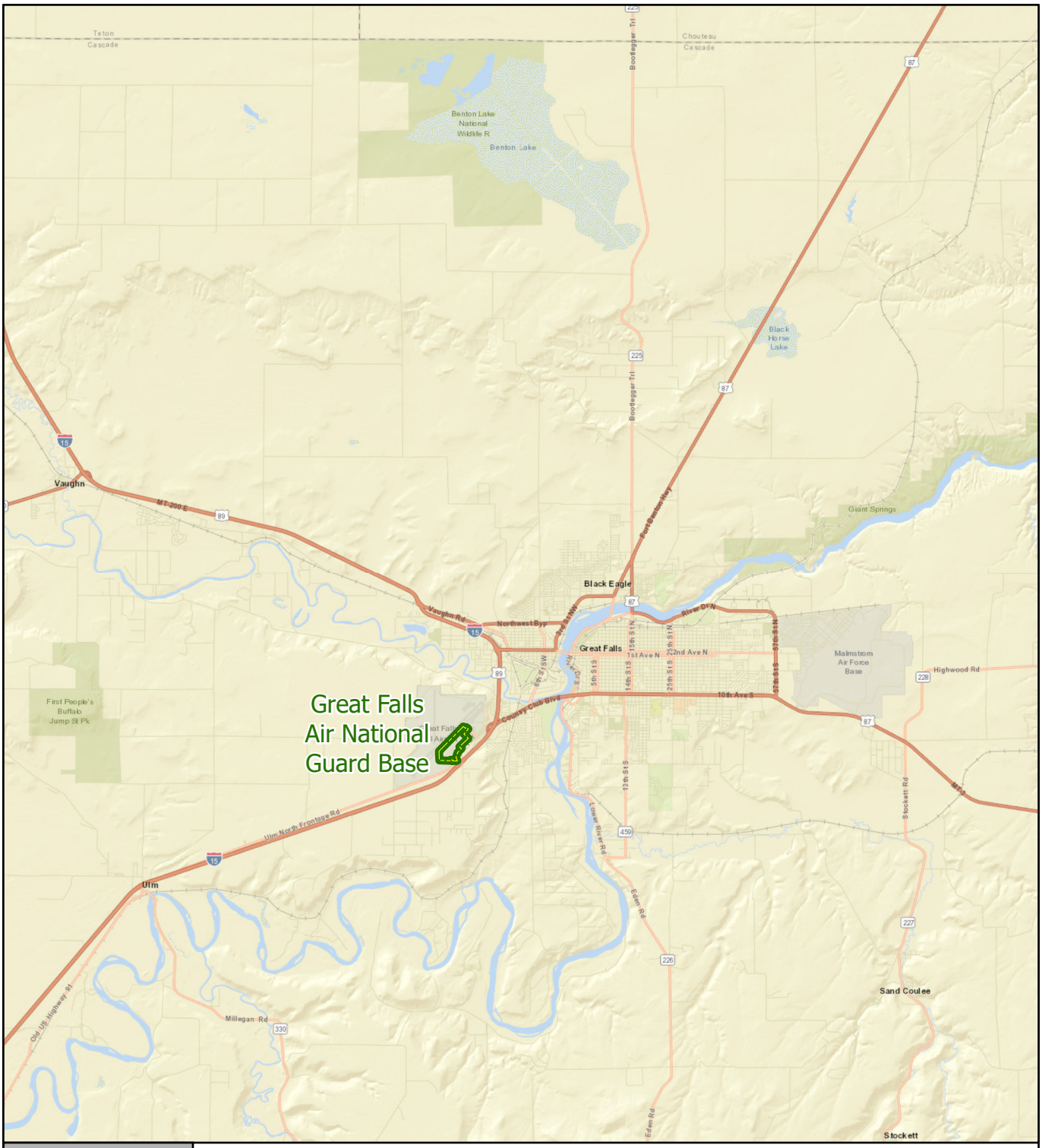
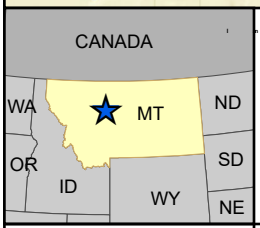



Installation Boundary

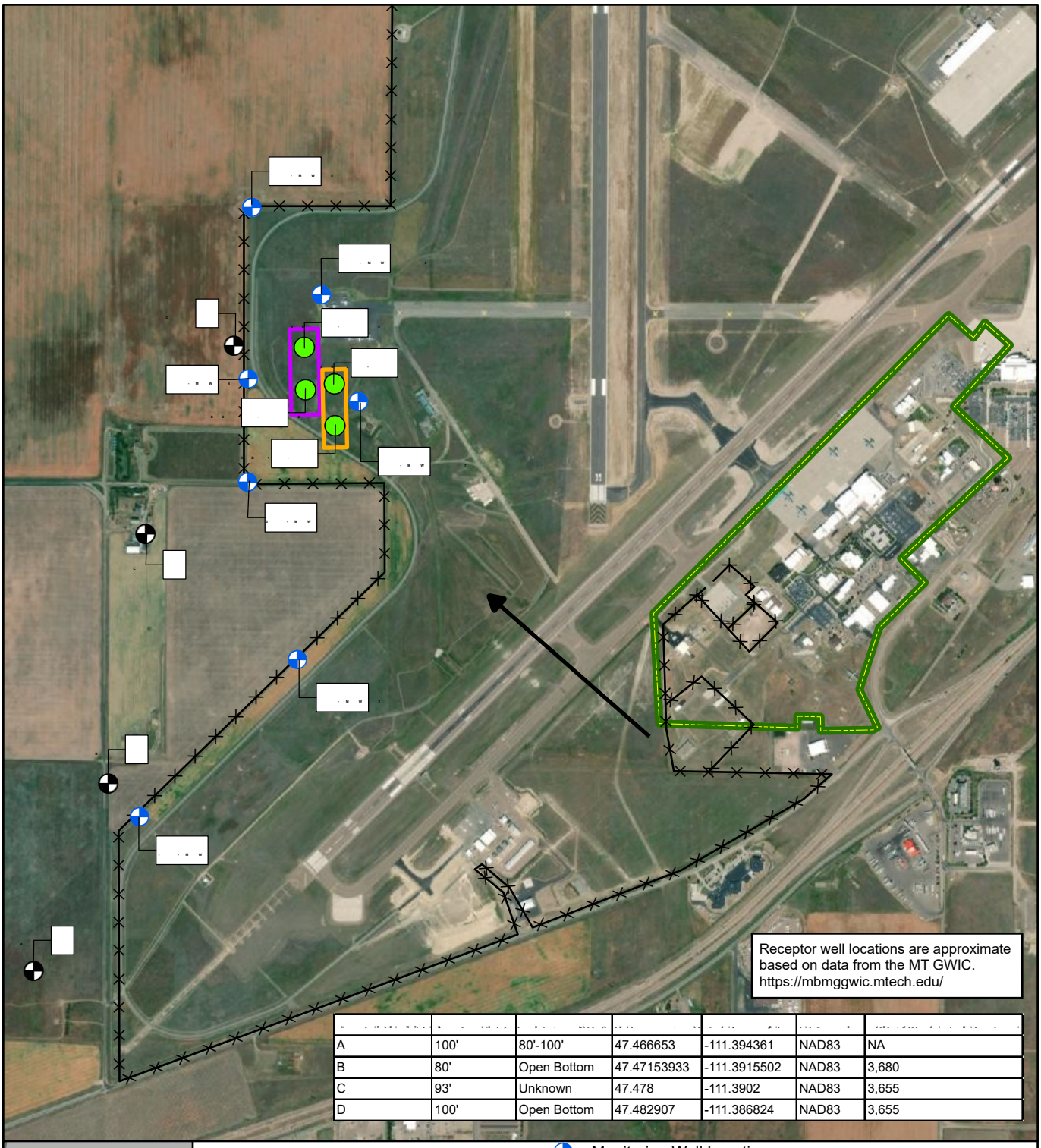
N
W
E
S

Miles

0 1 2 4

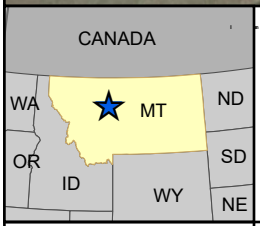
GREAT FALLS AIR NATIONAL GUARD BASE
SITE-SPECIFIC WORK PLAN
GREAT FALLS, MONTANA

Site Location



Receptor well locations are approximate based on data from the MT GWIC. https://mbmggwic.mtech.edu/

| | | | | | | |
|---|---|---|---|---|---|---|
| A | 100' | 80'-100' | 47.466653 | -111.394361 | NAD83 | NA |
| B | 80' | Open Bottom | 47.47153933 | -111.3915502 | NAD83 | 3,680 |
| C | 93' | Unknown | 47.478 | -111.3902 | NAD83 | 3,655 |
| D | 100' | Open Bottom | 47.482907 | -111.386824 | NAD83 | 3,655 |




Installation Boundary
ERP Site 1
Landfarm
Fenceline
Assumed Groundwater Flow Direction

Monitoring Well Location
Existing Potable Well Location
Soil Boring Location

N
W
E
S
Feet
0 300 600 1,200

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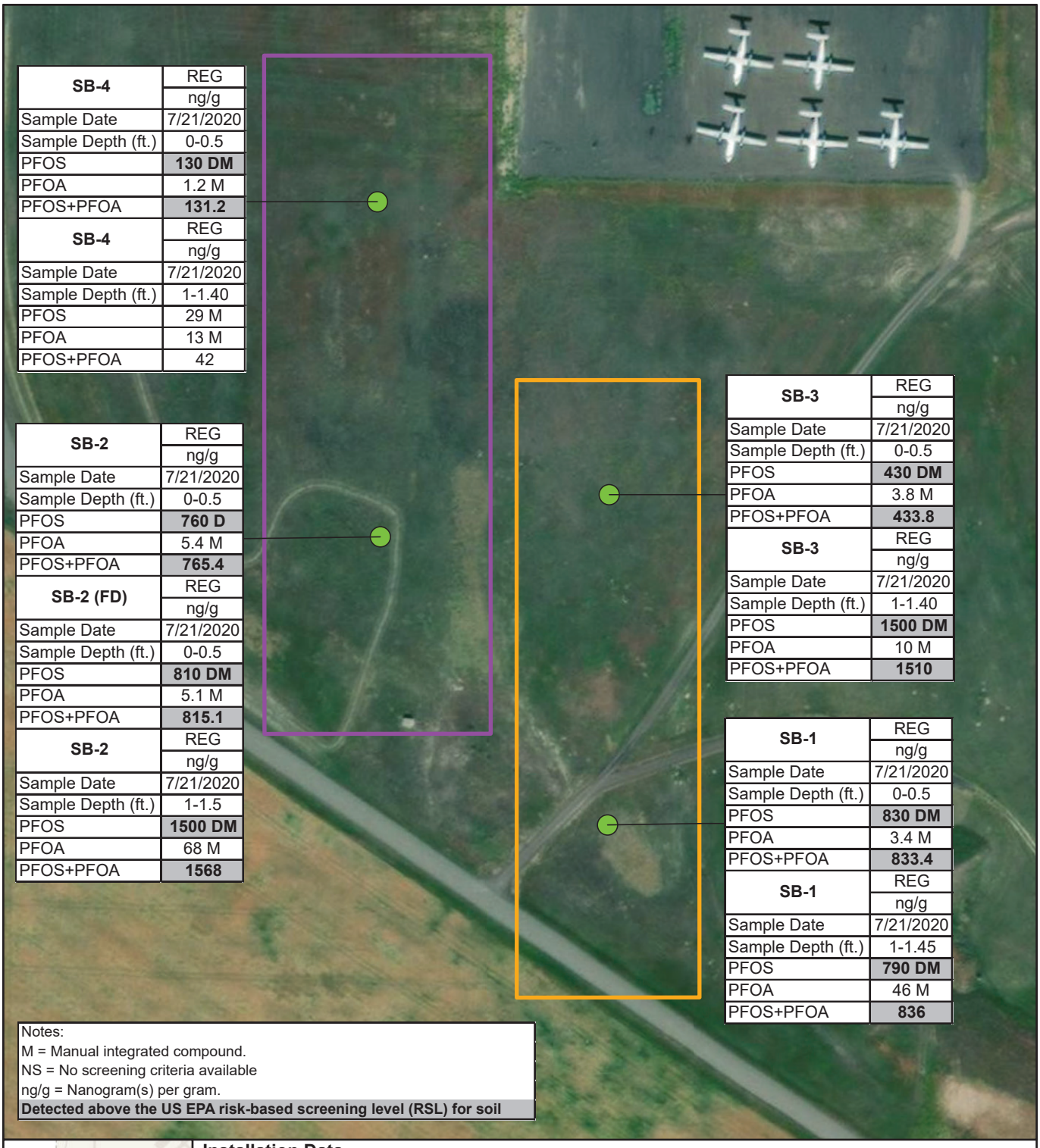
New Monitoring Well and Soil Boring Locations



| SB-4 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 0-0.5 |
| PFOS | **130 DM** |
| PFOA | 1.2 M |
| PFOS+PFOA | **131.2** |

| SB-4 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 1-1.40 |
| PFOS | 29 M |
| PFOA | 13 M |
| PFOS+PFOA | 42 |

| SB-2 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 0-0.5 |
| PFOS | **760 D** |
| PFOA | 5.4 M |
| PFOS+PFOA | **765.4** |

| SB-2 (FD) | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 0-0.5 |
| PFOS | **810 DM** |
| PFOA | 5.1 M |
| PFOS+PFOA | **815.1** |

| SB-2 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 1-1.5 |
| PFOS | **1500 DM** |
| PFOA | 68 M |
| PFOS+PFOA | **1568** |

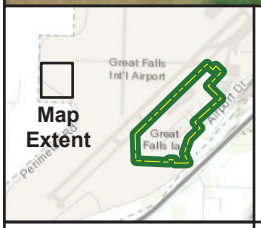
| SB-3 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 0-0.5 |
| PFOS | **430 DM** |
| PFOA | 3.8 M |
| PFOS+PFOA | **433.8** |

| SB-3 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 1-1.40 |
| PFOS | **1500 DM** |
| PFOA | 10 M |
| PFOS+PFOA | **1510** |

| SB-1 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 0-0.5 |
| PFOS | **830 DM** |
| PFOA | 3.4 M |
| PFOS+PFOA | **833.4** |

| SB-1 | REG |
|---|---|
| | ng/g |
| Sample Date | 7/21/2020 |
| Sample Depth (ft.) | 1-1.45 |
| PFOS | **790 DM** |
| PFOA | 46 M |
| PFOS+PFOA | **836** |

Notes:
M = Manual integrated compound.
NS = No screening criteria available
ng/g = Nanogram(s) per gram.
**Detected above the US EPA risk-based screening level (RSL) for soil**




**Installation Data**

- Installation Boundary
- ERP Site 1
- Landfarm
- Soil Boring Location

N
W E
S
Feet
0 50 100 200

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SUPPLEMENTAL SITE INVESTIGATION REPORT
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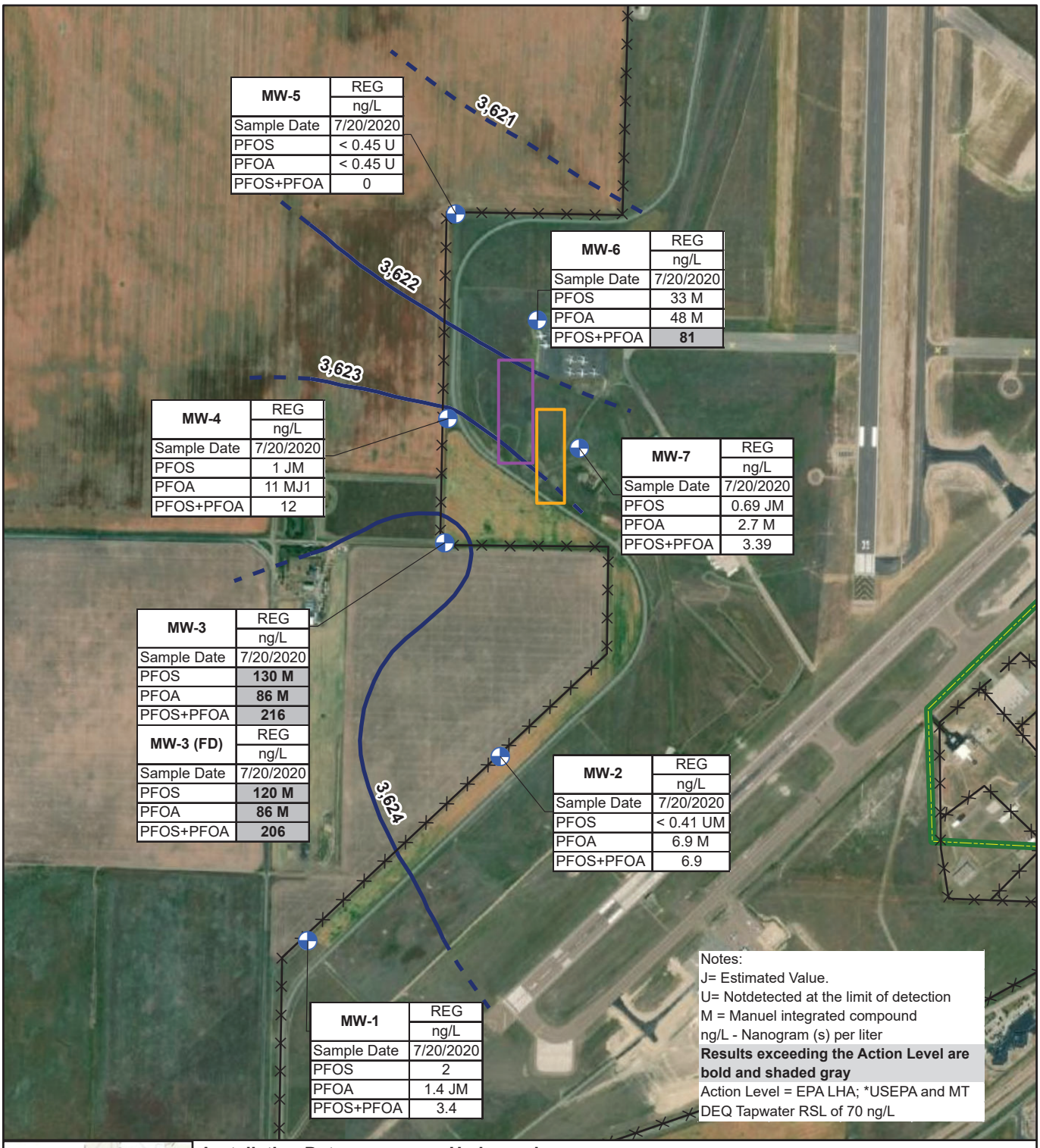
**Figure 3**
Soil Sampling Results




MONTANA AIR NATIONAL GUARD, GREAT FALLS
SUPPLEMENTAL SITE INVESTIGATION REPORT
GREAT FALLS, MONTANA

**Figure 4**
Groundwater
Sampling Results

# Tables

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**Table 1 July 2020**

# Soil Data

**VALIDATED**

**Great Falls ANG**

| | | | | **Sample Name** | SB-1-0-0.5 | SB-1-1-1.45 | SB-2-0-0.5 | FD-07212020 | SB-2-1-1.5 | SB-3-0-0.5 | SB-3-1-1.4 | SB-4-0-0.5 | SB-4-1-1.4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | **Parent Sample ID** | | | | SB-2-0-0.5 | | | | | |
| | | | | **Sample Date** | 7/21/2020 | 7/21/2020 | 7/21/2020 | 7/21/2020 | 7/21/2020 | 7/21/2020 | 7/21/2020 | 7/21/2020 | 7/21/2020 |
| **Analyte** | **Cas rn** | **Action Level*** | **Unit** | | | | | | | | | | |
| **PFAS (EPA 537.1 MOD)** | | | | | | | | | | | | | |
| 4:2 Fluorotelomer sulfonate | 757124-72-4 | NS | ng/g | | < 0.64 U | < 0.67 U | < 0.6 U | < 0.59 U | < 0.64 U | < 0.63 U | < 0.66 U | < 0.63 U | < 0.67 U |
| 6:2 Fluorotelomer sulfonate | 27619-97-2 | NS | ng/g | | < 0.64 U | 1.6 J | 1.6 J | 1.7 J | 29 | 5.8 | 11 | < 0.63 U | < 0.67 U |
| 8:2 Fluorotelomer sulfonate | 39108-34-4 | NS | ng/g | | 1.7 J | 2.3 J | 140 | 130 | 280 | 36 | 180 | < 0.63 U | < 0.67 U |
| N-ethyl perfluorooctanesulfonamidoacetic acid | 2991-50-6 | NS | ng/g | | < 0.21 U | < 0.22 U | < 0.2 U | 0.28 J | < 0.21 U | < 0.21 U | < 0.22 U | < 0.21 U | < 0.22 U |
| N-methyl perfluorooctanesulfonamidoacetic acid | 2355-31-9 | NS | ng/g | | < 0.21 U | < 0.22 UJ | < 0.2 U | < 0.2 U | < 0.21 U | < 0.21 U | < 0.22 U | < 0.21 UJ | < 0.22 U |
| Perfluorobutanesulfonic acid | 375-73-5 | NS | ng/g | | < 0.42 U | < 0.45 U | < 0.4 U | < 0.39 U | 0.71 J | < 0.42 U | < 0.44 U | < 0.42 U | < 0.44 U |
| Perfluorobutanoic acid | 375-22-4 | NS | ng/g | | 0.99 J | 1.4 J | 0.87 J | 0.81 J | 1.2 J | 0.91 J | 1 J | 0.68 J | < 0.67 U |
| Perfluorodecanesulfonic acid | 335-77-3 | NS | ng/g | | 3.2 | 0.31 J | 2.4 | 2.2 | 0.71 | 2.7 | 0.48 J | 0.25 J | < 0.22 U |
| Perfluorodecanoic acid | 335-76-2 | NS | ng/g | | 4.3 | 0.67 | 3.5 | 3.7 | 1.7 | 2.7 | 0.93 | 0.76 | < 0.22 U |
| Perfluorododecanoic acid | 307-55-1 | NS | ng/g | | 0.48 J | < 0.22 U | 0.46 J | 0.48 J | < 0.21 U | 0.3 J | < 0.22 U | < 0.21 U | < 0.22 U |
| Perfluoroheptanesulfonic acid | 375-92-8 | NS | ng/g | | 3 | 28 | 1.1 | 1.1 | 25 | 0.75 | 3.5 | 0.53 J | 1.3 |
| Perfluoroheptanoic acid | 375-85-9 | NS | ng/g | | 0.5 J | 1.4 | 0.61 | 0.61 | 2.6 | 1.1 | 2 | 0.4 J | 0.61 J |
| Perfluorohexanesulfonic acid | 355-46-4 | NS | ng/g | | 35 | 220 | 22 | 23 | 150 | 11 | 17 | 3 | 37 |
| Perfluorohexanoic acid | 307-24-4 | NS | ng/g | | 2.4 | 4.2 | 1.7 | 1.8 | 5.6 | 2 | 1.8 | 0.69 | 0.84 |
| Perfluorononanesulfonic acid | 68259-12-1 | NS | ng/g | | 3.2 J | < 0.22 U | 2.5 | 2.6 | 0.93 | 1.9 | 0.51 J | 0.24 J | < 0.22 U |
| Perfluorononanoic acid | 375-95-1 | NS | ng/g | | 11 | 17 | 3.9 | 3.8 | 11 | 1.7 | 8.1 | 5.2 | 2.2 |
| Perfluorooctanesulfonamide (PFOSA) | 754-91-6 | NS | ng/g | | 11 | 3.7 | 9.9 | 10 | 9.6 | 25 | 6.1 | 0.32 J | < 0.22 U |
| Perfluorooctanesulfonic acid (PFOS) | 1763-23-1 | 126 | ng/g | | **830** | **790** | **760** | **810** | **1500** | **430** | **1500** | **130** | 29 |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 126 | ng/g | | 3.4 | 46 | 5.4 | 5.1 | 68 | 3.8 | 10 | 1.2 | 13 |
| Sum PFOS + PFOA | | 126 | ng/g | | **833.4** | **836** | **765.4** | **815.1** | **1568** | **433.8** | **1510** | **131.2** | 42 |
| Perfluoropentanesulfonic acid | 2706-91-4 | NS | ng/g | | 0.3 J | 1.2 J | 0.42 J | 0.46 J | 1.1 J | 0.26 J | < 0.22 U | < 0.21 U | < 0.22 U |
| Perfluoropentanoic acid | 2706-90-3 | NS | ng/g | | 1.2 | 2.1 | 1 | 1 | 3.2 | 1.5 | 2.4 | 0.67 | 1 |
| Perfluorotetradecanoic acid | 376-06-7 | NS | ng/g | | < 0.21 U | < 0.22 U | < 0.2 U | < 0.2 U | < 0.21 U | < 0.21 U | < 0.22 U | < 0.21 U | < 0.22 U |
| Perfluorotridecanoic acid | 72629-94-8 | NS | ng/g | | 2 | < 0.22 U | 3.9 | 3.8 | 0.47 J | 0.67 | < 0.22 U | < 0.21 U | < 0.22 U |
| Perfluoroundecanoic acid | 2058-94-8 | NS | ng/g | | 1.6 | < 0.22 U | 1.1 | 0.97 | < 0.21 U | 0.65 | < 0.22 U | 0.31 J | < 0.22 U |

Notes:
J = Estimated value.
U = Not detected at the limit of detection.
NS = No screening criteria available
ng/g = Nanogram(s) per gram.
***Detected above the US EPA risk-based screening level (RSL) for soil**

**Table 2 July 2020**
**VALIDATED DATA**
**Great Falls ANG**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | **Sample Name** | MW-1 | MW-2 | MW-3 | FD-07202020 |
| | | | **Parent Sample ID** | | | | MW-3 |
| | | | **Sample Date** | 7/20/2020 | 7/20/2020 | 7/20/2020 | 7/20/2020 |
| **Analyte** | **Cas rn** | **Action Level** | **Unit** | | | | |
| **PFAS (EPA 537.1 MOD)** | | | | | | | |
| 4:2 Fluorotelomer sulfonate | 757124-72-4 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| 6:2 Fluorotelomer sulfonate | 27619-97-2 | NS | ng/L | < 1.7 U | < 1.7 U | < 1.8 U | < 1.7 U |
| 8:2 Fluorotelomer sulfonate | 39108-34-4 | NS | ng/L | < 0.86 U | < 0.83 U | < 0.89 U | < 0.83 U |
| N-ethyl perfluorooctanesulfonamidoacetic acid | 2991-50-6 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| N-methyl perfluorooctanesulfonamidoacetic acid | 2355-31-9 | NS | ng/L | < 0.51 U | < 0.5 U | < 0.54 U | < 0.5 U |
| Perfluorobutanesulfonic acid | 375-73-5 | 400000* | ng/L | 0.61 J | 2.7 | 9.2 | 9.6 |
| Perfluorobutanoic acid | 375-22-4 | NS | ng/L | < 1.7 U | 7.8 | 18 | 18 |
| Perfluorodecanesulfonic acid | 335-77-3 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| Perfluorodecanoic acid | 335-76-2 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| Perfluorododecanoic acid | 307-55-1 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| Perfluoroheptanesulfonic acid | 375-92-8 | NS | ng/L | < 0.43 U | < 0.41 U | 3.5 | 3.4 |
| Perfluoroheptanoic acid | 375-85-9 | NS | ng/L | < 0.43 U | 9.1 | 18 | 18 |
| Perfluorohexanesulfonic acid | 355-46-4 | NS | ng/L | 2.2 | 29 | 210 | 210 |
| Perfluorohexanoic acid | 307-24-4 | NS | ng/L | 1.4 J | 19 | 65 | 66 |
| Perfluorononanesulfonic acid | 68259-12-1 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| Perfluorononanoic acid | 375-95-1 | NS | ng/L | < 0.43 U | < 0.41 U | 1.5 J | < 0.41 U |
| Perfluorooctanesulfonamide (PFOSA) | 754-91-6 | NS | ng/L | < 0.43 UJ | < 0.41 U | < 0.45 UJ | < 0.41 U |
| Perfluorooctanesulfonic acid (PFOS) | 1763-23-1 | 70 | ng/L | 2 | < 0.41 U | **130** | **120** |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 70 | ng/L | 1.4 J | 6.9 | **86** | **86** |
| Sum PFOS + PFOA | | 70 | ng/L | 3.4 | 6.9 | **216** | **206** |
| Perfluoropentanesulfonic acid | 2706-91-4 | NS | ng/L | < 0.43 U | 2.6 | 10 | 11 |
| Perfluoropentanoic acid | 2706-90-3 | NS | ng/L | 1.6 J | 20 | 69 | 67 |
| Perfluorotetradecanoic acid | 376-06-7 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| Perfluorotridecanoic acid | 72629-94-8 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |
| Perfluoroundecanoic acid | 2058-94-8 | NS | ng/L | < 0.43 U | < 0.41 U | < 0.45 U | < 0.41 U |

Notes:
J = Estimated value.
U = Not detected at the limit of detection.
NS = No screening criteria available
ng/L = Nanogram(s) per liter.
**Results exceeding the Action Level are bolded and shaded gray**
Action Level = EPA LHA; *USEPA and DEQ Tapwater RSL of 70 ng/L

**Table 2 July 2020**
**VALIDATED DATA**
**Great Falls ANG**

| | | | | **Sample Name** | MW-4 | MW-5 | MW-6 | MW-7 |
|---|---|---|---|---|---|---|---|---|
| | | | | **Parent Sample ID** | | | | |
| | | | | **Sample Date** | 7/20/2020 | 7/20/2020 | 7/20/2020 | 7/20/2020 |
| **Analyte** | **Cas rn** | **Action Level** | **Unit** | | | | | |
| **PFAS (EPA 537.1 MOD)** | | | | | | | | |
| 4:2 Fluorotelomer sulfonate | 757124-72-4 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| 6:2 Fluorotelomer sulfonate | 27619-97-2 | NS | ng/L | | 3.6 J | < 1.8 U | < 1.7 U | < 1.7 U |
| 8:2 Fluorotelomer sulfonate | 39108-34-4 | NS | ng/L | | < 0.9 U | < 0.9 U | < 0.85 U | < 0.87 U |
| N-ethyl perfluorooctanesulfonamidoacetic acid | 2991-50-6 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| N-methyl perfluorooctanesulfonamidoacetic acid | 2355-31-9 | NS | ng/L | | < 0.54 U | < 0.54 U | < 0.51 U | < 0.52 U |
| Perfluorobutanesulfonic acid | 375-73-5 | 400000* | ng/L | | 2.3 | < 0.45 U | 6.8 | 3.2 |
| Perfluorobutanoic acid | 375-22-4 | NS | ng/L | | 6 | < 1.8 U | 9.9 | 9.6 |
| Perfluorodecanesulfonic acid | 335-77-3 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluorodecanoic acid | 335-76-2 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluorododecanoic acid | 307-55-1 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluoroheptanesulfonic acid | 375-92-8 | NS | ng/L | | < 0.45 U | < 0.45 U | 1.7 | < 0.43 U |
| Perfluoroheptanoic acid | 375-85-9 | NS | ng/L | | 1.4 J | < 0.45 U | 6.4 | 2.7 |
| Perfluorohexanesulfonic acid | 355-46-4 | NS | ng/L | | 19 | 0.55 J | 110 | 7.6 |
| Perfluorohexanoic acid | 307-24-4 | NS | ng/L | | 8.9 | < 0.45 U | 37 | 23 |
| Perfluorononanesulfonic acid | 68259-12-1 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluorononanoic acid | 375-95-1 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluorooctanesulfonamide (PFOSA) | 754-91-6 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluorooctanesulfonic acid (PFOS) | 1763-23-1 | 70 | ng/L | | 1 J | < 0.45 U | 33 | 0.69 J |
| Perfluorooctanoic acid (PFOA) | 335-67-1 | 70 | ng/L | | 11 J | < 0.45 U | 48 | 2.7 |
| Sum PFOS + PFOA | | 70 | ng/L | | 12 | 0 | **81** | 3.39 |
| Perfluoropentanesulfonic acid | 2706-91-4 | NS | ng/L | | 2.4 | < 0.45 U | 6.6 | 2.1 |
| Perfluoropentanoic acid | 2706-90-3 | NS | ng/L | | 6.2 | < 0.45 U | 26 | 20 |
| Perfluorotetradecanoic acid | 376-06-7 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluorotridecanoic acid | 72629-94-8 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |
| Perfluoroundecanoic acid | 2058-94-8 | NS | ng/L | | < 0.45 U | < 0.45 U | < 0.43 U | < 0.43 U |

Notes:
J = Estimated value.
U = Not detected at the limit of detection.
NS = No screening criteria available
ng/L = Nanogram(s) per liter.
**Results exceeding the Action Level are bolded and shaded gray**
Action Level = EPA LHA; *USEPA and DEQ Tapwater RSL of 70 ng/L

# Appendix A

# Well Completion Report

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# WELL COMPLETION REPORT
# GROUNDWATER INVESTIGATION

## MONTANA AIR NATIONAL GUARD, GREAT FALLS
## GREAT FALLS INTERNATIONAL AIRPORT
## GREAT FALLS, MONTANA


**AIR NATIONAL GUARD**

**ENVIRONMENTAL RESTORATION BRANCH**

**JULY 2020**

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# WELL COMPLETION REPORT
# GROUNDWATER INVESTIGATION

## MONTANA AIR NATIONAL GUARD, GREAT FALLS
## GREAT FALLS INTERNATIONAL AIRPORT
## GREAT FALLS, MONTANA

**Prepared for:**

**Air National Guard Environmental Restoration Branch (NGB/A4VR)**
**3501 Fetchet Avenue**
**Joint Base Andrews, Maryland 20762**

**Prepared by:**

**EA Engineering, Science, and Technology, Inc., PBC**
**1311 Continental Drive Suite K**
**Abingdon, Maryland 21009**

**Contract No.: W9133L-14-D-0004**

**ANG Delivery Order: 0006**

**EA Project No.: 6280606**

**JULY 2020**

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    1.3 PROJECT DELIVERABLES ..... 1

2. FIELD ACTIVITIES ..... 3

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    2.2 MONITORING WELL DEVELOPMENT ..... 3

3. MANAGEMENT OF INVESTIGATION-DERIVED WASTE ..... 4

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| 1 | Area Map |
| 2 | Monitoring Well Locations |

APPENDIX A: BORING LOGS

APPENDIX B: WELL COMPLETION DIAGRAMS

## LIST OF ACRONYMS

| | |
|---|---|
| ANG | Air National Guard |
| bgs | Below ground surface |
| EA | EA Engineering, Science, and Technology, Inc., PBC |
| ft | Foot (feet) |
| in. | Inch(es) |
| MTANGB | Montana Air National Guard Base |
| NGB/A4VR | National Guard Bureau's, Environmental Division, Restoration Branch |
| PFAS | Per- and polyfluoroalkyl substances |
| PFOA | Perfluorooctanoic acid |

# 1. INTRODUCTION

EA Engineering, Science, and Technology, Inc., PBC (EA) has been contracted by the National Guard Bureau's Environmental Division Restoration Branch (NGB/A4VR) to perform Emerging Contaminant Assessments for the presence of per- and polyfluoroalkyl substances (PFAS) in soil and groundwater at the Montana Air National Guard Base (MTANGB), Great Falls in Great Falls, Montana (Project Number ANGH20157008). The base location is presented in **Figure 1**.

Consistent with Department of Defense Instruction 4715.18 *Emerging Contaminants*, PFAS are considered to be emerging contaminants. Although these compounds are not yet listed as Comprehensive Environmental Response, Compensation, and Liability Act hazardous substances, the Air National Guard (ANG) has decided to assess potential releases of these compounds to the environment. Perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) in groundwater are regulated by the Montana Department of Environmental Quality, which has adopted the U.S. Environmental Protection Agency Lifetime Health Advisory levels for PFOS and PFOA as MDEQ-7 groundwater standards for the protection of human health.

EA prepared an abbreviated work plan/sampling and analysis plan to supplement the PFAS Site Inspection completed by Leidos in 2019.

## 1.1 PROJECT OBJECTIVES

The objective of the supplemental Site Inspection is to determine if PFAS contaminants associated with both on- and off-base potential release locations may have migrated to potential downgradient receptors. Review of analytical results will then facilitate ANG decisions on a path forward for the base, which would include no further action or recommendation of further actions. EA will perform a one-time sampling event of the seven newly installed monitoring wells at locations pre-selected by the ANG at the installation.

## 1.2 SCOPE OF WORK

The scope of work for this project consists of installing four soil borings within Environmental Restoration Program Site 1 and the landfarm. The soil borings were sampled for PFAS to evaluate any potential sources of contamination on-base. Seven monitoring wells were also installed, developed, and sampled for PFAS. These monitoring wells were installed upgradient, within, and downgradient of potential source areas to determine potential impacts to groundwater migrating on- or off-base. This scope of work does not include sampling existing potable wells. Monitoring well installation, development, and sampling were completed over a 2-week period, from 13 – 20 July 2020.

## 1.3 PROJECT DELIVERABLES

Deliverables for this investigation include development of a Well Completion Report and a supplemental Site Inspection. This Well Completion Report details the field activities including monitoring well installation (including well construction information and well development data). The supplemental Site Inspection will be a comprehensive report summarizing the results of the

July 2020 sampling of the soil borings and monitoring wells and will include analytical (both tabulated and graphically depicted) data compared against the screening criteria.

Draft and Final supplemental Site Inspections will be prepared for review with formal response to comments provided to address all comments received.

# 2. FIELD ACTIVITIES

## 2.1 MONITORING WELL INSTALLATION

EA, and our Montana-licensed subcontractor Boland Drilling, installed seven permanent flush-mounted monitoring wells into the surficial aquifer to depths ranging from approximately 50-100 ft bgs. The monitoring well locations and order of installation are presented in **Figure 2.** The 2-inch (in.) monitoring wells were installed using an air rotary drill. The drill rods were advanced to a depth of approximately 20–25 ft into the aquifer. As the drill rods advanced through the soil, the geologist logged (according to Unified Soil Classification System descriptions) the soil every 5 ft until the desired depth was achieved. Boring logs are presented in Appendix A.

Once the desired depth had been achieved, the riser pipe and well screen (polyvinyl chloride [PVC] Schedule 40, flush-threaded, and 0.010-in. factory slotted) was installed in 20-ft sections, including the well screen. The annular space surrounding the riser pipe and well screen was filled with an artificial sand pack from the base of the borehole to at least 2 ft above the screen. Additionally, at least 1 ft of sand pack was used to fill the space between the bottom of the borehole and the PVC bottom cap. The artificial sand pack consisted of commercially purchased 20/40 sized silica sand. The annular space above the sand pack was sealed with bentonite chips. The bentonite seal extended at least 2 ft above the screen and was hydrated with potable water passed through a GAC filter to avoid potential PFAS contamination. The remaining annular space was filled to surface grade with a Type I/II Portland cement grout. The PVC riser pipe was extended from the top of the screen to approximately 6 in. bgs where the monitoring wells were completed flush with the ground surface. Concrete was utilized for constructing the well pad that surrounds the surface casing. A permanent well identification tag was installed on the inside well cap and the well cap was secured with a lock. Well completion diagrams are presented as Appendix B.

In order to ensure the new monitoring wells were not contaminated during installation, all drill augers and other tooling were decontaminated between well locations with potable water passed through a GAC filter to avoid potential PFAS contamination.

The monitoring wells will be surveyed by Big Sky Civil & Environmental, Inc. Survey results, as well as disposal information will be provided in the Groundwater Monitoring Report.

## 2.2 MONITORING WELL DEVELOPMENT

Each monitoring well was developed using a surge block and submersible pump combination following standard development procedures. Monitoring well development was conducted at least 24 hours after monitoring well completion in order to allow sufficient time for the grout mixture to cure. Development consisted of repeated surging and groundwater removal until the water quality parameters stabilized. Stabilization parameters were measured and recorded every 5 minutes. Field personnel completed a well development form for each of the monitoring wells. The well development forms are presented as Appendix C

## 3. MANAGEMENT OF INVESTIGATION-DERIVED WASTE

Investigation-derived waste, including drill cuttings, purge water and decontamination fluids generated during drilling, development, and groundwater sampling activities, were handled in accordance with Section 2 of Air Force Guidance Memorandum 1908-32-71, AFFF-Related Waste Management Implementation Guidance. Investigation-derived waste was containerized in Department of Transportation approved 55-gallon drums and properly labeled for temporary onsite storage as coordinated with the Base Environmental Manager. The waste is currently being characterized and will be properly disposed offsite by EA in accordance with all applicable local, state, and federal requirements. Personal protective equipment (such as nitrile gloves) and disposable sampling materials such as sampling tubing was bagged and disposed as general refuse.

