

Evaluation of Lapeer WWTP Biosolids Site 08n11e33-SK01

Lapeer County, MI

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Table of Contents

1.	Introduction	. 1
2.	Background	. 1
3.	Hydrogeology/Geology	. 2
4.	Scope of Work	. 3
5.	Surface Soil	. 4
6.	Groundwater	. 5
7.	Surface Water	. 6
8.	QA/QC Results	. 7
9.	Investigation-Derived Waste (IDW)	. 8
10.	Pathway and Receptors Evaluation	. 8
11.	Summary and Discussion	10

Figures

Figure 1	08n11e33-SK01 Site Location
Figure 2	08n11e33-SK01 Incremental Soil Sampling Locations
Figure 3	08n11e33-SK01 Groundwater, Surface Water & Drain Tile Sampling Locations
Figure 4	08n11e33-SK01 Incremental Soil Sampling Total PFAS Concentration
Figure 5	08n11e33-SK01 Incremental Soil Sampling PFOS Concentration
Figure 6	08n11e33-SK01 Groundwater Total PFAS Concentration
Figure 7	08n11e33-SK01 Groundwater PFOA+PFOS Concentration
Figure 8	08n11e33-SK01 Surface Water & Drain Tile Total PFAS Concentration
Figure 9	08n11e33-SK01 Surface Water & Drain Tile PFOS Concentration
Figure 10	08n11e33-SK01 Wellogic Wells and Regional GW Flow Direction
Figure 11	08n11e33-SK01 Length of Largemouth Bass vs. PFOS Concentration
Figure 12	08n11e33-SK01 Length of Bluegill/pumpkinseed vs. PFOS Concentration
Figure 13	08n11e33-SK01 PFOS Concentration in Largemouth Bass Tissue Samples from
	Selected Michigan Waterbodies
Figure 14	08n11e33-SK01 PFOS Concentration in Bluegill & Pumpkinseed Tissue Samples from
	Selected Michigan Waterbodies

Tables

Tahla 1	Biosolids Application Data
	Dissolids Application Data
Table 2	Parcel ID: 08n11e33-SK01 PFAS Soil Analytical Results Summary
Table 3	Parcel ID: 08n11e33-SK01 PFAS and TOC Soil Detection Summary
Table 4	Parcel ID: 08n11e33-SK01 Temporary Monitoring Well Construction
Table 5	Parcel ID: 08n11e33-SK01 Stabilized Water Quality Parameters
Table 6	Parcel ID: 08n11e33-SK01 PFAS Groundwater Analytical Results Summary
Table 7	Parcel ID: 08n11e33-SK01 PFAS Surface Water Analytical Results Summary

Appendices

Appendix A	Soil Boring Logs
Appendix B	Soil Survey Description
Appendix C	Laboratory Analytical Reports
Appendix D	Validation Memos

1. Introduction

This technical memorandum summarizes and reports the findings at the privately owned site 08n11e33-SK01 (Site) (**Figure 1**). The purpose of the investigation was to determine the impact, if any, from the potential land application of Per- and Polyfluroalkyl Substances (PFAS)-impacted biosolids from the City of Lapeer Wastewater Treatment Plant (WWTP) in the soil, groundwater and adjacent surface water bodies.

The field investigation activities were designed to characterize conditions in soil, groundwater and surface water, and collect data to evaluate risk to human health and the environment from the application of potential PFAS-impacted biosolids. A review of existing data was used to guide the scope of this investigation. Field investigation activities at the site included soil, groundwater and surface water sampling activities.

2. Background

The Site (**Figure 1**) is an actively farmed field where corn was planted for ethanol production in the 2018 growing season. As a result of the farming activities, all soil sampling and well installation was completed prior to spring planting at the request of the owner. The investigation was conducted by AECOM on behalf of the Michigan Department of Environmental Quality (MDEQ) and was performed in accordance with applicable AECOM, MDEQ, and US Environmental Protection Agency (USEPA) guidance documents, including the site-specific Sampling and Analysis Plan (SAP) and the Quality Assurance Project Plan (QAPP).

PFAS have been classified by the USEPA as an emerging contaminant, that are regulated by the MDEQ under Part 201, Environmental Remediation, and Part 31, Water Resources Protection, of the Natural Resources and Environmental Protection Act, Act 451 of 1994, as amended and their respective administrative rules, specifically Rule 299.44-299.50 (Generic Cleanup Criteria) and Rule 323.1057 (Rule 57) (Toxic Substances) of the Michigan Administrative Code. PFAS are a complex family of more than 3,000 man-made fluorinated organic chemicals. Due to their unique chemical properties, PFAS have been used in many industries and consumer products since the late 1950's. The Interstate Technology Regulatory Council (ITRC) has identified four major sources of PFAS: fire training/fire response sites, industrial sites, landfills, and wastewater treatment plants/biosolids.

Preliminary surface water and fish tissue sampling performed by the MDEQ in 2013 and 2014 on the Flint River found concentrations of perfluorooctane sulfonic acid (PFOS) above Michigan's Part 31 Water Quality Standard and Michigan Department of Health and Human Services (MDHHS) screening values for fish tissue. As a result, in 2015, MDHHS released an updated "Eat Safe Fish" guidance where PFOS was the driver for the fish consumption advisory for several species on the Flint River downstream of Mott Dam. Subsequent surface water and fish collection was conducted in 2016 to investigate the potential sources of PFAS to the river the results of which indicated that there was a PFAS source located upstream of Holloway Dam. In 2017, additional monitoring was conducted upstream of Holloway Dam, of major tributaries of the Flint River, and of the three major wastewater treatment plants which discharge to the River within the area of concern. Analysis of the City of Lapeer's WWTP effluent identified the WWTP as a significant source of PFOS to the Flint River in May of 2017. Subsequently, an industrial user to the WWTP was identified as contributing significant amounts of PFOS to the City's sewer system.

The City of Lapeer was authorized to land-apply biosolids from the Lapeer WWTP in accordance with a Residuals Management Program (RMP) approved by the MDEQ on October 17, 2000. During land application, biosolids are injected below the surface to a maximum depth of 12 inches. Due to the elevated levels of PFAS identified in the effluent from the WWTP and concerns regarding the potential for

PFAS-impacted biosolids being land applied, the MDEQ requested the City of Lapeer analyze their biosolids for PFAS on August 24, 2017. Results indicated that PFAS was present in biosolids at elevated concentrations. The concentration of PFOS was found to be the highest at 2,100 nanograms per gram (ng/g) or parts per billion (ppb). In order to evaluate the potential impact of PFAS-contaminated biosolids in fields where they were land applied by the City of Lapeer, the MDEQ conducted a file review and identified 38 fields used by the City of Lapeer for land application of biosolids since 1997. Access to records of land application prior to 1997 is limited.

The MDEQ conducted an initial, limited investigation in December 2017 at the Site owned by the City of Lapeer (8n10e33-CL01) that included three surface soil samples and one surface water sample. The results of the initial MDEQ investigation indicated the highest PFAS concentration was PFOS, with an average soil concentration of 500 ppb. In addition, PFOS levels in the pond located on the northeast side of the City owned field were reported at 2,000 nanograms per liter (ng/L) or parts per trillion (ppt) which is above the Part 31 water quality value of 12 ppt. The presence of elevated levels of PFOS in the soils and pond water indicated the potential for PFOS to be present in adjacent groundwater and/or surface waters. The MDEQ's drinking water cleanup criterion under Part 201 is 70 ng/L for PFOS, perfluorooctanoic acid (PFOA), or the sum of both compounds.

Based on the data results from the parcel owned by the City of Lapeer (8n10e33-CL01), the MDEQ determined that additional monitoring was necessary to evaluate potential, if any, impacts to resources and chose additional fields for investigation.

One of those Sites was 08n11e33-SK01 (**Figure 1**). The MDEQ prioritized this site for monitoring based on several factors. The site had received a moderate number (6) of applications of biosolids from the City during a period of time when it is suspected that PFOS concentrations levels in biosolids may have been higher than what was measured in 2017 due to a PFOS-based fume suppressant being used at the industrial user as part of their process. Approximately 700 dry tons of biosolids were applied to the field since 1997 with the last application occurring in 2006. However, based on conversations with the landowner, as shown in **Figure 2**, biosolids from the Lapeer WWTP were only applied to the western portion of parcel 08n11e33-SK01. **Table 1** summarizes the application data based on the review of the City of the Lapeer biosolids annual reports provided by the MDEQ. In addition, the Site offered a contrast of soil types to those at the City site, had a surface water body (Lake Pleasant Drain) immediately adjacent to the Site and was located in a well head protection area for a manufactured housing community with a Type I community well.

From April 27, 2018 through May 01, 2018, AECOM conducted a field investigation to determine the impact, if any, from the land application of PFAS-impacted biosolids from the City of Lapeer WWTP in the soil, groundwater and adjacent surface water bodies at the Site. Subsequent to the AECOM investigation, the MDEQ collected fish tissue and surface water samples in August 2018 from Lake Pleasant, located approximately 3,400 feet south of the Site (**Figure 1**). In addition, the MDEQ is sampling all of the State's public water supplies, including Lapeer County, for PFAS.

3. Hydrogeology/Geology

The geology and topography of the site is the result of glacial activity. The glacial aquifers consist of sand and gravel that are part of a thick sequence of Pleistocene glacial deposits. The area is composed of end moraines of coarse-textured till. To the west of the Site are deposits of lacustrine clay and silt and to the east are deposits of glacial outwash sand and gravel. Soil borings installed during the investigation generally encountered sand containing gravel, underlain by clay at depths ranging from 8.5 to 16 feet below ground surface (bgs). However, at TMW1 a shallow, clayey sand with gravel was encountered, but no clay was observed deeper in the boring to the total depth of 20 feet bgs. Boring logs are provided in **Appendix A**.

The Lapeer County Soil Survey identified two primary types of surface soils in the three Decision Units (DUs) in which surface soil samples were collected. They are described by the U.S. Department of

Agriculture as the Capac fine sandy loam (CaA and CaB) and the Chelsea loamy sand (ChB and ChC). The Capac soils are located on till plains and have excessive wetness in early spring, but the soil material is stable. The Chelsea soils are located on broad outwash plains and due to the rapid permeability have low water capacity. The Site soils identified in the Lapeer County Soil Survey are shown on **Figure 2** and are described in **Appendix B**.

Regional groundwater flow is expected to generally be towards surface water bodies such as ponds and streams. The general groundwater elevation map, based on MDEQ-provided shallow groundwater elevation data, is provided in **Figure 3** and indicates groundwater flow is to the west, southwest. **Figure 3** also shows that the primary groundwater discharge point is the Lake Pleasant Drain, located along the western Site boundary.

4. Scope of Work

Soil, groundwater and surface water samples were collected from the Site to further characterize PFAS. Three surface soil samples were collected from each of the three DUs using Incremental Sampling Methodology (ISM). A total of nine soil samples were sent for laboratory analysis. Groundwater was collected from six temporary monitoring wells. The Scope of Work called for the collection of three surface water samples and five drain tile water samples; however, the drain tiles could not be physically located so surface water samples were collected from their approximate locations based on MDEQ-provided global positioning system (GPS) coordinates and other evidence, such as disturbance of the surface water (e.g. ripples), that suggested flow from the tiles into the surface water. The MDEQ subsequently collected nine fish tissue samples and two surface water samples from Lake Pleasant.

The soil, groundwater, and surface water samples were submitted to Vista Analytical Laboratories and analyzed using the isotope dilution method for a list of 24 PFAS which included:

- PFBA = Perfluorobutanoic acid
- PFPeA = Perfluoropentanoic acid
- PFPeS = Perfluoropentane sulfonic acid
- PFHxA Perfluorohexaonic acid
- PFHpA = Perfluoroheptanoic acid
- PFOA = Perfluorooctanoic acid
- PFNA = Perfluorononanoic acid
- PFDA = Perfluorodecanoic acid
- PFUnDA = Perfluoroundecanoic acid
- PFDoDA = perfluorododecanoic acid
- PFTeDA = Perfluorotetradecanoic acid
- PFTrDA = Perfluorotridecanoic acid
- EtFOSAA = N-Ethyl perfluorooctane sulfonamide
- MeFOSAA = N-methylperfluoro-1-octane sulfonamide
- PFBS = Perfluorobutane sulfonic acid
- PFHxS = Perfluorohexane sulfonic acid
- PFHpS = Perfluoroheptane sulfonic acid
- PFNS = Perfluorononane sulfonic acid

- PFOS = Perfluorooctane sulfonic acid
- PFDS = Perfluorodecane sulfonic acid
- 4:2 FTS = 4:2 fluorotelomer sulfonate
- 6:2 FTS = 6:2 fluorotelomer sulfonate
- 8:2 FTS = 8:2 fluorotelomer suflonate
- PFOSA = Perfluorooctane sulfonamide

The nine soil samples were also submitted to Test America Laboratories for total organic carbon (TOC) analysis using the Lloyd Kahn Method.

5. Surface Soil

Surface soil samples were collected on April 27, 2018 according to the MDEQ's ISM and Applications guidance document. This document is based on the ITRC 2012 Incremental Sampling Methodology. The spreading of the biosolids was assumed to have been applied consistently at a depth of 8 inches across the Site based on information provided by the MDEQ. The various soil types identified in the soil survey could influence the adsorption of PFAS. In order for the sampling to be representative of the entire site, the soil samples were taken from areas with various soil types, as described in *Section 3* that covered at least 50% of the entire Site. A total of three DU areas of one acre each was selected, and a total of three soil samples were collected from each DU in accordance with the MDEQ's Incremental Sampling Methodology and Applications guidance document (**Figure 2**). A total of 50 incremental sampling points were collected for each soil sample (approximately 24 grams each), resulting in a total sample mass of approximately 1,200 grams.

A one-inch diameter soil coring tool was used and was advanced to 8 inches below the ground surface (bgs), with the bottom two inches collected for analysis.

_	Soil Sample IDs	Total PFAS Mean Value (ng/g)	PFOA Mean Value (ng/g)	PFOS Mean Value (ng/g)
-	SK1-DU1	13.9	ND	11.7
-	SK1-DU2	9.5	0.3	6.8
	SK1-DU3	3.2	ND	1.7

The PFAS data are summarized in the table below and attached **Table 2**, **Figure 4** and **Figure 5**. Laboratory reports are provided in **Appendix C**.

All of the soil samples collected from the three DUs exceeded the Part 201 GSI protection criterion.

Both of the DUs with the highest and lowest PFAS/PFOS concentrations, DU1 and DU3, respectively, were located in areas with the Capac fine sandy loam (CaA and CaB) present. This observation suggests that the soil at both DUs, although identified as a sandy loam, may be somewhat heterogeneous. However, it should be noted that the difference between the maximum and minimum mean values is only approximately 10 ng/g.

The TOC analytical results ranged from 5,500 to 8,900 milligrams per kilogram (mg/Kg) or parts per million with average TOC values for DU1, DU2 and DU3 of 8,133 mg/Kg, 6,400 mg/Kg and 6,667 mg/Kg, respectively. The maximum TOC values are associated with DU1 and the Capac fine sandy loam (CaA). **Table 3** summarizes the TOC data by DU sample and compares it to total PFAS concentration, soil survey classification and the soil lithology logged in the soil borings within the DUs. The soils observed in the soil borings at each of the DUs were generally sand with gravel. These coarse-grained soils resulted

in lower TOC values compared to the City owned Site where the TOC values ranged from 13,000 to 23,000 mg/Kg and the soils were generally more fine grained.

6. Groundwater

Between April 30, 2018 and May 01, 2018, AECOM and Job Site Services (JSS) installed six temporary monitoring wells TMW-1, TMW-2, TMW-3, TMW-4, TMW-5 and TMW-6 (**Figure 3**; **Table 4**). The scope of work proposed six locations within the active farming field for the purpose of collecting groundwater samples and providing groundwater elevation measurements. At the request of the property owner, each temporary monitoring well was pulled after sampling was complete, with no materials left in the ground overnight. Surveying of groundwater and surface elevations could not be conducted due to the limited amount of time each well could be in the ground. Due to this lack of data, groundwater flow is based on MDEQ-provided shallow groundwater elevation data (**Figure 3**) and is assumed to flow in a westerly direction towards the Lake Pleasant Drain.

Temporary monitoring wells TMW2, TMW5, and TMW4 were collocated with decision units DU1, DU2 and DU3, respectively, to evaluate potential impacts to the groundwater from the surface soils. Temporary monitoring well TMW1 was selected as an upgradient boundary point and temporary monitoring wells TMW3 and TMW6 were selected as downgradient locations along the western Site boundary and to evaluate discharge into the Lake Pleasant Drain. All locations were originally chosen as groundwater elevation points to confirm groundwater flow direction.

Prior to any intrusive work being conducted a utility clearance was conducted by MISS DIG, Michigan's one-call utility locating service. In addition, a third party, Underground Detectives out of Toledo, OH, conducted a sub-surface investigation. There were known drain tiles across the site at an approximate depth of 4 feet bgs. All boring site locations were marked by AECOM and cleared by the utility locating contractor. No anomalies were encountered at the Site and none of the locations needed to be relocated.

Temporary Monitoring Wells

JSS completed the soil borings by hand augering the first 5 feet bgs and then using a Geoprobe 7720DT direct push drilling rig. Both hand augering and 3-inch dual tube system were used to continually core soils. Cored soils were logged at each of the borings from the surface to the total depth (**Appendix A**). Once water was encountered, a final dual tube sample was collected approximately 5 feet past the vadose zone to confirm groundwater. After the boring reached total depth, hollow stem auger drilling was utilized to over drill the soil boring to approximately 4 feet below groundwater. The borings ranged in depth from 10 to 20 feet bgs.

Groundwater Sampling

Six groundwater samples were collected from the Site using temporary monitoring wells. The locations are shown on **Figure 3**. Prior to the collection of the groundwater samples, static water levels were measured using an electronic water tape from the top of the well casing of each of the wells. Each monitoring well was purged and groundwater samples were collected for PFAS analysis in laboratory supplied containers. Water quality parameters (temperature, specific conductance, pH, dissolved solids, oxidation-reduction potential, and turbidity) were recorded following AECOM groundwater Standard Operating Procedures using an YSI Pro DDS water quality meter. Water quality measurements recorded during purging are summarized in **Table 5**.

Well Sample IDs	Total PFAS (ng/L)	PFOS (ng/L)	PFOA (ng/L)	PFOA + PFOS (ng/L)
SK1-TMW1	13.6	1.3	ND	1.3
SK1-TMW2	61.5	9.8	ND	9.8
SK1-TMW3	5.3	0.9	0.6	1.6
SK1-TMW4	1.9	ND	ND	ND
SK1-TMW5	169.1	15.2	8.6	23.8
SK1-TMW6	14.0	ND	0.7	0.7

The data is summarized in the table below and attached Table 6, Figure 6 and Figure 7.

Part 201 criteria were exceeded at one location, TMW5 (**Table 6** and **Figure 7**). PFOS exceeded the Part 31 Water Quality Value of 12 ng/L in TMW5 with a result of 15.2 ng/L.

The highest PFAS concentrations in groundwater were located southeast of the pond located on the western edge of the site in the sample from TMW-5 screened from 6 ft to 11 ft bgs. The lowest detected concentrations were located in the north part of the site, west of the buildings, in the sample from TMW-4 screened from 10 ft to 15 ft bgs.

7. Surface Water

Surface water samples were collected from eight locations (located both on and off the site). As previously discussed, five of the surface water samples were collected from approximate drain tile locations based on MDEQ-provided GPS coordinates and other evidence, such as disturbance of the surface water (e.g. ripples), that suggested flow from the tiles into the surface water. The analytical results are summarized in the table below and attached **Table 7**, **Figure 8** and **Figure 9**.

Surface Water Sample IDs	Total PFAS (ng/L)	PFOS (ng/L)	PFOA (ng/L)
SK1-SW1	75.0	51.4	7.3
SK1-SW2	16.0	ND	0.8
SK1-SW3	8.9	ND	0.6
SK1-DR1	28.3	12.0	2.2
SK1-DR2	18.5	2.9	1.1
SK1-DR3	2,162.9	2,080.0	26.1
SK1-DR4	15.7	5.6	3.1
SK1-DR5	132.4	90.2	8.1
Pleasant-01	23.26	6.1	3.7
Pleasant-02	19.3	6.5	3.6

Part 31 water quality standards were exceeded at three locations, SW1, DR3, and DR5 (**Table 7** and **Figure 9**). PFOS exceeded the Part 31 Water Quality Value (12 ng/L) in SW1 (51.4 ng/L), DR3 (2,080 ng/L), and DR5 (90.2 ng/L).

The highest total PFAS and PFOS concentration (DR3) was collected from the end of a submerged PVC pipe in Lake Pleasant Drain located on the southwest side of the Site. SW1 is located downstream of the

DR3 location. The lowest concentrations (SW-2 and SW-3) were collected from the pond and upstream of the site in the Lake Pleasant Drain, respectively. Both samples were non-detect for PFOS.

The surface water sampling locations are described below.

SW1 was located in Lake Pleasant Drain just downstream of the Site. It is the most downstream surface water sample location.

SW2 was collected from the small pond along the Site's western property boundary.

SW3 was located at the northwest corner of the Site in the Lake Pleasant Drain.

DR1 was collected at the northwest corner of the property from the Pleasant Lake Drain downstream of SW3. AECOM Field staff was unable to locate any form of drain tile and was instructed by MDEQ staff to collect a surface water sample from the location in the event that the drainage tile was not visible.

DR2 was collected west of the pond located along the western property boundary of the Site. The MDEQ instructed AECOM field staff to sample this location based on information from the property owner that the tile was there, but that it was submerged.

DR3 had the highest concentration of both PFAS and PFOS and was located in the southwest corner of the Site. AECOM field staff located what appeared to be a PVC pipe. The surface water sample was collected from the point that the pipe (drain tile) entered the Pleasant Lake Drain from the field. The sample could not be collected directly from the pipe due to partial submergence and flow from the pipe could not be confirmed.

DR4 was collected from the northwest corner of the property along Haines Road from a drainage ditch that emptied into the Lake Pleasant Drain. The sample location was not originally proposed, but when the drain tile was discovered, the MDEQ requested that a sample be collected. The drain tile appeared to be a PVC pipe that was completely submerged. The surface water sample was collected from water in the drainage ditch at the location of ripples created by water leaving the pipe.

DR5 was collected east of the driveway from the Lake Pleasant Drain along Haines Road. The sample location was not originally proposed, but when the drain tile was discovered, the MDEQ requested that a sample be collected. The drain tile appeared to be a PVC pipe that was completely submerged. The surface water sample was collected from the Pleasant Lake Drain at the location of ripples created by water leaving the pipe.

Pleasant-01 was collected by MDEQ staff at the inlet to Lake Pleasant.

Pleasant-02 was collected by MDEQ staff from the center of Lake Pleasant.

8. QA/QC Results

Laboratory reports 1800898 and 1800937 (**Appendix D**) were subjected to data validation per the Lapeer WWTP Biosolids Sites QAPP. The reports were evaluated for data completeness, holding times and sample preservation, initial and continuing calibration, method and field blanks, ongoing precision and recovery, field duplicate precision, extracted internal standard recoveries, and reporting issues. All quality control acceptance limits and criteria specified in the QAPP were met or qualification of the data was not required, with the exception of some exceedances for extracted internal standard recovery which were qualified as estimated.

All results in other PFAS laboratory reports were evaluated to determine if any result values should be rejected based on major quality control problems. No results were rejected based on this evaluation.

Data validation memos are presented in Appendix D.

9. Investigation-Derived Waste (IDW)

Investigation-derived waste (IDW) generated during the investigation included the following:

- Disposable material such as Geoprobe®/Vibracore™ liners, personal protective equipment (PPE), plastic sheeting, etc.
- Drill cuttings;
- Excess soil leftover from sampling activities;
- Well development water;
- Purge water, and
- Decontamination water.

Minimally-contaminated disposable sampling materials and PPE was containerized and disposed of as ordinary solid waste. Drill cuttings, excess soil from sampling, well development water, purge water and decontamination water was discharged to the ground adjacent to the boring/monitoring well where the material was generated.

10. Pathway and Receptors Evaluation

An exposure pathway includes five components: source of contamination; environmental media and transport mechanism; point of exposure; route of exposure; and receptor population. A pathway is considered potentially complete if all five components are present and one or more hazardous substances are detected. The human health risk associated with a potentially complete exposure pathway is acceptable if concentrations do not exceed the applicable criteria and background concentrations (Rule 299.1013(3). Ecological risks are acceptable if concentrations do not exceed water quality standards or soil screening values.

Potentially complete groundwater exposure pathways associated with the Site and corresponding Part 201 cleanup criteria are:

- Drinking Water criteria (DWC) (PFOA and PFOS 70 ppt), and
- Groundwater surface water interface (GSI; Part 31 Water Quality Values) (PFOA 12 ppb and PFOS 12 ppt).

Potentially complete surface water exposure pathways associated with the Site and corresponding Part 31 Water Quality Values or other criteria/screening values are:

- Ingestion of surface water incidental to recreational activities (human cancer values and noncancer values for non-drinking water sources) (PFOA 12 ppb and PFOS 12 ppt),
- Ingestion of fish (human cancer values and non-cancer values for non-drinking water sources) (PFOA 12 ppb PFOS 12 ppt), and
- Aquatic life exposures (aquatic chronic values (PFOA 880 ppb and PFOS 140 ppb) and final acute values (PFOA 15,000 ppb PFOS 1,600 ppb).

Potentially complete soil exposure pathways associated with the Site and corresponding Part 201 cleanup criteria (if available) are:

- Direct Contact Criteria (DCC; criteria not available);
- Particulate Soil Inhalation Criteria (PSIC; criteria not available);

- Soil protection of groundwater for drinking water (DWPC; proposed criteria PFOS 1.4 ppb and PFOA 59 ppb);
- Soil protection for the groundwater surface water interface (GSIPC; PFOA 10,000 ppb and PFOS 240 ppt), and
- Human exposure by consuming impacted vegetation (gardening, farming; screening levels not available).

Potential receptors associated with groundwater are:

• People who use impacted groundwater for drinking water.

Potential receptors associated with surface water are:

- People using the river and other impacted surface waters for recreation and fishing, and
- Fish and other aquatic life.

Potential receptors associated with soil are:

- Residents living at or near impacted soil areas, and
- Non-residential use of impacted soil areas, such as farming and commercial use.

Groundwater Evaluation

Groundwater receptors from WWTP biosolids include at least 26 private/household wells and 1 Type I well as identified within a ½-mile radius (**Figure 10**) using the MDEQ Wellogic data base. The MDEQ Wellogic database does not include all of the well records; however, a review of additional scanned well logs was also performed. Based upon the results of this investigation, there is no unacceptable risk based on the Part 201 drinking water criteria since all groundwater samples are below criteria. In addition, groundwater samples collected as part of the MDEQ's Statewide Public Water Supply Sampling Program from community water supplies, including the Type I well previously described, and public schools identified near the biosolid application sites were nondetect for PFAS.

Surface Water Evaluation

PFAS concentrations were detected in the surface water samples with three locations exceeding the Part 31 Water Quality Value for PFOS. However, no exceedances of the Part 31 final chronic and final acute values for protection of aquatic life were detected. Based on the Part 31 exceedance there is the potential for exposure to PFAS from ingestion of PFAS-impacted fish due to bioaccumulation of PFOS in fish tissue.

MDEQ staff collected nine largemouth bass, four bluegill, and six pumpkinseed fish tissue samples from Lake Pleasant as shown in the graphs of fish length versus PFOS concentration in **Figure 11** and **Figure 12**, respectively. The bluegill and pumpkinseed fish tissue samples were analyzed for mercury and PFAS (the two species are generally treated as one for advisory purposes).

The 95% upper confidence level (UCL) for largemouth bass data is 65 ppb which puts the recommended fish consumption to 2 meals per month. The 95% UCL for the bluegill/pumpkinseed data is 30 ppb causing a consumption advisory of 4 meals per month while the 95% UCL for mercury in the samples was 70 ppb which would cause a consumption advisory of 12 meals per month. The advisory due to PFOS is more restrictive than the statewide advisory of 8 meals per month due to mercury for these species. As a result, a revised fish advisory for PFOS will likely be issued for Lake Pleasant in the future. **Figure 13** and **Figure 14** are box and whisker plots of PFOS concentration detected in largemouth bass and bluegill/pumpkinseeds, respectively, from selected lakes in Michigan indicating that PFOS levels in Lake Pleasant fish are above what would be considered background concentrations.

Surface Soil Evaluation

On-site farm workers may encounter surface soil impacted with PFAS; however no Part 201 direct contact criteria has been established for PFOS and PFOA. All of the surface soil samples exceeded the Part 201 GSI Protection Criterion for PFOS and eight of the samples exceeded the proposed Part 201 DWPC, indicating a potential of PFOS concentrations to leach into groundwater at levels that exceed the Part 31 Water Quality Value and the Part 201 DWC for PFOS and PFOA. One of the groundwater samples (TMW5) exceeded Part 31 Water Quality Value in groundwater; however no exceedances of the Part 201 DWC in groundwater were detected. The data indicate that there is a potential for PFAS-impacted soil to leach to groundwater at concentrations that could exceed the Part 31 Water Quality Values if the groundwater were to discharge to a surface water body.

PFAS has been documented to transfer to various plants. Depending on the plant type and individual PFAS, the accumulation of PFAS is not evenly distributed throughout the major components of the plant. Some of the PFAS will accumulate more in the roots while others will accumulate in the leaves and fruit. However, there is the possibility of exposure to PFAS via plant uptake through direct or indirect ingestion of PFAS-impacted plants. Currently there are no PFAS criteria for plants; however, a consumption advisory could be developed in the future similar to those for fish.

11. Summary and Discussion

PFAS was detected in all three surface soil samples in each of the three DUs (**Figure 4** and **Figure 5**), all of the six groundwater samples (**Figure 6** and **Figure 7**), all eight surface water locations (**Figure 9** and **Figure 10**). The following Part 201 Criteria and Part 31 Water Quality Values were exceeded:

- GSI protection criterion for PFOS for each of the nine soil samples;
- Part 31 Water Quality Value for PFOS in one groundwater sample; and
- Part 31 Water Quality Values for three surface water samples.

The low PFAS concentrations detected in the temporary monitoring well groundwater samples are likely related to the shallow lithology at the Site, generally sand. PFAS are known to adsorb more strongly to fine particles such as silt and clay. The highest PFAS concentrations observed in soil (DU1) correlated to the highest TOC values, although both the PFAS and TOC concentrations were relatively low. These observations suggest that Site soils have not readily adsorbed PFAS and will generally leach PFAS at low concentrations. If additional groundwater samples were collected, PFAS groundwater concentrations would continue to be low (i.e. likely below Part 201 drinking water criteria) due to the primarily shallow sand lithology at the Site. However, exceedances of the Part 31 Water Quality Value for PFOS (12 ppt) are possible since the value is lower than the drinking water criteria (70 ppt).

Based on the review of well records near the Site, the residential wells are screened at depths between 75 and 400 feet bgs, with most wells screened below 200 feet. There is clay that overlies the well screens that has a thickness generally in excess of 70 feet. The shallowest residential well, 75 feet bgs, has over 50 feet of clay above its well screen. The PFAS results from the temporary monitoring well samples suggest that Part 31 Water Quality Value exceedances are limited to the shallow, groundwater aquifer. Given that the residential well locations have well screens that are deep in the aquifer with significant overlying clay and the current groundwater sample results, there is no indication that the residential wells near the Site would be at risk of PFAS contamination. In addition, groundwater samples collected from community water supplies and public schools near the biosolids application sites were nondetect for PFAS.

Elevated PFAS surface water concentrations, especially at the downstream (southwest) corner of the Site, are likely related to a combination of surface runoff and discharge of shallow groundwater into the drain tiles and the Lake Pleasant Drain. The southwest portion of the Site is dominated by the Chelsea loamy sand with the Carlisle muck located adjacent to the Lake Pleasant Drain which flows into Lake

Pleasant, approximately 3,400 feet south of the Site. The potential for ingestion of PFAS-impacted fish was identified and PFAS was subsequently detected in the tissue of largemouth bass, bluegill, and pumpkinseed collected from Lake Pleasant. Lake Pleasant is currently not under a PFAS fish advisory but an advisory will likely be placed on the Lake in the future based on recent fish results. A PFAS fish advisory for several fish species is currently in place for the South Branch of the Flint River. The surface water concentrations did not exceed the Part 31 Final Acute Value (FAV) and Final Chronic Value (FCV).

A direct contact exposure risk was not identified at the Site. However, the surface water and groundwater was found to be impacted due to PFAS leaching from the surface soils. Uptake of PFAS to various crops is also possible, but an ingestion criteria for plants has not been established. Ecological screening levels are not available for soil or sediments.

Figures























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Tables

Table 1 Biosolids Application Data Site 08n11e33-SK01

Annual Report Year	Site ID Number	dT Land Applied	dT/Acre	Acres Used	Acres Approved	Dates of Land Application
2007	08n12e10-SK01	153.12	2.64	58	75	11/22/06, 11/24/06
2004	08n11e27-SK01	164.45	2.99	55	75	10/20/03 - 10/23/03
2001	08n11e33-SK01	193.04	3.04	63.5	75	11/1/00, 11/2/00, 5/9/01, 5/10/01
1998	08n12e07-SK01	73.71	1.89	39	75	11/19/1997
1997	08n11e31-SK02	115.92	3.22	36	75	9/9/1997
	Total dT Applied:	700.24				

Notes:

dT = dry tons

Table 2 Parcel ID: 08n11e33-SK01 PFAS Soil Analytical Results Summary

Soil Sample	Sample Date	Depth (ft)	Total PFASs	PFOA + PFOS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	PFBS	PFPeS	PFHxS	PFHpS	PFNS	PFOS	PFDS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	EtFOSAA	MeFOSAA
SK1DU10100180427N	4/27/2018	8"	13.97	11.30	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.30	ND	ND	2.67	ND	ND	ND	ND
SK1DU10200180427N	4/27/2018	8"	14.01	12.50	ND	ND	ND	ND	ND	ND	0.27	ND	ND	ND	ND	ND	ND	ND	ND	ND	12.50	0.24	ND	1.00	ND	ND	ND	ND
SK1DU10300180427N	4/27/2018	8"	13.57	11.40	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.40	0.48	ND	1.69	ND	ND	ND	ND
SK1DU20100180427N	4/27/2018	8"	9.39	6.56	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.56	0.87	ND	1.96	ND	ND	ND	ND
SK1DU20200180427N	4/27/2018	8"	9.56	7.67	ND	ND	ND	ND	0.29	ND	0.25	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.38	1.64	ND	ND	ND	ND	ND	ND
SK1DU20300180427N	4/27/2018	8"	9.51	6.55	ND	ND	ND	ND	ND	ND	0.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	6.55	1.25	ND	1.45	ND	ND	ND	ND
SK1DU30100180427N	4/27/2018	8"	1.89	1.37	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.37	0.52	ND	ND	ND	ND	ND	ND
SK1DU30200180427N	4/27/2018	8"	5.45	2.11	ND	ND	ND	ND	ND	ND	0.29	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.11	1.63	ND	1.42	ND	ND	ND	ND
SK1DU30300180427N	4/27/2018	8"	2.15	1.48	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.48	0.67	ND	ND	ND	ND	ND	ND

ND = Non Detect

Concentrations are reported as ng/g or ppb FB = Field Blank

Bolded values indicate detection

PFBA = Perfluorobutanoic acid PFPeA = Perfluoropentanoic acid PFPeS = Perfluoropentane sulfonic acid PFHxA = Perfluorohexanoic acid PFHpA = Perfluoroheptanoic acid PFOA = Perfluoronctanoic acid PFNA = Perfluorononanoic acid PFDA = Perfluorodecanoic acid PFUnDA = Perfluoroundecanoic acid PFDoDA = Perfluorododecanoic acid PFTrDA = Perfluorotridecanoic acid PFTeDA = Perfluorotetradecanoic acid PFBS = Perfluorobutane sulfonic acid PFHxS = Perfluorohexane sulfonic acid PFHpS = Perfluoroheptane sulfonic acid PFOS = Perfluorooctane sulfonic acid PFDS = Perfluorodecane sulfonic acid 4:2 FTSA = 4:2 Fluorotelomer sulfonic acid 6:2 FTSA = 6:2 Fluorotelomer sulfonic acid 8:2 FTSA = 8:2 Fluorotelomer sulfonic acid POSA = Perfluorooctane sulfonamide EtFOSAA - N-Ethyl Perfluorooctane sulfonamindoacetic acid MeFOSAA = N-Methyl Perfluorooctane sulfonamide

Soil Criteria (ug/kg or ppb):	PFOS	PFOA
Part 201 Generic Residential Groundwater Surface Water Interface Protection Criteria (for soils) (GSIPC)	0.24	10,000
Proposed Drinking Water Protection Criteria (DWPC)	1.4	59
Soil Criteria Exceedances:		
Yellow indicates PFAS exceeded GSIPC		
Blue indicates PFAS exceeded proposed DWPC		
Green indicates PFAS exceeded both proposed DWPC and GSIPC		

Table 3Parcel ID: 08n11e33-SK01PFAS and TOC Soil Detection Summary

Soil Sample	Sample Date	Depth (ft)	Total PFASs	Total TOC	Soil Survey	Soil Boring
SK1DU10100180427N	4/27/2018	8"	13.97	8,900	CaA	Sand with Gravel
SK1DU10200180427N	4/27/2018	8"	14.01	8,100	CaA	Sand with Gravel
SK1DU10300180427N	4/27/2018	8"	13.57	7,400	CaA	Sand with Gravel
SK1DU20100180427N	4/27/2018	8"	9.39	5,500	ChC/ChB	Sand with Gravel
SK1DU20200180427N	4/27/2018	8"	9.56	6,400	ChC/ChB	Sand with Gravel
SK1DU20300180427N	4/27/2018	8"	9.51	7,300	ChC/ChB	Sand with Gravel
SK1DU30100180427N	4/27/2018	8"	1.89	6,300	CaB	Clayey Sand with Gravel
SK1DU30200180427N	4/27/2018	8"	5.45	7,200	CaB	Clayey Sand with Gravel
SK1DU30300180427N	4/27/2018	8"	2.15	6,500	CaB	Clayey Sand with Gravel

ND = Non Detect

PFAS concentrations are reported as ng/g or ppb

TOC concentrations are reported as mg/Kg or ppb

CaA/CaB - Capac fine sandy loam

ChC/ChB - Chelsea loamy sand

Table 4Parcel ID: 08n10e33-SK01Temporary Monitoring Well Construction

WELL ID	Well size / Material	Depth to Water ft BGS	Screen Interval ft BGS
TMW1	1" pvc	11	13-18
TMW2	1" pvc	11	11-16
TMW3	1" pvc	6.5	3-8
TMW4	1" pvc	13	10-15
TMW5	1" pvc	8.5	6-11
TMW6	1" pvc	8	7-12

Footnotes:

BGS = below ground surface ft = feet pvc = polyvinyl chloride

Table 5Parcel ID: 08nn11e33-SK01Stablized Water Quality Parameters

Well ID	Date	Sample Interval	Time Collected	рΗ	Cond.	Turbidity	D.O.	Temp	ORP
		ft	24hr	SU	uS/cm	NTU	mg/L	°C	mV
TMW1	5/1/18	18	1105	7.44	546	55	4.15	9.5	-60.4
TMW2	5/1/18	16	1230	NA	NA	NA	NA	NA	NA
TMW3	4/30/18	8	1525	7.14	611	34	8.57	12.8	140.9
TMW4	4/30/18	15	1335	7.28	740	194	6.02	9.2	0.7
TMW5	4/30/18	11	1710	7.45	430	180	11.45	8.7	118.1
TMW6	5/1/18	12	0825	7.17	503	31	0.01	7.3	-176.5

Notes:

ft = Feet

SU = Standard Unit

uS/cm = Microsiemens/centimeter

NTU = Nephelometric Turbidity Units

mg/L = Milligrams/Liter

mV = Millivolt

°C = Degrees Celsius Cond. = Conductivity D.O. = Dissolved Oxygen Temp. = Temperature

ORP = Oxidization-Reduction Potential

NA = Data not available due to well going dry

* Values in this table are the final "Stabilized" parameters
Table 6 Parcel ID: 08n11e33-SK01 PFAS Groundwater Analytical Results Summary

Groundwater Sample	Sample Date	Depth (ft)	Total PFASs	PFOA + PFOS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	PFBS	PFPeS	PFHxS	PFHpS	PFNS	PFOS	PFDS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	EtFOSAA	MeFOSAA
SK1TMW113180501N	5/1/2018	13	13.56	1.30	1.06	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	11.20	ND	ND	ND	ND	1.30	ND	ND	ND	ND	ND	ND	ND
SK1TMW218180501N	5/1/2018	18	61.52	9.80	2.33	0.94	ND	0.48	ND	ND	ND	ND	ND	ND	ND	44.90	ND	3.07	ND	ND	9.80	ND	ND	ND	ND	ND	ND	ND
SK1TMW308180430N	4/30/2018	8	5.25	1.55	1.63	ND	ND	ND	0.62	ND	ND	ND	ND	ND	ND	1.05	ND	ND	ND	ND	0.93	ND	ND	1.02	ND	ND	ND	ND
SK1TMW410180430N	4/30/2018	10	1.91	ND	0.59	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.32	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SK1TMW506180430N	4/30/2018	6	169.12	23.78	23.70	22.30	48.80	20.80	8.58	ND	ND	ND	ND	ND	ND	9.97	2.27	17.50	ND	ND	15.20	ND	ND	ND	ND	ND	ND	ND
SK1TMW606180501N	5/1/2018	6	13.96	0.65	7.86	ND	ND	ND	0.65	ND	ND	ND	ND	ND	ND	4.76	ND	0.69	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

ND = Non Detect

Concentrations are reported as ng/L or ppt FB = Field Blank

Bolded values indicate detection

PFBA = Perfluorobutanoic acid PFPeA = Perfluoropentanoic acid PFPeS = Perfluoropentane sulfonic acid PFHxA = Perfluorohexanoic acid PFHpA = Perfluoroheptanoic acid PFOA = Perfluoronotanoic acid PFDA = Perfluorononanoic acid PFDA = Perfluorodecanoic acid

PFUnDA = Perfluoroundecanoic acid PFDoDA = Perfluorododecanoic acid PFTrDA = Perfluorotridecanoic acid PFTeDA = Perfluorotetradecanoic acid PFBS = Perfluorobutane sulfonic acid PFHxS = Perfluorohexane sulfonic acid PFHpS = Perfluoroheptane sulfonic acid PFNS = Pefluorononane sulfonic acid PFOS = Perfluorooctane sulfonic acid PFDS = Perfluorodecane sulfonic acid 4:2 FTSA = 4:2 Fluorotelomer sulfonic acid 6:2 FTSA = 6:2 Fluorotelomer sulfonic acid 8:2 FTSA = 8:2 Fluorotelomer sulfonic acid POSA = Perfluorooctane sulfonamide EtFOSAA - N-Ethyl Perfluorooctane sulfonamindoacetic acid MeFOSAA = N-Methyl Perfluorooctane sulfonamide

Aqueous Criteria (ng/L or ppt):	PFOS	PFOA
Part 201 Generic Residential Drinking Water Criteria (DWC)	70	70
Part 31 Water Quality Values	12	12,000
(non-drinking source) (GSIC)	12	12,000
Part 31 Final Chronic Value (FCV)	140,000	880,000
Part 31 Final Acute Value (FAV)	1,600,000	15,000,000
Aqueous Criteria Exceedances: Yellow indicates PFAS exceeded DWC		
Blue indicates PFAS exceeded GSIC		
Crease indicates DEAC succession dead bath DM/C and CCIC		
Green indicates PFAS exceeded both DWC and GSIC		
Orange indicates PFAS exceeded both DWC and GSIC		

Table 7Parcel ID: 08n11e33-SK01PFAS Surface Water Analytical Results Summary

Surface Water/Drain Tile Sample	Sample Date	Depth (ft)	Total PFASs	PFOA + PFOS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	PFBS	PFPeS	PFHxS	PFHpS	PFNS	PFOS	PFDS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	EtFOSAA	MeFOSAA
SK1SW0100180509N	5/9/2018	surface	74.98	58.74	5.26	2.40	ND	3.36	7.34	0.93	ND	ND	ND	ND	ND	2.61	ND	1.68	ND	ND	51.40	ND	ND	ND	ND	ND	ND	ND
SK1SW0200180509N	5/9/2018	surface	16.03	0.79	6.02	1.25	1.79	1.11	0.79	ND	ND	ND	ND	ND	ND	3.81	ND	1.26	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SK1SW0300180509N	5/9/2018	surface	8.93	0.60	6.07	1.44	ND	0.82	0.60	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SK1DR0100180509N	5/9/2018	surface	28.29	14.18	4.35	1.27	ND	0.73	2.18	ND	ND	ND	ND	ND	ND	2.09	ND	0.74	ND	ND	12.00	ND	ND	4.93	ND	ND	ND	ND
SK1DR0200180509N	5/9/2018	surface	18.46	3.99	5.88	1.01	ND	ND	1.05	ND	ND	ND	ND	ND	ND	ND	ND	1.30	ND	ND	2.94	ND	ND	6.28	ND	ND	ND	ND
SK1DR0300180509N	5/9/2018	surface	2,162.86	2,106.10	5.70	3.55	6.19	6.16	26.10	4.70	5.55	0.61	0.42	ND	ND	13.80	ND	5.29	2.71	2.08	2,080.00	ND	ND	ND	ND	ND	ND	ND
SK1DR0400180509N	5/9/2018	surface	15.66	8.65	2.31	ND	ND	0.80	3.07	ND	ND	ND	ND	ND	ND	1.40	ND	2.50	ND	ND	5.58	ND	ND	ND	ND	ND	ND	ND
SK1DR0500180509N	5/9/2018	surface	132.44	98.33	3.95	2.49	ND	3.15	8.13	0.50	ND	ND	ND	ND	ND	11.40	ND	2.02	ND	ND	90.20	ND	ND	10.60	ND	ND	ND	ND

Lake Pleasant MDEQ Samples

Surface Water Sample	Sample Date	Depth (ft)	Total PFASs	PFOA + PFOS	PFBA	PFPeA	PFHxA	PFHpA	PFOA	PFNA	PFDA	PFUnDA	PFDoDA	PFTrDA	PFTeDA	PFBS	PFPeS	PFHxS	PFHpS	PFNS	PFOS	PFDS	4:2 FTS	6:2 FTS	8:2 FTS	PFOSA	EtFOSAA	MeFOSAA
Pleasant-01	8/1/2018	surface	23.26	9.80	5.90	1.70	2.70	1.90	3.70	0.60	ND	ND	ND	ND	1.40	2.40	ND	0.96	ND	ND	6.10	ND	ND	7.90	ND	ND	ND	ND
Pleasant-02	8/1/2018	surface	19.30	3.60	5.80	2.00	2.80	1.80	3.60	0.69	ND	ND	ND	ND	ND	2.20	ND	1.10	ND	ND	6.50	ND	ND	8.20	ND	ND	ND	ND

ND = Non Detect Concentrations are reported as ng/L or ppt FB = Field Blank

Bolded values indicates detection

PFBA = Perfluorobutanoic acid PFPeA = Perfluoropentanoic acid PFPeS = Perfluoropentane sulfonic acid PFHxA = Perfluorohexanoic acid PFHpA = Perfluoroheptanoic acid PFOA = Perfluoronotanoic acid PFDA = Perfluorononanoic acid PFUnDA = Perfluoroundecanoic acid PFDoDA = Perfluorododecanoic acid PFTrDA = Perfluorotridecanoic acid PFTeDA = Perfluorotetradecanoic acid PFBS = Perfluorobutane sulfonic acid PFHxS = Perfluorohexane sulfonic acid PFHpS = Perfluoroheptane sulfonic acid PFOS = Perfluorooctane sulfonic acid PFDS = Perfluorodecane sulfonic acid 4:2 FTSA = 4:2 Fluorotelomer sulfonic acid 6:2 FTSA = 6:2 Fluorotelomer sulfonic acid 8:2 FTSA = 8:2 Fluorotelomer sulfonic acid POSA = Perfluorooctane sulfonamide EtFOSAA - N-Ethyl Perfluorooctane sulfonamindoacetic acid MeFOSAA = N-Methyl Perfluorooctane sulfonamide

Aqueous Criteria (ng/L or ppt):	PFOS	PFOA
Part 201 Generic Residential Drinking Water Criteria (DWC)	70	70
Part 31 Water Quality Values	12	12,000
(non-drinking source) (GSIC)		,
Part 31 Final Chronic Value (FCV)	140,000	880,000
Part 31 Final Acute Value (FAV)	1,600,000	15,000,000
Aqueous Criteria Exceedances:		
Yellow indicates PFAS exceeded DWC		
Blue indicates PFAS exceeded GSIC		
Green indicates PFAS exceeded both DWC and GSIC		
Orange indicates PFAS exceeded FCV		
Red indicates PFAS exceeded both FCV and FAV		

Appendix A



	AEC	OM		FIELD	BOREHOL	E LOG	BORE TOTAI	HOLE NO: _ DEPTH:	SK1-TMW1 20'
	PR	OJECT	INFO	ORMATIC	N		DRILL	ING INFOR	RMATION
PROJEC	CT:	Lape	er Pl	ating		CONTRACT	OR:	Job Site Se	rvices
SITE LO PROJEC	CATION: CT NO.:	Lape 6057	er, M 0635	I		CREW CHIE DRILL RIG T DRILLING N	:F: 'YPE: IETHOD:	Dave Mokm Geoprobe 7 3" Dual Tub	ia /720DT pe
PROJEC	CT MANAGE	R: John	Cutl	nbertson		HOLE DIAM	ETER:	3.25"	
LOGGE	D BY:	Stan	Kren	z		DATE STAR	T:	5/1/18 0845	
CREATE	ED BY:	Stan	Kren	z		DATE END:		5/1/18 1110	
DEPTH	SAMPLE TYPE ATTEMPT RECOVERY	SOIL SYMBOLS	USCS	PID (ppm)		SOIL DESCRII	PTION		WELL CONSTRUCTION
20					\ \				-20











Appendix B

Brookston loam (0 to 2 percent slopes) (Bw).—This soil is on till plains throughout the county. Included with it in mapping were a few areas of gently sloping Brookston soils

soils. Unless artificially drained by tile and ditches, this soil has severe limitations for crops, pasture, and trees. It warms up and dries out slowly in spring, and there are small depressions and drainageways that stay wet longer than the surrounding areas. Farm machinery bogs down readily during wet weather in spring and fall. The soil material is stable, and tile and ditches are easily main-tained. Some areas lack outlets for drainage. Frost dam-age is a hazard to crops in low areas.

