NAVFAC
Naval Facilities Engineering Command

Groundwater Sample Results, Data Validation Report, and the Sample Location Report, SDG 280-25758-1

Naval Air Station South Weymouth
South Weymouth, Massachusetts

August 2019

Tetra Tech INC **INTERNAL CORRESPONDENCE**

TO: **P. CALL** **DATE:** **MARCH 12, 2012**

FROM: **JOSEPH KALINYAK** **COPIES:** **DV FILE**

SUBJECT: **ORGANIC DATA VALIDATION – PFOA / PFOS**
NAS SOUTH WEYMOUTH, CTO WE11
SDG 280-25758-1

SAMPLES: 2 / Aqueous / PFOA / PFOS

AFFF-SW-DUP01-021612 AFFF-SW-SW04-0212

2 / Sediment / PFOA / PFOS

AFFF-SD-DUP01-021612 AFFF-SD-SD04-0004

8 / Soil / PFOA / PFOS

AFFF-SO-DUP01-021612	AFFF-SO-SB22-0507	AFFF-SO-SB23-0507
AFFF-SO-SB24-0507	AFFF-SO-SB25-0507	AFFF-SO-SB26-0003
AFFF-SO-SB26-0507	AFFF-SO-SB27-0507	

OVERVIEW

The sample set for NAS South Weymouth, CTO WE11, SDG 280-25758-1 consisted of two (2) aqueous samples, two (2) sediment samples, and eight (8) soil samples. The samples were analyzed as listed above for pentadecafluorooctanoic acid (PFOA) and perfluorooctane sulfonic acid (PFOS). Three (3) field duplicate sample pairs were included in this sample delivery group (SDG): AFFF-SW-DUP01-021612 / AFFF-SW-SW04-0212, AFFF-SD-DUP01-021612 / AFFF-SD-SD04-0004, and AFFF-SO-DUP01-021612 / AFFF-SO-SB25-0507.

The samples were collected by Tetra Tech on February 16, 2012 and analyzed by TestAmerica Laboratories, Inc. All analyses were conducted in accordance with a TestAmerica procedure, LCMS PFOA, analytical and reporting protocols. A Tier II validation was conducted on the referenced sample analyses. The data was evaluated based on the following parameters:

* • Data Completeness
* • Holding Times
* • GC/MS Instrument Tuning and System Performance
* • Initial and Continuing Calibration
* • Blank Results
* • Blank Spike/Blank Spike Duplicate Results
* • Surrogate Spike Recoveries
• Internal Standard Recoveries
• Matrix Spike/Matrix Spike Duplicate Recoveries
• Field Duplicate Precision
• Compound Quantitation
* • Detection Limits

The asterisk (*) indicates that all quality control criteria were met for this parameter. Qualified (if applicable) analytical results are summarized in Appendix A. Results as reported by the laboratory are presented in Appendix B. Appendix C contains Region I worksheets, and Appendix D contains the documentation to support the findings as discussed in this data validation report.

HOLD TIME

No issues were identified.

BLANKS

No issues were identified.

CALIBRATIONS

No issues were identified.

LABORATORY CONTROL SPIKE/LABORATORY CONTROL SPIKE DUPLICATE (LCS/LCSD)

No issues were identified.

MATRIX SPIKE / MATRIX SPIKE DUPLICATE (MS/MSD)

The MS and MSD percent recoveries (%Rs) were outside the quality control limits for spiked samples AFFF-SD-SD04-0004 and AFFF-SW-SW04-0212. In both samples the PFOA and PFOS concentrations were at least 5X greater than the concentration of the spike added to the samples. The LCS percent recoveries (%Rs) for both water and soil were acceptable. No validation action was taken for these sample MS and MSD %R quality control limit non-compliances.

INTERNAL STANDARDS

The recoveries for internal standard 13C4 PFOA were less than the quality control limit for samples as listed below.

Affected Samples: AFFF-SD-DUP01-021612 and AFFF-SD-SD04-0004
Actions: The positive PFOA results for the aforementioned samples were qualified estimated, (J), respectively.

The recoveries for internal standard 13C4 PFOS were less than the quality control limit for samples as listed below.

Affected Samples: AFFF-SO-SB25-0507 and AFFF-SO-DUP01-021612
Actions: No validation action was necessary as the samples were reported from the sample dilution analyses for the analyte PFOS.

The recoveries for both internal standards 13C4 PFOA and 13C4 PFOS were less than the quality control limit for samples as listed below.