# Figures

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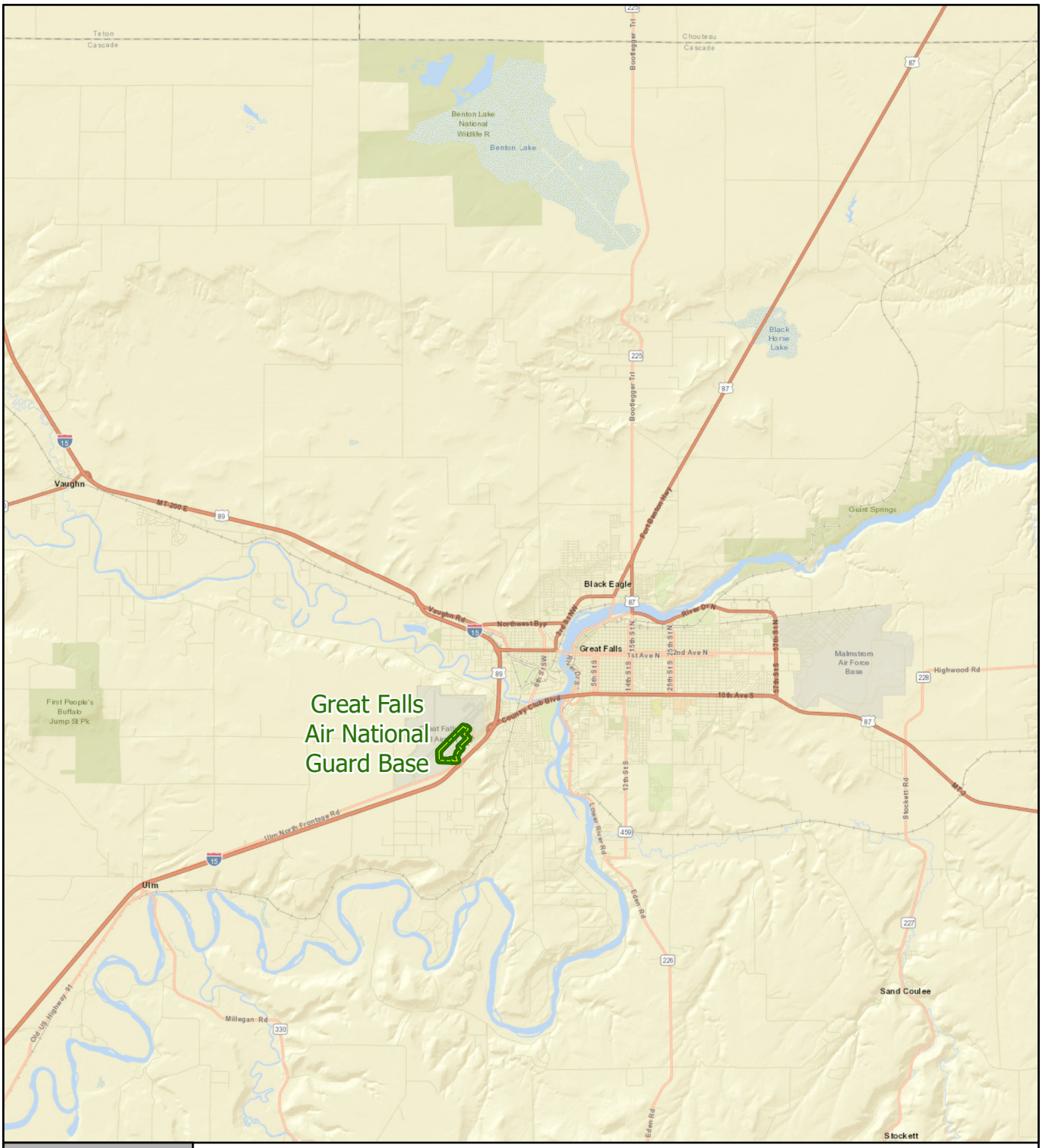


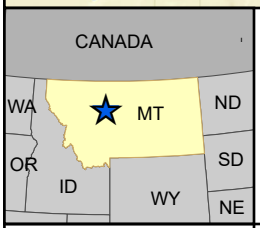


Installation Boundary

N
W E
S

Miles

0 0.5 1 2

GREAT FALLS AIR NATIONAL GUARD BASE
SITE-SPECIFIC WORK PLAN
GREAT FALLS, MONTANA

Base Location

CANADA

WA MT ND SD OR ID WY NE

Installation Boundary
Fenceline
Monitoring Well Location

N
W E
S

Feet
0 300 600 1,200

GREAT FALLS AIR NATIONAL GUARD BASE
WELL COMPLETION REPORT
GREAT FALLS, MONTANA

Figure 2
New Monitoring Well Locations

# APPENDIX A

## Boring Logs

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-1 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/14/20 | DATE: 7/14/20 |
| **Date:** | | | | | TIME: 0740 | TIME: 0947 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 60 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains, gray bentonitic siltstone |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 55 | | |
| | | | | | | Medium to dark gray siltstone with dark gray to black shale |
| | | | | 60 | | |
| | | | | | | Medium to dark gray siltstone with dark gray to black shale |
| | | | | 65 | | |
| | | | | | | Medium to dark gray siltstone with dark gray to black shale |
| | | | | 70 | | |
| | | | | | | Medium to dark gray siltstone with dark gray to black shale |
| | | | | 75 | | |
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**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | | | in |
| Bottom of Monitoring Well: | 75 | | | ft bgs |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 55 | To | 75 | ft bgs |
| Riser Interval: | 55 | To | 0.5 | ft bgs |
| Sand Pack Interval: | 51 | To | 77 | ft bgs |
| Bentonite Seal: | 47 | To | 51 | ft bgs |
| Grout Interval: | 1 | To | 47 | ft bgs |

**Additional Information**

Logged by: M. Wright Date: 7/14/20
Drilling Contractor: Boland Drilling Driller: Trevor

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-2 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/13/20 | DATE: 7/13/20 |
| **Date:** | | | | | TIME: 1130 | TIME: 1330 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 70 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
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| | | | | 55 | | |
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| | | | | 60 | | |
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**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | in | | |
| Bottom of Monitoring Well: | 48 | ft bgs | | |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 28 | To | 48 | ft bgs |
| Riser Interval: | 0.5 | To | 28.0 | ft bgs |
| Sand Pack Interval: | 26 | To | 50 | ft bgs |
| Bentonite Seal: | 22 | To | 26 | ft bgs |
| Grout Interval: | 1 | To | 22 | ft bgs |

**Additional Information**

Logged by: M. Wright Date: 7/13/20
Drilling Contractor: Boland Drilling Driller: Trevor

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-3 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/14/20 | DATE: 7/14/20 |
| **Date:** | | | | | TIME: 1120 | TIME: 1334 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 70 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
| | | | | | | Medium brown-gray very fine grain sandstone, little silt sized grains |
| | | | | 55 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 60 | | |
| | | | | | | |
| | | | | 65 | | |
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| | | | | 70 | | |
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**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | | | in |
| Bottom of Monitoring Well: | 60 | | | ft bgs |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 40 | To | 60 | ft bgs |
| Riser Interval: | 0.5 | To | 40.0 | ft bgs |
| Sand Pack Interval: | 38 | To | 62 | ft bgs |
| Bentonite Seal: | 33 | To | 38 | ft bgs |
| Grout Interval: | 1 | To | 33 | ft bgs |

**Additional Information**

Logged by: M. Wright Date: 7/14/20
Drilling Contractor: Boland Drilling Driller: Trevor

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-4 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/15/20 | DATE: 7/15/20 |
| **Date:** | | | | | TIME: 0730 | TIME: 0945 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 70 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
| | | | | | | Light brown-gray very fine grain sandstone, little silt sized grains |
| | | | | 55 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 60 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 65 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 70 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 75 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 80 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 85 | | |
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**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | in | | |
| Bottom of Monitoring Well: | 85 | ft bgs | | |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 65 | To | 85 | ft bgs |
| Riser Interval: | 0.5 | To | 65 | ft bgs |
| Sand Pack Interval: | 62 | To | 87 | ft bgs |
| Bentonite Seal: | 57 | To | 62 | ft bgs |
| Grout Interval: | 1 | To | 57 | ft bgs |

**Additional Information**

Logged by: M. Wright Date: 7/15/20
Drilling Contractor: Boland Drilling Driller: Trevor

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-5 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/15/20 | DATE: 7/15/20 |
| **Date:** | | | | | TIME: 1010 | TIME: 1230 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 70 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 55 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 60 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 65 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 70 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 75 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 80 | | |
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**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | in | | |
| Bottom of Monitoring Well: | 81 | ft bgs | | |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 71 | To | 81 | ft bgs |
| Riser Interval: | 0.5 | To | 71 | ft bgs |
| Sand Pack Interval: | 68 | To | 82 | ft bgs |
| Bentonite Seal: | 63 | To | 68 | ft bgs |
| Grout Interval: | 1 | To | 63 | ft bgs |

**Additional Information**

Logged by: M. Wright Date: 7/15/20
Drilling Contractor: Boland Drilling Driller: Trevor

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-6 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/15/20 | DATE: 7/15/20 |
| **Date:** | | | | | TIME: 1300 | TIME: 1440 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 70 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 55 | | |
| | | | | | | Medium-dark gray very fine sandstone, little silt sized grains |
| | | | | 60 | | |
| | | | | | | |
| | | | | 65 | | |
| | | | | | | |
| | | | | 70 | | |
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**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | in | | |
| Bottom of Monitoring Well: | 60 | ft bgs | | |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 40 | To | 60 | ft bgs |
| Riser Interval: | 0.5 | To | 40 | ft bgs |
| Sand Pack Interval: | 38 | To | 62 | ft bgs |
| Bentonite Seal: | 33 | To | 38 | ft bgs |
| Grout Interval: | 1 | To | 33 | ft bgs |

**Additional Information**

Logged by: M. Wright Date: 7/15/20
Drilling Contractor: Boland Drilling Driller: Trevor

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING FOR WELL INSTALLATION**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:**
**Casing Below Surface:**
**Reference Elevation:**
**Reference Description:**

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method:** Air Rotary | | | **Well ID:** MW-7 |
| **Sampling Method:** NONE | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/15/20 | DATE: 7/15/20 |
| **Date:** | | | | | TIME: 1450 | TIME: 1640 |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 70 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 5 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 10 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 15 | | |
| | | | | | | Light- medium gray very fine grain sandstone, little silt sized grains |
| | | | | 20 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 25 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 30 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 35 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 40 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 45 | | |
| | | | | | | Light brown-orange very fine grain sandstone, little silt sized grains |
| | | | | 50 | | |
| | | | | | | Dark brown very fine grain sandstone, little silt sized grains |
| | | | | 55 | | |
| | | | | | | Dark brown very fine grain sandstone, little silt sized grains |
| | | | | 60 | | |
| | | | | | | Dark gray very fine grain sandstone, little silt sized grains |
| | | | | 65 | | |
| | | | | | | Dark gray very fine grain sandstone, little silt sized grains |
| | | | | 70 | | |
| | | | | | | Dark gray very fine grain sandstone, little silt sized grains |
| | | | | 75 | | |
| | | | | | | Dark gray very fine grain sandstone, little silt sized grains with black shale |
| | | | | 80 | | |
| | | | | | | Dark gray very fine grain sandstone, little silt sized grains with black shale |
| | | | | 85 | | |
| | | | | | | Black shale with some dark gray sandstone, little silt sized grains |
| | | | | 90 | | |
| | | | | | | Black shale with some dark gray sandstone, little silt sized grains |
| | | | | 95 | | |
| | | | | | | Black shale |
| | | | | 100 | | |

**Monitoring Well Construction Information**

| | | | | |
|---|---|---|---|---|
| Monitoring Well Diameter: | 2 | in | | |
| Bottom of Monitoring Well: | 101 | ft bgs | | |
| Stick Up or Flush Mount: | Flush | | | |
| Screen Interval: | 81 | To | 101 | ft bgs |
| Riser Interval: | 0.5 | To | 81 | ft bgs |
| Sand Pack Interval: | 78 | To | 102 | ft bgs |
| Bentonite Seal: | 73 | To | 78 | ft bgs |
| Grout Interval: | 1 | To | 73 | ft bgs |

**Additional Information**

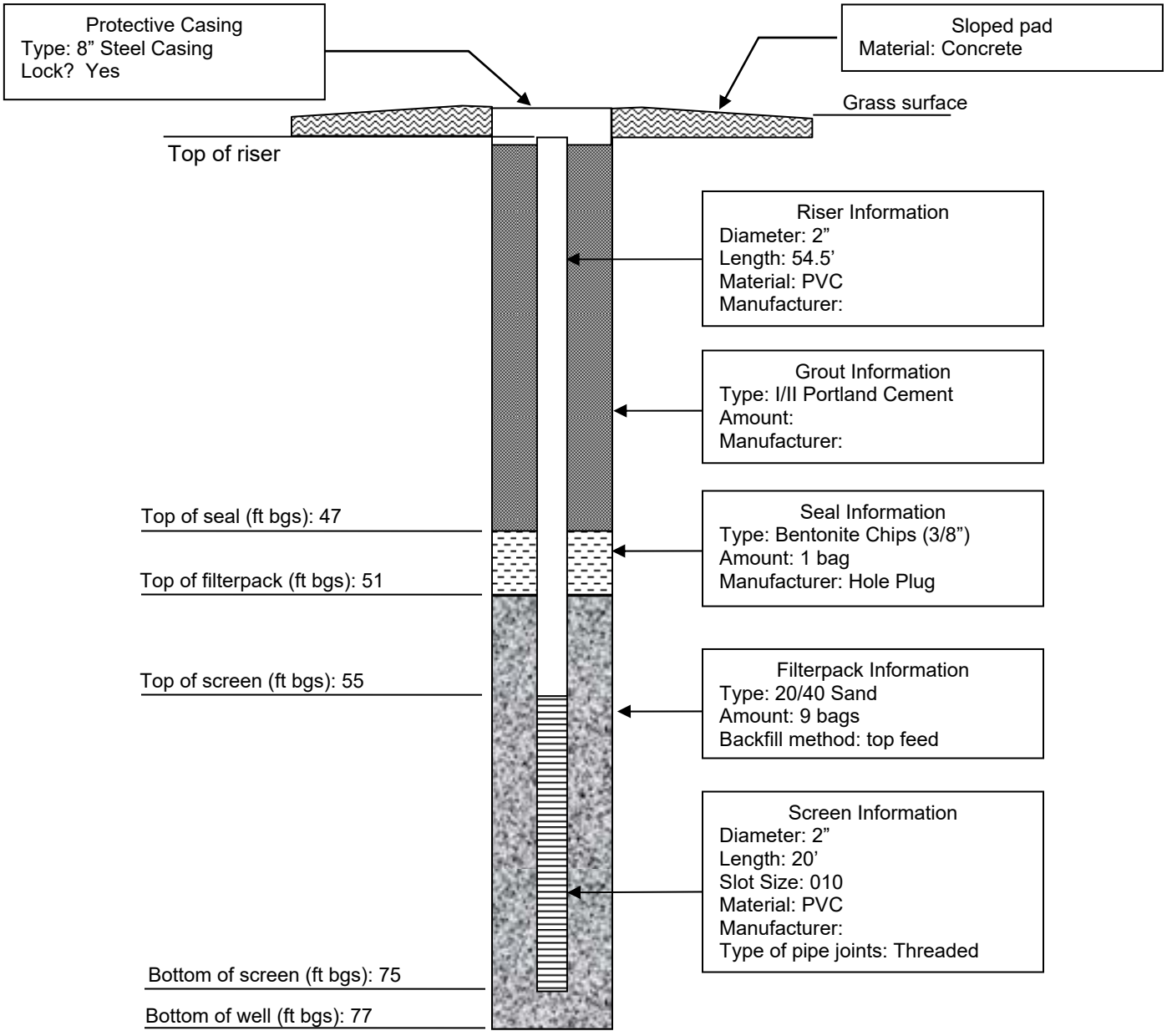
Logged by: M. Wright Date: 7/15/20
Drilling Contractor: Boland Drilling Driller: Trevor

# APPENDIX B

## Well Completion Diagrams

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring<br>ID No.: **MW-1** |
| Project Title/ Project No.:<br>Montana Air National Guard / 6280606 | Date/Time Installed: 7/14/20 / 0740<br>Time Finished: 0947 |
| Location: Great Falls, MT | Depth to Water: 45.25 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |

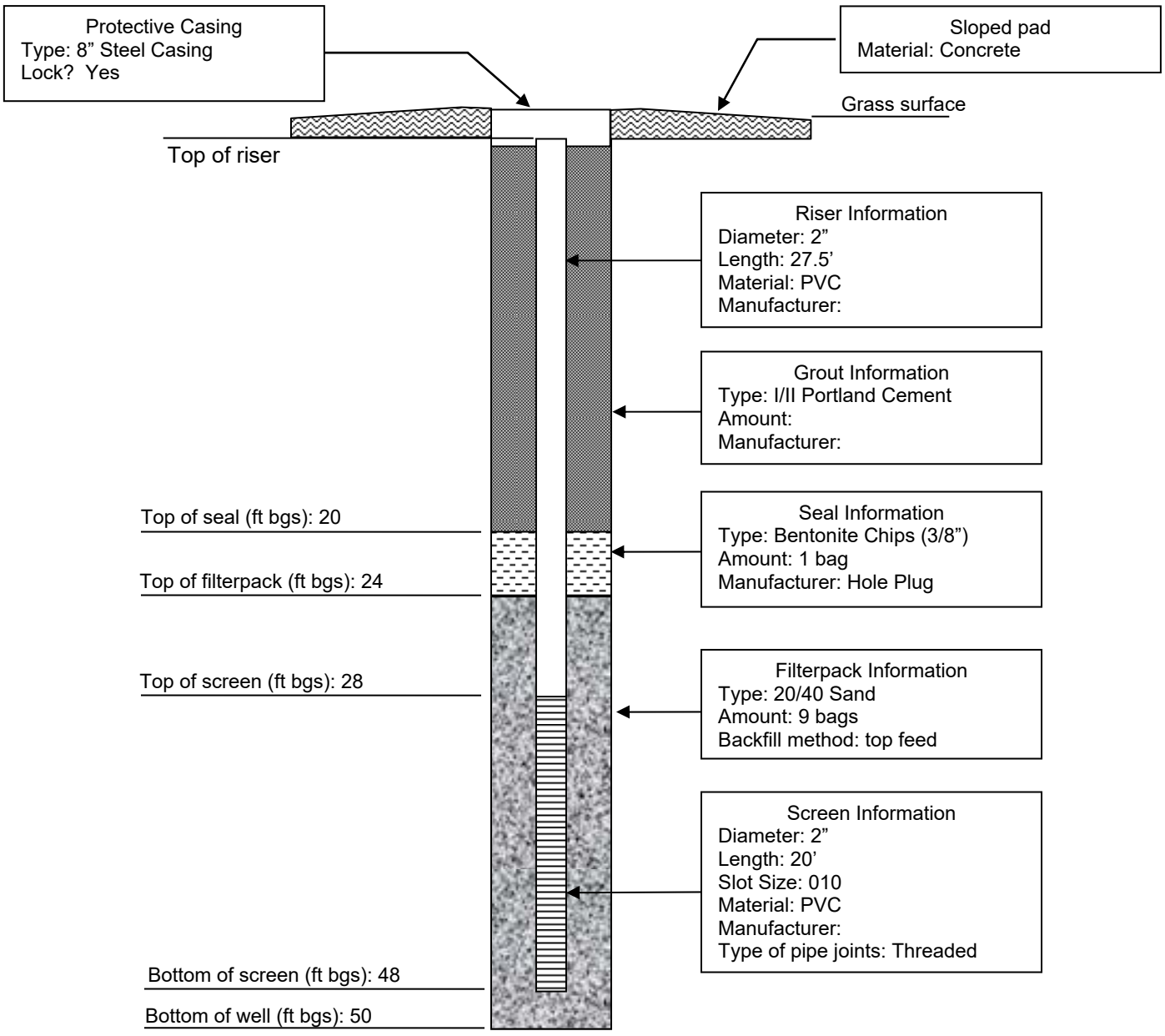



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring ID No.: **MW-2** |
| Project Title/ Project No.: Montana Air National Guard / 6280606 | Date/Time Installed: 7/13/20 / 1130<br>Time Finished: 1330 |
| Location: Great Falls, MT | Depth to Water: 40.10 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |

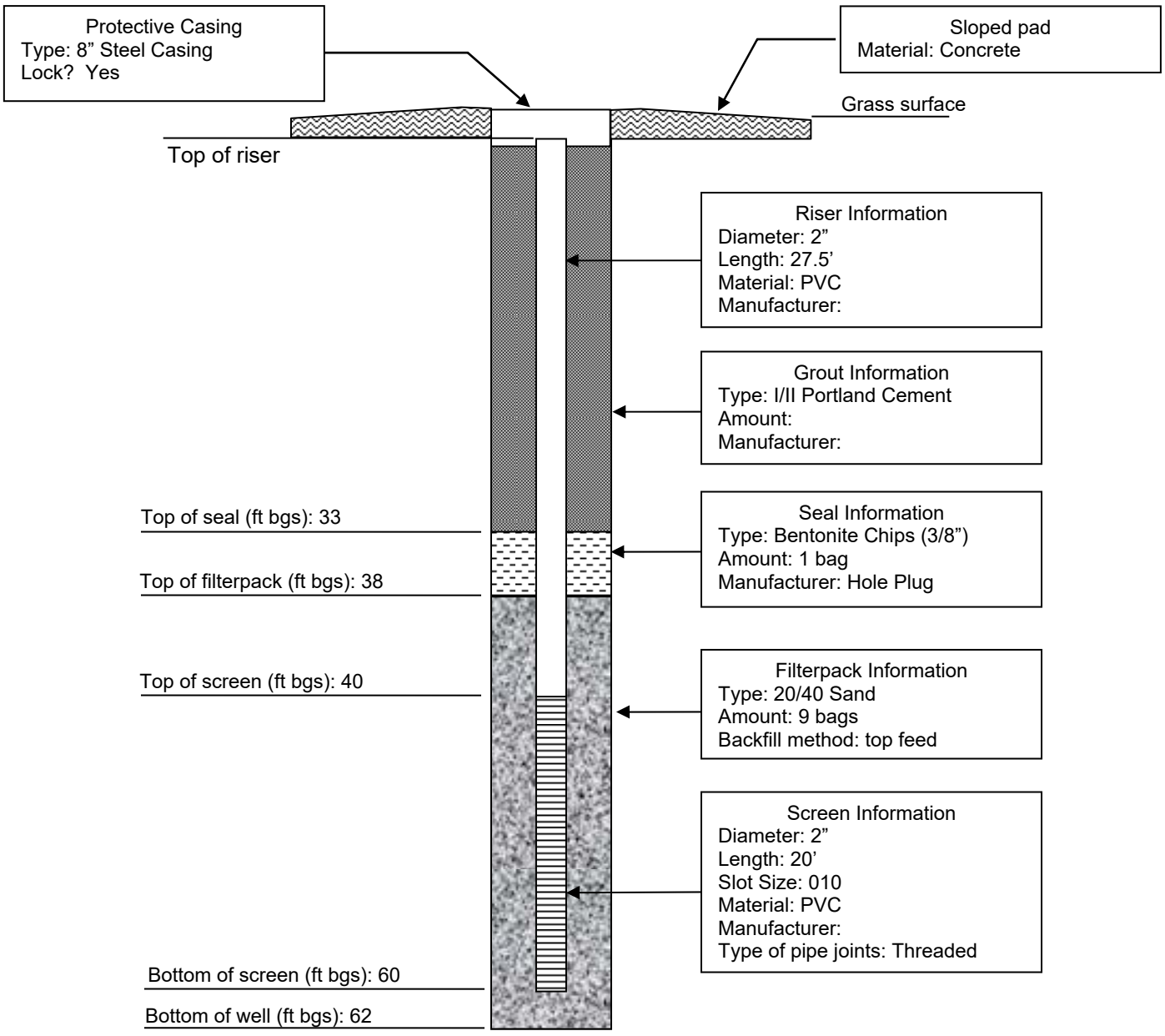



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring ID No.: **MW-3** |
| Project Title/ Project No.: Montana Air National Guard / 6280606 | Date/Time Installed: 7/14/20 / 1120<br>Time Finished: 1334 |
| Location: Great Falls, MT | Depth to Water: 32.25 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |

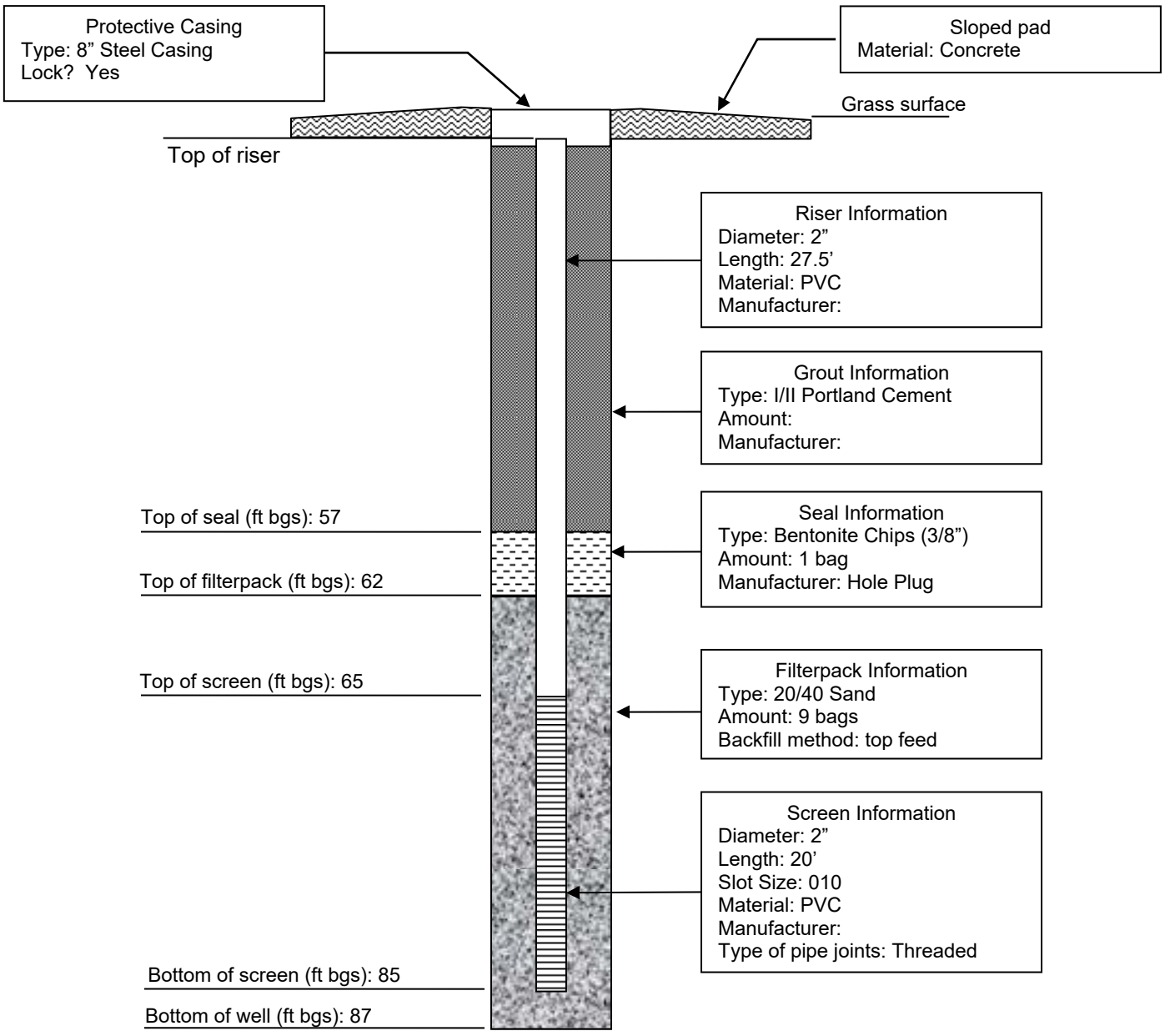



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring ID No.: **MW-4** |
| Project Title/ Project No.: Montana Air National Guard / 6280606 | Date/Time Installed: 7/15/20 / 0730<br>Time Finished: 0940 |
| Location: Great Falls, MT | Depth to Water: 36.15 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |

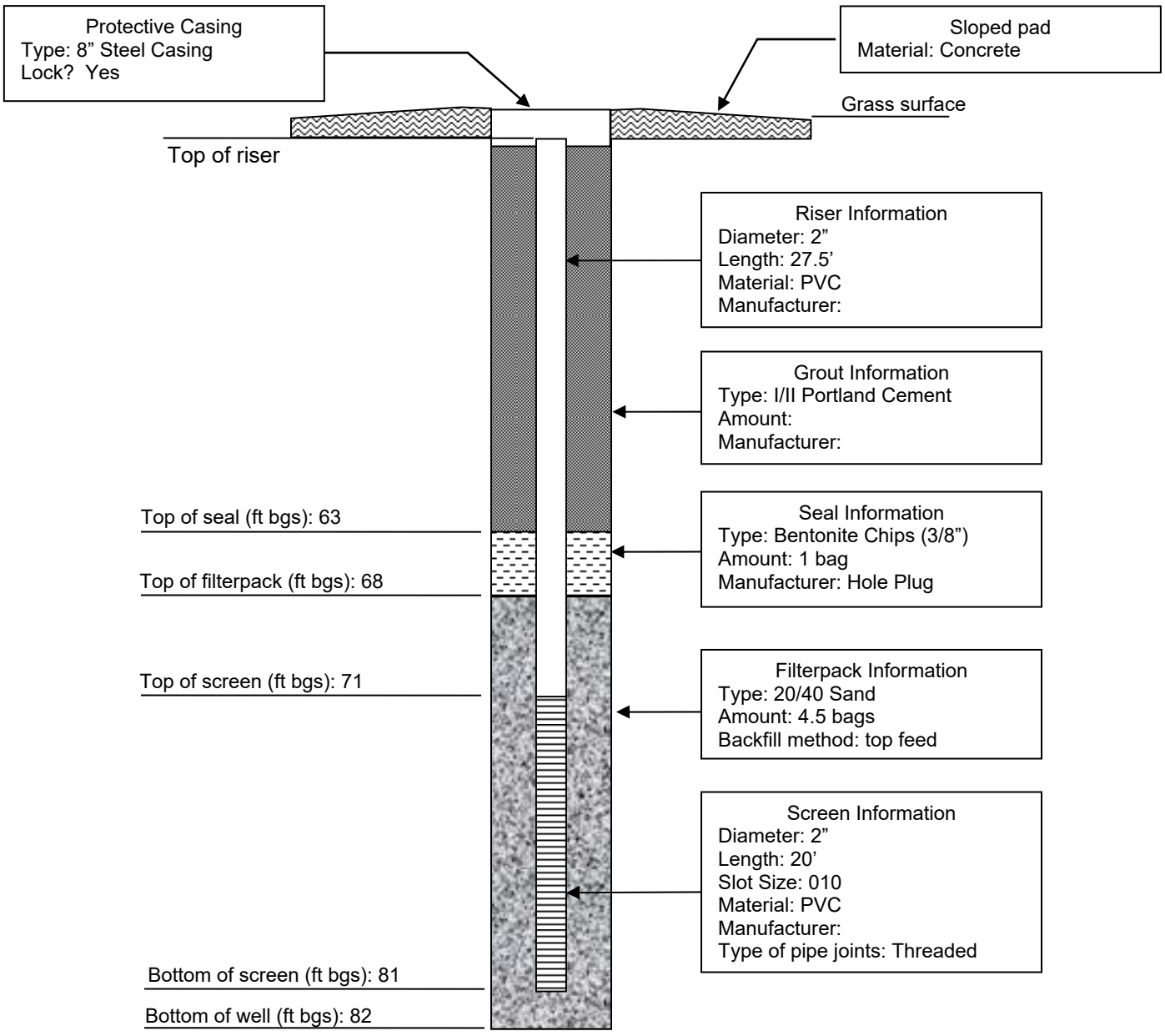



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring ID No.: **MW-5** |
| Project Title/ Project No.: Montana Air National Guard / 6280606 | Date/Time Installed: 7/15/20 / 1010<br>Time Finished: 1230 |
| Location: Great Falls, MT | Depth to Water: 24.25 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |

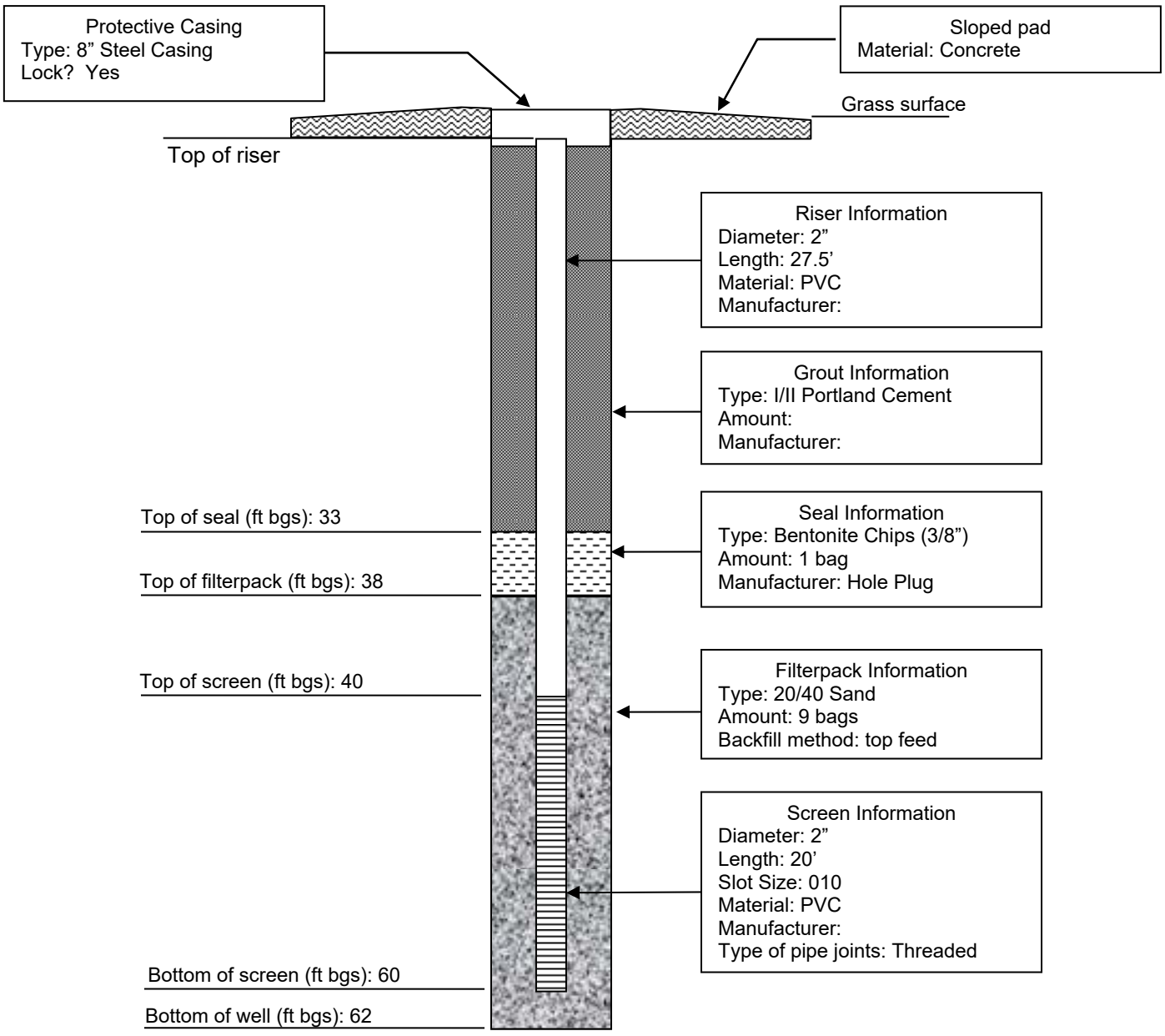



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring ID No.: **MW-6** |
| Project Title/ Project No.: Montana Air National Guard / 6280606 | Date/Time Installed: 7/15/20 / 1300<br>Time Finished: 1450 |
| Location: Great Falls, MT | Depth to Water: 31.21 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |

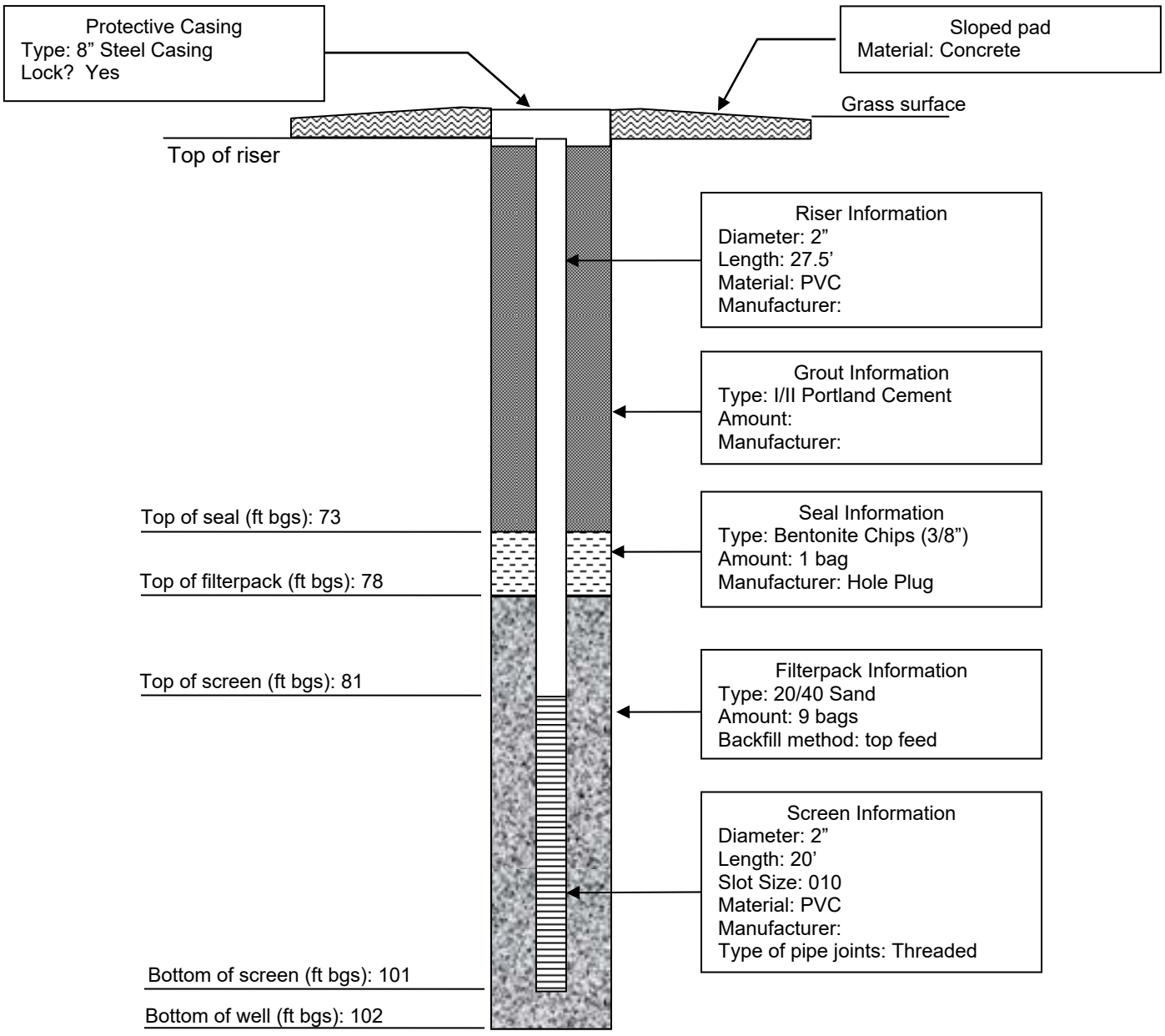



Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# RECORD OF MONITORING WELL CONSTRUCTION
(FLUSH MOUNT)

| | |
|---|---|
| EA Engineering, Science, and Technology, Inc. | Monitoring Well/Soil Boring ID No.: **MW-7** |
| Project Title/ Project No.: Montana Air National Guard / 6280606 | Date/Time Installed: 7/15/20 / 1450<br>Time Finished: 1640 |
| Location: Great Falls, MT | Depth to Water: 40.25 ft bgs |
| Site Geologist: Mike Wright | Drilling Method: Air Rotary |




Note: All features not to scale

ags – Above Ground Surface
bgs – Below Ground Surface

# APPENDIX C

## Well Development Logs

MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-1

Date: 7/17/2020
EA: M. Wright

Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 0825 | 9.44 | 0.810 | 562 | 10.85 | 53.8 |
| 0830 | 8.68 | 0.804 | 99.5 | 9.99 | 53.9 |
| 0835 | 8.46 | 0.805 | 78.7 | 10.15 | 56.9 |
| 0840 | 8.25 | 0.808 | 8.9 | 10.83 | 62.4 |
| 0845 | 8.27 | 0.808 | 9.8 | 9.69 | 66.3 |
| 0850 | 8.26 | 0.806 | 9.0 | 9.31 | 68.0 |
| 0855 | 8.26 | 0.805 | 4.2 | 9.18 | 68.7 |
| | | | | | |

MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-2

Date: 7/17/2020
EA: M. Wright

Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 0925 | 8.22 | 0.624 | 1382 | 10.97 | 79.0 |
| 0935 | 8.13 | 0.641 | 1391 | 10.99 | 77.0 |
| 0940 | 8.11 | 0.640 | 1421 | 12.77 | 76.9 |
| 0945 | 8.06 | 0.632 | 1415 | 13.79 | 80.2 |
| 0950 | 8.02 | 0.635 | 1416 | 13.96 | 78.3 |
| 0955 | 8.04 | 0.636 | 137.9 | 15.28 | 78.1 |
| 1000 | 8.06 | 0.641 | 83.1 | 15.28 | 88.1 |
| 1005 | 8.02 | 0.647 | 450.0 | 16.77 | 77.6 |
| 1010 | 7.64 | 0.647 | 587.0 | 16.10 | 77.7 |
| 1015 | 7.66 | 0.647 | 431.0 | 16.10 | 78.8 |
| 1020 | 7.65 | 0.647 | 377.0 | 15.92 | 79.2 |
| 1025 | 7.66 | 0.648 | 363.0 | 15.95 | 79.6 |
| | | | | | |

MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-3

Date: 7/17/2020
EA: M. Wright

Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 1115 | 7.91 | 1.756 | 1391 | 11.83 | 96.8 |
| 1120 | 7.57 | 1.799 | 296 | 10.27 | 94.7 |
| 1125 | 7.43 | 1.821 | 60.9 | 10.15 | 92.3 |
| 1130 | 7.40 | 1.872 | 38.6 | 9.45 | 92.9 |
| 1135 | 7.13 | 1.816 | 30.2 | 9.66 | 96.9 |
| 1140 | 7.18 | 1.820 | 19.5 | 9.40 | 88.9 |
| 1145 | 7.18 | 1.820 | 20.6 | 9.59 | 87.4 |
| 1150 | 7.18 | 1.819 | 16.1 | 9.64 | 87.6 |
| 1155 | 7.21 | 1.822 | 13.2 | 9.55 | 86.4 |
| 1200 | 7.23 | 1.820 | 14.6 | 9.84 | 85.6 |
| 1205 | 7.26 | 1.823 | 17.6 | 9.33 | 89.0 |
| 1210 | 7.27 | 1.817 | 11.6 | 9.29 | 88.4 |
| 1215 | 7.26 | 1.817 | 13.0 | 9.21 | 88.3 |

MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-4

Date: 7/17/2020
EA: M. Wright

Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 1235 | 7.52 | 1.608 | 1389 | 11.61 | 101.5 |
| 1240 | 7.37 | 1.595 | 269 | 11.84 | 95.9 |
| 1245 | 7.32 | 1.613 | 123 | 11.89 | 92.4 |
| 1250 | 7.45 | 1.650 | 1368 | 10.89 | 92.2 |
| 1255 | 7.36 | 1.639 | 1247 | 10.90 | 91.9 |
| 1300 | 7.34 | 1.666 | 1202 | 11.15 | 90.2 |
| 1305 | 7.36 | 1.633 | 1265 | 11.46 | 88.3 |
| 1310 | 7.41 | 1.680 | 1142 | 10.79 | 88.7 |
| 1315 | 7.42 | 1.670 | 1314 | 10.49 | 88.2 |
| 1320 | 7.41 | 1.686 | 936 | 10.56 | 88.3 |
| 1325 | 7.37 | 1.698 | 95.6 | 10.90 | 88.1 |
| 1330 | 7.38 | 1.702 | 22.6 | 10.79 | 88.3 |
| 1335 | 7.38 | 1.701 | 12.6 | 10.50 | 88.3 |

MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-5

Date: 7/17/2020
EA: M. Wright

Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 1410 | 8.07 | 1.201 | 1380 | 10.74 | 89.5 |
| 1415 | 7.17 | 1.175 | 161 | 12.17 | 87.7 |
| 1420 | 7.49 | 1.537 | 495 | 12.12 | 95.0 |
| 1425 | 7.84 | 1.240 | 1389 | 11.63 | 87.3 |
| 1430 | 7.83 | 1.285 | 776 | 11.00 | 88.8 |
| 1435 | 7.64 | 1.757 | 209 | 11.16 | 95.8 |
| 1440 | 7.53 | 1.894 | 101 | 11.01 | 95.7 |
| 1445 | 7.51 | 1.921 | 49.6 | 11.13 | 94.7 |
| 1450 | 7.51 | 1.913 | 48.8 | 11.07 | 93.7 |
| 1455 | 7.53 | 1.926 | 46.1 | 11.01 | 93.9 |
| | | | | | |
| | | | | | |
| | | | | | |

MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-6

Date: 7/17/2020
EA: M. Wright
Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 1525 | 7.86 | 1.269 | 53.6 | 10.70 | 89.5 |
| 1530 | 7.62 | 1.240 | 14.4 | 10.64 | 86.7 |
| 1535 | 7.51 | 1.241 | 2.4 | 10.64 | 87.7 |
| 1540 | 7.44 | 1.241 | 2.9 | 10.53 | 87.6 |
| 1545 | 7.44 | 1.245 | 0.3 | 10.60 | 87.6 |
| 1550 | 7.43 | 1.244 | 0.5 | 10.55 | 86.9 |
| 1555 | 7.44 | 1.242 | 0.2 | 10.49 | 86.1 |
| | | | | | |
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MTANG-Great Falls
MW Installation
Project # 6280606
Well Development
Data Sheet
Site Location: MW-7

Date: 7/17/2020
EA: M. Wright
Contractors: Boland Drilling



| TIME | pH +/- 0.1 units | Conductivity (S/m) +/- 10% | Turbidity (ntu) +/- 10% | Temperature (°C) +/- 1 degree | Redox Potential (mV) +/- 10 mV |
|---|---|---|---|---|---|
| 1605 | 8.15 | 1.845 | 1090 | 12.13 | 107.2 |
| 1610 | 8.21 | 1.890 | 1183 | 10.98 | 106.6 |
| 1615 | 8.23 | 1.782 | 1900 | 12.08 | 101.6 |
| 1620 | 8.29 | 1.909 | 2601 | 12.59 | 100.7 |
| 1625 | 8.42 | 1.954 | 2198 | 11.63 | 99.5 |
| 1630 | 8.46 | 1.945 | 1967 | 14.22 | 96.3 |
| 1635 | 8.49 | 2.139 | 1872 | 14.13 | 97.7 |
| | | | | | |
| | | | | | |
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NOTES: Well purged dry at 1635

# Appendix B

# Purge Logs—20 July 2020 Sampling Event

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EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-1

WELL/SITE DESCRIPTION Airfield

WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 0755 FIELD TECHNICIAN MW

SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 0825

SAMPLE IDENTIFICATION MW-1

WELL DEPTH 75 ft SCREEN HEIGHT 55-75 ft

WATER DEPTH ~10.2 ft WELL DIAMETER 2 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.3 (LPM)

PUMP TIME min

WELL WENT DRY? ( ) Yes ( X ) No PUMP TIME min

VOL. REMOVED 9 (L) RECOVERY TIME min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 0755 | 0 | 9.47 | 0.809 | 9.25 | 26.9 | 686 | 8.06 | 47.45 | 0.3 |
| 7/20/20 | 0800 | 1.5 | 9.07 | 0.806 | 9.61 | 28.4 | 591 | 7.69 | 45.50 | - |
| 7/20/20 | 0805 | 3.0 | 8.61 | 0.806 | 9.80 | 31.1 | 316 | 7.54 | 45.38 | - |
| 7/20/20 | 0810 | 4.5 | 8.54 | 0.805 | 10.21 | 34.2 | 180 | 7.43 | 45.48 | - |
| 7/20/20 | 0815 | 6.0 | 8.49 | 0.804 | 10.50 | 38.1 | 45.21 | 7.49 | 45.55 | - |
| 7/20/20 | 0820 | 7.5 | 8.48 | 0.802 | 9.94 | 41.7 | 47.44 | 7.51 | 45.70 | - |
| 7/20/20 | 0825 | 9.0 | 8.48 | 0.803 | 10.25 | 43.6 | 49.01 | 7.52 | 45.74 | - |
| | | | | | | | | | | |
| | | | | | | | | | | |
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COMMENTS sample collected @ 0825

SIGNATURE Mike Wright

EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-2
WELL/SITE DESCRIPTION Airfield
WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 0925 FIELD TECHNICIAN MW
SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 0955
SAMPLE IDENTIFICATION MW-2

WELL DEPTH 48 ft SCREEN HEIGHT 28-48 ft
WATER DEPTH ft WELL DIAMETER 2 in
WATER COL. HEIGHT ft SANDPACK DIAM. in
EQUIVALENT VOLUME OF STANDING WATER (gal) (L)
PUMP RATE 0.3 (LPM)
PUMP TIME min
WELL WENT DRY? ( ) Yes ( X ) No PUMP TIME min
VOL. REMOVED 9 (L) RECOVERY TIME min
PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 0925 | 0 | 8.66 | 0.615 | 10.02 | 66.9 | 1370 | 9,88 | 41.04 | 0.3 |
| 7/20/20 | 0930 | 1.5 | 8.48 | 0.610 | 9.58 | 64.5 | 219 | 10.05 | 41.78 | - |
| 7/20/20 | 0935 | 3.0 | 8.41 | 0.614 | 10.20 | 62.2 | 233 | 9.98 | 41.78 | - |
| 7/20/20 | 0940 | 4.5 | 8.31 | 0.624 | 10.64 | 61.3 | 67.5 | 9.96 | 41.80 | - |
| 7/20/20 | 0945 | 6.0 | 8.30 | 0.629 | 11.04 | 61.1 | 40.6 | 9.82 | 41.45 | - |
| 7/20/20 | 0950 | 7.5 | 8.30 | 0.631 | 11.21 | 61.1 | 41.7 | 9.80 | 41.80 | - |
| 7/20/20 | 0955 | 9.0 | 8.29 | 0.634 | 11.44 | 61.0 | 38.4 | 9.76 | 41.78 | - |
| | | | | | | | | | | |
| | | | | | | | | | | |
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| | | | | | | | | | | |

