

ANALYTICAL REPORT

Job Number: 280-90195-1

Job Description: ADEM PFC Sampling - Gadsden

For:

Alabama Dept. Environmental Management
2715 Sandlin Road, SW
Decatur, AL 35603
Attention: Mr. Ed Poolos



Approved for release.
Stephanie K Rothmeyer
Project Manager I
11/29/2016 12:20 PM

Stephanie K Rothmeyer, Project Manager I
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0182
stephanie.rothmeyer@testamericainc.com
11/29/2016

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002
Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

Definitions/Glossary

Client: Alabama Dept. Environmental Management
Project/Site: ADEM PFC Sampling - Gadsden

TestAmerica Job ID: 280-90195-1

Qualifiers

LCMS

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
*	LCS or LCSD is outside acceptance limits.
*	RPD of the LCS and LCSD exceeds the control limits
H	Sample was prepped or analyzed beyond the specified holding time

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains no Free Liquid
DER	Duplicate error ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision level concentration
MDA	Minimum detectable activity
EDL	Estimated Detection Limit
MDC	Minimum detectable concentration
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative error ratio
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE

Client: Alabama Dept. Environmental Management

Project: ADEM PFC Sampling - Gadsden

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With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The samples were received on 10/27/2016 at 8:55 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.1° C.

PERFLUORINATED HYDROCARBONS (PFC)

Samples GADSDEN-RAW (280-90195-1) and GADSDEN-FINISHED (280-90195-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 11/03/2016 and 11/15/2016 and analyzed on 11/07/2016 and 11/16/2016.

Perfluorotetradecanoic acid (PFTeA) failed the recovery criteria low for LCSD 280-349741/3-A. Perfluorotetradecanoic acid (PFTeA) and Perfluorotridecanoic Acid (PFTriA) exceeded the RPD limit. Samples were re-extracted and re-analyzed outside of holding time. Both sets of data are reported.

Internal standard responses were outside of acceptance limits for the following samples: GADSDEN-RAW (280-90195-1), GADSDEN-FINISHED (280-90195-2). The samples show evidence of matrix interference.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

PERFLUOROCTANE SULFONAMIDE (FOSA)

Samples GADSDEN-RAW (280-90195-1) and GADSDEN-FINISHED (280-90195-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 11/01/2016 and analyzed on 11/03/2016.

Internal standard responses were outside of acceptance limits for the following sample: GADSDEN-FINISHED (280-90195-2). The sample shows evidence of matrix interference.

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.

Client Sample Results

Client: Alabama Dept. Environmental Management
Project/Site: ADEM PFC Sampling - Gadsden

TestAmerica Job ID: 280-90195-1

Client Sample ID: GADSDEN-RAW

Lab Sample ID: 280-90195-1

Date Collected: 10/25/16 21:30

Matrix: Water

Date Received: 10/27/16 08:55

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.069		0.016	0.0067	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorobutanoic acid (PFBA)	0.021		0.016	0.0080	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorodecane sulfonate (PFDS)	0.0074	U	0.016	0.0074	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorodecanoic acid (PFDA)	0.0063	U	0.016	0.0063	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorododecanoic acid (PFDoA)	0.012	U	0.024	0.012	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluoroheptanoic acid (PFHpA)	0.021	J	0.024	0.011	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorohexane Sulfonate (PFHxS)	0.0057	U	0.024	0.0057	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorohexanoic acid (PFHxA)	0.066		0.016	0.0024	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorononanoic acid (PFNA)	0.014	U	0.032	0.014	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorooctanoic acid (PFOA)	0.030		0.016	0.0079	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorooctane Sulfonate (PFOS)	0.025		0.024	0.011	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluoropentanoic acid (PFPA)	0.077		0.024	0.0089	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorotetradecanoic acid (PFTeA)	0.012	U *	0.024	0.012	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluorotridecanoic Acid (PFTriA)	0.014	U *	0.032	0.014	ug/L		11/03/16 19:06	11/07/16 14:48	1
Perfluoroundecanoic acid (PFUnA)	0.0056	U	0.016	0.0056	ug/L		11/03/16 19:06	11/07/16 14:48	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	107		60 - 155				11/03/16 19:06	11/07/16 14:48	1
13C8 PFOS	99		45 - 130				11/03/16 19:06	11/07/16 14:48	1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.41	H	0.017	0.0072	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorobutanoic acid (PFBA)	0.13	H	0.017	0.0085	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorodecane sulfonate (PFDS)	0.0080	U H	0.017	0.0080	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorodecanoic acid (PFDA)	0.0068	U H	0.017	0.0068	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorododecanoic acid (PFDoA)	0.013	U H	0.026	0.013	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluoroheptanoic acid (PFHpA)	0.059	H	0.026	0.012	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorohexane Sulfonate (PFHxS)	0.048	H	0.026	0.0061	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorohexanoic acid (PFHxA)	0.23	H	0.017	0.0025	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorononanoic acid (PFNA)	0.015	U H	0.035	0.015	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorooctanoic acid (PFOA)	0.13	H	0.017	0.0085	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorooctane Sulfonate (PFOS)	0.022	J H	0.026	0.012	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluoropentanoic acid (PFPA)	0.071	H	0.026	0.0095	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U H	0.026	0.013	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluorotridecanoic Acid (PFTriA)	0.015	U H	0.035	0.015	ug/L		11/15/16 12:49	11/16/16 20:03	1
Perfluoroundecanoic acid (PFUnA)	0.0060	U H	0.017	0.0060	ug/L		11/15/16 12:49	11/16/16 20:03	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	111		60 - 155				11/15/16 12:49	11/16/16 20:03	1
13C8 PFOS	102		45 - 130				11/15/16 12:49	11/16/16 20:03	1