Affected Samples:
AFFF-SO-SB23-0507 dilution re-analysis AFFF-SO-SB25-0507 dilution re-analysis
AFFF-SO-SB26-0003 dilution re-analysis AFFF-SO-SB26-0507 dilution re-analysis
AFFF-SO-DUP01-021612 dilution re-analysis
Actions: The samples were diluted (5X or 10X) after the addition of the internal standard resulting in lower internal standard recoveries for the sample analysis. The laboratory software could not

correct for this internal standard dilution. Therefore, no validation action was necessary for this issue.

SURROGATE SPIKE RECOVERIES

No issues were identified.

COMPOUND QUANTIFICATION / FIELD DUPLICATE PRECISION

The relative percent difference (RPD) exceeded 30% for the PFOS results for the field duplicate samples AFFF-SW-DUP01-021612 and AFFF-SW-SW04-0212. The positive PFOS results for the samples were qualified estimated, (J).

ADDITIONAL COMMENTS

Positive results reported below the quantitation limit but above the method detection limit were qualified as estimated, (J).

Sample results were reported to the Limit of Detection (LOD).

Samples AFFF-SO-DUP01-021612 and AFFF-SD-DUP01-021612 were misidentified and logged in by the TestAmerica laboratory such that they were labeled reversed. The laboratory was contacted. All laboratory forms have been manually edited by the data validation chemist.

Samples were diluted as listed below due to high concentrations of the target analyte PFOS. Per the laboratory narrative, "The PFC method DV-LC-0012 is an isotope dilution method; therefore, the internal standards are added prior to the extraction process. This technique inherently corrects for variability in the extraction efficiency due to sample matrix. Dilution for samples beyond the ability of the instrument to detect the internal standards is not recommended. Analyses performed at a dilution level requiring additional internal standard to be added after the extraction step in order to quantitate results has been shown to yield results with a significant low bias."

The following samples were analyzed at a dilution. The PFOS results were reported from the dilution analyses for the listed samples. Dilution factors were not used to quantify dilution analysis results.

Sample	Dilution
AFFF-SD-DUP01-021612	1X, 10X
AFFF-SO-SB23-0507	1X, 5X
AFFF-SO-SB25-0507	1X, 5X
AFFF-SO-SB26-0003	1X, 5X
AFFF-SO-SB26-0507	1X, 5X

Samples AFFF-SD-SD04-0004, AFFF-SD-DUP01-021612, AFFF-SO-SB26-0003, AFFF-SW-DUP01-021612, and AFFF-SW-SW04-0212 had PFOA positive results above the Project Screening Level (PSL) listed in the Sample and Analysis Plan (SAP).

Samples AFFF-SD-SD04-0004, AFFF-SO-DUP01-021612, AFFF-SD-DUP01-021612, AFFF-SO-SB23-0507, AFFF-SO-SB25-0507, AFFF-SO-SB26-0003, AFFF-SO-SB26-0507, AFFF-SO-SB27-0507, AFFF-SW-DUP01-021612, and AFFF-SW-SW04-0212 had PFOS positive results above the Project Screening Level (PSL) listed in the Sample and Analysis Plan (SAP).

EXECUTIVE SUMMARY

Laboratory Performance: Sample PFOA results were qualified for internal standard recovery quality control limit non-compliances.

Other Factors Affecting Data Quality: Positive results reported below the limit of quantitation (LOQ) but above the method detection limit were qualified as estimated, (J). Field duplicate positive PFOS results were qualified for an RPD quality control limit non-compliance.

The data for these analyses were reviewed with reference to the "USEPA Region 1 Laboratory Data Validation Functional Guidelines – Part II" (12/96), and the (DOD) QSM document entitled "Quality Systems Manual (QSM) for Environmental Laboratories" (April 2009).

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Attachments:
Appendix A – Qualified Analytical Results
Appendix B – Results as Reported by the Laboratory
Appendix C – Regional Worksheets
Appendix D – Support Documentation

APPENDIX A

QUALIFIED LABORATORY RESULTS

Value Qualifier Key (Val Qual)

J – The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

UJ – The result is an estimated non-detected quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

U - Value is a non-detect as reported by the laboratory.

UR – Non-detected result is considered rejected, (UR), as a result of technical non-compliances.