COMMENTS sample collected @ 0955

SIGNATURE Mike Wright

EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-3

WELL/SITE DESCRIPTION Airfield

WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 1020 FIELD TECHNICIAN MW

SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 1050

SAMPLE IDENTIFICATION MW-3

WELL DEPTH 60 ft SCREEN HEIGHT 40-60 ft

WATER DEPTH ft WELL DIAMETER 2 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.2 (LPM)

PUMP TIME min

WELL WENT DRY? ( ) Yes ( X ) No PUMP TIME min

VOL. REMOVED 6 (L) RECOVERY TIME min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 1020 | 0 | 8.20 | 1.619 | 10.66 | 81.3 | 1378 | 4.10 | 32.33 | 0.2 |
| 7/20/20 | 1025 | 1 | 7.73 | 1.806 | 9.85 | 79.1 | 433 | 0.61 | 32.43 | - |
| 7/20/20 | 1030 | 2 | 7.69 | 1.811 | 9.77 | 73.9 | 249 | 0.35 | 32.42 | - |
| 7/20/20 | 1035 | 3 | 7.69 | 1.813 | 9.56 | 70.0 | 78.6 | 0.21 | 32.36 | - |
| 7/20/20 | 1040 | 4 | 7.42 | 1.815 | 9.98 | 67.0 | 36.8 | 0.22 | 32.38 | - |
| 7/20/20 | 1045 | 5 | 7.41 | 1.810 | 10.33 | 64.4 | 33.9 | 0.21 | 32.42 | - |
| 7/20/20 | 1050 | 6 | 7.41 | 1.809 | 10.61 | 62.0 | 34.7 | 0.20 | 32.41 | - |
| | | | | | | | | | | |
| | | | | | | | | | | |
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COMMENTS sample collected @ 1050 DUP

SIGNATURE Mike Wright

EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-4

WELL/SITE DESCRIPTION Airfield

WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 1115 FIELD TECHNICIAN MW

SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 1210

SAMPLE IDENTIFICATION MW-4

WELL DEPTH 85 ft SCREEN HEIGHT 65-85 ft

WATER DEPTH ft WELL DIAMETER 2 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.2 (LPM)

PUMP TIME min

WELL WENT DRY? ( ) Yes ( X ) No PUMP TIME min

VOL. REMOVED 12 (L) RECOVERY TIME min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 1115 | 0 | 7.91 | 1.703 | 12.77 | 78.6 | 61.9 | 3.66 | 29.18 | 0.2 |
| 7/20/20 | 1120 | 1 | 7.45 | 1.693 | 10.53 | 72.8 | 564 | 2.61 | 30.12 | - |
| 7/20/20 | 1125 | 2 | 7.38 | 1.688 | 10.26 | 70.7 | 242 | 2.44 | 30.35 | - |
| 7/20/20 | 1130 | 3 | 7.37 | 1.688 | 11.12 | 68.1 | 203 | 2.37 | 30.26 | - |
| 7/20/20 | 1135 | 4 | 7.36 | 1.688 | 11.21 | 66.9 | 146 | 2.31 | 30.34 | - |
| 7/20/20 | 1140 | 5 | 7.34 | 1.687 | 10.83 | 65.9 | 98.1 | 1.75 | 30.66 | - |
| 7/20/20 | 1145 | 6 | 7.33 | 1.686 | 10.99 | 62.6 | 49.1 | 1.08 | 31.59 | - |
| 7/20/20 | 1150 | 7 | 7.32 | 1.685 | 10.81 | 59.3 | 28.6 | 0.73 | 30.66 | - |
| 7/20/20 | 1155 | 8 | 7.32 | 1.685 | 10.78 | 57.6 | 25.3 | 0.51 | 30.89 | - |
| 7/20/20 | 1200 | 9 | 7.31 | 1.684 | 10.62 | 55.1 | 23.8 | 0.31 | 30.84 | - |
| 7/20/20 | 1205 | 10 | 7.31 | 1.684 | 10.71 | 53.3 | 22.9 | 0.30 | 30.98 | - |
| 7/20/20 | 1210 | 11 | 7.30 | 1.683 | 10.71 | 51.8 | 23.4 | 0.29 | 31.12 | - |
| | | | | | | | | | | |

COMMENTS sample collected @ 1210 MS/MSD

SIGNATURE Mike Wright

EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-5

WELL/SITE DESCRIPTION Airfield

WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 1300 FIELD TECHNICIAN MW

SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 1400

SAMPLE IDENTIFICATION MW-5

WELL DEPTH 81 ft SCREEN HEIGHT 71-81 ft

WATER DEPTH ft WELL DIAMETER 2 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.2 (LPM)

PUMP TIME min

WELL WENT DRY? ( ) Yes ( X ) No PUMP TIME min

VOL. REMOVED 11 (L) RECOVERY TIME min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 1305 | 0 | 8.00 | 1.943 | 12.43 | 77.6 | 45.7 | 1.86 | 20.71 | 0.2 |
| 7/20/20 | 1310 | 1 | 7.40 | 1.931 | 11.45 | 74.0 | 529 | 2.96 | 20.84 | - |
| 7/20/20 | 1315 | 2 | 7.34 | 1.930 | 10.97 | 71.9 | 567 | 3.02 | 20.81 | - |
| 7/20/20 | 1320 | 3 | 7.29 | 1.930 | 11.27 | 70.3 | 361 | 2.66 | 20.83 | - |
| 7/20/20 | 1325 | 4 | 7.29 | 1.929 | 10.97 | 68.7 | 190 | 1.90 | 20.84 | - |
| 7/20/20 | 1330 | 5 | 7.27 | 1.926 | 11.01 | 67.3 | 150 | 1.25 | 20.82 | - |
| 7/20/20 | 1335 | 6 | 7.26 | 1.926 | 11.08 | 65.6 | 44.4 | 0.71 | 20.80 | - |
| 7/20/20 | 1340 | 7 | 7.25 | 1.925 | 11.08 | 64.4 | 35.3 | 0.41 | 20.75 | - |
| 7/20/20 | 1345 | 8 | 7.23 | 1.924 | 10.88 | 63.1 | 22.9 | 0.19 | 20.80 | - |
| 7/20/20 | 1350 | 9 | 7.22 | 1.926 | 10.14 | 61.9 | 15.9 | 0.02 | 21.01 | - |
| 7/20/20 | 1355 | 10 | 7.21 | 1.924 | 9.99 | 61.0 | 16.3 | 0.01 | 21.20 | - |
| 7/20/20 | 1400 | 11 | 7.21 | 1.925 | 10.03 | 59.2 | 15.3 | 0.00 | 21.69 | - |
| | | | | | | | | | | |

COMMENTS sample collected @ 1400

SIGNATURE Mike Wright

EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-6

WELL/SITE DESCRIPTION Airfield

WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 1420 FIELD TECHNICIAN MW

SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 1450

SAMPLE IDENTIFICATION MW-6

WELL DEPTH 60 ft SCREEN HEIGHT 40-60 ft

WATER DEPTH ft WELL DIAMETER 2 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.2 (LPM)

PUMP TIME min

WELL WENT DRY? ( ) Yes ( X ) No PUMP TIME min

VOL. REMOVED 6 (L) RECOVERY TIME min

PURGE AGAIN? ( )Yes ( ) No TOTAL VOL. REMOVED (gal) (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 1420 | 0 | 8.14 | 1.267 | 14.14 | 61.9 | 13.5 | 6.57 | 26.04 | 0.2 |
| 7/20/20 | 1425 | 1 | 7.76 | 1.247 | 11.93 | 62.4 | 5.8 | 5.82 | 26.12 | - |
| 7/20/20 | 1430 | 2 | 7.55 | 1.248 | 11.93 | 63.2 | 0.6 | 5.79 | 26.12 | - |
| 7/20/20 | 1435 | 3 | 7.36 | 1.246 | 11.61 | 64.5 | 0.3 | 5.74 | 26.14 | - |
| 7/20/20 | 1440 | 4 | 7.35 | 1.245 | 11.73 | 65.4 | 0.1 | 5.72 | 26.14 | - |
| 7/20/20 | 1445 | 5 | 7.34 | 1.245 | 11.51 | 66.2 | 0.1 | 5.72 | 26.13 | - |
| 7/20/20 | 1450 | 6 | 7.34 | 1.246 | 11.56 | 66.9 | 0.0 | 5.70 | 26.12 | - |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

COMMENTS sample collected @ 1450

SIGNATURE Mike Wright

EA Engineering, Science, and Technology, Inc., PBC

# WELL PURGING AND SAMPLING RECORD

WELL ID MW-7

WELL/SITE DESCRIPTION Airfield

WEATHER/ TEMP , 80°F, sunny

DATE 7 / 20 / 2020 TIME 1515 FIELD TECHNICIAN MW

SAMPLING DATE 7 / 20 / 2020 SAMPLE TIME 1600

SAMPLE IDENTIFICATION MW-7

WELL DEPTH 101 ft SCREEN HEIGHT 81-101 ft

WATER DEPTH ft WELL DIAMETER 2 in

WATER COL. HEIGHT ft SANDPACK DIAM. in

EQUIVALENT VOLUME OF STANDING WATER (gal) (L)

PUMP RATE 0.2 (LPM)

PUMP TIME 25 min

WELL WENT DRY? ( X ) Yes ( ) No PUMP TIME 5 min

VOL. REMOVED 5 (L) RECOVERY TIME 15 min

PURGE AGAIN? ( X )Yes ( ) No TOTAL VOL. REMOVED 6 (L)

| Date | Time | Volume Removed Unit: | pH -- | Cond. ms/cm | Temp. °C | ORP mV | Turb. NTU | DO mg/L | Depth to Water from TOC | Pump Rate LPM |
|---|---|---|---|---|---|---|---|---|---|---|
| 7/20/20 | 1520 | 0 | 8.40 | 2.084 | 18.24 | 91.5 | 1332 | 7.69 | 94.90 | 0.2 |
| 7/20/20 | 1525 | 1 | 8.72 | 2.070 | 15.40 | 91.7 | 1260 | 7.70 | 95.56 | - |
| 7/20/20 | 1530 | 2 | 8.38 | 1.993 | 12.27 | 88.5 | 1184 | 7.83 | 96.92 | - |
| 7/20/20 | 1535 | 3 | 8.31 | 2.011 | 14.03 | 84.8 | 1390 | 7.31 | 97.73 | - |
| 7/20/20 | 1540 | 4 | 8.37 | 2.034 | 15.82 | 82.1 | 1178 | 7.00 | 98.20 | - |
| 7/20/20 | 1545 | 5 | 8.35 | 2.074 | 13.24 | 81.2 | 1097 | 6.85 | 98.89 | - |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |

COMMENTS went dry @ 1545 allowed to recover until enough volume in well to collect sample (15 min) sample collected @ 1600

SIGNATURE Mike Wright

# Appendix C

# Soil Boring Logs

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**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:** _____
**Casing Below Surface:** _____
**Reference Elevation:** _____
**Reference Description:** _____

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method: Hand Auger** | | | **Well ID:** SB-1 |
| **Sampling Method:** Composite | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/21/20 | DATE: 7/21/20 |
| **Date:** | | | | | TIME: | TIME: |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 80 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 0.5 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1.45 | | |

| Sample Information | Additional Information |
|---|---|
| SB-1-0-0.5<br>SB-1-1-1.45 | Auger refusal at 1.45 ft bgs |

| | | | |
|---|---|---|---|
| Logged by: | M. Wright | Date: | 7/21/20 |
| Drilling Contractor: | N/A | Driller: | N/A |

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:** _____
**Casing Below Surface:** _____
**Reference Elevation:** _____
**Reference Description:** _____

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method: Hand Auger** | | | **Well ID:** SB-2 |
| **Sampling Method:** Composite | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/21/20 | DATE: 7/21/20 |
| **Date:** | | | | | TIME: | TIME: |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 80 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 0.5 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1.5 | | |

| Sample Information | Additional Information |
|---|---|
| SB-2-0-0.5<br>SB-2-1-1.5 | Auger refusal at 1.5 ft bgs |

Logged by: M. Wright Date: 7/21/20
Drilling Contractor: N/A Driller: N/A

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:** _____
**Casing Below Surface:** _____
**Reference Elevation:** _____
**Reference Description:** _____

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method: Hand Auger** | | | **Well ID:** SB-3 |
| **Sampling Method:** Composite | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/21/20 | DATE: 7/21/20 |
| **Date:** | | | | | TIME: | TIME: |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 80 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 0.5 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1.4 | | |

| Sample Information | Additional Information |
|---|---|
| SB-3-0-0.5<br>SB-3-1-1.4 | Auger refusal at 1.4 ft bgs |

| | | | |
|---|---|---|---|
| Logged by: | M. Wright | Date: | 7/21/20 |
| Drilling Contractor: | N/A | Driller: | N/A |

**EA Engineering, P.C.**
**EA Science and Technology**

**LOG OF SOIL BORING**

**Coordinates:** Northing _____ Easting: _____
**Surface Elevation:** _____
**Casing Below Surface:** _____
**Reference Elevation:** _____
**Reference Description:** _____

| **Job. No.** | **Client:** | Air National Guard | **Location:** |
|---|---|---|---|
| 6280606 | **Project:** | Montana ANG | Great Falls MT |
| **Drilling Method: Hand Auger** | | | **Well ID:** SB-4 |
| **Sampling Method:** Composite | | | **Sheet 1 of 1** |

| | | | | | **Drilling** | |
|---|---|---|---|---|---|---|
| **Water Level:** | | | | | **Start** | **Finish** |
| **Time:** | | | | | DATE: 7/21/20 | DATE: 7/21/20 |
| **Date:** | | | | | TIME: | TIME: |

**Surface Conditions:** Grassy
**Weather:** Sunny
**Temperature:** 80 F

| Blow Counts (140-lb) | Ft. Driven/ Ft. Recvrd | Boring Diagram | PID (ppm) | Depth in Feet | USCS Log | |
|---|---|---|---|---|---|---|
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 0.5 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1 | | |
| | | | | | | Light brown very fine grain sand, little silt sized grains, trace small gravel |
| | | | | 1.4 | | |

| Sample Information | Additional Information |
|---|---|
| SB-4-0-0.5<br>SB-4-1-1.4 | Auger refusal at 1.4 ft bgs |

Logged by: M. Wright Date: 7/21/20
Drilling Contractor: N/A Driller: N/A

# Appendix D

# Non-Hazardous Waste Manifest

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201001602930

| NON-HAZARDOUS WASTE MANIFEST | 1. Generator ID Number | 2. Page 1 of | 3. Emergency Response Phone | 4. Waste Tracking Number |
|---|---|---|---|---|
| | SQG | 1 | 406-791-0298 | NF 093020 |

**GENERATOR**

5. Generator's Name and Mailing Address
Montana Air National Guard - Great Falls Environmental Offi
2800 Airport Ave. B, Great Falls, MT 59404
(406) 791-0298 Attn: Jared Grundhauser
Generator's Phone:

Generator's Site Address (if different than mailing address)
Montana Air National Guard - Great Falls
2800 Airport Ave. B
Great Falls, MT 59404

6. Transporter 1 Company Name: Steve Forler Trucking, Inc. — U.S. EPA ID Number: IDR 000 205 625

7. Transporter 2 Company Name — U.S. EPA ID Number:

8. Designated Facility Name and Site Address
US Ecology Idaho
20400 Lemley Rd., Grand View, ID 83624
(336) 855-7925
Facility's Phone:
U.S. EPA ID Number: IDD 073 114 654

| | 9. Waste Shipping Name and Description | 10. Containers No. | 10. Containers Type | 11. Total Quantity | 12. Unit Wt./Vol. | |
|---|---|---|---|---|---|---|
| 1. | Non RCRA, Non DOT Regulated Solid (IDW soil) | 20 | DM | 8000 | P | |
| 2. | Non RCRA, Non DOT Regulated Liquid (IDW water) | 5 | DM | 275 | G | |
| 3. | Non RCRA, non DOT Regulated Material (carbon) | 1 | DM | 100 | P | |
| 4. | | | | | | |

13. Special Handling Instructions and Additional Information
1: App# 52206-0 (Non-Regulated IDW Soil)
2: App# 52209-0 (Non-Regulated IDW water)
3. App # 52524-0 (non regulated carbon)
CESI - KWSA

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Jared Grundhauser — Signature — Month: 9 Day: 29 Year: 2020

**INT'L**

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

**TRANSPORTER**

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Logan Forler — Signature — Month: 9 Day: 30 Year: 20

Transporter 2 Printed/Typed Name — Signature — Month Day Year

**DESIGNATED FACILITY**

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator) — U.S. EPA ID Number

Facility's Phone:

17c. Signature of Alternate Facility (or Generator) — Month Day Year

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Savannah Richardson — Signature — Month: 10 Day: 1 Year: 2020

# Appendix E

# Data Validation Report

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ENVIRONMENTAL
Data Services, Inc.

# DATA VALIDATION SUMMARY REPORT
# AIR NATIONAL GUARD EMERGING CONTAMINANTS

Client: EA Engineering, Science & Technology, Inc., Abingdon, Maryland
SDG: 410-8511-1
Laboratory: Eurofins Lancaster Laboratories, Lancaster, Pennsylvania
Site: Air National Guard, Great Falls, Montana
Date: September 3, 2020

| PFAS | | | |
|---|---|---|---|
| EDS ID | Client Sample ID | Laboratory Sample ID | Matrix |
| 1 | MW-1 | 410-8511-1 | Water |
| 1RE | MW-1RE | 410-8511-1RE | Water |
| 2 | MW-2 | 410-8511-2 | Water |
| 3 | MW-3 | 410-8511-3 | Water |
| 3RE | MW-3RE | 410-8511-3RE | Water |
| 4 | MW-4 | 410-8511-4 | Water |
| 4MS | MW-4MS | 410-8511-4MS | Water |
| 4MSD | MW-4MSD | 410-8511-4MSD | Water |
| 5 | MW-5 | 410-8511-5 | Water |
| 6 | MW-6 | 410-8511- | Water |
| 7 | MW-7 | 410-8511-7 | Water |
| 8 | FD-07202020 | 410-8511-8 | Water |
| 9 | RB-07202020 | 410-8511-9 | Water |
| 9RE | RB-07202020RE | 410-8511-9RE | Water |
| 10 | RB-07212020 | 410-8511-10 | Water |
| 12 | SB-1-0-0.5 | 410-8511-12 | Soil |
| 12MS | SB-1-0-0.5MS | 410-8511-12MS | Soil |
| 12MSD | SB-1-0-0.5MSD | 410-8511-12MSD | Soil |
| 13 | SB-1-1-1.45 | 410-8511-13 | Soil |
| 13RE | SB-1-1-1.45RE | 410-8511-13RE | Soil |
| 14 | SB-2-0-0.5 | 410-8511-14 | Soil |
| 15 | SB-2-1-1.5 | 410-8511-15 | Soil |
| 16 | SB-3-0-0.5 | 410-8511-16 | Soil |
| 17 | SB-3-1-1.4 | 410-8511-17 | Soil |
| 18 | SB-4-0-0.5 | 410-8511-18 | Soil |
| 18RE | SB-4-0-0.5RE | 410-8511-18RE | Soil |
| 19 | SB-4-1-1.4 | 410-8511-19 | Soil |
| 20 | FD-07212020 | 410-8511-20 | Soil |

A Stage 2B/4 data validation was performed on the analytical data for eight water samples, nine soil samples, and two aqueous equipment blank samples collected on June 20-21, 2020 by the EA Engineering at the EA Engineering at the Air National Guard site in Great Falls, Montana. The samples were analyzed under the EPA Method "Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)".

Specific method references are as follows:

| *Analysis* | *Method References* |
|---|---|
| PFAS | USEPA Method 537.1 |

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, Department of Defense (DoD) Final General Data Validation Guidelines, November 2019, and the DoD Data Validation Guidelines as follows:

- The US Department of Defense (DoD) Data Validation Guidelines Module 3, Data Validation Procedure for Per- and Polyfluoroalkyl Substances Analysis by QSM Table B-15, May 2020;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

***Organics***

- Date Completeness, Case Narrative & Custody Documentation
- Holding times
- Liquid Chromatography/Mass Spectrometry (LC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

## Data Usability Assessment

There were no serious deficiencies of data.

The data are acceptable for the intended purposes as qualified for the deficiencies detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedances of QC criteria.

## Perfluorinated Alkyl Substances (PFAS)

### Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

### Holding Times

- All samples were extracted within 14 days for water and soil samples and analyzed within 28 days.

### LC/MS Tuning

- All criteria were met.

### Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

### Continuing Calibration

- All percent difference (%D) criteria were met.

### Method Blank

- The method blanks exhibited the following contamination.

| Blank ID | Compound | Conc. ng/L | Qualifier | Affected Samples |
|---|---|---|---|---|
| 410-25697/1-A | PFOS | 0.757 | U | 3, 3RE, 8 |

### Field QC Blank

- Field QC sample results are summarized in the table below.

| Blank ID | Compound | Conc. ng/L | Qualifier | Affected Samples |
|---|---|---|---|---|
| RB-07202020 | None - ND | - | - | - |
| RB-07212020 | None - ND | - | - | - |

## Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate percent recoveries (%R) except for the following.

| EDS Sample | Surrogate | %R | Qualifier |
|---|---|---|---|
| 1 | 13C8 FOSA | 19% | UJ |
| 1RE | 13C8 FOSA | 28% | UJ |
| 3 | 13C8 FOSA | 30% | UJ |
| 3RE | 13C8 FOSA | 27% | UJ |
| | 13C2 PFTeDA | 11% | UJ |
| 9 | d5-NEtFOSAA | 178% | None - Sample ND |
| 9RE | 13C2 PFDoDA | 32% | UJ |
| 13 | d3-NMeFOSAA | 40% | UJ |
| 13RE | d3-NMeFOSAA | 45% | UJ |
| 18 | d3-NMeFOSAA | 45% | UJ |
| 18RE | d3-NMeFOSAA | 49% | UJ |

## Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD samples exhibited acceptable percent recoveries (%R) and RPD values except for the following.

| MS/MSD Sample | Compound | MS %R/MSD %R/RPD | Qualifier | Affected Samples |
|---|---|---|---|---|
| 4 | PFOA | 80%/OK/OK | J | 4 |
| 12 | PFNA | 135%/136%/OK | J | 12 |
| | PFOS | OK/45%/OK | None | 4X Rule Applies |

## Laboratory Control Samples (LCS)

- The LCS samples exhibited acceptable percent recoveries (%R).

## Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

## Target Compound Identification

- All mass spectra and quantitation criteria were met.

## Compound Quantitation

- Several samples were analyzed at a dilution for several compounds. The reporting limits were adjusted accordingly. No action was required.

- Several samples were reanalyzed due to surrogate deficiencies with similar results. Please refer to the Form Is for which results to use for reporting purposes.
- Several samples exhibited high concentrations of compounds over the calibration range of the instrument and were flagged (E) by the laboratory. The samples were not diluted and reanalyzed. These results were already qualified due to holding times and no further qualifications were required.

## Field Duplicate Sample Precision

- Field duplicate results are summarized below. The precision was acceptable.

| PFAS | | | | |
|---|---|---|---|---|
| Compound | MW-3 ng/L | FD-07202020 ng/L | RPD | Qualifier |
| PFHxA | 65 | 66 | 2% | None |
| PFHpA | 18 | 18 | 0% | |
| PFOA | 86 | 86 | 0% | |
| PFNA | 1.5 | 0.41U | NC | |
| PFBS | 9.2 | 9.6 | 4% | |
| PFOS | 130 | 120 | 8% | |
| PFPeS | 10 | 11 | 10% | |
| PFHpS | 3.5 | 3.4 | 3% | |
| PFBA | 18 | 18 | 0% | |
| PFPeA | 69 | 67 | 3% | |
| PFHxS | 210 | 210 | 0% | |

| PFAS | | | | |
|---|---|---|---|---|
| Compound | SB-2-0-0.5 ng/g | FD-07212020 ng/g | RPD | Qualifier |
| PFHxA | 1.7 | 1.8 | 6% | None |
| PFHpA | 0.61 | 0.61 | 0% | |
| PFOA | 5.4 | 5.1 | 6% | |
| PFNA | 3.9 | 3.8 | 3% | |
| PFDA | 3.5 | 3.7 | 6% | |
| PFTDoA | 3.9 | 3.8 | 3% | |
| PFHxS | 22 | 23 | 4% | |
| NEtFOSAA | 0.20U | 0.28 | NC | |
| PFPeS | 0.42 | 0.46 | 9% | |
| PFHpS | 1.1 | 1.1 | 0% | |
| PFNS | 2.5 | 2.6 | 4% | |
| PFDS | 2.4 | 2.2 | 9% | |
| FOSA | 9.9 | 10 | 1% | |
| PFBA | 0.87 | 0.81 | 7% | |
| PFPeA | 1.0 | 1.0 | 0% | |
| PFUnDA | 1.1 | 0.97 | 13% | |
| PFDoDA | 0.46 | 0.48 | 4% | |
| 6:2 FTS | 1.6 | 1.7 | 6% | |
| PFOS | 760 | 810 | 6% | |
| 8:2 FTS | 140 | 130 | 7% | |

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver Dated: 9/9/20

Nancy Weaver
Senior Chemist

| Qualifier | Definition |
|---|---|
| U | The analyte was not detected and was reported as less than the LOD or as defined by the customer. The LOD has been adjusted for any dilution or concentration of the sample. |
| J | The reported result was an estimated value with an unknown bias. |
| J+ | The result was an estimated quantity, but the result may be biased high. |
| J- | The result was an estimated quantity, but the result may be biased low. |
| N | The analysis indicates the presence of an analyte for which there was presumptive evidence to make a "tentative identification." |
| NJ | The analyte has been "tentatively identified" or "presumptively" as present and the associated numerical value was the estimated concentration in the sample. |
| UJ | The analyte was not detected and was reported as less than the LOD or as defined by the customer. However, the associated numerical value is approximate. |
| X | The sample results (including non-detects) were affected by serious deficiencies in the ability to analyze the sample and to meet published method and project quality control criteria. The presence or absence of the analyte cannot be substantiated by the data provided.<br>Acceptance or rejection of the data should be decided by the project team (which should include a project chemist), but exclusion of the data is recommended. |

| Reason Code | Definition |
|---|---|
| HT | Holding Time |
| MB | Method Blank |
| SURR | Surrogate |
| LCS | Laboratory Control Sample |
| MS/MSD | Matrix Spike/Matrix Spike Duplicate |
| RPD | Relative Percent Difference |
| CB/CCB | Calibration Blank or Continuing Calibration Blank |
| CCV | Calibration Verification |
| SD | ICP Serial Dilution |
| TB | Trip Blank |
| EB | Equipment Blank |
| FB | Field Blank |
| FD | Field Duplicate |
| CQ | Compound Quantitation |
| IS | Internal Standard |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

1

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-1  Lab Sample ID: 410-8511-1

Matrix: Water  Lab File ID: 20JUL29-34.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 292.3(mL)  Date Analyzed: 07/29/2020 17:33

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 1.4 | J M | 1.7 | 0.86 | 0.43 |
| 375-85-9 | Perfluoroheptanoic acid | 0.43 | U M | 1.7 | 0.86 | 0.43 |
| 335-67-1 | Perfluorooctanoic acid | 1.4 | J M | 1.7 | 0.86 | 0.43 |
| 375-95-1 | Perfluorononanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 335-76-2 | Perfluorodecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.61 | J | 1.7 | 0.86 | 0.43 |
| 355-46-4 | Perfluorohexanesulfonic acid | 2.2 | M | 1.7 | 0.86 | 0.43 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 2.0 | | 1.7 | 0.86 | 0.43 |
| 2991-50-6 | NEtFOSAA | 0.43 | U | 2.6 | 0.86 | 0.43 |
| 2355-31-9 | NMeFOSAA | 0.51 | U | 1.7 | 1.0 | 0.51 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.43 | U UJ | 1.7 | 0.86 | 0.43 Surr |
| 375-22-4 | Perfluorobutanoic acid | 1.7 | U | 4.3 | 3.4 | 1.7 |
| 2706-90-3 | Perfluoropentanoic acid | 1.6 | J | 1.7 | 0.86 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 307-55-1 | Perfluorododecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U M | 4.3 | 3.4 | 1.7 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.86 | U | 2.6 | 1.7 | 0.86 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 |



NW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-1  Lab Sample ID: 410-8511-1

Matrix: Water  Lab File ID: 20JUL29-34.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 292.3(mL)  Date Analyzed: 07/29/2020 17:33

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 132 | | 50-150 |
| STL02280 | M2-8:2 FTS | 108 | | 50-150 |
| STL02279 | M2-6:2 FTS | 117 | | 50-150 |
| STL02577 | 13C5 PFHxA | 97 | | 50-150 |
| STL01892 | 13C4 PFHpA | 103 | | 50-150 |
| STL01052 | 13C8 PFOA | 99 | | 50-150 |
| STL02578 | 13C9 PFNA | 107 | | 50-150 |
| STL02579 | 13C6 PFDA | 98 | | 50-150 |
| STL02580 | 13C7 PFUnA | 105 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 109 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 106 | | 50-150 |
| STL02337 | 13C3 PFBS | 120 | | 50-150 |
| STL02581 | 13C3 PFHxS | 106 | | 50-150 |
| STL01054 | 13C8 PFOS | 105 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 120 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 127 | | 50-150 |
| STL01056 | 13C8 FOSA | 19 | Ø | 50-150 |
| STL00992 | 13C4 PFBA | 94 | | 50-150 |
| STL01893 | 13C5 PFPeA | 96 | | 50-150 |



NW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

IRE

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-1 RE  Lab Sample ID: 410-8511-1 RE

Matrix: Water  Lab File ID: 20JUL25-54.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 296.7(mL)  Date Analyzed: 07/25/2020 16:33  use EDS #1

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 1.4 | J | 1.7 | 0.84 | 0.42 |
| 375-85-9 | Perfluoroheptanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 335-67-1 | Perfluorooctanoic acid | 1.2 | J M | 1.7 | 0.84 | 0.42 |
| 375-95-1 | Perfluorononanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 335-76-2 | Perfluorodecanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.63 | J | 1.7 | 0.84 | 0.42 |
| 355-46-4 | Perfluorohexanesulfonic acid | 2.2 | M | 1.7 | 0.84 | 0.42 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 2.2 | M | 1.7 | 0.84 | 0.42 |
| 2991-50-6 | NEtFOSAA | 0.42 | U | 2.5 | 0.84 | 0.42 |
| 2355-31-9 | NMeFOSAA | 0.51 | U | 1.7 | 1.0 | 0.51 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.42 | U M | 1.7 | 0.84 | 0.42 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.42 | U ug | 1.7 | 0.84 | 0.42 |
| 375-22-4 | Perfluorobutanoic acid | 1.7 | U | 4.2 | 3.4 | 1.7 |
| 2706-90-3 | Perfluoropentanoic acid | 1.5 | J M | 1.7 | 0.84 | 0.42 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 307-55-1 | Perfluorododecanoic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.2 | 3.4 | 1.7 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.84 | U | 2.5 | 1.7 | 0.84 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.42 | U | 1.7 | 0.84 | 0.42 |

SURR



NW 9/3/20

1 RE

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-1 RE  Lab Sample ID: 410-8511-1 RE

Matrix: Water  Lab File ID: 20JUL25-54.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 296.7(mL)  Date Analyzed: 07/25/2020 16:33 UDE EDS #1

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup: (Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 127 | | 50-150 |
| STL02280 | M2-8:2 FTS | 105 | | 50-150 |
| STL02279 | M2-6:2 FTS | 111 | | 50-150 |
| STL02577 | 13C5 PFHxA | 99 | | 50-150 |
| STL01892 | 13C4 PFHpA | 97 | | 50-150 |
| STL01052 | 13C8 PFOA | 99 | | 50-150 |
| STL02578 | 13C9 PFNA | 101 | | 50-150 |
| STL02579 | 13C6 PFDA | 92 | | 50-150 |
| STL02580 | 13C7 PFUnA | 95 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 85 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 73 | | 50-150 |
| STL02337 | 13C3 PFBS | 102 | | 50-150 |
| STL02581 | 13C3 PFHxS | 96 | | 50-150 |
| STL01054 | 13C8 PFOS | 95 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 102 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 108 | | 50-150 |
| STL01056 | 13C8 FOSA | 28 | Q | 50-150 |
| STL00992 | 13C4 PFBA | 96 | | 50-150 |
| STL01893 | 13C5 PFPeA | 101 | | 50-150 |



MW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

2

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-2  Lab Sample ID: 410-8511-2

Matrix: Water  Lab File ID: 20JUL25-55.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 09:55

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 301.9(mL)  Date Analyzed: 07/25/2020 16:42

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 19 | M | 1.7 | 0.83 | 0.41 |
| 375-85-9 | Perfluoroheptanoic acid | 9.1 | | 1.7 | 0.83 | 0.41 |
| 335-67-1 | Perfluorooctanoic acid | 6.9 | M | 1.7 | 0.83 | 0.41 |
| 375-95-1 | Perfluorononanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 335-76-2 | Perfluorodecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 375-73-5 | Perfluorobutanesulfonic acid | 2.7 | | 1.7 | 0.83 | 0.41 |
| 355-46-4 | Perfluorohexanesulfonic acid | 29 | M | 1.7 | 0.83 | 0.41 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.41 | U M | 1.7 | 0.83 | 0.41 |
| 2991-50-6 | NEtFOSAA | 0.41 | U | 2.5 | 0.83 | 0.41 |
| 2355-31-9 | NMeFOSAA | 0.50 | U | 1.7 | 0.99 | 0.50 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 2.6 | | 1.7 | 0.83 | 0.41 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 375-22-4 | Perfluorobutanoic acid | 7.8 | | 4.1 | 3.3 | 1.7 |
| 2706-90-3 | Perfluoropentanoic acid | 20 | | 1.7 | 0.83 | 0.41 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 307-55-1 | Perfluorododecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.1 | 3.3 | 1.7 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.83 | U | 2.5 | 1.7 | 0.83 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |



NW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

2

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-2  Lab Sample ID: 410-8511-2

Matrix: Water  Lab File ID: 20JUL25-55.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 09:55

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 301.9(mL)  Date Analyzed: 07/25/2020 16:42

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 149 | | 50-150 |
| STL02280 | M2-8:2 FTS | 110 | | 50-150 |
| STL02279 | M2-6:2 FTS | 123 | | 50-150 |
| STL02577 | 13C5 PFHxA | 113 | | 50-150 |
| STL01892 | 13C4 PFHpA | 118 | | 50-150 |
| STL01052 | 13C8 PFOA | 110 | | 50-150 |
| STL02578 | 13C9 PFNA | 112 | | 50-150 |
| STL02579 | 13C6 PFDA | 103 | | 50-150 |
| STL02580 | 13C7 PFUnA | 106 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 109 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 98 | | 50-150 |
| STL02337 | 13C3 PFBS | 117 | | 50-150 |
| STL02581 | 13C3 PFHxS | 109 | | 50-150 |
| STL01054 | 13C8 PFOS | 109 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 114 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 118 | | 50-150 |
| STL01056 | 13C8 FOSA | 92 | | 50-150 |
| STL00992 | 13C4 PFBA | 105 | | 50-150 |
| STL01893 | 13C5 PFPeA | 113 | | 50-150 |

3

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-3  Lab Sample ID: 410-8511-3

Matrix: Water  Lab File ID: 20JUL29-35.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 10:50

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 280(mL)  Date Analyzed: 07/29/2020 17:42

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 65 | M | 1.8 | 0.89 | 0.45 |
| 375-85-9 | Perfluoroheptanoic acid | 18 | | 1.8 | 0.89 | 0.45 |
| 335-67-1 | Perfluorooctanoic acid | 86 | M | 1.8 | 0.89 | 0.45 |
| 375-95-1 | Perfluorononanoic acid | 1.5 | J | 1.8 | 0.89 | 0.45 |
| 335-76-2 | Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-73-5 | Perfluorobutanesulfonic acid | 9.2 | | 1.8 | 0.89 | 0.45 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 130 | M | 1.8 | 0.89 | 0.45 |
| 2991-50-6 | NEtFOSAA | 0.45 | U | 2.7 | 0.89 | 0.45 |
| 2355-31-9 | NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 10 | | 1.8 | 0.89 | 0.45 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 3.5 | | 1.8 | 0.89 | 0.45 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 754-91-6 | Perfluorooctanesulfonamide | 1.4 | ~~J M~~ U J | 1.8 | 0.89 | 0.45 |
| 375-22-4 | Perfluorobutanoic acid | 18 | | 4.5 | 3.6 | 1.8 |
| 2706-90-3 | Perfluoropentanoic acid | 69 | | 1.8 | 0.89 | 0.45 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 307-55-1 | Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.89 | U | 2.7 | 1.8 | 0.89 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |

MB SUM

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-3  Lab Sample ID: 410-8511-3

Matrix: Water  Lab File ID: 20JUL29-35.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 10:50

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 280(mL)  Date Analyzed: 07/29/2020 17:42

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 140 | | 50-150 |
| STL02280 | M2-8:2 FTS | 109 | | 50-150 |
| STL02279 | M2-6:2 FTS | 120 | | 50-150 |
| STL02577 | 13C5 PFHxA | 100 | | 50-150 |
| STL01892 | 13C4 PFHpA | 101 | | 50-150 |
| STL01052 | 13C8 PFOA | 103 | | 50-150 |
| STL02578 | 13C9 PFNA | 105 | | 50-150 |
| STL02579 | 13C6 PFDA | 106 | | 50-150 |
| STL02580 | 13C7 PFUnA | 106 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 112 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 106 | | 50-150 |
| STL02337 | 13C3 PFBS | 138 | | 50-150 |
| STL02581 | 13C3 PFHxS | 104 | | 50-150 |
| STL01054 | 13C8 PFOS | 102 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 122 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 123 | | 50-150 |
| STL01056 | 13C8 FOSA | 30 | φ | 50-150 |
| STL00992 | 13C4 PFBA | 101 | | 50-150 |
| STL01893 | 13C5 PFPeA | 118 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-3 DL  Lab Sample ID: 410-8511-3 DL

Matrix: Water  Lab File ID: 20JUL29-48.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 10:50

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 280(mL)  Date Analyzed: 07/29/2020 19:40

Con. Extract Vol.: 1(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 355-46-4 | Perfluorohexanesulfonic acid | 210 | ~~D M~~ | 18 | 8.9 | 4.5 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02581 | 13C3 PFHxS | 123 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

3RE

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-3 RE  Lab Sample ID: 410-8511-3 RE

Matrix: Water  Lab File ID: 20JUL25-56.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 10:50

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 302(mL)  Date Analyzed: 07/25/2020 16:51 WDE EDS #3

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL | |
|---|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 63 | | 1.7 | 0.83 | 0.41 | |
| 375-85-9 | Perfluoroheptanoic acid | 18 | | 1.7 | 0.83 | 0.41 | |
| 335-67-1 | Perfluorooctanoic acid | 82 | M | 1.7 | 0.83 | 0.41 | |
| 375-95-1 | Perfluorononanoic acid | 1.4 | J | 1.7 | 0.83 | 0.41 | |
| 335-76-2 | Perfluorodecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |
| 72629-94-8 | Perfluorotridecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |
| 376-06-7 | Perfluorotetradecanoic acid | 0.41 | U UJ | 1.7 | 0.83 | 0.41 | Surr |
| 375-73-5 | Perfluorobutanesulfonic acid | 9.1 | | 1.7 | 0.83 | 0.41 | |
| 355-46-4 | Perfluorohexanesulfonic acid | 220 | ~~E M~~ J | 1.7 | 0.83 | 0.41 | CQ |
| 1763-23-1 | Perfluorooctanesulfonic acid | 120 | M | 1.7 | 0.83 | 0.41 | |
| 2991-50-6 | NEtFOSAA | 0.41 | U | 2.5 | 0.83 | 0.41 | |
| 2355-31-9 | NMeFOSAA | 0.50 | U | 1.7 | 0.99 | 0.50 | |
| 2706-91-4 | Perfluoropentanesulfonic acid | 11 | | 1.7 | 0.83 | 0.41 | |
| 375-92-8 | Perfluoroheptanesulfonic acid | 3.4 | | 1.7 | 0.83 | 0.41 | |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |
| 754-91-6 | Perfluorooctanesulfonamide | 1.4 | J UJ | 1.7 | 0.83 | 0.41 | MB Surr |
| 375-22-4 | Perfluorobutanoic acid | 18 | | 4.1 | 3.3 | 1.7 | |
| 2706-90-3 | Perfluoropentanoic acid | 66 | | 1.7 | 0.83 | 0.41 | |
| 2058-94-8 | Perfluoroundecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |
| 307-55-1 | Perfluorododecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.1 | 3.3 | 1.7 | |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.83 | U | 2.5 | 1.7 | 0.83 | |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

3RE

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-3 RE  Lab Sample ID: 410-8511-3 RE

Matrix: Water  Lab File ID: 20JUL25-56.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 10:50

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 302 (mL)  Date Analyzed: 07/25/2020 16:51

Con. Extract Vol.: 1 (mL)  Dilution Factor: 1

Injection Volume: 3 (uL)  GC Column: Gemini C18 50mm ID: 3 (mm)

% Moisture:  GPC Cleanup: (Y/N) N

Analysis Batch No.: 26285  Units: ng/L

EDS
Use #3

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 131 | | 50-150 |
| STL02280 | M2-8:2 FTS | 98 | | 50-150 |
| STL02279 | M2-6:2 FTS | 114 | | 50-150 |
| STL02577 | 13C5 PFHxA | 103 | | 50-150 |
| STL01892 | 13C4 PFHpA | 105 | | 50-150 |
| STL01052 | 13C8 PFOA | 103 | | 50-150 |
| STL02578 | 13C9 PFNA | 104 | | 50-150 |
| STL02579 | 13C6 PFDA | 114 | | 50-150 |
| STL02580 | 13C7 PFUnA | 85 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 56 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 11 | Ø | 50-150 |
| STL02337 | 13C3 PFBS | 127 | | 50-150 |
| STL02581 | 13C3 PFHxS | 101 | | 50-150 |
| STL01054 | 13C8 PFOS | 103 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 102 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 112 | | 50-150 |
| STL01056 | 13C8 FOSA | 27 | Ø | 50-150 |
| STL00992 | 13C4 PFBA | 103 | | 50-150 |
| STL01893 | 13C5 PFPeA | 121 | | 50-150 |



NW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

4

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-4  Lab Sample ID: 410-8511-4

Matrix: Water  Lab File ID: 20JUL25-57.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 12:10

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 277.2(mL)  Date Analyzed: 07/25/2020 17:00

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 8.9 | | 1.8 | 0.90 | 0.45 |
| 375-85-9 | Perfluoroheptanoic acid | 1.4 | J | 1.8 | 0.90 | 0.45 |
| 335-67-1 | Perfluorooctanoic acid | 11 | ~~M~~ ~~J~~ J | 1.8 | 0.90 | 0.45 |
| 375-95-1 | Perfluorononanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 335-76-2 | Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-73-5 | Perfluorobutanesulfonic acid | 2.3 | | 1.8 | 0.90 | 0.45 |
| 355-46-4 | Perfluorohexanesulfonic acid | 19 | M | 1.8 | 0.90 | 0.45 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 1.0 | J M | 1.8 | 0.90 | 0.45 |
| 2991-50-6 | NEtFOSAA | 0.45 | U | 2.7 | 0.90 | 0.45 |
| 2355-31-9 | NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 2.4 | | 1.8 | 0.90 | 0.45 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-22-4 | Perfluorobutanoic acid | 6.0 | | 4.5 | 3.6 | 1.8 |
| 2706-90-3 | Perfluoropentanoic acid | 6.2 | | 1.8 | 0.90 | 0.45 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 307-55-1 | Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 3.6 | J | 4.5 | 3.6 | 1.8 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.90 | U | 2.7 | 1.8 | 0.90 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |

MS/MSD

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

4

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-4  Lab Sample ID: 410-8511-4

Matrix: Water  Lab File ID: 20JUL25-57.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 12:10

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 277.2(mL)  Date Analyzed: 07/25/2020 17:00

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 126 | | 50-150 |
| STL02280 | M2-8:2 FTS | 107 | | 50-150 |
| STL02279 | M2-6:2 FTS | 122 | | 50-150 |
| STL02577 | 13C5 PFHxA | 111 | | 50-150 |
| STL01892 | 13C4 PFHpA | 109 | | 50-150 |
| STL01052 | 13C8 PFOA | 112 | | 50-150 |
| STL02578 | 13C9 PFNA | 108 | | 50-150 |
| STL02579 | 13C6 PFDA | 103 | | 50-150 |
| STL02580 | 13C7 PFUnA | 110 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 105 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 100 | | 50-150 |
| STL02337 | 13C3 PFBS | 123 | | 50-150 |
| STL02581 | 13C3 PFHxS | 116 | | 50-150 |
| STL01054 | 13C8 PFOS | 110 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 125 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 125 | | 50-150 |
| STL01056 | 13C8 FOSA | 111 | | 50-150 |
| STL00992 | 13C4 PFBA | 109 | | 50-150 |
| STL01893 | 13C5 PFPeA | 120 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-5  Lab Sample ID: 410-8511-5