Most of this soil is farmed intensively. Corn is the crop most commonly grown. Scattered small areas are in woods. (Capability unit IIw-4 (2.5c); woodland suitability group P)

Capac fine sandy loam, 0 to 2 percent slopes (CaA).--This soil is on till plains in the central and northern parts of the county. In a few areas the plow layer is loam or sandy loam rather than fine sandy loam. Included in mapping were small areas of gently sloping Capac soils. Also included were small areas of the darker colored and mapping development of the darker colored and more poorly drained Brookston soils in drainageways and depressions. These Brookston soils dry out more slowly than the surrounding Capac soils.

slowly than the surrounding Capac soils. Excessive wetness early in spring is the main limitation for farming. Farm machinery bogs down, and the growth of roots is restricted unless the water table is lowered. Tile drainage is needed for efficient production of most crops. The soil material is stable, and ditches and tile are easy to maintain. Nearly all of this soil is intensively farmed. Corn, sugar beets, small grain, and forage crops are grown. (Capability unit IIw-4 (2.5b); woodland suitability group Z)

group Z) Capac fine sandy loam, 2 to 6 percent slopes (CaB).-**Capac fine sandy loam, 2 to 6 percent slopes** (CoB).— This soil is on till plains in the central and northern parts of the county. The slopes are uniform, are medium to long, and generally have a gradient of less than 5 per-cent. In some areas the plow layer is loam or sandy loam rather than fine sandy loam. Included in mapping were areas of moderately eroded Capac soils, mainly where the slope is 5 or 6 percent. In these eroded areas, the plow layer is lighter colored and contains some clay loam plowed up from the subsoil. Also included were areas of plowed up from the subsoil. Also included were areas of the slightly coarser textured Belding soils at slightly higher elevations and of the dark-colored, poorly drained Brookston soils in depressions and drainageways. The included Brookston soils dry out and warm up slowly in spring.

Excessive wetness early in spring is the main limitain for farming. Tile drainage is needed for efficient production of crops. Uneven relief in a few areas makes it difficult to plan complete drainage systems. Random tile and surface ditches are effective in such areas.

Nearly all of this soil is farmed intensively. Corn, sugar beets, small grain, and forage crops are grown. (Capability unit Πw -5 (2.5b); woodland suitability group Z)

Carlisle muck (0 to 1 percent slopes) (Cc).—This soil occurs in depressions on till plains, outwash plains, and moraines throughout the county. Excessive wetness is the main limitation for farming. Unless the water table is lowered by artificial drainage, farm machinery bogs down and farming operations are hampered. The water table should be controlled at a level low enough to allow adequate room for growth of roots but not so low that the organic material will settle. Some areas lack outlets for drainage. Shortages of phosphorus, potassium, and several micronutrients, including manga-ness, boron, copper, and zinc, constitute another limitanese, boron, copper, and zinc, constitute another limita-tion. Frost damage is a hazard to crops in the lowest areas, and soil blowing is also a hazard if large areas are cultivated.

If this soil is artificially drained, adequately fertilized, and protected against the wind, many short-season, frost-resistant crops can be grown. Most of the larger areas have been drained and are farmed intensively. Vegetables for market are common crops. Small areas are in woods. (Capability unit IIIw-15 (Me); woodland suitability group J)

Chelsea loamy sand, 0 to 6 percent slopes (ChB) .- This Chersea loamy sand, 0 to b percent slopes (Chi).—This soil is on broad outwash plains. The plow layer is dark brown or dark grayish brown. Wet depressions and drainageways are included in some of the areas mapped. Permeability is rapid, and the available water capacity is low. The result is a shortage of moisture during most of the growing season. This lack of moisture is the main limitation limitation.

Most of this soil is idle or is used for native hay or pasture. Large acreages have been planted to pine, and small areas are used for corn and garden vegeta-bles. (Capability unit IVs-4 (5a); woodland suitability group

Chelsea loamy sandy, 6 to 12 percent slopes (ChC).— This soil is on moraines. The slopes are short and irregu-lar. The surface layer is dark brown or dark grayish

brown; where organic matter has accumulated, the uppermost 4 or 5 inches is very dark grayish brown to

uppermost 4 or 5 inches is very dark grayish brown to very dark brown. The slope and a shortage of moisture make this soil unsuitable for cultivated crops and limit its use for improved pasture. Enough water is available for trees. Most of the acreage is in woods or brush. Most cleared areas are in native pasture or native hay. Reforesting of abandoned areas is a desirable practice. (Capability unit VIs-1 (5a); woodland suitability group E)

Fabius-Wasepi sandy loams, 0 to 2 percent slopes (FoA).—This complex occurs on lake plains and outwash plains throughout the county. In some places the plow

plains throughout the county. In some places the plow layer contains a little gravel. This mapping unit is made up of about equal acreages of Fabius sandy loam and Wasepi sandy loam, which occur together in such complex patterns that they cannot be shown separately on the soil map. The two soils are similar in texture and in drainage characteristics, and both are underlain with stratified sand and gravel, but in Fabius candy, leave the dott to the underlaing mate. in Fabius sandy loam the depth to the underlying mate-rial is less than 24 inches, and in Wasepi sandy loam it is 24 to 42 inches. Included with these soils in mapping were areas of the poorly drained Gilford soils in mapping were areas of the poorly drained Gilford soils in drain-ageways. These included soils stay wet longer than the surrounding Fabius and Wasepi soils. Excessive wetness and low to moderate fertility are

the major limitations for farming. Drainage can be improved by the use of tile, open ditches, and surface drains. It is advisable to install tile and to dig ditches during dry weather, because ditches and trenches cave in readily when the soils are wet. Some areas lack outlets for drainage. Straw or other blinding material helps to keep soil material from flowing into and plugging tile.

Corn and forage crops are commonly grown in drained areas of this complex, and native pasture plants in un-drained areas. (Capability unit IIIw-5 (4b); woodland suitability group G)

Locke sandy loam, 2 to 6 percent slopes (toB).—This soil occurs on till plains and low moraines throughout son occurs on the plans and low moralises chrodighout the county, The plow layer is very dark gravish brown. In some areas it contains a little material plowed up from the subsurface layer, and in some areas it is loam rather than sandy loam. The slopes are uniform and of medium length, and the topography is undulating. In-cluded in mapping were areas of moderately eroded soils that have a clone reuse of the forement grant layers of that have a slope range of 4 to 6 percent, small areas of level Locke soils, and areas of Barry soils in narrow drainageways. The included Barry soils stay wet longer

than the surrounding Locke soil. This Locke soil is affected by a high water table and by runoff from adjacent higher soils. Laying out a complete drainage system is difficult, because of the undu-lating relief and closed depressions, but random tile drains and surface drains are effective.

Corn and small grain are important crops. (Capability unit IIw-7 (3b); woodland suitability group G)

Marlette sandy loam, 2 to 6 percent slopes, moderately eroded [MHE2].—This soil is on mornines and undulating till plains in the central and northern parts of the county. The slopes are uniform and are short to medium in length. The plow layer is brown. In some places

it is loam rather than sandy loam in texture, and in some it contains a little dark yellowish-brown clay loam plowed up from the subsoil. Fertility is lower, the organic-matter content is less, runoff is more rapid, tilth is poorer, and crusting of the surface is more likely than in uneroded Marlette soils. Included in mapping were small areas of severely eroded Marlette soils that have short slopes of 5 or 6 percent. Gravel and cobblestones are scattered on the surface in these severely eroded spots; germination of seeds is uneven, and stands of plants are poor. Also included were spots of darker colored Capac soils in drainageways. These included Capac soils stay wet longer than the surrounding Marlette soil. A moderate hazard of further erosion is the main lim-

A moderate hazard of further erosion is the main limitation for farming. Most of this soil is intensively farmed. Corn, small

Most of this soll is intensively farmed. Corn, small grain, and forage crops are the common crops. (Capability unit Πe -2 (2.5a); woodland suitability group D)

Marlette sandy loam, 6 to 12 percent slopes, moderately eroded (MfC2).—This soil is on moraines in the central and northern parts of the county. The slopes are short and slightly irregular. In most areas the plow layer consists of brown heavy sandy loam. In some areas it is loam rather than sandy loam, and in some it contains dark yellowish-brown clay loam plowed up from the subsoil. The present plow layer is less fertile, contains less organic matter, has poorer tilth, is more likely to crust, and contains more gravel than that of uneroded Marlette soils. Included in mapping were severely croded spots, in which the dark yellowish-brown subsoil is exposed and gravel and coblestones are scattered on the surface. In these severely eroded spots, germination of seeds is uneven and stands of plants are poor. Small areas of level and gently sloping Marlette soils were included also.

The hazard of further erosion is the main limitation for farming. Contour farming and contour striperopping are not practical, because of short, irregular slopes. Grasses and legumes in the cropping sequence help to check runoff and control erosion. All of this soil is or has been intensively farmed. Corn,

All of this soil is or has been intensively farmed. Corn, small grain, and forage crops are the main crops. (Capability unit IIIe-5 (2.5a); woodland suitability group D) Marlette sandy loam, 6 to 12 percent slopes, severely

Marlette sandy loam, 6 to 12 percent slopes, severely eroded (M/C3).—This soil is on moraines in the central and northern parts of the county. The slopes are short and irregular. Most of the original surface layer and subsurface layer has been removed by erosion, and the clay

loam subsoil is exposed in small areas. The present plow layer is dark yellowish brown. It is less fertile, contains less organic matter, absorbs less water and allows more to runoff, and is more likely to crust than the plow layer of uneroded Marlette soils. Germination of seeds is uneven, and stands of plants are poor. Shallow gullies have formed in a few areas, mainly in natural drainageways.

drainageways. The hazard of further erosion is a very severe limitation for farming. All of this soil has been farmed intensively, but now

All of this soil has been farmed intensively, but now much of it is idle or is in brush or native grass. Closegrowing crops are better suited than row crops. Permanent vegetation reduces the risk of further erosion. (Capability unit IVe-5 (2.5a); woodland suitability group D)

Site 08n11e33-SK01 – Soil Survey Descriptions

Menominee loamy sand, 2 to 6 percent slopes (MmB) .----This soil is on plains and low moraines. Where cultivated it has a very dark grayish-brown plow layer. Included in mapping were areas of the darker colored Iosco soils in narrow drainageways and depressions. These included soils dry out more slowly than the surround-ing Menominee soil. Also included were small areas of level Menominee soils.

A shortage of available water during the growing season is the main limitation for farming. Most of this soil is farmed. Small grain and forage crops are the crops commonly grown. (Capability unit IIIs-4 (4/2a); woodland suitability group C) **Menominee loamy sand, 6 to 12 percent slopes** [MmC].—This soil is on low moraines. It has short slopes, some uniform and some irregular. The plow layer in cultivated areas is brown. Included in mapping were small areas of moderately eroded Menomines soils.

small areas of moderately eroded Menominee soils. An erosion hazard and a shortage of available water during the growing season are the main limitations for

farming. Small grain and forage crops are the crops commonly grown. (Capability unit IIIe-9 (4/2a); woodland suitability group C)

Montcalm loamy sand, 6 to 12 percent slopes (MrC).— This soil is on moraines in the central and northern parts of the county. It has short, irregular slopes. Where organic matter has accumulated, the surface layer is very

dark grayish brown to a depth of several inches. In-cluded in mapping were small areas of moderately eroded Montcalm soils.

Montcaim soils. Both water erosion and soil blowing are hazards that limit the use of this soil. A shortage of available water slows the growth of crops in midsummer. Much of this soil is in woods or native pasture. Most cultivated areas are used for small grain, forage, or pas-ture. (Capability unit IIIe-9 (4a); woodland suitability group M)

Tawas muck (0 to 1 percent slopes) (To).—This soil is in swampy depressions throughout the county. Excessive wetness and low fertility are the main limi-tations. Artificial draimage is difficult because the under-lying sand tends to cave into ditches and tile trenches. Farm machinery bogs down when the soil is wet. Lower-ing the water table too much can cause the organic mate-rial to settle. The supplies of phosphorus, potassium, and micronutrients are inadequate. Frost damage is a hazard to crops in low spots. Fire and soil blowing can reduce the thickness of the organic material. If drained, fertilized, and protected against the wind.

If drained, fertilized, and protected against the wind, this soil is suited to many short-season, frost-resistant crops. Most of the larger areas have been drained and are cultivated. The smaller areas are in woods. (Capabil-ity unit IVw-5 (M/4c); woodland suitability group J)

Appendix C



May 31, 2018 Vista Work Order No. 1800896

Ms. Maya Murshak Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Dear Ms. Murshak,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on May 04, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name 'Lapeer Sampling'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Marthe Maier

Martha Maier Laboratory Director



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

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 1800896 Case Narrative

Sample Condition on Receipt:

Six groundwater and seven water samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. Sample "FB1-180502" was not listed on the CoC. Authorization to proceed with the analysis was received by email on May 16, 2018.

Analytical Notes:

PFAS Isotope Dilution Method

The following samples contained particulate and were centrifuged prior to extraction:

Laboratory ID	Sample Name
1800896-01	SKITMW113180501N
1800896-02	SKITMW211180501N
1800896-03	SKITMW308180430N
1800896-05	SKITMW506180430N
1800896-06	SKITMW606180501N
1800896-07	EB01-180426
1800896-08	QC-180426

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537).

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

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

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

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1800896-01	SKITMW113180501N	PFAS Isotope Dilution Method	13C3-PFBS	Н	188
1800896-01	SKITMW113180501N	PFAS Isotope Dilution Method	13C8-PFOSA	Н	40.9
1800896-02	SKITMW211180501N	PFAS Isotope Dilution Method	13C3-PFBS	Н	206
1800896-03	SKITMW308180430N	PFAS Isotope Dilution Method	13C8-PFOSA	Н	44.1
1800896-04	SKITMW410180430N	PFAS Isotope Dilution Method	13C8-PFOSA	Н	42.6
1800896-05	SKITMW506180430N	PFAS Isotope Dilution Method	13C3-PFBS	Н	151
1800896-07	EB01-180426	PFAS Isotope Dilution Method	13C8-PFOSA	Н	49.1
1800896-08	QC-180426	PFAS Isotope Dilution Method	13C8-PFOSA	Н	46.7
1800896-09	EB01-180427	PFAS Isotope Dilution Method	13C8-PFOSA	Н	35.2
1800896-10	QC1-180430	PFAS Isotope Dilution Method	13C8-PFOSA	Н	35.1
1800896-11	FB1-180430	PFAS Isotope Dilution Method	13C8-PFOSA	Н	49.4
B8E0080-BLK1	B8E0080-BLK1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	47.8
B8E0159-BLK1	B8E0159-BLK1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	46.9

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Case Narrative	1
Table of Contents	4
Sample Inventory	5
Analytical Results	6
Qualifiers	41
Certifications	42
Sample Receipt	43

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1800896-01	SKITMW113180501N	01-May-18 11:05	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-02	SKITMW211180501N	01-May-18 12:30	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-03	SKITMW308180430N	30-Apr-18 15:25	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-04	SKITMW410180430N	30-Apr-18 13:35	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-05	SKITMW506180430N	30-Apr-18 17:10	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-06	SKITMW606180501N	01-May-18 08:25	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-07	EB01-180426	26-Apr-18 09:30	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-08	QC-180426	26-Apr-18 17:30	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-09	EB01-180427	27-Apr-18 06:50	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-10	QC1-180430	30-Apr-18 17:30	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-11	FB1-180430	30-Apr-18 18:00	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800896-12	EB1-180430	30-Apr-18 18:05	04-May-18 09:48	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

											Visto Analytical I	J aboratory
Sample ID: N	Aethod Blank									PFAS Isot	tope Dilution N	Method
Client Data						Labor	atory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer Sampling		Matrix:	Aqueous		Lab Sé	ample:	B8E0080-F	3LK1	Column:	BEH C18	
Analyte	CAS	S Number	Conc. (ng/L)	DL	LOD	100	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	35	75-22-4	ND	0.365	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	-
PFPeA	27	706-90-3	ND	0.640	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFBS	3.	75-73-5	ND	0.895	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFHxA	3(07-24-4	ND	1.09	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFHpA	3.	75-85-9	ND	0.296	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFHxS	3;	55-46-4	ŊŊ	0.474	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
6:2 FTS	270	619-97-2	ND	1.00	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFOA	3:	35-67-1	Ŋ	0.326	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFHpS	3.	75-92-8	ND	0.469	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFOS	17	763-23-1	ND	0.404	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFNA	3.	75-95-1	ND	0.405	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	-1
PFDA	35	35-76-2	ND	0.745	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
8:2 FTS	39.	108-34-4	ND	1.03	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFOSA	7:	54-91-6	ND	0.885	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
MeFOSAA	23	355-31-9	ND	0.825	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFDS	35	35-77-3	ND	0.615	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
PFUnA	20	058-94-8	ND	0.525	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
EtFOSAA	29	991-50-6	ND	0.685	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFDoA	3(07-55-1	ND	0.396	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	-1
PFTrDA	720	629-94-8	ND	0.247	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFTeDA	3.	76-06-7	ND	0.378	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFNS	682	259-12-1	ŊŊ	1.94	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
PFPeS	27	706-91-4	Q ;	1.37	2.50	4.00		B8E0080	10-May-18	0.250 L	25-May-18 04:15	
4:2 F IS	16/	/124-/2-4		1.37	2.50	4.00	5 ; (BSEUUSU	10-May-18	0.250 L	22-May-18 04:12	- :
Labeled Standa	uds T	ype	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	90.4		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	-
13C3-PFPeA		IS	90.2		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C3-PFBS		IS	112		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C2-PFHxA		IS	85.9		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C4-PFHpA		IS	82.8		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
1802-PFHxS		IS	92.0		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C2-PFOA		IS	77.8		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
13C8-PFOS		IS	89.1		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C5-PFNA		IS	73.0		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C2-PFDA		IS	69.1		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C8-PFOSA		IS	47.8		50 - 150		Н	B8E0080	10-May-18	0.250 L	25-May-18 04:15	
d3-MeFOSAA		SI	72.4		50 - 150			B8E0080	10-May-18	0.250 L	25-May-18 04:15	
13C2-PFUnA		N	8./.C		061 - 06			B8E0080	10-May-18	0.250 L	25-May-18 04:12	_

Work Order 1800896

Page 7 of 46



								Analytical Lo	poratory
Sample ID: Meth	hod Blank						PFAS Iso	tope Dilution M	ethod
Client Data				Laboratory Data					
Name: N	ferit Laboratories, Inc.	Matrix:	Aqueous	Lab Sample:	B8E0080-H	3LK1	Column:	BEH C18	
Project: L	apeer Sampling								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed I	Dilution
d5-EtFOSAA	IS	74.7	50 - 150		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
13C2-PFDoA	IS	76.3	50 - 150		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
13C2-PFTeDA	IS	55.1	50 - 150		B8E0080	10-May-18	0.250 L	25-May-18 04:15	1
DL - Detection Limit	LOD - Limit of Detection	TCL-UCL- Lov	ver control limit - upper control limit	When rep	ported, PFHxS, F	FOA and PFOS i	include both line	ar and branched isomers	
	LOQ - Limit of quantitation	Results reported	1 to the DL.	Only the	linear isomer is 1	reported for all ot	her analytes.		

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										Analytical Lc	aboratory
Sample ID: O	PR								PFAS Is	otope Dilution	Method
Client Data					Lab	oratory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer Sampling	Matrix:	Aqueous		Lab	Sample:	B8E0080-	BS1	Column:	BEH C18	
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	42.1	40.0	105	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFPeA	2706-90-3	41.5	40.0	104	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFBS	375-73-5	42.1	40.0	105	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFHxA	307-24-4	40.0	40.0	100	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFHpA	375-85-9	43.3	40.0	108	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFHxS	355-46-4	39.1	40.0	97.8	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
6:2 FTS	27619-97-2	37.3	40.0	93.3	60-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFOA	335-67-1	45.9	40.0	115	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFHpS	375-92-8	51.1	40.0	128	60-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFOS	1763-23-1	42.3	40.0	106	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFNA	375-95-1	37.7	40.0	94.2	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFDA	335-76-2	40.9	40.0	102	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
8:2 FTS	39108-34-4	39.1	40.0	97.9	60-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFOSA	754-91-6	40.9	40.0	102	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
MeFOSAA	2355-31-9	35.7	40.0	89.1	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFDS	335-77-3	51.6	40.0	129	60-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFUnA	2058-94-8	42.1	40.0	105	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
EtFOSAA	2991-50-6	38.2	40.0	95.5	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFDoA	307-55-1	44.2	40.0	110	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFTrDA	72629-94-8	40.8	40.0	102	60-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFTeDA	376-06-7	50.5	40.0	126	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFNS	68259-12-1	39.3	40.0	98.1	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
PFPeS	2706-91-4	42.9	40.0	107	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
4:2 FTS	757124-72-4	37.2	40.0	93.0	70-130		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
Labeled Standar	ds	Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS		95.2	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C3-PFPeA		IS		100	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C3-PFBS		IS		127	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C2-PFHxA		IS		100	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C4-PFHpA		IS		102	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	-
1802-PFHxS		IS		108	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	-1
13C2-PFOA		IS		90.8	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C8-PFOS		IS		97.4	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	-1
13C5-PFNA		IS		96.9	50- 150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C2-PFDA		IS		81.9	50- 150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	
Work	Order 1800896									Page 9 of 4	9

2	Vista	Analytical Laboratory
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Sample ID: OPR							PFAS Is	otope Dilution	Method
Client Data			Lab	oratory Data					
Name: Merit Laboratories, Inc. Project: Lapeer Sampling	Matrix: 1	Aqueous	Lab	Sample:	B8E0080-	BS1	Column:	BEH C18	
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C8-PFOSA	IS	57.0	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
d3-MeFOSAA	IS	87.0	50- 150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	-
13C2-PFUnA	IS	70.2	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
d5-EtFOSAA	IS	79.2	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C2-PFDoA	IS	87.0	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1
13C2-PFTeDA	IS	60.6	50-150		B8E0080	10-May-18	0.250 L	25-May-18 04:25	1

											Analytica	Laboratory
Sample ID: N	Method Blank									PFAS Iso	otope Dilution	Method
Client Data						Labor	atory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer Sampling		Matrix:	Aqueous		Lab Sa	ample:	B8E0159-1	BLK1	Column	BEH C18	
Analyte		CAS Number	Conc. (ng/L)	DL	TOD	100	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	QN	0.365	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:19	-
PFPeA		2706-90-3	QN	0.640	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
PFBS		375-73-5	QN	0.895	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
PFHxA		307-24-4	ND	1.09	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	1
PFHpA		375-85-9	ND	0.296	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:19	
PFHxS		355-46-4	ŊŊ	0.474	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
6:2 FTS		27619-97-2	ŊŊ	1.00	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:19	-
PFOA		335-67-1	ND	0.326	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
PFHpS		375-92-8	ND	0.469	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
PFOS		1763-23-1	0.680	0.404	2.50	4.00	ſ	B8E0159	18-May-18	0.250 L	24-May-18 08:1	_
PFNA		375-95-1	ND	0.405	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
PFDA		335-76-2	ND	0.745	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	_
8:2 FTS		39108-34-4	Q	1.03	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
PFOSA		754-91-6	QN	0.885	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
MeFOSAA		2355-31-9	Q	0.825	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	_
PFDS		335-77-3	QN	0.615	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	_
PFUnA		2058-94-8	Q	0.525	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
EtFOSAA		2991-50-6	Ŋ	0.685	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
PFDoA		307-55-1	ND	0.396	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	_
PFTrDA		72629-94-8	QN	0.247	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
PFTeDA		376-06-7	Q	0.378	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	_
PFNS DFD-5		68259-12-1	Q A	1.94	2.50	4.00		B8E0159	18-May-18	0.250 L	24-May-18 08:1	
A-7 FTS		2/10-91-4 757124-72-A		1 37	05.2	4.00		B&EU159 B&E0150	18-May-18 18-May-18	1 022.0	24-May-18 08:1 24-May-18 08-1	
Labeled Standa	trds	Type	% Recovery	1.2.1	Limits	00	Oualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	86.7		50 - 150		,	B8E0159	18-Mav-18	0.250 L	24-Mav-18 08:1	-
13C3-PFPeA		IS	83.5		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
13C3-PFBS		IS	97.2		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	1
13C2-PFHxA		IS	87.7		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	1
13C4-PFHpA		IS	77.3		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
18O2-PFHxS		IS	89.0		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
13C2-PFOA		IS	73.1		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	1
13C8-PFOS		IS	84.4		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
13C5-PFNA		IS	78.6		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	
13C2-PFDA		IS	98.1		50 - 150		-	B8E0159	18-May-18	0.250 L	24-May-18 08:1	-
13C8-PFOSA		IS	46.9		50 - 150		Н	B8E0159	18-May-18	0.250 L	24-May-18 08:1	
d3-MeFOSAA		SI	72.3		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	_ ,
13C2-PFUnA		IS	74.3		50 - 150			B8E0159	18-May-18	0.250 L	24-May-18 08:1	_

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Work Order 1800896

Page 11 of 46



								Analytical Lo	boratory
Sample ID: Methoc	l Blank						PFAS Iso	tope Dilution M	ethod
Client Data				Laboratory Data					
Name: Meri	t Laboratories, Inc.	Matrix:	Aqueous	Lab Sample:	B8E0159-I	3LK1	Column:	BEH C18	
Project: Lape	er Sampling								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed I	Dilution
d5-EtFOSAA	IS	77.2	50 - 150		B8E0159	18-May-18	0.250 L	24-May-18 08:19	1
13C2-PFDoA	IS	85.9	50 - 150		B8E0159	18-May-18	0.250 L	24-May-18 08:19	1
13C2-PFTeDA	IS	52.8	50 - 150		B8E0159	18-May-18	0.250 L	24-May-18 08:19	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lov	ver control limit - upper control limit	When rep	ported, PFHxS, F	FOA and PFOS i	nclude both line	ar and branched isomers	
	LOQ - Limit of quantitation	Results reported	l to the DL.	Only the	linear isomer is	reported for all ot	her analytes.		

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Sample ID: OPR									PFAS Is	otope Dilution]	Method
Client Data					Lab	oratory Data					
Name: Merit Laboratorie Project: Lapeer Sampling	J. Gicu	Matrix:	F 4æoA		Lab	Sample:	B8E0-1s,	BS-	HolAmn:	BEq H-8	
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
P2BF	591,77,3	5yu7	3000	s 0uy	90,-50		B8E0-1s	-8,Ma6,-8	0u710 L	73, Ma6, - 8 08:0s	,
P2PeF	790y, s0, 5	51ul	3000	88tD	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
P2BS	591,95,1	59u	3000	s 7uy	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
P2q xF	509, 73, 3	5 yu7	3000	s 0 🚯	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
P2q pF	591,81,s	57uB	3000	8- u)	90,-50		B8E0-1s	-8,Ma6,-8	0u710 L	73, Ma6, - 8 08:0s	,
P2q xS	511, 3y, 3	58u8	3000	s yus	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
y:7 2TS	79y-s,s9,7	7 yu8	3000	0n6v	y0,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73,Ma6,-808:0s	ı
P2OF	551,y9,-	53uy	3000	8yu8	90,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73,Ma6,-808:0s	ı
P2qpS	591,s7,8	51ul	3000	88uß	y0, - 50		B8E0-1s	-8,Ma6,-8	0u710 L	73, Ma6, - 8 08:0s	ı
P2OS	- 9y5,75,-	53uy	3000	8yu8	90,-50	В	B8E0-1s	- 8,Ma6,- 8	0u710 L	73,Ma6,-808:0s	ı
P2NF	591,s1,-	51u0	3000	89uB	90,-50		B8E0-1s	-8,Ma6,-8	0u710 L	73,Ma6,-808:0s	ı
P2DF	551,9y,7	57tt	3000	80ď	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
8:7 2TS	5s-08,53,3	51u7	3000	88u0	y0,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73, Ma6, - 8 08:0s	ı
P2OSF	913,s-,y	53u7	30.0	81u3	90,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73, Ma6, - 8 08:0s	I
Me2OSFF	7511,5-,s	7su+	3000	97 us	90,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73,Ma6,-808:0s	ı
P2DS	551,99,5	510 ⁰	3000	8s ub	y0,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73,Ma6,-808:0s	ı
P2UnF	7018,s3,8	58uy	3000	s yul	90,-50		B8E0-1s	-8,Ma6,-8	0u710 L	73,Ma6,-808:0s	ı
Et2OSF F	7ss-,10,y	57u	3000	80u7	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	I
P2DoF	509,11,-	7s u8	3000	93u 3	90, - 50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
P2TrDF	97y7s,s3,8	59uy	30.0	s300	y0,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73, Ma6, - 8 08:0s	I
P2TeDF	59y,0y,9	35tD	3000	- 0s	90,-50		B8E0-1s	- 8,Ma6,- 8	0u710 L	73, Ma6, - 8 08:0s	ı
P2NS	y871s,-7,-	55uB	3000	85uy	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73,Ma6,-808:0s	
P2PeS	790y, s-,3	55u7	3000	85u0	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	I
3:7 2TS	919-73,97,3	5- u•	$30 \cdot 0$	99uy	90,-50		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
- 5H5, P2BF		S		S - U	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
- 5H5, P2 PeF		S		s 8uy	10, -10		B8E0-1s	-8,Ma6,-8	0u710 L	73, Ma6, - 8 08:0s	ı
- 5H5, P2BS		S		5	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
- 5H7, P2q xF		S		8suß	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
- 5H3, P2q pF		S		syus	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
- 807, P2q xS		S		s Oul	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
- 5H7, P2 OF		S		8yuy	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	ı
- 5H8, P2 OS		S		s lul	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
-5H1,P2NF		S		80ų7	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
- 5H7,P2DF		S		s5us	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73,Ma6,- 8 08:0s	ı
Work Order 1800896										Page 13 of 4	9

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Sample ID: OP	R							PFAS Is	otope Dilution	Method
Client Data				Lab	oratory Data					
Name: Project:	Merit Laboratoriel. Grcu Lapeer Sampling	Matrix:	F 4æoM	Lab	Sample:	B8E0-1s,1	BS-	HolAmn:	BEq H-8	
Labeled Standard	S	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
5H8, P2 OSF		S	11us	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
15, Me2OSF F		S	98u	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
5H7, P2 UnF		S	98ul	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
11, Et2 OSF F		S	hs n	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	1
.5H7,P2DoF		S	Ľn66	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	
5H7, P2 TeDF		S	300 gr	10, -10		B8E0-1s	- 8, Ma6, - 8	0u710 L	73, Ma6, - 8 08:0s	

												aboratory
Sample ID: S	KITMW113180501N									PFAS Isc	otope Dilution N	lethod
Client Data Name: Project: Location:	Merit Laboratories, Inc. Lapeer Sampling LAPEER		Matrix: Date Coll	Ground [,] ected: 01-May	water 18 11:05	Labor Lab Sa Date I	atory Data ample: Received:	1800896-C 04-May-1)1 8 09:48	Column	: BEH C18	
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	1.06	0.348	2.39	3.82	ſ	B8E0080	10-May-18	0.262 L	25-Mav-18 04:46	
PFPeA		2706-90-3	ND	0.612	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
PFBS		375-73-5	11.2	0.856	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFHxA		307-24-4	ND	1.04	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFHpA		375-85-9	ND	0.282	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFHxS		355-46-4	ND	0.453	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
6:2 FTS		27619-97-2	ND	0.956	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFOA		335-67-1	ND	0.311	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFHpS		375-92-8	ND	0.448	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFOS		1763-23-1	1.30	0.386	2.39	3.82	J	B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFNA		375-95-1	ND	0.387	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFDA		335-76-2	ND	0.712	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
8:2 FTS		39108-34-4	ND	0.985	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
PFOSA		754-91-6	ND	0.846	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
MeFOSAA		2355-31-9	ND	0.789	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFDS		335-77-3	ND	0.588	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFUnA		2058-94-8	ND	0.502	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
EtFOSAA		2991-50-6	ND	0.655	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFDoA		307-55-1	ND	0.379	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFTrDA		72629-94-8	ND	0.236	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
PFTeDA		376-06-7	ND	0.361	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
PFNS		68259-12-1	Q	1.85	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	
PFPeS 4.7 ETC		2/106-91-4	ON ON	1.31	2.39	3.82		B8E0080	10-May-18	0.262 L	25-May-18 04:46	
Labeled Standa	rds	Type	% Recovery	1.0.1	Limits	70.0	Oualifiers	Batch	Extracted	Samp Size	Analvzed	Dilution
13C3-PFBA		SI	94.8		50 - 150			B8E0080	10-Mav-18	1 292 0	25-Mav-18 04-46	
13C3-PFPeA		IS	90.1		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
13C3-PFBS		IS	188		50 - 150		Η	B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
13C2-PFHxA		IS	87.1		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
13C4-PFHpA		IS	98.1		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	
1802-PFHxS		IS	100		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	-
13C2-PFOA		IS	74.3		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
13C8-PFOS		IS	102		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	
13C5-PFNA		IS	80.1		50 - 150			B8E0080	10-May-18	0.262 L	25-May-18 04:46	
13C2-PFDA		IS	81.9		50 - 150 -		;	B8E0080	10-May-18	0.262 L	25-May-18 04:46	
13C8-PFOSA		S	40.9		50 - 150		Н	B8E0080	10-May-18	0.262 L	25-May-18 04:46	
d3-MeFUSAA		SI 2	102		001 - 00			B8E0080	10-May-18	0.262 L	25-May-18 04:46	
		3	01.4		NCT - NC			DOEVVOV	IU-IMay-10	0.202 L	04.40 01-YBINI-C2	-

1

Work Order 1800896

Page 15 of 46



Sample ID: SKITMW113180501N

Sample ID: SKI7	[MW113180501N						PFAS Iso	tope Dilution M	ethod
Client Data				Laboratory Data					
Name: M	(erit Laboratories, Inc.	Matrix:	Groundwater	Lab Sample:	1800896-0	1	Column:	BEH C18	
Project: L	apeer Sampling	Date Collected:	01-May-18 11:05	Date Received:	04-May-18	: 09:48			
Location: L	APEER								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed I	Dilution
d5-EtFOSAA	IS	118	50 - 150		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
13C2-PFDoA	IS	6.99	50 - 150		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
13C2-PFTeDA	IS	73.7	50 - 150		B8E0080	10-May-18	0.262 L	25-May-18 04:46	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower c	ontrol limit - upper control limit	When rep	oorted, PFHxS, P	FOA and PFOS i	nclude both line	ar and branched isomers	
	LOQ - Limit of quantitation	Results reported to t	he DL.	Only the 1	linear isomer is r	reported for all ot	her analytes.		

ol Laboratory	(Method		Dilution	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 I	26 1	Dilution	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1	26 1
Analytic	tope Dilution	EHG C18	Analyzed	s2-Ma5-18 0AC	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A	S2-Ma5-18 0A	s 2-Ma5-18 0A:	Analyzed	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A:	s2-Ma5-18 0A3	s2-Ma5-18 0A	s2-Ma5-18 0A	s2-Ma5-18 0A3						
	PFAS Iso	ColBnn:	Samp Size	0us 6s L	Ous 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0us 6s L	0 us 6s L	Ous 6s L	Ous 6s L	Ous 6s L	Samp Size	0us 6s L	0 us 6s L	0us 6s L	0 us 6s L	0 us 6s L	0us 6s L	0us 6s L	0us 6s L					
		s 8 09:A8	Extracted	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	Extracted	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18	10-Ma5-18						
		1800896-0 0AMa5-18	Batch	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	Batch	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080	E8H0080						
		ratory Data ample: v ecei4ed:	Qualifiers	Ŀ	ſ			ſ	J																		Qualifiers			IJ										
		Labo Lab S Date	LOQ	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	Rußs	RtBs	Rußs Pr&c	Rußs														
		andy ater 1a5-18 1s:R0	LOD	s uR9	s uR9	s uPO	s uR9	s uR9	s uR9	s uPO	s uR9	s uR9	s uP9	s uR9	s uR9	s uPO	s uR9	s uR9	s uPO	s uR9	s uR9	s uR9	s uR9	s uRO	Surg Surg	suro suro	Limits	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120	20 - 120
		wroF ected: 01-N	DL	0uRA8	0u611	0u82A	10A	0 us 8s	0uA2s	0u02A	0uR11	0uAA7	0uR82	0uR87	0u711	0u98R	0u8A2	0u787	0u287	0201	0162A	0uR78	0us R6	00R60	1.082 1.421	1 url														
		Matrix: Date Coll	Conc. (ng/L)	suRR	0.0R9	AAB	ND	0uA79	Rt07	ND	ŊŊ	ND	9u80	ND	ND	ND	ŊŊ	ND	ND	ND	ND	ND	ŊŊ	QN	(UN)	QN	% Recovery	98uR	8Ru7	s 06	0°66	108	116	78û	86tB	10A	82us	29u8	1As	9Rt0
		-	CAS Number	R72-ss-A	s 706-90-R	R72-7R-2	R07-sAA	R72-82-9	R22-A6-A	s 7619-97-s	RR2-67-1	R72-9s-8	176R-sR-1	R72-92-1	RR2-76-s	R9108-RAA	72A-91-6	s R22-R1-9	RR2-77-R	s028-9A8	s 991-20-6	R07-22-1	7s6s9-9A8	R76-06-7	68829-15-1 e 706-01-A	7271sA7s-A	Type	s.	S.	S.	S.	s.	s.	s.						
	KITMW211180501N	Merit Laboratorie, I . ncı Lapeer Sampling LF PHHv																									rds													
	Sample ID: Sl	Client Data Name: Project: Location:	Analyte	P3EF	P3PeF	P3ES	P3GxF	P3GpF	P3GxS	6:s 3TS	P3OF	P3GpS	P3OS	P3NF	P3DF	8:s 3TS	P3OSF	Me3OSF F	P3DS	P3UnF	Ht3OSFF	P3DoF	P3TrDF	P3 TeDF	P3NS D3DeC	A:8 3TS	Labeled Standar	1RCR-P3EF	1RCR-P3 PeF	1RCR-P3ES	1RCs-P3 GxF	1RCAP3 GpF	18Os-P3GxS	1RCs-P3OF	1RC8-P3 OS	1RC2-P3NF	1RCs-P3DF	1RC8-P3 OSF	dR-Me3OSF F	1RCs-P3 UnF

1

Work Order 1800896

Page 17 of 46



Sample ID: SKITMW211180501N

Sample ID: SKI	TMW211180501N							PFAS Iso	tope Dilution M	ethod
Client Data					Laboratory Data					
Name: N	Aerit Laboratorie, I. ncu		Matrix:	wroBndy ater	Lab Sample:	1800896-0	S	ColBmn:	EHG C18	
Project: I	apeer Sampling		Date Collected:	01-Ma5-18 1s:R0	Date v ecei4ed:	0AMa5-18	8 09:A8			
Location: I	F PHHV									
Labeled Standards	Type		% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed D	ilution
d2-Ht3 OSF F	S.		1.44	20 - 120		E8H0080	10-Ma5-18	0us 6s L	s2-Ma5-18 0A:26	1
1RCs-P3DoF	S.		89uR	20 - 120		E8H0080	10-Ma5-18	0us 6s L	s2-Ma5-18 0A26	-
1RCs-P3 TeDF	S.		9Rui	20 - 120		E8H0080	10-Ma5-18	0us 6s L	s2-Ma5-18 0A26	1
DL - Detection Limit	LOD - Limit of D	Detection	LCL-UCL- Loy er o	ontrol limit - Bpper control limit	When rep	oortedI P3 GxSI F	3 OF and P3OS i	nclBde both line	ar and branched i, omer, u	
	LOQ - Limit of q	Bantitation	v e, Blt, reported to th	he DLu	Onl5 the 1	linear i, omer i,	reported for all ot	her anal5te, u		