DATA QUALIFICATION CODE (QUAL CODE)

Qualifier Codes:

A = Lab Blank Contamination
B = Field Blank Contamination
C = Calibration Noncompliance (i.e., % RSDs, %Ds, ICVs, CCVs, RRFs, etc.)
C01 = GC/MS Tuning Noncompliance
D = MS/MSD Recovery Noncompliance
E = LCS/LCSD Recovery Noncompliance
F = Lab Duplicate Imprecision
G = Field Duplicate Imprecision
H = Holding Time Exceedance
I = ICP Serial Dilution Noncompliance
J = ICP PDS Recovery Noncompliance; MSA's $r < 0.995$
K = ICP Interference - includes ICS % R Noncompliance
L = Instrument Calibration Range Exceedance
M = Sample Preservation Noncompliance
N = Internal Standard Noncompliance
N01 = Internal Standard Recovery Noncompliance Dioxins
N02 = Recovery Standard Noncompliance Dioxins
N03 = Clean-up Standard Noncompliance Dioxins
O = Poor Instrument Performance (i.e., base-time drifting)
P = Uncertainty near detection limit (< 2 x IDL for inorganics and <CRQL for organics)
Q = Other problems (can encompass a number of issues; i.e.chromatography,interferences, etc.)
R = Surrogates Recovery Noncompliance
S = Pesticide/PCB Resolution
T = % Breakdown Noncompliance for DDT and Endrin
U = RPD between columns/detectors >40% for positive results determined via GC/HPLC
V = Non-linear calibrations; correlation coefficient $r < 0.995$
W = EMPC result
X = Signal to noise response drop
Y = Percent solids <30%
Z = Uncertainty at 2 sigma deviation is less than sample activity
Z1 = Tentatively Identified Compound considered presumptively present
Z2 = Tentatively Identified Compound column bleed

PROJ_NO: 02073	NSAMPLE	AFFF-SW-DUP01-021612			AFFF-SW-SW04-0212		
SDG: 280-25758-1	LAB_ID	280-25758-12			280-25758-11		
FRACTION: MISC	SAMP_DATE	2/16/2012			2/16/2012		
MEDIA: WATER	QC_TYPE	NM			NM		
	UNITS	UG/L			UG/L		
	PCT_SOLIDS	0.0			0.0		
	DUP_OF	AFFF-SW-SW04-0212					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		0.72			0.96		
PERFLUOROOCTANE SULFONIC ACID		1.1	J	G	1.5	J	G

PROJ_NO: 02073	NSAMPLE	AFFF-SD-DUP01-021612			AFFF-SD-SD04-0004		
SDG: 280-25758-1	LAB_ID	280-25758-3			280-25758-9		
FRACTION: MISC	SAMP_DATE	2/16/2012			2/16/2012		
MEDIA: SEDIMENT	QC_TYPE	NM			NM		
	UNITS	UG/KG			UG/KG		
	PCT_SOLIDS	69.1			71.0		
	DUP_OF	AFFF-SD-SD04-0004					
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		130	J	N	99	J	N
PERFLUOROOCTANE SULFONIC ACID		84			100		

PROJ_NO: 02073	NSAMPLE	AFFF-SO-DUP01-021612			AFFF-SO-DUP01-021612DL			AFFF-SO-SB22-0507			AFFF-SO-SB23-0507		
SDG: 280-25758-1	LAB_ID	280-25758-10			280-25758-10			280-25758-5			280-25758-1		
FRACTION: MISC	SAMP_DATE	2/16/2012			2/16/2012			2/16/2012			2/16/2012		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	93.2			93.2			95.3			90.7		
	DUP_OF	AFFF-SO-SB25-0507			AFFF-SO-SB25-0507								
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		7.5						0.58	U		8.8		
PERFLUOROOCTANE SULFONIC ACID					1200			1.2					

PROJ_NO: 02073	NSAMPLE	AFFF-SO-SB23-0507DL			AFFF-SO-SB24-0507			AFFF-SO-SB25-0507			AFFF-SO-SB25-0507DL		
SDG: 280-25758-1	LAB_ID	280-25758-1			280-25758-7			280-25758-6			280-25758-6		
FRACTION: MISC	SAMP_DATE	2/16/2012			2/16/2012			2/16/2012			2/16/2012		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	90.7			82.5			95.2			95.2		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID					0.21	J	P	7					
PERFLUOROOCTANE SULFONIC ACID		380			0.77						1000		

PROJ_NO: 02073	NSAMPLE	AFFF-SO-SB26-0003			AFFF-SO-SB26-0003DL			AFFF-SO-SB26-0507			AFFF-SO-SB26-0507DL		
SDG: 280-25758-1	LAB_ID	280-25758-2			280-25758-2			280-25758-4			280-25758-4		
FRACTION: MISC	SAMP_DATE	2/16/2012			2/16/2012			2/16/2012			2/16/2012		
MEDIA: SOIL	QC_TYPE	NM			NM			NM			NM		
	UNITS	UG/KG			UG/KG			UG/KG			UG/KG		
	PCT_SOLIDS	94.1			94.1			94.1			94.1		
	DUP_OF												
PARAMETER		RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD	RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		20						15					
PERFLUOROOCTANE SULFONIC ACID					460						680		