Matrix: Water  Lab File ID: 20JUL25-60.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 14:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 278.1(mL)  Date Analyzed: 07/25/2020 17:27

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-85-9 | Perfluoroheptanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 335-67-1 | Perfluorooctanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-95-1 | Perfluorononanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 335-76-2 | Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.45 | U M | 1.8 | 0.90 | 0.45 |
| 355-46-4 | Perfluorohexanesulfonic acid | 0.55 | J M | 1.8 | 0.90 | 0.45 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 2991-50-6 | NEtFOSAA | 0.45 | U | 2.7 | 0.90 | 0.45 |
| 2355-31-9 | NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 375-22-4 | Perfluorobutanoic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 2706-90-3 | Perfluoropentanoic acid | 0.45 | U M | 1.8 | 0.90 | 0.45 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 307-55-1 | Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.90 | U | 2.7 | 1.8 | 0.90 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 |

5

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-5  Lab Sample ID: 410-8511-5

Matrix: Water  Lab File ID: 20JUL25-60.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 14:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 278.1(mL)  Date Analyzed: 07/25/2020 17:27

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 111 | | 50-150 |
| STL02280 | M2-8:2 FTS | 103 | | 50-150 |
| STL02279 | M2-6:2 FTS | 117 | | 50-150 |
| STL02577 | 13C5 PFHxA | 103 | | 50-150 |
| STL01892 | 13C4 PFHpA | 104 | | 50-150 |
| STL01052 | 13C8 PFOA | 105 | | 50-150 |
| STL02578 | 13C9 PFNA | 102 | | 50-150 |
| STL02579 | 13C6 PFDA | 101 | | 50-150 |
| STL02580 | 13C7 PFUnA | 102 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 101 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 101 | | 50-150 |
| STL02337 | 13C3 PFBS | 113 | | 50-150 |
| STL02581 | 13C3 PFHxS | 108 | | 50-150 |
| STL01054 | 13C8 PFOS | 102 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 111 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 116 | | 50-150 |
| STL01056 | 13C8 FOSA | 101 | | 50-150 |
| STL00992 | 13C4 PFBA | 103 | | 50-150 |
| STL01893 | 13C5 PFPeA | 116 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

6

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-6  Lab Sample ID: 410-8511-6

Matrix: Water  Lab File ID: 20JUL25-61.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 14:50

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 294(mL)  Date Analyzed: 07/25/2020 17:36

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 37 | | 1.7 | 0.85 | 0.43 |
| 375-85-9 | Perfluoroheptanoic acid | 6.4 | | 1.7 | 0.85 | 0.43 |
| 335-67-1 | Perfluorooctanoic acid | 48 | M | 1.7 | 0.85 | 0.43 |
| 375-95-1 | Perfluorononanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 335-76-2 | Perfluorodecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 375-73-5 | Perfluorobutanesulfonic acid | 6.8 | | 1.7 | 0.85 | 0.43 |
| 355-46-4 | Perfluorohexanesulfonic acid | 110 | M | 1.7 | 0.85 | 0.43 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 33 | M | 1.7 | 0.85 | 0.43 |
| 2991-50-6 | NEtFOSAA | 0.43 | U | 2.6 | 0.85 | 0.43 |
| 2355-31-9 | NMeFOSAA | 0.51 | U | 1.7 | 1.0 | 0.51 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 6.6 | | 1.7 | 0.85 | 0.43 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 1.7 | | 1.7 | 0.85 | 0.43 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 375-22-4 | Perfluorobutanoic acid | 9.9 | | 4.3 | 3.4 | 1.7 |
| 2706-90-3 | Perfluoropentanoic acid | 26 | | 1.7 | 0.85 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 307-55-1 | Perfluorododecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.3 | 3.4 | 1.7 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.85 | U | 2.6 | 1.7 | 0.85 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.43 | U | 1.7 | 0.85 | 0.43 |



MW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

6

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-6  Lab Sample ID: 410-8511-6

Matrix: Water  Lab File ID: 20JUL25-61.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 14:50

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 294(mL)  Date Analyzed: 07/25/2020 17:36

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 133 | | 50-150 |
| STL02280 | M2-8:2 FTS | 107 | | 50-150 |
| STL02279 | M2-6:2 FTS | 109 | | 50-150 |
| STL02577 | 13C5 PFHxA | 100 | | 50-150 |
| STL01892 | 13C4 PFHpA | 101 | | 50-150 |
| STL01052 | 13C8 PFOA | 103 | | 50-150 |
| STL02578 | 13C9 PFNA | 102 | | 50-150 |
| STL02579 | 13C6 PFDA | 97 | | 50-150 |
| STL02580 | 13C7 PFUnA | 101 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 99 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 98 | | 50-150 |
| STL02337 | 13C3 PFBS | 122 | | 50-150 |
| STL02581 | 13C3 PFHxS | 101 | | 50-150 |
| STL01054 | 13C8 PFOS | 102 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 110 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 122 | | 50-150 |
| STL01056 | 13C8 FOSA | 78 | | 50-150 |
| STL00992 | 13C4 PFBA | 101 | | 50-150 |
| STL01893 | 13C5 PFPeA | 115 | | 50-150 |



MW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

7

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-7  Lab Sample ID: 410-8511-7

Matrix: Water  Lab File ID: 20JUL25-62.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 16:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 288.9(mL)  Date Analyzed: 07/25/2020 17:45

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 23 | M | 1.7 | 0.87 | 0.43 |
| 375-85-9 | Perfluoroheptanoic acid | 2.7 | M | 1.7 | 0.87 | 0.43 |
| 335-67-1 | Perfluorooctanoic acid | 2.7 | M | 1.7 | 0.87 | 0.43 |
| 375-95-1 | Perfluorononanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 335-76-2 | Perfluorodecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 375-73-5 | Perfluorobutanesulfonic acid | 3.2 | | 1.7 | 0.87 | 0.43 |
| 355-46-4 | Perfluorohexanesulfonic acid | 7.6 | M | 1.7 | 0.87 | 0.43 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.69 | J M | 1.7 | 0.87 | 0.43 |
| 2991-50-6 | NEtFOSAA | 0.43 | U | 2.6 | 0.87 | 0.43 |
| 2355-31-9 | NMeFOSAA | 0.52 | U | 1.7 | 1.0 | 0.52 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 2.1 | M | 1.7 | 0.87 | 0.43 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 375-22-4 | Perfluorobutanoic acid | 9.6 | M | 4.3 | 3.5 | 1.7 |
| 2706-90-3 | Perfluoropentanoic acid | 20 | | 1.7 | 0.87 | 0.43 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 307-55-1 | Perfluorododecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.3 | 3.5 | 1.7 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.87 | U | 2.6 | 1.7 | 0.87 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 |



MW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

7

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: MW-7  Lab Sample ID: 410-8511-7

Matrix: Water  Lab File ID: 20JUL25-62.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 16:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 288.9(mL)  Date Analyzed: 07/25/2020 17:45

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 128 | | 50-150 |
| STL02280 | M2-8:2 FTS | 102 | | 50-150 |
| STL02279 | M2-6:2 FTS | 110 | | 50-150 |
| STL02577 | 13C5 PFHxA | 102 | | 50-150 |
| STL01892 | 13C4 PFHpA | 111 | | 50-150 |
| STL01052 | 13C8 PFOA | 98 | | 50-150 |
| STL02578 | 13C9 PFNA | 106 | | 50-150 |
| STL02579 | 13C6 PFDA | 91 | | 50-150 |
| STL02580 | 13C7 PFUnA | 103 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 100 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 93 | | 50-150 |
| STL02337 | 13C3 PFBS | 123 | | 50-150 |
| STL02581 | 13C3 PFHxS | 100 | | 50-150 |
| STL01054 | 13C8 PFOS | 103 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 112 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 125 | | 50-150 |
| STL01056 | 13C8 FOSA | 102 | | 50-150 |
| STL00992 | 13C4 PFBA | 95 | | 50-150 |
| STL01893 | 13C5 PFPeA | 114 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

8

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: FD-07202020  Lab Sample ID: 410-8511-8

Matrix: Water  Lab File ID: 20JUL25-64.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 00:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 301.4(mL)  Date Analyzed: 07/25/2020 18:03

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 66 | | 1.7 | 0.83 | 0.41 |
| 375-85-9 | Perfluoroheptanoic acid | 18 | M | 1.7 | 0.83 | 0.41 |
| 335-67-1 | Perfluorooctanoic acid | 86 | M | 1.7 | 0.83 | 0.41 |
| 375-95-1 | Perfluorononanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 335-76-2 | Perfluorodecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 375-73-5 | Perfluorobutanesulfonic acid | 9.6 | | 1.7 | 0.83 | 0.41 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 120 | M | 1.7 | 0.83 | 0.41 |
| 2991-50-6 | NEtFOSAA | 0.41 | U | 2.5 | 0.83 | 0.41 |
| 2355-31-9 | NMeFOSAA | 0.50 | U | 1.7 | 1.0 | 0.50 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 11 | | 1.7 | 0.83 | 0.41 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 3.4 | | 1.7 | 0.83 | 0.41 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.88 | J U | 1.7 | 0.83 | 0.41 |
| 375-22-4 | Perfluorobutanoic acid | 18 | | 4.1 | 3.3 | 1.7 |
| 2706-90-3 | Perfluoropentanoic acid | 67 | | 1.7 | 0.83 | 0.41 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 307-55-1 | Perfluorododecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.1 | 3.3 | 1.7 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.83 | U | 2.5 | 1.7 | 0.83 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 |

MB

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

8

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: FD-07202020  Lab Sample ID: 410-8511-8

Matrix: Water  Lab File ID: 20JUL25-64.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 00:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 301.4(mL)  Date Analyzed: 07/25/2020 18:03

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 138 | | 50-150 |
| STL02280 | M2-8:2 FTS | 104 | | 50-150 |
| STL02279 | M2-6:2 FTS | 113 | | 50-150 |
| STL02577 | 13C5 PFHxA | 96 | | 50-150 |
| STL01892 | 13C4 PFHpA | 95 | | 50-150 |
| STL01052 | 13C8 PFOA | 98 | | 50-150 |
| STL02578 | 13C9 PFNA | 97 | | 50-150 |
| STL02579 | 13C6 PFDA | 94 | | 50-150 |
| STL02580 | 13C7 PFUnA | 93 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 86 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 77 | | 50-150 |
| STL02337 | 13C3 PFBS | 113 | | 50-150 |
| STL02581 | 13C3 PFHxS | 96 | | 50-150 |
| STL01054 | 13C8 PFOS | 99 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 100 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 111 | | 50-150 |
| STL01056 | 13C8 FOSA | 90 | | 50-150 |
| STL00992 | 13C4 PFBA | 93 | | 50-150 |
| STL01893 | 13C5 PFPeA | 107 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

8

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: FD-07202020 DL  Lab Sample ID: 410-8511-8 DL

Matrix: Water  Lab File ID: 20JUL28-13.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 00:00

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 301.4(mL)  Date Analyzed: 07/28/2020 15:00

Con. Extract Vol.: 1(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27160  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 355-46-4 | Perfluorohexanesulfonic acid | 210 | D M | 17 | 8.3 | 4.1 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02581 | 13C3 PFHxS | 97 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

9

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: RB-07202020  Lab Sample ID: 410-8511-9

Matrix: Water  Lab File ID: 20JUL29-37.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 16:15

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 308.3(mL)  Date Analyzed: 07/29/2020 18:00

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 375-85-9 | Perfluoroheptanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 335-67-1 | Perfluorooctanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 375-95-1 | Perfluorononanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 335-76-2 | Perfluorodecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 355-46-4 | Perfluorohexanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 2991-50-6 | NEtFOSAA | 0.41 | U | 2.4 | 0.81 | 0.41 |
| 2355-31-9 | NMeFOSAA | 0.49 | U | 1.6 | 0.97 | 0.49 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 375-22-4 | Perfluorobutanoic acid | 1.6 | U | 4.1 | 3.2 | 1.6 |
| 2706-90-3 | Perfluoropentanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 307-55-1 | Perfluorododecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.6 | U | 4.1 | 3.2 | 1.6 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.81 | U | 2.4 | 1.6 | 0.81 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 |



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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: RB-07202020  Lab Sample ID: 410-8511-9

Matrix: Water  Lab File ID: 20JUL29-37.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 16:15

Extraction Method: 537 (Mod)  Date Extracted: 07/28/2020 17:20

Sample wt/vol: 308.3(mL)  Date Analyzed: 07/29/2020 18:00

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 118 | | 50-150 |
| STL02280 | M2-8:2 FTS | 117 | | 50-150 |
| STL02279 | M2-6:2 FTS | 109 | | 50-150 |
| STL02577 | 13C5 PFHxA | 103 | | 50-150 |
| STL01892 | 13C4 PFHpA | 106 | | 50-150 |
| STL01052 | 13C8 PFOA | 107 | | 50-150 |
| STL02578 | 13C9 PFNA | 109 | | 50-150 |
| STL02579 | 13C6 PFDA | 108 | | 50-150 |
| STL02580 | 13C7 PFUnA | 132 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 115 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 108 | | 50-150 |
| STL02337 | 13C3 PFBS | 106 | | 50-150 |
| STL02581 | 13C3 PFHxS | 105 | | 50-150 |
| STL01054 | 13C8 PFOS | 105 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 142 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 178 | Q | 50-150 |
| STL01056 | 13C8 FOSA | 114 | | 50-150 |
| STL00992 | 13C4 PFBA | 108 | | 50-150 |
| STL01893 | 13C5 PFPeA | 104 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

9RE

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: RB-07202020 RE  Lab Sample ID: 410-8511-9 RE

Matrix: Water  Lab File ID: 20JUL25-65.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 16:15

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 279.5(mL)  Date Analyzed: 07/25/2020 18:12  use EDS #9

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-85-9 | Perfluoroheptanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-67-1 | Perfluorooctanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-95-1 | Perfluorononanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-76-2 | Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 355-46-4 | Perfluorohexanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 2991-50-6 | NEtFOSAA | 0.45 | U | 2.7 | 0.89 | 0.45 |
| 2355-31-9 | NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-22-4 | Perfluorobutanoic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 2706-90-3 | Perfluoropentanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 307-55-1 | Perfluorododecanoic acid | 0.45 | ~~U~~ UJ | 1.8 | 0.89 | 0.45 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.89 | U | 2.7 | 1.8 | 0.89 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |

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9RE

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: RB-07202020 RE  Lab Sample ID: 410-8511-9 RE

Matrix: Water  Lab File ID: 20JUL25-65.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/20/2020 16:15

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 279.5(mL)  Date Analyzed: 07/25/2020 18:12

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

use EOS #9

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 111 | | 50-150 |
| STL02280 | M2-8:2 FTS | 139 | | 50-150 |
| STL02279 | M2-6:2 FTS | 117 | | 50-150 |
| STL02577 | 13C5 PFHxA | 106 | | 50-150 |
| STL01892 | 13C4 PFHpA | 101 | | 50-150 |
| STL01052 | 13C8 PFOA | 103 | | 50-150 |
| STL02578 | 13C9 PFNA | 111 | | 50-150 |
| STL02579 | 13C6 PFDA | 91 | | 50-150 |
| STL02580 | 13C7 PFUnA | 55 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 32 | Q | 50-150 |
| STL02116 | 13C2 PFTeDA | 80 | | 50-150 |
| STL02337 | 13C3 PFBS | 101 | | 50-150 |
| STL02581 | 13C3 PFHxS | 105 | | 50-150 |
| STL01054 | 13C8 PFOS | 109 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 88 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 55 | | 50-150 |
| STL01056 | 13C8 FOSA | 59 | | 50-150 |
| STL00992 | 13C4 PFBA | 103 | | 50-150 |
| STL01893 | 13C5 PFPeA | 100 | | 50-150 |



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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: RB-07212020  Lab Sample ID: 410-8511-10

Matrix: Water  Lab File ID: 20JUL25-66.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:50

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 279.8(mL)  Date Analyzed: 07/25/2020 18:21

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-85-9 | Perfluoroheptanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-67-1 | Perfluorooctanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-95-1 | Perfluorononanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-76-2 | Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 355-46-4 | Perfluorohexanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 2991-50-6 | NEtFOSAA | 0.45 | U | 2.7 | 0.89 | 0.45 |
| 2355-31-9 | NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 375-22-4 | Perfluorobutanoic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 2706-90-3 | Perfluoropentanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 307-55-1 | Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.89 | U | 2.7 | 1.8 | 0.89 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: RB-07212020  Lab Sample ID: 410-8511-10

Matrix: Water  Lab File ID: 20JUL25-66.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:50

Extraction Method: 537 (Mod)  Date Extracted: 07/23/2020 15:32

Sample wt/vol: 279.8(mL)  Date Analyzed: 07/25/2020 18:21

Con. Extract Vol.: 1(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture:  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26285  Units: ng/L

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 105 | | 50-150 |
| STL02280 | M2-8:2 FTS | 121 | | 50-150 |
| STL02279 | M2-6:2 FTS | 114 | | 50-150 |
| STL02577 | 13C5 PFHxA | 107 | | 50-150 |
| STL01892 | 13C4 PFHpA | 109 | | 50-150 |
| STL01052 | 13C8 PFOA | 109 | | 50-150 |
| STL02578 | 13C9 PFNA | 107 | | 50-150 |
| STL02579 | 13C6 PFDA | 113 | | 50-150 |
| STL02580 | 13C7 PFUnA | 112 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 108 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 106 | | 50-150 |
| STL02337 | 13C3 PFBS | 104 | | 50-150 |
| STL02581 | 13C3 PFHxS | 109 | | 50-150 |
| STL01054 | 13C8 PFOS | 107 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 124 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 123 | | 50-150 |
| STL01056 | 13C8 FOSA | 112 | | 50-150 |
| STL00992 | 13C4 PFBA | 107 | | 50-150 |
| STL01893 | 13C5 PFPeA | 104 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

12

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-0-0.5  Lab Sample ID: 410-8511-12

Matrix: Solid  Lab File ID: 20JUL24-87.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:15

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.01(g)  Date Analyzed: 07/24/2020 21:45

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 6.5  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 2.4 | | 0.64 | 0.42 | 0.21 |
| 375-85-9 | Perfluoroheptanoic acid | 0.50 | J | 0.64 | 0.42 | 0.21 |
| 335-67-1 | Perfluorooctanoic acid | 3.4 | M | 0.64 | 0.42 | 0.21 |
| 375-95-1 | Perfluorononanoic acid | 11 | | 0.64 | 0.42 | 0.21 |
| 335-76-2 | Perfluorodecanoic acid | 4.3 | | 0.64 | 0.42 | 0.21 |
| 72629-94-8 | Perfluorotridecanoic acid | 2.0 | | 0.64 | 0.42 | 0.21 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.21 | U | 0.64 | 0.42 | 0.21 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.42 | U | 2.1 | 1.7 | 0.42 |
| 355-46-4 | Perfluorohexanesulfonic acid | 35 | M | 0.64 | 0.42 | 0.21 |
| 2991-50-6 | NEtFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 |
| 2355-31-9 | NMeFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.30 | J M | 3.2 | 0.42 | 0.21 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 3.0 | | 0.64 | 0.42 | 0.21 |
| 68259-12-1 | Perfluorononanesulfonic acid | 3.2 | ~~M1~~ J | 0.64 | 0.42 | 0.21 |
| 335-77-3 | Perfluorodecanesulfonic acid | 3.2 | | 0.64 | 0.42 | 0.21 |
| 754-91-6 | Perfluorooctanesulfonamide | 11 | | 0.64 | 0.42 | 0.21 |
| 375-22-4 | Perfluorobutanoic acid | 0.99 | J | 2.1 | 1.7 | 0.64 |
| 2706-90-3 | Perfluoropentanoic acid | 1.2 | | 0.64 | 0.42 | 0.21 |
| 2058-94-8 | Perfluoroundecanoic acid | 1.6 | M | 0.64 | 0.42 | 0.21 |
| 307-55-1 | Perfluorododecanoic acid | 0.48 | J M | 0.64 | 0.42 | 0.21 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 0.64 | U | 2.1 | 1.7 | 0.64 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 1.7 | J | 3.2 | 1.7 | 0.64 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.64 | U | 2.1 | 1.7 | 0.64 |

MS/MSD

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-0-0.5  Lab Sample ID: 410-8511-12

Matrix: Solid  Lab File ID: 20JUL24-87.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:15

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.01(g)  Date Analyzed: 07/24/2020 21:45

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 6.5  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 106 | | 50-150 |
| STL02280 | M2-8:2 FTS | 99 | | 50-150 |
| STL02279 | M2-6:2 FTS | 108 | | 50-150 |
| STL02577 | 13C5 PFHxA | 99 | | 50-150 |
| STL01892 | 13C4 PFHpA | 97 | | 50-150 |
| STL01052 | 13C8 PFOA | 101 | | 50-150 |
| STL02578 | 13C9 PFNA | 120 | | 50-150 |
| STL02579 | 13C6 PFDA | 98 | | 50-150 |
| STL02580 | 13C7 PFUnA | 100 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 91 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 103 | | 50-150 |
| STL02337 | 13C3 PFBS | 99 | | 50-150 |
| STL02581 | 13C3 PFHxS | 100 | | 50-150 |
| STL01054 | 13C8 PFOS | 117 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 58 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 66 | | 50-150 |
| STL01056 | 13C8 FOSA | 70 | | 50-150 |
| STL00992 | 13C4 PFBA | 92 | | 50-150 |
| STL01893 | 13C5 PFPeA | 93 | | 50-150 |

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-0-0.5 DL  Lab Sample ID: 410-8511-12 DL

Matrix: Solid  Lab File ID: 20JUL27-08.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:15

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.01(g)  Date Analyzed: 07/27/2020 16:30

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 6.5  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 830 | ~~D M~~ | 6.4 | 4.2 | 2.1 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL01054 | 13C8 PFOS | 108 | | 50-150 |

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-1-1.45  Lab Sample ID: 410-8511-13

Matrix: Solid  Lab File ID: 20JUL24-90.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.02(g)  Date Analyzed: 07/24/2020 22:12

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 12.8  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 4.2 | | 0.67 | 0.45 | 0.22 |
| 375-85-9 | Perfluoroheptanoic acid | 1.4 | | 0.67 | 0.45 | 0.22 |
| 335-67-1 | Perfluorooctanoic acid | 46 | M | 0.67 | 0.45 | 0.22 |
| 375-95-1 | Perfluorononanoic acid | 17 | | 0.67 | 0.45 | 0.22 |
| 335-76-2 | Perfluorodecanoic acid | 0.67 | M | 0.67 | 0.45 | 0.22 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.22 | U M | 0.67 | 0.45 | 0.22 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.22 | U | 0.67 | 0.45 | 0.22 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.45 | U | 2.2 | 1.8 | 0.45 |
| 2991-50-6 | NEtFOSAA | 0.22 | U | 2.2 | 0.45 | 0.22 |
| 2355-31-9 | NMeFOSAA | 0.22 | U UJ | 2.2 | 0.45 | 0.22 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 1.2 | J M | 3.4 | 0.45 | 0.22 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 28 | | 0.67 | 0.45 | 0.22 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.22 | U | 0.67 | 0.45 | 0.22 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.31 | J M | 0.67 | 0.45 | 0.22 |
| 754-91-6 | Perfluorooctanesulfonamide | 3.7 | | 0.67 | 0.45 | 0.22 |
| 375-22-4 | Perfluorobutanoic acid | 1.4 | J | 2.2 | 1.8 | 0.67 |
| 2706-90-3 | Perfluoropentanoic acid | 2.1 | | 0.67 | 0.45 | 0.22 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.22 | U M | 0.67 | 0.45 | 0.22 |
| 307-55-1 | Perfluorododecanoic acid | 0.22 | U | 0.67 | 0.45 | 0.22 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.6 | J | 2.2 | 1.8 | 0.67 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 2.3 | J | 3.4 | 1.8 | 0.67 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.67 | U | 2.2 | 1.8 | 0.67 |

surr

13

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-1-1.45  Lab Sample ID: 410-8511-13

Matrix: Solid  Lab File ID: 20JUL24-90.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.02(g)  Date Analyzed: 07/24/2020 22:12

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 12.8  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 88 | | 50-150 |
| STL02280 | M2-8:2 FTS | 92 | | 50-150 |
| STL02279 | M2-6:2 FTS | 88 | | 50-150 |
| STL02577 | 13C5 PFHxA | 88 | | 50-150 |
| STL01892 | 13C4 PFHpA | 88 | | 50-150 |
| STL01052 | 13C8 PFOA | 90 | | 50-150 |
| STL02578 | 13C9 PFNA | 98 | | 50-150 |
| STL02579 | 13C6 PFDA | 90 | | 50-150 |
| STL02580 | 13C7 PFUnA | 88 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 90 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 87 | | 50-150 |
| STL02337 | 13C3 PFBS | 87 | | 50-150 |
| STL02581 | 13C3 PFHxS | 93 | | 50-150 |
| STL01054 | 13C8 PFOS | 101 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 40 | Ø | 50-150 |
| STL02117 | d5-NEtFOSAA | 51 | | 50-150 |
| STL01056 | 13C8 FOSA | 84 | | 50-150 |
| STL00992 | 13C4 PFBA | 85 | | 50-150 |
| STL01893 | 13C5 PFPeA | 86 | | 50-150 |



MW 9/3/20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-1-1.45 DL  Lab Sample ID: 410-8511-13 DL

Matrix: Solid  Lab File ID: 20JUL27-09.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.02(g)  Date Analyzed: 07/27/2020 16:39

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 12.8  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 355-46-4 | Perfluorohexanesulfonic acid | 220 | ~~D M~~ | 6.7 | 4.5 | 2.2 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 790 | ~~D M~~ | 6.7 | 4.5 | 2.2 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02581 | 13C3 PFHxS | 84 | | 50-150 |
| STL01054 | 13C8 PFOS | 88 | | 50-150 |



NW 9/3/20

13RE

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-1-1.45 RE  Lab Sample ID: 410-8511-13 RE

Matrix: Solid  Lab File ID: 20JUL27-28.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.01(g)  Date Analyzed: 07/27/2020 19:31

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 12.8  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

use EDS # 13

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 4.0 | | 0.68 | 0.45 | 0.23 |
| 375-85-9 | Perfluoroheptanoic acid | 1.3 | | 0.68 | 0.45 | 0.23 |
| 335-67-1 | Perfluorooctanoic acid | 44 | ~~M~~ | 0.68 | 0.45 | 0.23 |
| 375-95-1 | Perfluorononanoic acid | 15 | | 0.68 | 0.45 | 0.23 |
| 335-76-2 | Perfluorodecanoic acid | 0.48 | J ~~M~~ | 0.68 | 0.45 | 0.23 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.23 | U | 0.68 | 0.45 | 0.23 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.23 | U | 0.68 | 0.45 | 0.23 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.45 | U | 2.3 | 1.8 | 0.45 |
| 355-46-4 | Perfluorohexanesulfonic acid | 210 | ~~E M~~ J | 0.68 | 0.45 | 0.23 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 560 | ~~E M~~ J | 0.68 | 0.45 | 0.23 |
| 2991-50-6 | NEtFOSAA | 0.23 | U | 2.3 | 0.45 | 0.23 |
| 2355-31-9 | NMeFOSAA | 0.23 | ~~U~~ UJ | 2.3 | 0.45 | 0.23 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 1.1 | J | 3.4 | 0.45 | 0.23 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 27 | | 0.68 | 0.45 | 0.23 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.23 | J | 0.68 | 0.45 | 0.23 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.24 | J | 0.68 | 0.45 | 0.23 |
| 754-91-6 | Perfluorooctanesulfonamide | 3.3 | | 0.68 | 0.45 | 0.23 |
| 375-22-4 | Perfluorobutanoic acid | 1.3 | J | 2.3 | 1.8 | 0.68 |
| 2706-90-3 | Perfluoropentanoic acid | 1.9 | | 0.68 | 0.45 | 0.23 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.23 | U ~~M~~ | 0.68 | 0.45 | 0.23 |
| 307-55-1 | Perfluorododecanoic acid | 0.23 | U | 0.68 | 0.45 | 0.23 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.5 | J | 2.3 | 1.8 | 0.68 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 2.4 | J | 3.4 | 1.8 | 0.68 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.68 | U | 2.3 | 1.8 | 0.68 |

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NW 9/3/20

13RE

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-1-1-1.45 RE  Lab Sample ID: 410-8511-13 RE

Matrix: Solid  Lab File ID: 20JUL27-28.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:25

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.01(g)  Date Analyzed: 07/27/2020 19:31 Use EDS #13

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 12.8  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 99 | | 50-150 |
| STL02280 | M2-8:2 FTS | 99 | | 50-150 |
| STL02279 | M2-6:2 FTS | 99 | | 50-150 |
| STL02577 | 13C5 PFHxA | 109 | | 50-150 |
| STL01892 | 13C4 PFHpA | 109 | | 50-150 |
| STL01052 | 13C8 PFOA | 108 | | 50-150 |
| STL02578 | 13C9 PFNA | 116 | | 50-150 |
| STL02579 | 13C6 PFDA | 108 | | 50-150 |
| STL02580 | 13C7 PFUnA | 114 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 112 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 107 | | 50-150 |
| STL02337 | 13C3 PFBS | 108 | | 50-150 |
| STL02581 | 13C3 PFHxS | 110 | | 50-150 |
| STL01054 | 13C8 PFOS | 118 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 45 | ∅ | 50-150 |
| STL02117 | d5-NEtFOSAA | 59 | | 50-150 |
| STL01056 | 13C8 FOSA | 122 | | 50-150 |
| STL00992 | 13C4 PFBA | 107 | | 50-150 |
| STL01893 | 13C5 PFPeA | 105 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-0-0.5  Lab Sample ID: 410-8511-14

Matrix: Solid  Lab File ID: 20JUL24-91.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:45

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.05(g)  Date Analyzed: 07/24/2020 22:21

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 4.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 1.7 | M | 0.60 | 0.40 | 0.20 |
| 375-85-9 | Perfluoroheptanoic acid | 0.61 | | 0.60 | 0.40 | 0.20 |
| 335-67-1 | Perfluorooctanoic acid | 5.4 | M | 0.60 | 0.40 | 0.20 |
| 375-95-1 | Perfluorononanoic acid | 3.9 | | 0.60 | 0.40 | 0.20 |
| 335-76-2 | Perfluorodecanoic acid | 3.5 | M | 0.60 | 0.40 | 0.20 |
| 72629-94-8 | Perfluorotridecanoic acid | 3.9 | | 0.60 | 0.40 | 0.20 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.20 | U M | 0.60 | 0.40 | 0.20 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.40 | U | 2.0 | 1.6 | 0.40 |
| 355-46-4 | Perfluorohexanesulfonic acid | 22 | M | 0.60 | 0.40 | 0.20 |
| 2991-50-6 | NEtFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 |
| 2355-31-9 | NMeFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.42 | J | 3.0 | 0.40 | 0.20 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 1.1 | | 0.60 | 0.40 | 0.20 |
| 68259-12-1 | Perfluorononanesulfonic acid | 2.5 | | 0.60 | 0.40 | 0.20 |
| 335-77-3 | Perfluorodecanesulfonic acid | 2.4 | | 0.60 | 0.40 | 0.20 |
| 754-91-6 | Perfluorooctanesulfonamide | 9.9 | | 0.60 | 0.40 | 0.20 |
| 375-22-4 | Perfluorobutanoic acid | 0.87 | J | 2.0 | 1.6 | 0.60 |
| 2706-90-3 | Perfluoropentanoic acid | 1.0 | M | 0.60 | 0.40 | 0.20 |
| 2058-94-8 | Perfluoroundecanoic acid | 1.1 | M | 0.60 | 0.40 | 0.20 |
| 307-55-1 | Perfluorododecanoic acid | 0.46 | J M | 0.60 | 0.40 | 0.20 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.6 | J | 2.0 | 1.6 | 0.60 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.60 | U | 2.0 | 1.6 | 0.60 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-0-0.5  Lab Sample ID: 410-8511-14

Matrix: Solid  Lab File ID: 20JUL24-91.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:45

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.05(g)  Date Analyzed: 07/24/2020 22:21

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 4.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 97 | | 50-150 |
| STL02280 | M2-8:2 FTS | 93 | | 50-150 |
| STL02279 | M2-6:2 FTS | 96 | | 50-150 |
| STL02577 | 13C5 PFHxA | 91 | | 50-150 |
| STL01892 | 13C4 PFHpA | 89 | | 50-150 |
| STL01052 | 13C8 PFOA | 92 | | 50-150 |
| STL02578 | 13C9 PFNA | 102 | | 50-150 |
| STL02579 | 13C6 PFDA | 90 | | 50-150 |
| STL02580 | 13C7 PFUnA | 95 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 89 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 94 | | 50-150 |
| STL02337 | 13C3 PFBS | 94 | | 50-150 |
| STL02581 | 13C3 PFHxS | 96 | | 50-150 |
| STL01054 | 13C8 PFOS | 103 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 50 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 57 | | 50-150 |
| STL01056 | 13C8 FOSA | 61 | | 50-150 |
| STL00992 | 13C4 PFBA | 86 | | 50-150 |
| STL01893 | 13C5 PFPeA | 89 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-0-0.5 DL  Lab Sample ID: 410-8511-14 DL

Matrix: Solid  Lab File ID: 20JUL27-10.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:45

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.05(g)  Date Analyzed: 07/27/2020 16:48

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 4.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 760 | D | 6.0 | 4.0 | 2.0 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 140 | D | 30 | 16 | 6.0 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02280 | M2-8:2 FTS | 76 | | 50-150 |
| STL01054 | 13C8 PFOS | 88 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-1-1.5  Lab Sample ID: 410-8511-15

Matrix: Solid  Lab File ID: 20JUL24-92.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:55

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.03(g)  Date Analyzed: 07/24/2020 22:30

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.2  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 5.6 | | 0.64 | 0.43 | 0.21 |
| 375-85-9 | Perfluoroheptanoic acid | 2.6 | M | 0.64 | 0.43 | 0.21 |
| 335-67-1 | Perfluorooctanoic acid | 68 | M | 0.64 | 0.43 | 0.21 |
| 375-95-1 | Perfluorononanoic acid | 11 | | 0.64 | 0.43 | 0.21 |
| 335-76-2 | Perfluorodecanoic acid | 1.7 | M | 0.64 | 0.43 | 0.21 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.47 | J | 0.64 | 0.43 | 0.21 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.21 | U | 0.64 | 0.43 | 0.21 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.71 | J | 2.1 | 1.7 | 0.43 |
| 2991-50-6 | NEtFOSAA | 0.21 | U | 2.1 | 0.43 | 0.21 |
| 2355-31-9 | NMeFOSAA | 0.21 | U | 2.1 | 0.43 | 0.21 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 1.1 | J | 3.2 | 0.43 | 0.21 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 25 | | 0.64 | 0.43 | 0.21 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.93 | | 0.64 | 0.43 | 0.21 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.71 | | 0.64 | 0.43 | 0.21 |
| 754-91-6 | Perfluorooctanesulfonamide | 9.6 | | 0.64 | 0.43 | 0.21 |
| 375-22-4 | Perfluorobutanoic acid | 1.2 | J | 2.1 | 1.7 | 0.64 |
| 2706-90-3 | Perfluoropentanoic acid | 3.2 | | 0.64 | 0.43 | 0.21 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.21 | U M | 0.64 | 0.43 | 0.21 |
| 307-55-1 | Perfluorododecanoic acid | 0.21 | U M | 0.64 | 0.43 | 0.21 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 29 | | 2.1 | 1.7 | 0.64 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.64 | U | 2.1 | 1.7 | 0.64 |



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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-1-1.5  Lab Sample ID: 410-8511-15

Matrix: Solid  Lab File ID: 20JUL24-92.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:55

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.03(g)  Date Analyzed: 07/24/2020 22:30

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.2  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 104 | | 50-150 |
| STL02280 | M2-8:2 FTS | 94 | | 50-150 |
| STL02279 | M2-6:2 FTS | 99 | | 50-150 |
| STL02577 | 13C5 PFHxA | 101 | | 50-150 |
| STL01892 | 13C4 PFHpA | 97 | | 50-150 |
| STL01052 | 13C8 PFOA | 97 | | 50-150 |
| STL02578 | 13C9 PFNA | 119 | | 50-150 |
| STL02579 | 13C6 PFDA | 95 | | 50-150 |
| STL02580 | 13C7 PFUnA | 99 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 96 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 99 | | 50-150 |
| STL02337 | 13C3 PFBS | 96 | | 50-150 |
| STL02581 | 13C3 PFHxS | 100 | | 50-150 |
| STL01054 | 13C8 PFOS | 107 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 54 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 64 | | 50-150 |
| STL01056 | 13C8 FOSA | 82 | | 50-150 |
| STL00992 | 13C4 PFBA | 93 | | 50-150 |
| STL01893 | 13C5 PFPeA | 94 | | 50-150 |

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-1-1.5 DL  Lab Sample ID: 410-8511-15 DL

Matrix: Solid  Lab File ID: 20JUL27-11.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:55

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.03(g)  Date Analyzed: 07/27/2020 16:57

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.2  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 355-46-4 | Perfluorohexanesulfonic acid | 150 | ~~D M~~ | 6.4 | 4.3 | 2.1 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 280 | p | 32 | 17 | 6.4 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02280 | M2-8:2 FTS | 84 | | 50-150 |
| STL02581 | 13C3 PFHxS | 90 | | 50-150 |

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-2-1-1.5 DL2  Lab Sample ID: 410-8511-15 DL2

Matrix: Solid  Lab File ID: 20JUL27-74.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 08:55

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.03(g)  Date Analyzed: 07/28/2020 02:28

Con. Extract Vol.: 4(mL)  Dilution Factor: 100

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.2  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 1500 | ~~B~~ M | 64 | 43 | 21 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL01054 | 13C8 PFOS | 104 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-0-0.5  Lab Sample ID: 410-8511-16

Matrix: Solid  Lab File ID: 20JUL24-93.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:10

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.02(g)  Date Analyzed: 07/24/2020 22:39

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 5.9  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 2.0 | M | 0.63 | 0.42 | 0.21 |
| 375-85-9 | Perfluoroheptanoic acid | 1.1 | | 0.63 | 0.42 | 0.21 |
| 335-67-1 | Perfluorooctanoic acid | 3.8 | M | 0.63 | 0.42 | 0.21 |
| 375-95-1 | Perfluorononanoic acid | 1.7 | | 0.63 | 0.42 | 0.21 |
| 335-76-2 | Perfluorodecanoic acid | 2.7 | | 0.63 | 0.42 | 0.21 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.67 | | 0.63 | 0.42 | 0.21 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.21 | U | 0.63 | 0.42 | 0.21 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.42 | U | 2.1 | 1.7 | 0.42 |
| 355-46-4 | Perfluorohexanesulfonic acid | 11 | M | 0.63 | 0.42 | 0.21 |
| 2991-50-6 | NEtFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 |
| 2355-31-9 | NMeFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.26 | J M | 3.1 | 0.42 | 0.21 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.75 | | 0.63 | 0.42 | 0.21 |
| 68259-12-1 | Perfluorononanesulfonic acid | 1.9 | | 0.63 | 0.42 | 0.21 |
| 335-77-3 | Perfluorodecanesulfonic acid | 2.7 | | 0.63 | 0.42 | 0.21 |
| 754-91-6 | Perfluorooctanesulfonamide | 25 | | 0.63 | 0.42 | 0.21 |
| 375-22-4 | Perfluorobutanoic acid | 0.91 | J | 2.1 | 1.7 | 0.63 |
| 2706-90-3 | Perfluoropentanoic acid | 1.5 | | 0.63 | 0.42 | 0.21 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.65 | M | 0.63 | 0.42 | 0.21 |
| 307-55-1 | Perfluorododecanoic acid | 0.30 | J M | 0.63 | 0.42 | 0.21 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 5.8 | | 2.1 | 1.7 | 0.63 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 36 | | 3.1 | 1.7 | 0.63 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.63 | U | 2.1 | 1.7 | 0.63 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-0-0.5  Lab Sample ID: 410-8511-16

Matrix: Solid  Lab File ID: 20JUL24-93.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:10

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.02(g)  Date Analyzed: 07/24/2020 22:39

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 5.9  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 100 | | 50-150 |
| STL02280 | M2-8:2 FTS | 100 | | 50-150 |
| STL02279 | M2-6:2 FTS | 110 | | 50-150 |
| STL02577 | 13C5 PFHxA | 96 | | 50-150 |
| STL01892 | 13C4 PFHpA | 96 | | 50-150 |
| STL01052 | 13C8 PFOA | 99 | | 50-150 |
| STL02578 | 13C9 PFNA | 99 | | 50-150 |
| STL02579 | 13C6 PFDA | 91 | | 50-150 |
| STL02580 | 13C7 PFUnA | 97 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 96 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 96 | | 50-150 |
| STL02337 | 13C3 PFBS | 95 | | 50-150 |
| STL02581 | 13C3 PFHxS | 101 | | 50-150 |
| STL01054 | 13C8 PFOS | 101 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 52 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 62 | | 50-150 |
| STL01056 | 13C8 FOSA | 64 | | 50-150 |
| STL00992 | 13C4 PFBA | 88 | | 50-150 |
| STL01893 | 13C5 PFPeA | 88 | | 50-150 |

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-0-0.5 DL  Lab Sample ID: 410-8511-16 DL

Matrix: Solid  Lab File ID: 20JUL27-12.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:10

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.02(g)  Date Analyzed: 07/27/2020 17:06

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 5.9  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 430 | ~~D M~~ | 6.3 | 4.2 | 2.1 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL01054 | 13C8 PFOS | 86 | | 50-150 |



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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-1-1.4  Lab Sample ID: 410-8511-17

Matrix: Solid  Lab File ID: 20JUL27-29.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:18

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.00(g)  Date Analyzed: 07/27/2020 19:40

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 1.8 | M | 0.66 | 0.44 | 0.22 |
| 375-85-9 | Perfluoroheptanoic acid | 2.0 | | 0.66 | 0.44 | 0.22 |
| 335-67-1 | Perfluorooctanoic acid | 10 | M | 0.66 | 0.44 | 0.22 |
| 375-95-1 | Perfluorononanoic acid | 8.1 | | 0.66 | 0.44 | 0.22 |
| 335-76-2 | Perfluorodecanoic acid | 0.93 | M | 0.66 | 0.44 | 0.22 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.44 | U | 2.2 | 1.8 | 0.44 |
| 355-46-4 | Perfluorohexanesulfonic acid | 17 | M | 0.66 | 0.44 | 0.22 |
| 2991-50-6 | NEtFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 |
| 2355-31-9 | NMeFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.22 | U | 3.3 | 0.44 | 0.22 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 3.5 | | 0.66 | 0.44 | 0.22 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.51 | J | 0.66 | 0.44 | 0.22 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.48 | J | 0.66 | 0.44 | 0.22 |
| 754-91-6 | Perfluorooctanesulfonamide | 6.1 | | 0.66 | 0.44 | 0.22 |
| 375-22-4 | Perfluorobutanoic acid | 1.0 | J | 2.2 | 1.8 | 0.66 |
| 2706-90-3 | Perfluoropentanoic acid | 2.4 | | 0.66 | 0.44 | 0.22 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 307-55-1 | Perfluorododecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 11 | | 2.2 | 1.8 | 0.66 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.66 | U | 2.2 | 1.8 | 0.66 |

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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-1-1.4  Lab Sample ID: 410-8511-17

Matrix: Solid  Lab File ID: 20JUL27-29.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:18

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.00(g)  Date Analyzed: 07/27/2020 19:40

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 118 | | 50-150 |
| STL02280 | M2-8:2 FTS | 119 | | 50-150 |
| STL02279 | M2-6:2 FTS | 113 | | 50-150 |
| STL02577 | 13C5 PFHxA | 112 | | 50-150 |
| STL01892 | 13C4 PFHpA | 112 | | 50-150 |
| STL01052 | 13C8 PFOA | 111 | | 50-150 |
| STL02578 | 13C9 PFNA | 131 | | 50-150 |
| STL02579 | 13C6 PFDA | 117 | | 50-150 |
| STL02580 | 13C7 PFUnA | 117 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 113 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 111 | | 50-150 |
| STL02337 | 13C3 PFBS | 107 | | 50-150 |
| STL02581 | 13C3 PFHxS | 116 | | 50-150 |
| STL01054 | 13C8 PFOS | 110 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 77 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 86 | | 50-150 |
| STL01056 | 13C8 FOSA | 108 | | 50-150 |
| STL00992 | 13C4 PFBA | 106 | | 50-150 |
| STL01893 | 13C5 PFPeA | 103 | | 50-150 |

17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-1-1.4 DL  Lab Sample ID: 410-8511-17 DL

Matrix: Solid  Lab File ID: 20JUL28-31.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:18

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.00(g)  Date Analyzed: 07/28/2020 20:45

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27160  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 180 | D | 33 | 18 | 6.6 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02280 | M2-8:2 FTS | 101 | | 50-150 |

17

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-3-1-1.4 DL2  Lab Sample ID: 410-8511-17 DL2

Matrix: Solid  Lab File ID: 20JUL29-24.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:18

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.00(g)  Date Analyzed: 07/29/2020 12:25

Con. Extract Vol.: 4(mL)  Dilution Factor: 100

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 27503  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 1500 | ~~D M~~ | 66 | 44 | 22 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL01054 | 13C8 PFOS | 78 | | 50-150 |

18

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-0-0.5  Lab Sample ID: 410-8511-18

Matrix: Solid  Lab File ID: 20JUL24-96.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:30

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.05(g)  Date Analyzed: 07/24/2020 23:06