LOQ - Limit of qBantitation

											Visto Analytical L	aboratory
Sample ID: S	KITMW308180430N									PFAS Iso	otope Dilution N	Iethod
Client Data	T character T time. M		Maturi			Labo	ratory Data	0 2000001		<u>4</u>		
Project: Location:	MELL LADORATORIE, L. IICU Lapeer Sampling L5 PHH4	_	Date Colle	wrondid cted: s0-5 pr	iy aler -18 1RvR	Date 4	annpre. 4 eceiAed:	0F-Ma3-18	s 8 09:F8	ColBnn:	EHG C18	
Analyte		CAS Number	Conc. (ng/L)	DL	TOD	Г00	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PJE5		s 7R-vv-F	lu6s	0 us 69	vuRs	Fur	2	E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
PJ Pe5		v706-90-s	ND	0u6F8	vuRs	FuOR		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
PJES		s 7R-7s-R	100R	0000	vuRs	Fuor	2	E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
PJ Gx5 DI Gn5		s07-vF-F с 7Р-8Р-0	(IN)	1ul 0 Arvoo	vuRs vnRe	FUR		E8H0080	10-Ma3-18 10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07 vP-Ma3-18 0P:07	
PIGxS		s/Re-F6-F	QN QN	00F79	vus viRs	FIOR		E8H0080	10-Ma3-18	OINF7 L	vR-Ma3-18 0R-07	
6:v JTS		v7619-97-v	1u0v	101	vuRs	Fur	6	E8H0080	10-Ma3-18	OuvF7 L	vR-Ma3-18 0R:07	
PJ 05		ssR-67-1	OutevF	0us v9	vuRs	Fuor	2	E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
PJ GpS		s 7R-9v-8	ND	0uF7F	vuRs	Fuor		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
PJOS		176s-vs-1	0v0v	0uF08	vuRs	Fur	2	E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
PJN5		s 7R-9R-1	ND	0 ± 10	vuRs	Fuor		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
PJD5		ssR-76-v	QN :	0u7RF	vuRs	Fur		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R-07	
ST UV:8		s9108-sF-F	QN 👯	140F 0.607	vuks	FUR		E8H0080	10-Ma3-18	OuvF7 L	vR-Ma3-18 0R:07	
PJ US5		/KF-91-6	UN (IN	00000000000000000000000000000000000000	VUKS	FWK		E8H0080	10-Ma3-18	OuvF/L	VK-Ma3-18 0K:0/ VD M62 18 0D:07	
C COU LOIM		vs rues 1-9 s s R-77-s	ON ON	Diferv	vurs	FUR		E & HUU&U F & HOU&O	01-CEIM-01 10-Ma3-18	Ouve7 L	VR-Ma3-18 0R-07	
PJ Un5		v0R8-9F-8	QN	0uRs 1	vuRs	FuR		E8H0080	10-Ma3-18	OuvF7 L	vR-Ma3-18 0R:07	
HtJ OS5 5		v991-R0-6	QN	0u69s	vuRs	Fuor		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
PJ Do5		s 07-RR-1	ND	0uF01	vuRs	Fuor		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
PJ TrD5		7v6v9-9F-8	ND	0 u/R0	vuRs	FuOR		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	-1
PJ TeD5		s 76-06-7	ND	0us 8v	vuRs	Fuor		E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
PJNS		68vR9-1v-1	Q A	1006	vuRs	Fulk		E8H0080	10-Ma3-18	OuvF7 L	vR-Ma3-18 0R:07	
F:v JTS		7R71vF-7v-F	QN QN	1us 9	vuRs	FUR		E8H0080	10-Ma3-18	OuvF7 L	vR-Ma3-18 0R:07	
Labeled Standa	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
1sCs-PJE5		s.	9646		R0 - 1R0			E8H0080	10-Ma3-18	0wF7 L	vR-Ma3-18 0R:07	1
1sCs-PJ Pe5		s.	₽v6		RO - 1RO			E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	-
1sCs-PJES		si s	1F0		R0 - 1R0			E8H0080	10-Ma3-18	0 wF7 L	vR-Ma3-18 0R:07	
ISCV-PJ GX5		vio	30/.6		RU - 1RU DO 1DO			E8H0080	10-Ma3-18	OuvF7 L	VK-Ma3-18 0K:07	
18Ov-PIGxS		ý x	10F		RO - 1RO			E8H0080	01-CEIM-01 10-Ma3-18	Ouver L	vR-Ma3-18 0R-07	
1sCv-PJ O5		s	77.48		R0 - 1R0			E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
1sC8-PJ OS		s.	10v		R0 - 1R0			E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
1sCR-PJN5		s.	81uF		RO - 1RO			E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1
1sCv-PJ D5		si s	8916		R0 - 1R0		۲	E8H0080	10-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	
1sC8-PJ 0S5		vio	FFul OrrD		RU - 1RU BO 1D0		5	E8H0080	10-Ma3-18	OuvF7 L	vR-Ma3-18 0R:07	
ds-MeJ USS 3		ý v	7818 7818		R0 - 1R0 R0 - 1R0			E&H0080 E&H0080	01-CBIM-01 10-Ma3-18	OWF/L OwF7L	vR-Ma3-18 0R:07	
		2	3		A			LUANV VV	IV TIME A			

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Page 19 of 46

Work Order 1800896



Sample ID: SKITMW308180430N

Sample ID: SKITMW308	(80430N						PFAS Iso	tope Dilution M	ethod			
Client Data				Laboratory Data								
Name: Merit Laborat	orie, I. ncu	Matrix:	wroBndy ater	Lab Sample:	1800896-0s		ColBmn:	EHG C18				
Project: Lapeer Samp	ling	Date Collected:	s0-5 pr-18 1RvR	Date 4 ecei Aed:	0F-Ma3-18 ()9:F8						
Location: L5 PHH4												
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed I	oilution			
dR-HtJ OS5 5	S.	109	R0 - 1R0		E8H0080 1	0-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1			
1sCv-PJ Do5	s.	8v10	R0 - 1R0		E8H0080 1	0-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1			
1s Cv-PJ TeD5	S.	6Fu6	R0 - 1R0		E8H0080 1	0-Ma3-18	0uvF7 L	vR-Ma3-18 0R:07	1			
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Loy er o	ontrol limit - Bpper control limit	When rep	ortedI PJ GxSI PJ	O5 and PJOS i	nclBde both line	ar and branched i, omer,				
	LOQ - Limit of qBantitation	4 e, Bt, reported to th	ne DLu	Onl3 the l	linear i, omer i, rel	ported for all ot	her anal3te, u					
											Analytical	Laboratory
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Sample ID: S	\$KITMW308018348N									PFAS Iso	tope Dilution	Method
Client Data Name: Project: Location:	Merit Laboratorie, I. ncu Lapeer Sampling LRPHH4		Matrix: Date Colle	wro ected: 50-1	Bhdy ater Rpr-18 15:5v	Labo Lab S Date	oratory Data Sample: 4 eceiAed:	1800896-0 0s-MaF-18	s 3 09:s8	ColBmn:	EHG C18	
Analyte	C	AS Number	Conc. (ng/L)	DL	TOD	100	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
P3ER		5J v-77-s	0uv8J	0u6v1	7us 1	5u86	2	E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3PeR		7J06-90-5	ND	0u61J	7us 1	5u86		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
P3ES		5J v-J 5-v	1u67	0u865	7us 1	5u86	2	E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
P3GxR		50J-7s-s	ND	1 u 0 v	7 us 1	5u86		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
P3GpR		5J v-8v-9	ND	0u78v	7us 1	5u86		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
P3GxS		5vv-s6-s	ND	0us v6	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
6:7 3 TS	7.	7J 619-9J -7	ND	$0 \Phi 6 s$	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3OR		55v-6J-1	ND	$0 \pm 1s$	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3GpS		5J v-97-8	ND	0 us v 7	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3OS	1	1J65-75-1	ND	0u£89	7 us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3NR		5J v-9v-1	ND	0¢90	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3DR		55v-J6-7	ND	0ul 18	7 us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
8:7 3 TS	5	59108-5s-s	Ŋ	0 0 95	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3OSR		J vs-91-6	ND	0u8v5	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
Me3OSRR		75vv-51-9	ND	0ul 9v	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3DS		55v-JJ-5	ND	0w95	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3UnR		70v8-9s-8	QN	0uv06	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
Ht3OSRR		7991-v0-6	ND	01660	7 us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3DoR		50J-vv-1	Ŋ	0\G87	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3 TrDR	L	17679-9s-8	ŊŊ	0u758	7 us 1	5u86		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
P3TeDR		5J 6-06-J	Ŋ	0¢6s	7us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3NS	9	587v9-17-1	ŊŊ	1u86	7 us 1	5u86		E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	1
P3PeS		7J06-91-s	ND	1 167	7us 1	5u86		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	-
s:73TS	J.	vJ 17s-J 7-s	ŊŊ	1 u6 7	7 us 1	5u86		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	
Labeled Standa	ards	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
15C5-P3ER		s.	97uv		v0 - 1v0			E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
15C5-P3PeR		s.	99uv		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	-
15C5-P3ES		s.	11J		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
15C7-P3GxR		s.	95t0		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
15Cs-P3GpR		S.	9016		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
1807-P3GxS		s.	115		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
15C7-P3OR		s.	8640		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	-
15C8-P3OS		s.	10J		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	-
15Cv-P3NR		s	86uv		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
15C7-P3DR		S.	JSIG		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
15C8-P3OSR		S.	s 7u6		v0 - 1v0		IJ	E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	-
d5-Me3OSRR		s.	8vu8		v0 - 1v0			E8H0080	10-MaF-18	007v9 L	7v-MaF-18 0v:1J	
15C7-P3 UnR		s.	J 6us		v0 - 1v0			E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1

Work Order 1800896

Page 21 of 46



Sample ID: SKITMW308018348N

Sample ID: SKITN	AW308018348N						PFAS Iso	tope Dilution N	lethod
Client Data				Laboratory Data					
Name: Mer	it Laboratorie, I. ncu	Matrix:	wroBndy ater	Lab Sample:	1800896-0s		ColBmn:	EHG C18	
Project: Lap	eer Sampling	Date Collected:	50-Rpr-18 15:5v	Date 4 ecei Aed:	0s-MaF-18	09:s8			
Location: LRI	PHIH4								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
dv-Ht3 OSRR	Ś	8J us	v0 - 1v0		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
15C7-P3 DoR	S.	J 740	v0 - 1v0		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
15C7-P3 TeDR	.S	6s ul	v0 - 1v0		E8H0080	10-MaF-18	0u7v9 L	7v-MaF-18 0v:1J	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Loy er oc	ontrol limit - Boper control limit	When rep	oortedI P3 GxSI P3	3 OR and P3OS i	nclBde both line	ar and branched i, omer,	n
	LOQ - Limit of qBantitation	4 e, Blt, reported to th	le DLu	OnlF the 1	linear i, omer i, ro	eported for all of	her analFte, u		

											Analytical	Laboratory
Sample ID: S	SKITMW506180430N									PFAS Iso	tope Dilution	Method
Client Data Name: Project:	Merit Laboratorie, I. ncu Lapeer Sampling		Matrix: Date Coll	wroBh ected: 50-R _F	dy ater 5r-18 1v:10	Labo Lab S Date	ratory Data ample: 4 ecei Aed:	1800896-0 0F-Ma3-18	s 3 09:F8	ColBnn:	EHG C18	
Analyte	CAS	S Number	Conc. (ng/L)	DL	LOD	0	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PJER	5	/s-22-F	25uv	0¢s1	2uF1	5186		E8H0080	10-Ma3-18	00289 L	2s-Ma3-18 0s :FG	-
PJ PeR	2v	06-90-5	22ub	0u61v	2uF1	5u86		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:F9	1
PJES	5	vs-v5-s	90V	0u865	2uF1	5u86		E8H0080	10-Ma3-18	0u2s9 L	2s-Ma3-18 0s:F9	-
PJ GxR	5()v-2F-F	F8 1 8	10s	2uF1	5u86		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:FG	1
PJ GpR	5	/s-8s-9	20t8	0028s	2uF1 2 F1	5u86 5.86		E8H0080	10-Ma3-18	002s9L	2s-Ma3-18 0s:FG	
PJ GXS	50 E	SS-F6-F	I VIS	0uFS6	20F1	5-07		E8H0080	10-Ma3-18	0.0259 L	2s-Ma3-18 0s:F	
C/ f 7:0	7007	5. 6 1	UN 00	000F	20F1	090C		E & HUU&U	10-Ma3-18	0.029 L	2S-Ma3-18 US:F3	
PIGnS		75-07-8 75-97-8	0 ano	001F 01Fs 2	21F1	5186		EQU0000 E8H0080	01-CBIM-01 10-Ma3-18	01059 L	2s-Ma3-18 0s -FG	
PJTS		65-25-1	lsu2	00689	2uF1	5u86		E8H0080	10-Ma3-18	002s9L	2s-Ma3-18 0s:FG	
PJ NR	5	vs-9s-1	ND	0¢90	2uF1	5u86		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:FG	1
PJDR	55	5s-v6-2	ND	0uv18	2uF1	5u86		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:FG	1
8:2 J7S	293	108-5F-F	ND	0tb95	2uF1	5u86		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:FG	1
PJTSR	SA	sF-91-6	QN	0 uBs 5	2uF1	5u86		E8H0080	10-Ma3-18	0u2s9 L	2s-Ma3-18 0s:F9	
MeJTSRR	25	ss-51-9	ND	0uv9s	2uF1	5u86		E8H0080	10-Ma3-18	002s9 L	2s-Ma3-18 0s:F9	1
PJDS	55	5s-vv-5	QN	0us 95	2uF1	5u86		E8H0080	10-Ma3-18	002s9 L	2s-Ma3-18 0s:F9	-
PJ OnR	20	s 8-9F-8	ND	0us 06	2uF1	5u86		E8H0080	10-Ma3-18	002s9L	2s-Ma3-18 0s:FG	1
HUTSRR	29	91-s0-6	Ŋ	01660	2uF1	5u86		E8H0080	10-Ma3-18	0u2s9 L	2s-Ma3-18 0s:FG	-
PJ DoR	5()v-ss-1	ND	0 6 82	2uF1	5u86		E8H0080	10-Ma3-18	0u2s9L	2s-Ma3-18 0s:FG	1
PJ 7rDR	v2(529-9F-8	Q	0.258	$2 \mathrm{uF1}$	5486		E8H0080	10-Ma3-18	002s9 L	2s-Ma3-18 0s:FG	
PJ 7eDR	51	ve-06-v	Q	006F	2uF1	5u86		E8H0080	10-Ma3-18	02s9L	2s-Ma3-18 0s:FG	_
PJNS	. 68	2s9-12-1	ND S	1u8v 1.50	2uF1 2 F1	5u86 7.86		E8H0080	10-Ma3-18	00289 L	2s-Ma3-18 0s:FG	
PJ PeS E-7 1 7 S	A7	06-91-F	VID	1 u 2 1 i 6 2	2uF1 2vE1	5486		E8H0080	10-Ma5-18 10 Ma2 18	0.0259 L	2s-Ma3-18 0s:F9	
Labeled Standa	T. T.	vpe	% Recovery	7 01	Limits	0002	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
15C5-PJ ER		s.	0n/6		s0 - 1s0			E8H0080	10-Ma3-18	002s9L	2s-Ma3-18 0s:F6	-
15C5-PJ PeR		s.	95t0		s0 - 1s0			E8H0080	10-Ma3-18	0.2s 9 L	2s-Ma3-18 0s:F9	1
15C5-PJES		s.	1s1		s0 - 1s0		IJ	E8H0080	10-Ma3-18	002s9 L	2s-Ma3-18 0s:FG	
15C2-PJ GxR		s.	98æ		s0 - 1s0			E8H0080	10-Ma3-18	0u2s9 L	2s-Ma3-18 0s:F9	
15CF-PJ GpR		s.	109		$s_0 - 1s_0$			E8H0080	10-Ma3-18	0u2s9 L	2s-Ma3-18 0s:F9	
18T 2-PJ GxS		s.	101		s0 - 1s0			E8H0080	10-Ma3-18	002s9 L	2s-Ma3-18 0s:F ⁶	
15C2-PJ TR		s	8646		s0 - 1s0			E8H0080	10-Ma3-18	0.2s9 L	2s-Ma3-18 0s:F ⁶	
15C8-PJTS		s.	9vul		s0 - 1s0			E8H0080	10-Ma3-18	02s9L	2s-Ma3-18 0s:F	_
15Cs-PJ NR		si i	vout		s0 - 1s0			E8H0080	10-Ma3-18	0u2s9L	2s-Ma3-18 0s:FG	
15C2-PJ DR		s.	9016		$s_0 - 1s_0$			E8H0080	10-Ma3-18	002s9L	2s-Ma3-18 0s:FG	,
15C8-PJTSK		vio	62us		s0 - 1s0			E8H0080	10-Ma3-18	01259 L	2s-Ma3-18 0s:F	
do-MeJ I SKK		vio	98u		s0 - 1s0			E8HUU8U	10-Ma3-18	0.250 L	2s-Ma3-18 0s:F	
19C2-PJ UIIK		v.	VYIL		SU - ISU			E&HUU&U	01-CN143-10	ULLS & L	ZS-IVIA5-18 US.F3	_

Work Order 1800896

Page 23 of 46



Sample ID: SKITMW506180430N

Sample ID: SKITMW50	6180430N						PFAS Iso	tope Dilution N	Method
Client Data				Laboratory Data					
Name: Merit Labo	atorie, I. ncu	Matrix:	wroBndy ater	Lab Sample:	1800896-0	0	ColBmn:	EHG C18	
Project: Lapeer San	pling	Date Collected:	50-Rpr-18 1v:10	Date 4 ecei Aed:	0F-Ma3-18	09:F8			
Location: LRPHH4									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
ds-HtJ TSRR	S.	10s	s0 - 1s0		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:F9	1
15C2-PJ DoR	s.	vFu8	s0 - 1s0		E8H0080	10-Ma3-18	0.2s9L	2s-Ma3-18 0s:F9	1
15C2-PJ 7eDR	S.	v9û	s0 - 1s0		E8H0080	10-Ma3-18	0u2s9 L	2s-Ma3-18 0s:F9	1
DL - Detection Limit	LTD - Limit of Detection	LCL-OCL- Loy er co	ontrol limit - Boper control limit	When rep	portedI PJ GxSI P	JTR and PJTS	nclBde both line	car and branched i, omer	n :
	LTQ - Limit of qBantitation	4 e, Blt, reported to th	ie DLu	T n13 the	linear i, omer i, 1	eported for all ot	her anal3te, u		

1

												aboratory
Sample ID: SKI7	CMW606180501N									PFAS Iso	tope Dilution N	1 ethod
Client Data						Labor	atory Data					
Project: L	erit Laboratories, Inc. apeer Sampling		Matrix: Date Colle	Ground cted: 01-Ma	lwater y-18 08:5R	Lab Sa Date v	ample: / ecei4ed:	1800896-0 0AMay-18	6 8 09:A8	Column:	BEH C18	
	F PEEV		Cone (nall)		uo I		Oudifican	Datah	E wtwootod	Comn Cizo	A	
Analyte		LAS Number	CONC. (NB/LJ)	DL VICI	LOU L		Auamiers	Daucion	EAUACICU		Analyzeu	
P3BF D2D_F		J 2K-55-A	08.2	191.U	84.C 2 A0	792 L		B&EUU&U	10-May-18	U.SK5 L	5K-May-18 UK:R9	
P3BS		128-21-R	A76	0.03 K 0.887	5.A8	79. l		B&EUU&U B&E0080	10-May-18 10-May-18	0.5R5 L	5R-May-18 0R:R9	
P3HxF		J02-5AA	ND	1.08	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-Mav-18 0R:R9	
P3HpF		J2R-8R-9	ND	0.59J	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
P3HxS		J RR-A6-A	0.69J	0.A20	5.A8	J.92	7	B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
6:5 3TS		52619-92-5	ND	0.995	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
P3OF		JJR-62-1	0.6A9	0.J5J	5.A8	J.92	7	B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
P3HpS		J2R-95-8	QN ;	0.A6R	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R-R9	_
P3OS		126J-5J-1	QN ;	0.A00	5.A8 2.60	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
P3NF		J2R-9R-1	UN di	0.A05	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
P3DF		JJR-26-5	Q ;	0.2.19	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	,
8:5 3 TS		J9108-JAA	ON A	1.05 0.020	5.A8	J.92 1.02		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
P3OSF M_2OSE E		2KA91-0	UN GN	0.828	5.A8	1.02 1.02		B8E0080	10-May-18	0.5K5 L	5R-May-18 UK:R9	
MeJUSF F		11R-77_1	ON ON	0.610	84.C 84.2	76. l		B&EUU&U R&F00&0	10-May-18 10-May-18	0 5R5 I	5R-May-18 0R-P0	
P3UhF		50R8-9A.8	QN	0.851 0.851	5.88	1.92 1.92		B8E0080	10-Mav-18	0.5R5 L	5R-Mav-18 0R-R9	
Et3 OSF F		5991-R0-6	Q	0.629	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
P3DoF		J02-RR-1	ND	0.J9J	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
P3 TrDF		25659-9A8	ND	0.5AR	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
P3TeDF		J 26-06-2	ND	0.J2A	5.A8	J.92		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
P3NS		685R9-15-1	QN	1.95	5.A8 2.48	J.92 1.02		B8E0080	10-May-18	0.5R5 L	5R-May-18 0R-R9	
P3PeS A-5 3TS		2206-91-A	ON ON	0.1 1.16	5.A8	79. l		B8E0080 B8E0080	10-May-18 10-May-18	0.5R5 L	5R-May-18 0K:R9 5R-May-18 0R-R9	
Labeled Standards		Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
1JCJ-P3BF		IS	100		RO - 1RO			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
1JCJ-P3PeF		IS	82.6		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
1JCJ-P3BS		IS	1JR		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
1JC5-P3HxF		IS	89.5		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
1JCAP3HpF		IS	90.8		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	-
1805-P3HxS		IS	109		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
11C5-P3OF		SI 5	86.9		R0 - 1R0 B0 1B0			B8E0080	10-May-18	0.5K5 L	5R-May-18 0K:R9	
11CR-P3 US		ci X	9AA 90.5		RU - 1RU R0 - 1R0			B&E0080 R&F0080	10-May-18 10-May-18	0.5R5 I	5R-May-18 0K R9	
1JC5-P3DF		IS	110		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
1JC8-P3OSF		IS	R6.A		RO - 1RO			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	1
dJ-Me3OSFF		IS	151		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	
1JC5-P3UnF		IS	96.2		R0 - 1R0			B8E0080	10-May-18	0.5R5 L	5R-May-18 0R:R9	

Work Order 1800896

Page 25 of 46



Sample ID: SKITMW606180501N

Sample ID: SKITMW6	06180501N					, ,	PFAS Isot	ope Dilution N	lethod
Client Data				Laboratory Data					
Name: Merit Lab	oratories, Inc.	Matrix:	Groundwater	Lab Sample:	1800896-06		Column:	BEH C18	
Project: Lapeer Sa	mpling	Date Collected:	01-May-18 08:5R	Date v ecei4ed:	0AMay-18 09	:A8			
Location: LF PEEv									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch Ex	ctracted S	samp Size	Analyzed	Dilution
dR-Et3 OSF F	IS	151	R0 - 1R0		B8E0080 10-	-May-18	0.5R5 L	5R-May-18 0R:R9	1
1JC5-P3DoF	IS	10J	RO - 1RO		B8E0080 10-	-May-18	0.5R5 L	5R-May-18 0R:R9	
1J C5-P3 TeDF	IS	91.R	R0 - 1R0		B8E0080 10-	-May-18	0.5R5 L	5R-May-18 0R:R9	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower o	control limit - upper control limit	When rep	oorted, P3 HxS, P3 OF	F and P3OS in	clude both lines	rr and branched isomers	
	LOQ - Limit of quantitation	v esults reported to	the DL.	Only the 1	linear isomer is repor	rted for all oth	er analytes.		

											Analytical	Laboratory
ple ID: F	CB01-180426									PFAS Iso	tope Dilution	Method
nt Data e: set:	Merit Laboratories, Inc. Lapeer Sampling		Matrix: Date Col	Water lected: 26-Ap	or-18 09:30	Labo Lab S Date	ratory Data ample: Received:	1800896-0 04-May-18	17 8 09:48	Column:	BEH C18	
tion:	LAPEER	AS Number	Conc (ng/L)	Ĩ	TOD		Onalifiers	Ratch	Extracted	Samn Size	Analwzod	Dilution
hle				10			Audultor		10.15		Allaryzeu	
		5/5-22-4		0.346	2.38	3.80 7.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	
		2/00-90-5 275 72 5		0.008	2.58 05 C	08.6 2.00		B&EUU&U	10-May-18	0.203 L	25 May 18 06:14	
		C-5/-C/5		0.850	2.38	3.80 7.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	
~ ~		307-24-4 275 85 0	UN UN	1.04 0.281	2.38 7.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	
		355-46-4	QN	0.450	2.38	3.80		B8E0080	10-May-18	0.263 L	25-Mav-18 06:10	
S		27619-97-2	QN	0.950	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
		335-67-1	1.63	0.309	2.38	3.80	ſ	B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
		375-92-8	ND	0.445	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
		1763-23-1	1.59	0.383	2.38	3.80	ſ	B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
		375-95-1	ND	0.385	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
		335-76-2	ŊŊ	0.708	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
S		39108-34-4	ND	0.979	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
-		754-91-6	Ŋ	0.841	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
SAA		2355-31-9	ND	0.784	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
		335-77-3	QN	0.584	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
_		2058-94-8	Q	0.499	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	- 1
AA		2991-50-6	Q	0.651	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
		307-55-1	Q	0.376	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	
A		72629-94-8	Q	0.235	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	-
A		376-06-7	QN ;	0.359	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	_ ,
		68259-12-1 2706 01 4	QN Q	1.84	2.38	3.80		B8E0080	10-May-18	0.263 L	25-May-18 06:10	
2		2/00-91-4 757124-72-4		1 30	2.30 2.38	3.80		BOEUUOU R8F0080	10-May-18	0.263 L	25-May-18 06:10	
ed Standa	rds	Type	% Recovery		Limits	200	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilutior
PFBA		IS	92.8		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFPeA		IS	90.1		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFBS		IS	122		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFHxA		IS	92.1		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFHpA		IS	89.4		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10) 1
PFHxS		IS	96.2		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFOA		IS	84.1		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10) 1
PFOS		IS	97.8		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:1	1
PFNA		IS	87.3		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10)
PFDA		IS	56.1		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFOSA		IS	49.1		50 - 150		Η	B8E0080	10-May-18	0.263 L	25-May-18 06:10) 1
FOSAA		IS	85.2		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
PFUnA		IS	87.9		50 - 150			B8E0080	10-May-18	0.263 L	25-May-18 06:10) 1

Work Order 1800896

Page 27 of 46



PFAS Isotope Dilution Method

Sample ID: EB01-180426

Client Data				Laboratory Data					
Name: Merit Laborato	ories, Inc.	Matrix:	Water	Lab Sample:	1800896-07	-	Column:	BEH C18	
Project: Lapeer Sampli	Ing	Date Collected:	26-Apr-18 09:30	Date Received:	04-May-18	09:48			
Location: LAPEER									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	88.5	50 - 150		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
13C2-PFDoA	IS	64.0	50 - 150		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
13C2-PFTeDA	IS	76.6	50 - 150		B8E0080	10-May-18	0.263 L	25-May-18 06:10	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower of	ontrol limit - upper control limit	When repo	orted, PFHxS, PI	FOA and PFOS i	nclude both linea	r and branched isomers	
	LOQ - Limit of quantitation	Results reported to the	ie DL.	Only the l	inear isomer is r	eported for all ot	her analytes.		

											Analytical	aboratory
Sample ID: F	CB01-842									y PFS 1Ab	tbpe Dils tibn	ı etMbh
Client Data Name: Proiect	Merit Laboratories, Inc. I anser Samiling		Matrix: Date Coll	Water ected: 26.4 mr.	18.17-30	6 aLb Lab S Date 1	oatbor Data ample: Received:	1800896-0 04-Mav-15	8 8 00-48	Column:	BEH C18	
Location:	LAPEER			1dw-07	00.11 01-	Daily	vecei veu.	0	04.20			
Fnalrte		CFS Ns mLeo	Cbndc.n(g6/	D6	6f D	6f E	E s ali)ie0A	z atdM	Oxtoadteh	Samp SiQe	Fnalr@h	Dils tibn
PFBA		375-22-4	ND	0.352	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	-
PFPeA		2706-90-3	ND	0.618	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
PFBS		375-73-5	ND	0.864	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
PFHxA		307-24-4	ŊŊ	1.05	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFHpA		375-85-9	Q	0.285	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFHXS		300-40-4		10.075	2.41 2.41	5.80		BSEUU8U	10-May-18	U.250 L	22-May-18 06:20	
DEO A		275 67 1		0.90 0 1 2 0	2.41	3.00		B&EUU&U	10-May-18	0.250 L	22-May-18 U6:20	
PFHnS		375-97-8	CN N	0.452	2.41 2.41	3.86		B&F0080	10-May-10	0 259 L	25-May-18 06-20	
PFOS		1763-23-1	Q	0.389	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFNA		375-95-1	ND	0.391	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
PFDA		335-76-2	ND	0.719	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
8:2 FTS		39108-34-4	ND	0.994	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
PFOSA		754-91-6	ND	0.854	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
MeFOSAA		2355-31-9	QN	0.796	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
PFDS		335-77-3	Ŋ	0.594	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFUnA		2058-94-8	ND	0.507	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
EtFOSAA		2991-50-6	Ŋ	0.661	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFDoA		307-55-1	ND	0.382	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
PFTrDA		72629-94-8	ND	0.238	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFTeDA		376-06-7	ND	0.364	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	-
PFNS		68259-12-1		1.87	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
PFPeS	ſ	2/10-91-4	n a	1.32	2.41	3.86		B8E0080	10-May-18	0.259 L	25-May-18 06:20	
4.2 F I S 6 al alah Stanha	A 40	13/124-72-4 Tuno	0/ Dodbinou	1.72	2.41 6 imit A	00.0	F collition A	DOEUUOU Z otdM	D-too dtob	Comm CiO	<u>Enclude</u>	Dile tihn
0 allelen Stanna	011A	Irpe	% Kedbyeor		0111110 50 150		E S all JIE0A	Z atury		Damp Dice	r nairten	
13C3-FFDA		21 21	1.26		50 - 150 50 - 150			DOEUUOU B8E0080	10-May-10	0.250 I	25 May 18 06:20	
13C3-PFBS		SI	129		50 - 150			B8E0080	10-Mav-18	0.259 L	25-Mav-18 06-20	
13C2-PFHxA		IS	97.1		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	
13C4-PFHpA		IS	106		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
1802-PFHxS		IS	98.7		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
13C2-PFOA		IS	84.4		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
13C8-PFOS		IS	93.9		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	-
13C5-PFNA		IS	85.0		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
13C2-PFDA		IS	75.9		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	
13C8-PFOSA		IS	46.7		50 - 150		Н	B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
d3-MeFOSAA		IS	82.4		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	
13C2-PFUnA		IS	70.9		50 - 150			B8E0080	10-May-18	0.259 L	25-May-18 06:20	

Page 29 of 46

Work Order 1800896



Sample ID: ECB01-842

Sample ID: E	C B)1-842							y PFS 1Ab	tbpe Dils tibn u	etMbh
Client Data					6 aLboatbor Data					
Name:	Merit Laboratories, Inc.		Matrix:	Water	Lab Sample:	1800896-08	~	Column:	BEH C18	
Project:	Lapeer Sampling		Date Collected:	26-Apr-18 17:30	Date Received:	04-May-18	09:48			
Location:	LAPEER									
6 aLeleh Stanhaol	PA	Trpe	% Redbyeor	6 imitA	E s ali)ieoA	z atdM	Oxtoadteh	Samp SiQ	Fnalr@h I	ils tibn
d5-EtFOSAA		IS	92.2	50 - 150		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
13C2-PFDoA		IS	70.3	50 - 150		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
13C2-PFTeDA		IS	84.2	50 - 150		B8E0080	10-May-18	0.259 L	25-May-18 06:20	1
DL - Detection Limit	TOD-I	Limit of Detection	LCL-UCL- Lower o	ontrol limit - upper control limit	When rep	orted, PFHxS, PI	FOA and PFOS i	nclude both line	ar and branched isomers	
	1-D01	Limit of quantitation	Results reported to the	he DL.	Only the 1	linear isomer is r	eported for all ot	her analytes.		

											Analytical	Laboratory
Sample ID:]	EB01-180427									PFAS Iso	tope Dilution	Method
Client Data						Labor	ratory Data					
Name: Project: Location:	Merit Laboratories, Inc. Lapeer Sampling L7 PEER		Matrix: Date Coll.	Water ected: 2A7 pi	18 06:30	Lab S Date]	ample: Received:	1800896-0 04-May-18	9 : 09:48	Column:	BEH C18	
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	TOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFB7		5A3-22-4	QN	0.5Af	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFPe7		2A06-90-5	ND	0.63A	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFBS		5A3-A5-3	ND	0.919	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFHx7		50A24-4	ŊŊ	1.12	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	-
PFHp7		5A3-83-9	Q	0.504	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
PFHxS		533-46-4	QN :	0.486	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
6:2 FTS		2A619-9A-2	Q	1.05	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	_
PF07		553-6A-1	QN ;	0.554	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
PFHpS		5A3-92-8	Q :	0.481	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	- ,
PFOS		1A65-25-1	Q	0.414	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
PFN7		5A3-93-1	Q	0.416	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
PFD7		553-A6-2	QN	0.A63	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
8:2 FTS		59108-54-4	ND	1.06	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
PFOS7		A34-91-6	Ŋ	0.909	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
MeFOS77		2533-51-9	Ŋ	0.84A	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFDS		553-AA-5	ND	0.652	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFUn7		2038-94-8	ND	0.359	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
EtFOS77		2991-30-6	ND	0.A04	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFD ₀ 7		50A33-1	ND	0.40A	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	-
PFTrD7		A2629-94-8	ND	0.234	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFTeD7		5A6-06-A	ND	0.588	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	-
PFNS		68239-12-1	ND	1.99	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
PFPeS		2A06-91-4	ND	1.41	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1
4:2 FTS		A3A124-A2-4	ŊŊ	1.41	2.3A	4.11		B8E0080	10-May-18	0.245 L	23-May-18 06:51	
Labeled Stand	ards	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
15C5-PFB7		IS	96.3		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	1
15C5-PFPe7		IS	98.0		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	1
15C5-PFBS		IS	124		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	1
15C2-PFHx7		IS	94.6		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
15C4-PFHp7		IS	103		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
1802-PFHxS		IS	104		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
15C2-PFO7		IS	64.6		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
15C8-PFOS		IS	92.4		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
15C3-PFN7		IS	A3.3		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:51	
15C2-PFD7		IS	61.8		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
15C8-PFOS7		IS	53.2		30 - 130		Н	B8E0080	10-May-18	0.245 L	23-May-18 06:51	-
d5-MeFOS77		IS	A2.1		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	
15C2-PFUn7		IS	63.6		30 - 130			B8E0080	10-May-18	0.245 L	23-May-18 06:5	

1

Work Order 1800896

Page 31 of 46



BEH C18

PFAS Isotope Dilution Method Column: 1800896-09 04-May-18 09:48 Laboratory Data Lab Sample: Date Received: Matrix: Water Date Collected: 2A7 pr-18 06:30 Merit Laboratories, Inc. Lapeer Sampling L7 PEER Sample ID: EB01-180427 **Client Data** Name: Project: Location:

LUCAUUII. L/ FEEN										
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
d3-EtFOS7 7	IS	A2.6	30 - 130		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1	
15C2-PFDo7	IS	85.3	30 - 130		B8E0080	10-May-18	0.245 L	23-May-18 06:51	1	
15C2-PFTeD7	IS	A0.1	30 - 130		B8E0080	10-May-18	0.245 L	23-May-18 06:51	-	
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower control	limit - upper control limit	When repo	orted, PFHxS, P	FO7 and PFOS i	nclude both line	ear and branched isome	s.	
	LOQ - Limit of quantitation	Results reported to the DL		Only the li	near isomer is r	eported for all ot	her analytes.			

											Visto	aboratory
Sample ID: () 201-180430									PFAS Iso	tope Dilution N	Aethod
Client Data Name: Project:	Merit Laboratories, Inc. Lapeer Sampling		Matrix: Date Colle	Water ected: 20-Api	r-18 17:20	Labor Lab S Date 3	ratory Data ample: 3 eceiRed:	1800896-11 0v-Ma4-18	0 8 09:v8	Column:	BEH C18	
Location: Analyte	LAPEE3	CAS Number	Conc. (ng/L)	DL	LOD	0	Oualifiers	Batch	Extracted	Samp Size	Analvzed	Dilution
P P 4						000	,		10 16 1 10		TT 16 10 01 1	-
PyBA PyDeA		2/2-FF-V 5706-90-2		0.408	F.28 F 28	2.80 2.80		B8E0080 B8E0080	10-Ma4-18 10-Ma4-18	0.F62 L 0.F62 I	F5-Ma4-18 06:V1 F5-Ma4-18 06:v1	
PVRS		275-77-5		0.850	F 28	2 80		R8F0080	10-14147-10 10-Ma4-18	0.F62 I	F5-Ma4-18 06.v1	
PvHxA		207-Fv-v	QN	1.02	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyHpA		275-85-9	Q	0.F81	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyHxS		255-v6-v	ND	0.v50	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
6:FyTS		F7619-97-F	ND	0.9v9	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
PyOA		225-67-1	ŊŊ	0.209	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyHpS		275-9F-8	ND	0.vv5	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
PyOS		1762-F2-1	ŊŊ	0.282	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyNA		275-95-1	ND	0.28v	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
PyDA		225-76-F	ŊŊ	0.707	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
8:FyTS		29108-2v-v	ND	0.978	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
PyOSA		75v-91-6	ND	0.8v0	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
MeyOSAA		F255-21-9	ND	0.782	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
PyDS		225-77-2	ND	0.58v	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
PyUnA		F058-9v-8	ND	0.v98	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
EtyOSAA		F991-50-6	ŊŊ	0.650	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyDoA		207-55-1	ND	0.276	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
PyTrDA		7F6F9-9v-8	Ŋ	0.F2v	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyTeDA		276-06-7	ND	0.258	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyNS		68F59-1F-1	Q	1.8v	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
PyPeS		F706-91-v	Q	1.20	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	<u> </u>
v:F yTS		7571Fv-7F-v	QN	1.20	F.28	2.80		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	_
Labeled Standa	nds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
12C2-PyBA		IS	97.0		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
12C2-PyPeA		IS	92.F		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
12C2-PyBS		IS	1Fv		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
12CF-PyHxA		IS	92.v		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
12Cv-PyHpA		IS	7.66		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
180F-PyHxS		IS	97.5		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
12CF-PyOA		IS	87.6		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
12C8-PyOS		IS	97.8		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	-
12C5-PyNA		IS	7v.6		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
12CF-PyDA		IS	9F.F		50 - 150		-	B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
12C8-PyOSA		IS	25.1		50 - 150		Н	B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	- ,
d2-MeyOSAA		IS	8F.7		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
12CF-Py UnA		IS	61.2		50 - 150			B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	_

Work Order 1800896

Page 33 of 46



Sample ID: QC1-180430

Sample ID: QC1	-180430						PFAS Iso	tope Dilution M	ethod
Client Data				Laboratory Data					
Name: N	ferit Laboratories, Inc.	Matrix:	Water	Lab Sample:	1800896-10	(Column:	BEH C18	
Project: L	apeer Sampling	Date Collected:	20-Apr-18 17:20	Date 3 eceiRed:	0v-Ma4-18	09:v8			
Location: L	APEE3								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed I	Dilution
d5-EtyOSAA	IS	102	50 - 150		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
12CF-PyDoA	IS	99.5	50 - 150		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	
12CF-Py TeDA	IS	76.2	50 - 150		B8E0080	10-Ma4-18	0.F62 L	F5-Ma4-18 06:v1	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower c	ontrol limit - upper control limit	When rep	oorted, PyHxS, P	yOA and PyOS i	nclude both line	ar and branched isomers	
	LOQ - Limit of quantitation	3 esults reported to t	he DL.	Onl4 the 1	linear isomer is r	eported for all of	her anal4tes.		

LOQ - Limit of quantitation

										-	Visto	X aboratory
Sample ID: Q1 - 8-	04314									FQAS Isr	trpe Dilutirn I	Methrd
Client Data						baor	yatryP Data					
Name:MeProject:LatLocation:LA	rit Laboratories, In 2eer Sampling PEE7	nc.	Matrix: Date Colle	Water cted: 20-Apr-	-18 18:00	Lab S Date '	ample: 7 ecei3ed:	1800896-1 0R-Mav-18	1 8 09:R8	Column:	BEH C18	
AnalPte		CAS Numoey	Crnc. (ng/b)	Db	bBD	bBf	f ualizieys	1 atch	Extyacted	Samp SiQ	AnalPOd	Dilutirn
P4BA		2F5-yy-R	ND	0.2R6	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
P4PeA		yF06-90-2	ND	0.60F	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
P4BS		2F5-F2-5	QN	0.8R9	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	-
P4HXA		20F-yR-R	QN A	1.02 0 80	y.2F 2F	2.F9 2.F0		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
P4HPA P4HvS		255-R6-R		0.ys0 0 RR9	у.2F v 7F	2.F9 7 F0		B&EUU&U R&F00&0	10-Mav-18	0.VORL	v5-Mav-18 06:5v	
6.v 4TS		vF619-9F-v	QN	0.9R8	y.2F	2.F9		B8E0080	10-Mav-18	0.v6RL	v5-Mav-18 06:5v	
P40A		225-6F-1	ND	0.209	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
P4HpS		2F5-9y-8	ND	0.RRR	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
P4OS		1F62-y2-1	ΟN	0.282	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	-
P4NA		2F5-95-1	ND	0.28R	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
P4DA		225-F6-y	ND	0.F06	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
8:y 4TS		29108-2R-R	ŊŊ	0.9F6	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
P40SA		F5R-91-6	QN ;	0.829	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	,
Me40SAA		y255-21-9	QN A	0.F8y	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
P4DS D4Hm A		2-77-C22		0.000 0	y.2F 7E	2.F9		B&EUU&U	10-May-18	0.yokl	YC:00 81-VAI-CV	
F4UnA F4OSAA		y038-9K-8 v991-50-6	ON ON	0.689	y.2F v 2F	2.F9 7 F0		B&EUU&U R&F00&0	10-Mav-18 10-Mav-18	0.V6RL	v5-Mav-18 06:5v	
P4DoA		20F-55-1	Q	0.2F5	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
P4TrDA		Fy6y9-9R-8	ND	0.y2R	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
P4TeDA		2F6-06-F	ND	0.258	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
P4NS		68y59-1y-1	ND	1.82	y.2F	2.F9		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	-1
P4PeS		yF06-91-R E5E1.0 Ev. D	QN QN	1.20	у.2F v.2E	2.F9 7 F0		B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
baoeled Standayds		TPpe	% RecrveyP	07:1	bimits	61.2	f ualizieys	1 atch	Extyacted	Samp SiQ	AnalP@d	Dilutirn
12C2-P4BA		IS	92.F		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	-
12C2-P4PeA		IS	8F.2		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
12C2-P4BS		IS	110		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
12Cy-P4HxA		IS	92.F		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
12CR-P4HpA		S	90.6		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	
180y-P4HXS		SI	102		001 - 00			B8E0080	10-May-18	0.yokl	yc:00 81-vall-cy	
12Cy-P4UA		6 N	FF.Y 07 v		001 - 00 50 - 150			B&EUU&U	10-Mav-18	0.yokl	VC:00 81-VBM-CV VC:00 81-VBM-CV	
12C5-P4NA		SI SI	80.6		50 - 150			B8E0080	10-Mav-18	0.v6RL	y5-Mav-18 06:5v	
12Cy-P4DA		IS	F5.9		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	-
12C8-P40SA		IS	R9.R		50 - 150		Н	B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
d2-Me4OSAA		IS	F5.5		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	1
12Cy-P4UnA		IS	66.y		50 - 150			B8E0080	10-Mav-18	0.y6RL	y5-Mav-18 06:5y	

Work Order 1800896

Page 35 of 46



Sample ID: QI - 8-043L4

FQAS Isrtrpe Dilutirn Methrd Dilutirn When reported, P4HxS, P4OA and P4OS include both linear and branched isomers. y5-Mav-18 06:5y y5-Mav-18 06:5y y5-Mav-18 06:5y **BEH C18** AnalPOd Column: Samp SiQ B8E0080 10-Mav-18 0.y6RL B8E0080 10-Mav-18 0.y6RL 0.y6RL 10-Mav-18 Extyacted 0R-Mav-18 09:R8 1800896-11 B8E0080 1 atch f ualizieys baoryatryPData Date 7 ecei3ed: Lab Sample: LCL-UCL- Lower control limit - upper control limit 7 esults reported to the DL. 50 - 150 50 - 150 50 - 150 bimits 20-Apr-18 18:00 Water Matrix: Date Collected: % RecrveyP F1.0 68.0 65.6 LOD - Limit of Detection LOQ - Limit of quantitation IS IS TPpe Merit Laboratories, Inc. Lapeer Sampling LAPEE7 b aoeled Standayds DL - Detection Limit 12Cy-P4TeDA 12Cy-P4DoA d5-Et4OSAA **Client Data** Location: Project: Name:

Only the linear isomer is reported for all other analytes.