Method: PFC -FOSA - FOSA in Water (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0047	U	0.041	0.0047	ug/L		11/01/16 19:36	11/03/16 04:38	1

Client Sample Results

Client: Alabama Dept. Environmental Management
Project/Site: ADEM PFC Sampling - Gadsden

TestAmerica Job ID: 280-90195-1

Client Sample ID: GADSDEN-FINISHED

Lab Sample ID: 280-90195-2

Date Collected: 10/26/16 10:00

Matrix: Water

Date Received: 10/27/16 08:55

Method: DV-LC-0012 - Perfluorinated Hydrocarbons

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.065		0.018	0.0072	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorobutanoic acid (PFBA)	0.021		0.018	0.0086	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorodecane sulfonate (PFDS)	0.0080	U	0.018	0.0080	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorodecanoic acid (PFDA)	0.0068	U	0.018	0.0068	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.026	0.013	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluoroheptanoic acid (PFHpA)	0.019	J	0.026	0.012	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorohexane Sulfonate (PFHxS)	0.0061	U	0.026	0.0061	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorohexanoic acid (PFHxA)	0.065		0.018	0.0025	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorononanoic acid (PFNA)	0.015	U	0.035	0.015	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorooctanoic acid (PFOA)	0.031		0.018	0.0086	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorooctane Sulfonate (PFOS)	0.032		0.026	0.012	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluoropentanoic acid (PFPA)	0.080		0.026	0.0095	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U *	0.026	0.013	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluorotridecanoic Acid (PFTriA)	0.015	U *	0.035	0.015	ug/L		11/03/16 19:06	11/07/16 15:00	1
Perfluoroundecanoic acid (PFUnA)	0.0060	U	0.018	0.0060	ug/L		11/03/16 19:06	11/07/16 15:00	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	107		60 - 155				11/03/16 19:06	11/07/16 15:00	1
13C8 PFOS	94		45 - 130				11/03/16 19:06	11/07/16 15:00	1

Method: DV-LC-0012 - Perfluorinated Hydrocarbons - RE

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.064	H	0.018	0.0076	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorobutanoic acid (PFBA)	0.016	J H	0.018	0.0090	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorodecane sulfonate (PFDS)	0.0084	U H	0.018	0.0084	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorodecanoic acid (PFDA)	0.0072	U H	0.018	0.0072	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorododecanoic acid (PFDoA)	0.014	U H	0.027	0.014	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluoroheptanoic acid (PFHpA)	0.018	J H	0.027	0.012	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorohexane Sulfonate (PFHxS)	0.0064	U H	0.027	0.0064	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorohexanoic acid (PFHxA)	0.065	H	0.018	0.0027	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorononanoic acid (PFNA)	0.016	U H	0.037	0.016	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorooctanoic acid (PFOA)	0.029	H	0.018	0.0090	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorooctane Sulfonate (PFOS)	0.034	H	0.027	0.012	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluoropentanoic acid (PFPA)	0.077	H	0.027	0.010	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U H	0.027	0.013	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U H	0.037	0.016	ug/L		11/15/16 12:49	11/16/16 19:50	1
Perfluoroundecanoic acid (PFUnA)	0.0063	U H	0.018	0.0063	ug/L		11/15/16 12:49	11/16/16 19:50	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C8 PFOA	106		60 - 155				11/15/16 12:49	11/16/16 19:50	1
13C8 PFOS	97		45 - 130				11/15/16 12:49	11/16/16 19:50	1

Method: PFC -FOSA - FOSA in Water (LC/MS/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0050	U	0.043	0.0050	ug/L		11/01/16 19:36	11/03/16 04:50	1