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.69 | M | 0.63 | 0.42 | 0.21 |
| 375-85-9 | Perfluoroheptanoic acid | 0.40 | J | 0.63 | 0.42 | 0.21 |
| 335-67-1 | Perfluorooctanoic acid | 1.2 | M | 0.63 | 0.42 | 0.21 |
| 375-95-1 | Perfluorononanoic acid | 5.2 | | 0.63 | 0.42 | 0.21 |
| 335-76-2 | Perfluorodecanoic acid | 0.76 | M | 0.63 | 0.42 | 0.21 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.21 | U M | 0.63 | 0.42 | 0.21 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.21 | U | 0.63 | 0.42 | 0.21 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.42 | U | 2.1 | 1.7 | 0.42 |
| 355-46-4 | Perfluorohexanesulfonic acid | 3.0 | M | 0.63 | 0.42 | 0.21 |
| 2991-50-6 | NEtFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 |
| 2355-31-9 | NMeFOSAA | 0.21 | U UJ | 2.1 | 0.42 | 0.21 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.21 | U | 3.2 | 0.42 | 0.21 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.53 | J | 0.63 | 0.42 | 0.21 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.24 | J | 0.63 | 0.42 | 0.21 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.25 | J | 0.63 | 0.42 | 0.21 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.32 | J | 0.63 | 0.42 | 0.21 |
| 375-22-4 | Perfluorobutanoic acid | 0.68 | J | 2.1 | 1.7 | 0.63 |
| 2706-90-3 | Perfluoropentanoic acid | 0.67 | | 0.63 | 0.42 | 0.21 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.31 | J M | 0.63 | 0.42 | 0.21 |
| 307-55-1 | Perfluorododecanoic acid | 0.21 | U | 0.63 | 0.42 | 0.21 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 0.63 | U | 2.1 | 1.7 | 0.63 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.63 | U | 3.2 | 1.7 | 0.63 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.63 | U | 2.1 | 1.7 | 0.63 |

Surr

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-0-0.5  Lab Sample ID: 410-8511-18

Matrix: Solid  Lab File ID: 20JUL24-96.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:30

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.05(g)  Date Analyzed: 07/24/2020 23:06

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 95 | | 50-150 |
| STL02280 | M2-8:2 FTS | 90 | | 50-150 |
| STL02279 | M2-6:2 FTS | 99 | | 50-150 |
| STL02577 | 13C5 PFHxA | 89 | | 50-150 |
| STL01892 | 13C4 PFHpA | 87 | | 50-150 |
| STL01052 | 13C8 PFOA | 91 | | 50-150 |
| STL02578 | 13C9 PFNA | 91 | | 50-150 |
| STL02579 | 13C6 PFDA | 87 | | 50-150 |
| STL02580 | 13C7 PFUnA | 89 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 88 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 89 | | 50-150 |
| STL02337 | 13C3 PFBS | 92 | | 50-150 |
| STL02581 | 13C3 PFHxS | 99 | | 50-150 |
| STL01054 | 13C8 PFOS | 98 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 45 | Ø | 50-150 |
| STL02117 | d5-NEtFOSAA | 61 | | 50-150 |
| STL01056 | 13C8 FOSA | 76 | | 50-150 |
| STL00992 | 13C4 PFBA | 84 | | 50-150 |
| STL01893 | 13C5 PFPeA | 85 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

18

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-0-0.5 DL  Lab Sample ID: 410-8511-18 DL

Matrix: Solid  Lab File ID: 20JUL27-14.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:30

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.05(g)  Date Analyzed: 07/27/2020 17:24

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 130 | ~~D M~~ | 6.3 | 4.2 | 2.1 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL01054 | 13C8 PFOS | 84 | | 50-150 |

18RE

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-0-0.5 RE  Lab Sample ID: 410-8511-18 RE

Matrix: Solid  Lab File ID: 20JUL27-30.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:30

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.01(g)  Date Analyzed: 07/27/2020 19:49  use EDS #18

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.6  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.69 | | 0.66 | 0.44 | 0.22 |
| 375-85-9 | Perfluoroheptanoic acid | 0.35 | J | 0.66 | 0.44 | 0.22 |
| 335-67-1 | Perfluorooctanoic acid | 1.3 | M | 0.66 | 0.44 | 0.22 |
| 375-95-1 | Perfluorononanoic acid | 4.7 | | 0.66 | 0.44 | 0.22 |
| 335-76-2 | Perfluorodecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.44 | U | 2.2 | 1.8 | 0.44 |
| 355-46-4 | Perfluorohexanesulfonic acid | 3.2 | | 0.66 | 0.44 | 0.22 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 110 | ~~E M~~ J | 0.66 | 0.44 | 0.22 CQ |
| 2991-50-6 | NEtFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 |
| 2355-31-9 | NMeFOSAA | 0.22 | ~~U~~ UJ | 2.2 | 0.44 | 0.22 surr |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.22 | U | 3.3 | 0.44 | 0.22 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 0.51 | J | 0.66 | 0.44 | 0.22 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.35 | J | 0.66 | 0.44 | 0.22 |
| 375-22-4 | Perfluorobutanoic acid | 0.68 | J | 2.2 | 1.8 | 0.66 |
| 2706-90-3 | Perfluoropentanoic acid | 0.68 | | 0.66 | 0.44 | 0.22 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.47 | J | 0.66 | 0.44 | 0.22 |
| 307-55-1 | Perfluorododecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 0.66 | U | 2.2 | 1.8 | 0.66 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.66 | U | 3.3 | 1.8 | 0.66 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.66 | U | 2.2 | 1.8 | 0.66 |



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18RE

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-0-0.5 RE  Lab Sample ID: 410-8511-18 RE

Matrix: Solid  Lab File ID: 20JUL27-30.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:30

Extraction Method: 537 (Mod)  Date Extracted: 07/27/2020 08:21

Sample wt/vol: 1.01(g)  Date Analyzed: 07/27/2020 19:49 Use EDS #18

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 9.6  GPC Cleanup: (Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 101 | | 50-150 |
| STL02280 | M2-8:2 FTS | 97 | | 50-150 |
| STL02279 | M2-6:2 FTS | 110 | | 50-150 |
| STL02577 | 13C5 PFHxA | 101 | | 50-150 |
| STL01892 | 13C4 PFHpA | 106 | | 50-150 |
| STL01052 | 13C8 PFOA | 106 | | 50-150 |
| STL02578 | 13C9 PFNA | 105 | | 50-150 |
| STL02579 | 13C6 PFDA | 99 | | 50-150 |
| STL02580 | 13C7 PFUnA | 109 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 102 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 101 | | 50-150 |
| STL02337 | 13C3 PFBS | 102 | | 50-150 |
| STL02581 | 13C3 PFHxS | 111 | | 50-150 |
| STL01054 | 13C8 PFOS | 111 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 49 | 9 | 50-150 |
| STL02117 | d5-NEtFOSAA | 60 | | 50-150 |
| STL01056 | 13C8 FOSA | 94 | | 50-150 |
| STL00992 | 13C4 PFBA | 98 | | 50-150 |
| STL01893 | 13C5 PFPeA | 97 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

19

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-1-1.4  Lab Sample ID: 410-8511-19

Matrix: Solid  Lab File ID: 20JUL24-97.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:35

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.06(g)  Date Analyzed: 07/24/2020 23:16

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 15.1  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 0.84 | | 0.67 | 0.44 | 0.22 |
| 375-85-9 | Perfluoroheptanoic acid | 0.61 | J | 0.67 | 0.44 | 0.22 |
| 335-67-1 | Perfluorooctanoic acid | 13 | M | 0.67 | 0.44 | 0.22 |
| 375-95-1 | Perfluorononanoic acid | 2.2 | | 0.67 | 0.44 | 0.22 |
| 335-76-2 | Perfluorodecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 72629-94-8 | Perfluorotridecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.44 | U | 2.2 | 1.8 | 0.44 |
| 355-46-4 | Perfluorohexanesulfonic acid | 37 | M | 0.67 | 0.44 | 0.22 |
| 1763-23-1 | Perfluorooctanesulfonic acid | 29 | M | 0.67 | 0.44 | 0.22 |
| 2991-50-6 | NEtFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 |
| 2355-31-9 | NMeFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.22 | U | 3.3 | 0.44 | 0.22 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 1.3 | | 0.67 | 0.44 | 0.22 |
| 68259-12-1 | Perfluorononanesulfonic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 335-77-3 | Perfluorodecanesulfonic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 754-91-6 | Perfluorooctanesulfonamide | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 375-22-4 | Perfluorobutanoic acid | 0.67 | U | 2.2 | 1.8 | 0.67 |
| 2706-90-3 | Perfluoropentanoic acid | 1.0 | | 0.67 | 0.44 | 0.22 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 307-55-1 | Perfluorododecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 0.67 | U | 2.2 | 1.8 | 0.67 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 0.67 | U | 3.3 | 1.8 | 0.67 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.67 | U | 2.2 | 1.8 | 0.67 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: SB-4-1-1.4  Lab Sample ID: 410-8511-19

Matrix: Solid  Lab File ID: 20JUL24-97.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 09:35

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.06(g)  Date Analyzed: 07/24/2020 23:16

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 15.1  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 107 | | 50-150 |
| STL02280 | M2-8:2 FTS | 99 | | 50-150 |
| STL02279 | M2-6:2 FTS | 106 | | 50-150 |
| STL02577 | 13C5 PFHxA | 103 | | 50-150 |
| STL01892 | 13C4 PFHpA | 99 | | 50-150 |
| STL01052 | 13C8 PFOA | 103 | | 50-150 |
| STL02578 | 13C9 PFNA | 99 | | 50-150 |
| STL02579 | 13C6 PFDA | 96 | | 50-150 |
| STL02580 | 13C7 PFUnA | 104 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 97 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 93 | | 50-150 |
| STL02337 | 13C3 PFBS | 98 | | 50-150 |
| STL02581 | 13C3 PFHxS | 106 | | 50-150 |
| STL01054 | 13C8 PFOS | 104 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 67 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 77 | | 50-150 |
| STL01056 | 13C8 FOSA | 93 | | 50-150 |
| STL00992 | 13C4 PFBA | 97 | | 50-150 |
| STL01893 | 13C5 PFPeA | 99 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

20

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: FD-07212020  Lab Sample ID: 410-8511-20

Matrix: Solid  Lab File ID: 20JUL24-98.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 00:00

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.06(g)  Date Analyzed: 07/24/2020 23:25

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 4.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 307-24-4 | Perfluorohexanoic acid | 1.8 | | 0.59 | 0.39 | 0.20 |
| 375-85-9 | Perfluoroheptanoic acid | 0.61 | M | 0.59 | 0.39 | 0.20 |
| 335-67-1 | Perfluorooctanoic acid | 5.1 | M | 0.59 | 0.39 | 0.20 |
| 375-95-1 | Perfluorononanoic acid | 3.8 | | 0.59 | 0.39 | 0.20 |
| 335-76-2 | Perfluorodecanoic acid | 3.7 | M | 0.59 | 0.39 | 0.20 |
| 72629-94-8 | Perfluorotridecanoic acid | 3.8 | | 0.59 | 0.39 | 0.20 |
| 376-06-7 | Perfluorotetradecanoic acid | 0.20 | U | 0.59 | 0.39 | 0.20 |
| 375-73-5 | Perfluorobutanesulfonic acid | 0.39 | U | 2.0 | 1.6 | 0.39 |
| 355-46-4 | Perfluorohexanesulfonic acid | 23 | M | 0.59 | 0.39 | 0.20 |
| 2991-50-6 | NEtFOSAA | 0.28 | J | 2.0 | 0.39 | 0.20 |
| 2355-31-9 | NMeFOSAA | 0.20 | U | 2.0 | 0.39 | 0.20 |
| 2706-91-4 | Perfluoropentanesulfonic acid | 0.46 | J | 3.0 | 0.39 | 0.20 |
| 375-92-8 | Perfluoroheptanesulfonic acid | 1.1 | | 0.59 | 0.39 | 0.20 |
| 68259-12-1 | Perfluorononanesulfonic acid | 2.6 | | 0.59 | 0.39 | 0.20 |
| 335-77-3 | Perfluorodecanesulfonic acid | 2.2 | | 0.59 | 0.39 | 0.20 |
| 754-91-6 | Perfluorooctanesulfonamide | 10 | | 0.59 | 0.39 | 0.20 |
| 375-22-4 | Perfluorobutanoic acid | 0.81 | J | 2.0 | 1.6 | 0.59 |
| 2706-90-3 | Perfluoropentanoic acid | 1.0 | | 0.59 | 0.39 | 0.20 |
| 2058-94-8 | Perfluoroundecanoic acid | 0.97 | M | 0.59 | 0.39 | 0.20 |
| 307-55-1 | Perfluorododecanoic acid | 0.48 | J M | 0.59 | 0.39 | 0.20 |
| 27619-97-2 | 6:2 Fluorotelomer sulfonic acid | 1.7 | J | 2.0 | 1.6 | 0.59 |
| 757124-72-4 | 4:2 Fluorotelomer sulfonic acid | 0.59 | U | 2.0 | 1.6 | 0.59 |



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FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

20

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: FD-07212020  Lab Sample ID: 410-8511-20

Matrix: Solid  Lab File ID: 20JUL24-98.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 00:00

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.06(g)  Date Analyzed: 07/24/2020 23:25

Con. Extract Vol.: 4(mL)  Dilution Factor: 1

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 4.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 25943  Units: ng/g

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02395 | M2-4:2 FTS | 90 | | 50-150 |
| STL02280 | M2-8:2 FTS | 90 | | 50-150 |
| STL02279 | M2-6:2 FTS | 92 | | 50-150 |
| STL02577 | 13C5 PFHxA | 84 | | 50-150 |
| STL01892 | 13C4 PFHpA | 88 | | 50-150 |
| STL01052 | 13C8 PFOA | 85 | | 50-150 |
| STL02578 | 13C9 PFNA | 99 | | 50-150 |
| STL02579 | 13C6 PFDA | 89 | | 50-150 |
| STL02580 | 13C7 PFUnA | 97 | | 50-150 |
| STL02703 | 13C2-PFDoDA | 96 | | 50-150 |
| STL02116 | 13C2 PFTeDA | 96 | | 50-150 |
| STL02337 | 13C3 PFBS | 87 | | 50-150 |
| STL02581 | 13C3 PFHxS | 92 | | 50-150 |
| STL01054 | 13C8 PFOS | 97 | | 50-150 |
| STL02118 | d3-NMeFOSAA | 51 | | 50-150 |
| STL02117 | d5-NEtFOSAA | 62 | | 50-150 |
| STL01056 | 13C8 FOSA | 71 | | 50-150 |
| STL00992 | 13C4 PFBA | 83 | | 50-150 |
| STL01893 | 13C5 PFPeA | 86 | | 50-150 |

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: Eurofins Lancaster Laboratories E  Job No.: 410-8511-1

SDG No.:

Client Sample ID: FD-07212020 DL  Lab Sample ID: 410-8511-20 DL

Matrix: Solid  Lab File ID: 20JUL27-15.d

Analysis Method: EPA 537 (Mod)  Date Collected: 07/21/2020 00:00

Extraction Method: 537 (Mod)  Date Extracted: 07/24/2020 09:12

Sample wt/vol: 1.06(g)  Date Analyzed: 07/27/2020 17:33

Con. Extract Vol.: 4(mL)  Dilution Factor: 10

Injection Volume: 3(uL)  GC Column: Gemini C18 50mm ID: 3(mm)

% Moisture: 4.3  GPC Cleanup:(Y/N) N

Analysis Batch No.: 26801  Units: ng/g

| CAS NO. | COMPOUND NAME | RESULT | Q | LOQ | LOD | DL |
|---|---|---|---|---|---|---|
| 1763-23-1 | Perfluorooctanesulfonic acid | 810 | ~~D M~~ | 5.9 | 3.9 | 2.0 |
| 39108-34-4 | 8:2 Fluorotelomer sulfonic acid | 130 | J | 30 | 16 | 5.9 |

| CAS NO. | ISOTOPE DILUTION | %REC | Q | LIMITS |
|---|---|---|---|---|
| STL02280 | M2-8:2 FTS | 69 | | 50-150 |
| STL01054 | 13C8 PFOS | 80 | | 50-150 |

# Appendix F

# Laboratory Report

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eurofins | Environment Testing America

# ANALYTICAL REPORT

Eurofins Lancaster Laboratories Env, LLC
2425 New Holland Pike
Lancaster, PA 17601
Tel: (717)656-2300

Laboratory Job ID: 410-8511-1
Client Project/Site: Montana Air National Guard / 6280606

For:
EA Engineering, Science, and Technology
225 Schilling Circle
Suite 400
Hunt Valley, Maryland 21031

Attn: Accounts Payable (Mid-Atlantic)

*Authorized for release by:*
*8/3/2020 3:14:23 PM*

Kay Hower, Principal Project Manager
(717)556-7364
kayhower@eurofinsus.com

Analytical test results meet all requirements of the associated regulatory program (e.g., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis. Data qualifiers are applied to note exceptions. Noncompliant quality control (QC) is further explained in narrative comments. QC data that exceed the upper limits and are associated with non-detect samples are qualified but no further narration is needed since the bias is high and does not change a non-detect result. Regulated compliance samples (e.g. SDWA, NPDES) must comply with the associated agency requirements/permits.

Measurement uncertainty values, as applicable, are available upon request.

Test results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff. Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" and tested in the laboratory are not performed within 15 minutes of collection.



WARRANTY AND LIMITS OF LIABILITY - In accepting analytical work, we warrant the accuracy of test results for the sample as submitted. THE FOREGOING EXPRESS WARRANTY IS EXCLUSIVE AND IS GIVEN IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED. WE DISCLAIM ANY OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING A WARRANTY OF FITNESS FOR PARTICULAR PURPOSE AND WARRANTY OF MERCHANTABILITY. IN NO EVENT SHALL EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL, LLC BE LIABLE FOR INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES INCLUDING, BUT NOT LIMITED TO, DAMAGES FOR LOSS OF PROFIT OR GOODWILL REGARDLESS OF (A) THE NEGLIGENCE (EITHER SOLE OR CONCURRENT) OF EUROFINS LANACASTER LABORATORIES ENVIRONMENTAL AND (B) WHETHER EUROFINS LANCASTER LABORATORIES ENVIRONMENTAL HAS BEEN INFORMED OF THE POSSIBILITY OF SUCH DAMAGES. We accept no legal responsibility for the purposes for which the client uses the test results. No purchase order or other order for work shall be accepted by Eurofins Lancaster Laboratories Environmental which includes any conditions that vary from the Standard Terms and Conditions, and Eurofins Lancaster Laboratories Environmental hereby objects to any conflicting terms contained in any acceptance or order submitted by client.

Kay Hower
Principal Project Manager
*8/3/2020 3:14:23 PM*

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# Definitions/Glossary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

## Qualifiers

### LCMS

| Qualifier | Qualifier Description |
|---|---|
| 4 | MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable. |
| D | The reported value is from a dilution. |
| E | Result exceeded calibration range. |
| J | Estimated: The analyte was positively identified; the quantitation is an estimation |
| J1 | Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria. |
| M | Manual integrated compound. |
| Q | One or more quality control criteria failed. |
| U | Undetected at the Limit of Detection. |

## Glossary

| Abbreviation | These commonly used abbreviations may or may not be present in this report. |
|---|---|
| ¤ | Listed under the "D" column to designate that the result is reported on a dry weight basis |
| %R | Percent Recovery |
| 1C | Result is from the primary column on a dual-column method. |
| 2C | Result is from the confirmation column on a dual-column method. |
| CFL | Contains Free Liquid |
| CFU | Colony Forming Unit |
| CNF | Contains No Free Liquid |
| DER | Duplicate Error Ratio (normalized absolute difference) |
| Dil Fac | Dilution Factor |
| DL | Detection Limit (DoD/DOE) |
| DL, RA, RE, IN | Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample |
| DLC | Decision Level Concentration (Radiochemistry) |
| EDL | Estimated Detection Limit (Dioxin) |
| LOD | Limit of Detection (DoD/DOE) |
| LOQ | Limit of Quantitation (DoD/DOE) |
| MCL | EPA recommended "Maximum Contaminant Level" |
| MDA | Minimum Detectable Activity (Radiochemistry) |
| MDC | Minimum Detectable Concentration (Radiochemistry) |
| MDL | Method Detection Limit |
| ML | Minimum Level (Dioxin) |
| MPN | Most Probable Number |
| MQL | Method Quantitation Limit |
| NC | Not Calculated |
| ND | Not Detected at the reporting limit (or MDL or EDL if shown) |
| NEG | Negative / Absent |
| POS | Positive / Present |
| PQL | Practical Quantitation Limit |
| PRES | Presumptive |
| QC | Quality Control |
| RER | Relative Error Ratio (Radiochemistry) |
| RL | Reporting Limit or Requested Limit (Radiochemistry) |
| RPD | Relative Percent Difference, a measure of the relative difference between two points |
| TEF | Toxicity Equivalent Factor (Dioxin) |
| TEQ | Toxicity Equivalent Quotient (Dioxin) |
| TNTC | Too Numerous To Count |

## Job ID: 410-8511-1

### Laboratory: Eurofins Lancaster Laboratories Env, LLC

**Narrative**

**Job Narrative**
**410-8511-1**

**Receipt**
The samples were received on 7/22/2020 11:06 AM; the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.5º C.

**LCMS**
Method EPA 537 (Mod): The labeled isotope recovery for the following samples were outside of the QC acceptance limits as noted on the QC Summary: MW-1 (410-8511-1), MW-3 (410-8511-3), RB-07202020 (410-8511-9) and IDW-AQ (410-8511-11). The following action was taken:
The sample was re-extracted within the method holding time and the labeled isotope recovery was again outside of the QC acceptance limits.

Method EPA 537 (Mod): The labeled isotope recovery for the following samples were outside of the QC acceptance limits as noted on the QC Summary: SB-1-1-1.45 (410-8511-13) and SB-4-0-0.5 (410-8511-18). The following action was taken:
The sample was re-extracted within the method holding time and the labeled isotope recovery was again outside of the QC acceptance limits.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

**Organic Prep**
No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

# Detection Summary

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-1 — Lab Sample ID: 410-8511-1

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 1.4 | J M | 1.7 | 0.86 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 1.4 | J M | 1.7 | 0.86 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 0.61 | J | 1.7 | 0.86 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 2.2 | M | 1.7 | 0.86 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 2.0 | | 1.7 | 0.86 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 1.6 | J | 1.7 | 0.86 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: MW-2 — Lab Sample ID: 410-8511-2

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 19 | M | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 9.1 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 6.9 | M | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 2.7 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 29 | M | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 2.6 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 7.8 | | 4.1 | 3.3 | 1.7 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 20 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: MW-3 — Lab Sample ID: 410-8511-3

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 65 | M | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 18 | | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 86 | M | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 1.5 | J | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 9.2 | | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 130 | M | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 10 | | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 3.5 | | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 1.4 | J M | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 18 | | 4.5 | 3.6 | 1.8 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 69 | | 1.8 | 0.89 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid - DL | 210 | D M | 18 | 8.9 | 4.5 | ng/L | 10 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: MW-4 — Lab Sample ID: 410-8511-4

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 8.9 | | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 1.4 | J | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 11 | M J1 | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 2.3 | | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

## Client Sample ID: MW-4 (Continued) — Lab Sample ID: 410-8511-4

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanesulfonic acid | 19 | M | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 1.0 | J M | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 2.4 | | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 6.0 | | 4.5 | 3.6 | 1.8 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 6.2 | | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 3.6 | J | 4.5 | 3.6 | 1.8 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: MW-5 — Lab Sample ID: 410-8511-5

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanesulfonic acid | 0.55 | J M | 1.8 | 0.90 | 0.45 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: MW-6 — Lab Sample ID: 410-8511-6

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 37 | | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 6.4 | | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 48 | M | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 6.8 | | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 110 | M | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 33 | M | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 6.6 | | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 1.7 | | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 9.9 | | 4.3 | 3.4 | 1.7 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 26 | | 1.7 | 0.85 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: MW-7 — Lab Sample ID: 410-8511-7

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 23 | M | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 2.7 | M | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 2.7 | M | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 3.2 | | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 7.6 | M | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 0.69 | J M | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 2.1 | M | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 9.6 | M | 4.3 | 3.5 | 1.7 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 20 | | 1.7 | 0.87 | 0.43 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

# Detection Summary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

## Client Sample ID: FD-07202020 — Lab Sample ID: 410-8511-8

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 66 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 18 | M | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 86 | M | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 9.6 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 120 | M | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 11 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 3.4 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 0.88 | J | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 18 | | 4.1 | 3.3 | 1.7 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 67 | | 1.7 | 0.83 | 0.41 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid - DL | 210 | D M | 17 | 8.3 | 4.1 | ng/L | 10 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: RB-07202020 — Lab Sample ID: 410-8511-9

No Detections.

## Client Sample ID: RB-07212020 — Lab Sample ID: 410-8511-10

No Detections.

## Client Sample ID: IDW-AQ — Lab Sample ID: 410-8511-11

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 28 | M | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 3.9 | | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 37 | M | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 4.4 | | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 54 | M | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 20 | M | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 4.5 | | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 0.72 | J | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 12 | | 4.4 | 3.5 | 1.7 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 19 | | 1.7 | 0.87 | 0.44 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 2.1 | J | 4.4 | 3.5 | 1.7 | ng/L | 1 | | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-1-0-0.5 — Lab Sample ID: 410-8511-12

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 2.4 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 0.50 | J | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 3.4 | M | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 11 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 4.3 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorotridecanoic acid | 2.0 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

Eurofins Lancaster Laboratories Env, LLC

## Client Sample ID: SB-1-0-0.5 (Continued)

## Lab Sample ID: 410-8511-12

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanesulfonic acid | 35 | M | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 0.30 | J M | 3.2 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 3.0 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 3.2 | J1 | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 3.2 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 11 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 0.99 | J | 2.1 | 1.7 | 0.64 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 1.2 | | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroundecanoic acid | 1.6 | M | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorododecanoic acid | 0.48 | J M | 0.64 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 8:2 Fluorotelomer sulfonic acid | 1.7 | J | 3.2 | 1.7 | 0.64 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL | 830 | D M | 6.4 | 4.2 | 2.1 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-1-1-1.45

## Lab Sample ID: 410-8511-13

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 4.2 | | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 1.4 | | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 46 | M | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 17 | | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 0.67 | M | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 1.2 | J M | 3.4 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 28 | | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 0.31 | J M | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 3.7 | | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 1.4 | J | 2.2 | 1.8 | 0.67 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 2.1 | | 0.67 | 0.45 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 1.6 | J | 2.2 | 1.8 | 0.67 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 8:2 Fluorotelomer sulfonic acid | 2.3 | J | 3.4 | 1.8 | 0.67 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid - DL | 220 | D M | 6.7 | 4.5 | 2.2 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL | 790 | D M | 6.7 | 4.5 | 2.2 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-2-0-0.5

## Lab Sample ID: 410-8511-14

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 1.7 | M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 0.61 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 5.4 | M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: SB-2-0-0.5 (Continued) — Lab Sample ID: 410-8511-14

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorononanoic acid | 3.9 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 3.5 | M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorotridecanoic acid | 3.9 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 22 | M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 0.42 | J | 3.0 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 1.1 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 2.5 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 2.4 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 9.9 | | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 0.87 | J | 2.0 | 1.6 | 0.60 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 1.0 | M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroundecanoic acid | 1.1 | M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorododecanoic acid | 0.46 | J M | 0.60 | 0.40 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 1.6 | J | 2.0 | 1.6 | 0.60 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL | 760 | D | 6.0 | 4.0 | 2.0 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |
| 8:2 Fluorotelomer sulfonic acid - DL | 140 | D | 30 | 16 | 6.0 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-2-1-1.5 — Lab Sample ID: 410-8511-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 5.6 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 2.6 | M | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 68 | M | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 11 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 1.7 | M | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorotridecanoic acid | 0.47 | J | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanesulfonic acid | 0.71 | J | 2.1 | 1.7 | 0.43 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 1.1 | J | 3.2 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 25 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 0.93 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 0.71 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 9.6 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 1.2 | J | 2.1 | 1.7 | 0.64 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 3.2 | | 0.64 | 0.43 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 29 | | 2.1 | 1.7 | 0.64 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid - DL | 150 | D M | 6.4 | 4.3 | 2.1 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: SB-2-1-1.5 (Continued) — Lab Sample ID: 410-8511-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| 8:2 Fluorotelomer sulfonic acid - DL | 280 | D | 32 | 17 | 6.4 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL2 | 1500 | D M | 64 | 43 | 21 | ng/g | 100 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-3-0-0.5 — Lab Sample ID: 410-8511-16

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 2.0 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 1.1 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 3.8 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 1.7 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 2.7 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorotridecanoic acid | 0.67 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 11 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 0.26 | J M | 3.1 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 0.75 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 1.9 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 2.7 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 25 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 0.91 | J | 2.1 | 1.7 | 0.63 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 1.5 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroundecanoic acid | 0.65 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorododecanoic acid | 0.30 | J M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 5.8 | | 2.1 | 1.7 | 0.63 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 8:2 Fluorotelomer sulfonic acid | 36 | | 3.1 | 1.7 | 0.63 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL | 430 | D M | 6.3 | 4.2 | 2.1 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-3-1-1.4 — Lab Sample ID: 410-8511-17

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 1.8 | M | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 2.0 | | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 10 | M | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 8.1 | | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 0.93 | M | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 17 | M | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 3.5 | | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 0.51 | J | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 0.48 | J | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: SB-3-1-1.4 (Continued) — Lab Sample ID: 410-8511-17

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorooctanesulfonamide | 6.1 | | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 1.0 | J | 2.2 | 1.8 | 0.66 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 2.4 | | 0.66 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 11 | | 2.2 | 1.8 | 0.66 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 8:2 Fluorotelomer sulfonic acid - DL | 180 | D | 33 | 18 | 6.6 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL2 | 1500 | D M | 66 | 44 | 22 | ng/g | 100 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-4-0-0.5 — Lab Sample ID: 410-8511-18

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.69 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 0.40 | J | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 1.2 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 5.2 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 0.76 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 3.0 | M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 0.53 | J | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 0.24 | J | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 0.25 | J | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 0.32 | J | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 0.68 | J | 2.1 | 1.7 | 0.63 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 0.67 | | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroundecanoic acid | 0.31 | J M | 0.63 | 0.42 | 0.21 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL | 130 | D M | 6.3 | 4.2 | 2.1 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: SB-4-1-1.4 — Lab Sample ID: 410-8511-19

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.84 | | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 0.61 | J | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanoic acid | 13 | M | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 2.2 | | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 37 | M | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid | 29 | M | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 1.3 | | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 1.0 | | 0.67 | 0.44 | 0.22 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: FD-07212020 — Lab Sample ID: 410-8511-20

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 1.8 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanoic acid | 0.61 | M | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |

This Detection Summary does not include radiochemical test results.

## Client Sample ID: FD-07212020 (Continued)

## Lab Sample ID: 410-8511-20

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | Dil Fac | D | Method | Prep Type |
|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorooctanoic acid | 5.1 | M | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanoic acid | 3.8 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanoic acid | 3.7 | M | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorotridecanoic acid | 3.8 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorohexanesulfonic acid | 23 | M | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| NEtFOSAA | 0.28 | J | 2.0 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanesulfonic acid | 0.46 | J | 3.0 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroheptanesulfonic acid | 1.1 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorononanesulfonic acid | 2.6 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorodecanesulfonic acid | 2.2 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonamide | 10 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorobutanoic acid | 0.81 | J | 2.0 | 1.6 | 0.59 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoropentanoic acid | 1.0 | | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluoroundecanoic acid | 0.97 | M | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorododecanoic acid | 0.48 | J M | 0.59 | 0.39 | 0.20 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| 6:2 Fluorotelomer sulfonic acid | 1.7 | J | 2.0 | 1.6 | 0.59 | ng/g | 1 | ☼ | EPA 537 (Mod) | Total/NA |
| Perfluorooctanesulfonic acid - DL | 810 | D M | 5.9 | 3.9 | 2.0 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |
| 8:2 Fluorotelomer sulfonic acid - DL | 130 | D | 30 | 16 | 5.9 | ng/g | 10 | ☼ | EPA 537 (Mod) | Total/NA |

## Client Sample ID: IDW-SO-1

## Lab Sample ID: 410-8511-21

No Detections.

## Client Sample ID: IDW-SO-2

## Lab Sample ID: 410-8511-22

No Detections.

This Detection Summary does not include radiochemical test results.

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-1

**Date Collected: 07/20/20 08:25**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-1

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **1.4** | **J M** | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluoroheptanoic acid | 0.43 | U M | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| **Perfluorooctanoic acid** | **1.4** | **J M** | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorononanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorodecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorotridecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorotetradecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| **Perfluorobutanesulfonic acid** | **0.61** | **J** | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| **Perfluorohexanesulfonic acid** | **2.2** | **M** | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| **Perfluorooctanesulfonic acid** | **2.0** | | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| NEtFOSAA | 0.43 | U | 2.6 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| NMeFOSAA | 0.51 | U | 1.7 | 1.0 | 0.51 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluoropentanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluoroheptanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorononanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorodecanesulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorooctanesulfonamide | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorobutanoic acid | 1.7 | U | 4.3 | 3.4 | 1.7 | ng/L | | 07/29/20 17:33 | 1 |
| **Perfluoropentanoic acid** | **1.6** | **J** | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluoroundecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| Perfluorododecanoic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.7 | U M | 4.3 | 3.4 | 1.7 | ng/L | | 07/29/20 17:33 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.86 | U | 2.6 | 1.7 | 0.86 | ng/L | | 07/29/20 17:33 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.43 | U | 1.7 | 0.86 | 0.43 | ng/L | | 07/29/20 17:33 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *132* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *M2-8:2 FTS* | *108* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *M2-6:2 FTS* | *117* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C5 PFHxA* | *97* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C4 PFHpA* | *103* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C8 PFOA* | *99* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C9 PFNA* | *107* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C6 PFDA* | *98* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C7 PFUnA* | *105* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C2-PFDoDA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C2 PFTeDA* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C3 PFBS* | *120* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C3 PFHxS* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C8 PFOS* | *105* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *d3-NMeFOSAA* | *120* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *d5-NEtFOSAA* | *127* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C8 FOSA* | *19* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C4 PFBA* | *94* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |
| *13C5 PFPeA* | *96* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:33* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-2

**Date Collected: 07/20/20 09:55**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-2

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **19** | **M** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluoroheptanoic acid** | **9.1** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluorooctanoic acid** | **6.9** | **M** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorononanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorodecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorotridecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorotetradecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluorobutanesulfonic acid** | **2.7** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluorohexanesulfonic acid** | **29** | **M** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorooctanesulfonic acid | 0.41 | U M | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| NEtFOSAA | 0.41 | U | 2.5 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| NMeFOSAA | 0.50 | U | 1.7 | 0.99 | 0.50 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluoropentanesulfonic acid** | **2.6** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluoroheptanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorononanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorodecanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorooctanesulfonamide | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluorobutanoic acid** | **7.8** | | 4.1 | 3.3 | 1.7 | ng/L | | 07/25/20 16:42 | 1 |
| **Perfluoropentanoic acid** | **20** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluoroundecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| Perfluorododecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.1 | 3.3 | 1.7 | ng/L | | 07/25/20 16:42 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.83 | U | 2.5 | 1.7 | 0.83 | ng/L | | 07/25/20 16:42 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 16:42 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *149* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *M2-8:2 FTS* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *M2-6:2 FTS* | *123* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C5 PFHxA* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C4 PFHpA* | *118* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C8 PFOA* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C9 PFNA* | *112* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C6 PFDA* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C7 PFUnA* | *106* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C2-PFDoDA* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C2 PFTeDA* | *98* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C3 PFBS* | *117* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C3 PFHxS* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C8 PFOS* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *d3-NMeFOSAA* | *114* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *d5-NEtFOSAA* | *118* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C8 FOSA* | *92* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C4 PFBA* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |
| *13C5 PFPeA* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:42* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-3

**Date Collected: 07/20/20 10:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-3

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **65** | **M** | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluoroheptanoic acid** | **18** | | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluorooctanoic acid** | **86** | **M** | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluorononanoic acid** | **1.5** | **J** | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluorobutanesulfonic acid** | **9.2** | | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluorooctanesulfonic acid** | **130** | **M** | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| NEtFOSAA | 0.45 | U | 2.7 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluoropentanesulfonic acid** | **10** | | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluoroheptanesulfonic acid** | **3.5** | | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluorooctanesulfonamide** | **1.4** | **J M** | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluorobutanoic acid** | **18** | | 4.5 | 3.6 | 1.8 | ng/L | | 07/29/20 17:42 | 1 |
| **Perfluoropentanoic acid** | **69** | | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 | ng/L | | 07/29/20 17:42 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.89 | U | 2.7 | 1.8 | 0.89 | ng/L | | 07/29/20 17:42 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/29/20 17:42 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *140* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *M2-8:2 FTS* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *M2-6:2 FTS* | *120* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C5 PFHxA* | *100* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C4 PFHpA* | *101* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C8 PFOA* | *103* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C9 PFNA* | *105* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C6 PFDA* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C7 PFUnA* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C2-PFDoDA* | *112* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C2 PFTeDA* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C3 PFBS* | *138* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C3 PFHxS* | *104* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C8 PFOS* | *102* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *d3-NMeFOSAA* | *122* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *d5-NEtFOSAA* | *123* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C8 FOSA* | *30* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C4 PFBA* | *101* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |
| *13C5 PFPeA* | *118* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 17:42* | *1* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanesulfonic acid** | **210** | **D M** | 18 | 8.9 | 4.5 | ng/L | | 07/29/20 19:40 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 PFHxS* | *123* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 19:40* | *10* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-4

**Date Collected: 07/20/20 12:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-4

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **8.9** | | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluoroheptanoic acid** | **1.4** | **J** | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluorooctanoic acid** | **11** | **M J1** | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorononanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluorobutanesulfonic acid** | **2.3** | | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluorohexanesulfonic acid** | **19** | **M** | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluorooctanesulfonic acid** | **1.0** | **J M** | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| NEtFOSAA | 0.45 | U | 2.7 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluoropentanesulfonic acid** | **2.4** | | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluorobutanoic acid** | **6.0** | | 4.5 | 3.6 | 1.8 | ng/L | | 07/25/20 17:00 | 1 |
| **Perfluoropentanoic acid** | **6.2** | | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **3.6** | **J** | 4.5 | 3.6 | 1.8 | ng/L | | 07/25/20 17:00 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.90 | U | 2.7 | 1.8 | 0.90 | ng/L | | 07/25/20 17:00 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:00 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *126* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *M2-8:2 FTS* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *M2-6:2 FTS* | *122* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C5 PFHxA* | *111* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C4 PFHpA* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C8 PFOA* | *112* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C9 PFNA* | *108* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C6 PFDA* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C7 PFUnA* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C2-PFDoDA* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C2 PFTeDA* | *100* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C3 PFBS* | *123* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C3 PFHxS* | *116* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C8 PFOS* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *d3-NMeFOSAA* | *125* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *d5-NEtFOSAA* | *125* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C8 FOSA* | *111* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C4 PFBA* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |
| *13C5 PFPeA* | *120* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:00* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-5

**Date Collected: 07/20/20 14:00**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-5

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluoroheptanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorooctanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorononanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorobutanesulfonic acid | 0.45 | U M | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| **Perfluorohexanesulfonic acid** | **0.55** | **J M** | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorooctanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| NEtFOSAA | 0.45 | U | 2.7 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluoropentanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorobutanoic acid | 1.8 | U | 4.5 | 3.6 | 1.8 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluoropentanoic acid | 0.45 | U M | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 | ng/L | | 07/25/20 17:27 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.90 | U | 2.7 | 1.8 | 0.90 | ng/L | | 07/25/20 17:27 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.90 | 0.45 | ng/L | | 07/25/20 17:27 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *111* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *M2-8:2 FTS* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *M2-6:2 FTS* | *117* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C5 PFHxA* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C4 PFHpA* | *104* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C8 PFOA* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C9 PFNA* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C6 PFDA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C7 PFUnA* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C2-PFDoDA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C2 PFTeDA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C3 PFBS* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C3 PFHxS* | *108* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C8 PFOS* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *d3-NMeFOSAA* | *111* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *d5-NEtFOSAA* | *116* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C8 FOSA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C4 PFBA* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |
| *13C5 PFPeA* | *116* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:27* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-6

**Date Collected: 07/20/20 14:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-6

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **37** | | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluoroheptanoic acid** | **6.4** | | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluorooctanoic acid** | **48** | **M** | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorononanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorodecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorotridecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorotetradecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluorobutanesulfonic acid** | **6.8** | | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluorohexanesulfonic acid** | **110** | **M** | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluorooctanesulfonic acid** | **33** | **M** | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| NEtFOSAA | 0.43 | U | 2.6 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| NMeFOSAA | 0.51 | U | 1.7 | 1.0 | 0.51 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluoropentanesulfonic acid** | **6.6** | | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluoroheptanesulfonic acid** | **1.7** | | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorononanesulfonic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorodecanesulfonic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorooctanesulfonamide | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluorobutanoic acid** | **9.9** | | 4.3 | 3.4 | 1.7 | ng/L | | 07/25/20 17:36 | 1 |
| **Perfluoropentanoic acid** | **26** | | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluoroundecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| Perfluorododecanoic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.3 | 3.4 | 1.7 | ng/L | | 07/25/20 17:36 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.85 | U | 2.6 | 1.7 | 0.85 | ng/L | | 07/25/20 17:36 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.43 | U | 1.7 | 0.85 | 0.43 | ng/L | | 07/25/20 17:36 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *133* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *M2-8:2 FTS* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *M2-6:2 FTS* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C5 PFHxA* | *100* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C4 PFHpA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C8 PFOA* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C9 PFNA* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C6 PFDA* | *97* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C7 PFUnA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C2-PFDoDA* | *99* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C2 PFTeDA* | *98* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C3 PFBS* | *122* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C3 PFHxS* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C8 PFOS* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *d3-NMeFOSAA* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *d5-NEtFOSAA* | *122* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C8 FOSA* | *78* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C4 PFBA* | *101* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |
| *13C5 PFPeA* | *115* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:36* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

**Client Sample ID: MW-7**
**Date Collected: 07/20/20 16:00**
**Date Received: 07/22/20 11:06**

**Lab Sample ID: 410-8511-7**
**Matrix: Water**

**Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15**

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **23** | **M** | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluoroheptanoic acid** | **2.7** | **M** | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluorooctanoic acid** | **2.7** | **M** | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorononanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorodecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorotridecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorotetradecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluorobutanesulfonic acid** | **3.2** | | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluorohexanesulfonic acid** | **7.6** | **M** | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluorooctanesulfonic acid** | **0.69** | **J M** | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| NEtFOSAA | 0.43 | U | 2.6 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| NMeFOSAA | 0.52 | U | 1.7 | 1.0 | 0.52 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluoropentanesulfonic acid** | **2.1** | **M** | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluoroheptanesulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorononanesulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorodecanesulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorooctanesulfonamide | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluorobutanoic acid** | **9.6** | **M** | 4.3 | 3.5 | 1.7 | ng/L | | 07/25/20 17:45 | 1 |
| **Perfluoropentanoic acid** | **20** | | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluoroundecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| Perfluorododecanoic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.3 | 3.5 | 1.7 | ng/L | | 07/25/20 17:45 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.87 | U | 2.6 | 1.7 | 0.87 | ng/L | | 07/25/20 17:45 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.43 | U | 1.7 | 0.87 | 0.43 | ng/L | | 07/25/20 17:45 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *128* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *M2-8:2 FTS* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *M2-6:2 FTS* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C5 PFHxA* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C4 PFHpA* | *111* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C8 PFOA* | *98* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C9 PFNA* | *106* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C6 PFDA* | *91* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C7 PFUnA* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C2-PFDoDA* | *100* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C2 PFTeDA* | *93* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C3 PFBS* | *123* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C3 PFHxS* | *100* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C8 PFOS* | *103* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *d3-NMeFOSAA* | *112* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *d5-NEtFOSAA* | *125* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C8 FOSA* | *102* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C4 PFBA* | *95* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |
| *13C5 PFPeA* | *114* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 17:45* | *1* |

## Client Sample ID: FD-07202020
**Date Collected: 07/20/20 00:00**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-8
**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **66** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluoroheptanoic acid** | **18** | **M** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluorooctanoic acid** | **86** | **M** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorononanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorodecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorotridecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorotetradecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluorobutanesulfonic acid** | **9.6** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluorooctanesulfonic acid** | **120** | **M** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| NEtFOSAA | 0.41 | U | 2.5 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| NMeFOSAA | 0.50 | U | 1.7 | 1.0 | 0.50 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluoropentanesulfonic acid** | **11** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluoroheptanesulfonic acid** | **3.4** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorononanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorodecanesulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluorooctanesulfonamide** | **0.88** | **J** | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluorobutanoic acid** | **18** | | 4.1 | 3.3 | 1.7 | ng/L | | 07/25/20 18:03 | 1 |
| **Perfluoropentanoic acid** | **67** | | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluoroundecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| Perfluorododecanoic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.7 | U | 4.1 | 3.3 | 1.7 | ng/L | | 07/25/20 18:03 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.83 | U | 2.5 | 1.7 | 0.83 | ng/L | | 07/25/20 18:03 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.7 | 0.83 | 0.41 | ng/L | | 07/25/20 18:03 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *138* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *M2-8:2 FTS* | *104* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *M2-6:2 FTS* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C5 PFHxA* | *96* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C4 PFHpA* | *95* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C8 PFOA* | *98* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C9 PFNA* | *97* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C6 PFDA* | *94* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C7 PFUnA* | *93* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C2-PFDoDA* | *86* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C2 PFTeDA* | *77* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C3 PFBS* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C3 PFHxS* | *96* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C8 PFOS* | *99* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *d3-NMeFOSAA* | *100* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *d5-NEtFOSAA* | *111* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C8 FOSA* | *90* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C4 PFBA* | *93* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |
| *13C5 PFPeA* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:03* | *1* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanesulfonic acid** | **210** | **D M** | 17 | 8.3 | 4.1 | ng/L | | 07/28/20 15:00 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C3 PFHxS* | *97* | | *50 - 150* | *07/23/20 15:32* | *07/28/20 15:00* | *10* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: RB-07202020