										Visto Analytical I	X aboratory
Sample ID: QI - 8-043L	-								FAs S Iur	trpe DilMirn h	ı etdrc
Client Data					baor	yatryP Data					
Name:Merit LabProject:Lapeer Sa	oratorie, I . ncu mpling	Matrix: Date Colle	2 ater scted: A0-7 pr-	18 18:03	Lab S Date]	ample: Received:	1800896-1 04-May-18	s 3 09:48	ColBmn:	EHWC18	
Location: L7 PHHR											
s nalPte	Cs S NMnoey	Crn.(gn/)bf	Db	bED	bEz	z MiliQeyu	1 at. d	Qxtya. tec	Samp SiBe	s nalPBec	DilMirn
PFE7	A53-ss-4	ND	0n M 6	s uA8	A480		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
PFPe7	s 506-90-A	ND	0r608	s uA8	A480		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
PFES	A53-5A-3	ND	0t830	s uA8	A480		E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	1
PFWx7	A05-s4-4	QN	104	s uA8	A180		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	
PFWp7	A53-83-9	QN	0us 81	s uA8	A180		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	<u> </u>
PFWxS	A33-46-4	QN	0t430	s uA8	A.80		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	
6:S F1S	S5619-95-S	CN A	0.030	suas	ALB()		E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	
PFU/	AAD-00-1 A53-06-8		00409 01443	80408	ALBU ALBU		E & HOU&U	10-May-18	OusoAL	s3-May-18 05:08	
PFOS	1564s A1	QN (N	0148.4	suds suds	A.R.O		E 8H0080	10-May-18	Oue 6 A I	s 3-May-18 05-0s	
PFN7	A53-93-1	QN	0uA83	suA8	A80		E8H0080	10-Mav-18	0us 6AL	s3-Mav-18 05:0s	
PFD7	AA3-56-s	ND	0¢08	su48	A480		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	
8:s FTS	A9108-A4-4	ND	0.058	s uA8	A180		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	-1
PFOS7	534-91-6	ND	0.641	s uA8	A180		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
MeFOS7 7	s A33-A1-9	ND	0u684	s uA8	A180		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
PFDS	AA3-55-A	ŊŊ	0u384	s uA8	A480		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	
PFUn7	s 038-94-8	ND	0t#99	s uA8	A180		E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	
HtFOS77	s 991-30-6	QN	0.631	suA8	A.80		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	 ,
PFDo7	A05-33-1	QN #	0uA56	s uA8	A180		E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	
PFTrD7	58 68 9-94-8	ON 🔅	0us A3	sua8	A180		E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	
PF IeU/ DENIS	A00-066 688-30-18-1	(UN)	0uA39 1.8.4	SUAS 511A8	ALBU A-R0		E8H0080	10-May-18 10-May-18	0us 6AL	s3-May-18 05:08	
PFPeS	s506-91-4	ON N	1 uA0	suA8	A80		E8H0080	10-May-18	0us 6AL	s3-Mav-18 05:0s	
4:s FTS	5351s4-5s-4	ND	1 uA0	s uA8	A180		E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
b aoelec Stancaycu	TPpe	% Re. rveyP		bimitu		z MiliGeyu	1 at. d	Qxtya. tec	Samp SiBe	s nalPBec	DilMirn
1ACAPFE7	s	9M9		30 - 130			E8H0080	10-May-18	0 us 6AL	s3-May-18 05:0s	1
1ACA-PFPe7	s.	95u0		30 - 130			E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	-
1ACAPFES	S.	108		30 - 130			E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	1
IACS-PFWK7	si si	9640		30 - 130			E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	
1.80- DEWES	vi c	101		30 - 130 20 120			E8H0080	10-May-18	0us 6AL	s3-May-18 05:08	
1 ACs - PFO7	ö a	001 861e		30 - 130			E 8H0080	10-May-10	Oue 6 A T	s 3-May-18 05-08	
1AC8-PFOS	i si	104		30 - 130			E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	
1 AC3-PFN7	s	864		30 - 130			E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
1ACs-PFD7	S.	84u8		30 - 130			E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
1AC8-PFOS7	S.	36uA		30 - 130			E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	1
dAMeFOS7 7	Ś	51¢		30 - 130			E8H0080	10-May-18	0us 6AL	s 3-May-18 05:0s	
1ACs-PFUn7	s.	580		30 - 130			E8H0080	10-May-18	0us 6AL	s3-May-18 05:0s	_

Work Order 1800896

Page 37 of 46



Sample ID: Q1 - 8-04314

FAs S lurtrpe DilMirn h etdrc DilMirn E8H0080 10-May-18 0us 6AL s3-May-18 05:0s 2 hen reportedI PFWXSI PFO7 and PFOS inclBde both linear and branched i, omer, u s 3-May-18 05:0s s3-May-18 05:0s EHWC18 s nalPBec ColBmn: Samp SiBe Only the linear i, omer i, reported for all other analyte, u E8H0080 10-May-18 0us 6AL 0 us 6 AL10-May-18 Oxtya. tec 04-May-18 09:48 1800896-1s E8H0080 1 at. d z Mili@eyu baoryatryPData Date Received: Lab Sample: LCL-UCL- Lower control limit - Bpper control limit Re, Bt, reported to the DLu 30 - 130 30 - 130 30 - 130 bimitu A0-7 pr-18 18:03 2 ater Matrix: Date Collected: % Re. rveyP 83uA 5100 6406 LOD - Limit of Detection LOQ - Limit of qBantitation S. si si TPpe Merit Laboratorie, I. ncu Lapeer Sampling L7 PHHR baoelec Stancaycu DL - Detection Limit 1 ACs-PFTeD7 1ACs-PFDo7 d3-HtFOS77 **Client Data** Location: Project: Name:

											Visto	X Laboratory
Sample ID: FB1	-180502									PFAS Iso	tope Dilution	Method
Client Data						Labo	ratory Data					
Name: Project:	Merit Laboratorie, I . Lapeer Sampling	ncu	Matrix: Date Colle	2 ater scted: 0AMa7-	18 16:A0	Lab S Date	ample: 3 eceiRed:	1800896-1 0v-Ma7-18	s 3 09:v8	ColBmn:	EHWC18	
Location:	L4 PHH3											
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PyE4		s5F-AAv	ND	0us F6	Auv	st@1		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	1
PyPe4		A506-90-s	ND	0u6AF	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	-
PyES		s5F-5s-F	ND	0u85v	AUVV	st@1		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	-
Py Wx4		s05-Av-v	Q	106	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
Py Wp4		s5F-8F-9	(IN)	0uA89	AUV	su91		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	,
Py WxS		sFF-v6-v	Q :	0uv6s	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
6:Ay1S		A5619-95-A	Q A	0455	AUV	Sub I		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
PyO4 Dumbe		SSF-02-I		0 us 18 0E0	AUV	1013		E8HU1F9	18-Ma/-18	OUAFO L	AV-Ma/-18 11:V9	
		5.0F-9/F0 1566 Ac 1		Ourro Ourov	AUVV	1405		EQUIT9	10-Ma7 18	OUNTO L	Av-Ma7 18 11.v5	
PVN4		s 5E-9E-1	CN (N	016.96	AINY	sup1		F 8H01F9	18-Ma7-18	OnAF6 L	Av-Ma7-1811.v9	
PvD4		ssF-56-A	QN	0.6A8	AW	su91		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
8:AvTS		s9108-sv-v	QN	101	AUV	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
PyOS4		5Fv-91-6	QN	0u86F	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
MeyOS4 4		As FF-s 1-9	ND	00806	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	-
PyDS		ssF-55-s	ND	0.601	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
PyUn4		A0F8-9v-8	ND	$0 \mathrm{vF1s}$	Auv	st\$1		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
HtyOS4 4		A991-F0-6	Ŋ	0r669	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
PyDo4		s05-FF-1	Q	0us 85 2	AUV	su91		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
PyTrD4		5A6A9-9v-8	QN Å	0uAv1	AUV	Sub1		E8H01F9	18-Ma7-18	0 MF6 L	Av-Ma7-18 11:v5	
Py IeD4 DvNS		S 20-00-2 68 AF9-1 A-1		016 69 1.180	AUVV	SUP1		E8H01F9 F8H01F9	18-Ma/-18 18-Ma7-18	OUAFO L	AV-Ma7-1811:V9	
PyPeS		A506-91-V	Ð	lusv	Auv	su01		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
v:AyTS		5F51Av-5Av	ND	1 us v	Auv	su0-1		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	1
Labeled Standards		Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
1sCs-PyE4		s.	9vb		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	-
1sCs-PyPe4		S.	101		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
1sCs-PyES		s.	10A		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	-
1sCAPy Wk4		S. C	109		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
18CV-Py Wp4		ە ن	501 Fri0		FU - 1FU E0 1E0			E8HU1F9	18-Ma/-18	OUAF6 L	AV-Ma/-18 11:V9	
1sCAPvO4		ġ Ø	8016		FO = 1FO			E 8H01F9	10-Ma7-10	OnAF6 L	Av-Ma7-18 11.v9	
1sC8-PyOS		š vi	0 166		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
1sCF-PyN4		S.	8v16		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
1sCAPyD4		s.	9vu6		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	1
1sC8-PyOS4		S.	F6uA		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	-
ds-MeyOS4 4		s.	88uv		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	
1sCAPyUn4		S	89u		F0 - 1F0			E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	_

Work Order 1800896

Page 39 of 46



Sample ID: FB1-180502

PFAS Isotope Dilution Method

Client DataName:Merit LaboraProject:Lapeer SampLocation:L4 PHH3	torie, I . ncu ling	Matrix: Date Collected:	2 ater 0AMa7-18 16:A0	Laboratory Data Lab Sample: Date 3 eceiRed:	1800896-1s 0v-Ma7-18	8v:60	ColBnn:	EHWC18	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
dF-Hty OS4 4	S.	9648	F0 - 1F0		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	1
1sCAPyDo4	s.	5Fu8	F0 - 1F0		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	1
1sCAPyTeD4	S.	8v16	F0 - 1F0		E8H01F9	18-Ma7-18	0uAF6 L	Av-Ma7-18 11:v9	1
DL - Detection Limit	LOD - Limit of Detection LOQ - Limit of qBantitation	LCL-UCL- Lower c 3 e, Bt, reported to t	ontrol limit - Bpper control limit he DLu	2 hen rep Onl7 the I	ortedI Py WkSI Py inear i, omer i, re	/04 and PyOS ii sported for all ot	nclBde both linea ner anal7te, u	r and branched i, ome	n

DATA QUALIFIERS & ABBREVIATIONS

В	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
Н	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
Μ	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

Visto	CHAIN OF		>	For Laborat Work Order #:	ry Use Only 180089 6	Temp: 0.2	S S S
Analytical Laboratory			-	Storage ID:	WP-2	Storage Secured: Yes	ON D S
				1	AT Standard:	× 21 days	
Project ID: LAPEER SAMPLING	PO#: 60570309	San	npler: John Yanchula (name)	(ch	eck one): Rush (surc	narge may apply) /s 7 7 days Specify:	
Invoice to: Name Company		Address		City	State	Ph# Fax	X#
Stephanie Kammer MDEQ		525 W. Allegan	i Stree	Lansing	MI	517-897-1597 517	7-241-3571
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and sign	ature)		Date Tirr	le
Saw Ynucious Inthe	5/3/18	1830	なると				
Relinquished by (printed name and signature)	Date	Time	Received by (printed name and sign	ature)		Date Tim	1e k
trock			tim ELPIC (g		05/01/18/	4.0
SHIP TO: Vista Analytical Laboratory 1104 Windfield Way EI Dorado Hills, CA 95762	Method of Shipment:	Add Analysis(es) Reque	ssted State		Le gu		
Ph: (916) 673-1520; Fax: (916) 673-0106		Container(s)			Nor as a series		
ATTN: Jennifer Miller	Tracking No.:		-1 18/ 18/		9.75		
			SIT SEBAC	PEO PER	\$1.35		
Sample ID Date Time	Location/Sample Description	The west and the second	122 122 122 122 122 122 122 122 122 122	PER SCARE	1754	Comments	
SKITMWII3180501 N 5/1/18 1105	LANOUL	Z Gub	8				
SKITMW 2111 BOSUN S/1/18 1230	Linguese	2 Cut	x				
5K1 TWW 308180130 N 1988 1535	Linear	2 and	8				
SKIT WWW HIGE BUISON \$ 30/18 1335	LAPUSOR	2 au	2				
5K17MW 50% 1804 30 N 4/34/18 1710	LAPRAL	2 6	92				
5K17mm 6061805 011 5/1/18 0835	LADUSZ	3 64	×				
6							
Special Instructions/Comments: Send Results and J	Acknowledgements to the li	st provided	1	Name: Ste	phanie Kammer		
by e-mail to Vista.			- DOCUMENTATION	Company: MD	EQ		
			AND RESULTS TO:	Address: 525	W. Allegan Stree		
				City: Lar	Ising	State: MI Zip: 489	606
				Email: dor	n.bogdan@aecom.com	Fax: 51/-241-35/1	
Container Types: P= HDPE, PJ= HDPE Jar	Bottle Preservation Type:	T = Thiosulfate.	Matrix Tvpes: AQ = Aqueous: DW	= Drinking Water.	EF = Effluent. PP = Puln/P	aner. SD = Sediment	
O = Other:	TZ = Trizma:		SL = Sludge, SO = Soil, WW = Was	stewater, B = Blood	Serum, O = Other:		

Work Order 1800896

Page 43 of 46

Visto Analytical Laboratory		CHAIN OF	SND :	ξτοργ		For Wor Stor	k Order #: 1800 8	Be	Temp:	. Yes d'No []
Project ID: LAPEER SAMPLING		PO#: 60570309		Sampler	John Yanchula (name)	- Free contractions	TAT (check one): F	Standard: Rush (surcha	x 21 days rge may apply)	Acify.
Invoice to: Name	Company		Add	ress		City	0	State	Ph#	Fax#
Stephanie Kammer	MDEQ		525	W. Allegan Stre	ē.	Lan	sing A	II	517-897-1597	517-241-3571
Relinquished by (printed name and signatur	(e)	Date	Time	e Rec	eived by (printed name	and signature)			Date	Time
JUNN YANCHUA	Jul	Ken 5/3	108 1	630	Fed CX					
Relinquished by (printed name and signatur \mathcal{R}_{0} \mathcal{C}	(ə	Date	Time	e K	eived by (printed name a	and signature)	(0)		os 4/18	Time 104
SHIP TO: Vista Analytical Laboratory 1104 Windfield Way EI Dorado Hills, CA 95762 Ph: (916) 673-1520; Fax: (916)) 673-0106	Method of Shipment:	Add Analys	sis(es) Requested	Stort State	uomininon edenini	Line 53			
ATTN: Jennifer Miller		Tracking No.:	Com	(aliner(s)	Signers and Signers	15/5	1 15 5050 5050 5050			
Sample ID	Date Time L	ocation/Sample Description	Chanter Pro-	Matrix 1151 List	12 12 12 12 12 12 12 12 12 12 12 12 12 1	040	SCALES STA		Comments	
EB-01-1804 36 41.	20/20 0930	LAPUSS	~	3	2					
14 BC - 1804 26 41	USE1 3/76/	LAPUSIC	4	3	¥					
14 - 180427 4/	27/18 OLSO	JUDICON)	2	3	×					
QCI-IBUYOG 41	30/18/1730	LAPOOL	5	3	R					
FBI - 043018 180430 41	000 3/re/	LARSIN	2	3	8					
CR1-0130 130430 41	5020 31/0	LARUSIC	4	3	×					
Special Instructions/Comments: Ser by e-mail to Vista.	nd Results and A	cknowledgements to the li	st provided		SEND	Z	ame: Stephanie Kam	mer		
					DOCUMENTATI AND RESULTS	TO: Add	ress: 525 W. Allegan	Stree		
							City: Lansing		state: MI Zij	p: 48909
						È Π	none: 517-897-1597 mail: dorin.boodan@a	lecom.com	Fax: 517-241-35	71
Container Types: P= HDPE, PJ= HDPE Jar		Bottle Preservation Type:	T = Thiosulf	ate,	Matrix Types: AQ = Aque	eous, DW = Drinkir	na Water. EF = Effluent. F	PP = Pulo/Pap	er. SD = Sediment	
O = Other:		TZ = Trizma:			SL = Sludge, SO = Soil, W	/W = Wastewater,	B = Blood/Serum, O = OI	ther:		

Work Order 1800896

Page 44 of 46



Sample Log-in Checklist

Vista Work Orde	r#:80	008	396				TAT	ST	D		
Samples Arrival:	Date/Time 05 04 18	69	148	Initials: KE		Lo	ocation:	WR-	.2		
Logged In:	Date/Time	5/08/	0758 18 8431	Initials:	Ŵ	Lo	ocation: nelf/Rack	WR A-	-2 Y		
Delivered By:	FedEx U	PS	On Tra	ac GSO	DHI	_	Hand Deliver	l ed	Oth	ner	
Preservation:	lce)	Blu	ue Ice		[Dry Ice		No	ne]
Temp °C: 0.2 Temp °C: 0.3	(uncorrected)	^{I)} Ti P	ime: 10. robe use	:13 ed: Yes□	Not	Tł	nermomet	ter ID:	IR-4		
								YES	NO	NA	
Adequate Sampl	e Volume Rece	ived?	?								
Holding Time Acceptable?											
Shipping Contair	ner(s) Intact?					2		~			
Shipping Custod	y Seals Intact?				- <u> </u>			V ,			
Shipping Docum	entation Prese	nt?	0			540-3885		1			
Airbill OF	5 Trk # 1	180	8 14	015	838			V			
Sample Containe	er Intact?			Robert and address				<			
Sample Custody	Seals Intact?									1	
Chain of Custody	/ / Sample Doc	umen	tation Pr	resent?				V			us peloglist
COC Anomaly/S	ample Accepta	nce F	orm com	npleted?				V		1	165 03/00/18
If Chlorinated or	Drinking Water	Sam	ples, Acc	ceptable P	reserva	tior	1?			/	
Preservation Doc	cumented:	Na	2S2O3	Trizm	a	Nor	ne	Yes	No	NA	
The second s	Sector and the sector of the s		11 N-Cl			1000					4.

Comments: AQ EBI-180430 EB01-180427

Shipping Container

. FB1-18050

ID.: LR - SLC NOT ON COC'S Work Order 1800896

QC-180426 QCI-180430 SKITMIN 308180430N

Rev No.: 0

Vista

Client

Rev Date: 05/18/2017

Retain

EB01-180426 SKITMW113180501N SKITMW410180430N FB1-180430 SKITMW211180501N SKITMW506186430N FB1-18050 SKITMW308180430N SKITMW606180501N

Dispose

Page: 1 of 1

Return/

Page 45 of 46

Chain of Custody Anomaly/Sample Acceptance Form



Client: Merit Laboratories, Inc. Contact: Maya Murshak mayamurshak@meritlabs.com Email: Phone: (517) 827-2744

Workorder Number: 1800896 Date Received: 04-May-18 09:48 Documented by/date: Kim Elric 05/08/18

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.

Thank you,

Martha Maier mmaier@vista-analytical.com 916-673-1520

The following information or item is needed to proceed with analysis:



The following anomalies were noted. Authorization is needed to proceed with analysis.

Temperature	outside < 6°C Range	Samples	Affected:		
Tem	perature°C	Ice Present?	Yes	No	Melted
Sample ID D Sample Hold Custody Seal Comments: <u>COC lists</u> : EB01-180426 QC-180426 EB01-180427 QC1-180430 FB1-180430 EB1-180430	Discrepancy ling Time Missed ls Broken <u>Samples:</u> EB01-180426 QC-180426 EB01-180427 QC1-180430 FB1-180430 EB1-180430		Insufficie Sample C Incorrect	ent Samp Containe Contain	ple Size er(s) Broken ner Type
Client Authorization Proceed with Analysi Client Comments/Inst	FB1-180502	Signature and D	Date 21 - 18		2 TO THIS COC,



June 14, 2018 Vista Work Order No. 1800899

Ms. Maya Murshak Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Dear Ms. Murshak,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on May 04, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name 'Lapeer Sampling'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Martha Maier

Martha Maier Laboratory Director



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

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 1800899 Case Narrative

Sample Condition on Receipt:

Nine soil samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. Two sample ID discrepancies were resolved as directed: the samples listed as "SKIDU10100180427N" were reported as "SKIDU10200180427N" and "SKIDU10300180427N", as listed on the bottle labels.

Analytical Notes:

VAL-PFAS

The soils were dried and homogenzied following Vista's Incremental Sampling Procedure. The subsamples were extracted and analyzed for a selected list of PFAS using VAL Method PFAS.

Quality Control

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

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

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
B8F0058-BLK1	B8F0058-BLK1	VAL - PFAS	13C8-PFOSA	Н	30.9
B8F0058-BS1	B8F0058-BS1	VAL - PFAS	13C8-PFOSA	Н	31.9

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Case Narrative	1
Table of Contents	3
Sample Inventory	4
Analytical Results	6
Qualifiers	29
Certifications	30
Sample Receipt	31

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1800899-01	SKIDU30300180427N	ISM27-Apr-18 11:00	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-02	SKIDU30200180427N	ISM27-Apr-18 12:00	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-03	SKIDU30100180427N	ISM27-Apr-18 13:00	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-04	SKIDU20100180427N	ISM27-Apr-18 13:45	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-05	SKIDU20200180427N	ISM27-Apr-18 14:15	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-06	SKIDU20300180427N	ISM27-Apr-18 15:30	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-07	SKIDU10100180427N	ISM27-Apr-18 17:05	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L
1800899-08	SKIDU10200180427N	ISM27-Apr-18 17:35	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz

Vista Project: 1800899

Client Project: Lapeer Sampling

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1800899-08	SKIDU10200180427N	ISM27-Apr-18 17:35	04-May-18 09:48	HDPE Bottle, 1L
1800899-09	SKIDU10300180427N	ISM27-Apr-18 18:10	04-May-18 09:48	HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Jar, 6 oz
				HDPE Bottle, 1L

ANALYTICAL RESULTS

											Visto Analytical L	aboratory
Sample ID: N	Aethod Blank										VAL	- PFAS
Client Data						Labor	atory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer Sampling		Matrix:	Solid		Lab Si	ample:	B8F0058-E	ILK1	Column:	BEH C18	
Analyte	C	AS Number	Conc. (ng/g)	DL	TOD	TOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	ND	0.140	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFPeA		2706-90-3	ND	0.202	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFBS		375-73-5	ND	0.363	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFHxA		307-24-4	ND	0.203	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFHpA		375-85-9	ND	0.205	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFHxS		355-46-4	ŊŊ	0.310	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	
6:2 FTS		27619-97-2	QN	0.229	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
PFOA		335-67-1	ND	0.236	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
PFHpS		375-92-8	ND	0.170	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFOS		1763-23-1	ND	0.845	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFNA		375-95-1	ND	0.178	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
PFDA		335-76-2	ND	0.256	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
8:2 FTS	(*)	39108-34-4	ND	0.285	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
PFOSA		754-91-6	Ŋ	0.227	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
MeFOSAA		2355-31-9	QN	0.302	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
PFDS		335-77-3	ND	0.201	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
PFUnA		2058-94-8	ND	0.354	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
EtFOSAA		2991-50-6	ŊŊ	0.321	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
PFDoA		307-55-1	Ŋ	0.276	1.00	2.00		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
PFTrDA		72629-94-8	ŊŊ	0.122	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
PFTeDA		376-06-7	ND	0.198	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	-
PFNS	¢	68259-12-1	ŊŊ	1.43	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
PFPeS		2706-91-4	QN	0.845	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
4:2 FTS	<u> </u>	757124-72-4	QN	0.845	1.00	2.00		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
Labeled Standa	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	90.1		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
13C3-PFPeA		IS	93.8		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	-1
13C3-PFBS		IS	101		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
13C2-PFHxA		IS	94.9		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
13C4-PFHpA		IS	81.8		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
1802-PFHxS		IS	92.1		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	-1
13C2-PFOA		IS	85.9		50 - 150			B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
13C8-PFOS		IS	88.4		50 - 150			B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	
13C5-PFNA		IS	84.1		50 - 150			B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
13C2-PFDA		IS	77.2		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
13C8-PFOSA		IS	30.9		50 - 150		Н	B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
d3-MeFOSAA		IS	59.4		50 - 150			B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
13C2-PFUnA		IS	83.5		50 - 150			B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1

Work Order 1800899

Page 7 of 34

Vista Analytical Laboratory	
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Sample ID: Method Blank

Sample ID: Method Blank								VAL	- PFAS
Client Data Name: Merit Laborato Project: Lapeer Sampli	ries, Inc. ng	Matrix:	Solid	Laboratory Data Lab Sample:	B8F0058-B	3LK1	Column:	BEH C18	
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	64.4	50 - 150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	1
13C2-PFDoA	IS	86.6	50 - 150		B8F0058	10-Jun-18	$1.00~{ m g}$	14-Jun-18 02:38	1
13C2-PFTeDA	IS	106	50 - 150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:38	
DL - Detection Limit	LOD - Limit of Detection LOQ - Limit of quantitation	LCL-UCL- Low The results are r The sample size Results reported	recontrol limit - upper control limit eported in dry weight. is reported in wet weight. to the DL.	When rep Only the J	oorted, PFHxS, P linear isomer is r	FOA and PFOS i eported for all of	nclude both line: her analytes.	ar and branched isomer	ró.

	Vista	Analytical Laboratory
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Sample ID: C	DPR										NAL	- PFAS
Client Data						Lab	oratory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer Sampling		Matrix:	Solid		Lat	Sample:	B8F0058-]	BS1	Column:	BEH C18	
Analyte	CAS	Number	Amt Found (ng/g)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-	-22-4	69.6	10.0	96.9	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFPeA	2706	5-90-3	9.26	10.0	92.6	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	-
PFBS	375.	-73-5	9.45	10.0	94.5	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFHxA	307.	-24-4	9.35	10.0	93.5	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFHpA	375.	-85-9	9.55	10.0	95.5	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFHxS	355	-46-4	11.5	10.0	115	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
6:2 FTS	2761	9-97-2	10.7	10.0	107	60 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFOA	335	-67-1	9.85	10.0	98.5	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFHpS	375.	-92-8	10.1	10.0	101	60 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFOS	1763	3-23-1	9.13	10.0	91.3	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFNA	375.	-95-1	9.28	10.0	92.8	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFDA	335.	-76-2	9.32	10.0	93.2	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
8:2 FTS	3910	8-34-4	9.84	10.0	98.4	60 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFOSA	754.	-91-6	10.4	10.0	104	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
MeFOSAA	2355	5-31-9	69.6	10.0	96.9	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFDS	335.	-77-3	9.82	10.0	98.2	60 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFUnA	2058	3-94-8	11.4	10.0	114	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
EtFOSAA	2991	1-50-6	10.1	10.0	101	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFDoA	307.	-55-1	9.26	10.0	92.6	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFTrDA	7262	9-94-8	10.9	10.0	109	60 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFTeDA	376	-00-7	7.56	10.0	75.6	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFNS	6825	9-12-1	9.61	10.0	96.1	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
PFPeS	2706	5-91-4	8.86	10.0	88.6	70 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
4:2 FTS	75712	24-72-4	11.5	10.0	115	60 - 130		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	-
Labeled Standa	ırds		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA			IS		88.9	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C3-PFPeA			IS		93.5	50- 150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C3-PFBS			IS		105	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C2-PFHxA			IS		92.0	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C4-PFHpA			IS		84.2	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
1802-PFHxS			IS		91.7	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C2-PFOA			IS		99.5	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C8-PFOS			IS		84.5	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C5-PFNA			IS		87.1	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C2-PFDA			IS		74.9	50- 150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
Work	c Order 1800899										Page 9 of 3	4

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Sample ID: OPR

Sample ID: (DPR									VAL	- PFAS
Client Data					Labor	atory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer Sampling	Matrix:	Solid		Lab S	ample:	B8F0058-]	BS1	Column:	BEH C18	
Labeled Standa	ırds	Type	%	Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C8-PFOSA		IS	с) (31.9	50- 150	Н	B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
d3-MeFOSAA		IS	43	56.1	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C2-PFUnA		IS	(~	75.2	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
d5-EtFOSAA		IS	Ŷ	50.4	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	1
13C2-PFDoA		IS		17.5	50-150		B8F0058	10-Jun-18	1.00 g	14-Jun-18 02:28	

14-Jun-18 02:28

1.00 g

B8F0058 10-Jun-18

50-150

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13C2-PFTeDA
										-		aboratory
Sample ID: Sl	KIDU30300180427	7									VAL -	PFAS
Client Data						Labor	atory Data					
Name: Project:	Merit Laboratories, In Lapeer Sampling	Ö	Matrix: Date Colle	Soil scted: 27-A _F	or-18 11:00	Lab S Date 1	ample: Received:	1800899-0 04-May-18	1 : 09:48	Column:	BEH C18	
Location:	08n11e33-SK01					% Sol	ids:	98.4				
Analyte		CAS Number	Conc. (ng/g)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	ND	0.131	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
PFPeA		2706-90-3	ND	0.188	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
PFBS		375-73-5	ND	0.338	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
PFHxA		307-24-4	ND	0.189	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFHpA		375-85-9	ND	0.191	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFHxS		355-46-4	QN	0.289	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
6:2 FTS		27619-97-2	Q	0.214	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFOA		335-67-1	QN 🔅	0.220	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFHpS		375-92-8	UN .	0.159	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFOS		1./63-23-1	1.48	0.788	0.932	1.86	ſ	B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	_, ,
PFNA		375-95-1	ON GN	0.166	0.932	1.86		B8F0058	10-Jun-18	1.09 g 1.00	14-Jun-18 02:49	
PFDA		335-76-2	UN	0.239	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	_, ,
8:2 FTS		39108-34-4	(IN)	0.266	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFOSA		754-91-6	QN	0.212	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
MeFOSAA		2355-31-9	ND	0.282	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
PFDS		335-77-3	0.674	0.187	0.932	1.86	ſ	B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	\
PFUnA		2058-94-8	QN ;;	0.330	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
EtFUSAA		2991-50-6	ON ;	0.299	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	_, ,
PFDoA		307-55-1	ON	0.257	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFTrDA		72629-94-8	ON #	0.114	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
PFIEDA		3/6-06-/ 20250 12 1	(IN A	0.185 271	0.932	1.86		B&FUU58	10-Jun-18	1.09 g 1.00 ~	14-Jun-18 02:49	
PFPeS		2706-91-4	QN QN	0.788	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
4:2 FTS		757124-72-4	ND	0.788	0.932	1.86		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
Labeled Standar	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	95.2		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
13C3-PFPeA		IS	100		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
13C3-PFBS		IS	96.6 102		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
13C2-FFHXA		CI S	201 202		001 - 00			Boruusa	10-Jun-18	1.09 g	14-Jun-18 02:49	- ,
13C4-PFHpA 19O2 DEHwe		SI 51	88.7		50 - 150 50 150			B8F0058	10-Jun-18	1.09 g 1.00 g	14-Jun-18 02:49	
13C2 DEOA		CI SI	104		001 - 00 50 - 150			DeF0058	10 Jun 18	1.00 g	14 Lun 18 02.49	
13C8-PEOS		ci N	01 Z		50 - 150			B8F0058	10-Jun-10 10-Jun-18	1.07 ξ 1 09 α	14-Juii-18 02:49	
13C5-PFNA		IS	80.5		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
13C2-PFDA		IS	88.2		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
13C8-PFOSA		IS	79.4		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
d3-MeFOSAA		IS	68.1		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	
13C2-PFUnA		IS	96.1		50 - 150			B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1

Page 11 of 34

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Vista		VAL - PFAS

Sample ID: SKIDU30300180427N

Client Data				Laboratory Data					
Name: Merit	Laboratories, Inc.	Matrix:	Soil	Lab Sample:	1800899-01		Column:	BEH C18	
Project: Lape	er Sampling	Date Collected:	27-Apr-18 11:00	Date Received:	04-May-18	09:48			
Location: 08n1	le33-SK01			% Solids:	98.4				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d5-EtFOSAA	IS	72.7	50 - 150		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
13C2-PFDoA	IS	96.3	50 - 150		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
13C2-PFTeDA	IS	132	50 - 150		B8F0058	10-Jun-18	1.09 g	14-Jun-18 02:49	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower o	ontrol limit - upper control limit	When rep	orted, PFHxS, PI	FOA and PFOS	include both lines	ar and branched isome	s.
	LOQ - Limit of quantitation	The results are repor	ted in dry weight.	Only the 1	inear isomer is re	eported for all of	her analytes.		
		The sample size is re	sported in wet weight.						
		Results reported to the	he DL.						