PROJ_NO: 02073	NSAMPLE	AFFF-SO-SB27-0507		
SDG: 280-25758-1	LAB_ID	280-25758-8		
FRACTION: MISC	SAMP_DATE	2/16/2012		
MEDIA: SOIL	QC_TYPE	NM		
	UNITS	UG/KG		
	PCT_SOLIDS	90.2		
	DUP_OF			
PARAMETER		RESULT	VQL	QLCD
PENTADECAFLUOROOCTANOIC ACID		1.9		
PERFLUOROOCTANE SULFONIC ACID		44		

APPENDIX B

RESULTS AS REPORTED BY THE LABORATORY

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SW-DUP01-021612 Lab Sample ID: 280-25758-12

Matrix: Water Lab File ID: PC512b23050.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 00:00

Extraction Method: 3535 Date Extracted: 02/21/2012 13:05

Sample wt/vol: 257.5(mL) Date Analyzed: 02/23/2012 22:27

Con. Extract Vol.: 5(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109060 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.72		0.019	0.0078	0.0012
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.1		0.029	0.0074	0.0016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	112		60-155
STL01054	13C8 PFOS	106		45-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SW-SW04-0212 Lab Sample ID: 280-25758-11

Matrix: Water Lab File ID: PC512b23047.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 12:30

Extraction Method: 3535 Date Extracted: 02/21/2012 13:05

Sample wt/vol: 255.6(mL) Date Analyzed: 02/23/2012 22:03

Con. Extract Vol.: 5(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109060 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.96	J	0.020	0.0078	0.0012
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.5	J	0.029	0.0074	0.0016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	109		60-155
STL01054	13C8 PFOS	107		45-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.: 2D

Client Sample ID: AFFF-~~80~~-DUP01-021612 | Lab Sample ID: 280-25758-3

Matrix: Solid | Lab File ID: PC512b24042.d

Analysis Method: PFOA/PFOS | Date Collected: 02/16/2012 00:00

Extraction Method: PFC leach | Date Extracted: 02/22/2012 10:30

Sample wt/vol: 15.61(g) | Date Analyzed: 02/24/2012 21:30

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

% Moisture: 30.9 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	130		0.74	0.56	0.19
1763-23-1	Perfluorooctane Sulfonate (PFOS)	84		0.74	0.56	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	110		57-153
STL01054	13C8 PFOS	105		70-130

3/12/12
JAJ

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SD-SD04-0004 Lab Sample ID: 280-25758-9

Matrix: Solid Lab File ID: PC512b24051.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 12:35

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 15.02(g) Date Analyzed: 02/24/2012 22:40

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

% Moisture: 29.0 GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	99	J	0.75	0.56	0.20
1763-23-1	Perfluorooctane Sulfonate (PFOS)	100	J	0.75	0.56	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	103		57-153
STL01054	13C8 PFOS	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SD-DUP01-021612 | Lab Sample ID: 280-25758-10

Matrix: Solid | Lab File ID: PC512b24054.d

Analysis Method: PFOA/PFOS | Date Collected: 02/16/2012 00:00

Extraction Method: PFC leach | Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.23(g) | Date Analyzed: 02/24/2012 23:03

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

% Moisture: 6.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.5		0.76	0.57	0.20
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1300	J	0.76	0.57	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		57-153
STL01054	13C8 PFOS	107		70-130

3-12-12
JAJ

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.: 50

Client Sample ID: AFFF-~~SD~~-DUP01-021612 DL | Lab Sample ID: 280-25758-10 DL

Matrix: Solid | Lab File ID: PC512b26013.d

Analysis Method: PFOA/PFOS | Date Collected: 02/16/2012 00:00

Extraction Method: PFC leach | Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.23(g) | Date Analyzed: 02/26/2012 17:14

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

% Moisture: 6.8 | GPC Cleanup:(Y/N) N

Analysis Batch No.: 109440 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*8.4*		*0.76*	0.57	*0.20*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1200*		*0.76*	0.57	*0.18*

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107	*D*	57-153
STL01054	13C8 PFOS	103	*M D*	70-130

3-12-12
JA

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB22-0507 Lab Sample ID: 280-25758-5

Matrix: Solid Lab File ID: PC512b24044.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 09:55

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 10.87(g) Date Analyzed: 02/24/2012 21:46

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

% Moisture: 4.7 GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.58	U	0.77	0.58	0.20
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1.2		0.77	0.58	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107		57-153
STL01054	13C8 PFOS	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB23-0507 Lab Sample ID: 280-25758-1