**Date Collected: 07/20/20 16:15**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-9

**Matrix: Water**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluoroheptanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorooctanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorononanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorodecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorotridecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorotetradecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorobutanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorohexanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorooctanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| NEtFOSAA | 0.41 | U | 2.4 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| NMeFOSAA | 0.49 | U | 1.6 | 0.97 | 0.49 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluoropentanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluoroheptanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorononanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorodecanesulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorooctanesulfonamide | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorobutanoic acid | 1.6 | U | 4.1 | 3.2 | 1.6 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluoropentanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluoroundecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| Perfluorododecanoic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.6 | U | 4.1 | 3.2 | 1.6 | ng/L | | 07/29/20 18:00 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.81 | U | 2.4 | 1.6 | 0.81 | ng/L | | 07/29/20 18:00 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.41 | U | 1.6 | 0.81 | 0.41 | ng/L | | 07/29/20 18:00 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *118* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *M2-8:2 FTS* | *117* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *M2-6:2 FTS* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C5 PFHxA* | *103* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C4 PFHpA* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C8 PFOA* | *107* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C9 PFNA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C6 PFDA* | *108* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C7 PFUnA* | *132* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C2-PFDoDA* | *115* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C2 PFTeDA* | *108* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C3 PFBS* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C3 PFHxS* | *105* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C8 PFOS* | *105* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *d3-NMeFOSAA* | *142* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *d5-NEtFOSAA* | *178* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C8 FOSA* | *114* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C4 PFBA* | *108* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |
| *13C5 PFPeA* | *104* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:00* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

**Client Sample ID: RB-07212020**
**Date Collected: 07/21/20 09:50**
**Date Received: 07/22/20 11:06**

**Lab Sample ID: 410-8511-10**
**Matrix: Water**

**Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15**

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluoroheptanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorooctanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorononanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorodecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorotridecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorotetradecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorobutanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorohexanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorooctanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| NEtFOSAA | 0.45 | U | 2.7 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| NMeFOSAA | 0.54 | U | 1.8 | 1.1 | 0.54 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluoropentanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluoroheptanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorononanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorodecanesulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorooctanesulfonamide | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorobutanoic acid | 1.8 | U | 4.5 | 3.6 | 1.8 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluoropentanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluoroundecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| Perfluorododecanoic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 1.8 | U | 4.5 | 3.6 | 1.8 | ng/L | | 07/25/20 18:21 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.89 | U | 2.7 | 1.8 | 0.89 | ng/L | | 07/25/20 18:21 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 1.8 | 0.89 | 0.45 | ng/L | | 07/25/20 18:21 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *M2-8:2 FTS* | *121* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *M2-6:2 FTS* | *114* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C5 PFHxA* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C4 PFHpA* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C8 PFOA* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C9 PFNA* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C6 PFDA* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C7 PFUnA* | *112* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C2-PFDoDA* | *108* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C2 PFTeDA* | *106* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C3 PFBS* | *104* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C3 PFHxS* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C8 PFOS* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *d3-NMeFOSAA* | *124* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *d5-NEtFOSAA* | *123* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C8 FOSA* | *112* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C4 PFBA* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |
| *13C5 PFPeA* | *104* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 18:21* | *1* |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

**Client Sample ID: IDW-AQ**
**Date Collected: 07/21/20 12:50**
**Date Received: 07/22/20 11:06**

**Lab Sample ID: 410-8511-11**
**Matrix: Water**

**Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15**

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **28** | **M** | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluoroheptanoic acid** | **3.9** | | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluorooctanoic acid** | **37** | **M** | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorononanoic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorodecanoic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorotridecanoic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorotetradecanoic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluorobutanesulfonic acid** | **4.4** | | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluorohexanesulfonic acid** | **54** | **M** | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluorooctanesulfonic acid** | **20** | **M** | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| NEtFOSAA | 0.44 | U | 2.6 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| NMeFOSAA | 0.52 | U | 1.7 | 1.0 | 0.52 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluoropentanesulfonic acid** | **4.5** | | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluoroheptanesulfonic acid** | **0.72** | **J** | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorononanesulfonic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorodecanesulfonic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorooctanesulfonamide | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluorobutanoic acid** | **12** | | 4.4 | 3.5 | 1.7 | ng/L | | 07/29/20 18:09 | 1 |
| **Perfluoropentanoic acid** | **19** | | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluoroundecanoic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| Perfluorododecanoic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **2.1** | **J** | 4.4 | 3.5 | 1.7 | ng/L | | 07/29/20 18:09 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.87 | U | 2.6 | 1.7 | 0.87 | ng/L | | 07/29/20 18:09 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.44 | U | 1.7 | 0.87 | 0.44 | ng/L | | 07/29/20 18:09 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *359* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *M2-8:2 FTS* | *153* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *M2-6:2 FTS* | *329* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C5 PFHxA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C4 PFHpA* | *146* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C8 PFOA* | *112* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C9 PFNA* | *161* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C6 PFDA* | *86* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C7 PFUnA* | *35* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C2-PFDoDA* | *19* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C2 PFTeDA* | *71* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C3 PFBS* | *147* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C3 PFHxS* | *110* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C8 PFOS* | *107* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *d3-NMeFOSAA* | *46* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *d5-NEtFOSAA* | *26* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C8 FOSA* | *34* | *Q* | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C4 PFBA* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |
| *13C5 PFPeA* | *126* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 18:09* | *1* |

## Client Sample ID: SB-1-0-0.5

**Date Collected: 07/21/20 08:15**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-12

**Matrix: Solid**
**Percent Solids: 93.5**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **2.4** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluoroheptanoic acid** | **0.50** | **J** | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorooctanoic acid** | **3.4** | **M** | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorononanoic acid** | **11** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorodecanoic acid** | **4.3** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorotridecanoic acid** | **2.0** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| Perfluorotetradecanoic acid | 0.21 | U | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| Perfluorobutanesulfonic acid | 0.42 | U | 2.1 | 1.7 | 0.42 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorohexanesulfonic acid** | **35** | **M** | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| NEtFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| NMeFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluoropentanesulfonic acid** | **0.30** | **J M** | 3.2 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluoroheptanesulfonic acid** | **3.0** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorononanesulfonic acid** | **3.2** | **J1** | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorodecanesulfonic acid** | **3.2** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorooctanesulfonamide** | **11** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorobutanoic acid** | **0.99** | **J** | 2.1 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluoropentanoic acid** | **1.2** | | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluoroundecanoic acid** | **1.6** | **M** | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **Perfluorododecanoic acid** | **0.48** | **J M** | 0.64 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.64 | U | 2.1 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| **8:2 Fluorotelomer sulfonic acid** | **1.7** | **J** | 3.2 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 21:45 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.64 | U | 2.1 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 21:45 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *106* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *M2-8:2 FTS* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *M2-6:2 FTS* | *108* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C5 PFHxA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C4 PFHpA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C8 PFOA* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C9 PFNA* | *120* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C6 PFDA* | *98* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C7 PFUnA* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C2-PFDoDA* | *91* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C2 PFTeDA* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C3 PFBS* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C3 PFHxS* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C8 PFOS* | *117* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *d3-NMeFOSAA* | *58* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *d5-NEtFOSAA* | *66* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C8 FOSA* | *70* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C4 PFBA* | *92* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |
| *13C5 PFPeA* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:45* | *1* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **830** | **D M** | 6.4 | 4.2 | 2.1 | ng/g | ☼ | 07/27/20 16:30 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C8 PFOS* | *108* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 16:30* | *10* |

## Client Sample ID: SB-1-0-0.5

**Date Collected: 07/21/20 08:15**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-12

**Matrix: Solid**
**Percent Solids: 93.5**

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **6.5** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **93.5** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: SB-1-1-1.45

**Date Collected: 07/21/20 08:25**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-13

**Matrix: Solid**
**Percent Solids: 87.2**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **4.2** | | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluoroheptanoic acid** | **1.4** | | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluorooctanoic acid** | **46** | **M** | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluorononanoic acid** | **17** | | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluorodecanoic acid** | **0.67** | **M** | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| Perfluorotridecanoic acid | 0.22 | U M | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| Perfluorotetradecanoic acid | 0.22 | U | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| Perfluorobutanesulfonic acid | 0.45 | U | 2.2 | 1.8 | 0.45 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| NEtFOSAA | 0.22 | U | 2.2 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| NMeFOSAA | 0.22 | U | 2.2 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluoropentanesulfonic acid** | **1.2** | **J M** | 3.4 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluoroheptanesulfonic acid** | **28** | | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| Perfluorononanesulfonic acid | 0.22 | U | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluorodecanesulfonic acid** | **0.31** | **J M** | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluorooctanesulfonamide** | **3.7** | | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluorobutanoic acid** | **1.4** | **J** | 2.2 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **Perfluoropentanoic acid** | **2.1** | | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| Perfluoroundecanoic acid | 0.22 | U M | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| Perfluorododecanoic acid | 0.22 | U | 0.67 | 0.45 | 0.22 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **1.6** | **J** | 2.2 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| **8:2 Fluorotelomer sulfonic acid** | **2.3** | **J** | 3.4 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 22:12 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.67 | U | 2.2 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 22:12 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *M2-8:2 FTS* | *92* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *M2-6:2 FTS* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C5 PFHxA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C4 PFHpA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C8 PFOA* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C9 PFNA* | *98* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C6 PFDA* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C7 PFUnA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C2-PFDoDA* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C2 PFTeDA* | *87* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C3 PFBS* | *87* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C3 PFHxS* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C8 PFOS* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *d3-NMeFOSAA* | *40* | *Q* | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *d5-NEtFOSAA* | *51* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C8 FOSA* | *84* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |
| *13C4 PFBA* | *85* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:12* | *1* |

## Client Sample ID: SB-1-1-1.45

**Date Collected: 07/21/20 08:25**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-13

**Matrix: Solid**
**Percent Solids: 87.2**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C5 PFPeA | 86 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:12 | 1 |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanesulfonic acid** | **220** | **D M** | 6.7 | 4.5 | 2.2 | ng/g | ☼ | 07/27/20 16:39 | 10 |
| **Perfluorooctanesulfonic acid** | **790** | **D M** | 6.7 | 4.5 | 2.2 | ng/g | ☼ | 07/27/20 16:39 | 10 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C3 PFHxS | 84 | | 50 - 150 | 07/24/20 09:12 | 07/27/20 16:39 | 10 |
| 13C8 PFOS | 88 | | 50 - 150 | 07/24/20 09:12 | 07/27/20 16:39 | 10 |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **12.8** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **87.2** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: SB-2-0-0.5

**Date Collected: 07/21/20 08:45**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-14

**Matrix: Solid**
**Percent Solids: 95.4**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **1.7** | **M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluoroheptanoic acid** | **0.61** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorooctanoic acid** | **5.4** | **M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorononanoic acid** | **3.9** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorodecanoic acid** | **3.5** | **M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorotridecanoic acid** | **3.9** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| Perfluorotetradecanoic acid | 0.20 | U M | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| Perfluorobutanesulfonic acid | 0.40 | U | 2.0 | 1.6 | 0.40 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorohexanesulfonic acid** | **22** | **M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| NEtFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| NMeFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluoropentanesulfonic acid** | **0.42** | **J** | 3.0 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluoroheptanesulfonic acid** | **1.1** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorononanesulfonic acid** | **2.5** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorodecanesulfonic acid** | **2.4** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorooctanesulfonamide** | **9.9** | | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorobutanoic acid** | **0.87** | **J** | 2.0 | 1.6 | 0.60 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluoropentanoic acid** | **1.0** | **M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluoroundecanoic acid** | **1.1** | **M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **Perfluorododecanoic acid** | **0.46** | **J M** | 0.60 | 0.40 | 0.20 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **1.6** | **J** | 2.0 | 1.6 | 0.60 | ng/g | ☼ | 07/24/20 22:21 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | ☼ | 07/24/20 22:21 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| M2-4:2 FTS | 97 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:21 | 1 |
| M2-8:2 FTS | 93 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:21 | 1 |
| M2-6:2 FTS | 96 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:21 | 1 |
| 13C5 PFHxA | 91 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:21 | 1 |
| 13C4 PFHpA | 89 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:21 | 1 |
| 13C8 PFOA | 92 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 22:21 | 1 |

## Client Sample ID: SB-2-0-0.5
**Date Collected: 07/21/20 08:45**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-14
**Matrix: Solid**
**Percent Solids: 95.4**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C9 PFNA* | *102* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C6 PFDA* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C7 PFUnA* | *95* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C2-PFDoDA* | *89* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C2 PFTeDA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C3 PFBS* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C3 PFHxS* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C8 PFOS* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *d3-NMeFOSAA* | *50* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *d5-NEtFOSAA* | *57* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C8 FOSA* | *61* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C4 PFBA* | *86* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |
| *13C5 PFPeA* | *89* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:21* | *1* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **760** | **D** | 6.0 | 4.0 | 2.0 | ng/g | ☼ | 07/27/20 16:48 | 10 |
| **8:2 Fluorotelomer sulfonic acid** | **140** | **D** | 30 | 16 | 6.0 | ng/g | ☼ | 07/27/20 16:48 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-8:2 FTS* | *76* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 16:48* | *10* |
| *13C8 PFOS* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 16:48* | *10* |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **4.6** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **95.4** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: SB-2-1-1.5
**Date Collected: 07/21/20 08:55**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-15
**Matrix: Solid**
**Percent Solids: 90.8**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **5.6** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluoroheptanoic acid** | **2.6** | **M** | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorooctanoic acid** | **68** | **M** | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorononanoic acid** | **11** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorodecanoic acid** | **1.7** | **M** | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorotridecanoic acid** | **0.47** | **J** | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| Perfluorotetradecanoic acid | 0.21 | U | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorobutanesulfonic acid** | **0.71** | **J** | 2.1 | 1.7 | 0.43 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| NEtFOSAA | 0.21 | U | 2.1 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| NMeFOSAA | 0.21 | U | 2.1 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluoropentanesulfonic acid** | **1.1** | **J** | 3.2 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluoroheptanesulfonic acid** | **25** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorononanesulfonic acid** | **0.93** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorodecanesulfonic acid** | **0.71** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorooctanesulfonamide** | **9.6** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluorobutanoic acid** | **1.2** | **J** | 2.1 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **Perfluoropentanoic acid** | **3.2** | | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |

## Client Sample ID: SB-2-1-1.5

**Date Collected: 07/21/20 08:55**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-15

**Matrix: Solid**
**Percent Solids: 90.8**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluoroundecanoic acid | 0.21 | U M | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| Perfluorododecanoic acid | 0.21 | U M | 0.64 | 0.43 | 0.21 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **29** | | 2.1 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 22:30 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.64 | U | 2.1 | 1.7 | 0.64 | ng/g | ☼ | 07/24/20 22:30 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *M2-8:2 FTS* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *M2-6:2 FTS* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C5 PFHxA* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C4 PFHpA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C8 PFOA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C9 PFNA* | *119* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C6 PFDA* | *95* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C7 PFUnA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C2-PFDoDA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C2 PFTeDA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C3 PFBS* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C3 PFHxS* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C8 PFOS* | *107* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *d3-NMeFOSAA* | *54* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *d5-NEtFOSAA* | *64* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C8 FOSA* | *82* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C4 PFBA* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |
| *13C5 PFPeA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:30* | *1* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanesulfonic acid** | **150** | **D M** | 6.4 | 4.3 | 2.1 | ng/g | ☼ | 07/27/20 16:57 | 10 |
| **8:2 Fluorotelomer sulfonic acid** | **280** | **D** | 32 | 17 | 6.4 | ng/g | ☼ | 07/27/20 16:57 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-8:2 FTS* | *84* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 16:57* | *10* |
| *13C3 PFHxS* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 16:57* | *10* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL2

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **1500** | **D M** | 64 | 43 | 21 | ng/g | ☼ | 07/28/20 02:28 | 100 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C8 PFOS* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/28/20 02:28* | *100* |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **9.2** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **90.8** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: SB-3-0-0.5

**Date Collected: 07/21/20 09:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-16

**Matrix: Solid**
**Percent Solids: 94.1**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **2.0** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluoroheptanoic acid** | **1.1** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorooctanoic acid** | **3.8** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorononanoic acid** | **1.7** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorodecanoic acid** | **2.7** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorotridecanoic acid** | **0.67** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| Perfluorotetradecanoic acid | 0.21 | U | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| Perfluorobutanesulfonic acid | 0.42 | U | 2.1 | 1.7 | 0.42 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorohexanesulfonic acid** | **11** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| NEtFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| NMeFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluoropentanesulfonic acid** | **0.26** | **J M** | 3.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluoroheptanesulfonic acid** | **0.75** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorononanesulfonic acid** | **1.9** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorodecanesulfonic acid** | **2.7** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorooctanesulfonamide** | **25** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorobutanoic acid** | **0.91** | **J** | 2.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluoropentanoic acid** | **1.5** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluoroundecanoic acid** | **0.65** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **Perfluorododecanoic acid** | **0.30** | **J M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **5.8** | | 2.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| **8:2 Fluorotelomer sulfonic acid** | **36** | | 3.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 22:39 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.63 | U | 2.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 22:39 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *M2-8:2 FTS* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *M2-6:2 FTS* | *110* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C5 PFHxA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C4 PFHpA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C8 PFOA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C9 PFNA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C6 PFDA* | *91* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C7 PFUnA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C2-PFDoDA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C2 PFTeDA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C3 PFBS* | *95* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C3 PFHxS* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C8 PFOS* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *d3-NMeFOSAA* | *52* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *d5-NEtFOSAA* | *62* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C8 FOSA* | *64* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C4 PFBA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |
| *13C5 PFPeA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 22:39* | *1* |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **430** | **D M** | 6.3 | 4.2 | 2.1 | ng/g | ☼ | 07/27/20 17:06 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *13C8 PFOS* | *86* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 17:06* | *10* |

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

## Client Sample ID: SB-3-0-0.5
**Lab Sample ID: 410-8511-16**
**Date Collected: 07/21/20 09:10**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 94.1**

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **5.9** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **94.1** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: SB-3-1-1.4
**Lab Sample ID: 410-8511-17**
**Date Collected: 07/21/20 09:18**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 90.7**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **1.8** | **M** | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluoroheptanoic acid** | **2.0** | | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorooctanoic acid** | **10** | **M** | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorononanoic acid** | **8.1** | | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorodecanoic acid** | **0.93** | **M** | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| Perfluorotridecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| Perfluorotetradecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| Perfluorobutanesulfonic acid | 0.44 | U | 2.2 | 1.8 | 0.44 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorohexanesulfonic acid** | **17** | **M** | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| NEtFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| NMeFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| Perfluoropentanesulfonic acid | 0.22 | U | 3.3 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluoroheptanesulfonic acid** | **3.5** | | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorononanesulfonic acid** | **0.51** | **J** | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorodecanesulfonic acid** | **0.48** | **J** | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorooctanesulfonamide** | **6.1** | | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluorobutanoic acid** | **1.0** | **J** | 2.2 | 1.8 | 0.66 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **Perfluoropentanoic acid** | **2.4** | | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| Perfluoroundecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| Perfluorododecanoic acid | 0.22 | U | 0.66 | 0.44 | 0.22 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **11** | | 2.2 | 1.8 | 0.66 | ng/g | ☼ | 07/27/20 19:40 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.66 | U | 2.2 | 1.8 | 0.66 | ng/g | ☼ | 07/27/20 19:40 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *118* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *M2-8:2 FTS* | *119* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *M2-6:2 FTS* | *113* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C5 PFHxA* | *112* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C4 PFHpA* | *112* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C8 PFOA* | *111* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C9 PFNA* | *131* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C6 PFDA* | *117* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C7 PFUnA* | *117* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C2-PFDoDA* | *113* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C2 PFTeDA* | *111* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C3 PFBS* | *107* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C3 PFHxS* | *116* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C8 PFOS* | *110* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *d3-NMeFOSAA* | *77* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *d5-NEtFOSAA* | *86* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C8 FOSA* | *108* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |
| *13C4 PFBA* | *106* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:40* | *1* |

## Client Sample ID: SB-3-1-1.4

**Date Collected: 07/21/20 09:18**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-17

**Matrix: Solid**
**Percent Solids: 90.7**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C5 PFPeA | 103 | | 50 - 150 | 07/27/20 08:21 | 07/27/20 19:40 | 1 |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **8:2 Fluorotelomer sulfonic acid** | **180** | **D** | 33 | 18 | 6.6 | ng/g | ☼ | 07/28/20 20:45 | 10 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| M2-8:2 FTS | 101 | | 50 - 150 | 07/27/20 08:21 | 07/28/20 20:45 | 10 |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL2

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **1500** | **D M** | 66 | 44 | 22 | ng/g | ☼ | 07/29/20 12:25 | 100 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C8 PFOS | 78 | | 50 - 150 | 07/27/20 08:21 | 07/29/20 12:25 | 100 |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **9.3** | | 1.0 | | 1.0 | % | | 07/23/20 16:48 | 1 |
| **Percent Solids** | **90.7** | | 1.0 | | 1.0 | % | | 07/23/20 16:48 | 1 |

## Client Sample ID: SB-4-0-0.5

**Date Collected: 07/21/20 09:30**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-18

**Matrix: Solid**
**Percent Solids: 90.4**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **0.69** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluoroheptanoic acid** | **0.40** | **J** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorooctanoic acid** | **1.2** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorononanoic acid** | **5.2** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorodecanoic acid** | **0.76** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| Perfluorotridecanoic acid | 0.21 | U M | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| Perfluorotetradecanoic acid | 0.21 | U | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| Perfluorobutanesulfonic acid | 0.42 | U | 2.1 | 1.7 | 0.42 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorohexanesulfonic acid** | **3.0** | **M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| NEtFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| NMeFOSAA | 0.21 | U | 2.1 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| Perfluoropentanesulfonic acid | 0.21 | U | 3.2 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluoroheptanesulfonic acid** | **0.53** | **J** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorononanesulfonic acid** | **0.24** | **J** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorodecanesulfonic acid** | **0.25** | **J** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorooctanesulfonamide** | **0.32** | **J** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluorobutanoic acid** | **0.68** | **J** | 2.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluoropentanoic acid** | **0.67** | | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| **Perfluoroundecanoic acid** | **0.31** | **J M** | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| Perfluorododecanoic acid | 0.21 | U | 0.63 | 0.42 | 0.21 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.63 | U | 2.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.63 | U | 3.2 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 23:06 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.63 | U | 2.1 | 1.7 | 0.63 | ng/g | ☼ | 07/24/20 23:06 | 1 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| M2-4:2 FTS | 95 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |

## Client Sample ID: SB-4-0-0.5

**Date Collected: 07/21/20 09:30**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-18

**Matrix: Solid**
**Percent Solids: 90.4**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| M2-8:2 FTS | 90 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| M2-6:2 FTS | 99 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C5 PFHxA | 89 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C4 PFHpA | 87 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C8 PFOA | 91 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C9 PFNA | 91 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C6 PFDA | 87 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C7 PFUnA | 89 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C2-PFDoDA | 88 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C2 PFTeDA | 89 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C3 PFBS | 92 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C3 PFHxS | 99 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C8 PFOS | 98 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| d3-NMeFOSAA | 45 | Q | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| d5-NEtFOSAA | 61 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C8 FOSA | 76 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C4 PFBA | 84 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |
| 13C5 PFPeA | 85 | | 50 - 150 | 07/24/20 09:12 | 07/24/20 23:06 | 1 |

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **130** | **D M** | 6.3 | 4.2 | 2.1 | ng/g | ☼ | 07/27/20 17:24 | 10 |

| Isotope Dilution | %Recovery | Qualifier | Limits | Prepared | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|
| 13C8 PFOS | 84 | | 50 - 150 | 07/24/20 09:12 | 07/27/20 17:24 | 10 |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **9.6** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **90.4** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: SB-4-1-1.4

**Date Collected: 07/21/20 09:35**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-19

**Matrix: Solid**
**Percent Solids: 84.9**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **0.84** | | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluoroheptanoic acid** | **0.61** | **J** | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluorooctanoic acid** | **13** | **M** | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluorononanoic acid** | **2.2** | | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorodecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorotridecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorotetradecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorobutanesulfonic acid | 0.44 | U | 2.2 | 1.8 | 0.44 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluorohexanesulfonic acid** | **37** | **M** | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluorooctanesulfonic acid** | **29** | **M** | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| NEtFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| NMeFOSAA | 0.22 | U | 2.2 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluoropentanesulfonic acid | 0.22 | U | 3.3 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluoroheptanesulfonic acid** | **1.3** | | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |

## Client Sample ID: SB-4-1-1.4

**Date Collected: 07/21/20 09:35**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-19

**Matrix: Solid**
**Percent Solids: 84.9**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorononanesulfonic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorodecanesulfonic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorooctanesulfonamide | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorobutanoic acid | 0.67 | U | 2.2 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| **Perfluoropentanoic acid** | **1.0** | | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluoroundecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| Perfluorododecanoic acid | 0.22 | U | 0.67 | 0.44 | 0.22 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.67 | U | 2.2 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.67 | U | 3.3 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 23:16 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.67 | U | 2.2 | 1.8 | 0.67 | ng/g | ☼ | 07/24/20 23:16 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *107* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *M2-8:2 FTS* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *M2-6:2 FTS* | *106* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C5 PFHxA* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C4 PFHpA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C8 PFOA* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C9 PFNA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C6 PFDA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C7 PFUnA* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C2-PFDoDA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C2 PFTeDA* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C3 PFBS* | *98* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C3 PFHxS* | *106* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C8 PFOS* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *d3-NMeFOSAA* | *67* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *d5-NEtFOSAA* | *77* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C8 FOSA* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C4 PFBA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |
| *13C5 PFPeA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:16* | *1* |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **15.1** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **84.9** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

## Client Sample ID: FD-07212020

**Date Collected: 07/21/20 00:00**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-20

**Matrix: Solid**
**Percent Solids: 95.7**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanoic acid** | **1.8** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluoroheptanoic acid** | **0.61** | **M** | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorooctanoic acid** | **5.1** | **M** | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorononanoic acid** | **3.8** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorodecanoic acid** | **3.7** | **M** | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorotridecanoic acid** | **3.8** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| Perfluorotetradecanoic acid | 0.20 | U | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| Perfluorobutanesulfonic acid | 0.39 | U | 2.0 | 1.6 | 0.39 | ng/g | ☼ | 07/24/20 23:25 | 1 |

**Client Sample ID: FD-07212020**
**Lab Sample ID: 410-8511-20**
**Date Collected: 07/21/20 00:00**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 95.7**

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorohexanesulfonic acid** | **23** | **M** | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **NEtFOSAA** | **0.28** | **J** | 2.0 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| NMeFOSAA | 0.20 | U | 2.0 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluoropentanesulfonic acid** | **0.46** | **J** | 3.0 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluoroheptanesulfonic acid** | **1.1** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorononanesulfonic acid** | **2.6** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorodecanesulfonic acid** | **2.2** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorooctanesulfonamide** | **10** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorobutanoic acid** | **0.81** | **J** | 2.0 | 1.6 | 0.59 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluoropentanoic acid** | **1.0** | | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluoroundecanoic acid** | **0.97** | **M** | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **Perfluorododecanoic acid** | **0.48** | **J M** | 0.59 | 0.39 | 0.20 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| **6:2 Fluorotelomer sulfonic acid** | **1.7** | **J** | 2.0 | 1.6 | 0.59 | ng/g | ☼ | 07/24/20 23:25 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.59 | U | 2.0 | 1.6 | 0.59 | ng/g | ☼ | 07/24/20 23:25 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *M2-8:2 FTS* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *M2-6:2 FTS* | *92* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C5 PFHxA* | *84* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C4 PFHpA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C8 PFOA* | *85* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C9 PFNA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C6 PFDA* | *89* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C7 PFUnA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C2-PFDoDA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C2 PFTeDA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C3 PFBS* | *87* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C3 PFHxS* | *92* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C8 PFOS* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *d3-NMeFOSAA* | *51* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *d5-NEtFOSAA* | *62* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C8 FOSA* | *71* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C4 PFBA* | *83* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |
| *13C5 PFPeA* | *86* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:25* | *1* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 - DL

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Perfluorooctanesulfonic acid** | **810** | **D M** | 5.9 | 3.9 | 2.0 | ng/g | ☼ | 07/27/20 17:33 | 10 |
| **8:2 Fluorotelomer sulfonic acid** | **130** | **D** | 30 | 16 | 5.9 | ng/g | ☼ | 07/27/20 17:33 | 10 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-8:2 FTS* | *69* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 17:33* | *10* |
| *13C8 PFOS* | *80* | | *50 - 150* | *07/24/20 09:12* | *07/27/20 17:33* | *10* |

## General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **4.3** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **95.7** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: IDW-SO-1

**Date Collected: 07/21/20 13:05**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-21

**Matrix: Solid**
**Percent Solids: 95.9**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluoroheptanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorooctanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorononanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorodecanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorotridecanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorotetradecanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorobutanesulfonic acid | 0.38 | U | 1.9 | 1.5 | 0.38 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorohexanesulfonic acid | 0.19 | U M | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorooctanesulfonic acid | 0.19 | U M | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| NEtFOSAA | 0.19 | U | 1.9 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| NMeFOSAA | 0.19 | U | 1.9 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluoropentanesulfonic acid | 0.19 | U | 2.9 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluoroheptanesulfonic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorononanesulfonic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorodecanesulfonic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorooctanesulfonamide | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorobutanoic acid | 0.57 | U | 1.9 | 1.5 | 0.57 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluoropentanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluoroundecanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| Perfluorododecanoic acid | 0.19 | U | 0.57 | 0.38 | 0.19 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.57 | U | 1.9 | 1.5 | 0.57 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.57 | U | 2.9 | 1.5 | 0.57 | ng/g | ☼ | 07/24/20 23:34 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.57 | U | 1.9 | 1.5 | 0.57 | ng/g | ☼ | 07/24/20 23:34 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *106* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *M2-8:2 FTS* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *M2-6:2 FTS* | *113* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C5 PFHxA* | *102* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C4 PFHpA* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C8 PFOA* | *105* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C9 PFNA* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C6 PFDA* | *98* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C7 PFUnA* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C2-PFDoDA* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C2 PFTeDA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C3 PFBS* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C3 PFHxS* | *105* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C8 PFOS* | *102* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *d3-NMeFOSAA* | *80* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *d5-NEtFOSAA* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C8 FOSA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C4 PFBA* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |
| *13C5 PFPeA* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:34* | *1* |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **4.1** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |
| **Percent Solids** | **95.9** | | 1.0 | | 1.0 | % | | 07/23/20 18:43 | 1 |

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: IDW-SO-2

**Date Collected: 07/21/20 13:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-22

**Matrix: Solid**
**Percent Solids: 95.4**

### Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluoroheptanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorooctanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorononanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorodecanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorotridecanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorotetradecanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorobutanesulfonic acid | 0.39 | U | 1.9 | 1.6 | 0.39 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorohexanesulfonic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorooctanesulfonic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| NEtFOSAA | 0.19 | U | 1.9 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| NMeFOSAA | 0.19 | U | 1.9 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluoropentanesulfonic acid | 0.19 | U | 2.9 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluoroheptanesulfonic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorononanesulfonic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorodecanesulfonic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorooctanesulfonamide | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorobutanoic acid | 0.58 | U | 1.9 | 1.6 | 0.58 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluoropentanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluoroundecanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| Perfluorododecanoic acid | 0.19 | U | 0.58 | 0.39 | 0.19 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.58 | U | 1.9 | 1.6 | 0.58 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.58 | U | 2.9 | 1.6 | 0.58 | ng/g | ☼ | 07/24/20 23:43 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.58 | U | 1.9 | 1.6 | 0.58 | ng/g | ☼ | 07/24/20 23:43 | 1 |

| *Isotope Dilution* | *%Recovery* | *Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *M2-8:2 FTS* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *M2-6:2 FTS* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C5 PFHxA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C4 PFHpA* | *97* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C8 PFOA* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C9 PFNA* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C6 PFDA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C7 PFUnA* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C2-PFDoDA* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C2 PFTeDA* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C3 PFBS* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C3 PFHxS* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C8 PFOS* | *105* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *d3-NMeFOSAA* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *d5-NEtFOSAA* | *108* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C8 FOSA* | *104* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C4 PFBA* | *101* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |
| *13C5 PFPeA* | *100* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 23:43* | *1* |

### General Chemistry

| Analyte | Result | Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| **Percent Moisture** | **4.6** | | 1.0 | | 1.0 | % | | 07/23/20 16:48 | 1 |
| **Percent Solids** | **95.4** | | 1.0 | | 1.0 | % | | 07/23/20 16:48 | 1 |

# Isotope Dilution Summary

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

**Matrix: Solid**

**Prep Type: Total/NA**

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | M242FTS (50-150) | M282FTS (50-150) | M262FTS (50-150) | 13C5PHA (50-150) | C4PFHA (50-150) | C8PFOA (50-150) | C9PFNA (50-150) | C6PFDA (50-150) |
| 410-8511-12 | SB-1-0-0.5 | 106 | 99 | 108 | 99 | 97 | 101 | 120 | 98 |
| 410-8511-12 - DL | SB-1-0-0.5 | | | | | | | | |
| 410-8511-12 MS | SB-1-0-0.5 | 100 | 98 | 95 | 91 | 91 | 93 | 105 | 91 |
| 410-8511-12 MSD | SB-1-0-0.5 | 103 | 99 | 102 | 91 | 93 | 95 | 111 | 98 |
| 410-8511-13 | SB-1-1-1.45 | 88 | 92 | 88 | 88 | 88 | 90 | 98 | 90 |
| 410-8511-13 - DL | SB-1-1-1.45 | | | | | | | | |
| 410-8511-14 | SB-2-0-0.5 | 97 | 93 | 96 | 91 | 89 | 92 | 102 | 90 |
| 410-8511-14 - DL | SB-2-0-0.5 | | 76 | | | | | | |
| 410-8511-15 | SB-2-1-1.5 | 104 | 94 | 99 | 101 | 97 | 97 | 119 | 95 |
| 410-8511-15 - DL | SB-2-1-1.5 | | 84 | | | | | | |
| 410-8511-15 - DL2 | SB-2-1-1.5 | | | | | | | | |
| 410-8511-16 | SB-3-0-0.5 | 100 | 100 | 110 | 96 | 96 | 99 | 99 | 91 |
| 410-8511-16 - DL | SB-3-0-0.5 | | | | | | | | |
| 410-8511-17 | SB-3-1-1.4 | 118 | 119 | 113 | 112 | 112 | 111 | 131 | 117 |
| 410-8511-17 - DL | SB-3-1-1.4 | | 101 | | | | | | |
| 410-8511-17 - DL2 | SB-3-1-1.4 | | | | | | | | |
| 410-8511-18 | SB-4-0-0.5 | 95 | 90 | 99 | 89 | 87 | 91 | 91 | 87 |
| 410-8511-18 - DL | SB-4-0-0.5 | | | | | | | | |
| 410-8511-19 | SB-4-1-1.4 | 107 | 99 | 106 | 103 | 99 | 103 | 99 | 96 |
| 410-8511-20 | FD-07212020 | 90 | 90 | 92 | 84 | 88 | 85 | 99 | 89 |
| 410-8511-20 - DL | FD-07212020 | | 69 | | | | | | |
| 410-8511-21 | IDW-SO-1 | 106 | 99 | 113 | 102 | 99 | 105 | 101 | 98 |
| 410-8511-22 | IDW-SO-2 | 103 | 103 | 104 | 96 | 97 | 103 | 104 | 94 |
| LCS 410-25969/2-B | Lab Control Sample | 94 | 98 | 98 | 89 | 94 | 94 | 92 | 92 |
| LCS 410-26607/2-B | Lab Control Sample | 105 | 108 | 105 | 102 | 103 | 100 | 120 | 107 |
| LCSD 410-26607/3-B | Lab Control Sample Dup | 125 | 123 | 127 | 122 | 122 | 118 | 125 | 121 |
| MB 410-25969/1-B | Method Blank | 102 | 90 | 103 | 93 | 95 | 94 | 98 | 88 |
| MB 410-26607/1-B | Method Blank | 111 | 106 | 108 | 106 | 109 | 107 | 103 | 98 |

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 13C7PUA (50-150) | PFDoDA (50-150) | PFTDA (50-150) | C3PFBS (50-150) | C3PFHS (50-150) | C8PFOS (50-150) | d3NMFOS (50-150) | d5NEFOS (50-150) |
| 410-8511-12 | SB-1-0-0.5 | 100 | 91 | 103 | 99 | 100 | 117 | 58 | 66 |
| 410-8511-12 - DL | SB-1-0-0.5 | | | | | | 108 | | |
| 410-8511-12 MS | SB-1-0-0.5 | 94 | 92 | 97 | 93 | 95 | 105 | 55 | 58 |
| 410-8511-12 MSD | SB-1-0-0.5 | 104 | 97 | 106 | 97 | 96 | 110 | 59 | 69 |
| 410-8511-13 | SB-1-1-1.45 | 88 | 90 | 87 | 87 | 93 | 101 | 40 Q | 51 |
| 410-8511-13 - DL | SB-1-1-1.45 | | | | | 84 | 88 | | |
| 410-8511-14 | SB-2-0-0.5 | 95 | 89 | 94 | 94 | 96 | 103 | 50 | 57 |
| 410-8511-14 - DL | SB-2-0-0.5 | | | | | | 88 | | |
| 410-8511-15 | SB-2-1-1.5 | 99 | 96 | 99 | 96 | 100 | 107 | 54 | 64 |
| 410-8511-15 - DL | SB-2-1-1.5 | | | | | 90 | | | |
| 410-8511-15 - DL2 | SB-2-1-1.5 | | | | | | 104 | | |
| 410-8511-16 | SB-3-0-0.5 | 97 | 96 | 96 | 95 | 101 | 101 | 52 | 62 |
| 410-8511-16 - DL | SB-3-0-0.5 | | | | | | 86 | | |
| 410-8511-17 | SB-3-1-1.4 | 117 | 113 | 111 | 107 | 116 | 110 | 77 | 86 |
| 410-8511-17 - DL | SB-3-1-1.4 | | | | | | | | |
| 410-8511-17 - DL2 | SB-3-1-1.4 | | | | | | 78 | | |
| 410-8511-18 | SB-4-0-0.5 | 89 | 88 | 89 | 92 | 99 | 98 | 45 Q | 61 |
| 410-8511-18 - DL | SB-4-0-0.5 | | | | | | 84 | | |

# Isotope Dilution Summary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Matrix: Solid**
**Prep Type: Total/NA**

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 13C7PUA (50-150) | PFDoDA (50-150) | PFTDA (50-150) | C3PFBS (50-150) | C3PFHS (50-150) | C8PFOS (50-150) | d3NMFOS (50-150) | d5NEFOS (50-150) |
| 410-8511-19 | SB-4-1-1.4 | 104 | 97 | 93 | 98 | 106 | 104 | 67 | 77 |
| 410-8511-20 | FD-07212020 | 97 | 96 | 96 | 87 | 92 | 97 | 51 | 62 |
| 410-8511-20 - DL | FD-07212020 | | | | | | 80 | | |
| 410-8511-21 | IDW-SO-1 | 103 | 103 | 94 | 96 | 105 | 102 | 80 | 90 |
| 410-8511-22 | IDW-SO-2 | 104 | 100 | 101 | 100 | 101 | 105 | 100 | 108 |
| LCS 410-25969/2-B | Lab Control Sample | 93 | 93 | 96 | 90 | 89 | 94 | 98 | 105 |
| LCS 410-26607/2-B | Lab Control Sample | 105 | 109 | 103 | 103 | 103 | 104 | 119 | 118 |
| LCSD 410-26607/3-B | Lab Control Sample Dup | 125 | 123 | 117 | 120 | 121 | 125 | 138 | 141 |
| MB 410-25969/1-B | Method Blank | 96 | 89 | 92 | 93 | 99 | 95 | 95 | 96 |
| MB 410-26607/1-B | Method Blank | 105 | 104 | 100 | 103 | 107 | 101 | 114 | 112 |

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | PFOSA (50-150) | PFBA (50-150) | PFPeA (50-150) |
| 410-8511-12 | SB-1-0-0.5 | 70 | 92 | 93 |
| 410-8511-12 - DL | SB-1-0-0.5 | | | |
| 410-8511-12 MS | SB-1-0-0.5 | 66 | 88 | 89 |
| 410-8511-12 MSD | SB-1-0-0.5 | 72 | 89 | 91 |
| 410-8511-13 | SB-1-1-1.45 | 84 | 85 | 86 |
| 410-8511-13 - DL | SB-1-1-1.45 | | | |
| 410-8511-14 | SB-2-0-0.5 | 61 | 86 | 89 |
| 410-8511-14 - DL | SB-2-0-0.5 | | | |
| 410-8511-15 | SB-2-1-1.5 | 82 | 93 | 94 |
| 410-8511-15 - DL | SB-2-1-1.5 | | | |
| 410-8511-15 - DL2 | SB-2-1-1.5 | | | |
| 410-8511-16 | SB-3-0-0.5 | 64 | 88 | 88 |
| 410-8511-16 - DL | SB-3-0-0.5 | | | |
| 410-8511-17 | SB-3-1-1.4 | 108 | 106 | 103 |
| 410-8511-17 - DL | SB-3-1-1.4 | | | |
| 410-8511-17 - DL2 | SB-3-1-1.4 | | | |
| 410-8511-18 | SB-4-0-0.5 | 76 | 84 | 85 |
| 410-8511-18 - DL | SB-4-0-0.5 | | | |
| 410-8511-19 | SB-4-1-1.4 | 93 | 97 | 99 |
| 410-8511-20 | FD-07212020 | 71 | 83 | 86 |
| 410-8511-20 - DL | FD-07212020 | | | |
| 410-8511-21 | IDW-SO-1 | 97 | 100 | 101 |
| 410-8511-22 | IDW-SO-2 | 104 | 101 | 100 |
| LCS 410-25969/2-B | Lab Control Sample | 100 | 92 | 91 |
| LCS 410-26607/2-B | Lab Control Sample | 113 | 104 | 99 |
| LCSD 410-26607/3-B | Lab Control Sample Dup | 125 | 119 | 116 |
| MB 410-25969/1-B | Method Blank | 93 | 94 | 94 |
| MB 410-26607/1-B | Method Blank | 112 | 105 | 101 |

**Surrogate Legend**

M242FTS = M2-4:2 FTS
M282FTS = M2-8:2 FTS
M262FTS = M2-6:2 FTS
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA

# Isotope Dilution Summary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoDA = 13C2-PFDoDA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

**Matrix: Water** **Prep Type: Total/NA**

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | M242FTS (50-150) | M282FTS (50-150) | M262FTS (50-150) | 13C5PHA (50-150) | C4PFHA (50-150) | C8PFOA (50-150) | C9PFNA (50-150) | C6PFDA (50-150) |
| 410-8511-1 | MW-1 | 132 | 108 | 117 | 97 | 103 | 99 | 107 | 98 |
| 410-8511-2 | MW-2 | 149 | 110 | 123 | 113 | 118 | 110 | 112 | 103 |
| 410-8511-3 | MW-3 | 140 | 109 | 120 | 100 | 101 | 103 | 105 | 106 |
| 410-8511-3 - DL | MW-3 | | | | | | | | |
| 410-8511-4 | MW-4 | 126 | 107 | 122 | 111 | 109 | 112 | 108 | 103 |
| 410-8511-4 MS | MW-4 | 121 | 94 | 117 | 106 | 108 | 106 | 103 | 93 |
| 410-8511-4 MSD | MW-4 | 112 | 98 | 108 | 102 | 100 | 102 | 102 | 96 |
| 410-8511-5 | MW-5 | 111 | 103 | 117 | 103 | 104 | 105 | 102 | 101 |
| 410-8511-6 | MW-6 | 133 | 107 | 109 | 100 | 101 | 103 | 102 | 97 |
| 410-8511-7 | MW-7 | 128 | 102 | 110 | 102 | 111 | 98 | 106 | 91 |
| 410-8511-8 | FD-07202020 | 138 | 104 | 113 | 96 | 95 | 98 | 97 | 94 |
| 410-8511-8 - DL | FD-07202020 | | | | | | | | |
| 410-8511-9 | RB-07202020 | 118 | 117 | 109 | 103 | 106 | 107 | 109 | 108 |
| 410-8511-10 | RB-07212020 | 105 | 121 | 114 | 107 | 109 | 109 | 107 | 113 |
| 410-8511-11 | IDW-AQ | 359 Q | 153 Q | 329 Q | 109 | 146 | 112 | 161 Q | 86 |
| LCS 410-25697/2-A | Lab Control Sample | 111 | 99 | 111 | 101 | 103 | 106 | 112 | 97 |
| LCS 410-27247/2-A | Lab Control Sample | 125 | 111 | 110 | 106 | 111 | 107 | 114 | 109 |
| LCSD 410-27247/3-A | Lab Control Sample Dup | 117 | 109 | 104 | 103 | 110 | 102 | 106 | 103 |
| MB 410-25697/1-A | Method Blank | 112 | 109 | 117 | 108 | 113 | 113 | 110 | 105 |
| MB 410-27247/1-A | Method Blank | 122 | 113 | 126 | 107 | 109 | 110 | 108 | 103 |