Client Data Matrix Soil Laboration Name: Matrix Soil Jaboration Pojet: Laper Sampling Date Collected: γ_{ab} Apr-181 %00 Date Second: Decision: 08011 jabbestrion Conc. (org.g) Dit Local for Jab Sampling Decision: 08011 jabbestrion Conc. (org.g) Dit Lon Qua Decision: 08011 jabbestrion Conc. (org.g) Dit LOD Qua Decision: 08011 jabbestrion Synthyse Conc. (org.g) Dit LOD Qua Decision: 08011 jabbestrion Conc. (org.g) Dit LOD Qua Decision: 08012 jabbestrion Dit LOD Qua Japs Decision: 08012 jabbestrien Dit Qua Qua Qua Japs Decision: 08012 jabbestrien Dit Qua Qua Qua Qua Japs Decision: 08012 jabbestrien NDD Qua Qua Qua <th>N1DU30100840217N</th> <th></th> <th>T</th>	N1DU30100840217N											T
Name: Metil: laboratoric.1.ned Matrix: Soil Laboratoric Laboratoric <thlaboratoric< th=""> <thlaboratoric< th=""> <t< th=""><th></th><th></th><th></th><th></th><th></th><th>Laboi</th><th>ratory Data</th><th></th><th></th><th></th><th></th><th></th></t<></thlaboratoric<></thlaboratoric<>						Laboi	ratory Data					
Drotect: Lapeer Sampling Date Collected: 97 -Apr: R1 9500 Due Receiv. Location: 0sh116.8K-5F CASNumber Cost. 85.04d.: \$5.04d.: Andre CASNumber CASNumber CASNumber DL DQ Qua PGPA K71-9549 ND 0408 04719 144y \$5.043.: PG2 K71-9549 ND 0408 04719 0479 0479 144y PG2 K71-9549 ND 04919 0479 0479 144y PG2 K71-9549 ND 04918 04719 144y PG2 K41-9549 ND 0497 04719 144y PG2	Merit Laboratorie, I.nc4		Matrix:	Soil		Lab S	ample:	1800899-0	%	ColBmn:	EH2 C18	
Analyte Case Number Conc. (ogg) DL LOD LOQ Quart REE 873^{-9} 873^{-9} 873^{-9} $14y$ REE 873^{-9} 873^{-9} $14y$ $14y$ REA 873^{-9} 871^{-9} 673^{-9} $14y$ REA 873^{-9} 873^{-9} 873^{-9} $14y$ REA 873^{-9} 873^{-9} 873^{-9} $14y$ REA 873^{-9} 873^{-9} $14y$ $14y$ REA 884^{-171} 864^{-171} 8673^{-9} $14y$ REA 884^{-171} 8673^{-9} $14y$ $14y$ RED 884^{-171} 8673^{-9} $14y$ $14y$ RED 884^{-171} 8673^{-9} $14y$ $14y$ RED 884^{-171} 873^{-9} $14y$ $14y$ RED 884^{-171} 873^{-9} $14y$ $14y$ RED 884^{-171} $14y$ $14y$	Lapeer Sampling 08n11eKK-SF01		Date Colle	scted: %7-Apr	-18 1%00	Date] s Sol	Received: id,:	0y-Ma3-18 984ı	8 09:y8			
Ref Knu % ND 0408 0479 14y Ref 870.7 % ND 0498 0479 14y Ref 870.7 % ND 0488 0479 14y Ref 870.7 % 870.7 % $9410 0479 14y Ref 870.7% 9410 0479 14y 14y Ref 860.77.4% 8010 0479 14y 14y Ref 860.77.4% 8010 9410 0479 14y Ref 9410 9410 9410 0479 14y Ref 9410 $	C	AS Number	Conc. (ng/g)	DL	TOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
P6PeA 800 -90.K ND 04u 670 9 14y PES ND 94m 670 9 14y PES ND 94m 070 9 14y PC3 801997:8 ND 040 8 071 9 14y PC3 801997:8 ND 040 8 071 9 14y PC3 ND 040 8 071 9 14y 070 9 14y PC3 ND 040 8 041 9 071 9 14y PC3 ND 040 8 071 9 $14y$ 071 9 $14y$ PC3 ND 070 9 071 9 $14y$ 071 9 $14y$ PC3 ND 071 9 071 9 071 9 $14y$ 071 9 $14y$ PC3 ND 9 <		K7u-%%v	QN	04108	04719	14ıy		E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		701-90-K	ND	04 uu	04/19	14uy		E8600u8	10-5Bn-18	14C/0g	1y-5Bn-18 0%u9	1
PC2 XA R07 3_{7} , yr ND 0 dul 0 719 14y PC2 TA Ku-3U-y ND 0 du3 0 479 14y PC2 TA Ku-3U-y ND 0 du3 0 479 14y PC3 TS Ku-3U-y ND 0 du3 0 479 14y PC3 TS Ku-3U-y ND 0 du3 0 479 14y PC3 TS Ku-9U-i ND 0 du3 0 479 14y PC3 S Ku-9U-i ND 0 du3 0 479 14y PC3 S Ku-9U-i ND 0 du3 0 479 14y PC3 S Ku-9U-i ND 0 du3 0 479 14y PC3 S Ku-9U-i ND 0 du3 0 479 14y PC3 S Ku-9U-i ND 0 du3 0 479 14y PC3 S Ku-1-i ND 0 du3 0 479 14y PC3 S Ku-1-i ND 0 du3 0 479 14y PC3 S <td></td> <td>K7u-7K-u</td> <td>ŊŊ</td> <td>04/79</td> <td>047J9</td> <td>14uy</td> <td></td> <td>E8600u8</td> <td>10-5Bn-18</td> <td>14C/og</td> <td>1y-5Bn-18 0%u9</td> <td>-1</td>		K7u-7K-u	ŊŊ	04/79	047J9	14uy		E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	-1
PRG pA Ku-81-9 ND 04u8 0419 14y PGZ nS $Ku-y1-y$ ND 0488 04719 $14y$ PGZ nS $8(u-y1-y)$ ND 0487 04719 $14y$ PGO AS $8(u-y1-y)$ ND 0477 04719 $14y$ PGO S $171K^{12}K^{12}K^{11}$ ND 0477 04719 $14y$ PGO S $171K^{12}K^{2}K^{11}$ ND 0477 04719 $14y$ PGO S $7019^{11}y^{11}$ ND 0477 04719 $14y$ PGO S $7019^{11}y^{11}$ ND 0477 0419 0419 PGO S $7019^{11}y^{11}$ ND 0470 0419 $14y$ PGO S $7019^{11}y^{11}$ ND 0479 $14y$ $14y$ PGO S $7019^{11}y^{11}$ ND 0479 0419 $14y$ PGO S $7019^{11}y^{11}$ ND 0479 0419 $14y$ PGO S <t< td=""><td></td><td>K07-%y-y</td><td>ND</td><td>04l uJ</td><td>04/19</td><td>14uy</td><td></td><td>E8600u8</td><td>10-5Bn-18</td><td>14C/vg</td><td>1y-5Bn-18 0%u9</td><td>1</td></t<>		K07-%y-y	ND	04l uJ	04/19	14uy		E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	1
PR2.x5 $(kur)_{1-j}$ ND $04k3$ 0473 04		K7u-8u-9	ND	04l u8	047J9	14uy		E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	1
$136/13$ $92119-97^{-6}_{-6}$ 147^{-6}_{-6} 0471_{-1} 0471_{-1} 0471_{-1} 141_{-7} $P60A$ $Rd_{-1}7_{-1}$ ND 0487_{-6} 0471_{-9} 141_{-7} $P60A$ $Rd_{-1}7_{-1}$ ND 0487_{-6} 0471_{-9} 141_{-7} $P60A$ $Rd_{-1}7_{-1}$ ND 0487_{-6} 0471_{-9} 141_{-9} $P60A$ $Rd_{-1}7_{-1}$ ND 0487_{-6} 0471_{-9} 141_{-9} $P60A$ $Rd_{-1}7_{-1}$ ND 0471_{-1} 0471_{-9} 141_{-9} $P60A$ $Rd_{-1}7_{-1}$ ND 0471_{-9} 041_{-9} 141_{-9} $P60A$ $Rd_{-1}7_{-1}$ ND 0470_{-9} 041_{-9} 141_{-9} $P60A$ $Rd_{-1}7_{-1}$ ND 0470_{-9} 041_{-9} 141_{-9} $P60A$ $Rd_{-1}7_{-1}$ ND 0470_{-9} 041_{-9} 141_{-9} $P61A$ 874_{-9} ND 0440_{-9} 041_{-9} 141_{-9		Kuu-yJ-y	ŊŊ	04/K8	04/19	14uy		E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	
PEOOA Kda-17-1 ND 048% 0479 14y P62 pS $Kda-17-1$ ND 041K 0419 14y P60A $Kda-71-4$ ND 041K 0419 14y P60A $Kda-71-4$ ND 0417 0419 14y P60A $Kda-71-4$ ND 0417 0419 14y P60A $Kda-71-4$ ND 0417 0419 14y P60SA $Kda-77-4$ ND 0419 0419 14y P60SA $Kda-77-4$ ND 0414 0419 14y P60SA $Kda-77-4$ ND 0447 0419 14y P60SA $Kda-77-4$ ND 0440 0419 14y P60SA $Kda-77-4$ ND 0447 0419 14y P60SA $Kda-77-4$ ND 0448 0419 14y P60SA $Kda-77-4$ ND 0448 0419 14y P60SA	0	<i>ୟ</i> J19-97-%	14y%	0417J	04/19	14uy	5	E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	-1
PG2 pS ND 04 ND		KKu-J 7-1	QN	0418%	04/19	14uy		E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
P6OS 1731 K% 961 041 041 041 041 $14y$ $60A$ 85.73 -91 ND 041 041 $14y$ $60A$ 83.73 -9. ND 047 041 $14y$ $60SA$ 83.73 -9. ND 047 041 $14y$ $8.66TS$ 89108 -8/y-7 ND 047 041 $14y$ $8.60SA$ $7uy$ -91-1 ND 047 041 $14y$ $8.60SA$ 83.47 -K $14X$ 0493 047 $14y$ $8.60SA$ 83.47 -K $14X$ 0494 047 $14y$ $8.60SA$ 83.47 -K $14X$ 0494 047 $14y$ $8.60SA$ 83.47 -K $14X$ 0494 047 $14y$ $805A$ 83.97 -9 ND 0479 041 $14y$ $805A$ $909-9$ -8 ND 0494 047 $14y$ $805A$ $999-9$ -8 ND 0494 0719 $14y$ $805A$ 83.97 -9 ND 0490 0719 $14y$ $805A$ 83.97 -9 ND 0400 0719 $14y$ $805A$ 83.97 -9 ND 0400 0719 $14y$ $805A$ 8		K7u-9%8	ŊŊ	04I KI	04719	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	1
P6NA $Ku-9u-1$ ND 0417 047 047 0419 $14y$ P6DA $Ku-9u-1$ ND 0471 0497 0419 $14y$ 8%67 $89018-Ky-y$ ND 0470 04719 $14y$ P6DS $80018-Ky-y$ ND 0470 04719 $14y$ P6DS $86018-Sy-s$ ND 0470 04719 $14y$ P6DS $84u-77-K$ $14f$ 0410 04719 $14y$ P6DA $991-uc-1$ ND 0479 04719 $14y$ P6DA $87u-7-K$ $14f$ 0479 04719 $14y$ P6DA $870-9-8$ ND 0400 04719 $14y$ P6DA $870-19-1-7$ ND 0470 04719 $14y$ P6DA $870-9-8$ ND 0400 04719 $14y$ P6TDA $870-9-9-8$ ND 0400 04719 $14y$ P6TDA		17JK-%6-1	%41 1	0¶ n0	047J9	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	-
Defind Ka_r-71 0.497 0.477 0.479 0.479 0.479 $1.4y$ P60SA 7.90 7.91 ND 0.479 0.479 0.479 $1.4y$ P60SA $7.91-1$ ND 0.470 0.479 0.479 $1.4y$ P60SA $8.4u-K1-5$ 14 $0.47u$ 0.479 0.479 $1.4y$ P60SA $8.4u-K1-5$ ND 0.479 0.479 $1.4y$ P60A $9.4u-K1-5$ ND 0.479 0.479 $1.4y$ P60A $900-10-1$ ND 0.479 0.479 $1.4y$ P60A $907-u0-1$ ND 0.410^6 0.719 $1.4y$ P60A $807-10-1$ ND 0.410^6 0.719 $1.4y$ P61DA $793^9.9y-8$ ND 0.410^6 0.719 $1.4y$ P61EA $700-10^2$ ND 0.40^6 0.719 $1.4y$ P61EA $700-70^2$ ND		K7u-9u-1	ND	041 K7	04/19	14uy		E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
8:%6TS (8:)%6TS (9:)%7		KKu-7J-%	04/8J	04197	047J9	14uy	5	E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
P60SA $7uy-91-J$ ND $047u$ $047y$ $14y$ Me60SAA $wau-kt-9$ ND $047w$ $047y$ $14y$ Me60SAA $wau-kt-9$ ND $047w$ $047y$ $14y$ P61S $wau-kt-9$ ND $047y$ $14y$ $14y$ P61A $9991-u0-J$ ND $047y$ $047y$ $14y$ P61DA $9991-u0-J$ ND $047y$ $047y$ $14y$ P61DA $737-y^{0}y$ ND $047y$ $047y$ $14y$ P61DA $737-y^{0}y$ ND $044y$ 04719 $14y$ P61DA $737-19^{0}y$ ND $044y$ 04719 $14y$ P61EA $737-19^{0}y$ ND $044y$ 0719 $14y$ P61EA $737-19^{0}y$ ND $044y$ 0719 $14y$ P61EA $737-19^{0}y$ ND $044y$ $00-1u0$ $14y$ 041 P61EA $737-19^{0}y$	¥	@108-Ky-y	ND	04/19	047J9	14uy		E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	1
$ \begin{array}{llllllllllllllllllllllllllllllllllll$		7uy-91-J	ND	04l 7u	047J9	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
		%Kuu-Kl-9	ND	04⁄‰	04719	14uy		E8600u8	10-5Bn-18	14K%g	1y-5Bn-18 0%u9	
P6UnA 90u8-9y-8 ND 047% 0419 14y H6OSAA 9991-u0-1 ND 0497 0419 14y P6DoA RD7-uu-1 ND 0487% 0419 14y P6DoA RD7-uu-1 ND 0491% 0419 14y P6TeDA R1-01-7 ND 0410% 0419 14y P6TeDA R1-01-7 ND 0410% 0419 14y P6NS 971-91-3 ND 0410% 0419 14y P6NS 9701-91-3 ND 0410% 0419 14y P6NS 9701-91-3 ND 0410% 0419 14y P6NS 9701-91-3 ND 0410% 0419 14y P6NS 7075 944 ND 0410 0419 14y P6NS 7075 944 00-100 14y 041 00-100 RCKP6FEA S 70719 794 00-100 100 14y </td <td></td> <td>KKu-77-K</td> <td>141 K</td> <td>04l uu</td> <td>04719</td> <td>14uy</td> <td></td> <td>E8600u8</td> <td>10-5Bn-18</td> <td>14C%g</td> <td>1y-5Bn-18 0%u9</td> <td>1</td>		KKu-77-K	141 K	04l uu	04719	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	1
HicOSAA $9991-u0-1$ NID $048/7$ 0419 $14y$ P6DoA $K07-uu-1$ NID 04076 0719 $14y$ P6TDA $707-uu-1$ NID 04076 0719 $14y$ P6TDA $730-9-y-8$ NID 040968 0719 $14y$ P6TDA $731-01-7$ NID 0410^{66} 0719 $14y$ P6TDA $731-01-7$ NID 0410^{66} 0719 $14y$ P6NS $970-19_{61}$ NID 0410^{60} 0719 $14y$ P6NS $707-19_{5}-79_{62}$ NID 0410^{60} 0719 $14y$ P6NS $707-19_{5}-79_{62}$ NID 0410^{60} 0719^{61} $14y$ P6NS $707-19_{5}-79_{62}$ NID 0410^{60} 0719^{61} $14y$ P6NS $707-19_{5}-79_{62}$ NID 0410^{60} 0719^{61} $14y$ P6NS $707-10^{61}$ NID 0410^{60} 0719^{61} $14y$ P6NS $707-10^{61}$ 120^{61} 000^{61} 100^{61} $14y$ P6NS $707-10^{61}$ 100^{61} 00^{61} 100^{61} 100^{61} P6NS 80^{60} 81^{61} 00^{61} 100^{61} 100^{61} 100^{61} P6NS 80^{60} 81^{61} 00^{61} 100^{61} 100^{61} 100^{61} P6NS 80^{60} 81^{61} 00^{61} 100^{61} 100^{61} 100^{61} P6NS 80^{60} 81^{61} 00^{61} 00^{61} 100^{61} 100^{6		Mu8-9y-8	ND	04/7%	04/J9	14uy		E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	1
P6DoA K07-uu-1 ND 044% 0419 $14y$ P6TrDA $734\%-9y-8$ ND 040% 0419 $14y$ P6TrDA $734\%-9y-8$ ND 040% 0479 $14y$ P6TeDA $873-01-7$ ND 040% 0479 $14y$ P6NS $9701-91-y$ ND 0400 0479 $14y$ P6NS $9701-91-y$ ND 0400 0479 $14y$ P6NS $9701-91-y$ ND 0400 0479 $14y$ P6NS 9700 ND 0400 0479 $14y$ P6NS $71079-78y$ ND 0400 0479 $14y$ P6NS $71079-78y$ ND 0400 0479 $14y$ P6NS $71079-78y$ ND 0400 100^2 $14y$ P6NS 710^2 904 100^2 10^2 10^2 IKCWAFES S 904 10^2		%991-u0-J	ND	04⁄y7	047J9	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	-
$\begin{array}{l c c c c c c c c c c c c c c c c c c c$		K07-uu-1	QN	04⁄4 %	047J9	14uy		E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
P6TeDA $K7J$ -01-7 ND 04u% 047J9 14y P6NS J8%49-1%1 ND 140 0419 14y P6PeS $970J$ -91-y ND 04u0 0419 14y P6PeS $970J$ -91-y ND 04u0 0419 14y P6PeS $7uTJ$ %-7%y ND 04u0 0419 14y V%6TS $7uTJ$ %-7%y ND 04u0 0419 14y V%6TS $7uTJ$ %-7%y ND 04u0 0419 14y V%6TS $7uTJ$ %-7%y ND 04u0 0419 14y IKCkP6EA S $9u4$ u0 - 1u0 140 100 IKCkP6ES S $9u4$ u0 - 1u0 100 100 IKCkP6ES S $9u4$ u0 - 1u0 100 100 100 IKCkP6ES S $9u4$ u0 - 1u0 100 100 100 100 100 100 100 100 100 100		%7%9-9y-8	QN	0409K8	047J9	14uy		E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
P6NSJ8%49-1%1ND1410041914yP6PeS $9701-91-y$ ND04u0071914y $y.%6TS$ $7u719x$ $700-91-y$ ND04u0071914y $y.%6TS$ $7u719x$ $7u719x$ $7u719x$ 14y $00-100$ 071914y $Labeled Standards$ $Tu719x$ $Type$ 960 0719 14y $00-100$ 0719 14y $Labeled Standards$ $Type$ 960 $00-100$ 0719 14y $00-100$ 0719 14y $IKCFebEA$ S 904 $00-100$ 0710 0710 0710 0710 0710 $IKCFebEA$ S 904 $00-100$ 0710 $00-100$ 0710 $00-100$ $IKC*ebES$ S 904 $00-100$ $00-100$ $00-100$ $IKC*ebES$ S 904 $00-100$ $00-100$ $IKC*ebES$ S 814 $00-100$ $00-100$ $IKC*ebES$ S 814 $00-100$ $100-100$ $IKC*ebES$ S $S14$ $00-100$ $00-100$ $IKC*ebES$ S 014 $00-100$ $00-100$ $IKC*ebES$ S		K7J-0J-7	ND	04 u%	04719	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	-1
P6PeS $970J - 91 - y$ ND 04100 $047J9$ $14y$ $y \% 6TS$ $7u71 \psi_y \cdot 7\psi_y$ ND 04100 $047J9$ $14y$ Labeled Standards Type 9.6 Recovery Limits Qua IKCKP6EA S 904 $u0 - 1u0$ $040 - 1u0$ IKCKP6EA S 904 $u0 - 1u0$ $100 - 1u0$ IKCKP6ES S 904 $u0 - 1u0$ $100 - 1u0$ IKCF96ES S 994 $u0 - 1u0$ $100 - 1u0$ IKC9662 xA S 994 $u0 - 1u0$ $100 - 1u0$ IKC9662 xA S 994 $u0 - 1u0$ $100 - 1u0$ IKC9662 xA S 994 $u0 - 1u0$ $100 - 1u0$ IKC9662 xA S 8144 $u0 - 1u0$ $100 - 1u0$ IKC9660 A S S 914 $u0 - 1u0$ $100 - 1u0$ IKC9660 A S S 914 $u0 - 1u0$ $100 - 1u0$ IKC960 SA S	ſ	8%u9-1%1	ŊŊ	140	04719	14uy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
y:%6TS $7u71\%$ $04u0$ 04719 $14y$ Labeled Standards Type $\%$ Recovery Limits Qual IKCKP6EA Type $\%$ Recovery Limits Qual IKCKP6EA S 904 $u0 \cdot 1u0$ $100 \cdot 1u0$ IKCKP6EA S $9u4$ $u0 \cdot 1u0$ $100 \cdot 1u0$ IKCKP6EA S $9u4$ $u0 \cdot 1u0$ $100 \cdot 1u0$ IKCYP62 S $9u4$ $u0 - 1u0$ $100 \cdot 1u0$ IKCYP62 S $9u4$ $u0 - 1u0$ $100 \cdot 1u0$ IKCyP62 S $9u4$ $u0 - 1u0$ $100 \cdot 1u0$ IKCyP62 S $8u4\%$ $u0 - 1u0$ $100 \cdot 1u0$ IKCyP6DA S 814 $u0 - 1u0$ $100 \cdot 1u0$ IKCwP6DA S 814 $u0 - 1u0$ $100 \cdot 1u0$ IKC%P6DA S 814 $u0 - 1u0$ $100 \cdot 1u0$ IKCwP6DA S 814 $u0 - 1u0$ $100 \cdot 1u0$ IKC%P6		∿70J-91-y	ND	04J u0	04/19	14uy		E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
Labeled Standards Type % Recovery Limits Qual IKCKF0EA .S 904 u0 1u0 1u0 IKCKF0EA .S 904 u0 1u0 1u0 IKCKF0EA .S 904 u0 1u0 1u0 IKCKF0EA .S 994 u0 1u0 1u0 IKC%P6EA .S 994 u0 1u0 1u0 IKC%P62xA .S 994 u0 1u0 1u0 IKC%P62xA .S 814 u0 1u0 1u0 IKC%P62xS .S 814 u0 1u0 1u0 IKC%P60A .S 814 u0 1u0 <td>71</td> <td>u71%y-7%y</td> <td>QN</td> <td>04J u0</td> <td>04719</td> <td>14ıy</td> <td></td> <td>E8600u8</td> <td>10-5Bn-18</td> <td>14C%g</td> <td>1y-5Bn-18 0%u9</td> <td>_</td>	71	u71%y-7%y	QN	04J u0	04719	14ıy		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	_
IKCKP6EA .S 904 u0 - 1u0 IKCKP6EA .S 9u4i u0 - 1u0 IKCKP6ES .S 9u4i u0 - 1u0 IKCKP6ES .S 9u4i u0 - 1u0 IKC%P62xA .S 9u4i u0 - 1u0 IKC%P62xA .S 9u4i u0 - 1u0 IKC%P62xA .S 8u4io u0 - 1u0 IKC%P62xA .S 8u4io u0 - 1u0 IKC%P62xS .S 8u4io u0 - 1u0 IKC%P60A .S 8u4io u0 - 1u0 IKC%P60A .S 814 u0 - 1u0 IKC%P60A .S u0 - 1u0 u0 - 1u0 IKC%P60A .S u0 - 1u0 u0 - 1u0	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
IKCK-P6PeA .S 9u41 u0 - 1u0 IKCK-P6ES .S 9%4 u0 - 1u0 IKCK-P6ES .S 9%4 u0 - 1u0 IKC%-P62 xA .S 9%4 u0 - 1u0 IKC%-P62 pA .S 9%4 u0 - 1u0 IKC%-P62 pA .S 8u4% u0 - 1u0 IKC%-P62 pA .S 8u4% u0 - 1u0 IKC%-P62 xS .S 8u4% u0 - 1u0 IKC%-P60A .S 814 u0 - 1u0 IKC%-P60A .S 8740 u0 - 1u0 IKC%-P60A .S u14 u0 - 1u0 IKC%-P60A .S u14 u0 - 1u0 IKC%-P60A .S u14 u0 - 1u0		s	904		u0 - 1u0			E8600u8	10-5Bn-18	14C/og	1y-5Bn-18 0%u9	1
IKCKP6ES .S 9%4. u0 - 1u0 IKC%P62 xA .S 99.48 u0 - 1u0 IKC%P62 xA .S 99.46 u0 - 1u0 IKC%P62 xA .S 99.46 u0 - 1u0 IKC%P62 xS .S 8u4% u0 - 1u0 IRO%P62 xS .S 814 u0 - 1u0 IRO%P62 xS .S 814 u0 - 1u0 IRO%P62 xS .S 814 u0 - 1u0 IKC%P60A .S 814 u0 - 1u0 IKC%P60A .S 814 u0 - 1u0 IKC%P6DA .S 814 u0 - 1u0 IKC%P6DA .S u14 u0 - 1u0 IKC%P6DA .S u14 u0 - 1u0 IKC%P6DA .S u14 u0 - 1u0		s.	9u4i		u0 - 1u0			E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
IKC%P62 xA S 9948 u0 - 1u0 IKC%P62 pA S 8u4% u0 - 1u0 180%P62 xS S 8u4% u0 - 1u0 180%P62 xS S 814 u0 - 1u0 180%P62 xS S 814 u0 - 1u0 180%P62 xS S 814 u0 - 1u0 1KC%P60A S 814 u0 - 1u0 IKC%P6DA S 8740 u0 - 1u0 IKC%P6DA S 8740 u0 - 1u0 IKC%P6DA S 1J4 u0 - 1u0 IKC%P6DA S u14 u0 - 1u0 IKC%P6DA S u14 u0 - 1u0		s.	9%41		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	1
IKCy-P62 pA .S 8u4% u0 - 1u0 180%P62 xS .S 814 u0 - 1u0 180%P62 xS .S 814 u0 - 1u0 180%P62 xS .S 814 u0 - 1u0 1KC%P60A .S 914K u0 - 1u0 1KC%P60A .S 814 u0 - 1u0 1KC%P60A .S 8740 u0 - 1u0 1KC%P6DA .S 8740 u0 - 1u0 1KC%P6DA .S u14 u0 - 1u0		s.	9948		u0 - 1u0			E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
180%P62 xS .S 8141 u0 - 1u0 1KC%P60A .S 914K u0 - 1u0 1KC%P60A .S 914K u0 - 1u0 1KCu-P6NA .S 8749 u0 - 1u0 1KCu-P6NA .S 8740 u0 - 1u0 1KCu-P6NA .S 8740 u0 - 1u0 1KC%P6DA .S uJ4 u0 - 1u0		s.	8u4%		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
IKC%P60A .S 914 u0 - 1u0 IKC%P60S .S 814 u0 - 1u0 IKCu-P6NA .S 874 u0 - 1u0 IKCu-P6NA .S 8740 u0 - 1u0 IKCu-P6NA .S 8740 u0 - 1u0 IKC%P6DA .S uJ4y u0 - 1u0 IKC%P6DA .S uJ4y u0 - 1u0 IKC%P6DA .S uJ4y u0 - 1u0 IKC%P6DA .S uJ4 u0 - 1u0 IKC%P6DA .S uJ4 u0 - 1u0		s.	8141		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
IKC8-P6OS .S 814y u0 - 1u0 IKCu-P6NA .S 8Ka0 u0 - 1u0 IKCu-P6NA .S 8Ka0 u0 - 1u0 IKCwP6DA .S 8740 u0 - 1u0 IKCwP6DA .S uJ4 u0 - 1u0		s.	914K		u0 - 1u0			E8600u8	10-5Bn-18	14K%g	1y-5Bn-18 0%u9	
IKCu-P6NA .S 8K40 u0 - 1u0 IKCv/P6DA .S 8740 u0 - 1u0 IKCs/P6OSA .S uJ4 u0 - 1u0 dK-Me6OSAA .S uJ4 u0 - 1u0 trov.pstite .S uJ4 u0 - 1u0		s.	814y		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
IKC%P6DA .S 8740 u0 - 1u0 IKC8-P6OSA .S uJ4 u0 - 1u0 dK-Me6OSAA .S uJ4 u0 - 1u0 1vc*ozbetta s s 7940 u0 - 1u0		s.	8K49		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	
IKC8-P6OSA .S uJ4y u0 - 1u0 dK-Me6OSAA .S uJ4 u0 - 1u0 1127-02 DETT+A S - 7940 u0 - 1u0		s.	8740		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	1
dK-Me6OSAA .S uJ4 u0 - 1u0 .S 114 u0 - 1u0		s.	uJ 4y		u0 - 1u0			E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	1
11Vr0/D611m A 110 110		s.	uJ⊈I		u0 - 1u0			E8600u8	10-5Bn-18	14C/vg	1y-5Bn-18 0%u9	
		s.	7940		u0 - 1u0			E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	

Page 13 of 34

Visto Analytical Labora

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Sample ID: SKIDU30100840217N

Client Data				Laboratory Data					
Name:	Merit Laboratorie, I. nc4	Matrix:	Soil	Lab Sample:	1800899-0	0	ColBmn:	EH2 C18	
Project:	Lapeer Sampling	Date Collected:	%-Apr-18 1%00	Date Received:	0y-Ma3-18	09:y8			
Location:	08n11eKK-SF01			s Solid,:	984ı				
Labeled Standard	s Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
du-Ht6OSAA	s	<i>中</i> 74	u0 - 1u0		E8600u8	10-5Bn-18	14C%g	1y-5Bn-18 0%u9	1
1KC%P6DoA	S.	984	u0 - 1u0		E8600u8	10-5Bn-18	14K%g	1y-5Bn-18 0%u9	1
1 KC%P6 TeDA	s.	11K	u0 - 1u0		E8600u8	10-5Bn-18	14K%g	1y-5Bn-18 0%u9	1
DL - Detection Limit	LOD - Limit of Detect	tion LCL-UCL- Lower c	ontrol limit - Bpper control limit	When rep	ortedI P62 xSI P6	OA and P6OS	nclBde both lines	rr and branched i, omer	4
	LOQ - Limit of qBanti	tation The re, Blt, are report	rted in dr3 weight4	Onl3 the l	inear i, omer i, re	sported for all ot	her anal3te,4		
		The , ample , ize i, r	eported in wet weight4						
		Re, Btt, reported to t	he DL4						

										Visto	aboratory
0427N										VAL	- PFAS
					Labor	atory Data					
ng, i. nc4 Matrix ng Date C	Date C	olle	sou ected: 7u-A _I	pr-18 1%00	Lab Sa Date R	mpie: eceived:	1800899-0 0y-Ma3-18	% 09:y8	ColBmn:	EH2 C18	
					s Soli	d, :	9u48				
CAS Number Conc. (ng/g)	Conc. (ng/g)		DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
%u6-77-y ND	QN		04118	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
7u0J-90-%	QN		04u1	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
%at6-u%66 ND	ND		04⁄0u	048y6	1419		E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	
%0u-7y-y ND	QN 🛱		04lu7	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
UNI 6-00-010/	ON A		04 U%	04890	141 Y		E&FUU08	01-000-01	14/1 g	1 200-18-18-0%10	
			04/J /	048y0	1419 1410		ESFUU68	81-04C-01	14/1 g 1.771 ~	1. 5De 18 0%10	
UN 1-11-1900			04100	0.49.0 0.18.46	1410 11110		E SEDD68	10-5Bn-18	14/100 1/1/10	1y-5Bn-18 0/010 1y-5Bn-18 0%10	
UN 8-00/	QN QN		04 vv	048v6	149		E8F0068	10-5Bn-18	1471 g	1v-5Bn-18 0%10	
1uJ %67%1 14%	14/01		041J	048y6	1419	5	E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	
%it6-96-1 ND	ND		04160	048y6	1419		E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	-1
ON 2-1-2-20	ND		0471J	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
%9108-%y-y ND	ND		047y1	048y6	1419		E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	1
u6y-91-J ND	QN		04197	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
7%6-%1-9 ND	ND		04766	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
%%-uu-% 04670	04670		04lu0	048y6 2.5	1419	5	E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
UN 8-yy-80/ CIN 1-001-60-1			04/99 04/11	048y6 048y6	1419 1419		E8F0068 F8F0068	10-5Bn-18 10-5Bn-18	14/1 g 14/1 g	1y-5Bn-18 0%10 1v-5Bn-18 0%10	
%0u-66-1 ND	QN		047%	048y6	1419		E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	1
u7J79-9y-8 ND	ND		040%	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
VID - IOJ - IND	Q		04Ju	048y6	1419		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
UN 1-7-1-61-72 UN 21.01 UN 21.01 UN 21.01 UN 21.01 UN 21.01 UN 20.01 UN 20.	an a		14/1	048y6 0.26	1419 1410		E8F0068	10-5Bn-18	14/1 g 1//1 c	1y-5Bn-18 0%10	
uou17y-u7-v	Q Q		0411y	048y6	149 1419		E8F0068	10-5Bn-18	14-1 1471 m	1y-5Bh-18 0%10	
Type % Recover	% Recover	<u>^</u>		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
.S 8946	8946			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
.S 964%	964%			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
.S 904y	904y			60 - 160			E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	1
.S 9y48	9y4			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S 8u47	8u4			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
.S 8y4	8y4			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S	8%%			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S 96&	9648			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S 814	814			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S uu	nn	æ		60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S	6%9			60 - 160			E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	1
J %0	J%D			60 - 160			E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	
.S u64	u64y			60 - 160			E8F0068	10-5Bn-18	14/1 g	1y-5Bn-18 0%10	1

Page 15 of 34

Work Order 1800899

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Sample ID: SKIDU30100180427N

Sample ID: SKIDU3)100180427N							VAL	- PFAS
Client Data				Laboratory Data					
Name: Merit L	aboratorie, I . nc4	Matrix:	Soil	Lab Sample:	1800899-0%	0	ColBmn:	EH2 C18	
Project: Lapeer	Sampling	Date Collected:	7u-Apr-18 1%00	Date Received:	0y-Ma3-18	09:y8			
Location: 08n11e	9%SK01			s Solid,:	9u48				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d6-HtFOSAA	s	J %6	60 - 160		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
1%C7-PFDoA	s.	u84y	60 - 160		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
1%C7-PFTeDA	s.	11J	60 - 160		E8F0068	10-5Bn-18	1471 g	1y-5Bn-18 0%10	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower of	ontrol limit - Bpper control limit	When rep	ortedI PF2 xSI PH	FOA and PFOS	inclBde both linea	r and branched i, ome	r, 4
	LOQ - Limit of qBantitation	The re, Blt, are repor	ted in dr3 weight4	Onl3 the 1	linear i, omer i, re	sported for all or	ther anal3te,4		
		The , ample , ize i, re	sported in wet weight4						
		Re, Bt, reported to th	he DL4						

Client Data Name: J Project: Location: Analyte P6BA P6BS											VAL	- PFAS
Client Data Name: J Project: Location: Analyte P6BA P6BA												
Name: Project: Location: Analyte P6BA P6BA						Labor	atory Data					
Project: Location: Analyte P6BA P6PeA	Merit Laboratorie, I. nc4		Matrix:	Soil		Lab S $_{\delta}$	umple:	1800899-0	%	Column:	BEH C18	
Analyte P6BA P6PeA P6BS	Lapeer Sampling 08n11eRR-SF 01		Date Coll-	ected: 27-Ap	r-18 1R%	Date y s Soli	recei3ed: d.:	0%MaK-18 984%	8 09:%			
P6BA P6PeA P6BS	C	AS Number	Conc. (ng/g)	DL	TOD	L0Q	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
P6PeA P6BS		R7v-22-%	QN	041%	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R-%	-
P6BS		2705-90-R	ND	020R	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
		R7v-7R-v	ND	046v	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6HxA		R07-2%%	ND	020%	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6HpA		R7v-8v-9	ND	0405	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6HxS		Rvv-%-%	ND	04R12	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
5:2 6TS	2	:7519-97-2	1495	042R0	1401	2401	ſ	B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P60A		RRv-57-1	ND	042R7	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6HpS		R7v-92-8	ND	04171	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6OS		175R-2R-1	54v5	048v0	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6NA		R7v-9v-1	ND	04179	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6DA		RRv-75-2	ND	02v8	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
8:2 6TS	R	30108-R%%	ND	04287	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6OSA		7v%91-5	ND	04228	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
Me6OSAA		2Rvv-Rl-9	ND	04R0%	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6DS		RRv-77-R	04872	04202	1401	2401	ſ	B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6UnA		20v8-9%8	ND	04Rv5	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
Et6OSAA	. 1	2991-v0-5	ND	04R2R	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6DoA		R07-vv-1	ND	04278	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6TrDA	7.	72529-9%8	ND	0412R	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6TeDA		R75-05-7	Ŋ	04199	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	1
P6NS	5	582v9-12-1	ŊŊ	14%	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R%	-
P6PeS		2705-91-%	QN ;	048v0	1401	2401		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R: %	
%2 61S		v712%672-%	UN	048v0	1401	2401	8	B8600v8	10-Jun-18	1401 g	1%Jun-18 0K%	-
Labeled Standards		Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
1RCR-P6BA		s	854R		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	1
1RCR-P6PeA		s.	9140		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RCR-P6BS		s.	8745		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	1
1RC2-P6HxA		s	8v40		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	1
1RC%P6HpA		s	784R		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	1
1802-P6HxS		s.	7545		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RC2-P6OA		s.	854		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RC8-P6OS		s.	8%8		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RCv-P6NA		s.	8R47		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RC2-P6DA		s.	7940		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RC8-P6OSA		s	504v		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	-
dR-Me6OSAA		s	554%		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	
1RC2-P6UnA		s.	854		v0 - 1v0			B8600v8	10-Jun-18	1401 g	1%Jun-18 0R: %	

Page 17 of 34

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Vista		VAL - PFAS

Sample ID: SKIDU20100180427N

Client Data					Laboratory Data					
Name:	Merit Laboratorie,	I.nc4	Matrix:	Soil	Lab Sample:	1800899-0%	%	Column:	BEH C18	
Project:	Lapeer Sampling		Date Collected:	27-Apr-18 1R%	Date y ecei3ed:	0%MaK-18	8%:60			
Location:	08n11eRR-SF 01				s Solid,:	984%				
Labeled Standar	rds	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
dv-Et6OSAA		S.	594	v0 - 1v0		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	1
1RC2-P6DoA		S	8R48	v0 - 1v0		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R:%	1
1RC2-P6TeDA		S.	127	v0 - 1v0		B8600v8	10-Jun-18	1401 g	1%Jun-18 0R·34	1
DL - Detection Limi	it	LOD - Limit of Detection	LCL-UCL- Lower of	ontrol limit - upper control limit	When rep	ortedI P6HxSI P6	5OA and P6OS	include both lines	ar and branched i, omer	4
		LOQ - Limit of quantitation	The re, ult, are repor	ted in drKweight4	OnlKthe 1	inear i, omer i, re	eported for all ot	her analKte, 4		
			The , ample , ize i, re	sported in wet weight4						
			y e, ult, reported to th	he DL4						

												aboratory
Sample ID: S	KIDU20200180427	N									VAL	- PFAS
Client Data						Labo	catory Data					
Name:	Merit Laboratorie, I.	nc4	Matrix:	Soil		Lab S	ample:	1800899-0	%	ColBmn:	EH2 C18	
Project: Location:	Lapeer Sampling 08n11eKKSF01		Date Coll	ected: u7-Aj	pr-18 1R 1%	Date s Sol	v eceiyed: id, :	0R-Ma3-18 984ı	8 09:R8			
Analyte		CAS Number	Conc. (ng/g)	DL	TOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
P6EA		K7%uu-R	ND	04 uR	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	
P6PeA		u705-90-K	ΟN	04179	048%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
P6ES		K7%7K-%	ND	04Ku1	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
P62 xA		K07-uR-R	QN	04 80	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	- 1
P62 pA		K7%8%9	QN	0481	048%	1477		E8600%	10-JBn-18	14 %g	1R-JBn-18 0K%	,
P62 xS		K%%R5-R	QN 4	0417R	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	- ,
\$10 n:c		u-/6-610/u	04.00	0410K	0468%0	14//	-	E8600%	10-JBn-18	141 %0g 1 /1 0/ ~	1 K-JBn-18 UK %u 1 D TDs 18 0E %u	
P62 nS		K7%911-8	(IN	04.0	048%	1477	•	E8600%	10-IBn-18	1-11/05 141%σ	1R-IBn-18 0K-%	
P60S		175K-uK-1	748	047R8	048%	1477		E8600%	10-JBn-18	1 1 %5 141 %2	1R-JBn-18 0K%	
P6NA		K7%9%1	ND	041%	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
P6DA		KK%75-u	041R7	04uu7	048%	1477	ſ	E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
8:u 6TS		K9108-KR-R	ND	041%1	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
P6OSA		7% R- 91-5	ND	04101	0488%	1477		E8600%	10-JBn-18	141%g	1R-JBn-18 0K%	-1
Me6OSAA		uK%%KI-9	ND	04157	048%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
P6DS		KK%77-K	145R	04178	048%	1477	ſ	E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	
P6UnA		u0%-9R-8	ŊŊ	04K1K	0488%	1477		E8600%	10-JBn-18	141%g	1R-JBn-18 0K%	1
Ht6OSAA		u991-%0-5	UN .	0418R	0488%	14/7		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%u	,
P6D0A		75.0 0D 9		041KK	0488%	14/7		E8600%	10-JBn-18	141 %g	1 K-J Bn-18 0 K % 1 D-1D-18 0 K %	
PETADA		k75-05-7		04100	0480%	147		E000070	10-1Bn-18	141 % 141 %	1R-TBn-18 0K-%	
PENS		581199-111-1	CIN CIN	1417	0.48%	1477		E8600%	10-IBn-18	1 - 1 /05 1 41 % o	1R-IBn-18 0K-%	
P6PeS		u705-91-R	QN	047R8	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	
R:u 6TS		7%71uR-7u-R	ND	047R8	0488%	1477		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
Labeled Standa	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
1KCK-P6EA		s.	894		% - 1%			E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	1
1KCK-P6PeA		S.	100		<u>%0 - 1%0</u>			E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	1
1KCK-P6ES		s	9848		<u>%0 - 1%0</u>			E8600%	10-JBn-18	14%g	1R-JBn-18 0K%	
1KCu-P62 xA		S.	984ı		%0 - 1%0			E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	
1KCK-P62 pA		vi o	9140		- 1% 001 - 0%			E8600%	10-JBn-18	141%g	1R-JBn-18 0K:%	
180u-P62 xS		vi o	/u/K		- 1% - 1%			E8600%	10-JBn-18	141%g	1K-JBn-18 0K:%	_, ,
IKUU-POUA		v o	9141		0,0 - 1%0 0,0 - 10,0			E8600%	10-JBn-18	141 %0g 1 /1 0/ ~	1 R-J Bn-18 UK %	
1KC%P6NA		j a	814)		0,40 - 10,40 0,40 - 10,40			E8600%	10-IBn-18	141/05 141%σ	1R-IBn-18 0K-%	
1KCu-P6DA		i vi	7% R		<u> 9</u> % - 19%			E8600%	10-JBn-18	14%g	1R-JBn-18 0K:%	
1KC8-P6OSA		S.	5R4		%0 - 1%0			E8600%	10-JBn-18	141 %g	1R-JBn-18 0K%	1
dK-Me6OSAA		S.	7%8%		9 , 0 - 19,0			E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	
1KCu-P6UnA		s.	914		% - 1%			E8600%	10-JBn-18	141%g	1R-JBn-18 0K-%	
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Page 19 of 34

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Sample ID: SKIDU20200180427N

Sample ID: SKIDU2	20200180427N							VAL	- PFAS
Client Data				Laboratory Data					
Name: Merit	Laboratorie, I. nc4	Matrix:	Soil	Lab Sample:	1800899-0%	0	ColBmn:	EH2 C18	
Project: Lapee	er Sampling	Date Collected:	u7-Apr-18 1R·1%	Date v eceiyed:	0R-Ma3-18	09:R8			
Location: 08n11	eKK-SF01			s Solid,:	984ı				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
d%Ht6OSAA	S.	7u48	°∕ 0 - 1%0		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	1
1KCu-P6DoA	s.	8549	9 /0 - 19 /0		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	1
1KCu-P6TeDA	s.	1R0	9 %) - 19 %		E8600%	10-JBn-18	141 %g	1R-JBn-18 0K:%	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower c	ontrol limit - Bpper control limit	When rep	ortedI P62 xSI P6	OA and P6OS i	nclBde both line.	ar and branched i, ome	,4
	LOQ - Limit of qBantitation	The re, Blt, are report	ted in dr3 weight4	Onl3 the 1	inear i, omer i, re	sported for all ot	her anal3te,4		
		The , ample , ize i, r	sported in wet weight4						
		v e, Btt, reported to t	he DL4						

										-	Visto	Laboratory
ample ID: S	KIDU3010084023	NL									VAL	- PFAS
Client Data						Labo	ratory Data					
Name:	Merit Laboratorie, I	.nc4	Matrix:	Soil		Lab S	ample:	1800899-0	%	ColBmn:	EH2 C18	
Project: Location:	Lapeer Sampling 08n11evv-S6 01		Date Coll	ected: 7AR _l	or-18 1u:v0	Date ^c ^c	y ecei3ed: i.d	0K-MaF-18 994:	09:K8			
			Carro landa	2	100			Datal	Firture at a d	0	•	
Analyte		CAS Number	Conc. (ng/g)	DF	FOD	TUQ	Qualifiers	Batch	EXtracted	Samp Size	Analyzed	Dilution
JER		vAu-77-K	ND	041 KI	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-1
J PeR		7A0%90-v	ND	0470v	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
JES		vAu-Av-u	ND	04v%u	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-
J2 xR		v0A7K-K	QN	040K	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
J2 pR		vAu-8u-9	ND	040%	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
J2 xS		vuu-K%K	ŊŊ	04v17	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
67 J TS		7A99-9A7	14Ku	047v0	1401	7401	5	E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
JOR		vvu-%1	ŊŊ	04/vA	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
J 2 pS		vAu-97-8	ND	04I AI	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
JOS		1A%-7v-1	%nu	048K9	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
JNR		vAu-9u-1	ND	041 A9	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
JDR		vvu-A%7	2%470	04/uA	1401	7401	5	E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
:7 JTS		v9108-vK-K	ND	0478%	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
J OSR		AuK-91-%	ND	04778	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
feJ OSRR		7vuu-v1-9	ND	04v0K	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
IDS		vvu-AAv	147u	04707	1401	7401	5	E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-1
J UnR		70u8-9K-8	ND	04vu%	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-
tJ OSRR		7991-u0-%	ŊŊ	04v7v	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
J DoR		v0Auu-1	ND	047AA	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
J TrDR		A7%79-9K-8	ŊŊ	04l 7v	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
J TeDR		vA%0%A	ND	04199	1401	7401		E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
INS		%7u9-17-1	Q ;	14KK	1401	7401		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
T LTS		/A0%91-K		048K9 0./8K0	1401 1401	7.01		E810018	10-5Bn-18	1400 g 1/00 g	1K-5Bn-18 0K:07 1K-5Bn-18 0K:07	
abeled Standa	rds	Type	% Recovery	Aldry	Limits	10-1	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
vCv-PJ ER		s.	9140		u0 - 1u0			E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-
vCv-PJ PeR		s.	9948		u0 - 1u0			E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
vCv-PJ ES		s.	9K4		u0 - 1u0			E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-
vC7-PJ 2 xR		s.	974K		u0 - 1u0			E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	-
vCK-PJ 2 pR		s.	8 M 0		u0 - 1u0			E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
807-PJ 2 xS		s.	894v		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
vC7-PJ OR		s.	9v4%		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
vC8-PJ OS		s.	8K4%		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
vCu-PJ NR		s.	8%		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
vC7-PJ DR		s.	A94A		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
vC8-PJ OSR		s.	₩4		u0 - 1u0			E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
v-MeJOSRR		s.	u%8		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
vC7-PJ UnR		s.	8u40		u0 - 1u0			E8J 00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	
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Page 21 of 34

Work Order 1800899

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Sample ID: SKIDU30100840237N

Sample ID: SKIDU30100	840237N							VAL	- PFAS
Client Data				Laboratory Data					
Name: Merit Labor:	ttorie, I. nc4	Matrix:	Soil	Lab Sample:	1800899-0%	%	ColBmn:	EH2 C18	
Project: Lapeer Sami	ling	Date Collected:	7ARpr-18 1u:v0	Date y ecei3ed:	0K-MaF-18	09:K8			
Location: 08n11evv-S	01			s Solid,:	994ı				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
du-HtJ OSRR	S.	Au49	u0 - 1u0		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
1vC7-PJ DoR	S.	0%6	u0 - 1u0		E8J00u8	10-5Bn-18	$1400 \mathrm{g}$	1K-5Bn-18 0K:07	1
1vC7-PJ TeDR	s.	1v7	u0 - 1u0		E8J00u8	10-5Bn-18	1400 g	1K-5Bn-18 0K:07	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower co	ontrol limit - Boper control limit	When rep	ortedI PJ 2 xSI PJ	I OR and PJ OS	inclBde both line	ar and branched i, ome	r, 4
	LOQ - Limit of qBantitation	The re, Blt, are repor	ted in drF weight4	OnlF the 1	linear i, omer i, ro	eported for all ot	her analFte, 4		
		The , ample , ize i, re	ported in wet weight4						
		y e, Bt, reported to the	ne DL4						

Laboratory	- PFAS				Dilution	-	-	1			-	1		1	-						-	-	-						Dilution	-	1											
Analytical	VAL		BEH C18		Analyzed	1y-Jun-18 0y:1K	ly-Jun-18 0y:1K	1y-Jun-18 0y.1K 1v-Jun-18 0v-1K	Analyzed	1y-Jun-18 0y:1K																																
			Column:		Samp Size	140 g	140g	140 g	140 g	140 g	14-0 g 14-0 g σ	Samp Size	140 g	140g	140 g																											
			%	8 09:y8	Extracted	10-Jun-18	10-Jun-18 10-Jun-18	Extracted	10-Jun-18																																	
			1800899-0	0y-Ma3-18 994	Batch	B8600A8	B860048	Batch	B8600A8																																	
		ratory Data	ample:	Received: id, :	Qualifiers																								Qualifiers													
		Labor	Lab S	Date I s Sol	LOQ	148y	148y 148v	62 1																																		
				r-18 1%0A	TOD	04018	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918	04918 04918	Limits	A0 - 1A0												
			Soil	ected: 2%7 p	DL	04128	0418A	04KK	04185	04188	0 2 8A	04210	0421%	041A5	04.86	04I5K	02KA	04252	0408	02%	0418y	042A	049A	02AK	04112	04182	14KI 0.0.0.6	04/8/0 04/8/5														
			Matrix:	Date Coll	Conc. (ng/g)	ND	ND	ND	ŊŊ	ND	ND	245%	ŊŊ	ND	114K	ND	QN	QN A	CN CN	% Recovery	8940	924	8AP	9K4K	8y40	854	%84y	8245	814	₩%	5248	514y	8K40									
			_		CAS Number	K%A-22-y	2%05-90-K	K%A%A	K0%2y-y	KV/A8A9	KAA-y5-y	2%619-9%62	KKA5%1	KVA-92-8	1%K-2K-1	K%A9A1	KKA-%-2	K9108-Ky-y	%Ay-91-5	2KAA-KI-9	KKA%K	20A8-9y-8	2991-A0-5	K0%AA-1	%2529-9y-8	K%6-05-%	582A9-12-1	V-00-72 - 00-2	Type	S.												
	KIDU20200210847N		Merit Laboratorie, I . nc ²	Lapeer Sampling 08n11eKK-SF 01																									rds													
	Sample ID: S	Client Data	Name:	Project: Location:	Analyte	P6B7	P6Pe7	P6BS	P6Hx7	P6Hp7	P6HxS	5:2 6TS	P607	P6HpS	P6OS	P6N7	P6D7	8:2 6TS	P6OS7	Me6OS7 7	P6DS	P6Un7	Et6OS77	P6Do7	P6TrD7	P6TeD7	P6NS	v-2.6TS	Labeled Standa	1 KCK-P6B7	1KCK-P6Pe7	1 KCK-P6BS	1KC2-P6Hx7	1KCy-P6Hp7	1802-P6HxS	1KC2-P607	1KC8-P6OS	1KCAP6N7	1KC2-P6D7	1KC8-P6OS7	dK-Me6OS77	1KC2-P6Un7

Page 23 of 34

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Vista		VAL - PFAS

Sample ID: SKIDU20200210847N

Client Data				Laboratory Data					
Name: Merit	Laboratorie, I. nc4	Matrix:	Soil	Lab Sample:	1800899-0%	0	Column:	BEH C18	
Project: Lapee	r Sampling	Date Collected:	2%7 pr-18 1%0A	Date Received:	0y-Ma3-18 (09:y8			
Location: 08n11	eKK-SF01			s Solid,:	994				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
dAEt60S7 7	S.	5%\$%	A0 - 1A0		B8600A8	10-Jun-18	140 g	1y-Jun-18 0y:1K	1
1KC2-P6Do7	s.	924	A0 - 1A0		B8600A8	10-Jun-18	140g	1y-Jun-18 0y:1K	1
1KC2-P6TeD7	s.	12A	A0 - 1A0		B8600A8	10-Jun-18	140g	1y-Jun-18 0y:1K	
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower c	ontrol limit - upper control limit	When repo	ortedI P6HxSI P6	O7 and P6OS	nclude both linea	r and branched i, ome	.4
	LOQ - Limit of quantitation	The re, ult, are repor	ted in dr3 weight4	Onl3 the l	inear i, omer i, re	ported for all ot	her anal3te,4		
		The , ample , ize i, re	ported in wet weight4						
		Re, ult, reported to t	ne DL4						

tory	AS		tion															_								ion									_			
	- PF		Dilu	₹ 	A	Ā	Ā	<	4.4		A	A	۲ ا	Ā	Ā	Ā	₹.	<	Ā	A	▼	<. <			A	Dilut	A 1	A	Ā	A = A		e e				A 1	A 1	Ā
Vist	IAI	u BE C18	Analyzed	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	12-14n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	Analyzed	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-14n-18 03.H	13-14n-18 03-H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H	13-J4n-18 03:H					
		Col4mn:	Samp Size	1.05 g	0.1 201	1.05 g	о 1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1.05 g	1 05 20	1.05 g	1.05 g	Samp Size	1.05 g	1.05 g	1.05 g	1.05 g	1 05 g	0.1 201	1 05 a	1 05 σ	1.05 g	1.05 g	1.05 g	1.05 g				
		8 09:38	Extracted	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18 10 14: 18	10-J4n-18	10-J4n-18	Extracted	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J411-10 10-I4n-18	10-14n-18	10-J4n-18	10-J4n-18	10-J4n-18	10-J4n-18
		1800899-03 03-MaK-18 98.8	Batch	u 8600R8	u 8600B8	u 8600R8	0400000 m	u 8600R8 u 8600R8	u 8600R8	Batch	u 8600R8	u 8600R8	u 8600R8	u 8600R8	u 8600K8	u 8000K8	u o000100 11 860088	11 8600R8	u 8600R8	u 8600R8	u 8600R8	u 8600R8																
		ratory Data ample: v eceiyed: ids:	Qualifiers						F	c				J				ſ								Qualifiers												
		Labo Lab S Date % Sol	LOQ	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91	1.91													
		r-18 12:AR	TOD	0.9RR	0.9RR	0.9RR	0.9RR	0.9RR	0.0PD	0.9RR	ANGU Dan	0.9RR	0.9RR	Limits	R0 - 1R0	R0 - 1R0	R0 - 1R0	R0 - 1R0	RU - 1RU Pro 1Pro	DAL - DA DAL 1 PO	R0 - 1R0 R0 - 1R0	R0 - 1R0	R0 - 1R0	R0 - 1R0	R0 - 1R0	R0 - 1R0												
		Soil scted: H2-7 p	DL	0.1A3	0.19A	0.A32	0.193	0.195	CAH-O	0.HHR	0.15H	0.802	0.120	0.HBR	0.H2H	0.HI2	0.HB9	0.19H	0.AA8	0.A02	0.H53	0.112	0.189	0.802	0.802													
		Matrix: Date Colle	Conc. (ng/g)	ND	ND	ND	ND	Q	UN 1 00	ND.	ND	1HR	ND	0.H21	ND	QN	ND	0.HAR	ND	Q	Q	ON A		QN	ND	% Recovery	H.98	93.R	9AH	9H3	83.A	92.8	17.76 83.3	91 A	8A0	51.H	5HH	90.1
			CAS Number	A2R-HH-3	H205-90-A	A2R-2AR	A02-HB-3	A2R-8R-9	AKK-33-3 LD510.07 LD	AAR-52-1	A2R-9H-8	125AHA1	A2R-9R-1	AAR-25-H	A9108-A3-3	2R3-91-5	HARR-AI-9	AAR-22-A	HDR8-93-8	H991-R0-5	A02-RR-1	2H5H9-93-8	7-CU-CZA	1205-91-3	2R21HB-2H3	Type	IS	IS	IS	IS	SI of	51 21	0 Y	S	IS	IS	IS	IS
	KIDU20100280417N	Merit Laboratories, Inc Lapeer Sampling 08n11eAASF 01																								nrds												
	Sample ID: S	Client Data Name: Project: Location:	Analyte	P6u 7	P6Pe7	P6u S	P6Ex7	P6Ep7	POEXS 5-UKTS	P607	P6EpS	P6OS	P6N7	P6D7	8:H6TS	P60S7	Me6OS7 7	P6DS	P6Un7	Bt6OS77	P6Do7	P6TrD7	PoleU/	P6PeS	3:H6TS	Labeled Standa	1ACAP6u7	1ACAP6Pe7	1ACAP6uS	1ACHP6Ex7	IAC3-P0Ep/	1801HP0EXS	1 ACR-P6OS	1 ACR-P6N7	1ACHP6D7	1AC8-P6OS7	dAMe6OS77	1ACHP6 Un7

Page 25 of 34

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Sample ID: SKIDU20100280417N

Sample ID: SKIDU20	100280417N							VAL	- PFAS
Client Data				Laboratory Data					
Name: Merit La	boratories, Inc.	Matrix:	Soil	Lab Sample:	1800899-08	~	Col4mn:	u BE C18	
Project: Lapeer S	sampling	Date Collected:	H2-7 pr-18 12:AR	Date v eceiyed:	03-MaK-18	09:38			
Location: 08n11eA	ASF 01			% Solids:	98.8				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
dR-Bt6OS77	IS	R5.5	R0 - 1R0		u 8600R8	10-J4n-18	1.05 g	13-J4n-18 03:HA	1
1ACHP6Do7	IS	8HA	R0 - 1R0		u 8600R8	10-J4n-18	1.05 g	13-J4n-18 03:HA	1
1ACHP6TeD7	IS	IHI	R0 - 1R0		u 8600R8	10-J4n-18	1.05 g	13-J4n-18 03:HA	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower c	ontrol limit - 4pper control limit	When rep	orted, P6ExS, P0	5O7 and P6OS	incl4de both line	ar and branched isome	s.
	LOQ - Limit of q4antitation	The res4lts are repor	ted in drKweight.	OnlKthe 1	linear isomer is r	eported for all of	her analKtes.		
		The sample size is re	sported in wet weight.						
		v es4lts reported to t	he DL.						