Matrix: Solid Lab File ID: PC512b24040.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 09:00

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 12.00(g) Date Analyzed: 02/24/2012 21:15

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	8.8		0.74	0.55	0.19
1763-23-1	Perfluorooctane Sulfonate (PFOS)	410	J	0.74	0.55	0.17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102		57-153
STL01054	13C8 PFOS	107		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB23-0507 DL | Lab Sample ID: 280-25758-1 DL

Matrix: Solid | Lab File ID: PC512b26009.d

Analysis Method: PFOA/PFOS | Date Collected: 02/16/2012 09:00

Extraction Method: PFC leach | Date Extracted: 02/22/2012 10:30

Sample wt/vol: 12.00(g) | Date Analyzed: 02/26/2012 16:43

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109440 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*9.7*		*0.74*	0.55	*0.19*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*380*		*0.74*	0.55	*0.17*

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107	*D*	57-153
STL01054	13C8 PFOS	107	*M D*	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB24-0507 Lab Sample ID: 280-25758-7

Matrix: Solid Lab File ID: PC512b24047.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 10:30

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 12.70(g) Date Analyzed: 02/24/2012 22:09

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

% Moisture: 17.5 GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.21	J	0.76	0.57	0.20
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.77		0.76	0.57	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		57-153
STL01054	13C8 PFOS	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB25-0507 Lab Sample ID: 280-25758-6

Matrix: Solid Lab File ID: PC512b24045.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 10:10

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 10.58(g) Date Analyzed: 02/24/2012 21:54

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

% Moisture: 4.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	7.0		0.79	0.60	0.21
1763-23-1	Perfluorooctane Sulfonate (PFOS)	1100	J	0.79	0.60	0.19

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	100		57-153
STL01054	13C8 PFOS	110		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB25-0507 DL Lab Sample ID: 280-25758-6 DL

Matrix: Solid Lab File ID: PC512b26012.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 10:10

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 10.58(g) Date Analyzed: 02/26/2012 17:06

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

% Moisture: 4.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 109440 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*6.8*		*0.79*	0.60	*0.21*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*1000*		*0.79*	0.60	*0.19*

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	102	*D*	57-153
STL01054	13C8 PFOS	103	*D*	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB26-0003 Lab Sample ID: 280-25758-2

Matrix: Solid Lab File ID: PC512b24041.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 09:10

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.83(g) Date Analyzed: 02/24/2012 21:23

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	20		0.72	0.54	0.19
1763-23-1	Perfluorooctane Sulfonate (PFOS)	490	J	0.72	0.54	0.17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	105		57-153
STL01054	13C8 PFOS	106		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB26-0003 DL Lab Sample ID: 280-25758-2 DL

Matrix: Solid Lab File ID: PC512b26010.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 09:10

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.83(g) Date Analyzed: 02/26/2012 16:51

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109440 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*21*		*0.72*	0.54	*0.19*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*460*		*0.72*	0.54	*0.17*

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	110	*D*	57-153
STL01054	13C8 PFOS	108	*D*	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB26-0507 Lab Sample ID: 280-25758-4

Matrix: Solid Lab File ID: PC512b24043.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 09:25

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.13(g) Date Analyzed: 02/24/2012 21:38

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	15		0.76	0.57	0.20
1763-23-1	Perfluorooctane Sulfonate (PFOS)	690	J	0.76	0.57	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	107		57-153
STL01054	13C8 PFOS	102		70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB26-0507 DL | Lab Sample ID: 280-25758-4 DL

Matrix: Solid | Lab File ID: PC512b26011.d

Analysis Method: PFOA/PFOS | Date Collected: 02/16/2012 09:25

Extraction Method: PFC leach | Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.13(g) | Date Analyzed: 02/26/2012 16:58

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109440 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	*Perfluorooctanoic acid (PFOA)*	*14*		*0.76*	0.57	*0.20*
1763-23-1	*Perfluorooctane Sulfonate (PFOS)*	*680*		*0.76*	0.57	*0.18*

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	104	*D*	57-153
STL01054	13C8 PFOS	109	*D*	70-130

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Client Sample ID: AFFF-SO-SB27-0507 Lab Sample ID: 280-25758-8

Matrix: Solid Lab File ID: PC512b24048.d

Analysis Method: PFOA/PFOS Date Collected: 02/16/2012 11:00

Extraction Method: PFC leach Date Extracted: 02/22/2012 10:30

Sample wt/vol: 11.46(g) Date Analyzed: 02/24/2012 22:17

Con. Extract Vol.: 20(mL) Dilution Factor: 1

Injection Volume: 20(uL) GC Column: Gemini-NX ID:

% Moisture: 9.8 GPC Cleanup:(Y/N) N

Analysis Batch No.: 109197 Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	1.9		0.77	0.58	0.20
1763-23-1	Perfluorooctane Sulfonate (PFOS)	44	J	0.77	0.58	0.18

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	101		57-153
STL01054	13C8 PFOS	103		70-130

APPENDIX C

REGIONAL WORKSHEETS

REGION I, EPA-NE ORGANIC REGIONAL DATA ASSESSMENT (ORDA)*

CASE #: 52073 SITE NAME: NAS South Weymouth

LAB NAME: TestAmerica # OF SAMPLES/MATRIX: _____

SDG #: _____ VALIDATION CONTRACTOR: Tetra Tech

SOW #/CONTRACT #: _____ VALIDATOR'S NAME: J. Kalinyak

EPA-NE DV TIER LEVEL: _____ DATE DP REC'D BY EPA-NE: _____

TPO/PO: **ACTION ____ FYI ____ DV COMPLETION DATE: _____

ANALYTICAL DATA QUALITY SUMMARY

	VOA	SV	Pest/PCB
1. Preservation and Contractual Holding Times			
2. GC/MS / GC/ECD Instrument Performance Check			
3. Initial Calibration			
4. Continuing Calibration			
5. Blanks			
6. Surrogate Compounds			
7. Internal Standards			
8. Matrix Spike/Matrix Spike Duplicate			
9. Sensitivity Check			
10. PE Samples-Accuracy Check			
11. Target Compound Identification			
12. Compound Quantitation and Reported QLs			
13. Tentatively Identified Compounds			
14. Semivolatile Cleanup/Pesticide/PCB Cleanup			
15. Data Completeness			
16. Overall Evaluation of Data			

o = Data had no problems or were qualified due to minor contractual problems.
m = Data were qualified due to major contractual problems.
z = Data were rejected as unusable due major contractual problems.

ACTION ITEMS: (z items) See DV Report

AREAS OF CONCERN: (m items) _____

COMMENTS: _____

*This form assesses the analytical data quality in terms of contractual compliance only. It does not assess sampling errors and/or non-contractual analytical issues that affect data quality.

**Check "ACTION" only if contractual defects resulted in reduced payment/data rejection recommendations.

Validator: J. Kalinyak Date: 03/09/12

INSTRUCTIONS ON REVERSE SIDE

EPA-NE
Data Validation Worksheet Cover Page - Page 1

Site Name NAS South Weymouth
Reference No. _____

REGION I ORGANIC DATA VALIDATION

The following data package has been validated:

Lab Name TestAmerica
Case/Project No. 32073
SDG No. 280-25758-1
No. of Samples/Matrix _____

SOW/Method No. _____
Sampling Date(s) _____
Shipping Date(s) _____
Date Rec'd by lab _____

Traffic Report Sample Nos. See DV Report

Trip Blank No. _____
Equipment Blank No. _____
Bottle Blank No. _____
Field Duplicate Nos. _____

PES Nos. _____

The Region I, EPA-NE Data Validation Functional Guidelines for Evaluating Environmental Analyses, revision _____ was used to evaluate the data and/or approved modifications to the EPA-NE Functional Guidelines were used to evaluate the data and are attached to this cover page: (attach modified criteria from EPA approved QAPjP or amendment to QAPjP).

A Tier II or Tier III evaluation was used to validate the data (circle one). If a Tier II validation with a partial Tier III was used, then identify samples, parameters, etc. that received partial Tier III validation

_____

The data were evaluated based upon the following parameters:

- Overall Evaluation of Data
- Data Completeness (CSF Audit - Tier I)
- Preservation & Technical Holding Times
- GC/MS & GC/ECD Instrument Performance Check
- Initial & Continuing Calibrations
- Blanks
- Surrogate Compounds
- Internal Standards
- Matrix Spike/Matrix Spike Duplicate
- Field Duplicates
- Sensitivity Check
- PE Samples/Accuracy Check
- Target Compound Identification
- Compound Quantitation and Reported Quantitation Limits
- TICs
- Semivolatile and Pesticide/PCB Cleanup
- System Performance

Region I Definitions and Qualifiers:

A - Acceptable Data
J - Numerical value associated with compound is an estimated quantity.
R - The data are rejected as unusable. The R replaces the numerical value or sample quantitation limit.
U - Compound not detected at that numerical sample quantitation limit.
UJ - The sample quantitation limit is an estimated quantity.
TB, BB, EB - Compound detected in aqueous trip blank, aqueous bottle blank, or aqueous equipment blank associated with soil/sediment samples.