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 13C7PUA (50-150) | PFDoDA (50-150) | PFTDA (50-150) | C3PFBS (50-150) | C3PFHS (50-150) | C8PFOS (50-150) | d3NMFOS (50-150) | d5NEFOS (50-150) |
| 410-8511-1 | MW-1 | 105 | 109 | 106 | 120 | 106 | 105 | 120 | 127 |
| 410-8511-2 | MW-2 | 106 | 109 | 98 | 117 | 109 | 109 | 114 | 118 |
| 410-8511-3 | MW-3 | 106 | 112 | 106 | 138 | 104 | 102 | 122 | 123 |
| 410-8511-3 - DL | MW-3 | | | | | 123 | | | |
| 410-8511-4 | MW-4 | 110 | 105 | 100 | 123 | 116 | 110 | 125 | 125 |
| 410-8511-4 MS | MW-4 | 99 | 92 | 87 | 115 | 106 | 104 | 116 | 117 |
| 410-8511-4 MSD | MW-4 | 105 | 96 | 94 | 108 | 103 | 99 | 111 | 119 |
| 410-8511-5 | MW-5 | 102 | 101 | 101 | 113 | 108 | 102 | 111 | 116 |
| 410-8511-6 | MW-6 | 101 | 99 | 98 | 122 | 101 | 102 | 110 | 122 |
| 410-8511-7 | MW-7 | 103 | 100 | 93 | 123 | 100 | 103 | 112 | 125 |
| 410-8511-8 | FD-07202020 | 93 | 86 | 77 | 113 | 96 | 99 | 100 | 111 |
| 410-8511-8 - DL | FD-07202020 | | | | | 97 | | | |
| 410-8511-9 | RB-07202020 | 132 | 115 | 108 | 106 | 105 | 105 | 142 | 178 Q |
| 410-8511-10 | RB-07212020 | 112 | 108 | 106 | 104 | 109 | 107 | 124 | 123 |

# Isotope Dilution Summary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Matrix: Water** **Prep Type: Total/NA**

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | 13C7PUA (50-150) | PFDoDA (50-150) | PFTDA (50-150) | C3PFBS (50-150) | C3PFHS (50-150) | C8PFOS (50-150) | d3NMFOS (50-150) | d5NEFOS (50-150) |
| 410-8511-11 | IDW-AQ | 35 Q | 19 Q | 71 | 147 | 110 | 107 | 46 Q | 26 Q |
| LCS 410-25697/2-A | Lab Control Sample | 96 | 102 | 99 | 101 | 102 | 110 | 116 | 112 |
| LCS 410-27247/2-A | Lab Control Sample | 108 | 114 | 110 | 108 | 106 | 113 | 126 | 132 |
| LCSD 410-27247/3-A | Lab Control Sample Dup | 110 | 106 | 105 | 102 | 105 | 105 | 123 | 124 |
| MB 410-25697/1-A | Method Blank | 105 | 109 | 107 | 105 | 113 | 110 | 117 | 117 |
| MB 410-27247/1-A | Method Blank | 110 | 109 | 109 | 106 | 108 | 103 | 121 | 128 |

| | | Percent Isotope Dilution Recovery (Acceptance Limits) | | |
|---|---|---|---|---|
| Lab Sample ID | Client Sample ID | PFOSA (50-150) | PFBA (50-150) | PFPeA (50-150) |
| 410-8511-1 | MW-1 | 19 Q | 94 | 96 |
| 410-8511-2 | MW-2 | 92 | 105 | 113 |
| 410-8511-3 | MW-3 | 30 Q | 101 | 118 |
| 410-8511-3 - DL | MW-3 | | | |
| 410-8511-4 | MW-4 | 111 | 109 | 120 |
| 410-8511-4 MS | MW-4 | 101 | 106 | 112 |
| 410-8511-4 MSD | MW-4 | 102 | 100 | 111 |
| 410-8511-5 | MW-5 | 101 | 103 | 116 |
| 410-8511-6 | MW-6 | 78 | 101 | 115 |
| 410-8511-7 | MW-7 | 102 | 95 | 114 |
| 410-8511-8 | FD-07202020 | 90 | 93 | 107 |
| 410-8511-8 - DL | FD-07202020 | | | |
| 410-8511-9 | RB-07202020 | 114 | 108 | 104 |
| 410-8511-10 | RB-07212020 | 112 | 107 | 104 |
| 410-8511-11 | IDW-AQ | 34 Q | 106 | 126 |
| LCS 410-25697/2-A | Lab Control Sample | 98 | 102 | 107 |
| LCS 410-27247/2-A | Lab Control Sample | 116 | 108 | 106 |
| LCSD 410-27247/3-A | Lab Control Sample Dup | 117 | 103 | 101 |
| MB 410-25697/1-A | Method Blank | 108 | 107 | 104 |
| MB 410-27247/1-A | Method Blank | 110 | 109 | 103 |

**Surrogate Legend**

M242FTS = M2-4:2 FTS
M282FTS = M2-8:2 FTS
M262FTS = M2-6:2 FTS
13C5PHA = 13C5 PFHxA
C4PFHA = 13C4 PFHpA
C8PFOA = 13C8 PFOA
C9PFNA = 13C9 PFNA
C6PFDA = 13C6 PFDA
13C7PUA = 13C7 PFUnA
PFDoDA = 13C2-PFDoDA
PFTDA = 13C2 PFTeDA
C3PFBS = 13C3 PFBS
C3PFHS = 13C3 PFHxS
C8PFOS = 13C8 PFOS
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
PFOSA = 13C8 FOSA
PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15

**Lab Sample ID: MB 410-25697/1-A**
**Matrix: Water**
**Analysis Batch: 26285**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 25697**

| Analyte | MB Result | MB Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluoroheptanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorooctanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorononanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorodecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorotridecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorotetradecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorobutanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorohexanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorooctanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| NEtFOSAA | 0.50 | U | 3.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| NMeFOSAA | 0.60 | U | 2.0 | 1.2 | 0.60 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluoropentanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluoroheptanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorononanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorodecanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorooctanesulfonamide | 0.757 | J M | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorobutanoic acid | 2.0 | U | 5.0 | 4.0 | 2.0 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluoropentanoic acid | 0.50 | U M | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluoroundecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| Perfluorododecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 2.0 | U | 5.0 | 4.0 | 2.0 | ng/L | | 07/25/20 16:05 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 1.0 | U | 3.0 | 2.0 | 1.0 | ng/L | | 07/25/20 16:05 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/25/20 16:05 | 1 |

| *Isotope Dilution* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *112* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *M2-8:2 FTS* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *M2-6:2 FTS* | *117* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C5 PFHxA* | *108* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C4 PFHpA* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C8 PFOA* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C9 PFNA* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C6 PFDA* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C7 PFUnA* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C2-PFDoDA* | *109* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C2 PFTeDA* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C3 PFBS* | *105* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C3 PFHxS* | *113* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C8 PFOS* | *110* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *d3-NMeFOSAA* | *117* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *d5-NEtFOSAA* | *117* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C8 FOSA* | *108* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C4 PFBA* | *107* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |
| *13C5 PFPeA* | *104* | | *50 - 150* | *07/23/20 15:32* | *07/25/20 16:05* | *1* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: LCS 410-25697/2-A**
**Matrix: Water**
**Analysis Batch: 26285**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 25697**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 25.6 | 24.4 | | ng/L | | 95 | 80 - 137 |
| Perfluoroheptanoic acid | 25.6 | 24.5 | | ng/L | | 96 | 80 - 140 |
| Perfluorooctanoic acid | 25.6 | 23.4 | | ng/L | | 91 | 83 - 138 |
| Perfluorononanoic acid | 25.6 | 24.5 | | ng/L | | 96 | 73 - 140 |
| Perfluorodecanoic acid | 25.6 | 23.2 | | ng/L | | 91 | 78 - 137 |
| Perfluorotridecanoic acid | 25.6 | 24.2 | | ng/L | | 94 | 67 - 144 |
| Perfluorotetradecanoic acid | 25.6 | 24.0 | | ng/L | | 94 | 79 - 134 |
| Perfluorobutanesulfonic acid | 22.6 | 22.1 | | ng/L | | 98 | 81 - 133 |
| Perfluorohexanesulfonic acid | 24.2 | 24.3 | | ng/L | | 100 | 71 - 131 |
| Perfluorooctanesulfonic acid | 24.5 | 22.7 | | ng/L | | 93 | 54 - 139 |
| NEtFOSAA | 25.6 | 24.2 | | ng/L | | 94 | 59 - 145 |
| NMeFOSAA | 25.6 | 24.6 | | ng/L | | 96 | 53 - 136 |
| Perfluoropentanesulfonic acid | 24.0 | 25.5 | | ng/L | | 106 | 82 - 132 |
| Perfluoroheptanesulfonic acid | 24.4 | 25.0 | | ng/L | | 103 | 80 - 129 |
| Perfluorononanesulfonic acid | 24.6 | 24.2 | | ng/L | | 99 | 71 - 121 |
| Perfluorodecanesulfonic acid | 24.7 | 26.9 | | ng/L | | 109 | 69 - 124 |
| Perfluorooctanesulfonamide | 25.6 | 21.9 | | ng/L | | 86 | 73 - 121 |
| Perfluorobutanoic acid | 25.6 | 25.1 | | ng/L | | 98 | 84 - 135 |
| Perfluoropentanoic acid | 25.6 | 24.2 | | ng/L | | 94 | 75 - 138 |
| Perfluoroundecanoic acid | 25.6 | 28.0 | | ng/L | | 109 | 70 - 134 |
| Perfluorododecanoic acid | 25.6 | 23.8 | | ng/L | | 93 | 75 - 139 |
| 6:2 Fluorotelomer sulfonic acid | 24.3 | 23.2 | | ng/L | | 95 | 51 - 155 |
| 8:2 Fluorotelomer sulfonic acid | 24.5 | 20.9 | | ng/L | | 85 | 62 - 133 |
| 4:2 Fluorotelomer sulfonic acid | 23.9 | 20.7 | | ng/L | | 87 | 64 - 134 |

| *Isotope Dilution* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *111* | | *50 - 150* |
| *M2-8:2 FTS* | *99* | | *50 - 150* |
| *M2-6:2 FTS* | *111* | | *50 - 150* |
| *13C5 PFHxA* | *101* | | *50 - 150* |
| *13C4 PFHpA* | *103* | | *50 - 150* |
| *13C8 PFOA* | *106* | | *50 - 150* |
| *13C9 PFNA* | *112* | | *50 - 150* |
| *13C6 PFDA* | *97* | | *50 - 150* |
| *13C7 PFUnA* | *96* | | *50 - 150* |
| *13C2-PFDoDA* | *102* | | *50 - 150* |
| *13C2 PFTeDA* | *99* | | *50 - 150* |
| *13C3 PFBS* | *101* | | *50 - 150* |
| *13C3 PFHxS* | *102* | | *50 - 150* |
| *13C8 PFOS* | *110* | | *50 - 150* |
| *d3-NMeFOSAA* | *116* | | *50 - 150* |
| *d5-NEtFOSAA* | *112* | | *50 - 150* |
| *13C8 FOSA* | *98* | | *50 - 150* |
| *13C4 PFBA* | *102* | | *50 - 150* |
| *13C5 PFPeA* | *107* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: 410-8511-4 MS**
**Matrix: Water**
**Analysis Batch: 26285**

**Client Sample ID: MW-4**
**Prep Type: Total/NA**
**Prep Batch: 25697**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 8.9 | | 22.3 | 29.3 | M | ng/L | | 92 | 80 - 137 |
| Perfluoroheptanoic acid | 1.4 | J | 22.3 | 21.4 | | ng/L | | 90 | 80 - 140 |
| Perfluorooctanoic acid | 11 | M J1 | 22.3 | 28.7 | M J1 | ng/L | | 80 | 83 - 138 |
| Perfluorononanoic acid | 0.45 | U | 22.3 | 21.4 | | ng/L | | 96 | 73 - 140 |
| Perfluorodecanoic acid | 0.45 | U | 22.3 | 20.6 | | ng/L | | 93 | 78 - 137 |
| Perfluorotridecanoic acid | 0.45 | U | 22.3 | 22.9 | | ng/L | | 103 | 67 - 144 |
| Perfluorotetradecanoic acid | 0.45 | U | 22.3 | 22.1 | | ng/L | | 99 | 79 - 134 |
| Perfluorobutanesulfonic acid | 2.3 | | 19.7 | 21.1 | | ng/L | | 96 | 81 - 133 |
| Perfluorohexanesulfonic acid | 19 | M | 21.1 | 38.7 | M | ng/L | | 94 | 71 - 131 |
| Perfluorooctanesulfonic acid | 1.0 | J M | 21.3 | 19.4 | M | ng/L | | 87 | 54 - 139 |
| NEtFOSAA | 0.45 | U | 22.3 | 21.7 | | ng/L | | 97 | 59 - 145 |
| NMeFOSAA | 0.54 | U | 22.3 | 20.5 | | ng/L | | 92 | 53 - 136 |
| Perfluoropentanesulfonic acid | 2.4 | | 20.9 | 24.3 | | ng/L | | 105 | 82 - 132 |
| Perfluoroheptanesulfonic acid | 0.45 | U | 21.2 | 20.4 | | ng/L | | 96 | 80 - 129 |
| Perfluorononanesulfonic acid | 0.45 | U | 21.4 | 21.0 | | ng/L | | 98 | 71 - 121 |
| Perfluorodecanesulfonic acid | 0.45 | U | 21.4 | 22.8 | | ng/L | | 106 | 69 - 124 |
| Perfluorooctanesulfonamide | 0.45 | U | 22.3 | 19.5 | | ng/L | | 88 | 73 - 121 |
| Perfluorobutanoic acid | 6.0 | | 22.3 | 26.5 | | ng/L | | 92 | 84 - 135 |
| Perfluoropentanoic acid | 6.2 | | 22.3 | 28.1 | M | ng/L | | 98 | 75 - 138 |
| Perfluoroundecanoic acid | 0.45 | U | 22.3 | 23.7 | | ng/L | | 107 | 70 - 134 |
| Perfluorododecanoic acid | 0.45 | U | 22.3 | 22.8 | | ng/L | | 103 | 75 - 139 |
| 6:2 Fluorotelomer sulfonic acid | 3.6 | J | 21.1 | 22.4 | | ng/L | | 89 | 51 - 155 |
| 8:2 Fluorotelomer sulfonic acid | 0.90 | U | 21.3 | 21.6 | | ng/L | | 101 | 62 - 133 |
| 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 20.8 | 18.1 | | ng/L | | 87 | 64 - 134 |

| *Isotope Dilution* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *121* | | *50 - 150* |
| *M2-8:2 FTS* | *94* | | *50 - 150* |
| *M2-6:2 FTS* | *117* | | *50 - 150* |
| *13C5 PFHxA* | *106* | | *50 - 150* |
| *13C4 PFHpA* | *108* | | *50 - 150* |
| *13C8 PFOA* | *106* | | *50 - 150* |
| *13C9 PFNA* | *103* | | *50 - 150* |
| *13C6 PFDA* | *93* | | *50 - 150* |
| *13C7 PFUnA* | *99* | | *50 - 150* |
| *13C2-PFDoDA* | *92* | | *50 - 150* |
| *13C2 PFTeDA* | *87* | | *50 - 150* |
| *13C3 PFBS* | *115* | | *50 - 150* |
| *13C3 PFHxS* | *106* | | *50 - 150* |
| *13C8 PFOS* | *104* | | *50 - 150* |
| *d3-NMeFOSAA* | *116* | | *50 - 150* |
| *d5-NEtFOSAA* | *117* | | *50 - 150* |
| *13C8 FOSA* | *101* | | *50 - 150* |
| *13C4 PFBA* | *106* | | *50 - 150* |
| *13C5 PFPeA* | *112* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: 410-8511-4 MSD**
**Matrix: Water**
**Analysis Batch: 26285**

**Client Sample ID: MW-4**
**Prep Type: Total/NA**
**Prep Batch: 25697**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 8.9 | | 23.1 | 29.7 | M | ng/L | | 90 | 80 - 137 | 2 | 30 |
| Perfluoroheptanoic acid | 1.4 | J | 23.1 | 23.5 | M | ng/L | | 95 | 80 - 140 | 9 | 30 |
| Perfluorooctanoic acid | 11 | M J1 | 23.1 | 31.6 | M | ng/L | | 90 | 83 - 138 | 10 | 30 |
| Perfluorononanoic acid | 0.45 | U | 23.1 | 21.4 | | ng/L | | 93 | 73 - 140 | 0 | 30 |
| Perfluorodecanoic acid | 0.45 | U | 23.1 | 22.5 | | ng/L | | 97 | 78 - 137 | 9 | 30 |
| Perfluorotridecanoic acid | 0.45 | U | 23.1 | 23.7 | | ng/L | | 103 | 67 - 144 | 3 | 30 |
| Perfluorotetradecanoic acid | 0.45 | U | 23.1 | 21.5 | | ng/L | | 93 | 79 - 134 | 3 | 30 |
| Perfluorobutanesulfonic acid | 2.3 | | 20.4 | 22.4 | | ng/L | | 99 | 81 - 133 | 6 | 30 |
| Perfluorohexanesulfonic acid | 19 | M | 21.8 | 40.1 | M | ng/L | | 98 | 71 - 131 | 4 | 30 |
| Perfluorooctanesulfonic acid | 1.0 | J M | 22.1 | 19.8 | M | ng/L | | 85 | 54 - 139 | 2 | 30 |
| NEtFOSAA | 0.45 | U | 23.1 | 22.4 | | ng/L | | 97 | 59 - 145 | 3 | 30 |
| NMeFOSAA | 0.54 | U | 23.1 | 21.7 | | ng/L | | 94 | 53 - 136 | 6 | 30 |
| Perfluoropentanesulfonic acid | 2.4 | | 21.7 | 26.3 | | ng/L | | 110 | 82 - 132 | 8 | 30 |
| Perfluoroheptanesulfonic acid | 0.45 | U | 22.0 | 21.8 | | ng/L | | 99 | 80 - 129 | 7 | 30 |
| Perfluorononanesulfonic acid | 0.45 | U | 22.2 | 23.0 | | ng/L | | 104 | 71 - 121 | 9 | 30 |
| Perfluorodecanesulfonic acid | 0.45 | U | 22.2 | 23.5 | | ng/L | | 106 | 69 - 124 | 3 | 30 |
| Perfluorooctanesulfonamide | 0.45 | U | 23.1 | 20.9 | | ng/L | | 91 | 73 - 121 | 7 | 30 |
| Perfluorobutanoic acid | 6.0 | | 23.1 | 28.3 | | ng/L | | 97 | 84 - 135 | 7 | 30 |
| Perfluoropentanoic acid | 6.2 | | 23.1 | 27.7 | | ng/L | | 93 | 75 - 138 | 1 | 30 |
| Perfluoroundecanoic acid | 0.45 | U | 23.1 | 22.9 | | ng/L | | 99 | 70 - 134 | 3 | 30 |
| Perfluorododecanoic acid | 0.45 | U | 23.1 | 23.3 | | ng/L | | 101 | 75 - 139 | 2 | 30 |
| 6:2 Fluorotelomer sulfonic acid | 3.6 | J | 21.9 | 23.7 | | ng/L | | 92 | 51 - 155 | 6 | 30 |
| 8:2 Fluorotelomer sulfonic acid | 0.90 | U | 22.1 | 21.5 | | ng/L | | 97 | 62 - 133 | 0 | 30 |
| 4:2 Fluorotelomer sulfonic acid | 0.45 | U | 21.6 | 18.8 | | ng/L | | 87 | 64 - 134 | 4 | 30 |

| *Isotope Dilution* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *112* | | *50 - 150* |
| *M2-8:2 FTS* | *98* | | *50 - 150* |
| *M2-6:2 FTS* | *108* | | *50 - 150* |
| *13C5 PFHxA* | *102* | | *50 - 150* |
| *13C4 PFHpA* | *100* | | *50 - 150* |
| *13C8 PFOA* | *102* | | *50 - 150* |
| *13C9 PFNA* | *102* | | *50 - 150* |
| *13C6 PFDA* | *96* | | *50 - 150* |
| *13C7 PFUnA* | *105* | | *50 - 150* |
| *13C2-PFDoDA* | *96* | | *50 - 150* |
| *13C2 PFTeDA* | *94* | | *50 - 150* |
| *13C3 PFBS* | *108* | | *50 - 150* |
| *13C3 PFHxS* | *103* | | *50 - 150* |
| *13C8 PFOS* | *99* | | *50 - 150* |
| *d3-NMeFOSAA* | *111* | | *50 - 150* |
| *d5-NEtFOSAA* | *119* | | *50 - 150* |
| *13C8 FOSA* | *102* | | *50 - 150* |
| *13C4 PFBA* | *100* | | *50 - 150* |
| *13C5 PFPeA* | *111* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: MB 410-25969/1-B**
**Matrix: Solid**
**Analysis Batch: 25943**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 25969**

| Analyte | MB Result | MB Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluoroheptanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorooctanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorononanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorodecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorotridecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorotetradecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorobutanesulfonic acid | 0.40 | U | 2.0 | 1.6 | 0.40 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorohexanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorooctanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| NEtFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| NMeFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluoropentanesulfonic acid | 0.20 | U | 3.0 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluoroheptanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorononanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorodecanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorooctanesulfonamide | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorobutanoic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluoropentanoic acid | 0.20 | U M | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluoroundecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| Perfluorododecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/24/20 21:27 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | | 07/24/20 21:27 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.60 | U | 3.0 | 1.6 | 0.60 | ng/g | | 07/24/20 21:27 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | | 07/24/20 21:27 | 1 |

| *Isotope Dilution* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *102* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *M2-8:2 FTS* | *90* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *M2-6:2 FTS* | *103* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C5 PFHxA* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C4 PFHpA* | *95* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C8 PFOA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C9 PFNA* | *98* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C6 PFDA* | *88* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C7 PFUnA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C2-PFDoDA* | *89* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C2 PFTeDA* | *92* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C3 PFBS* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C3 PFHxS* | *99* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C8 PFOS* | *95* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *d3-NMeFOSAA* | *95* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *d5-NEtFOSAA* | *96* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C8 FOSA* | *93* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C4 PFBA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |
| *13C5 PFPeA* | *94* | | *50 - 150* | *07/24/20 09:12* | *07/24/20 21:27* | *1* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: LCS 410-25969/2-B**
**Matrix: Solid**
**Analysis Batch: 25943**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 25969**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 25.0 | 24.0 | | ng/g | | 96 | 73 - 145 |
| Perfluoroheptanoic acid | 25.0 | 21.9 | | ng/g | | 88 | 81 - 140 |
| Perfluorooctanoic acid | 25.0 | 21.7 | | ng/g | | 87 | 80 - 140 |
| Perfluorononanoic acid | 25.0 | 24.0 | | ng/g | | 96 | 74 - 141 |
| Perfluorodecanoic acid | 25.0 | 22.1 | | ng/g | | 89 | 79 - 136 |
| Perfluorotridecanoic acid | 25.0 | 23.2 | | ng/g | | 93 | 75 - 147 |
| Perfluorotetradecanoic acid | 25.0 | 23.0 | | ng/g | | 92 | 81 - 137 |
| Perfluorobutanesulfonic acid | 22.1 | 20.8 | | ng/g | | 94 | 80 - 134 |
| Perfluorohexanesulfonic acid | 23.6 | 21.7 | | ng/g | | 92 | 75 - 131 |
| Perfluorooctanesulfonic acid | 23.9 | 21.6 | | ng/g | | 90 | 66 - 140 |
| NEtFOSAA | 25.0 | 23.2 | | ng/g | | 93 | 60 - 143 |
| NMeFOSAA | 25.0 | 24.3 | | ng/g | | 97 | 56 - 142 |
| Perfluoropentanesulfonic acid | 23.5 | 23.7 | | ng/g | | 101 | 78 - 131 |
| Perfluoroheptanesulfonic acid | 23.8 | 24.0 | | ng/g | | 101 | 75 - 131 |
| Perfluorononanesulfonic acid | 24.0 | 23.9 | | ng/g | | 100 | 66 - 131 |
| Perfluorodecanesulfonic acid | 24.1 | 25.6 | | ng/g | | 107 | 59 - 142 |
| Perfluorooctanesulfonamide | 25.0 | 21.8 | | ng/g | | 87 | 66 - 128 |
| Perfluorobutanoic acid | 25.0 | 23.2 | | ng/g | | 93 | 79 - 146 |
| Perfluoropentanoic acid | 25.0 | 23.5 | | ng/g | | 94 | 73 - 140 |
| Perfluoroundecanoic acid | 25.0 | 25.2 | | ng/g | | 101 | 63 - 147 |
| Perfluorododecanoic acid | 25.0 | 21.7 | | ng/g | | 87 | 76 - 142 |
| 6:2 Fluorotelomer sulfonic acid | 23.7 | 22.1 | | ng/g | | 93 | 51 - 156 |
| 8:2 Fluorotelomer sulfonic acid | 24.0 | 19.6 | | ng/g | | 82 | 61 - 142 |
| 4:2 Fluorotelomer sulfonic acid | 23.4 | 22.4 | | ng/g | | 96 | 63 - 132 |

| *Isotope Dilution* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *94* | | *50 - 150* |
| *M2-8:2 FTS* | *98* | | *50 - 150* |
| *M2-6:2 FTS* | *98* | | *50 - 150* |
| *13C5 PFHxA* | *89* | | *50 - 150* |
| *13C4 PFHpA* | *94* | | *50 - 150* |
| *13C8 PFOA* | *94* | | *50 - 150* |
| *13C9 PFNA* | *92* | | *50 - 150* |
| *13C6 PFDA* | *92* | | *50 - 150* |
| *13C7 PFUnA* | *93* | | *50 - 150* |
| *13C2-PFDoDA* | *93* | | *50 - 150* |
| *13C2 PFTeDA* | *96* | | *50 - 150* |
| *13C3 PFBS* | *90* | | *50 - 150* |
| *13C3 PFHxS* | *89* | | *50 - 150* |
| *13C8 PFOS* | *94* | | *50 - 150* |
| *d3-NMeFOSAA* | *98* | | *50 - 150* |
| *d5-NEtFOSAA* | *105* | | *50 - 150* |
| *13C8 FOSA* | *100* | | *50 - 150* |
| *13C4 PFBA* | *92* | | *50 - 150* |
| *13C5 PFPeA* | *91* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: 410-8511-12 MS**
**Matrix: Solid**
**Analysis Batch: 25943**

**Client Sample ID: SB-1-0-0.5**
**Prep Type: Total/NA**
**Prep Batch: 25969**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MS Result | MS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 2.4 | | 26.7 | 28.2 | | ng/g | ☼ | 96 | 73 - 145 |
| Perfluoroheptanoic acid | 0.50 | J | 26.7 | 25.0 | | ng/g | ☼ | 92 | 81 - 140 |
| Perfluorooctanoic acid | 3.4 | M | 26.7 | 27.3 | M | ng/g | ☼ | 90 | 80 - 140 |
| Perfluorononanoic acid | 11 | | 26.7 | 39.7 | | ng/g | ☼ | 106 | 74 - 141 |
| Perfluorodecanoic acid | 4.3 | | 26.7 | 28.3 | | ng/g | ☼ | 90 | 79 - 136 |
| Perfluorotridecanoic acid | 2.0 | | 26.7 | 26.0 | M | ng/g | ☼ | 90 | 75 - 147 |
| Perfluorotetradecanoic acid | 0.21 | U | 26.7 | 25.4 | | ng/g | ☼ | 95 | 81 - 137 |
| Perfluorobutanesulfonic acid | 0.42 | U | 23.6 | 22.6 | | ng/g | ☼ | 96 | 80 - 134 |
| Perfluorohexanesulfonic acid | 35 | M | 25.3 | 56.3 | M | ng/g | ☼ | 83 | 75 - 131 |
| Perfluorooctanesulfonic acid | 510 | E M J1 | 25.6 | 523 | E M 4 | ng/g | ☼ | 68 | 66 - 140 |
| NEtFOSAA | 0.21 | U | 26.7 | 25.2 | | ng/g | ☼ | 94 | 60 - 143 |
| NMeFOSAA | 0.21 | U | 26.7 | 23.9 | | ng/g | ☼ | 89 | 56 - 142 |
| Perfluoropentanesulfonic acid | 0.30 | J M | 25.1 | 25.6 | | ng/g | ☼ | 101 | 78 - 131 |
| Perfluoroheptanesulfonic acid | 3.0 | | 25.4 | 28.2 | | ng/g | ☼ | 99 | 75 - 131 |
| Perfluorononanesulfonic acid | 3.2 | J1 | 25.7 | 37.8 | J1 | ng/g | ☼ | 135 | 66 - 131 |
| Perfluorodecanesulfonic acid | 3.2 | | 25.7 | 37.8 | | ng/g | ☼ | 135 | 59 - 142 |
| Perfluorooctanesulfonamide | 11 | | 26.7 | 32.7 | | ng/g | ☼ | 82 | 66 - 128 |
| Perfluorobutanoic acid | 0.99 | J | 26.7 | 25.9 | | ng/g | ☼ | 93 | 79 - 146 |
| Perfluoropentanoic acid | 1.2 | | 26.7 | 26.6 | | ng/g | ☼ | 95 | 73 - 140 |
| Perfluoroundecanoic acid | 1.6 | M | 26.7 | 28.2 | M | ng/g | ☼ | 99 | 63 - 147 |
| Perfluorododecanoic acid | 0.48 | J M | 26.7 | 25.2 | M | ng/g | ☼ | 93 | 76 - 142 |
| 6:2 Fluorotelomer sulfonic acid | 0.64 | U | 25.3 | 23.9 | | ng/g | ☼ | 94 | 51 - 156 |
| 8:2 Fluorotelomer sulfonic acid | 1.7 | J | 25.6 | 23.1 | | ng/g | ☼ | 83 | 61 - 142 |
| 4:2 Fluorotelomer sulfonic acid | 0.64 | U | 25.0 | 21.2 | | ng/g | ☼ | 85 | 63 - 132 |

| *Isotope Dilution* | *MS %Recovery* | *MS Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *100* | | *50 - 150* |
| *M2-8:2 FTS* | *98* | | *50 - 150* |
| *M2-6:2 FTS* | *95* | | *50 - 150* |
| *13C5 PFHxA* | *91* | | *50 - 150* |
| *13C4 PFHpA* | *91* | | *50 - 150* |
| *13C8 PFOA* | *93* | | *50 - 150* |
| *13C9 PFNA* | *105* | | *50 - 150* |
| *13C6 PFDA* | *91* | | *50 - 150* |
| *13C7 PFUnA* | *94* | | *50 - 150* |
| *13C2-PFDoDA* | *92* | | *50 - 150* |
| *13C2 PFTeDA* | *97* | | *50 - 150* |
| *13C3 PFBS* | *93* | | *50 - 150* |
| *13C3 PFHxS* | *95* | | *50 - 150* |
| *13C8 PFOS* | *105* | | *50 - 150* |
| *d3-NMeFOSAA* | *55* | | *50 - 150* |
| *d5-NEtFOSAA* | *58* | | *50 - 150* |
| *13C8 FOSA* | *66* | | *50 - 150* |
| *13C4 PFBA* | *88* | | *50 - 150* |
| *13C5 PFPeA* | *89* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: 410-8511-12 MSD**
**Matrix: Solid**
**Analysis Batch: 25943**

**Client Sample ID: SB-1-0-0.5**
**Prep Type: Total/NA**
**Prep Batch: 25969**

| Analyte | Sample Result | Sample Qualifier | Spike Added | MSD Result | MSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 2.4 | | 25.7 | 26.6 | | ng/g | ☼ | 94 | 73 - 145 | 6 | 30 |
| Perfluoroheptanoic acid | 0.50 | J | 25.7 | 23.6 | | ng/g | ☼ | 90 | 81 - 140 | 6 | 30 |
| Perfluorooctanoic acid | 3.4 | M | 25.7 | 26.4 | M | ng/g | ☼ | 90 | 80 - 140 | 3 | 30 |
| Perfluorononanoic acid | 11 | | 25.7 | 36.5 | | ng/g | ☼ | 98 | 74 - 141 | 8 | 30 |
| Perfluorodecanoic acid | 4.3 | | 25.7 | 28.7 | | ng/g | ☼ | 95 | 79 - 136 | 1 | 30 |
| Perfluorotridecanoic acid | 2.0 | | 25.7 | 25.6 | M | ng/g | ☼ | 92 | 75 - 147 | 1 | 30 |
| Perfluorotetradecanoic acid | 0.21 | U | 25.7 | 23.5 | | ng/g | ☼ | 91 | 81 - 137 | 8 | 30 |
| Perfluorobutanesulfonic acid | 0.42 | U | 22.7 | 21.3 | | ng/g | ☼ | 94 | 80 - 134 | 6 | 30 |
| Perfluorohexanesulfonic acid | 35 | M | 24.3 | 54.8 | M | ng/g | ☼ | 80 | 75 - 131 | 3 | 30 |
| Perfluorooctanesulfonic acid | 510 | E M J1 | 24.6 | 516 | E M 4 | ng/g | ☼ | 45 | 66 - 140 | 1 | 30 |
| NEtFOSAA | 0.21 | U | 25.7 | 22.6 | | ng/g | ☼ | 88 | 60 - 143 | 10 | 30 |
| NMeFOSAA | 0.21 | U | 25.7 | 23.2 | | ng/g | ☼ | 90 | 56 - 142 | 3 | 30 |
| Perfluoropentanesulfonic acid | 0.30 | J M | 24.1 | 26.2 | | ng/g | ☼ | 107 | 78 - 131 | 2 | 30 |
| Perfluoroheptanesulfonic acid | 3.0 | | 24.5 | 27.2 | | ng/g | ☼ | 99 | 75 - 131 | 4 | 30 |
| Perfluorononanesulfonic acid | 3.2 | J1 | 24.7 | 36.7 | J1 | ng/g | ☼ | 136 | 66 - 131 | 3 | 30 |
| Perfluorodecanesulfonic acid | 3.2 | | 24.7 | 37.9 | | ng/g | ☼ | 140 | 59 - 142 | 0 | 30 |
| Perfluorooctanesulfonamide | 11 | | 25.7 | 31.9 | | ng/g | ☼ | 83 | 66 - 128 | 2 | 30 |
| Perfluorobutanoic acid | 0.99 | J | 25.7 | 25.5 | | ng/g | ☼ | 95 | 79 - 146 | 2 | 30 |
| Perfluoropentanoic acid | 1.2 | | 25.7 | 25.5 | | ng/g | ☼ | 95 | 73 - 140 | 4 | 30 |
| Perfluoroundecanoic acid | 1.6 | M | 25.7 | 26.8 | M | ng/g | ☼ | 98 | 63 - 147 | 5 | 30 |
| Perfluorododecanoic acid | 0.48 | J M | 25.7 | 24.7 | M | ng/g | ☼ | 94 | 76 - 142 | 2 | 30 |
| 6:2 Fluorotelomer sulfonic acid | 0.64 | U | 24.4 | 22.1 | | ng/g | ☼ | 91 | 51 - 156 | 8 | 30 |
| 8:2 Fluorotelomer sulfonic acid | 1.7 | J | 24.6 | 23.8 | | ng/g | ☼ | 90 | 61 - 142 | 3 | 30 |
| 4:2 Fluorotelomer sulfonic acid | 0.64 | U | 24.0 | 20.0 | | ng/g | ☼ | 83 | 63 - 132 | 6 | 30 |

| *Isotope Dilution* | *MSD %Recovery* | *MSD Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *103* | | *50 - 150* |
| *M2-8:2 FTS* | *99* | | *50 - 150* |
| *M2-6:2 FTS* | *102* | | *50 - 150* |
| *13C5 PFHxA* | *91* | | *50 - 150* |
| *13C4 PFHpA* | *93* | | *50 - 150* |
| *13C8 PFOA* | *95* | | *50 - 150* |
| *13C9 PFNA* | *111* | | *50 - 150* |
| *13C6 PFDA* | *98* | | *50 - 150* |
| *13C7 PFUnA* | *104* | | *50 - 150* |
| *13C2-PFDoDA* | *97* | | *50 - 150* |
| *13C2 PFTeDA* | *106* | | *50 - 150* |
| *13C3 PFBS* | *97* | | *50 - 150* |
| *13C3 PFHxS* | *96* | | *50 - 150* |
| *13C8 PFOS* | *110* | | *50 - 150* |
| *d3-NMeFOSAA* | *59* | | *50 - 150* |
| *d5-NEtFOSAA* | *69* | | *50 - 150* |
| *13C8 FOSA* | *72* | | *50 - 150* |
| *13C4 PFBA* | *89* | | *50 - 150* |
| *13C5 PFPeA* | *91* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: MB 410-26607/1-B**
**Matrix: Solid**
**Analysis Batch: 26801**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 26607**

| Analyte | MB Result | MB Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluoroheptanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorooctanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorononanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorodecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorotridecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorotetradecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorobutanesulfonic acid | 0.40 | U | 2.0 | 1.6 | 0.40 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorohexanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorooctanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| NEtFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| NMeFOSAA | 0.20 | U | 2.0 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluoropentanesulfonic acid | 0.20 | U | 3.0 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluoroheptanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorononanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorodecanesulfonic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorooctanesulfonamide | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorobutanoic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluoropentanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluoroundecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| Perfluorododecanoic acid | 0.20 | U | 0.60 | 0.40 | 0.20 | ng/g | | 07/27/20 19:04 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | | 07/27/20 19:04 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 0.60 | U | 3.0 | 1.6 | 0.60 | ng/g | | 07/27/20 19:04 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.60 | U | 2.0 | 1.6 | 0.60 | ng/g | | 07/27/20 19:04 | 1 |

| *Isotope Dilution* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *111* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *M2-8:2 FTS* | *106* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *M2-6:2 FTS* | *108* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C5 PFHxA* | *106* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C4 PFHpA* | *109* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C8 PFOA* | *107* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C9 PFNA* | *103* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C6 PFDA* | *98* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C7 PFUnA* | *105* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C2-PFDoDA* | *104* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C2 PFTeDA* | *100* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C3 PFBS* | *103* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C3 PFHxS* | *107* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C8 PFOS* | *101* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *d3-NMeFOSAA* | *114* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *d5-NEtFOSAA* | *112* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C8 FOSA* | *112* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C4 PFBA* | *105* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |
| *13C5 PFPeA* | *101* | | *50 - 150* | *07/27/20 08:21* | *07/27/20 19:04* | *1* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: LCS 410-26607/2-B**
**Matrix: Solid**
**Analysis Batch: 26801**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 26607**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 25.0 | 23.2 | | ng/g | | 93 | 73 - 145 |
| Perfluoroheptanoic acid | 25.0 | 22.6 | | ng/g | | 90 | 81 - 140 |
| Perfluorooctanoic acid | 25.0 | 22.5 | | ng/g | | 90 | 80 - 140 |
| Perfluorononanoic acid | 25.0 | 20.5 | | ng/g | | 82 | 74 - 141 |
| Perfluorodecanoic acid | 25.0 | 21.9 | | ng/g | | 87 | 79 - 136 |
| Perfluorotridecanoic acid | 25.0 | 23.5 | | ng/g | | 94 | 75 - 147 |
| Perfluorotetradecanoic acid | 25.0 | 23.3 | | ng/g | | 93 | 81 - 137 |
| Perfluorobutanesulfonic acid | 22.1 | 19.7 | | ng/g | | 89 | 80 - 134 |
| Perfluorohexanesulfonic acid | 23.6 | 21.6 | | ng/g | | 92 | 75 - 131 |
| Perfluorooctanesulfonic acid | 23.9 | 21.7 | | ng/g | | 91 | 66 - 140 |
| NEtFOSAA | 25.0 | 23.0 | | ng/g | | 92 | 60 - 143 |
| NMeFOSAA | 25.0 | 23.3 | | ng/g | | 93 | 56 - 142 |
| Perfluoropentanesulfonic acid | 23.5 | 23.3 | | ng/g | | 99 | 78 - 131 |
| Perfluoroheptanesulfonic acid | 23.8 | 22.3 | | ng/g | | 94 | 75 - 131 |
| Perfluorononanesulfonic acid | 24.0 | 24.0 | | ng/g | | 100 | 66 - 131 |
| Perfluorodecanesulfonic acid | 24.1 | 24.5 | | ng/g | | 102 | 59 - 142 |
| Perfluorooctanesulfonamide | 25.0 | 21.6 | | ng/g | | 87 | 66 - 128 |
| Perfluorobutanoic acid | 25.0 | 23.1 | | ng/g | | 93 | 79 - 146 |
| Perfluoropentanoic acid | 25.0 | 24.0 | | ng/g | | 96 | 73 - 140 |
| Perfluoroundecanoic acid | 25.0 | 26.1 | | ng/g | | 104 | 63 - 147 |
| Perfluorododecanoic acid | 25.0 | 22.6 | | ng/g | | 90 | 76 - 142 |
| 6:2 Fluorotelomer sulfonic acid | 23.7 | 21.4 | | ng/g | | 90 | 51 - 156 |
| 8:2 Fluorotelomer sulfonic acid | 24.0 | 19.5 | | ng/g | | 82 | 61 - 142 |
| 4:2 Fluorotelomer sulfonic acid | 23.4 | 21.0 | | ng/g | | 90 | 63 - 132 |

| *Isotope Dilution* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *105* | | *50 - 150* |
| *M2-8:2 FTS* | *108* | | *50 - 150* |
| *M2-6:2 FTS* | *105* | | *50 - 150* |
| *13C5 PFHxA* | *102* | | *50 - 150* |
| *13C4 PFHpA* | *103* | | *50 - 150* |
| *13C8 PFOA* | *100* | | *50 - 150* |
| *13C9 PFNA* | *120* | | *50 - 150* |
| *13C6 PFDA* | *107* | | *50 - 150* |
| *13C7 PFUnA* | *105* | | *50 - 150* |
| *13C2-PFDoDA* | *109* | | *50 - 150* |
| *13C2 PFTeDA* | *103* | | *50 - 150* |
| *13C3 PFBS* | *103* | | *50 - 150* |
| *13C3 PFHxS* | *103* | | *50 - 150* |
| *13C8 PFOS* | *104* | | *50 - 150* |
| *d3-NMeFOSAA* | *119* | | *50 - 150* |
| *d5-NEtFOSAA* | *118* | | *50 - 150* |
| *13C8 FOSA* | *113* | | *50 - 150* |
| *13C4 PFBA* | *104* | | *50 - 150* |
| *13C5 PFPeA* | *99* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: LCSD 410-26607/3-B**
**Matrix: Solid**
**Analysis Batch: 26801**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 26607**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | | | 25.0 | 22.8 | | ng/g | | 91 | 73 - 145 | 2 | 30 |
| Perfluoroheptanoic acid | | | 25.0 | 22.5 | | ng/g | | 90 | 81 - 140 | 0 | 30 |
| Perfluorooctanoic acid | | | 25.0 | 22.5 | | ng/g | | 90 | 80 - 140 | 0 | 30 |
| Perfluorononanoic acid | | | 25.0 | 23.3 | | ng/g | | 93 | 74 - 141 | 13 | 30 |
| Perfluorodecanoic acid | | | 25.0 | 21.7 | | ng/g | | 87 | 79 - 136 | 1 | 30 |
| Perfluorotridecanoic acid | | | 25.0 | 23.0 | | ng/g | | 92 | 75 - 147 | 2 | 30 |
| Perfluorotetradecanoic acid | | | 25.0 | 23.0 | | ng/g | | 92 | 81 - 137 | 1 | 30 |
| Perfluorobutanesulfonic acid | | | 22.1 | 19.7 | | ng/g | | 89 | 80 - 134 | 0 | 30 |
| Perfluorohexanesulfonic acid | | | 23.6 | 21.7 | | ng/g | | 92 | 75 - 131 | 0 | 30 |
| Perfluorooctanesulfonic acid | | | 23.9 | 21.1 | | ng/g | | 88 | 66 - 140 | 3 | 30 |
| NEtFOSAA | | | 25.0 | 21.6 | | ng/g | | 87 | 60 - 143 | 6 | 30 |
| NMeFOSAA | | | 25.0 | 22.1 | | ng/g | | 88 | 56 - 142 | 5 | 30 |
| Perfluoropentanesulfonic acid | | | 23.5 | 23.5 | | ng/g | | 100 | 78 - 131 | 1 | 30 |
| Perfluoroheptanesulfonic acid | | | 23.8 | 22.4 | | ng/g | | 94 | 75 - 131 | 0 | 30 |
| Perfluorononanesulfonic acid | | | 24.0 | 23.7 | | ng/g | | 99 | 66 - 131 | 1 | 30 |
| Perfluorodecanesulfonic acid | | | 24.1 | 24.9 | | ng/g | | 103 | 59 - 142 | 2 | 30 |
| Perfluorooctanesulfonamide | | | 25.0 | 22.5 | | ng/g | | 90 | 66 - 128 | 4 | 30 |
| Perfluorobutanoic acid | | | 25.0 | 23.0 | | ng/g | | 92 | 79 - 146 | 0 | 30 |
| Perfluoropentanoic acid | | | 25.0 | 23.9 | | ng/g | | 95 | 73 - 140 | 1 | 30 |
| Perfluoroundecanoic acid | | | 25.0 | 24.0 | M | ng/g | | 96 | 63 - 147 | 8 | 30 |
| Perfluorododecanoic acid | | | 25.0 | 22.3 | | ng/g | | 89 | 76 - 142 | 1 | 30 |
| 6:2 Fluorotelomer sulfonic acid | | | 23.7 | 20.1 | | ng/g | | 85 | 51 - 156 | 6 | 30 |
| 8:2 Fluorotelomer sulfonic acid | | | 24.0 | 20.3 | | ng/g | | 85 | 61 - 142 | 4 | 30 |
| 4:2 Fluorotelomer sulfonic acid | | | 23.4 | 21.0 | | ng/g | | 90 | 63 - 132 | 0 | 30 |

| *Isotope Dilution* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *125* | | *50 - 150* |
| *M2-8:2 FTS* | *123* | | *50 - 150* |
| *M2-6:2 FTS* | *127* | | *50 - 150* |
| *13C5 PFHxA* | *122* | | *50 - 150* |
| *13C4 PFHpA* | *122* | | *50 - 150* |
| *13C8 PFOA* | *118* | | *50 - 150* |
| *13C9 PFNA* | *125* | | *50 - 150* |
| *13C6 PFDA* | *121* | | *50 - 150* |
| *13C7 PFUnA* | *125* | | *50 - 150* |
| *13C2-PFDoDA* | *123* | | *50 - 150* |
| *13C2 PFTeDA* | *117* | | *50 - 150* |
| *13C3 PFBS* | *120* | | *50 - 150* |
| *13C3 PFHxS* | *121* | | *50 - 150* |
| *13C8 PFOS* | *125* | | *50 - 150* |
| *d3-NMeFOSAA* | *138* | | *50 - 150* |
| *d5-NEtFOSAA* | *141* | | *50 - 150* |
| *13C8 FOSA* | *125* | | *50 - 150* |
| *13C4 PFBA* | *119* | | *50 - 150* |
| *13C5 PFPeA* | *116* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: MB 410-27247/1-A**
**Matrix: Water**
**Analysis Batch: 27503**