										-	Visto	Laboratory
Sample ID: Sl	KIDU30100380427	N									VAL	- PFAS
Client Data						Labor	atory Data					
Name:	Merit Laboratories, In	nc.	Matrix:	Soil		Lab S	ample:	1800899-0	6	Column:	BEH C18	
Project: Location:	Lapeer Sampling 08n11e33-SK01		Date Coll	ected: 24-7 _F	pr-18 18:10	. Date . % Sol	AeceiRed: ids:	0v-May-18 98.4	8 09:v8			
Analyte		CAS Number	Conc. (ng/g)	DL	TOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFB7		34J-22-v	ND	0.1v2	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
PFPe7		2405-90-3	ND	0.20J	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
PFBS		34J-43-J	ND	0.358	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
PFHx7		304-2v-v	QN ;	0.205	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFHp7		34J-8J-9	(IN)	0.208	1.01	2.03		B8F00J8	10-6un-18	1.00 g	Iv-6un-18 0v:33	_ ,
PFHXS 5-7 ETC		3JJ-V5-V	ND 1 50	0.31v	1.01	2.03	9	B8F00J8	10-6un-18	1.00 g	Iv-6un-18 0v:33	
DEO7		24019-94-2		0.730	1.01	50.2 20.2	0	BSF0018	10-000-10 10-600-18	1.00 8	1 v-0001-10 0v.23	
PFHpS		34J-92-8	Q	0.142	10.1	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFOS		1453-23-1	11.v	0.8J5	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFN7		34J-9J-1	ND	0.180	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
PFD7		33J-45-2	ND	0.2J9	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
8:2 FTS		39108-3v-v	ND	0.289	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	-1
PFOS7		4Jv-91-5	ND	0.230	1.01	2.03		B8F00J8	10-6un-18	$1.00~{ m g}$	1v-6un-18 0v:33	
MeFOS77		23JJ-31-9	ND	0.305	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFDS		33J-44-3	0.v82	0.20v	1.01	2.03	9	B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFUn7		2018-9v-8	Q A	0.319	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PEDo7		304-111-1 304-111-1		0.280	1.01	c0.2 0.2		B&F0018	10-000-10 10-600-18	1.00 g 1 00 g	1 v-6411-18 0v.33	
PFTrD7		42529-9v-8	Ð	0.12v	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFTeD7		345-05-4	ND	0.201	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	-1
PFNS		582J9-12-1	QN ;	1.vJ	1.01	2.03		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
PFPeS		2405-91-v 41412v-42-v	(IN)	0.815	1.01	2.03		B8F0018 B8F0018	10-6un-18 10-6un-18	1.00 g	Iv-6un-18 0v:33 1v-6un-18 0v:33	
Labeled Standar	sp.	Type	% Recovery	0.00	Limits	CO.7	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFB7		IS	92.2		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	-
13C3-PFPe7		IS	94.9		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	-1
13C3-PFBS		IS	91.2		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
13C2-PFHX/ 13C DEIL-7		CI 21	91.1 01.1		0f1 - 0f			Bor UUJ 8	10-000-18	1.00 g	1 v-0un-18 0v:25	
1802-PFHxS		ci Si	04.2 94.2		J0 - 110 J0 - 110			B8F00.18	10-6un-18	1.00 g 1.00 g	1v-6un-18 0v:33	
13C2-PFO7		IS	89.1		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	-1
13C8-PFOS		IS	8J.0		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
13CJ-PFN7		IS	92.5		JO - 1JO			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
13C2-PFD7		IS	8J.8		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
13C8-PFOS7		IS	59.2		J0 - 1J0			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
d3-MeFOS77		SI	58.J		10 - 110			B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	
13C2-PFUn7		S	C.16		0f1 - 0f			B&FUUJ &	10-6un-18	1.00 g	1v-6un-18 Uv:33	_

Page 27 of 34

Work Order 1800899

	·
Visto	VAL - PFAS

Sample ID: SKIDU30100380427N

Client Data				Laboratory Data					
Name:	Merit Laboratories, Inc.	Matrix:	Soil	Lab Sample:	1800899-09		Column:	BEH C18	
Project:	Lapeer Sampling	Date Collected:	24-7 pr-18 18:10	Date AeceiRed:	0v-May-18	09:v8			
Location:	08n11e33-SK01			% Solids:	98.4				
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
dJ-EtFOS77	IS	40.4	J0 - 1J0		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
13C2-PFDo7	IS	100	JO - 1JO		B 8F00J8	10-6un-18	$1.00~{ m g}$	1v-6un-18 0v:33	1
13C2-PFTeD7	IS	133	J0 - 1J0		B8F00J8	10-6un-18	1.00 g	1v-6un-18 0v:33	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Lower or	ontrol limit - upper control limit	When rep	orted, PFHxS, PH	FO7 and PFOS	include both linea	r and branched isome	s.
	LOQ - Limit of quantitation	The results are repor	ted in dry weight.	Only the 1	inear isomer is re	eported for all ot	her analytes.		
		The sample size is re	ported in wet weight.						
		Aesults reported to the	ie DL.						

DATA QUALIFIERS & ABBREVIATIONS

В	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
Н	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
Μ	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

Visto Analytical Laboratory			CHAIN OF	no :	STOL	Y		For Laboratory Use Work Order # 192 Storage ID:	only 20899	Temp: 2	
Project ID: Lapeer PFAS Biosolids Ir	ivestigatic	ч	PO# 60570635		Sar	npler. <u>Stan Kren</u>	Z (omci)	TAT (check one)	Standard: Rush (surchar	rge may apply)	
Invoice to: Name		Compan	^	PA	dress		(indite)	Citv	State	Ph#	Fax#
Stephanie Kammer		MDEQ	ĸ	52	5 W. Allegar	1 Street		Lansing	IW	517-897-1597	517-241-3571
Relinquished by (printed name and sigr	nature)		Date	Tir	ne	Received by (pr	inted name and signat	lre)		Date	Time
Dovin Bagden	7		5/16/2018	17:	30						
Relinquished by (printed name and sign	nature)		Date	LE	в	Received by (pr	inted name and signat	ure)		Date	Time
SHIP TO: Vista Analytical Laboratory 1104 Windfield Way EI Dorado Hills, CA 95762			Method of Shipment:	Add Anal	ysis(es) Requ	ested	uojini ^a doji SVJ	All	Le: Doi:		
Ph: (916) 673-1520; Fax: (:	916) 673-0	106	FED EX	ပိ	ntainer(s)	$\left \right $	110 51	NS N	<u>_</u>		
ATTN: Jennifer Miller		T	Tracking No.:		//	SJOULOSUN 10	Degse List	11:12:12 12:12:12:12 12:12:12:12 12:12:12 12:12:12 12:12:12 12:12:12 12:12:12 12:12:12 12:12:12 12:12:12 12:12:12 12:12:12:12 12:12:12 12:12:12:12 12:12:12:12:12:12:12:12:12:12:12:12:12:1	, /		
Sample ID	Date	Time	Location/Sample Description	mueno	APE Matix	101 01 01 01 01 01 01 01 01 01 01 01 01	LIST OF BEIOW	PEC SCH PEC		Comments	
SK1DU30300180427N	4/27/18	1100	08n11e33-SK01	е В	s so	×		S	W		
SK1DU30200180427N	4/27/18	1200	08n11e33-SK01	8	s so	×		<u>S</u>	W		
SK1DU30100180427N	4/27/18	1300	08n11e33-SK01	е Б	s so	×		S	W		
SK1DU20100180427N	4/27/18	1345	08n11e33-SK01	3 F	o so	x		SI	M		
SK1DU20200180427N	4/27/18	1415	08n11e33-SK01	3 Е	s so	x		IS	M		
SK1DU20300180427N	4/27/18	1530	08n11e33-SK01	3 F	os o	×		SI IS	M		
SK1DU10100180427N	4/27/18	1705	08n11e33-SK01	ы	s so	×		S	W		
SK1DU10200180427N	4/27/18	1735	08n11e33-SK01	3	s so	×		S	W		
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Crocial Instantioner(Dommonte:	Sond Dos	the and	A browned communication of the second		-						
by e-mail to Vista.		nits alla		list provi	nen	ľ	SEND	Company: MDFO	vammer		
						- DOC	CUMENTATION RESULTS TO:	Address: 525 W. Alleg	gan Street		
								City: Lansing	N I	tate: MI Zip;	48909
						9		Phone: 517-897-159 Email: dorin bonda	17 Dimaecom com	Fax 517-241-357	
Container Types: P= HDPE, PJ= HDPE Ja			Bottle Preservation Type:	T = Thios	ulfate,	Matrix Type	ss: AQ = Aqueous, DW =	Drinking Water, EF = Efflu	lent, PP = Pulp/Pap	per, SD = Sediment,	
O = Other.			TZ = Trizma:			SL = Sludge	, SO = Soil, WW = Waste	water, B = Blood/Serum, C) = Other:		
Do viced Co.		0	the last	8	C	C C C C C C C C C C C C C C C C C C C	adan	5/17/18 (R		
Work Order 1800899	l J	Y	3) }		-	1	Ч	age 31 of 34

Visto Analytical Laboratory			CHAIN OF	CU	STO	λQ		For Laborator, Work Order #: Storage ID:	1800 Use Only	658	Temp:	2,2,2,C	afos/18
								TAT	Sta	ndard:	x 21 days		
Project ID: LAPEER SAMPLING			PO#: 60570309			Sampler: John Ya	anchula (name)	(chec	k one): Rus	sh (surcharg]14 days [je may apply)	ecify:	
Invoice to: Name	Con	npany		Ad	dress			City	Stal	1.9	Ph#	Fax#	ä
Stephanie Kammer	IDM	EQ		52	5 W. Alle	egan Stree		Lansing	IW		517-897-1597	517-241-3571	
Relinquished by (printed name and signatu	(ə.		Date	Tin	ne	Received by	(printed name and signat	ure)			Date	Time	
JUNY YANCHURA Jun	X	3	- 5/3/10	10	30		No là						
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SHIP TO: Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 Dor 1616 573 1500-504	0100		Method of Shipment:	Add Analy	ysis(es) R	fequested	uoiinii adolo SV30		SEP A ST				-
FII. (910) 0/ 3-1320, FAX. (910	anin-s/a (x (a)	ပိ	ntainer(s		10 31		~ ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
ATTN: Jennifer Miller			Tracking No.:		\vdash	130/1/	15/ 150	151					
				~	/	uosum 10	T 35EBIO	PED DE AS	b1 :15				
Sample ID	Date Tir	ne Loc	ttion/Sample Description	1 and	AD Natix	135 135 135	22 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	A SA SA SA			Comments	150	
SKIDUJEJEEREERER A	11 31/22	8	LAPUSE	S	S	×							
5KI DU36264186427N 41.	et estes	00	LAPUNS	3	S	×							
SEIDUZULOUIBURDIN 41	2745 13.	3	LAPUZK	3	S	X							
5K100201001504274 41	27/63 134	15	LAROX	3	S	×							
5×1002 42001844271 4	27/18 H	15	LAPER	\mathcal{M}	5	×							
5/11 DUZUS WELEBUY 271 41	27/15 15	30	LAPERR	3	3	×							
5K10016160164427N 41	71 3/15	cap.	LAPUSR	3	S	×							
5K1001010000000000000000000000000000000	27/6 17	35	LARUSA	m	S	×							
SKIDULULUNUUS WIRDING	27/18 18	0	LAPOR	3	S	×							
	_	-											
Special Instructions/Comments: Sei	nd Results	and Ack	in owledgements to the li	ist provid	ed]		Name: Stepl	ianie Kamme	r			
by e-mail to Vista.							SEND DOCUMENTATION	Company: MDE	-	T I I I I I I I I I I I I I I I I I I I			
						•	ND RESULTS TO:	City: Lans	/. Allegan St ng	St	ate: MI Zi	0:48909	
						Ĩ		Phone: 517-8	97-1597		ax: 517-241-35	11	
						I I		Email: dorin	bogdan@aec	om.com			
Container Types: P= HDPE, PJ= HDPE Jar 0 = Other:			Bottle Preservation Type: TZ = Trizma:	T = Thiosu	ulfate,	SL = Sluc	<pre>ypes: AQ = Aqueous, DW = dae, SO = Soil. WW = Wast</pre>	Drinking Water, EF	= Effluent, PP erum. O = Othe	= Pulp/Pape	r, SD = Sediment,		
							2					I	

Page 32 of 34



Sample Log-in Checklist

Vista Work Orde	r#:8008	99	2		TAT	d.
Samples	Date/Time	10	Initials:		Location: WR	-2
Arrival:	05/04/18 04	48	V2	/	Shelf/Rack:N	A
	Date/Time		Initials:		Location:	22
Logged In:	05 08 18 00	120	(m		Shelf/Rack: A	-5
Delivered By:	FedEx UPS	On Tra	GSO	DHL	Hand Delivered	Other
Preservation:	lce	Blu	lce		Dry Ice	None
Temp °C: 2.3	(uncorrected)	me: 10	33			
Temp °C: 2.2	(corrected)	robe use	ed: Yes⊡ I	No⊠	Thermometer ID:	: IR-4

	YES	NO	NA
Adequate Sample Volume Received?			
Holding Time Acceptable?			
Shipping Container(s) Intact?	 ✓ 		
Shipping Custody Seals Intact?			~
Shipping Documentation Present?			
Airbill 3 of 3 Trk # 7808 1407 5850	\checkmark		
Sample Container Intact?			
Sample Custody Seals Intact?			/
Chain of Custody / Sample Documentation Present?		\checkmark	
COC Anomaly/Sample Acceptance Form completed?	V		
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			1
Preservation Documented: Na ₂ S ₂ O ₃ Trizma None	Yes	No	NA
Shipping Container Vista Client Retain	Return	Disp	ose

Comments:

SKIDU30100180427N SKIDU30200180427N SKIDU30300180427N SKIDU20100180427N SKIDU20300180427N SKIDU20300180427N SKIDU20300180427N SKIDN10100180427N • SKIDN10200180427N • SKIDN10300180427N

Rev Date: 05/18/2017

* coc different from Sample

ID.: LR – SLC

Work Order 1800899

Rev No.: 0

Page: 1 of 1

Chain of Custody Anomaly/Sample Acceptance Form

Vista Analytical Laboratory

Merit Laboratories, Inc. Maya Murshak mayamurshak@meritlabs.com (517) 827-2744 Workorder Number:1800899Date Received:04-May-18 09:48Documented by/date:Kim Elric 05/08/18

Please review the following information and complete the Client Authorization section. To comply with NELAC regulations, we must receive authorization before proceeding with sample analysis.

Thank you,

Martha Maier mmaier@vista-analytical.com 916-673-1520

Χ

Sample IDs on Chain of Custody do not match Sample Container Labels

Chain of Custody ID	Container Label ID
SKIDU30300180427N	SKIDU30300180427N
SKIDU30200180427N	SKIDU30200180427N
SKIDU30100180427N	SKIDU30100180427N
SKIDU20100180427N	SKIDU20100180427N
SKIDU20200180427N	SKIDU20200180427N
SKIDU20300180427N	SKIDU20300180427N
SKIDU10100180427N	SKIDU10100180427N
*SKIDU10100180427N	SKIDU10200180427N
*SKIDU10100180427N	SKIDU10300180427N

Client Authorization
Proceed with Analysis: YES NO Signature and Date 4744 5/16/18
Client Comments/Instructions Per Dorin Bogdan use container laber 1D
for Samples.

Work Order 1800899



June 15, 2018 Vista Work Order No. 1800936

Ms. Maya Murshak Merit Laboratories, Inc. 2680 East Lansing Drive East Lansing, MI 48823

Dear Ms. Murshak,

Enclosed are the results for the sample set received at Vista Analytical Laboratory on May 12, 2018. This sample set was analyzed on a standard turn-around time, under your Project Name 'Lapeer'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

Marthe Maier

Martha Maier Laboratory Director



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

Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 ph: 916-673-1520 fx: 916-673-0106 www.vista-analytical.com

Vista Work Order No. 1800936 Case Narrative

Sample Condition on Receipt:

Eight aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology.

Analytical Notes:

PFAS Isotope Dilution Method

The following samples contained particulate and were centrifuged prior to extraction:

Laboratory ID Sample Name	
1800936-02 SK1SW010018	0509N
1800936-04 SK1DR020018	0509N
1800936-05 SK1DR010018	0509N
1800936-06 SK1SW030018	0509N
1800936-07 SK1DR040018	0509N
1800936-08 SK1DR050018	0509N

The samples were extracted and analyzed for a selected list of PFAS using the PFAS Isotope Dilution Method (Modified EPA Method 537).

Holding Times

The samples were extracted and analyzed within the method hold times. The samples were re-extracted for 6:2 FTS; the re-extractions were performed outside of the hold time.

Quality Control

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

A Method Blank and Ongoing Precision and Recovery (OPR) sample were extracted and analyzed with each preparation batch. A concentration of 4.47 ng/L of 6:2 FTS was detected in the original Method Blank. Results for this analyte were reported from re-extractions of all the samples except "SK1DR0400180509N". No other analytes were detected in the Method Blanks above 1/2 the LOQ. The recoveries of all reported analytes in the OPRs were within the method acceptance criteria.

The labeled standard recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
B8E0146-BLK1	B8E0146-BLK1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	49.1
B8E0146-BS1	B8E0146-BS1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	41.7
B8F0041-BLK1	B8F0041-BLK1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	41.3
B8F0041-BS1	B8F0041-BS1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	34.9
B8F0066-BLK1	B8F0066-BLK1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	36.0
B8F0066-BS1	B8F0066-BS1	PFAS Isotope Dilution Method	13C8-PFOSA	Н	42.6

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Case Narrative	1
Table of Contents	4
Sample Inventory	5
Analytical Results	6
Qualifiers	35
Certifications	36
Sample Receipt	37

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1800936-01	SK1SW0200180509N	09-May-18 15:05	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-02	SK1SW0100180509N	09-May-18 15:45	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-03	SK1DR0300180509N	09-May-18 16:15	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-04	SK1DR0200180509N	09-May-18 16:30	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-05	SK1DR0100180509N	09-May-18 17:05	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-06	SK1SW0300180509N	09-May-18 17:15	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-07	SK1DR0400180509N	09-May-18 17:20	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL
1800936-08	SK1DR0500180509N	09-May-18 17:30	12-May-18 09:57	HDPE Bottle, 250 mL
				HDPE Bottle, 250 mL

ANALYTICAL RESULTS

											Visto Analytical	Laboratory
Sample ID: M	ethod Blank									PFAS Iso	otope Dilution 1	Method
Client Data Name:	Merit Laboratories. Inc.		Matrix:	Aqueou	s	Labor Lab S	ratory Data ample:	B8E0146-]	BLK1	Column.	REH C18	
Project:	Lapeer				1		4					
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		375-22-4	ND	0.365	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
PFPeA		2706-90-3	ND	0.640	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
PFBS		375-73-5	ND	0.895	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
4:2 FTS DEHVA		757124-72-4 307 24 4	QN QN	1.37	2.50 7.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
PFPeS		2706-91-4	QN (N	1.09	2.50	4.00		B8E0140 B8E0146	23-Mav-18	0.250 L	03-Jun-18 02:51	
PFHnA		375-85-9	QN	0.296	2.50	4.00		B8E0146	23-Mav-18	0.250 L	03-Jun-18 02:51	
PFHxS		355-46-4	QN	0.474	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
6:2 FTS		27619-97-2	4.47	1.00	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
PFOA		335-67-1	QN	0.326	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	-
PFHpS		375-92-8	ND	0.469	2.50	4.00		B8E0146	23-May-18	$0.250\mathrm{L}$	03-Jun-18 02:51	1
PFNA		375-95-1	ŊŊ	0.405	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	-
PFOSA		754-91-6	ND	0.885	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
PFOS		1763-23-1	QN	0.404	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	_
PFDA		335-76-2	Q (0.745	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
8:2 F I S		39108-34-4		1.03	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
PFNS MefOSA A		0.8259-12-1 2355 21 0	UN UN	1.94 0.875	0007 05 C	4.00		B8E0146 B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
EtFOSAA		2991-50-6	QN QN	0.685	2.50	4 00		B8E0146	23-Mav-18	0.250 L	03-Jun-18 02:51	
PFUnA		2058-94-8	Ð	0.525	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
PFDS		335-77-3	QN	0.615	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
PFDoA		307-55-1	ND	0.396	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
PFTrDA		72629-94-8	QN A	0.247	2.50	4.00		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
Labeled Standard	ds	Type	% Recovery	0/ ()	Limits	-00. 1	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	94.4		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	-
13C3-PFPeA		IS	95.8		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
13C3-PFBS		IS	108		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
13C2-PFHxA		IS	97.4		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
13C4-PFHpA		IS	99.1 22.2		50 - 150 20 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
12C2 PFOX		SI SI	98.0		50 - 150 50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
13C5-PFNA		c Z	04.0 84.0		50 - 150 50 - 150			B&E0140 B&E0146	23-May-18	0.250 L	03-Jun-18 02:51	
13C8-PFOSA		IS	49.1		50 - 150		Н	B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	·
13C8-PFOS		IS	99.1		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
13C2-PFDA		IS	72.3		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
d3-MeFOSAA		IS	66.2		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	
d5-EtFOSAA		IS	70.1		50 - 150			B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	_

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Work Order 1800936

Page 7 of 40



									moratory
Sample ID: Method Bl	ank						PFAS Iso	tope Dilution N	lethod
Client Data				Laboratory Data					
Name: Merit Lal	ooratories, Inc.	Matrix:	Aqueous	Lab Sample:	B8E0146-I	3LK1	Column:	BEH C18	
Project: Lapeer									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFUnA	IS	58.8	50 - 150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
13C2-PFDoA	IS	77.3	50 - 150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	-
13C2-PFTeDA	IS	64.8	50 - 150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:51	1
DL - Detection Limit	LOD - Limit of Detection	LCL-UCL- Low	ver control limit - upper control limit	When rep	ported, PFHxS, F	FOA and PFOS	include both line	ar and branched isomers	
	LOQ - Limit of quantitation	Results reported	l to the DL.	Only the	linear isomer is	reported for all of	ther analytes.		

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Sample ID: O	PR								PFAS Is	otope Dilution	Method
Client Data					Lab	oratory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer	Matrix:	Aqueous		Lab	Sample:	B8E0146	BS1	Column:	BEH C18	
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	38.1	40.0	95.3	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFPeA	2706-90-3	38.5	40.0	96.3	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	
PFBS	375-73-5	37.6	40.0	94.0	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
4:2 FTS	757124-72-4	36.3	40.0	90.7	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFHxA	307-24-4	39.0	40.0	97.6	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFPeS	2706-91-4	37.7	40.0	94.3	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFHpA	375-85-9	42.1	40.0	105	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFHxS	355-46-4	38.4	40.0	96.0	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
6:2 FTS	27619-97-2	37.8	40.0	94.4	60 - 130	В	B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFOA	335-67-1	36.8	40.0	92.0	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFHpS	375-92-8	44.1	40.0	110	60 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFNA	375-95-1	38.6	40.0	96.4	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	
PFOSA	754-91-6	36.8	40.0	92.1	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFOS	1763-23-1	38.1	40.0	95.2	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFDA	335-76-2	38.0	40.0	95.1	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
8:2 FTS	39108-34-4	32.7	40.0	81.7	60 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFNS	68259-12-1	41.2	40.0	103	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
MeFOSAA	2355-31-9	35.6	40.0	88.9	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
EtFOSAA	2991-50-6	40.4	40.0	101	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFUnA	2058-94-8	36.4	40.0	91.1	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFDS	335-77-3	48.6	40.0	122	60 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFDoA	307-55-1	42.0	40.0	105	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFTrDA	72629-94-8	46.0	40.0	115	60 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
PFTeDA	376-06-7	47.4	40.0	118	70 - 130		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
Labeled Standar	rds	Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS		96.9	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	-
13C3-PFPeA		IS		95.4	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C3-PFBS		IS		116	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C2-PFHxA		IS		6.66	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C4-PFHpA		IS		89.2	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
1802-PFHxS		IS		9.66	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C2-PFOA		IS		85.1	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	
13C5-PFNA		IS		93.1	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	-1
13C8-PFOSA		IS		41.7	50-150	Н	B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C8-PFOS		IS		104	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
Work	Order 1800936									Page 9 of 4	0

2	Vista	Analytical Laboratory

Sample ID: OPR							PFAS Isc	otope Dilution	Method
Client Data			Lab	oratory Data					
Name: Merit Laboratories, Inc. Project: Lapeer	Matrix:	Aqueous	Lab	Sample:	B8E0146-	BS1	Column:	BEH C18	
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA	IS	87.1	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
d3-MeFOSAA	IS	81.6	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
d5-EtFOSAA	IS	78.2	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C2-PFUnA	IS	68.3	50- 150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C2-PFDoA	IS	81.5	50-150		B8E0146	23-May-18	0.250 L	03-Jun-18 02:41	1
13C2-PFTeDA	IS	69.7	50-150		B8E0146	23-Mav-18	0.250 L	03-Jun-18 02:41	

											Analytical I	aboratory
Sample ID:	Method Blank									PFAS Iso	tope Dilution N	Aethod
Client Data						Labor	atory Data					
Name: Project:	Merit Laboratorieks, I ci Lapeer	E	Matrix:	AqCeo(X	Lab S.	ample:	B8E00146	3L- 4	. olGnI :	BuH. 48	
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	L0Q	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PEBA		Fv5@261	QN	0rF35	2tb0	1100		B8E0014	0861CI 648	0r250 L	4061CI 648 08:14	4
PEPeA		2y036706F	ND	0n310	2n60	1100		B8E0014	086JCI 648	0n250 L	406JCI 648 08:14	4
PEBS		Fy56yF65	ND	0r875	2n60	1100		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
1:2 E9 S		y5y4216y26l	ND	4ıFy	2n60	1 + 00		B8E0014	086JCI 648	0n250 L	406JCI 648 08:14	4
PEHxA		F0y@161	ND	4n07	2n60	1 n 0 0		B8E0014	086JCI 648	0n250 L	406JCI 648 08:14	4
PEPeS		2y03 <i>6</i> 7461	ND	4tFy	2n60	1r00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PEHpA		Fy568567	ND	01273	2n£0	1 n 0 0		B8E0014	086JCI 648	0n250 L	406/CI 648 08:14	4
PEHxS		F5561361	QN	0nly1	2n60	1r00		B8E0014	0861CI 648	0r250 L	406/CI 648 08:14	4
3:2 E9 S		2y34767y@	ND	4100	2n60	1r00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PETA		FF5@y64	ND	0rF23	2n60	1r00		B8E0014	086JCI 648	0r250 L	406/CI 648 08:14	4
PEHpS		Fy567268	ND	0nl 37	2n60	1 n 0 0		B8E0014	086JCI 648	0r250 L	406/CI 648 08:14	4
PENA		Fy567564	ND	0nl 05	2160	1r00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PETSA		y5167463	ND	0r885	2n60	1 n 0 0		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PETS		4y3F62F64	ŊŊ	0nl 01	2n60	1r00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PEDA		FF56y362	ŊŊ	0ny15	2n60	1n00		B8E0014	08GICI 648	0r250 L	406JCI 648 08:14	4
8:2 E9 S		F74086F161	ND	4n0F	2n60	1 n 0 0		B8E0014	086JCI 648	0r250 L	4061CI 648 08:14	4
PENS		3825764264	ND	4n71	2n60	1 n 0 0		B8E0014	08GICI 648	0r250 L	406/CI 648 08:14	4
MeETSAA		2F556F467	ND	0r825	2n60	1r00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
utETSAA		277466063	ND	0rB85	2n60	1 n 0 0		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PEOI A		205867168	ND	0r625	2n60	1n00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PEDS		FF56yy6F	ND	0rB45	2n60	1n00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PEDoA		F0y65564	ND	0rF73	2n60	1n00		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
PE9rDA		y232767168	ND	0n21y	2n£0	1 n 0 0		B8E0014	086JCI 648	0n250 L	406/CI 648 08:14	4
PE9eDA		Fy36036y	ND	0rFy8	2n60	1r00		B8E0014	086JCI 648	0r250 L	406/CI 648 08:14	4
Labeled Stand	ards	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
4F. F@EBA		Š,	781£		50 6 450			B8E0014	086JCI 648	0n250 L	406JCI 648 08:14	4
4F. F@EPeA		s,	7318		506450			B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. FOPEBS		s,	445		506450			B8E0014	08GICI 648	0r250 L	4061CI 648 08:14	4
4F. 26PEHxA		Š,	73tb		506450			B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. 16PEHpA		Š	77 Hz		506450			B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
48T 26PEHxS		s,	404		506450			B8E0014	08GICI 648	0r250 L	406JCI 648 08:14	4
4F. 26PETA		s,	88nl		506450			B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. 56PENA		s,	7FiF		50 6 450			B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. 86PETSA		s,	14nF		50 6 450		Η	B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. 86PETS		Š,	88n3		50 6 450			B8E0014	086JCI 648	0r250 L	406/CI 648 08:14	4
4F. 26PEDA		Š	85nB		506450			B8E0014	086JCI 648	0n250 L	4061CI 648 08:14	4
UF6MeET SAA		Š,	33t2		506450			B8E0014	08GICI 648	0r250 L	406JCI 648 08:14	4
U56utETSAA		S,	73nl		50 6 450			B8E0014	0861CI 648	0r250 L	4061CI 648 08:14	4

Work Order 1800936

Page 11 of 40



								Analytical L	aboratory
Sample ID: Method Bla	nk						PFAS Isot	tope Dilution N	1ethod
Client Data				Laboratory Data					
Name: Merit Lab	oratorieKs, I cn	Matrix:	AqGoOK	Lab Sample:	B8E00146B	8L- 4	. olGmI :	BuH. 48	
Project: Lapeer									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
4F. 26PEOIA	,S	80rF	50 6 450		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. 26PEDoA	s,	85n0	50 6 450		B8E0014	086JCI 648	0r250 L	406JCI 648 08:14	4
4F. 26PE9eDA	s,	87ny	50 6 450		B8E0014	0861CI 648	0r250 L	406JCI 648 08:14	4
DL 6Detectiol Limit	LTD 6Limit of Detectiol	L. L60. L6Lod	er col trol limit 6 Cpper col trol limit	h Rel rep	porteUs PEHxSs P	ETA al UPETS	il clCUb botR lil e	ar al Ubral cReUiKomer	ĥ
	LTQ 6Limit of qCal titatiol	wekOtKreporteL	Jto tRe DLn	TIIWIR	lil ear iKomer iKr	eporteUfor all o	Rer al alWekn		
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Sample ID: C	JPR								PFAS Is	otope Dilution]	Method
Client Data					Lab	oratory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer	Matrix:	Aqueous		Lab	Sample:	B8F0041-	BSI	Column:	BEH C18	
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	375-22-4	39.0	40.0	97.5	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFPeA	2706-90-3	38.3	40.0	95.6	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFBS	375-73-5	38.7	40.0	96.7	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
4:2 FTS	757124-72-4	37.7	40.0	94.3	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFHxA	307-24-4	38.2	40.0	95.5	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFPeS	2706-91-4	38.2	40.0	95.4	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFHpA	375-85-9	36.9	40.0	92.3	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFHxS	355-46-4	32.6	40.0	81.6	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
6:2 FTS	27619-97-2	46.3	40.0	116	60 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFOA	335-67-1	43.5	40.0	109	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFHpS	375-92-8	40.8	40.0	102	60 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFNA	375-95-1	40.2	40.0	101	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFOSA	754-91-6	31.4	40.0	78.6	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFOS	1763-23-1	42.9	40.0	107	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFDA	335-76-2	35.0	40.0	87.5	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
8:2 FTS	39108-34-4	28.6	40.0	71.5	60 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFNS	68259-12-1	34.6	40.0	86.6	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
MeFOSAA	2355-31-9	47.9	40.0	120	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
EtFOSAA	2991-50-6	37.5	40.0	93.9	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFUnA	2058-94-8	36.8	40.0	92.1	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFDS	335-77-3	42.1	40.0	105	60 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFDoA	307-55-1	38.0	40.0	95.0	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFTrDA	72629-94-8	40.1	40.0	100	60 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
PFTeDA	376-06-7	42.0	40.0	105	70 - 130		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
Labeled Standa	ırds	Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS		98.3	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C3-PFPeA		IS		95.9	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C3-PFBS		IS		111	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C2-PFHxA		IS		92.3	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C4-PFHpA		IS		100	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
1802-PFHxS		IS		98.8	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C2-PFOA		IS		96.2	50- 150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C5-PFNA		IS		85.8	50- 150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	
13C8-PFOSA		IS		34.9	50- 150	Н	B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C8-PFOS		IS		90.3	50- 150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
Work	c Order 1800936									Page 13 of 4	0

Visto	

Sample ID: O	PR							PFAS Iso	otope Dilution	Method
Client Data				Lab	oratory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer	Matrix:	Aqueous	Lab	Sample:	B8F0041-]	BS1	Column:	BEH C18	
Labeled Standar	ds	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFDA		IS	90.06	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
d3-MeFOSAA		IS	78.8	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
d5-EtFOSAA		IS	104	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C2-PFUnA		IS	96.2	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	-
13C2-PFDoA		IS	80.2	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	1
13C2-PFTeDA		IS	83.9	50-150		B8F0041	08-Jun-18	0.250 L	10-Jun-18 08:20	

												a boratory
Sample ID: N	Aethod Blank									PFAS Isot	tope Dilution N	Aethod
Client Data Name: Proiect [.]	Merit LaboratorieK, I cn I aneer		Matrix:	AqŒot	K	Laboi Lab Si	ratory Data ample:	B8E00114	BL6 -	. olGnI :	BuH8	
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	0	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PEBA		Fy34DDt2	N5	0rF13	D30	2n00		B8E0011	- DłJCI 4 8	04D80 L	- 24JCI 4-8 0y:3D	
PEPeA		Dy014704F	N5	0nl 20	D80	2n00		B8E0011	- DUC 4 8	04D80 L	- 24JCI 4 8 0y:3D	•
PEBS		Fy34yF43	N5	01873	D30	2n00		B8E0011	- D4JCI 4-8	0rD80 L	- 24JCI 4 8 0y:3D	ı
2:DE9S		y3y-D24yD42	N5	- nFy 	D30	2n00		B8E0011	- DJJCI 4 8	04D80 L	- 24JCI 4 8 0y:3D	•
PEHXA		FUy41242	CN 314	- 10/	1980 Dao	2000		B8E0011	- DWU 4-8	UILBU L	- 24JU 4-8 0y:3D	
PEPes		Ev.2./82./7	CN SN	- 11-y 0-1771	1.080	0.012		B8E0011 B8E0011	- DWICI 4 8	UT DO L	- 24JCI 4-8 0y:3D - 24ICI 4-8 0y:3D	
PEHxS		F3342142	N5 N5	0n2y2	D990	2n00		B8E0011	- DND + 8	04D80 L	- 24JC 4 8 0y:3D	
1:DE9S		Dy1-747y4D	N5	- 100	D30	2n00		B8E0011	- D¢ICI 4-8	04D80 L	- 24JCI 4-8 0y:3D	ı
PETA		FF341 y4	N5	0rFDI	D30	2 n 0 0		B8E0011	- D¢ICI 4-8	04D80 L	- 24JCI 4-8 0y:3D	
PEHpS		Fy347D48	N5	0n217	D30	2n00		B8E0011	- D(J)C(14.8	0rD80 L	- 24JCI 4-8 0y:3D	ı
PENA		Fy34734	N5	0r203	D80	2r00		B8E0011	- D¢JCI 4-8	04D80 L	- 24JCI 4 8 0y:3D	ı
PET SA		y3247-41	NS	01883	D80	2r00		B8E0011	- Duid 4.8	0fD80 L	- 24JCI 4-8 0y:3D	ı
PELS DEF 4		- y1F4LF4	SN	01202	D80	2:00		B8E0011	- DUC 4 8	0rd B0 L	- 24JCI 4-8 0y:3D	•
RED A		FT-084F740	CN SN	uny 23 - 10F	1780	2100		B&E0011 B&F0011	- DWICI 4 8	04D80 L	- 24JCI 4- 8 0Y:3D - 24JCI 4- 8 0V:3D	
PENS		18D874 D4	N5	- 172	D80	2n00		B8E0011	- DJJ 4 8	04D80 L	- 24JCI 4 8 0v:3D	ı
MeETSAA		DF334F-47	N5	0r8D8	D30	2n00		B8E0011	- D¢JCI 4-8	04D80 L	- 24JCI 4-8 0y:3D	ı
utETSAA		D77-43041	N5	0nl 83	D30	2n00		B8E0011	- D(J) (1 4 8	0rD80 L	- 24JCI 4-8 0y:3D	ī
PEOI A		D03847248	N5	0ri&D3	D30	2n00		B8E0011	- D¢JCI 4-8	04D80 L	- 24JCI 4-8 0y:3D	•
PE5 S		FF34yy4F	N5	0nl - 3	D80	2n00		B8E0011	- DJJCI 4 8	04D80 L	- 24JCI 4 8 0y:3D	ı
PED oA		FUy4534	SN	011-71	D80	2400		B8E0011	- DNU 4-8	04D60 L	- 24JU 4-8 0y:3D	
PE9e5 A		Fy14014y	N5 N5	0nFy8	D900	2n00		B8E0011	- DUC + 8	04D80 L	- 24JC 4 8 0y:3D	
Labeled Standa	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
-F. F4PEBA		Š,	77tD		304-30			B8E0011	- DţJCI 4-8	04D80 L	- 24JCI 4-8 0y:3D	ī
- F. F4PEPeA		Š,	- 03		304-30			B8E0011	- D4JCI 4-8	04D80 L	- 24JCI 4-8 0y:3D	•
-F. F4PEBS		v∑ u	77 18		304-30			B8E0011	- DJJCI 4-8	04D80 L	- 24JCI 4 8 0y:3D	ı.
-F. D#FEHnA		ŏα	- U/ 7Fi&		304-30			B0E0011 R8F0011	- DWU + 0	OrtBO L	- 2410 4-8 0y.3D - 2410 4-8 0y.3D	
- 8T DIPEHXS		ý Sj	7318		304-30			B8E0011	- DJJCI 4 8	04D80 L	- 24JCI 4 8 0y:3D	ī
-F. DIPETA		Š,	77 n l		304-30			B8E0011	- DţJC] 4 8	04D80 L	- 24JCI 4-8 0y:3D	ı
-F. 34PENA		Š,	88rD		304-30			B8E0011	- D¢JCI 4-8	04D80 L	- 24JCI 4-8 0y:3D	
-F. 84PETSA		Š,	F1n0		304-30		Н	B8E0011	- D(J)C] 4 8	0rD80 L	- 24JCI 4 8 0y:3D	ı
-F. 84PETS		Š,	81nl		304-30			B8E0011	- D¢ICI 4 8	04D80 L	- 24JCI 4 8 0y:3D	
- F. DIPES A		Х, c	y3tB		304-30			B8E0011	- Duid 4 8	0fD80 L	- 24JCI 4-8 0y:3D	ı
UF4MEEI SAA TR4+FTSAA		Ň o	3F11 2748		304-30 304-30			B8E0011 B8E0011	- DNICI 4 8	04780 L	- 24JU 4-8 UY:3D	. ,
DHILLI JAA		Ċ,	ſI7C		UC - + UC			DOEVUII	- LHU + 0	NITDN F	лс. ул о + D #7 -	

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Work Order 1800936

Page 15 of 40



								Analytical	aboratory
Sample ID: Method Blan	×						PFAS Isot	ope Dilution N	1ethod
Client Data				Laboratory Data					
Name: Merit Labor.	atorieKs, I cn	Matrix:	AqGoOK	Lab Sample:	B8E00114B	3L6 -	. olCmI :	BuH8	
Project: Lapeer									
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
-F. DAPEOIA	S,	yDD	304-30		B8E0011	- DţJCI 4 8	04D30 L	- 24JCI 4 8 0y:3D	
- F. D#PE5 oA	S,	1110	304-30		B8E0011	- DţICI 4 8	04D80 L	- 24JCI 4-8 0y:3D	1
-F. DuPE9e5 A	s,	0	304-30		B8E0011	- DUC 4 8	04D80 L	- 24JCI 4-8 0y:3D	ı
5 L 45 etectiol Limit	LT5 4Limit of 5 etectiol	L. L40. L4Lod	er col trol limit 4 Cpper col trol limit	h Rel rep	oorteUs PEHxSs P	ETA al UPETS	II clUb botR lil ea	r al Ubral cReUiKomer	ų
	LTQ 4Limit of qGal titatiol	weKOtKreporteU	to tRe 5 Ln	TIIWR	lil ear iKomer iKr	eporteUfor all o	Rer al alWeKn		

										Analytical I	X aboratory
Sample ID:	OPR								PFAS Is	otope Dilution	Method
Client Data					Lab	oratory Data					
Name: Project:	Merit Laboratories, Inc. Lapeer	Matrix:	Aqueous		Lat	Sample:	B8F00441	BS-	Column:	BEH C-8	
Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA	51712213	38	30.0	- 07	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	,
PFPeA	2J 04 160 15	56.6	30.0	66.8	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
PFBS	5J 7 IJ 5 I7	30.J	30.0	- 02	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
3:2 FTS	J 7J - 23 IJ 2 I3	37.7	30.0	- - 3	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	,
PFHxA	50J 123 13	58.3	30.0	67.6	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	·
PFPeS	2J 04 16- 13	54.6	30.0	62.2	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFHpA	5J718716	32.4	30.0	- 0J	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFHxS	57713413	74.6	30.0	- 32	J01-50	Н	B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	·
4:2 FTS	2J 4- 6 16J 12	57	30.0	8J.J	40 1 - 50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFOA	55714J I-	30	30.0	- 02	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFHpS	5J 7 162 18	58	30.0	67.5	40 1 - 50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFNA	5J71671-	56.2	30.0	68.0	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFOSA	J 73 16- 14	5J.6	30.0	63.8	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
PFOS	- J 45 125 1-	56.7	30.0	68.J	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
PFDA	557IJ4I2	56	30.0	6J.J	J01-50		B8F0044	-219un1-8	0.270 L	- 3 19un 1- 8 0J :32	ı
8:2 FTS	56-0815313	5J.J	30.0	63.2	40 1 - 50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFNS	482761-21-	30.4	30.0	- 02	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
MeFOSAA	257715-16	33.J	30.0	2	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	·
EtFOSAA	266-17014	33.4	30.0	:	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
PFUnA	2078 163 18	33.3	30.0		J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	,
PFDS	5571JJI5	3J	30.0	- 03	40 1 - 50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
PFDoA	50J 1771-	54.6	30.0	62.2	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
PFTrDA	J 2426 163 18	37.8	30.0	7	40 1 - 50		B8F0044	-219un1-8	0.270 L	- 3 19un 1- 8 0J :32	·
PFTeDA	5J41041J	55.2	30.0	85	J01-50		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
Labeled Stand	ards	Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
- 5C5 IPFBA		IS		- 00	701-70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	ı
- 5C5 IPFPeA		IS		- 03	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
- 5C5 IPFBS		IS		6J.8	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 I9un l- 8 0J :32	
- 5C2 IPFHxA		IS		- 05	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
- 5C3 IPFHpA		IS		62.8	701-70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 I9un I- 8 0J :32	
- 802 IPFHxS		IS		86.7	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
- 5C2 IPFOA		IS		- 06	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
- 5C7 IPFNA		IS		68.4	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
- 5C8 IPFOSA		IS		32.4	701 - 70	Н	B8F0044	- 2 19un 1- 8	0.270 L	- 3 I9un l- 8 0J :32	
- 5C8 IPFOS		IS		64	701-70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
Wor	k Order 1800936									Page 17 of	40