Validator's Name J. Kalinyak Company Name Ketrateck Phone Number 412-921-7132

Date Validation Started _____ Date Validation Completed _____

EPA-NE
Data Validation Worksheet Cover Page - Page 2

Check if all criteria are met and no hard copy worksheet provided. Indicate NA if worksheet is not applicable to analytical method. Note: there is no standard worksheet for System Performance, however, the validator must document all system performance issues in the Data Validation Memorandum.

VOA/SV worksheets:

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
VOA/SV-II	GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)	
VOA/SV-III	INITIAL CALIBRATION	
VOA/SV-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
VOA-VI	VOA SURROGATE SPIKE RECOVERIES	
SV-VI	SV SURROGATE SPIKE RECOVERIES	
VOA/SV-VII	INTERNAL STANDARD PERFORMANCE	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
VOA/SV-Pest/PCB-XII	TARGET COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
VOA/SV-XIV	TENTATIVELY IDENTIFIED COMPOUNDS	
VOA/SV-XV	SEMIVOLATILE CLEANUP	
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

Pest/PCB worksheets:

See DV Report

VOA/SV-Pest/PCB	COMPLETE SDG FILE (CSF) AUDIT	
VOA/SV-Pest/PCB-I	PRESERVATION AND HOLDING TIMES	
Pest/PCB-IIA	GC/ECD INSTRUMENT PERFORMANCE CHECK-RESOLUTION	
Pest/PCB-IIB	GC/ECD INSTRUMENT PERFORMANCE CHECK-RETENTION TIMES	
Pest/PCB-IIC	GC/ECD INSTRUMENT PERFORMANCE CHECK-ACCURACY CHECK OF INITIAL CALIBRATION	
Pest/PCB-IID	GC/ECD INSTRUMENT PERFORMANCE CHECK-PESTICIDE DEGRADATION	
Pest/PCB-III	INITIAL CALIBRATION	
Pest/PCB-IV	CONTINUING CALIBRATION	
VOA/SV-Pest/PCB-V-A	BLANK ANALYSIS	
VOA/SV-Pest/PCB-V-B	BLANK ANALYSIS	
Pest/PCB-VI	SURROGATE COMPOUNDS: SPIKE RECOVERIES AND RETENTION TIME SHIFT	
Pest/PCB-VII	PESTICIDE CLEANUP	
VOA/SV-Pest/PCB-VIII	MATRIX SPIKE/MATRIX SPIKE DUPLICATE	
VOA/SV-Pest/PCB-IX	FIELD DUPLICATE PRECISION	
VOA/SV-Pest/PCB-X	SENSITIVITY CHECK	
VOA/SV-Pest/PCB-XI	ACCURACY CHECK	
Pest/PCB-XII	COMPOUND IDENTIFICATION	
VOA/SV-Pest/PCB-XIII	SAMPLE QUANTITATION	
TABLE II-WORKSHEET	OVERALL EVALUATION OF DATA	

I certify that all criteria were met for the worksheets checked above.

Signature: _____ Name: J. Kalinyak

Date: 03/27/12

EPA-NE - Data Validation Worksheet N/A
Overall Evaluation of Data - Data Validation Memorandum - Table II

See DV Report

VOLATILE ORGANICS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability**	Potential Usability Issues
		Analytical Error	Sampling Error*		

* The evaluation of "sampling error" cannot be completely assessed in data validation.

** Sampling variability is not assessed in data validation.

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
Overall Evaluation of Data - Data Validation Memorandum - Table II N/A See DV Report

SEMIVOLATILE ORGANICS					
DQO (list all DQOs)	Sampling and/or Analytical Method Appropriate Yes or No	Measurement Error		Sampling Variability**	Potential Usability Issues
		Analytical Error	Sampling Error*		

* The evaluation of "sampling error" cannot be completely assessed in data validation.

** Sampling variability is not assessed in data validation.

Validator: _____

Date: 03/09/12

COMPLETE SDG FILE (CSF) AUDIT

Organic Fractions: _____ See DV Report

Missing Information	Date Lab Contacted	Date Received

Validator: _____ Date: 03/09/12

Sampler:_____ Company:_____ Contacted: Yes No Date:_____

I. PRESERVATION AND HOLDING TIMES - Circle sample numbers with exceeded technical holding times or omitted preservation.
List all required preservation codes and circle omitted preservation codes.
Circle all exceeded technical holding times.
Identify extraction technique after "# of Days"/(*Extraction Code).

