

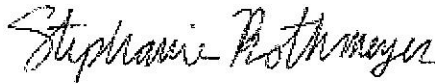
## ANALYTICAL REPORT

Job Number: 280-93143-1

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  
2/9/2017 1:26 PM

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02/09/2017

The test results in this report relate only to the samples in this report and meet all requirements of NELAP, 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.**

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## Definitions/Glossary

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

TestAmerica Job ID: 280-93143-1

### Qualifiers

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#### LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.
H	Sample was prepped or analyzed beyond the specified holding time

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### Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
±	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
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**

**Report Number: 280-93143-1**

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 1/19/2017 at 10:00 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 2.2° C.

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): GADSDEN-FINISHED (280-93143-2). All container labels list Sample ID FW, while the COC lists GADSDEN-FINISHED (280-93143-2). The sample was logged per the COC.

### **PERFLUORINATED HYDROCARBONS (PFC)**

Samples GADSDEN-RAW (280-93143-1) and GADSDEN-FINISHED (280-93143-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 01/24/2017 and 02/02/2017 and analyzed on 01/25/2017, 01/30/2017 and 02/07/2017.

The following sample was prepared outside of preparation holding time due to surrogate failures in the initial extraction: GADSDEN-FINISHED (280-93143-2).

3C4 PFOS (IS) and 13C5 PFNA (IS) failed high in the Method Blank associated with preparation batch 280-359796 and analytical batch 280-360067. The samples were in control for these internal standards with the exception of GADSDEN-FINISHED (280-93143-2), which was sent back for re-extraction due to surrogate failures.

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

### **PERFLUOROOCTANE SULFONAMIDE (FOSA)**

Samples GADSDEN-RAW (280-93143-1) and GADSDEN-FINISHED (280-93143-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 01/24/2017 and analyzed on 01/25/2017.

No 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: 280-93143-1

## Client Sample ID: GADSDEN-RAW

Lab Sample ID: 280-93143-1

Date Collected: 01/17/17 19:30

Matrix: Water

Date Received: 01/19/17 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.088		0.019	0.0077	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorobutanoic acid (PFBA)	0.018	J	0.019	0.0092	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorodecane sulfonate (PFDS)	0.0086	U	0.019	0.0086	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorodecanoic acid (PFDA)	0.0073	U	0.019	0.0073	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorododecanoic acid (PFDoA)	0.014	U	0.028	0.014	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluoroheptanoic acid (PFHpA)	0.020	J	0.028	0.012	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorohexane Sulfonate (PFHxS)	0.0065	U	0.028	0.0065	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorohexanoic acid (PFHxA)	0.051		0.019	0.0027	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorononanoic acid (PFNA)	0.016	U	0.037	0.016	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorooctanoic acid (PFOA)	0.020		0.019	0.0092	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorooctane Sulfonate (PFOS)	0.016	J	0.028	0.012	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluoropentanoic acid (PFPA)	0.070		0.028	0.010	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorotetradecanoic acid (PFTeA)	0.014	U	0.028	0.014	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluorotridecanoic Acid (PFTriA)	0.017	U	0.037	0.017	ug/L		01/24/17 08:51	01/25/17 16:45	1
Perfluoroundecanoic acid (PFUnA)	0.0065	U	0.019	0.0065	ug/L		01/24/17 08:51	01/25/17 16:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	105		60 - 155	01/24/17 08:51	01/25/17 16:45	1
13C8 PFOS	97		45 - 130	01/24/17 08:51	01/25/17 16:45	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0055	U	0.048	0.0055	ug/L		01/24/17 08:49	01/25/17 19:49	1

## Client Sample ID: GADSDEN-FINISHED

Lab Sample ID: 280-93143-2

Date Collected: 01/18/17 10:00

Matrix: Water

Date Received: 01/19/17 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.037		0.020	0.0082	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorobutanoic acid (PFBA)	0.018	J	0.020	0.0097	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorodecane sulfonate (PFDS)	0.0091	U	0.020	0.0091	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorodecanoic acid (PFDA)	0.0077	U	0.020	0.0077	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorododecanoic acid (PFDoA)	0.015	U	0.030	0.015	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluoroheptanoic acid (PFHpA)	0.021	J	0.030	0.013	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorohexane Sulfonate (PFHxS)	0.0069	U	0.030	0.0069	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorohexanoic acid (PFHxA)	0.032		0.020	0.0029	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorononanoic acid (PFNA)	0.017	U	0.040	0.017	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorooctanoic acid (PFOA)	0.023		0.020	0.0097	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorooctane Sulfonate (PFOS)	0.013	J	0.030	0.013	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluoropentanoic acid (PFPA)	0.076		0.030	0.011	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorotetradecanoic acid (PFTeA)	0.015	U	0.030	0.015	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluorotridecanoic Acid (PFTriA)	0.018	U	0.040	0.018	ug/L		01/24/17 08:51	01/25/17 16:57	1
Perfluoroundecanoic acid (PFUnA)	0.0068	U	0.020	0.0068	ug/L		01/24/17 08:51	01/25/17 16:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	103		60 - 155	01/24/17 08:51	01/25/17 16:57	1
13C8 PFOS	93		45 - 130	01/24/17 08:51	01/25/17 16:57	1

TestAmerica Denver

# Client Sample Results

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

TestAmerica Job ID: 280-93143-1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-93143-2**

Date Collected: 01/18/17 10:00

Matrix: Water

Date Received: 01/19/17 10:00

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.11	H	0.016	0.0068	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorobutanoic acid (PFBA)	0.027	H	0.016	0.0081	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorodecane sulfonate (PFDS)	0.0075	U H	0.016	0.0075	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorodecanoic acid (PFDA)	0.0064	U H	0.016	0.0064	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorododecanoic acid (PFDoA)	0.012	U H	0.025	0.012	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorooheptanoic acid (PFHpA)	0.027	H	0.025	0.011	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorohexane Sulfonate (PFHxS)	0.0057	U H	0.025	0.0057	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorohexanoic acid (PFHxA)	0.061	H	0.016	0.0024	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorononanoic acid (PFNA)	0.014	U H	0.033	0.014	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorooctanoic acid (PFOA)	0.025	H	0.016	0.0081	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorooctane Sulfonate (PFOS)	0.023	J H	0.025	0.011	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluoropentanoic acid (PFPA)	0.033	H	0.025	0.0090	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorotetradecanoic acid (PFTeA)	0.012	U H	0.025	0.012	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluorotridecanoic Acid (PFTriA)	0.015	U H	0.033	0.015	ug/L		02/02/17 11:55	02/07/17 23:55	1
Perfluoroundecanoic acid (PFUnA)	0.0057	U H	0.016	0.0057	ug/L		02/02/17 11:55	02/07/17 23:55	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 PFOA	106		60 - 155	02/02/17 11:55	02/07/17 23:55	1
13C8 PFOS	105		45 - 130	02/02/17 11:55	02/07/17 23:55	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0056	U	0.049	0.0056	ug/L		01/24/17 08:49	01/25/17 20:02	1