Victo

2	Vista	Analytical Laboratory
2		

Sample ID: OPR							PFAS Iso	otope Dilution	Method
Client Data			Lab	oratory Data					
Name: Merit Laboratories, Inc. Project: Lapeer	Matrix:	Aqueous	Lab	Sample:	B8F00441E	3S-	Column:	BEH C-8	
Labeled Standards	Type	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
- 5C2IPFDA	IS	83.2	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
d5 IMeFOSAA	IS	70.8	701-70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
d7IEtFOSAA	IS	75.4	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	I
- 5C2 IPFUnA	IS	J4.J	701-70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	1
- 5C2IPFDoA	IS	J 8.6	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	
- 5C2 IPFTeDA	IS	L	701 - 70		B8F0044	- 2 19un 1- 8	0.270 L	- 3 19un 1- 8 0J :32	1

nple: 1800936-01 Column: BEH CI 8 sceived: 12-May-18 09:57 Analyzed Dilution ceived: 12-May-18 09:57 Analyzed Dilution Ualiffers Barch Extracted Samp Size Analyzed Dilution J B8E0146 23-May-18 0.256L 03-Jun-18 04:15 1 B8E0146 23-May-18 0.256L 03-Jun-18 04:15 1 1 B8E0146 23-May-18 0.256L 03-Jun-18 04:15 1 1 B8E0146 23-May-18 0.256L 03-Jun-18 04:15 1 1	30509N	Labora	Labora	Labora	Labora	La la	tory Data			PFAS Isc	otope Dilution	Method
	Merit Laborat Lapeer 08n11e33-SK	tories, Inc. .01	Matrix: Date Col	Aque lected: 09-M	ous ay-18 15:05	Labo Lab S Date	ratory Data lample: Received:	1800936- 12-May-1	01 8 09:57	Column:	BEH C18	
375-24 602 0.35 2.44 391 1 887016 2.3660-8 0.441 301 1 887016 2.3660-8 0.441 301 1 30551 0.411 0.412 1 73712471 10 114 2.341 301 1 887016 2.3660-8 0.361 0.3168 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.412 1 0.411		CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
		375-22-4	6.02	0.356	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		2706-90-3	1.25	0.625	2.44	3.91	ſ	B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		375-73-5	3.81	0.874	2.44	3.91	ſ	B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	-
$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$		757124-72-4	QN .	1.34	2.44	3.91	,	B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $		307-24-4	0/.1 MD	1.06	2.44 74	3.91 2.01	-	B8E0146	23-May-18	0.256 L	03-Jun-18 04:15 02 Tun 18 04:15	
355-67-1 120 0.40 2.44 3.91 1 BERDIA 2.33 0.31 0.3118 <th0.3118< th=""> <th< td=""><td></td><td>9-28-21</td><td>UN 111</td><td>0 789</td><td>2 44</td><td>3 91</td><td>-</td><td>B8E0146</td><td>23-Mav-18</td><td>0.2561</td><td>03-Jun-18 04.15</td><td></td></th<></th0.3118<>		9-28-21	UN 111	0 789	2 44	3 91	-	B8E0146	23-Mav-18	0.2561	03-Jun-18 04.15	
27619-72 ND 103 257 412 10 8870041 63-JmL-18 0.3041		355-46-4	1.15	0.462	2.44	3 91	• -	B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
		27619-97-2	ND N	1.03	2.57	4.12	•	B8F0041	08-Jun-18	0.243 L	10-Jun-18 09:34	
375-92-8 ND 0.458 2.44 3.91 B800146 2.34my-18 0.2561 0.34ms18 0.3561 0.34ms18 0.3561 0.34ms18 0.3561 0.34ms18 0.3561 0.34ms18 0.3561 0.34ms18 0.35<1 0.34ms18 0.35 0.34ms18 0.35 0.34ms18 0.35 0.34ms18 0.35 0.34ms18 0.3561 0.34ms18 0.35<1 0.34ms18 0.34m<18 0.34<1 0.34m<18 0.34<1 0.34m<18 0.34<1 0.34m<18 0.34<1 0.34m<18 0.34m<18 0.35<1 0.34ms18 0.35<1 0.34m18 0.34<1 0.34m<18 0.34<1 0.34m<18 0.34<1 0.34ms18 0.35<1		335-67-1	0.790	0.318	2.44	3.91	ſ	B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
		375-92-8	ND	0.458	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	-
75491-6 ND 0.864 2.44 391 BBE0146 2.3.May-18 0.2561 0.3.Jun 18 04;15 1 763-23-1 ND 0.394 2.44 3.91 BBE0146 2.3.May-18 0.2.561 0.3.Jun 18 04;15 1 335-76-2 ND 1.01 2.44 3.91 BBE0146 2.3.May-18 0.2.561 0.3.Jun 18 04;15 1 335-76-2 ND 0.669 2.44 3.91 BBE0146 2.3.May-18 0.2.561 0.3.Jun 18 04;15 1 335-75-1 ND 0.669 2.44 3.91 BBE0146 2.3.May-18 0.2.561 0.3.Jun 18 04;15 1 2355-71-3 ND 0.669 2.44 3.91 BBE0146 2.3.May-18 0.2.561 0.3.Jun 18 04;15 1 2355-71-3 ND 0.669 2.44 3.91 BBE0146 2.3.May-18 0.2.561 0.3.Jun 18 04;15 1 2355-71-3 ND 0.387 2.44 3.91 BBE0146 2.3.May-18 0.2.561		375-95-1	QN	0.396	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
		754-91-6	QN	0.864	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
335-76-2 ND 0.728 2.44 3.91 B800146 2.3 May-18 0.256L 0.34m-18 04:15 1 9108-34-4 ND 101 1.244 3.91 B880146 2.3 May-18 0.256L 0.34m-18 04:15 1 05251-31-9 ND 0.806 2.44 3.91 B880146 2.3 May-18 0.256L 0.34m-18 04:15 1 2355-31-9 ND 0.609 2.44 3.91 B880146 2.3 May-18 0.256L 0.34m-18 04:15 1 2058-94-6 ND 0.603 2.44 3.91 B880146 2.3 May-18 0.256L 0.34m-18 04:15 1 2058-94-5 ND 0.601 2.44 3.91 B880146 2.3 May-18 0.256L 0.34m-18 04:15 1 2055-94-8 ND 0.601 2.44 3.91 B880146 2.3 May-18 0.256L 0.34m-18 04:15 1 7052-94-8 ND 0.241 3.91 B880146 2.4 May-18 0.256L 0.34m-18 04:15		1763-23-1	ND	0.394	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
		335-76-2	ND	0.728	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
		39108-34-4	ND	1.01	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
$ \begin{array}{l l l l l l l l l l l l l l l l l l l $		68259-12-1	ND	1.89	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
2991-50-6 ND 0.669 2.44 3.91 B8E0146 2.3-May-18 0.256L 0.3-Um-18 04:15 1 33577-3 ND 0.601 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:15 1 33577-3 ND 0.601 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:15 1 337-55-1 ND 0.369 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:15 1 376-06-7 ND 0.369 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:15 1 376-06-7 ND 0.369 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:15 1 376-06-7 ND 0.369 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:15 1 376-06-7 ND 0.369 2.44 3.91 B8E0146 23-May-18 0.256L 0.3-Um-18 04:		2355-31-9	ND	0.806	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
		2991-50-6	ND	0.669	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
335-77-3ND0.601 2.44 3.91 B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 $307-55-1$ ND 0.387 2.44 3.91 B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 $726-94-8$ ND 0.241 2.44 3.91 B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 $766-05-7$ ND 0.387 2.44 3.91 B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 $756-06-7$ ND 0.369 2.44 3.91 B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 $756-06-7$ ND 0.369 2.44 3.91 B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 $179e$ 96.1 $50-150$ B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 18 94.1 $50-150$ B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 18 94.1 $50-150$ B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 18 94.1 $50-150$ B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 18 94.1 $50-150$ B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 18 94.1 $50-150$ B8E0146 2.5 May-18 $0.256L$ 0.3 -lun-18 04:151 18 94.1 $50-150$ 1880146 2.5 May-18 $0.256L$ 0.3 -lun-18 04		2058-94-8	ŊŊ	0.513	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	-
		335-77-3	QN	0.601	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
72629-948ND0.2412.443.91B8E014623-May-180.256L03-um-18 04:151 $376-06-7$ ND0.3692.443.91B8E014623-May-180.256L03-um-18 04:151 $376-06-7$ ND0.3692.043.91B8E014623-May-180.256L03-um-18 04:1511S96.150-150B8E014623-May-180.256L03-um-18 04:1511S91.150-150B8E014623-May-180.256L03-um-18 04:1511S93.450-150B8E014623-May-180.256L03-um-18 04:1511S94.550-150B8E014623-May-180.256L03-um-18 04:1511S94.550-150B8E014623-May-180.256L03-um-18 04:1511S94.150-150B8E014623-May-180.256L03-um-18 04:1511S94.150-150B8E014623-May-180.256L03-um-18 04:1511S94.150-150B8E014623-May-180.256L03-um-18 04:1511S94.150-150B8E014623-May-180.256L03-um-18 04:1511S95.850-150B8E014623-May-180.256L03-um-18 04:1511S95.850-150B8E014623-May-180.256L03-um-18 04:1511S95.850-150B8E014623-May-180.256L03-um-18 04:151		307-55-1	ND	0.387	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
376-06-7 ND 0.369 2.44 3.91 B8B0146 $2.3-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 96.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.3 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.3-Jun-18 04:15$ 1 IS 94.1 $50 - 150$ B8B0146 $23-May-18$ 0.256 L $0.$		72629-94-8	QN	0.241	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
TypeYor		3/6-06-7	UN	0.369	2.44	3.91		B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
IS96.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS91.450- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.550- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.550- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS94.150- 150BBE0146 23 -May-18 0.256 L 03 -Jun-18 $04:15$ 1IS95.850- 150BBE0146 23 -May-18 0.256 L <t< td=""><td></td><td>Type</td><td>% Recovery</td><td></td><td>Limits</td><td></td><td>Qualifiers</td><td>Batch</td><td>Extracted</td><td>Samp Size</td><td>Analyzed</td><td>Dilution</td></t<>		Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
IS 94.1 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 110 $50 \cdot 150$ $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 94.5 $50 \cdot 150$ $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 94.5 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 94.1 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 94.1 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 88.4 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 88.4 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 88.4 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 95.8 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 95.8 $50 \cdot 150$ $B8E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 95.8 95.8 $50 \cdot 150$ $92.8May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 85.1 $50 \cdot 150$ $88E0146$ $23-May-18$ $0.256L$ $03-Jun-1804:15$ 1 IS 85.1 $50 \cdot 150$ $92.9May-18$ $0.256L$		IS	96.1		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
IS110 $50 \cdot 150$ B8E0146 $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 93.4 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 94.5 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 94.1 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 94.1 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 88.4 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 88.4 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 88.4 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 106 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 106 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 95.8 $50 \cdot 150$ $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 95.8 $50 \cdot 150$ $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$ 1IS 95.8 $50 \cdot 150$ $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256 L$ $03 \cdot Jun \cdot 18 04:15$		IS	94.1		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		IS	110		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
IS 94.5 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 89.7 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 94.1 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 88.4 $50 \cdot 150$ $B8E0146$ $23 \cdot May \cdot 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 58.0 $50 \cdot 150$ $B8E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 106 $50 \cdot 150$ $B8E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 106 $50 \cdot 150$ $B8E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 95.8 $50 \cdot 150$ $B8E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 95.8 $50 \cdot 150$ $B8E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 95.8 $50 \cdot 150$ $B8E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 95.8 $50 \cdot 150$ $98E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 97.9 97.9 $50 \cdot 150$ $98E0146$ $23 \cdot May - 18$ $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 IS 97.9 97.9 97.15 97.16 $0.256L$ $0.3 \cdot Jun \cdot 18.04:15$ 1 </td <td></td> <td>IS</td> <td>93.4</td> <td></td> <td>50 - 150</td> <td></td> <td></td> <td>B8E0146</td> <td>23-May-18</td> <td>0.256 L</td> <td>03-Jun-18 04:15</td> <td>1</td>		IS	93.4		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
		IS	94.5		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
		IS	89.7		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$		IS	94.1		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	-
IS 58.0 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 106 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 95.8 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 85.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 85.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 87.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 97.9 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1		IS	88.4		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
IS 106 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 95.8 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 85.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 85.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 97.9 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1		IS	58.0		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
IS 95.8 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 85.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 97.9 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1		IS	106		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
IS 85.1 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1 IS 97.9 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1		IS	95.8		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
IS 97.9 50 - 150 B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 1		IS	85.1		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1
		IS	9.79		50 - 150			B8E0146	23-May-18	0.256 L	03-Jun-18 04:15	1

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Work Order 1800936

Page 19 of 40



Sample ID: SK1SW0200180509N

PFAS Isotope Dilution Method Dilution 03-Jun-18 04:15 03-Jun-18 04:15 BEH C18 Analyzed Column: Samp Size B8E0146 23-May-18 0.256 L 0.256 L 23-May-18 Extracted 12-May-18 09:57 1800936-01 B8E0146 Batch Qualifiers Laboratory Data Date Received: Lab Sample: 50 - 150 50 - 150 50 - 150 Limits 09-May-18 15:05 Aqueous Matrix: Date Collected: % Recovery 96.7 72.8 73.1 IS IS Type Merit Laboratories, Inc. 08n11e33-SK01 Lapeer Labeled Standards 13C2-PFTeDA 13C2-PFUnA 13C2-PFDoA **Client Data** Location: Project: Name:

B8E0146 23-May-18 0.256 L 03-Jun-18 04:15 When reported, PFHxS, PFOA and PFOS include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

LCL-UCL- Lower control limit - upper control limit

Results reported to the DL.

LOD - Limit of Detection LOQ - Limit of quantitation

DL - Detection Limit

iboratory	lethod				Dilution	1	-					1	-	-					-		-						1	Dilution	-		1	-		-	-		-	-	-		
	tope Dilution N		EHA C18		Analyzed	03-JB18 0v:sR	03-JB18 0v:sR	03-JB18 0v:sR	03-JB18 0V:SK 02 IB 18 0v:5 D	03-IB -18 0V SR	03-JB -18 0v:sR	03-JB18 0v:sR	10-JB18 09:vv	03-JB18 0v:sR	03-JB18 0v:SK 03-IB -18 0v:sP	03-JB, -18 0v:sR	03-JB18 0v:sR	Analyzed	03-JB18 0v:sR	03-JB18 0v:sK																					
	PFAS Isot		ColBm. :		Samp Size	0us R8 L	0us R8 L	0us R8 L	0us K& L 0us D8 T	Ous R8 L	Ous R8 L	0us R8 L	0us R3 L	0us R8 L	0us K& L 0us P8 I	Ous R8 L	0us R8 L	Samp Size	0us R8 L	0us R& L																					
				09:RK	Extracted	s3-Ma5-18	s3-Ma5-18	s3-Ma5-18	81-cmas-18	61-001-00 81-001-00 81-001-00	s3-Ma5-18	s3-Ma5-18	08-JB18	s3-Ma5-18	s3-Ma5-18 s3-Ma5-18	s3-Ma5-18	s3-Ma5-18	Extracted	s3-Ma5-18																						
			1800936-0s	1s-Ma5-18	Batch	E8H01v6	E8H01v6	E8H01v6	E8H01v6	E8H01v6	E8H01v6	E8H01v6	E8400v1	E8H01v6	E8H01v6 E8H01v6	E8H01v6	E8H01v6	Batch	E8H01v6																						
		ratory Data	ample:	2 ecei7ed:	Qualifiers		J	J			ŗ	J				J												Qualifiers													
		Labo	Lab S	Date	LOQ	3u88	3u88	3u88	3168 2188	3188	3488	3u88	3 OR	3u88	3u88	3 u 88	3u88	3 1 88	3 1 88	3 1 88	3 u 88	3088	3488	3488 3.60	3188 3188	3088 3088	3u88														
			oB,	a5-18 1KvK	TOD	S W S	S UVS	SUVS	SUVS	SALS	SUVS	S UVS	surK	S UVS	SUVS	S UVS	S UVS	S UVS	SUVS	SUVS	SUVS	s n s	S UVS	Limits	RO - 1RO	R0 - 1R0															
			q yBe	ected: 09-M	DL	OuBRv	0u6s 1	0u869	1 u6 3 1 - 0 6	1000 1183	0us 8K	09M0	0u08K	0u316	OuvRR	0 ຜ 93	0.6R9	$0 \oplus 9s$	0uKs 3	1400	1u88	0u801	0166R	0uR10	0ut9K 0u38v	00.800	0u36K														
			Matrix:	Date Collo	Conc. (ng/L)	Rus 6	s w0	su61	UN UN	R N	306	1168	ND	Kuðv	ND	0u9s8	ND	Rluv	ND	ND	ND	ND	QN	QN ;	UN ON	QN N	ND	% Recovery	K8ıK	8KiR	910	90ı8	86uK	86u	KOU)	8vu6	K6u6	8v0	K348	83uR	9Rt8
			'n		CAS Number	3KR-ss-v	s K06-90-3	3KR-K3-R	KKKISV-KS-V 20V ev v	s K06-91-v	3KR-8R-9	3RR-v6-v	s K619-9K-s	33R-6K-1	3KR-9s-8	3KR-9R-1	KRv-91-6	1K63-s3-1	33R-K6-s	39108-3v-v	68sR9-1s-1	s3RR-31-9	s 991-R0-6	s 0R8-9v-8	33K-KK-3 20K-PP-1	Ks 6s 9-9v-8	3K6-06-K	Type	SI	SI	SI	SI :	22	SI .	21	SI (SI	SI	SI	S	R
	SK1SW0100180509N		Merit Laboratorie, In c	Lapeer 08. 11e33-SF 01																								ards													
	Sample ID: 3	Client Data	Name:	Project: Locatio. :	Analyte	P4Eq	P4Peq	P4ES	V:S 41S	P4PeS	P4Apq	P4AxS	6:s 4TS	P4Oq	P4ApS	P4Nq	P4OSq	P4OS	P4Dq	8:s 4TS	P4NS	Me4OSq q	Ht4OSq q	P4U.q	P4DS D4Dec	P4TrDq	P4TeDq	Labeled Stand	13C3-P4Eq	13C3-P4Peq	13C3-P4ES	13Cs-P4Axq	13Cv-P4Apq	180s-P4AxS	13Cs-P4Oq	13CR-P4Nq	13C8-P4OSq	13C8-P4OS	13Cs-P4Dq	d3-Me4OSq q	dR-Ht4 USq q

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Work Order 1800936

Page 21 of 40



Sample ID: SK1SW0100180509N

PFAS Isotope Dilution Method Dilution 03-JB. -18 0v:sR 03-JB. -18 0v:sR EHA C18 Analyzed ColBm. : Samp Size 0us R8 L 0us R8 L E8H01v6 s3-Ma5-18 s3-Ma5-18 Extracted 1s-Ma5-18 09:RK 1800936-0sE8H01v6 Batch Qualifiers Laboratory Data Date 2 ecei7ed: Lab Sample: R0 - 1R0 R0 - 1R0 Limits 09-Ma5-18 1RvR q yBeoB Matrix: Date Collected: % Recovery 63w K8us Type S S Merit Laboratorie, In cu 08. 11e33-SF01 Lapeer Labeled Standards 13Cs-P4U. q 13Cs-P4Doq **Client Data**

Whe. reportedI P4AXSI P4Oq a. d P4OS i. clBde both li. ear a. d bra. ched i, omer, u O. 15 the li. ear i, omer i, reported for all other a. al5te, u

LCL-UCL- Lower co. trol limit - Byper co. trol limit 2 e, Bt, reported to the DLu

LOD - Limit of Detectio. LOQ - Limit of yBa. titatio. S

DL - Detectio. Limit 13Cs-P4TeDq

Locatio. : Project: Name:

R0 - 1R0

(0169

03-JB. -18 0v:sR

0us R8 L

E8H01v6 s3-Ma5-18

Mathod	n Meunu			Dilution	:36 1	:36 1	:36 1	:36 1 26 1	:36 I	-36 1	:36 1	:03 1	:36 1	:36 1	:36 1	:36 1	:57 5	:36 1	:36 1	:36 1	:36 1	:36 1	:36 1	:36 1	:36 1	:36 I -36 I	Dilution	.26 1	-36 1	:36 1	:36 1	:36 1	:36 1	:36 1	:36 1	:36 1	:57 5	:36 1	:36 1	:36 1
	otope Dilutic	BEH C18		Analyzed	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	14-Jun-18 08	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04	07-Jun-18 10	03-Jun-18 04	Analyzed	02 Lun 18 04	03-Jun-18 04	07-Jun-18 10	03-Jun-18 04	03-Jun-18 04	03-Jun-18 04															
	PFAS Isc	Column:		Samp Size	0.256 L	0.256 L	0.256 L	0.256 L	0.256 L	0.2561.	0.256 L	0.244 L	0.256 L	Samn Size	0.7561	0.2561	0.256 L																							
)3 8 09:57		Extracted	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-Mav-18	23-May-18	12-Jun-18	23-May-18	Extracted	22 May 19	23-May-18	23-Mav-18	23-May-18																						
		1800936-0 12-May-1		Batch	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146 B8E0146	B8E0146	B8E0146	B8F0066	B8E0146	B8E0146 B8E0146	Ratch	D9E0146	B8E0146																							
		oratory Data Sample: Received:		Qualifiers		ſ								ſ			D			ſ			ſ		ſ		Oualifiers	Zualinel 3									D			
		Labo Lab (Date		L0Q	3.90	3.90	3.90	3.90	3.90 3.00	3 90	3.90	4.10	3.90	3.90	3.90	3.90	19.5	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90	3.90 2.00	0													
		ieous May-18 16:15		LOD	2.44	2.44	2.44	2.44	2.44 2.44	2.44	2.44	2.56	2.44	2.44	2.44	2.44	12.2	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44	2.44 2.44	Limite	50 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150	50 - 150
		Aqı lected: 09-		DL	0.355	0.624	0.873	1.34	1.06	0.288	0.462	1.03	0.317	0.457	0.395	0.863	1.97	0.726	1.00	1.89	0.804	0.668	0.512	0.600	0.386	0.241	000.0													
		Matrix: Date Col		Conc. (ng/L)	5.70	3.55	13.8	Q	6.19 ND	6 16	5.29	ND	26.1	2.71	4.70	ND	2080	5.55	ŊŊ	2.08	QN	ND	0.614	ND	0.424	UN UN	0% Recovery	07 1	95.1	110	105	101	103	83.7	81.5	80.4	111	106	104	103
				CAS Number	375-22-4	2706-90-3	375-73-5	757124-72-4	307-24-4 2706-01-4	375-85-9	355-46-4	27619-97-2	335-67-1	375-92-8	375-95-1	754-91-6	1763-23-1	335-76-2	39108-34-4	68259-12-1	2355-31-9	2991-50-6	2058-94-8	335-77-3	307-55-1	12629-94-8 276.06.7	Tune	1S	a s	IS SI	IS									
	K1DR0300180509N	Merit Laboratories, Inc. Lapeer	08n11e33-SK01																								rde	CD 1												
	Sample ID: S	Client Data Name: Project:	Location:	Analyte	PFBA	PFPeA	PFBS	4:2 FTS	PFHXA DFDaS	PFHnA	PFHxS	6:2 FTS	PFOA	PFHpS	PFNA	PFOSA	PFOS	PFDA	8:2 FTS	PFNS	MeFOSAA	EtFOSAA	PFUnA	PFDS	PFDoA	PF ITUA DETaDA	I aheled Standa	13C3 DED A	13C3-PFPeA	13C3-PFBS	13C2-PFHxA	13C4-PFHpA	1802-PFHxS	13C2-PFOA	13C5-PFNA	13C8-PFOSA	13C8-PFOS	13C2-PFDA	d3-MeFOSAA	d5-EtFOSAA

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Page 23 of 40

Work Order 1800936



Sample ID: SK1DR0300180509N

PFAS Isotope Dilution Method Dilution 03-Jun-18 04:36 03-Jun-18 04:36 B8E0146 23-May-18 0.256 L 03-Jun-18 04:36 When reported, PFHxS, PFOA and PFOS include both linear and branched isomers. BEH C18 Analyzed Column: Samp Size B8E0146 23-May-18 0.256 L 0.256 L 23-May-18 Extracted 12-May-18 09:57 1800936-03 B8E0146 Batch Qualifiers Laboratory Data Date Received: Lab Sample: LCL-UCL- Lower control limit - upper control limit 50 - 150 50 - 150 50 - 150 Limits 09-May-18 16:15 Aqueous Matrix: Date Collected: % Recovery 89.6 87.4 77.5 IS IS Type Merit Laboratories, Inc. 08n11e33-SK01 Lapeer Labeled Standards DL - Detection Limit 13C2-PFTeDA 13C2-PFUnA 13C2-PFDoA **Client Data** Location: Project: Name:

Only the linear isomer is reported for all other analytes.

Results reported to the DL.

LOD - Limit of Detection LOQ - Limit of quantitation

Vista Analytical Laboratory	Isotope Dilution Method	m.: EHA C18	ze Analyzed Dilution	03-JB -18 0s:s6 1	03-JB18 0s:s6 1	03-JB18 0s:s6 1	03-JB -18 0s:s6 1	03-JB18 05:S6 1	03-JB -18 05:56 1	03-JB -18 0s:s6 1	1 10-JB -18 09:77 1	03-JB18 0s:s6 1	03-JB18 0s:s6 1	03-JB18 0s:s6 1	03-JB -18 0s:s6 1	03-JB -18 0s:s6 1	03-JB -18 0s:s6 1	03-TB -18 0s:50 1	03-JB18 0s:s6 1	03-JB18 0s:s6 1	03-JB18 0s:s6 1	03-JB -18 0s:s6 1	03-JB -18 08:S0 1 03-JB -18 08:S6 1	03-JB18 0s:s6 1	ze Analyzed Dilution	03-JB18 0s:s6 1	03-IR -18 0c·c6 1		03-JB -18 0s:s6 1	03-JB -18 0s:s6 1 03-JB -18 0s:s6 1	03-JB -18 0s:s6 1 03-JB -18 0s:s6 1 03-JB -18 0s:s6 1 03-JB -18 0s:s6 1	03-JB -18 05:56 1 03-JB -18 05:56 1 03-JB -18 05:56 1 03-JB -18 05:56 1 03-JB -18 05:56 1	03-JB -18 0s:s6 1 03-JB -18 0s:s6 1	03-JB -18 0s:s6 1 03-JB -18 0s:s6 1	03-JB -1808:36 1 03-JB -1808:36 1	03-JB -18 0s: s6 1 03-JB -18 0s: s6 1
	PFAS	-0s 18 09:7K	Extracted Samp S	0.23-Ma5-18 0.07s 1	23-Ma5-18 0t27s 1	i 23-Ma5-18 0@7s 1	23-Ma5-18 0@7s 1	23-Ma5-18 00/81	23-Ma5-18 0127s	23-Ma5-18 0\text{u27s}]	08-JB18 00277 1	23-Ma5-18 0@7s 1	23-Ma5-18 0027s 1	23-Ma5-18 0@7s 1	23-Ma5-18 0\mathcal{2}7s]	23-Ma5-18 0\v27s 1	23-Ma5-18 0@7s 1	23-Ma5-18 0107s	23-Ma5-18 0\vec{2}7s 1	23-Ma5-18 0027s 1	23-Ma5-18 0@7s 1	23-Ma5-18 0@7s]	23-Ma5-18 0027s	23-Ma5-18 0t27s 1	Extracted Samp S	23-Ma5-18 0@7s 1	23-Ma5-18 0027s 1	1 2 MAC 18 0.076 1	1 61 JUU 01-01/101-07	23-Ma5-18 00278 1	23-Ma5-18 0(27s]	23-Ma5-18 0\var275 1 23-Ma5-18 0\var275 1 23-Ma5-18 0\var275 1 23-Ma5-18 0\var275 1	23-Ma5-10 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1	23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1 23-Ma5-18 00275 1	23-Ma5-18 23-Ma5-18 23-Ma5-18 0.275 23-Ma5-18 0.275 23-Ma5-18 0.275 23-Ma5-18 0.275 23-Ma5-18 0.275 23-Ma5-18 0.275 23-Ma5-18 0.275	23-Ma5-16 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275 23-Ma5-18 00275
		atory Data ample: 1800936- Received: 12-Ma5-	Qualifiers Batch	E8H01s6	J E8H01s6	E8H01s6	E8H01s6	E8H01S6 F8H01s6	E8H01s6	J E8H01s6	E8400s1	J E8H01s6	E8H01s6	E8H01s6	E8H01s6	J E8H01s6	E8H01s6	ESHDISG	E8H01s6	E8H01s6	E8H01s6	E8H01s6	E8H0156 E8H0156	E8H01s6	Qualifiers Batch	E8H01s6	E8H01s6	E8H01s6	· · · · · · · · · · · · · · · · · · ·	E8H01s6	E8H01s6 E8H01s6	E8H01s6 E8H01s6 E8H01s6 E8H01s6	E8H0156 E8H0156 E8H0156 E8H0156 E8H0156	E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6	E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6	E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6 E8H01s6
		Labor B. Lab Sc a5-18 16:30 Date F	TOD TOO	2us 6 3u0s	2us 6 3u9s	2us 6 3u9s	2us 6 3ubs	2006 3106 2166 3106	218.6 319s	2us 6 3uBs	2us 7 3u92	2us 6 3u9s	2us 6 3u0s	2us 6 3u9s	2us 6 3u9s	2us 6 3u9s	2us 6 3u9s	216.6 319s	2us 6 3ubs	2us 6 3u9s	2us 6 3u0s	2us 6 3u9s	2066 309S	2us 6 3u0s	Limits	70 - 170	70 - 170	70 - 170	70 - 170		70 - 170	70 - 170 70 - 170 70 - 170	70 - 170 70 - 170 70 - 170 70 - 170	70 - 170 70 - 170 70 - 170 70 - 170 70 - 170	70 - 170 70 - 170 70 - 170 70 - 170 70 - 170 70 - 170	70 - 170 70 - 170
		Matrix: q yBc Date Collected: 09-Mi	Conc. (ng/L) DL	7u88 0u379	1.001 0.631	ND 0u883	ND 1.67	ND IUK ND 1.87	ND 00291	1u80 0us 6K	6u28 0u0K9	1.07 0.321	ND 0us 62	ND 0499	ND 048K3	200s 00398	ND 04637	UN 1011	ND 0u81s	ND 006K7	ND 0u718	ND 0.606	ND 00255	ND 008K2	% Recovery	9216	9306	102	9312		93u8	93û 91ú 00.4	93.16 91.16 90.11	93tB 91t6 92t0 83t8	93.tB 91.tG 92.tD 83.t8 96.td	93.tB 91.tG 92.t0 83.t8 95.ti 97.ts
	509N	ie, 1 n cu	CAS Number	3K7-22-s	2K06-90-3	3K7-K3-7	K7KI 2s-K2-s	30K-2S-S 7K06-01-e	3K7-87-9	377-s6-s	2K619-9K-2	337-6K-1	3K7-92-8	3K7-97-1	K7s-91-6	1K63-23-1	337-K6-2	68279-12-1	2377-31-9	2991-70-6	2078-9s-8	337-KK-3 20V 77 1	30K-//-1 K2629-9s-8	3K6-06-K	Type	ß	Sī	SS .	Se :		2	<u>ନ</u> ନ ଖ	ୟ ହ ହ ହ	ୟ ୟ ୟ ୟ ୟ	ୟ ହ ହ ହ ହ ଅ	ୟ
	ID: SK1DR0200180;	ata Merit Laboratori Lapeer 08. 11e33-SF 01					8				S						0	0	Sq q	b ba	F		Ja	Jq	led Standards	P4Eq	.P4 Peq	-P4ES	-P4Axq		-P4Apq	-P4Apq -P4AxS D405	-P4 Apq -P4 AxS -P4 Oq D1 N:O	-P4 Apq -P4 AxS -P4 Oq -P4 Nq -P4 OSq	-P4 Apq -P4 AxS -P4 Oq -P4 Nq -P4 OSq	-P4Apq -P4AxS -P4Oq -P4Nq -P4OSq -P4OS

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Page

Work Order 1800936

Page 25 of 40



Sample ID: SK1DR0200180509N

PFAS Isotope Dilution Method Laboratory Data

Client Data				Laboratory Data					
Name: Mer	rit Laboratorie, I n cu	Matrix:	q yBeoB,	Lab Sample:	1800936-0s		ColBm. :	EHA C18	
Project: Lap Locatio. : 08.	eer 11e33-SF 01	Date Collected:	09-Ma5-18 16:30	Date Received:	12-Ma5-18 (09:7K			
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-P4U. q	Ş	8s û	70 - 170		E8H01s6 2	23-Ma5-18	0027s L	03-JB18 0s:s0	j 1
13C2-P4Doq	SI	8616	70 - 170		E8H01s6	23-Ma5-18	027s L	03-JB18 0s:st	1
13C2-P4TeDq	IS	K6ıl	70 - 170		E8H01s6	23-Ma5-18	0027s L	03-JB18 0s:st	j 1
DL - Detectio. Limit	LOD - Limit of Detectio. LOQ - Limit of yBa. titatio.	LCL-UCL- Lower o Re, Blt, reported to th	o. trol limit - Byper co. trol limit ne DLu	Whe. rep O. 15 the I	ortedI P4 AxSI P4 i. ear i, omer i, re	Oq a. d P4OS i ported for all ot	. clBde both li. ea her a. al5te, u	ır a. d bra. ched i, om	er, u

											Visto Analytical L	aboratory
Sample ID: S	K1DR0100180509N									PFAS Iso	tope Dilution N	Iethod
Client Data						Labo	ratory Data					
Name: Project:	Merit Laboratorie, In (Lapeer	cu	Matrix: Date Collt	q yBe ected: 09-Mi	oB, a5-18 1R:0s	Lab S Date	Sample: v ecei2ed:	1800936-0 17-Ma5-1)s 8 09:sR	ColBm. :	EHA C18	
Locatio. :	08. 11e33-SK01				401			Datab	Tota ata d	0		
Analyte		CAS Number	Conc. (ng/L)	DF	TOD	ГОЛ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFEq		3Rs-77-4	4uBs	0 a 67	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
PFPeq		7R06-90-3	1 <i>u</i> 7R	0u63s	7u48	3 	J	E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
PFES		3Rs-R3-s	2007	00888	7u48	3 	ſ	E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
4:7 FTS		Rs R1 74-R7-4	ND	1u36	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFAxq		30R-74-4	ND	108	7u48	3OR		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
PFPeS		7R06-91-4	ND	1 ů 6	7u48	3OR		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFApq		3Rs-8s-9	0uR37	0u793	7u48	3 OR	ſ	E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFAxS		3ss-46-4	0uR47	0u4R0	7u48	3OR	ſ	E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
6:7 FTS		7R619-9R-7	403	1.07	7us s	4008		E8F0041	08-JB18	0u74s L	10-JB18 10:0s	1
PFOq		33s-6R-1	7ul 8	0 ቆ73	7u48	3 	ſ	E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFApS		3Rs-97-8	ND	0u46s	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
PFNq		3Rs-9s-1	ŊŊ	0u407	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFOSq		Rs 4-91-6	ND	0u8R8	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
PFOS		1R63-73-1	17u0	0u400	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFDq		33s-R6-7	ND	0439	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
8:7 FTS		39108-34-4	Ŋ	1.07	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFNS		687s9-17-1	ND	1097	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
MeFOSq q		73ss-31-9	ND	0u819	7u48	30PR		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
HtFOSq q		7991-s0-6	ND	01680	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	-
PFU. q		70s8-94-8	ND	0us 71	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
PFDS		33s-RR-3	ND	00610	7u48	3 		E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
PFDoq		30R-ss-1	QN	0@93	7u48	30R		E8H0146	73-Ma5-18	$0\overline{u}s7L$	03-JB18 04:sR	
PFIrDq		K/679-94-8	CIN :	0u/4s	7448	30R		E8H0146	73-Ma5-18	$0\overline{0}$ S 7 L	03-JB -18 04:sR	
PFleDq		3K0-06-K	ΠN	OukRs	/148	3 WK		E8H0146	/3-Ma5-18	0u/s / L	03-JB18 04:SK	
Labeled Standa	rds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFEq		S	93uB		$s_0 - 1s_0$			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
13C3-PFPeq		S	96dR		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
13C3-PFES		S	111		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
13C7-PFAxq		S	990B		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
13C4-PFApq		S	10R		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
1807-PFAxS		S	100		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
13C7-PFOq		SI	90dR		$s_0 - 1s_0$			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	-
13Cs-PFNq		Si	R8u3		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
13C8-PFOSq		S	RRus		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
13C8-PFOS		Sī	940		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
13C7-PFDq		S	83us		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	-
d3-MeFOSq q		S	8Ru3		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	
ds-HtFOSq q		R	103		s0 - 1s0			E8H0146	73-Ma5-18	0u7s7L	03-JB18 04:sR	

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Work Order 1800936

Page 27 of 40



Sample ID: SK1DR0100180509N

Sample ID: SK1DR01(0180509N						PFAS Iso	tope Dilution N	lethod
Client Data				Laboratory Data					
Name: Merit La	ooratorie, I n cu	Matrix:	q yBeoB,	Lab Sample:	1800936-0s		ColBm. :	EHA C18	
Project: Lapeer		Date Collected:	09-Ma5-18 1R:0s	Date v ecei2ed:	17-Ma5-18 (39:sR			
Locatio. : 08. 11e3	-SK01								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C7-PFU. q	S	RRus	s0 - 1s0		E8H0146 7	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
13C7-PFDoq	SI	83ul	s0 - 1s0		E8H0146 7	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
13C7-PFTeDq	IIS	R6u7	s0 - 1s0		E8H0146 7	73-Ma5-18	0u7s7L	03-JB18 04:sR	1
DL - Detectio. Limit	LOD - Limit of Detectio.	LCL-UCL- Lower c	o. trol limit - Bpper co. trol limit	Whe. rep	ortedI PFAxSI PF	Oq a. d PFOS i	. clBde both li. e	ar a. d bra. ched i, omer,	n
	LOQ - Limit of yBa. titatio.	v e, Blt, reported to t	he DLu	O. 15 the 1	li. ear i, omer i, rej	ported for all ot	her a. al5te, u		

												aboratory
Sample ID: Sł	X1SW0300180509N									PFAS Iso	tope Dilution N	1 ethod
Client Data Name	Merit Lahoratories Inc.		Matrix.	Adheon		Labor Lab Sa	atory Data	1800936-0	9	.umilo)	DEH C10	
Project: Location:	Lapeer 08n11e33-SK01		Date Colle	scted: 09-May	-18 15:1R	Date v	/ ecei2ed:	17-May-1	8 09:R5	COMMITT	DEIL CIO	
Analyte		CAS Number	Conc. (ng/L)	DL	LOD	T00	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBA		35R-77-4	6.05	0.408	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
PFPeA		7506-90-3	1.44	0.515	7.80	4.48	ſ	B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
PFBS		35R-53-R	ND	1.00	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
4:7 FTS		5R5174-57-4	Q	1.R3	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
PFHXA DFD ₂ C		305-74-4	ON AN	1.//	08.7 7 80	4.48		BSE0146	72 May-18	0.//3 L	0.3 Lun-18 0K05	
DEHAA		35P 8P 0	0.816	1.KS 0.331	7 80	4.48 1 18	F	BSE0140 BSE0146	72 May-18	U.773 I	03-Jun-18 0R05	
PFHxS		3RR-46-4	ND	0.R30	7.80	4.48	5	B8E0146	73-Mav-18	0.773 L	03-Jun-18 0R:05	
6:7 FTS		75619-95-7	ND	0.997	7.48	3.95		B8F0041	08-Jun-18	0.7R7 L	10-Jun-18 10:1R	1
PFOA		33R-65-1	0.R9R	0.364	7.80	4.48	ſ	B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
PFHpS		35R-97-8	ND	0.R7R	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
PFNA		35R-9R-1	ΟN	0.4R3	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	-
PFOSA		5R4-91-6	ND	0.991	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
PFOS		1563-73-1	ND	0.4R7	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
PFDA		33R-56-7	Q	0.834	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	_
8:7 FTS		39108-34-4	QN ;	1.1R	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
PFNS		687K9-17-1	(UN)	7.15	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
Merusaa Taposaa		7001 D0 7		0.9/4	7.80	4.48		BSE0146	72 May-18	0.//3 L	0.3 Lucitor 18 0000	
Etf-USAA DEI In A		0-03-166/ 2018-04-8	UN UN	0.00 0 884 0	7 80 7	4.48 1.48		B8E0146 B8E0146	73-May-18	0.773 L	03-Jun-18 0K05 03-Lun-18 0P-05	
PFDS		33R-55-3	QN N	0.689	7.80	4 48		B8E0146	73-Mav-18	0.773 L	03-Jun-18 0R:05	
PFDoA		305-RR-1	QN	0.443	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
PFTrDA		57679-94-8	ND	0.755	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
PFTeDA		356-06-5	ΟN	0.473	7.80	4.48		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	-
Labeled Standar	ds	Type	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBA		IS	91.3		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
13C3-PFPeA		IS	86.3		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
13C3-PFBS 13C7-DFHv A		SI SI	98.9 80.1		RU - 1RU R0 - 1R0			B8E0146 B8E0146	73-May-18	0.773 I	03-Jun-18 0K:05 03-Jun-18 0R:05	
13C4-PFHnA		SI	93.1		R0 - 1R0			B8E0146	73-Mav-18	0.773 L	03-Jun-18 0R:05	
1807-PFHxS		IS	94.R		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
13C7-PFOA		IS	80.8		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	-
13CR-PFNA		IS	91.9		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
13C8-PFOSA		IS	85.4		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1
13C8-PFOS		IS	94.7		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
13C7-PFDA		IS	93.1		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
d3-MeFOSAA		IS	107		R0 - 1R0			B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	
dk-EtrUSAA		IS	9.66		KU - 1KU			B8E0140	75-May-18	0.775 L	CU:NU &1-nul-50	

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Work Order 1800936

Page 29 of 40



Sample ID: SK1SW0300180509N

Client Data

PFAS Isotope Dilution Method BEH C18 Column: 1800936-06 Laboratory Data Lab Sample: Aqueous Matrix:

Name: 1 Project: 1 Location: 0	Merit Laboratories, I Lapeer 08n11e33-SK01	Inc.	Matrix: Date Collected:	Aqueous 09-May-18 15:1R	Lab Sample: Date v ecei2ed:	1800936-00 17-May-18	6 . 09:R5	Column:	BEH C18		
Labeled Standards		Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	I I
13C7-PFUnA		IS	93.9	R0 - 1R0		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1	
13C7-PFDoA		IS	58.4	RO - 1RO		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	-	
13C7-PFTeDA		IS	53.8	R0 - 1R0		B8E0146	73-May-18	0.773 L	03-Jun-18 0R:05	1	
DL - Detection Limit	07 70)D - Limit of Detection)Q - Limit of quantitation	LCL-UCL- Lower a	ontrol limit - upper control limit ne DL.	When rep Only the I:	orted, PFHxS, P inear isomer is 1	FOA and PFOS eported for all of	include both line: her analytes.	ar and branched isome	ś	

											Visto Analytical	J Laboratory
Sample ID: S	K1DR0400180509N									PFAS Iso	tope Dilution	Method
Client Data Name: Project: Locatio. :	Merit Laboratorie, I n cu Lapeer 08. 11e33-SK01		Matrix: Date Coll	q y B o ected: 09-Ma	B, 5-18 1s:R0	Labo Lab S Date	ratory Data ample: v ecei2ed:	1800936-C 1R-Ma5-1	s 8 09:7s	ColBm. :	EHA C18	
Analyte	CASI	Number	Conc. (ng/L)	DL	TOD	T00	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFEq	387	7-RR-J	Ruß 1	0¢6R	Rul 9	3098	4	E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
PFPeq	Rs 0(6-90-3	ND	0u636	Rul 9	308		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
PFES	387	7-s3-7	1 u I0	06800	Rul 9	3098	4	E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
J:RFTS	s 7s 1i	RJ -s R-J	ND	1u36	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
PFAxq	30s	s-RJ-J	ND	108	Rul 9	3 08		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
PFPeS	Rs 0.	6-91-J	ŊŊ	1ů6	Rul 9	3098		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFApq	3s7	7-87-9	00801	0uP0J	Rul 9	3 0 8	4	E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFAxS	377	7-J 6-J	Ru70	0uJ s 1	Rul 9	3 0 8	4	E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
6:RFTS	Rs 61	19-9s-R	ND	009J	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
PFOq	337	7-6s-1	30s	0thRI	Rul 9	3 0 8	4	E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
PFApS	3s7	7-9R-8	QN	0ul 66	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
PFNq	3s7	7-97-1	ND	0 u 03	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFOSq	s 7J	1-91-6	ND	00880	Rul 9	3098		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFOS	156	3-R3-1	7u78	0 u J01	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFDq	337	7-s 6-R	QN	0us J 1	Rul 9	3u08		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
8:RFTS	3910)8-3J-J	QN	1.0R	Rul 9	3098		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFNS	68R7	79-1R-1	QN	1 uPR	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
MeFOSq q	R37	7-31-9	QN	0u8R0	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
HtFOSq q	R99	1-70-6	QN	0u681	Rul 9	3098		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
PFU.q	R07.	8-9J-8	ND	0u7RR	Rul 9	3 0 8		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFDS	337	7-ss-3	QN	0u611	Rul 9	3 0 98		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFDoq	308	5-77-1	QN	0 B 9J	Rul 9	3098		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
PFTrDq	s R6F	20-9J-8	Q	0 uR 6	Rul 9	3098 2.22		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	<u> </u>
PFIEDQ		0-00-S		Uuss /	Kuly	3UD 8	8 ; (E8H01J6	K3-Ma2-18	0uK/1 L	<u>03-4B180/:18</u>	_
Labeled Standa	Irds Tyr	pe	% Recovery		Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFEq	C C C C C C C C C C C C C C C C C C C	IS	93uB		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
13C3-PFPeq	(SI	100		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
13C3-PFES	t t	ß	113		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
13CR-PFAxq	ſ	ß	96u7		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
13CJ-PFApq	ſ	IS	99û		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
18OR-PFAxS	ſ	ß	101		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
13CR-PFOq	ſ	ß	83t0		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
13C7-PFNq	ſ	ß	8J us		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
13C8-PFOSq	ſ	ß	s 8t9		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
13C8-PFOS	ſ	ß	93 u		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
13CR-PFDq	(ß	88 u R		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
d3-MeFOSq q		SI	88uJ		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	
d7-HtFOSq q	1	SI SI	D10		70 - 170			E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	

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Work Order 1800936

Page 31 of 40



Sample ID: SK1DR0400180509N

Sample ID: SKi	1DR0400180509N						PFAS Iso	tope Dilution N	lethod
Client Data				Laboratory Data					
Name:	Merit Laboratorie, In cu	Matrix:	q yBeoB,	Lab Sample:	1800936-0s		ColBm. :	EHA C18	
Project:	Lapeer	Date Collected:	09-Ma5-18 1s:R0	Date v ecei2ed:	1R-Ma5-18	09:7s			
Locatio. :	08. 11e33-SK01								
Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13CR-PFU. q	Sī	s 6 tū	70 - 170		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
13CR-PFDoq	SI	9J û	70 - 170		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	-
13CR-PFTeDq	IIS	s Ru6	70 - 170		E8H01J6	R3-Ma5-18	0uR71 L	03-4B18 07:18	1
DL - Detectio. Limit	LOD - Limit of Detectic	. LCL-UCL- Lower c	o. trol limit - Bpper co. trol limit	Whe. rep	ortedI PFAxSI PF	FOq a. d PFOS i	. clBde both li. e	ar a. d bra. ched i, omer,	n
	LOQ - Limit of yBa. tita	tio. v e, Blt, reported to t	he DLu	O. 15 the 1	li. ear i, omer i, re	sported for all ot	her a. al5te, u		

v e, Blt, reported to the DLu

LOQ - Limit of yBa. titatio.

iboratory	lethod				Dilution	1	1	1		_ ,					-	-	1	-	1	-	1					1		Dilution	1	-	1	-			,				·	 , ,	
	tope Dilution N		BEH C18		Analyzed	03-Jun-18 07:28	10-Jun-18 10-26	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	Analyzed I	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28	03-Jun-18 07:28																			
	PFAS Isot		Column:		Samp Size	0.277 L	0 277 I	0.2721	0.277 L	0.277 L	0.277 L	0.277 L	0.277 L	Samp Size	0.277 L	0.277 L	0.277 L	0.277 L	0.277 L	0.277 L	0.277 L	0.277 L	0.277 L																		
			~	: 09:75	Extracted	23-May-18	01-4111-10 08-1111-18	23-Mav-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	Extracted	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18	23-May-18														
			1800936-03	12-May-18	Batch	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	BSEU140	B8E0041	B8E0146	B&E0140 B&E0146	B8E0146	B8E0146	B8E0146	Batch	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146	B8E0146									
		ratory Data	ample:	Received:	Qualifiers		J					-, -	c			J												Qualifiers													
		Labo	Lab S	Date]	LOQ	3.93	3.93	3.93	3.93	3.93	3.93	5.95 2.02	3 05	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93	3.93 2.22	3.93 2.02	66.6 293	3.93	3.93	3.93														
			sno	ay-18 15:30	LOD	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2 A8	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47	2.47 2.47	2.47	2.47	2.47	Limits	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170	70 - 170
			Aque	scted: 09-M	DL	0.378	0.628	0.859	1.34	1.05	0.200	0.467	0.040/	0.320	0.460	0.398	0.869	0.396	0.531	1.01	1.90	0.810	0.652	0.604	0.389	0.242	0.351														
			Matrix:	Date Colle	Conc. (ng/L)	3.97	2.49	11.4	QN	ON I	UN 2:2	3.17 2.07	10.6	8.13	QN	0.703	ND	90.2	ND	ND	ND	Q ;	QN QN	ON ON	Q	ND	ΟN	% Recovery	93.0	90.6	96.1	90.1	89.0	88.4	85.7	59.3 - 26.3	56.8	94.6 00.0	99.3 	53.1	85.3
					CAS Number	357-22-4	2506-90-3	357-53-7	575124-52-4	305-24-4	2506-91-4	6-18-165 N 24 775	75619-95-7	337-65-1	357-92-8	357-97-1	574-91-6	1563-23-1	337-56-2	39108-34-4	68279-12-1	2377-31-9	2991-70-6 2078-04-8	20/8-94-8 337-55-3	305-77-1	52629-94-8	356-06-5	Type	IS	IS	IS	IS	IS	SI	IS	SI	IS	IS	IS	SI	IS
	ple ID: SK1DR0800150809N	nt Data	ne: Merit Laboratories, Inc	ject: Lapeer ation: 08n11e33-SK01	lyte	T	Ŷ		TS	X		Ad S	ST.		Sc	A	SA	~	4	TS		0SAA 2	SAA	Y	PC PC	DA	DA	eled Standards	1-PFBA	-PFPeA	1-PFBS	2-PFHxA	I-PFHpA	2-PFHxS	PFOA	-PFNA	3-PFOSA	-PFOS	PFDA	leFOSAA	tFOSAA
	San	Cli	Naı	Pro Loc	Ana	PFB.	PFP(PFB	4:2 F	PFH	PFP(PFH	4 C-9	PFO.	PFH	PFN	PFO	PFO	PFD.	8:2 F	PFN	MeF	EtFC	PFD	PFD	PFT1	PFT	Lab	13C	13C	13C.	13C	13C ⁴	180.	13C.	13C	13C	13C	13C.	d3-N	d7-E

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Work Order 1800936

Page 33 of 40



Sample ID: SK1DR0800150809N

Sample ID: 5	SK1DR0800150809	N						PFAS Iso	tope Dilution N	Method
Client Data					Laboratory Data					
Name:	Merit Laboratories,	Inc.	Matrix:	Aqueous	Lab Sample:	1800936-0	8	Column:	BEH C18	
Project:	Lapeer		Date Collected:	09-May-18 15:30	Date Received:	12-May-18	3 09:75			
Location:	08n11e33-SK01									
Labeled Standa	ards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFUnA		IS	53.7	70 - 170		B8E0146	23-May-18	0.277 L	03-Jun-18 07:28	1
13C2-PFDoA		IS	101	70 - 170		B8E0146	23-May-18	0.277 L	03-Jun-18 07:28	1
13C2-PFTeDA		IS	54.0	70 - 170		B8E0146	23-May-18	0.277 L	03-Jun-18 07:28	1
DL - Detection Lin	nit L	OD - Limit of Detection	LCL-UCL- Lower co	ontrol limit - upper control limit	When rep	orted, PFHxS, 1	FOA and PFOS	include both line	ar and branched isomer	s.