**Client Sample ID: Method Blank**
**Prep Type: Total/NA**
**Prep Batch: 27247**

| Analyte | MB Result | MB Qualifier | LOQ | LOD | DL | Unit | D | Analyzed | Dil Fac |
|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluoroheptanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorooctanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorononanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorodecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorotridecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorotetradecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorobutanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorohexanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorooctanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| NEtFOSAA | 0.50 | U | 3.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| NMeFOSAA | 0.60 | U | 2.0 | 1.2 | 0.60 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluoropentanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluoroheptanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorononanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorodecanesulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorooctanesulfonamide | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorobutanoic acid | 2.0 | U | 5.0 | 4.0 | 2.0 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluoropentanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluoroundecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| Perfluorododecanoic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |
| 6:2 Fluorotelomer sulfonic acid | 2.0 | U | 5.0 | 4.0 | 2.0 | ng/L | | 07/29/20 16:57 | 1 |
| 8:2 Fluorotelomer sulfonic acid | 1.0 | U | 3.0 | 2.0 | 1.0 | ng/L | | 07/29/20 16:57 | 1 |
| 4:2 Fluorotelomer sulfonic acid | 0.50 | U | 2.0 | 1.0 | 0.50 | ng/L | | 07/29/20 16:57 | 1 |

| *Isotope Dilution* | *MB %Recovery* | *MB Qualifier* | *Limits* | *Prepared* | *Analyzed* | *Dil Fac* |
|---|---|---|---|---|---|---|
| *M2-4:2 FTS* | *122* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *M2-8:2 FTS* | *113* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *M2-6:2 FTS* | *126* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C5 PFHxA* | *107* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C4 PFHpA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C8 PFOA* | *110* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C9 PFNA* | *108* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C6 PFDA* | *103* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C7 PFUnA* | *110* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C2-PFDoDA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C2 PFTeDA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C3 PFBS* | *106* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C3 PFHxS* | *108* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C8 PFOS* | *103* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *d3-NMeFOSAA* | *121* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *d5-NEtFOSAA* | *128* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C8 FOSA* | *110* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C4 PFBA* | *109* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |
| *13C5 PFPeA* | *103* | | *50 - 150* | *07/28/20 17:20* | *07/29/20 16:57* | *1* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: LCS 410-27247/2-A**
**Matrix: Water**
**Analysis Batch: 27503**

**Client Sample ID: Lab Control Sample**
**Prep Type: Total/NA**
**Prep Batch: 27247**

| Analyte | Spike Added | LCS Result | LCS Qualifier | Unit | D | %Rec | %Rec. Limits |
|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | 25.6 | 25.6 | | ng/L | | 100 | 80 - 137 |
| Perfluoroheptanoic acid | 25.6 | 24.9 | | ng/L | | 97 | 80 - 140 |
| Perfluorooctanoic acid | 25.6 | 25.2 | | ng/L | | 99 | 83 - 138 |
| Perfluorononanoic acid | 25.6 | 26.6 | | ng/L | | 104 | 73 - 140 |
| Perfluorodecanoic acid | 25.6 | 25.6 | | ng/L | | 100 | 78 - 137 |
| Perfluorotridecanoic acid | 25.6 | 25.8 | | ng/L | | 101 | 67 - 144 |
| Perfluorotetradecanoic acid | 25.6 | 26.7 | | ng/L | | 104 | 79 - 134 |
| Perfluorobutanesulfonic acid | 22.6 | 22.8 | | ng/L | | 101 | 81 - 133 |
| Perfluorohexanesulfonic acid | 24.2 | 24.2 | | ng/L | | 100 | 71 - 131 |
| Perfluorooctanesulfonic acid | 24.5 | 23.9 | | ng/L | | 97 | 54 - 139 |
| NEtFOSAA | 25.6 | 22.7 | | ng/L | | 88 | 59 - 145 |
| NMeFOSAA | 25.6 | 24.1 | | ng/L | | 94 | 53 - 136 |
| Perfluoropentanesulfonic acid | 24.0 | 26.0 | | ng/L | | 108 | 82 - 132 |
| Perfluoroheptanesulfonic acid | 24.4 | 25.4 | | ng/L | | 104 | 80 - 129 |
| Perfluorononanesulfonic acid | 24.6 | 26.0 | | ng/L | | 106 | 71 - 121 |
| Perfluorodecanesulfonic acid | 24.7 | 26.8 | | ng/L | | 109 | 69 - 124 |
| Perfluorooctanesulfonamide | 25.6 | 24.7 | | ng/L | | 96 | 73 - 121 |
| Perfluorobutanoic acid | 25.6 | 26.1 | | ng/L | | 102 | 84 - 135 |
| Perfluoropentanoic acid | 25.6 | 26.7 | | ng/L | | 104 | 75 - 138 |
| Perfluoroundecanoic acid | 25.6 | 29.3 | | ng/L | | 114 | 70 - 134 |
| Perfluorododecanoic acid | 25.6 | 24.9 | | ng/L | | 97 | 75 - 139 |
| 6:2 Fluorotelomer sulfonic acid | 24.3 | 24.5 | | ng/L | | 101 | 51 - 155 |
| 8:2 Fluorotelomer sulfonic acid | 24.5 | 24.3 | | ng/L | | 99 | 62 - 133 |
| 4:2 Fluorotelomer sulfonic acid | 23.9 | 20.0 | | ng/L | | 84 | 64 - 134 |

| *Isotope Dilution* | *LCS %Recovery* | *LCS Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *125* | | *50 - 150* |
| *M2-8:2 FTS* | *111* | | *50 - 150* |
| *M2-6:2 FTS* | *110* | | *50 - 150* |
| *13C5 PFHxA* | *106* | | *50 - 150* |
| *13C4 PFHpA* | *111* | | *50 - 150* |
| *13C8 PFOA* | *107* | | *50 - 150* |
| *13C9 PFNA* | *114* | | *50 - 150* |
| *13C6 PFDA* | *109* | | *50 - 150* |
| *13C7 PFUnA* | *108* | | *50 - 150* |
| *13C2-PFDoDA* | *114* | | *50 - 150* |
| *13C2 PFTeDA* | *110* | | *50 - 150* |
| *13C3 PFBS* | *108* | | *50 - 150* |
| *13C3 PFHxS* | *106* | | *50 - 150* |
| *13C8 PFOS* | *113* | | *50 - 150* |
| *d3-NMeFOSAA* | *126* | | *50 - 150* |
| *d5-NEtFOSAA* | *132* | | *50 - 150* |
| *13C8 FOSA* | *116* | | *50 - 150* |
| *13C4 PFBA* | *108* | | *50 - 150* |
| *13C5 PFPeA* | *106* | | *50 - 150* |

## Method: EPA 537 (Mod) - EPA 537 mod QSM 5.1, Table B-15 (Continued)

**Lab Sample ID: LCSD 410-27247/3-A**
**Matrix: Water**
**Analysis Batch: 27503**

**Client Sample ID: Lab Control Sample Dup**
**Prep Type: Total/NA**
**Prep Batch: 27247**

| Analyte | | | Spike Added | LCSD Result | LCSD Qualifier | Unit | D | %Rec | %Rec. Limits | RPD | RPD Limit |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Perfluorohexanoic acid | | | 25.6 | 24.7 | | ng/L | | 96 | 80 - 137 | 4 | 30 |
| Perfluoroheptanoic acid | | | 25.6 | 24.1 | | ng/L | | 94 | 80 - 140 | 3 | 30 |
| Perfluorooctanoic acid | | | 25.6 | 24.6 | | ng/L | | 96 | 83 - 138 | 3 | 30 |
| Perfluorononanoic acid | | | 25.6 | 26.5 | | ng/L | | 103 | 73 - 140 | 1 | 30 |
| Perfluorodecanoic acid | | | 25.6 | 26.1 | | ng/L | | 102 | 78 - 137 | 2 | 30 |
| Perfluorotridecanoic acid | | | 25.6 | 26.8 | | ng/L | | 105 | 67 - 144 | 4 | 30 |
| Perfluorotetradecanoic acid | | | 25.6 | 26.5 | | ng/L | | 104 | 79 - 134 | 1 | 30 |
| Perfluorobutanesulfonic acid | | | 22.6 | 22.0 | | ng/L | | 97 | 81 - 133 | 4 | 30 |
| Perfluorohexanesulfonic acid | | | 24.2 | 23.5 | | ng/L | | 97 | 71 - 131 | 3 | 30 |
| Perfluorooctanesulfonic acid | | | 24.5 | 23.8 | | ng/L | | 97 | 54 - 139 | 0 | 30 |
| NEtFOSAA | | | 25.6 | 25.8 | | ng/L | | 101 | 59 - 145 | 13 | 30 |
| NMeFOSAA | | | 25.6 | 24.5 | | ng/L | | 96 | 53 - 136 | 2 | 30 |
| Perfluoropentanesulfonic acid | | | 24.0 | 26.6 | | ng/L | | 111 | 82 - 132 | 2 | 30 |
| Perfluoroheptanesulfonic acid | | | 24.4 | 24.4 | | ng/L | | 100 | 80 - 129 | 4 | 30 |
| Perfluorononanesulfonic acid | | | 24.6 | 27.0 | | ng/L | | 110 | 71 - 121 | 4 | 30 |
| Perfluorodecanesulfonic acid | | | 24.7 | 27.0 | | ng/L | | 109 | 69 - 124 | 1 | 30 |
| Perfluorooctanesulfonamide | | | 25.6 | 23.1 | | ng/L | | 90 | 73 - 121 | 7 | 30 |
| Perfluorobutanoic acid | | | 25.6 | 26.1 | | ng/L | | 102 | 84 - 135 | 0 | 30 |
| Perfluoropentanoic acid | | | 25.6 | 26.3 | | ng/L | | 103 | 75 - 138 | 1 | 30 |
| Perfluoroundecanoic acid | | | 25.6 | 28.5 | | ng/L | | 111 | 70 - 134 | 3 | 30 |
| Perfluorododecanoic acid | | | 25.6 | 26.1 | | ng/L | | 102 | 75 - 139 | 5 | 30 |
| 6:2 Fluorotelomer sulfonic acid | | | 24.3 | 24.0 | | ng/L | | 99 | 51 - 155 | 2 | 30 |
| 8:2 Fluorotelomer sulfonic acid | | | 24.5 | 24.3 | | ng/L | | 99 | 62 - 133 | 0 | 30 |
| 4:2 Fluorotelomer sulfonic acid | | | 23.9 | 20.2 | | ng/L | | 85 | 64 - 134 | 1 | 30 |

| *Isotope Dilution* | *LCSD %Recovery* | *LCSD Qualifier* | *Limits* |
|---|---|---|---|
| *M2-4:2 FTS* | *117* | | *50 - 150* |
| *M2-8:2 FTS* | *109* | | *50 - 150* |
| *M2-6:2 FTS* | *104* | | *50 - 150* |
| *13C5 PFHxA* | *103* | | *50 - 150* |
| *13C4 PFHpA* | *110* | | *50 - 150* |
| *13C8 PFOA* | *102* | | *50 - 150* |
| *13C9 PFNA* | *106* | | *50 - 150* |
| *13C6 PFDA* | *103* | | *50 - 150* |
| *13C7 PFUnA* | *110* | | *50 - 150* |
| *13C2-PFDoDA* | *106* | | *50 - 150* |
| *13C2 PFTeDA* | *105* | | *50 - 150* |
| *13C3 PFBS* | *102* | | *50 - 150* |
| *13C3 PFHxS* | *105* | | *50 - 150* |
| *13C8 PFOS* | *105* | | *50 - 150* |
| *d3-NMeFOSAA* | *123* | | *50 - 150* |
| *d5-NEtFOSAA* | *124* | | *50 - 150* |
| *13C8 FOSA* | *117* | | *50 - 150* |
| *13C4 PFBA* | *103* | | *50 - 150* |
| *13C5 PFPeA* | *101* | | *50 - 150* |

## LCMS

### Prep Batch: 25697

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-1 - RE | MW-1 | Total/NA | Water | 537 (Mod) | |
| 410-8511-2 | MW-2 | Total/NA | Water | 537 (Mod) | |
| 410-8511-3 - RE | MW-3 | Total/NA | Water | 537 (Mod) | |
| 410-8511-4 | MW-4 | Total/NA | Water | 537 (Mod) | |
| 410-8511-5 | MW-5 | Total/NA | Water | 537 (Mod) | |
| 410-8511-6 | MW-6 | Total/NA | Water | 537 (Mod) | |
| 410-8511-7 | MW-7 | Total/NA | Water | 537 (Mod) | |
| 410-8511-8 | FD-07202020 | Total/NA | Water | 537 (Mod) | |
| 410-8511-8 - DL | FD-07202020 | Total/NA | Water | 537 (Mod) | |
| 410-8511-9 - RE | RB-07202020 | Total/NA | Water | 537 (Mod) | |
| 410-8511-10 | RB-07212020 | Total/NA | Water | 537 (Mod) | |
| 410-8511-11 - RE | IDW-AQ | Total/NA | Water | 537 (Mod) | |
| MB 410-25697/1-A | Method Blank | Total/NA | Water | 537 (Mod) | |
| LCS 410-25697/2-A | Lab Control Sample | Total/NA | Water | 537 (Mod) | |
| 410-8511-4 MS | MW-4 | Total/NA | Water | 537 (Mod) | |
| 410-8511-4 MSD | MW-4 | Total/NA | Water | 537 (Mod) | |

### Analysis Batch: 25943

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-12 | SB-1-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-13 | SB-1-1-1.45 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-14 | SB-2-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-15 | SB-2-1-1.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-16 | SB-3-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-18 | SB-4-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-19 | SB-4-1-1.4 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-20 | FD-07212020 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-21 | IDW-SO-1 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-22 | IDW-SO-2 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| MB 410-25969/1-B | Method Blank | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| LCS 410-25969/2-B | Lab Control Sample | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-12 MS | SB-1-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-12 MSD | SB-1-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |

### Prep Batch: 25969

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-12 - DL | SB-1-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-12 | SB-1-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-13 - DL | SB-1-1-1.45 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-13 | SB-1-1-1.45 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-14 | SB-2-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-14 - DL | SB-2-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-15 - DL2 | SB-2-1-1.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-15 | SB-2-1-1.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-15 - DL | SB-2-1-1.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-16 - DL | SB-3-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-16 | SB-3-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-18 | SB-4-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-18 - DL | SB-4-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-19 | SB-4-1-1.4 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-20 | FD-07212020 | Total/NA | Solid | 537 (Mod) | |

## LCMS (Continued)

### Prep Batch: 25969 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-20 - DL | FD-07212020 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-21 | IDW-SO-1 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-22 | IDW-SO-2 | Total/NA | Solid | 537 (Mod) | |
| MB 410-25969/1-B | Method Blank | Total/NA | Solid | 537 (Mod) | |
| LCS 410-25969/2-B | Lab Control Sample | Total/NA | Solid | 537 (Mod) | |
| 410-8511-12 MS | SB-1-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-12 MSD | SB-1-0-0.5 | Total/NA | Solid | 537 (Mod) | |

### Cleanup Batch: 25986

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-12 - DL | SB-1-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-12 | SB-1-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-13 | SB-1-1-1.45 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-13 - DL | SB-1-1-1.45 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-14 - DL | SB-2-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-14 | SB-2-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-15 - DL2 | SB-2-1-1.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-15 | SB-2-1-1.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-15 - DL | SB-2-1-1.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-16 - DL | SB-3-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-16 | SB-3-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-18 - DL | SB-4-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-18 | SB-4-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-19 | SB-4-1-1.4 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-20 | FD-07212020 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-20 - DL | FD-07212020 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-21 | IDW-SO-1 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-22 | IDW-SO-2 | Total/NA | Solid | Extract Aliquot | 25969 |
| MB 410-25969/1-B | Method Blank | Total/NA | Solid | Extract Aliquot | 25969 |
| LCS 410-25969/2-B | Lab Control Sample | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-12 MS | SB-1-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |
| 410-8511-12 MSD | SB-1-0-0.5 | Total/NA | Solid | Extract Aliquot | 25969 |

### Analysis Batch: 26285

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-1 - RE | MW-1 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-2 | MW-2 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-3 - RE | MW-3 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-4 | MW-4 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-5 | MW-5 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-6 | MW-6 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-7 | MW-7 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-8 | FD-07202020 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-9 - RE | RB-07202020 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-10 | RB-07212020 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-11 - RE | IDW-AQ | Total/NA | Water | EPA 537 (Mod) | 25697 |
| MB 410-25697/1-A | Method Blank | Total/NA | Water | EPA 537 (Mod) | 25697 |
| LCS 410-25697/2-A | Lab Control Sample | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-4 MS | MW-4 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-4 MSD | MW-4 | Total/NA | Water | EPA 537 (Mod) | 25697 |

## LCMS

### Prep Batch: 26607

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-13 - RE | SB-1-1-1.45 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-17 - DL2 | SB-3-1-1.4 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-17 | SB-3-1-1.4 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-17 - DL | SB-3-1-1.4 | Total/NA | Solid | 537 (Mod) | |
| 410-8511-18 - RE | SB-4-0-0.5 | Total/NA | Solid | 537 (Mod) | |
| MB 410-26607/1-B | Method Blank | Total/NA | Solid | 537 (Mod) | |
| LCS 410-26607/2-B | Lab Control Sample | Total/NA | Solid | 537 (Mod) | |
| LCSD 410-26607/3-B | Lab Control Sample Dup | Total/NA | Solid | 537 (Mod) | |

### Cleanup Batch: 26619

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-13 - RE | SB-1-1-1.45 | Total/NA | Solid | Extract Aliquot | 26607 |
| 410-8511-17 - DL2 | SB-3-1-1.4 | Total/NA | Solid | Extract Aliquot | 26607 |
| 410-8511-17 - DL | SB-3-1-1.4 | Total/NA | Solid | Extract Aliquot | 26607 |
| 410-8511-17 | SB-3-1-1.4 | Total/NA | Solid | Extract Aliquot | 26607 |
| 410-8511-18 - RE | SB-4-0-0.5 | Total/NA | Solid | Extract Aliquot | 26607 |
| MB 410-26607/1-B | Method Blank | Total/NA | Solid | Extract Aliquot | 26607 |
| LCS 410-26607/2-B | Lab Control Sample | Total/NA | Solid | Extract Aliquot | 26607 |
| LCSD 410-26607/3-B | Lab Control Sample Dup | Total/NA | Solid | Extract Aliquot | 26607 |

### Analysis Batch: 26801

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-12 - DL | SB-1-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-13 - DL | SB-1-1-1.45 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-13 - RE | SB-1-1-1.45 | Total/NA | Solid | EPA 537 (Mod) | 26619 |
| 410-8511-14 - DL | SB-2-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-15 - DL | SB-2-1-1.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-15 - DL2 | SB-2-1-1.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-16 - DL | SB-3-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-17 | SB-3-1-1.4 | Total/NA | Solid | EPA 537 (Mod) | 26619 |
| 410-8511-18 - DL | SB-4-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| 410-8511-18 - RE | SB-4-0-0.5 | Total/NA | Solid | EPA 537 (Mod) | 26619 |
| 410-8511-20 - DL | FD-07212020 | Total/NA | Solid | EPA 537 (Mod) | 25986 |
| MB 410-26607/1-B | Method Blank | Total/NA | Solid | EPA 537 (Mod) | 26619 |
| LCS 410-26607/2-B | Lab Control Sample | Total/NA | Solid | EPA 537 (Mod) | 26619 |
| LCSD 410-26607/3-B | Lab Control Sample Dup | Total/NA | Solid | EPA 537 (Mod) | 26619 |

### Analysis Batch: 27160

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-8 - DL | FD-07202020 | Total/NA | Water | EPA 537 (Mod) | 25697 |
| 410-8511-17 - DL | SB-3-1-1.4 | Total/NA | Solid | EPA 537 (Mod) | 26619 |

### Prep Batch: 27247

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-1 | MW-1 | Total/NA | Water | 537 (Mod) | |
| 410-8511-3 | MW-3 | Total/NA | Water | 537 (Mod) | |
| 410-8511-3 - DL | MW-3 | Total/NA | Water | 537 (Mod) | |
| 410-8511-9 | RB-07202020 | Total/NA | Water | 537 (Mod) | |
| 410-8511-11 | IDW-AQ | Total/NA | Water | 537 (Mod) | |
| MB 410-27247/1-A | Method Blank | Total/NA | Water | 537 (Mod) | |
| LCS 410-27247/2-A | Lab Control Sample | Total/NA | Water | 537 (Mod) | |

## LCMS (Continued)

### Prep Batch: 27247 (Continued)

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| LCSD 410-27247/3-A | Lab Control Sample Dup | Total/NA | Water | 537 (Mod) | |

### Analysis Batch: 27503

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-1 | MW-1 | Total/NA | Water | EPA 537 (Mod) | 27247 |
| 410-8511-3 | MW-3 | Total/NA | Water | EPA 537 (Mod) | 27247 |
| 410-8511-3 - DL | MW-3 | Total/NA | Water | EPA 537 (Mod) | 27247 |
| 410-8511-9 | RB-07202020 | Total/NA | Water | EPA 537 (Mod) | 27247 |
| 410-8511-11 | IDW-AQ | Total/NA | Water | EPA 537 (Mod) | 27247 |
| 410-8511-17 - DL2 | SB-3-1-1.4 | Total/NA | Solid | EPA 537 (Mod) | 26619 |
| MB 410-27247/1-A | Method Blank | Total/NA | Water | EPA 537 (Mod) | 27247 |
| LCS 410-27247/2-A | Lab Control Sample | Total/NA | Water | EPA 537 (Mod) | 27247 |
| LCSD 410-27247/3-A | Lab Control Sample Dup | Total/NA | Water | EPA 537 (Mod) | 27247 |

## General Chemistry

### Analysis Batch: 25728

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-17 | SB-3-1-1.4 | Total/NA | Solid | Moisture | |
| 410-8511-22 | IDW-SO-2 | Total/NA | Solid | Moisture | |

### Analysis Batch: 25760

| Lab Sample ID | Client Sample ID | Prep Type | Matrix | Method | Prep Batch |
|---|---|---|---|---|---|
| 410-8511-12 | SB-1-0-0.5 | Total/NA | Solid | Moisture | |
| 410-8511-13 | SB-1-1-1.45 | Total/NA | Solid | Moisture | |
| 410-8511-14 | SB-2-0-0.5 | Total/NA | Solid | Moisture | |
| 410-8511-15 | SB-2-1-1.5 | Total/NA | Solid | Moisture | |
| 410-8511-16 | SB-3-0-0.5 | Total/NA | Solid | Moisture | |
| 410-8511-18 | SB-4-0-0.5 | Total/NA | Solid | Moisture | |
| 410-8511-19 | SB-4-1-1.4 | Total/NA | Solid | Moisture | |
| 410-8511-20 | FD-07212020 | Total/NA | Solid | Moisture | |
| 410-8511-21 | IDW-SO-1 | Total/NA | Solid | Moisture | |

# Lab Chronicle

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-1
**Date Collected: 07/20/20 08:25**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-1
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | RE | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | RE | 1 | 26285 | 07/25/20 16:33 | UCD3 | ELLE |
| Total/NA | Prep | 537 (Mod) | | | 27247 | 07/28/20 17:20 | QLP7 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 27503 | 07/29/20 17:33 | UCD3 | ELLE |

## Client Sample ID: MW-2
**Date Collected: 07/20/20 09:55**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-2
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 16:42 | UCD3 | ELLE |

## Client Sample ID: MW-3
**Date Collected: 07/20/20 10:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-3
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | RE | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | RE | 1 | 26285 | 07/25/20 16:51 | UCD3 | ELLE |
| Total/NA | Prep | 537 (Mod) | | | 27247 | 07/28/20 17:20 | QLP7 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 27503 | 07/29/20 17:42 | UCD3 | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 27247 | 07/28/20 17:20 | QLP7 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 27503 | 07/29/20 19:40 | UCD3 | ELLE |

## Client Sample ID: MW-4
**Date Collected: 07/20/20 12:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-4
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 17:00 | UCD3 | ELLE |

## Client Sample ID: MW-5
**Date Collected: 07/20/20 14:00**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-5
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 17:27 | UCD3 | ELLE |

# Lab Chronicle

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: MW-6
**Date Collected: 07/20/20 14:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-6
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 17:36 | UCD3 | ELLE |

## Client Sample ID: MW-7
**Date Collected: 07/20/20 16:00**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-7
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 17:45 | UCD3 | ELLE |

## Client Sample ID: FD-07202020
**Date Collected: 07/20/20 00:00**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-8
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 18:03 | UCD3 | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 27160 | 07/28/20 15:00 | PY4D | ELLE |

## Client Sample ID: RB-07202020
**Date Collected: 07/20/20 16:15**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-9
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | RE | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | RE | 1 | 26285 | 07/25/20 18:12 | UCD3 | ELLE |
| Total/NA | Prep | 537 (Mod) | | | 27247 | 07/28/20 17:20 | QLP7 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 27503 | 07/29/20 18:00 | UCD3 | ELLE |

## Client Sample ID: RB-07212020
**Date Collected: 07/21/20 09:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-10
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26285 | 07/25/20 18:21 | UCD3 | ELLE |

## Client Sample ID: IDW-AQ
**Date Collected: 07/21/20 12:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-11
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | RE | | 25697 | 07/23/20 15:32 | Z5TV | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | RE | 1 | 26285 | 07/25/20 18:31 | UCD3 | ELLE |

# Lab Chronicle

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: IDW-AQ
**Date Collected: 07/21/20 12:50**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-11
**Matrix: Water**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 27247 | 07/28/20 17:20 | QLP7 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 27503 | 07/29/20 18:09 | UCD3 | ELLE |

## Client Sample ID: SB-1-0-0.5
**Date Collected: 07/21/20 08:15**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-12
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-1-0-0.5
**Date Collected: 07/21/20 08:15**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-12
**Matrix: Solid**
**Percent Solids: 93.5**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 21:45 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 16:30 | PY4D | ELLE |

## Client Sample ID: SB-1-1-1.45
**Date Collected: 07/21/20 08:25**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-13
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-1-1-1.45
**Date Collected: 07/21/20 08:25**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-13
**Matrix: Solid**
**Percent Solids: 87.2**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 22:12 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 16:39 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | RE | | 26607 | 07/27/20 08:21 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | RE | | 26619 | 07/27/20 08:33 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | RE | 1 | 26801 | 07/27/20 19:31 | PY4D | ELLE |

# Lab Chronicle

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: SB-2-0-0.5
**Date Collected: 07/21/20 08:45**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-14
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-2-0-0.5
**Date Collected: 07/21/20 08:45**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-14
**Matrix: Solid**
**Percent Solids: 95.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 22:21 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 16:48 | PY4D | ELLE |

## Client Sample ID: SB-2-1-1.5
**Date Collected: 07/21/20 08:55**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-15
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-2-1-1.5
**Date Collected: 07/21/20 08:55**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-15
**Matrix: Solid**
**Percent Solids: 90.8**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 22:30 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 16:57 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL2 | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL2 | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL2 | 100 | 26801 | 07/28/20 02:28 | PY4D | ELLE |

## Client Sample ID: SB-3-0-0.5
**Date Collected: 07/21/20 09:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-16
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-3-0-0.5

**Lab Sample ID: 410-8511-16**
**Date Collected: 07/21/20 09:10**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 94.1**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 22:39 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 17:06 | PY4D | ELLE |

## Client Sample ID: SB-3-1-1.4

**Lab Sample ID: 410-8511-17**
**Date Collected: 07/21/20 09:18**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25728 | 07/23/20 16:48 | OEL4 | ELLE |

## Client Sample ID: SB-3-1-1.4

**Lab Sample ID: 410-8511-17**
**Date Collected: 07/21/20 09:18**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 90.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 26607 | 07/27/20 08:21 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 26619 | 07/27/20 08:33 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 26801 | 07/27/20 19:40 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 26607 | 07/27/20 08:21 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 26619 | 07/27/20 08:33 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 27160 | 07/28/20 20:45 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL2 | | 26607 | 07/27/20 08:21 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL2 | | 26619 | 07/27/20 08:33 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL2 | 100 | 27503 | 07/29/20 12:25 | UCD3 | ELLE |

## Client Sample ID: SB-4-0-0.5

**Lab Sample ID: 410-8511-18**
**Date Collected: 07/21/20 09:30**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-4-0-0.5

**Lab Sample ID: 410-8511-18**
**Date Collected: 07/21/20 09:30**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 90.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 23:06 | PY4D | ELLE |

# Lab Chronicle

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: SB-4-0-0.5

**Lab Sample ID: 410-8511-18**
**Date Collected: 07/21/20 09:30**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 90.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 17:24 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | RE | | 26607 | 07/27/20 08:21 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | RE | | 26619 | 07/27/20 08:33 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | RE | 1 | 26801 | 07/27/20 19:49 | PY4D | ELLE |

## Client Sample ID: SB-4-1-1.4

**Lab Sample ID: 410-8511-19**
**Date Collected: 07/21/20 09:35**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: SB-4-1-1.4

**Lab Sample ID: 410-8511-19**
**Date Collected: 07/21/20 09:35**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 84.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 23:16 | PY4D | ELLE |

## Client Sample ID: FD-07212020

**Lab Sample ID: 410-8511-20**
**Date Collected: 07/21/20 00:00**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: FD-07212020

**Lab Sample ID: 410-8511-20**
**Date Collected: 07/21/20 00:00**
**Matrix: Solid**
**Date Received: 07/22/20 11:06**
**Percent Solids: 95.7**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 23:25 | PY4D | ELLE |
| Total/NA | Prep | 537 (Mod) | DL | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | DL | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | DL | 10 | 26801 | 07/27/20 17:33 | PY4D | ELLE |

# Lab Chronicle

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

## Client Sample ID: IDW-SO-1
**Date Collected: 07/21/20 13:05**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-21
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25760 | 07/23/20 18:43 | OEL4 | ELLE |

## Client Sample ID: IDW-SO-1
**Date Collected: 07/21/20 13:05**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-21
**Matrix: Solid**
**Percent Solids: 95.9**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 23:34 | PY4D | ELLE |

## Client Sample ID: IDW-SO-2
**Date Collected: 07/21/20 13:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-22
**Matrix: Solid**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Analysis | Moisture | | 1 | 25728 | 07/23/20 16:48 | OEL4 | ELLE |

## Client Sample ID: IDW-SO-2
**Date Collected: 07/21/20 13:10**
**Date Received: 07/22/20 11:06**

## Lab Sample ID: 410-8511-22
**Matrix: Solid**
**Percent Solids: 95.4**

| Prep Type | Batch Type | Batch Method | Run | Dilution Factor | Batch Number | Prepared or Analyzed | Analyst | Lab |
|---|---|---|---|---|---|---|---|---|
| Total/NA | Prep | 537 (Mod) | | | 25969 | 07/24/20 09:12 | RDL8 | ELLE |
| Total/NA | Cleanup | Extract Aliquot | | | 25986 | 07/24/20 09:48 | RDL8 | ELLE |
| Total/NA | Analysis | EPA 537 (Mod) | | 1 | 25943 | 07/24/20 23:43 | PY4D | ELLE |

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Accreditation/Certification Summary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

## Laboratory: Eurofins Lancaster Laboratories Env, LLC

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

| Authority | Program | Identification Number | Expiration Date |
|---|---|---|---|
| A2LA | Dept. of Defense ELAP | 1.01 | 11-30-20 |

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

| Analysis Method | Prep Method | Matrix | Analyte |
|---|---|---|---|
| Moisture | | Solid | Percent Moisture |
| Moisture | | Solid | Percent Solids |

# Method Summary

Client: EA Engineering, Science, and Technology
Job ID: 410-8511-1
Project/Site: Montana Air National Guard / 6280606

| Method | Method Description | Protocol | Laboratory |
|---|---|---|---|
| EPA 537 (Mod) | EPA 537 mod QSM 5.1, Table B-15 | EPA | ELLE |
| Moisture | Percent Moisture | EPA | ELLE |
| 537 (Mod) | EPA 537 mod QSM 5.1 Table B-15 | EPA | ELLE |
| Extract Aliquot | Preparation, Extract Aliquot | None | ELLE |

**Protocol References:**

EPA = US Environmental Protection Agency
None = None

**Laboratory References:**

ELLE = Eurofins Lancaster Laboratories Env, LLC, 2425 New Holland Pike, Lancaster, PA 17601, TEL (717)656-2300

# Sample Summary

Client: EA Engineering, Science, and Technology
Project/Site: Montana Air National Guard / 6280606

Job ID: 410-8511-1

| Lab Sample ID | Client Sample ID | Matrix | Collected | Received | Asset ID |
|---|---|---|---|---|---|
| 410-8511-1 | MW-1 | Water | 07/20/20 08:25 | 07/22/20 11:06 | |
| 410-8511-2 | MW-2 | Water | 07/20/20 09:55 | 07/22/20 11:06 | |
| 410-8511-3 | MW-3 | Water | 07/20/20 10:50 | 07/22/20 11:06 | |
| 410-8511-4 | MW-4 | Water | 07/20/20 12:10 | 07/22/20 11:06 | |
| 410-8511-5 | MW-5 | Water | 07/20/20 14:00 | 07/22/20 11:06 | |
| 410-8511-6 | MW-6 | Water | 07/20/20 14:50 | 07/22/20 11:06 | |
| 410-8511-7 | MW-7 | Water | 07/20/20 16:00 | 07/22/20 11:06 | |
| 410-8511-8 | FD-07202020 | Water | 07/20/20 00:00 | 07/22/20 11:06 | |
| 410-8511-9 | RB-07202020 | Water | 07/20/20 16:15 | 07/22/20 11:06 | |
| 410-8511-10 | RB-07212020 | Water | 07/21/20 09:50 | 07/22/20 11:06 | |
| 410-8511-11 | IDW-AQ | Water | 07/21/20 12:50 | 07/22/20 11:06 | |
| 410-8511-12 | SB-1-0-0.5 | Solid | 07/21/20 08:15 | 07/22/20 11:06 | |
| 410-8511-13 | SB-1-1-1.45 | Solid | 07/21/20 08:25 | 07/22/20 11:06 | |
| 410-8511-14 | SB-2-0-0.5 | Solid | 07/21/20 08:45 | 07/22/20 11:06 | |
| 410-8511-15 | SB-2-1-1.5 | Solid | 07/21/20 08:55 | 07/22/20 11:06 | |
| 410-8511-16 | SB-3-0-0.5 | Solid | 07/21/20 09:10 | 07/22/20 11:06 | |
| 410-8511-17 | SB-3-1-1.4 | Solid | 07/21/20 09:18 | 07/22/20 11:06 | |
| 410-8511-18 | SB-4-0-0.5 | Solid | 07/21/20 09:30 | 07/22/20 11:06 | |
| 410-8511-19 | SB-4-1-1.4 | Solid | 07/21/20 09:35 | 07/22/20 11:06 | |
| 410-8511-20 | FD-07212020 | Solid | 07/21/20 00:00 | 07/22/20 11:06 | |
| 410-8511-21 | IDW-SO-1 | Solid | 07/21/20 13:05 | 07/22/20 11:06 | |
| 410-8511-22 | IDW-SO-2 | Solid | 07/21/20 13:10 | 07/22/20 11:06 | |

# Environmental Analysis Chain of Custody

eurofins | Lancaster Laboratories Environmental

Acct. # _____

410-8511 Chain of Custody

nental use only

**COC #610060** 1 of 3

## Client Information

| | |
|---|---|
| Client: EA Engineering | Acct. #: |
| Project Name/#: Montana Air National Guard / 6280606 | PWSID #: |
| Project Manager: Jamie Welsh | P.O. #: 6280606 |
| Sampler: Mike Wright | Quote #: |
| State where samples were collected: Montana | For Compliance: Yes ☒ No ☐ |

| Sample Identification | Collected Date | Collected Time | Grab | Composite | Matrix: Soil ☐ Sediment ☐ Tissue ☐ Potable ☐ Ground ☐ Surface ☐ NPDES ☐ Water ☒ Other: | Total # of Containers | Analysis Requested: PFAS in water by LC/MS/MS - DoD | Remarks |
|---|---|---|---|---|---|---|---|---|
| MW-1 | 7/20/20 | 0825 | X | | X | 2 | X | |
| MW-2 | 7/20/20 | 0955 | X | | X | 2 | X | |
| MW-3 | 7/20/20 | 1050 | X | | X | 2 | X | |
| MW-4 | 7/20/20 | 1210 | X | | X | 6 | X | MS/MSD |
| MW-5 | 7/20/20 | 1400 | X | | X | 2 | X | |
| MW-6 | 7/20/20 | 1450 | X | | X | 2 | X | |
| MW-7 | 7/20/20 | 1600 | X | | X | 2 | X | |
| FD-07202020 | 7/20/20 | | X | | X | 2 | X | |
| RB-07202020 | 7/20/20 | 1615 | X | | X | 2 | X | |
| RB-07212020 | 7/21/20 | 0950 | X | | X | 2 | X | |

**Preservation and Filtration Codes**

**Preservation Codes**

| | |
|---|---|
| H=HCl | T=Thiosulfate |
| N=$HNO_3$ | B=NaOH |
| S=$H_2SO_4$ | P=$H_3PO_4$ |
| F=Field Filtered | O=Other |

For Lab Use Only
FSC: 261521
SCR#:

## Turnaround Time (TAT) Requested (please circle)

Standard (Rush)

(Rush TAT is subject to laboratory approval and surcharge.)

Requested TAT in business days: _____

E-mail address: jwelsh@eqest.com

## Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

| Relinquished by | Date | Time | Received by | Date | Time |
|---|---|---|---|---|---|
| [signature] | 7-21-20 | 1030 | | | |
| [signature] | 7/21/20 | 1520 | | | |
| | | | | | |
| | | | | | |
| | | | [signature] | 7/22/20 | 1106 |

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.5 °C

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The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0919

# Environmental Analysis Request/Chain of Custody

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For Eurofins Lancaster Laboratories Environmental use only

Acct. # _____ Group # _____ Sample # _____

**COC # 610061**

2 of 3

## Client Information

Client: SAME | Acct. #: AS

Project Name/#: | PWSID #:

Project Manager: PAGE 1 | P.O. #:

Sampler: | Quote #:

State where samples were collected: | For Compliance: Yes ☐ No ☐

## Matrix

Soil ☒ Sediment ☐ Tissue ☐ | Water ☒ Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: _____

## Analysis Requested

Preservation and Filtration Codes

For Lab Use Only

FSC: _____

SCR#: _____

### Preservation Codes

H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ P=$H_3PO_4$
F=Field Filtered O=Other

| Sample Identification | Collected Date | Collected Time | Grab | Composite | Total # of Containers | PFAS in water by LC/MS/MS-DoD | PFAS in soil by LC/MS/MS-DoD | Moisture | Remarks |
|---|---|---|---|---|---|---|---|---|---|
| IDW-AQ | 7/21/20 | 1250 | | X | 2 | X | | | |
| SB-1-0-0.5 | 7/21/20 | 0915 | | X | 6 | | X | X | MS/MSD |
| SB-1-1-1.45 | 7/21/20 | 0825 | | X | 2 | | X | X | |
| SB-2-0-0.5 | 7/21/20 | 0845 | | X | 2 | | X | X | |
| SB-2-1-1.5 | 7/21/20 | 0855 | | X | 2 | | X | X | |
| SB-3-0-0.5 | 7/21/20 | 0910 | | X | 2 | | X | X | |
| SB-3-1-1.4 | 7/21/20 | 0918 | | X | 2 | | X | X | |
| SB-4-0-0.5 | 7/21/20 | 0930 | | X | 2 | | X | X | |
| SB-4-1-1.4 | 7/21/20 | 0935 | | X | 2 | | X | X | |
| FD-07212020 | 7/21/20 | | | X | 2 | | X | X | |

## Turnaround Time (TAT) Requested (please circle)

Standard (Rush)

(Rush TAT is subject to laboratory approval and surcharge.)

Requested TAT in business days: _____

E-mail address: jwelsh@eaest.com

## Data Package Options (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP) | Type VI (Raw Data Only)

Type III (Reduced non-CLP) | NJ DKQP | TX TRRP-13

NYSDEC Category A or B | MA MCP | CT RCP

| Relinquished by | Date | Time | Received by | Date | Time |
|---|---|---|---|---|---|
| [signature] | 7/21/20 | 1520 | | | |
| Relinquished by | Date | Time | Received by | Date | Time |
| Relinquished by | Date | Time | Received by | Date | Time |
| Relinquished by | Date | Time | Received by | Date | Time |
| Relinquished by | Date | Time | Received by [signature] | 7/22/20 | 1106 |

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.5 °C

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The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

7044 0919

# Environmental Analysis Request/Chain of Custody

eurofins | Lancaster Laboratories Environmental

For Eurofins Lancaster Laboratories Environmental use only

Acct. # _____ Group # _____ Sample # _____

**COC #610062**

3 of 3

## Client Information

Client: Sam A

Acct. #:

Project Name/#: PWSID #:

Project Manager: PAGE 1

P.O. #:

Sampler:

Quote #:

State where samples were collected:

For Compliance: Yes ☐ No ☐

## Matrix

Soil ☒ Sediment ☐ Tissue ☐ | Water: Potable ☐ Ground ☐ NPDES ☐ Surface ☐ | Other: | Total # of Containers

## Analysis Requested

Preservation and Filtration Codes

PFAS in Soil by LC/MS/MS - DoD | Moisture

| Sample Identification | Collected Date | Collected Time | Grab | Composite | Soil | Water | Other | Total # of Containers | PFAS | Moisture | Remarks |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IDW-SO-1 | 7/21/20 | 1305 | | X | X | | | 2 | X | X | |
| IDW-SO-2 | 7/21/20 | 1310 | | X | X | | | 2 | X | X | |

**For Lab Use Only**

FSC:

SCR#:

**Preservation Codes**

H=HCl T=Thiosulfate
N=$HNO_3$ B=NaOH
S=$H_2SO_4$ P=$H_3PO_4$
F=Field Filtered O=Other

**Remarks**

**Turnaround Time (TAT) Requested** (please circle)

Standard (Rush)

(Rush TAT is subject to laboratory approval and surcharge.)

Requested TAT in business days: _____

E-mail address: Jwish@eaest.com

**Data Package Options** (circle if required)

Type I (EPA Level 3 Equivalent/non-CLP)
Type VI (Raw Data Only)
Type III (Reduced non-CLP)
NJ DKQP
TX TRRP-13
NYSDEC Category A or B
MA MCP
CT RCP

| Relinquished by | Date | Time | Received by | Date | Time |
|---|---|---|---|---|---|
| [signature] | 7/24/20 | 1520 | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | [signature] | 7/22/20 | 1106 |

EDD Required? Yes No

If yes, format: _____

Site-Specific QC (MS/MSD/Dup)? Yes No

(If yes, indicate QC sample and submit triplicate sample volume.)

Relinquished by Commercial Carrier: UPS _____ FedEx _____ Other _____

Temperature upon receipt 0.5 °C

# Login Sample Receipt Checklist

Client: EA Engineering, Science, and Technology

Job Number: 410-8511-1

**Login Number: 8511**
**List Number: 1**
**Creator: Miller, Wesley R**

**List Source: Eurofins Lancaster Laboratories Env**

| Question | Answer | Comment |
|---|---|---|
| Radioactivity wasn't checked or is </= background as measured by a survey meter. | N/A | |
| The cooler's custody seal is intact. | True | |
| The cooler or samples do not appear to have been compromised or tampered with. | True | |
| Samples were received on ice. | True | |
| Cooler Temperature is acceptable (</=6C, not frozen). | True | |
| Cooler Temperature is recorded. | True | |
| WV: Container Temperature is acceptable (</=6C, not frozen). | N/A | |
| WV: Container Temperature is recorded. | N/A | |
| COC is present. | True | |
| COC is filled out in ink and legible. | True | |
| COC is filled out with all pertinent information. | True | |
| There are no discrepancies between the containers received and the COC. | True | |
| Samples are received within Holding Time (excluding tests with immediate HTs) | True | |
| Sample containers have legible labels. | True | |
| Containers are not broken or leaking. | True | |
| Sample collection date/times are provided. | True | |
| Appropriate sample containers are used. | True | |
| Sample bottles are completely filled. | True | |
| There is sufficient vol. for all requested analyses. | True | |
| Multiphasic samples are not present. | True | |
| Samples do not require splitting or compositing. | N/A | |
| Is the Field Sampler's name present on COC? | True | |
| Sample Preservation Verified. | N/A | |
| Residual Chlorine Checked. | N/A | |
| Sample custody seals are intact. | N/A | |