

## ANALYTICAL REPORT

Job Number: 280-95897-1

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.  
Dile R Bindel  
Project Manager I  
4/26/2017 2:37 PM

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Designee for

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04/26/2017

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.

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## Definitions/Glossary

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

TestAmerica Job ID: 280-95897-1

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### Qualifiers

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#### 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.
*	RPD of the LCS and LCSD exceeds the control limits
B	Compound was found in the blank and sample.

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### Glossary

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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**

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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 4/13/2017 9:30 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

Please note: The samples for the Gadsden site will be reported under SDG 280-95897-1. The sample for the Centre site will be reported under SDG 280-95897-2.

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

Samples GADSDEN-RAW (280-95897-1) and GADSDEN-FINISHED (280-95897-2) were analyzed for Perfluorinated Hydrocarbons (PFC) in accordance with SOP DV-LC-0012. The samples were prepared on 04/14/2017 and 04/19/2017 and analyzed on 04/17/2017 and 04/20/2017.

Sample GADSDEN-RAW (280-95897-1) had significant sediment and was centrifuged after adding surrogate and spike, but prior to loading onto the SPE cartridge.

During the solid phase extraction process, sample GADSDEN-RAW (280-95897-1) clogged the cartridge; therefore the samples were weighed back and the amount of surrogate actually extracted was adjusted.

Internal standard responses were outside of acceptance limits for the following samples: GADSDEN-FINISHED (280-95897-2). The sample showed evidence of matrix interference. Internal standards failed in the samples, but were in control in the method blank and LCS, indicating that the extraction process was done properly.

Perfluorohexanoic acid (PFHxA) was detected in method blank MB 280-369401/1-A at a level that was above the method detection limit but below the reporting limit. The value should be considered an estimate, and has been flagged. If the associated sample reported a result above the MDL and/or RL, the result has been flagged. Refer to the QC report for details.

Perfluorotetradecanoic acid (PFTeA) exceeded the RPD limit for LCSD 280-370032/3-A. The individual LCS and LCSD recoveries were acceptable; therefore, corrective action is deemed unnecessary.

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 (280-95897-1) and GADSDEN-FINISHED (280-95897-2) were analyzed for Perfluorooctane Sulfonamide (FOSA) in accordance with SOP DV-LC-0012. The samples were prepared on 04/14/2017 and analyzed on 04/17/2017.

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: 280-95897-1

**Client Sample ID: GADSDEN-RAW**

**Lab Sample ID: 280-95897-1**

Date Collected: 04/11/17 19:00

Matrix: Water

Date Received: 04/13/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.087		0.017	0.0070	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorobutanoic acid (PFBA)	0.020		0.017	0.0083	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorodecane sulfonate (PFDS)	0.0078	U	0.017	0.0078	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorodecanoic acid (PFDA)	0.0066	U	0.017	0.0066	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.026	0.013	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluoroheptanoic acid (PFHpA)	0.021	J	0.026	0.011	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorohexane Sulfonate (PFHxS)	0.0059	U	0.026	0.0059	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorohexanoic acid (PFHxA)	0.043		0.017	0.0025	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorononanoic acid (PFNA)	0.015	U	0.034	0.015	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorooctanoic acid (PFOA)	0.040		0.017	0.0083	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorooctane Sulfonate (PFOS)	0.054		0.026	0.011	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluoropentanoic acid (PFPA)	0.063		0.026	0.0093	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorotetradecanoic acid (PFTeA)	0.012	U *	0.026	0.012	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluorotridecanoic Acid (PFTriA)	0.015	U	0.034	0.015	ug/L		04/19/17 11:50	04/20/17 13:36	1
Perfluoroundecanoic acid (PFUnA)	0.0059	U	0.017	0.0059	ug/L		04/19/17 11:50	04/20/17 13:36	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C8 PFOA	128		60 - 155				04/19/17 11:50	04/20/17 13:36	1
13C8 PFOS	124		45 - 130				04/19/17 11:50	04/20/17 13:36	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0051	U	0.044	0.0051	ug/L		04/14/17 11:15	04/17/17 20:53	1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-95897-2**

Date Collected: 04/12/17 10:00

Matrix: Water

Date Received: 04/13/17 09:30

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutane Sulfonate (PFBS)	0.12		0.018	0.0074	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorobutanoic acid (PFBA)	0.023		0.018	0.0088	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorodecane sulfonate (PFDS)	0.0082	U	0.018	0.0082	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorodecanoic acid (PFDA)	0.0070	U	0.018	0.0070	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorododecanoic acid (PFDoA)	0.013	U	0.027	0.013	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluoroheptanoic acid (PFHpA)	0.023	J	0.027	0.012	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorohexane Sulfonate (PFHxS)	0.0063	U	0.027	0.0063	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorohexanoic acid (PFHxA)	0.045	B	0.018	0.0026	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorononanoic acid (PFNA)	0.016	U	0.036	0.016	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorooctanoic acid (PFOA)	0.045		0.018	0.0088	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorooctane Sulfonate (PFOS)	0.063		0.027	0.012	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluoropentanoic acid (PFPA)	0.060		0.027	0.0098	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorotetradecanoic acid (PFTeA)	0.013	U	0.027	0.013	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluorotridecanoic Acid (PFTriA)	0.016	U	0.036	0.016	ug/L		04/14/17 11:15	04/17/17 15:09	1
Perfluoroundecanoic acid (PFUnA)	0.0062	U	0.018	0.0062	ug/L		04/14/17 11:15	04/17/17 15:09	1
<b>Surrogate</b>	<b>%Recovery</b>	<b>Qualifier</b>	<b>Limits</b>				<b>Prepared</b>	<b>Analyzed</b>	<b>Dil Fac</b>
13C8 PFOA	125		60 - 155				04/14/17 11:15	04/17/17 15:09	1
13C8 PFOS	128		45 - 130				04/14/17 11:15	04/17/17 15:09	1

# Client Sample Results

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

TestAmerica Job ID: 280-95897-1

**Client Sample ID: GADSDEN-FINISHED**

**Lab Sample ID: 280-95897-2**

**Date Collected: 04/12/17 10:00**

**Matrix: Water**

**Date Received: 04/13/17 09:30**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorooctane Sulfonamide (FOSA)	0.0053	U	0.046	0.0053	ug/L		04/14/17 11:15	04/17/17 21:06	1