Only the linear isomer is reported for all other analytes.

Results reported to the DL.

LOQ - Limit of quantitation

DATA QUALIFIERS & ABBREVIATIONS

В	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
н	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
Μ	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

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

CERTIFICATIONS

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	17-015-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-18
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2016026
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207717
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-008
Pennsylvania Department of Environmental Protection	014
Texas Commission on Environmental Quality	T104704189-17-8
Virginia Department of General Services	9077
Washington Department of Ecology	C584
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

000									For Laborator	v Use Only			
Visto			CHAIN OF	C	L S I				Work Order #:	18	0936	Temp:	7, 1.9 %
Analytical Laboratory				5	2	201			Storage ID:	2-20		Storage Secured:	Yes TONO
									TA	r Sta	ndard:	x 21 days	-
Project ID: Lapeer PFAS Biosolids Ir	ivestigation		PO#: 60570635			Sample	r. Stan K	renz	(che	ck one): Ru:	sh (surchar	ge may apply)	
								(name)			14 days	7 days Spe	scify:
Invoice to: Name	0	Compan	У	4	vddres	~			City	Sta	te	Ph#	Fax#
Stephanie Kammer	2	ADEQ		47	25 W.	Allegan St	reet		Lansing	IM		517-897-1597	517-241-3571
Relinquished by (printed name and sign	ature)		Date		ime	Re	sceived by	r (printed name and signs	ature)			Date	Time
Dovi Bogh	-2		5/16/2018	F	7:30								
Relinquished by (printed name and sign	ature)		Date		ime	Å	ceived by	/ (printed name and signs	ature)			Date	Time
SHIP TO: Vista Analytical Laboratory 1104 Windfield Way EI Dorado Hills, CA 95762			Method of Shipment:	Add An	alysis(e	s) Requested		uoiini ⁹ doic SV3		LES DOG			
Рћ. (916) 673-1520; Fax: (\$ АТТМ: Ionnifor Millor	916) 673-010	90	-FED EX Transform No		ontain	er(s)		19 1 1 1		Non is			
		1			\searrow	10	SUBUUOSIM LC	Deleger List	SOJJ	×1 :151			
Sample ID	Date	Time	Location/Sample Description	Inueno	edri	10 IST TURN	10 15/7	Tist of Orgen	EC SA RE	1		Comments	
SK1SW0200180509N	5/9/18	1505	08n11e33-SK01	2	A A	q	×						
SK1SW0100180509N	5/9/18	1545	08n11e33-SK01	7	P	a	×						
SK1DR0300180509N	5/9/18	1615	08n11e33-SK01	2	P	Ø	×						
SK1DR0200180509N	5/9/18	1630	08n11e33-SK01	2	A	ø	×						
SK1DR0100180509N	5/9/18	1705	08n11e33-SK01	7	A A	a	×						
SK1SW0300180509N	5/9/18	1715	08n11e33-SK01	7	P	a	×						
SK1DR0400180509N	5/9/18	1720	08n11e33-SK01	7	P	a	×						
SK1DR0500180509N	5/9/18	1730	08n11e33-SK01	2	A A	a	×						
Special Instructions/Comments:	Send Resul	Its and	Acknowledgements to the	list prov	ided				Name: Step	hanie Kamm	er		
by e-mail to Vista.								SEND	Company: MDE	٥	2 million and 1		
							٩	NND RESULTS TO:	Address: 525 \	N. Allegan St	reet		
									City: Lans Phone: 517-	ing 897-1597	ن ا	tate: <u>MI</u> Zip Fax: <u>517-241-35</u>	:48909
							1		Email: dorin	.bogdan@aed	com.com		
Container Types: P= HDPE, PJ= HDPE Jar			Bottle Preservation Type	c T = Thio	sulfate,		Matrix 7	Types: AQ = Aqueous, DW	= Drinking Water, Ef	= Effluent, PP	= Pulp/Pape	r, SD = Sediment,	
O = Other.			TZ = Trizma:			1	SL = Slu	Idge, SO = Soil, WW = Was	tewater, B = Blood/S	erum, O = Othe	1		
			C			0		5/12	1.2				

Page 37 of 40

Work Order 1800936

Revised Coc-received from Doin Bogdan 5/17/18 (du

Visto Analytical Laboratory			CHAIN OF	CU	STOL	λ		For Laboratory Use Work Order #: Storage ID: WK-2	00456	Temp: 10-1	
Project ID: Lapeer			PO#: 60570635		Sa	mpler: Stan K	(renz (name)	TAT (check one	Standard: e): Rush (surc	x 21 days tharge may apply) ys 7 days Spe	ecify:
Invoice to: Name Stephanie Kammer		Company		Ac 52	dress 5 W. Allega	n Street		City Lansing	State MI	Ph# 517-897-1597	Fax# 517-241-3571
Relinquished by (printed name and sigr	ature) "		Date		ue eu	Received by	y (printed name and signe	ature)		Date	Time
Stan KM12 Munt	Min B	N	5-11-18	61	35	Beth	i Brodie	AND Bun	ut	05/12/18	1633
Relinquished by (printed name and sign	lature)		Date	Ē	аш	Received b	y (printed name and sign	ature)		Date	Time
SHIP TO: Vista Analytical Laboratory 1104 Windfield Way EI Dorado Hills, CA 95762			Method of Shipment:	Add Anal	/sis(es) Requ	lested	uoini Baoi SV3	A day	LE DOG		
Ph: (916) 673-1520; Fax: (ATTN: Jennifer Miller	916) 673-01	06	FED EX Tracking No ·	S	ntainer(s)		12 st st	13/	6		
		1	2	~	/	Pourosin Lo	ISIT OSEOJO	1 1351 134 14 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2			
Sample ID	Date	Time	Location/Sample Description	meno	SP Net	2 13 13	12 1 22 1 22 0 00 00 00 00 00 00 00 00 00 00 00 0	1 2 3 2 4 4 5 1 4 4 5 1		Comments	
SK1SW0200180509N	5/9/18	1505	Lapeer	2	AQ	×					
SK1SW0100180509N	5/9/18	1545	Lapeer	2	AQ	×					
SK1DR0300180509N	5/9/18	1615	Lapeer	2	AQ	×					
SK1DR0200180509N	5/9/18	1630	Lapeer	2	AQ	×					
SK1DR0100180509N	5/9/18	1705	Lapeer	2	AQ	×					
SK1SW0300180509N	5/9/18	1715	Lapeer	2	AQ	×					
SK1DR0400180509N	5/9/18	1720	Lapeer	2	AQ	×					
SK1DR0500180509N	5/9/18	1730	Lapeer	2	AG	×					
					-		-				×
Special Instructions/Comments:	Send Resu	ults and	Acknowledgements to the li	st provid	led	1	SEND	Name: Stephanie	Kammer		
by e-mail to Vista.						Ĩ	DOCUMENTATION AND RESULTS TO:	Company: MDEQ Address: 525 W. All	egan Street		
						F 1		City: Lansing		State: MI Zip	0:48909
						1		Phone: 517-897-1	597	Fax: 517-241-35	12
			E .	L L							
Container Types: P= HDPE, PJ= HDPE Ja O - Other:	-		Edite Preservation Type: T7 - Trisma:		urtate,	Matrix SI - SI	Iypes: Au = Aqueous, UW	= Urinking Water, EF = Effi tewater B = Blood/Serium	uent, PP = Pulp/P O = Other:	aper, SD = Sediment,	
			14 - 11161114.		Ĩ	5	nuge, co - con, mm	ופאמופוי, בי ב בוסטעו ספו איווי			Ê

Work Order 1800936

Page 38 of 40



Sample Log-in Checklist

Vista Work Orde	r #:80	0936					TAT	std	×
Samples	Date/Tim	e		In	itials:		Location:	WR.	-2
Arrival:	05/12	18 00	157 、	J	KND		Shelf/Rac	:k: <u>N</u>	+
	Date/Tim	e		In	itials:		Location:	WR-2	2
Logged In:	05/12/18	1201		W	US		Shelf/Rac	:k: <u>8</u> -L	l
Delivered By:	FedEx	UPS	On Tra	ic	GSO	DHI	- Ha Deliv	nd ered	Other
Preservation:	lo	e)	Blu	ue I	се		Dry Ice		None
Temp °C:) ,) (uncorr	ected) T	ime: (02	8 who	5/12/18	Therese	eter ID:	
Temp °C: . 7	(corre	cted) P	robe use	ed:	Yes 🗹 I	No	Inermom	eter ID:	117-4

	YES	NO	NA
Adequate Sample Volume Received?	MUS		
Holding Time Acceptable?	MAUS		
Shipping Container(s) Intact?	BB		
Shipping Custody Seals Intact?	Bell		
Shipping Documentation Present?	Balls		
Airbill 10/2 Trk# 7722 /188 4532 C	Balls		
Sample Container Intact?	UNUS		
Sample Custody Seals Intact?			UNDS
Chain of Custody / Sample Documentation Present?	AB		
COC Anomaly/Sample Acceptance Form completed?	J	WUS	UNS
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			UUUS
Preservation Documented: Na ₂ S ₂ O ₃ Trizma None	Yes	No	NA
Shipping Container Vista Client Retain Re	turn	Disp	ose

Comments:



Sample Log-in Checklist

Vista Work Orde	r #: \8 00	1936						TAT_STO	
Samples	Date/Time	e		Ini	itials:		Loca	ation: WR	-9
Arrival:	25/12	18 (X957	J:	BB		Shel	f/Rack: N/	t
	Date/Time	e		Ini	itials:		Loca	ation: WR-2	2
Logged In:	05/12/18	1201		M	US		Shel	f/Rack: 2-4	
Delivered By:	FedEx	UPS	On Tra	ic	GSO	DHI	-	Hand Delivered	Other
Preservation:	(Ice	e)	Blu	le lo	се		Dry	/ Ice	None
Temp °C: 2.0) (uncorre	ected) T	ime: (0	34	(Ther	memotor ID	
Temp °C:].	(correc	cted) P	robe use	ed:	Yes⊡ I	Not	iner	mometer ID:	IN-4

	YES	NO	NA
Adequate Sample Volume Received?	illes		
Holding Time Acceptable?	UNIS		
Shipping Container(s) Intact?	BUB		
Shipping Custody Seals Intact?	BIB		
Shipping Documentation Present?	BUB		
Airbill 20f2 Trk# 9722 1188 4554	BUD		
Sample Container Intact?	UNS		
Sample Custody Seals Intact?			NULUS
Chain of Custody / Sample Documentation Present?	-	VBSE	
COC Anomaly/Sample Acceptance Form completed?		WWS	UUUS
If Chlorinated or Drinking Water Samples, Acceptable Preservation?			ULLIS
Preservation Documented: Na ₂ S ₂ O ₃ Trizma None	Yes	NO	NA
Shipping Container Vista Client Retain Re	eturn	Disp	ose

Comments:

Appendix D



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Memorandum

Project	Lapeer Area PFAS	Page	1
Laboratory	Vista Analytical Laboratory, El Dorado Hills, CA		
Laboratory Work Number	1800898		
Analyses/Method	Per- and Polyfluoroalkyl Substances (PFAS)/Vista Lab SOF	^P No 49, F	Rev 10
Validation Level	Limited		
AECOM Project Number	60570365-01		
Prepared by	Waverly Braunstein		
Reviewed by	Robert Kennedy Completed: Ju	ıly 27, 201	18

SUMMARY

A limited validation was performed for the samples collected on April 26, April 27, April 30, May 1, and May 2, 2018 at the Lapeer site. The samples were submitted to Vista Analytical Laboratory (Vista) in El Dorado Hills, CA for analysis. Vista reported the samples under laboratory work order number 1800898.

Sample IDs
CLIDU10100180501N
CLIDU10200180501N
CLIDU10300180501N
CLIDU20100180501N
CLIDU20200180501N
CLIDU20300180501N
CLIDU30100180502N
CLIDU30200180502N
CLIDU30300180502N
TGIDU10100180426N
TGIDU10200180427N
TGIDU10300180427N
TGIDU20100180430N
TGIDU20200180430N
TGIDU20300180430N
TGIDU30100180426N
TGIDU30200180426N
TGIDU30300180426N

Data validation activities were conducted with reference to:

- Vista Analytical Laboratory SOP: Preparation and Analysis for the Determination of Perand Poly-Fluorinated Compounds (SOP No. 49, Revision 10);
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (January 2017); and

 USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016);

In the absence of method-specific information, laboratory quality control (QC) limits and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements:

- ✓ Data completeness (chain-of-custody (COC)/sample integrity
- ✓ Holding times and sample preservation
- ✓ Initial calibration/initial calibration and continuing calibration verification
- ✓ Laboratory method blanks/field blanks
- NA Matrix spike (MS) and/or matrix spike duplicate (MSD) results
- ✓ Ongoing precision and recovery (OPR) results
- NA Field duplicate results
- **X** Extracted internal standard results
- ✓ Sample results/reporting issues

The symbol (\checkmark) indicates that no validation qualifiers were applied based on this parameter. An "NA" indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (\varkappa) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Select data points were qualified as estimated due to nonconformances of certain QC criteria (see discussion below).

RESULTS

Data Completeness (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times and Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met.

Initial Calibration/Initial and Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD) or correlation coefficient (r)/coefficient of determination (r²) method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery (%R) acceptance criteria were met; and
- the continuing calibration verification standard (CCV) frequency and method acceptance criteria were met.

All QC acceptance limits were met or qualification of the data was not required.

Laboratory Method Blanks/Field Blanks

Laboratory method blanks and field blanks are evaluated as to whether there are contaminants detected above the detection limit (DL). Target compounds were not detected in the method blank associated with the sample in this data set. A field blank was not submitted with the sample reported in this data set.

MS/MSD Results

MS/MSD analyses were not performed on a sample in this data set. No data validation actions were taken on this basis.

OPR Results

The OPR percent recoveries were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required.

Field Duplicate Results

Field duplicate samples were not submitted with this data set. No data validation actions were taken on this basis.

Extracted Internal Standard Results

The extracted internal standard (IS) results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met except for the extracted IS results summarized below.

Sample ID	Extraction IS	% Recovery	QC Limits	Associated Compounds
CLIDU10100180501N	13C8-PFOSA	49.70	50 - 150	PFOSA
CLIDU20100180501N	13C3-PFBA	43.00	50 - 150	PFBA
CLIDU20200180501N	13C3-PFBA	30.40	50 - 150	PFBA
CLIDU20200180501N	13C8-PFOSA	47.50	50 - 150	PFOSA
CLIDU20300180501N	13C3-PFBA	41.10	50 - 150	PFBA
CLIDU20300180501N	13C8-PFOSA	42.70	50 - 150	PFOSA

Samples were qualified as follows (based on NFG 2016):

Criteria		Actions ¹
	Detected	Nondetected
%R > Upper Acceptance Limit	J	UJ
%R >10% but < Lower Acceptance Limit	J	UJ
%R <10%	U,	See below
<10% and S/N >10:1	J	R
<10% and S/N <10:1	R	R
¹ The PFAS method is performed using isotope dilution tecl applied and bias codes were not included in data qualificat	nnique; therefore, pr ion.	ofessional judgment was

Qualified sample results are summarized in Table 1.

Sample Results/Reporting Issues

If applicable, compounds detected at concentrations less than the level of quantitation (LOQ) but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

It should be noted that the overall bias is considered to be indeterminate in cases where cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Qualifier Codes and Explanations

Attachment B: Reason Codes and Explanations

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
CLIDU20100180501N	SO	Perfluorobutanoic acid	0.497	1.38	2.77	ng/g	J	lc
CLIDU20100180501N	SO	Perfluorooctane sulfonamide		1.38	2.77	ng/g	UJ	lc
CLIDU20200180501N	SO	Perfluorobutanoic acid	0.646	1.17	2.33	ng/g	J	lc
CLIDU20200180501N	SO	Perfluorooctane sulfonamide	0.319	1.17	2.33	ng/g	J	lc
CLIDU20300180501N	SO	Perfluorobutanoic acid	0.572	1.22	2.44	ng/g	J	lc
CLIDU20300180501N	SO	Perfluorooctane sulfonamide	0.558	1.22	2.44	ng/g	J	lc

Attachment A

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential low bias.
J+	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential high bias.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment B

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
C	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
	Internal standard areas (including recovery standards)
k	Estimated Maximum Possible Concentration (EMPC)
	LCS or OPR recoveries
lc	Extracted internal standard recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
р	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
S	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
Х	Percent solids
у	Serial dilution results
Z	ICS results


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Memorandum

Project	Lapeer Area PFAS	Page 1
Laboratory	Vista Analytical Laboratory, El Dorado Hills, CA	
Laboratory Work Number	1800937	
Analyses/Method	Per- and Polyfluoroalkyl Substances (PFAS)/Vista La	b SOP No 49, Rev 10
Validation Level	Limited	
AECOM Project Number	60570365-01	
Prepared by	Paula DiMattei	
Reviewed by	Robert Kennedy Complete	ed: July 27, 2018

SUMMARY

A limited validation was performed for the samples collected on May 3, 4, 8, and 9, 2018 at the Lapeer site. The samples were submitted to Vista Analytical Laboratory (Vista) in El Dorado Hills, CA for analysis. Vista reported the samples under laboratory work order number 1800937.

Sample IDs
CL1DR0100180508N
CL1DR0200180509N
CL1DR0300180508N
CL1SW0100180509N
CL1SW0200180509N
CL1SW0300180508N
CL1SW0400180508N
CL1SW0500180508N
CL1TMW0118180503N
CL1TMW0405180504N

Data validation activities were conducted with reference to:

- Vista Analytical Laboratory SOP: Preparation and Analysis for the Determination of Perand Poly-Fluorinated Compounds (SOP No. 49, Revision 10);
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (January 2017); and
- USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016);

In the absence of method-specific information, laboratory quality control (QC) limits and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements:

- ✓ Data completeness (chain-of-custody (COC)/sample integrity
- X Holding times and sample preservation
- ✓ Initial calibration/initial calibration and continuing calibration verification
- ✓ Laboratory method blanks/field blanks
- NA Matrix spike (MS) and/or matrix spike duplicate (MSD) results
- ✓ Ongoing precision and recovery (OPR) results
- NA Field duplicate results
- X Extracted internal standard results
- ✓ Sample results/reporting issues

The symbol (\checkmark) indicates that no validation qualifiers were applied based on this parameter. An "NA" indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (\varkappa) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Select data points were qualified as estimated due to nonconformances of certain QC criteria (see discussion below).

RESULTS

Data Completeness (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

Holding Times and Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria. All samples were initially extracted and analyzed within holding times. However, samples CL1DR0200180509N and CL1TMW0405180504N were re-extracted outside of holding time because perfluoroundecanoic acid and perfluorodecane sulfonic acid were detected in the these samples in the original analysis and the recoveries in the associated OPR exceeded the upper acceptance limits. These results were reported from the re-extraction as they were associated with compliant OPR recoveries. Professional judgment, as stipulated in the NFG, was applied to qualify these results as estimated (J).

Initial Calibration/Initial and Continuing Calibration Verification

Calibration data were reviewed for conformance with the QC acceptance criteria to ensure that:

- the initial calibration (ICAL) percent relative standard deviation (%RSD) or correlation coefficient (r)/coefficient of determination (r²) method acceptance criteria were met;
- the initial calibration verification standard (ICV) percent recovery (%R) acceptance criteria were met; and
- the continuing calibration verification standard (CCV) frequency and method acceptance criteria were met.

All QC acceptance limits were met or qualification of the data was not required.

Laboratory Method Blanks/Field Blanks

Laboratory method blanks and field blanks are evaluated as to whether there are contaminants detected above the detection limit (DL). Target compounds were not detected in the method blank associated with the sample in this data set. A field blank was not submitted with the sample reported in this data set.

MS/MSD Results

MS/MSD analyses were not performed on a sample in this data set. No data validation actions were taken on this basis.

OPR Results

The OPR percent recoveries were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required.

Field Duplicate Results

Field duplicate samples were not submitted with this data set. No data validation actions were taken on this basis.

Extracted Internal Standard Results

The extracted internal standard (IS) results were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met except for the extracted IS results summarized below.

Sample ID	Extraction IS	% Recovery	QC Limits	Associated Compounds
CL1DR0200180509N	13C8PFOSA	41.4	50 – 150	PFOSA
CL1TMW0118180503N	13C8PFOSA	45.2	50 – 150	PFOSA
CL1TMW0405180504N	13C8PFOSA	34.3	50 – 150	PFOSA

Samples were qualified as follows (based on NFG 2016):

Criteria	Actions ¹		
	Detected	Nondetected	
%R > Upper Acceptance Limit	J	UJ	
%R >10% but < Lower Acceptance Limit	J	UJ	
%R <10%		See below	

Criteria	Actions ¹		
	Detected	Nondetected	
<10% and S/N >10:1	J	R	
<10% and S/N <10:1	R	R	
¹ The PFAS method is performed using isotope dilution technique; therefore, professional judgment was applied and bias codes were not included in data qualification.			

Qualified sample results are summarized in Table 1.

Sample Results/Reporting Issues

If applicable, compounds detected at concentrations less than the level of quantitation (LOQ) but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

It should be noted that the overall bias is considered to be indeterminate in cases where cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Qualifier Codes and Explanations

Attachment B: Reason Codes and Explanations

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
CL1DR0200180509N	WG	Perfluorooctane sulfonamide		2.51	4.01	ng/l	UJ	lc
CL1DR0200180509N	WG	Perfluoroundecanoic acid	2.41	2.49	3.98	ng/l	J	h
CL1DR0200180509N	WG	Perfluorodecanesulfonic acid	1.17	2.49	3.98	ng/l	J	h
CL1TMW0118180503N	WG	Perfluorooctane sulfonamide		2.47	3.96	ng/l	UJ	lc
CL1TMW0405180504N	WG	Perfluorooctane sulfonamide	12.1	2.47	3.96	ng/l	J	lc
CL1TMW0405180504N	WG	Perfluoroundecanoic acid	10.0	2.45	3.93	ng/l	J	h
CL1TMW0405180504N	WG	Perfluorodecanesulfonic acid	2.03	2.45	3.93	ng/l	J	h

Attachment A

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential low bias.
+L	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential high bias.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment B

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
C	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
	Internal standard areas (including recovery standards)
k	Estimated Maximum Possible Concentration (EMPC)
	LCS or OPR recoveries
lc	Extracted internal standard recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
р	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
S	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
Х	Percent solids
У	Serial dilution results
Z	ICS results



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Memorandum

Project	Lapeer Area PFAS	Page	1
Laboratory	Vista Analytical Laboratory, El Dorado Hills, CA		
Laboratory Work Number	1800896, 1800897, 1800899, 1800933, 1800934, 1800936,	and 180	0938
Analyses/Method	Per- and Polyfluoroalkyl Substances (PFAS)/Vista Lab SOP	No 49, F	Rev 10
Validation Level	Level 1 Plus		
AECOM Project Number	60570365-01		
Prepared by	Waverly Braunstein		
Reviewed by	Robert Kennedy Completed: Aug	just 5, 20	18

SUMMARY

A limited validation was performed for the samples collected on April 26 through May 10, 2018 at the Lapeer site. This 'Level 1 Plus' review excluded calibration but included all batch QC elements listed below. The samples were submitted to Vista Analytical Laboratory (Vista) in El Dorado Hills, CA for analysis. Vista reported the samples under laboratory work order numbers 1800896, 1800897, 1800899, 1800933, 1800934, 1800936, and 1800938.

Work Order	Sample IDs	Laboratory ID	Matrix
1800896	SKITMW113180501N	1800896-01	Groundwater
1800896	SKITMW211180501N	1800896-02	Groundwater
1800896	SKITMW308180430N	1800896-03	Groundwater
1800896	SKITMW410180430N	1800896-04	Groundwater
1800896	SKITMW506180430N	1800896-05	Groundwater
1800896	SKITMW606180501N	1800896-06	Groundwater
1800896	EB01-180426	1800896-07	Equipment/field blank
1800896	QC-180426	1800896-08	Equipment/field blank
1800896	EB01-180427	1800896-09	Equipment/field blank
1800896	QC1-180430	1800896-10	Equipment/field blank
1800896	FB1-180430	1800896-11	Equipment/field blank
1800896	EB1-180430	1800896-12	Equipment/field blank
1800896	FB1-180502	1800896-13	Equipment/field blank
1800897	TG1TMW318180502N	1800897-01	Groundwater
1800897	TG1-2-TMW1	1800897-02	Soil
1800897	TG1-2-TMW2	1800897-03	Soil
1800897	TG1-2-TMW4	1800897-04	Soil
1800897	TG1-2-TMW5	1800897-05	Soil
1800897	TG1-2-TMW6	1800897-06	Soil
1800899	SKIDU30300180427N	1800899-01	Soil
1800899	SKIDU30200180427N	1800899-02	Soil
1800899	SKIDU30100180427N	1800899-03	Soil
1800899	SKIDU20100180427N	1800899-04	Soil
1800899	SKIDU20200180427N	1800899-05	Soil
1800899	SKIDU20300180427N	1800899-06	Soil

Work Order	Sample IDs	Laboratory ID	Matrix	
1800899	SKIDU10100180427N	1800899-07	Soil	
1800899	SKIDU10200180427N	1800899-08	Soil	
1800899	SKIDU10300180427N	1800899-09	Soil	
1800933	FB1-180503	1800933-01	Equipment/field blank	
1800933	FB1-180504	1800933-02	Equipment/field blank	
1800933	QC1-180504	1800933-03	Equipment/field blank	
1800933	QC1-180509	1800933-04	Equipment/field blank	
1800933	FB01-180509	1800933-05	Equipment/field blank	
1800933	FB02-180509	1800933-06	Equipment/field blank	
1800933	FB03-180509	1800933-07	Equipment/field blank	
1800933	FB1-180510	1800933-08	Equipment/field blank	
1800934	TG1SW0300180509N	1800934-01	Groundwater	
1800934	TG1SW0200180509N	1800934-02	Groundwater	
1800934	TG1SW0100180509N	1800934-03	Groundwater	
1800936	SK1SW0200180509N	1800936-01	Groundwater	
1800936	SK1SW0100180509N	1800936-02	Groundwater	
1800936	SK1DR0300180509N	1800936-03	Groundwater	
1800936	SK1DR0200180509N	1800936-04	Groundwater	
1800936	SK1DR0100180509N	1800936-05	Groundwater	
1800936	SK1SW0300180509N	1800936-06	Groundwater	
1800936	SK1DR0400180509N	1800936-07	Groundwater	
1800936	SK1DR0500180509N	1800936-08	Groundwater	
1800938	CL1MW0124180510N	1800938-01	Groundwater	
1800938	CL1MW0324180510N	1800938-02	Groundwater	
1800938	CL1MW0229180510N	1800938-03	Groundwater	
1800938	CL1MW0414180510N	1800938-04	Groundwater	
1800896	SKITMW113180501N	1800896-01	Groundwater	
1800896	SKITMW211180501N	1800896-02	Groundwater	
1800896	SKITMW308180430N	1800896-03	Groundwater	

Data validation activities were conducted with reference to:

- Vista Analytical Laboratory SoilP: Preparation and Analysis for the Determination of Perand Poly-Fluorinated Compounds (SoilP No. 49, Revision 10);
- USEPA National Functional Guidelines for Organic Superfund Methods Data Review (January 2017); and
- USEPA National Functional Guidelines for High Resolution Superfund Methods Data Review (April 2016);

In the absence of method-specific information, laboratory quality control (QC) limits and/or professional judgment were used as appropriate.

REVIEW ELEMENTS

The data were evaluated based on the following review elements:

✓ Data completeness (chain-of-custody (COC)/sample integrity

- ✓ Holding times and sample preservation
- X Laboratory method blanks/field blanks
- NA Matrix spike (MS) and/or matrix spike duplicate (MSD) results
- X Ongoing precision and recovery (OPR) results
- NA Field duplicate results
- X Extracted internal standard results
- ✓ Sample results/reporting issues

The symbol (\checkmark) indicates that no validation qualifiers were applied based on this parameter. An "NA" indicates that the parameter was not included as part of this data set or was not applicable to this validation and therefore not reviewed. The symbol (\varkappa) indicates that a QC nonconformance resulted in the qualification of data. Any QC nonconformance that resulted in the qualification of data is discussed below. In addition, nonconformances or other issues that were noted during validation, but did not result in qualification of data, may be discussed for informational purposes only.

The data appear valid as reported and may be used for decision making purposes. Select data points were negated or qualified as estimated due to nonconformances of certain QC criteria (see discussion below). No data were rejected

RESULTS

Data Completeness (COC)/Sample Integrity

The data package was reviewed and found to meet acceptance criteria for completeness:

- The COCs were reviewed for completeness of information relevant to the samples and requested analyses, and for signatures indicating transfer of sample custody.
- The laboratory sample login sheet(s) were reviewed for issues potentially affecting sample integrity, including the condition of sample containers upon receipt at the laboratory.
- Completeness of analyses was verified by comparing the reported results to the COC requests.

No significant issues were encountered.

Holding Times and Sample Preservation

Sample preservation and preparation/analysis holding times were reviewed for conformance with the QC acceptance criteria.

All samples were initially extracted and analyzed within holding times. The samples tabulated below were re-extracted outside of holding times because 6:2 Fluorotelomer sulfonic acid was detected above the quantitation limit in one or more method blanks.

SampleID
FB1-180502
TG1SW0100180509N
TG1SW0200180509N
TG1SW0300180509N
SK1DR0100180509N
SK1DR0200180509N

SampleID
SK1DR0300180509N
SK1DR0500180509N
SK1SW0100180509N
SK1SW0200180509N
SK1SW0300180509N
CL1MW0124180510N
CL1MW0229180510N
CL1MW0414180510N

Laboratory Method Blanks/Field Blanks

Laboratory method blanks and field blanks are evaluated as to whether there are contaminants detected above the detection limit (DL). Target compounds were not detected in the method blank associated with the sample in this data set. In general, method blanks were free from contamination or the associated samples were re-extracted. There were two exceptions to this resulting in the negation of perfluorooctanoic acid in sample TG1TMW318180502N, and 6:2 fluorotelomer sulfonic acid in sample CL1MW0324180510N.

Multiple field and equipment blanks were submitted with the sample reported in these data sets. The results were not used to qualify data, but were used for informational purposes only. No elevated or systematic contamination issues were noted. The following table summarizes all detected compounds in all field and equipment blanks.

Sample ID	Compound	Result (ng/L)	Quantitation Limit (ng/L)
EB01-180426	Perfluorooctanesulfonic acid	1.59	3.80
EB01-180426	Perfluorooctanoic acid	1.63	3.80
QC1-180504	Perfluoroheptanoic acid	0.432	3.89
QC1-180504	Perfluorohexanesulfonic acid	0.562	3.89
QC1-180504	Perfluorooctanesulfonic acid	0.928	3.89
QC1-180504	Perfluorooctanoic acid	1.13	3.89
FB02-180509	Perfluorooctanesulfonic acid	1.18	3.87

MS/MSD Results

MS/MSD analyses were not performed on a sample in this data set. No data validation actions were taken on this basis.

OPR Results

The OPR percent recoveries were reviewed for conformance with the QC acceptance criteria. All QC acceptance criteria were met or qualification of the data was not required, with the exception of the perfluorooctanesulfonic acid results in samples FB02-180509 and QC1-180504, which were qualified as estimated with a potential high bias due to elevated OPR recoveries.

Field Duplicate Results

Field duplicate samples were not submitted with this data set. No data validation actions were taken on this basis.

Extracted Internal Standard Results

The extracted internal standard (IS) results were reviewed for conformance with the QC acceptance criteria. In general, the recoveries met the acceptance limits. However, there were minor

nonconformances that resulted in qualification of the results as estimated (J/UJ). Details can be found in the validation worksheets.

Sample Results/Reporting Issues

If applicable, compounds detected at concentrations less than the level of quantitation (LOQ) but greater than the DL are qualified by the laboratory as estimated (J). This "J" qualifier is retained during data validation.

It should be noted that the overall bias is considered to be indeterminate in cases where cumulative nonconformances do not show a consistent bias or in cases of the presence of conflicting high and low biases.

QUALIFICATION ACTIONS

Sample results qualified as a result of validation actions are summarized in Table 1. All actions are described above.

ATTACHMENTS

Attachment A: Qualifier Codes and Explanations

Attachment B: Reason Codes and Explanations

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
EB01-180426	WQ	Perfluorooctane sulfonamide		2.38	3.80	ng/l	UJ	lc
EB01-180427	WQ	Perfluorooctane sulfonamide		2.57	4.11	ng/l	UJ	lc
FB1-180430	WQ	Perfluorooctane sulfonamide		2.37	3.79	ng/l	UJ	lc
FB1-180502	WQ	Perfluorooctanesulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluoroundecanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorooctane sulfonamide		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	4:2 FLUOROTELOMER SULFONIC ACID		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	PERFLUORONONANE SULFONIC ACID		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorotridecanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorotetradecanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	8:2 Fluorotelomer sulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluoroheptanesulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorononanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorobutanesulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluoroheptanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorohexanesulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorobutanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorodecanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorodecanesulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorododecanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorooctanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	EtFOSAA		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluorohexanoic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	PERFLUOROPENTANE SULFONIC ACID		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	6:2 Fluorotelomer sulfonic acid		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	MeFOSAA		2.44	3.91	ng/l	UJ	h
FB1-180502	WQ	Perfluoropentanoic acid		2.44	3.91	ng/l	UJ	h
QC1-180430	WQ	Perfluorooctane sulfonamide		2.38	3.80	ng/l	UJ	lc
QC-180426	WQ	Perfluorooctane sulfonamide		2.41	3.86	ng/l	UJ	lc
SKITMW113180501N	WG	Perfluorooctane sulfonamide		2.39	3.82	ng/l	UJ	lc
SKITMW113180501N	WG	Perfluorobutanesulfonic acid	11.2	2.39	3.82	ng/l	J	lc
SKITMW211180501N	WG	Perfluorobutanesulfonic acid	44.9	2.39	3.82	ng/l	J	lc
SKITMW308180430N	WG	Perfluorooctane sulfonamide		2.53	4.05	ng/l	UJ	lc
SKITMW410180430N	WG	Perfluorooctane sulfonamide	0.07	2.41	3.86	ng/l	UJ	lc
5K11WW000180430N	WG	Periluorobutanesulionic acid	9.97	2.41	3.80	ng/i	J	
TGTTWWW318180502N	wG			3.96	3.90	ng/i		
	50	Periluorooctane sulfonamide		1.08	2.15	ng/g	UJ	IC
TG1-2-TMW1	50			1.08	2.15	ng/g	UJ	IC
1G1-2-1MW2	50	Perfluorooctane sulfonamide		1.05	2.10	ng/g	UJ	IC
IG1-2-IMW2	SO	Pertluorobutanoic acid		1.05	2.10	ng/g	UJ	IC

Table 1 - Data Validation Summary of Qualified Data

Sample ID	Matrix	Compound	Result	LOD	LOQ	Units	Validation Qualifiers	Validation Reason
TG1-2-TMW4	SO	Perfluorooctane sulfonamide		1.05	2.10	ng/g	UJ	lc
TG1-2-TMW5	SO	Perfluorooctane sulfonamide		1.09	2.19	ng/g	UJ	lc
TG1-2-TMW5	SO	Perfluorobutanoic acid		1.09	2.19	ng/g	UJ	lc
TG1-2-TMW6	SO	Perfluorooctane sulfonamide		1.04	2.08	ng/g	UJ	lc
TG1-2-TMW6	SO	Perfluorobutanoic acid		1.04	2.08	ng/g	UJ	lc
FB01-180509	WQ	Perfluorooctane sulfonamide		2.38	3.80	ng/l	UJ	lc
FB02-180509	WQ	Perfluorooctanesulfonic acid	1.18	2.42	3.87	ng/l	J+	
FB02-180509	WQ	Perfluorooctane sulfonamide		2.42	3.87	ng/l	UJ	lc
FB03-180509	WQ	Perfluorooctane sulfonamide		2.40	3.85	ng/l	UJ	lc
FB1-180503	WQ	Perfluorooctane sulfonamide		2.41	3.86	ng/l	UJ	lc
FB1-180504	WQ	Perfluorooctane sulfonamide		2.45	3.93	ng/l	UJ	lc
FB1-180510	WQ	Perfluorooctane sulfonamide		2.44	3.91	ng/l	UJ	lc
QC1-180504	W	Perfluorooctanesulfonic acid	0.928	2.43	3.89	ng/l	J+	
QC1-180504	W	Perfluorooctane sulfonamide		2.43	3.89	ng/l	UJ	lc
QC1-180509	W	Perfluorooctane sulfonamide		2.43	3.89	ng/l	UJ	lc
TG1SW0100180509N	WG	Perfluorooctanesulfonic acid	1.64	2.63	4.20	ng/l	J+	
TG1SW0100180509N	WG	Perfluorotridecanoic acid		2.63	4.20	ng/l	UJ	lc
TG1SW0100180509N	WG	Perfluorotetradecanoic acid		2.63	4.20	ng/l	UJ	lc
TG1SW0100180509N	WG	6:2 Fluorotelomer sulfonic acid		2.48	3.97	ng/l	UJ	h
TG1SW0200180509N	WG	EtFOSAA		2.48	3.96	ng/l	UJ	lc
TG1SW0200180509N	WG	MeFOSAA		2.48	3.96	ng/l	UJ	lc
TG1SW0200180509N	WG	6:2 Fluorotelomer sulfonic acid		2.50	4.00	ng/l	UJ	h
TG1SW0300180509N	WG	Perfluorooctane sulfonamide		2.49	3.99	ng/l	UJ	lc
TG1SW0300180509N	WG	Perfluorotridecanoic acid		2.49	3.99	ng/l	UJ	lc
TG1SW0300180509N	WG	Perfluorotetradecanoic acid		2.49	3.99	ng/l	UJ	lc
TG1SW0300180509N	WG	EtFOSAA		2.49	3.99	ng/l	UJ	lc
TG1SW0300180509N	WG	MeFOSAA		2.49	3.99	ng/l	UJ	lc
TG1SW0300180509N	WG	6:2 Fluorotelomer sulfonic acid	9.90	2.53	4.05	ng/l	J-	h
SK1DR0100180509N	WG	6:2 Fluorotelomer sulfonic acid	4.93	2.55	4.08	ng/l	J	h
SK1DR0200180509N	WG	6:2 Fluorotelomer sulfonic acid	6.28	2.45	3.92	ng/l	J	h
SK1DR0300180509N	WG	6:2 Fluorotelomer sulfonic acid		2.56	4.10	ng/l	UJ	h
SK1DR0500180509N	WG	6:2 Fluorotelomer sulfonic acid	10.6	2.48	3.97	ng/l	J	h
SK1SW0100180509N	WG	6:2 Fluorotelomer sulfonic acid		2.47	3.95	ng/l	UJ	h
SK1SW0200180509N	WG	6:2 Fluorotelomer sulfonic acid		2.57	4.12	ng/l	UJ	h
SK1SW0300180509N	WG	6:2 Fluorotelomer sulfonic acid		2.48	3.97	ng/l	UJ	h
CL1MW0124180510N	WG	6:2 Fluorotelomer sulfonic acid		2.38	3.81	ng/l	UJ	h
CL1MW0229180510N	WG	6:2 Fluorotelomer sulfonic acid		2.50	4.00	ng/l	UJ	h
CL1MW0324180510N	WG	6:2 Fluorotelomer sulfonic acid		3.96	3.96	ng/l	U	bl
CL1MW0414180510N	WG	6:2 Fluorotelomer sulfonic acid	4.03	2.48	3.97	ng/l	J	h

Attachment A

Qualifier Codes and Explanations

Qualifier	Explanation
J	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
J-	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential low bias.
+L	The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample with a potential high bias.
JN	The analyte was tentatively identified; the associated numerical value is the approximate concentration of the analyte in the sample.
UJ	The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.
U	The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
R	The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

Attachment B

Reason Codes and Explanations

Reason Code	Explanation
be	Equipment blank contamination
bf	Field blank contamination
bl	Laboratory blank contamination
С	Calibration issue
d	Reporting limit raised due to chromatographic interference
fd	Field duplicate RPDs
h	Holding times
i	Internal standard areas (including recovery standards)
k	Estimated Maximum Possible Concentration (EMPC)
	LCS or OPR recoveries
lc	Extracted internal standard recovery
ld	Laboratory duplicate RPDs
lp	Laboratory control sample/laboratory control sample duplicate RPDs
m	Matrix spike recovery
md	Matrix spike/matrix spike duplicate RPDs
nb	Negative laboratory blank contamination
р	Chemical preservation issue
r	Dual column RPD
q	Quantitation issue
S	Surrogate recovery
su	Ion suppression
t	Temperature preservation issue
Х	Percent solids
у	Serial dilution results
Z	ICS results

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