See DV Report

Sample No. (TR No.)	Matrix	Pres. Code	Date Sampled	VOA			BNA					PEST/PCB				
				Date Analyzed	# of Days from Samp. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action	Date Extracted	# of Days from Samp. to Extr./(*)	Date Analyzed	# of Days from Extr. to Anal.	Action

Preservation Code:
1. Cool @ 4°C (± 2°)
2. Preserve with HCl to at least pH 2
3. Protect from light
4. Freeze
5. Room Temperature (Avoid excessive heat)

(*Extraction Code:)
L/L - Liquid/Liquid
SON - Sonication
SEP - Separatory Funnel
SOX - Soxhlet
SPE - Solid Phase Extraction

Action Code:
J - Estimate (J) Detected Values
UJ - Estimate (UJ) Non-Detected Values
R - Reject (R) Non-Detected Values

Validator: _____ Date: 03/09/12

II. GC/MS INSTRUMENT PERFORMANCE CHECK (TUNING)

See DV Report

List all Instrument Performance Checks that are outside method QC tuning acceptance criteria.

Volatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action
Comments:							

Semivolatile Instrument Performance Check (Compound Name)	Analysis Date and Time	Instrument	Ion(s) Affected	Percent Relative Abundance	QC Limits	Samples Affected	Action
Comments:							

If tuning compounds and criteria are different from those specified in CLP SOW OLM03.1, then the validator should include a copy of the method-specific tuning criteria with this worksheet.

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV-III

See DV Report

III. INITIAL CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Instrument	Parameter	Matrix	Compound	% RSD	$\overline{RRF}$	Samples Affected	Action

Comments:

Validator: _____

Date: 03/09/12

12/96

EPA-NE - Data Validation Worksheet
VOA/SV-IV

See DV Report

IV. CONTINUING CALIBRATION - List all analytes that are outside calibration criteria.

Date of ICAL	Date of CCAL	Instrument	Parameter	Matrix	Compound	%D	RRF	Samples Affected	Action

Comments:

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet

VOA/SV - Pest/PCB-V-A

See DV Report

V. BLANK ANALYSIS

List the blank contamination below. Concentration Level:____

Sampler: _____ Company: _____ Contacted: Yes No Date:_____

1. Laboratory: Method, Storage and Instrument Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)

2. Field: Equipment (Rinsate), Trip and Bottle Blanks

Date Extracted	Date Analyzed	Parameter/ Matrix	Sample No. (Blank Type)	Instrument/ Column	Compound	Conc. (units)

Validator: _____ Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-V-B

See DV Report

3. Blank Actions - List the maximum concentrations of blank compounds.

Compound	Type of Blank	Date Blank Sampled/Originated	Max. Conc. (units)	Action Level (units)	Sample QL	Samples Affected	Action

Comments: _____

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA-VI

See DV Report

VI. VOA SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Volatile Method QC Acceptance Criteria				
	Toluene-d_8	BFB	DCE-d_4	Other:	
OLM03.2	Water 88-110 Soil 84-138	Water 86-115 Soil 59-113	Water 76-114 Soil 70-121		
OLC02.1	NA	80-120	NA		
Other:					
Sample Number/Matrix	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**Action**

Validator: JK

Date: 03/09/12

EPA-NE - Data Validation Worksheet
SV-VI

See DV Report

VI. SV SURROGATE SPIKE RECOVERIES - List all surrogate compound recoveries that are outside method QC acceptance criteria.

Method	Base/Neutral Method QC Acceptance Criteria					
	NBZ-d_5	2-FBP	TPH-d_{14}	1,2-DCB-d_4*	Other:	
OLM03.2	Water Soil 35-114 23-120	Water Soil 43-116 30-115	Water Soil 33-141 18-137	Water Soil 16-110 20-130		
OLC02.1	40-110	30-110	20-140	NA		
Other:						
Sample Number/Matrix	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**Action**

Method	Acid Method QC Acceptance Criteria					
	Phenol-d_5	2-FP	2,4,6-TBP	2-CP-d_4*	Other:	
OLM03.2	Water Soil 10-110 24-113	Water Soil 21-110 25-121	Water Soil 10-123 19-122	Water Soil 33-110 20-130		
OLC02.1	15-115	15-110	15-130	NA		
Other:						
Sample Number/Matrix	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**% Recovery**	**Action**

* Advisory Surrogates - OLM03.2

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV-VII

See DV Report

VII. INTERNAL STANDARD PERFORMANCE

List the internal standards that are outside the area count and retention time method QC acceptance criteria.
IS Area Count method QC acceptance criteria: _____
IS Retention Time method QC acceptance criteria: _____

Sample Number (TR#)	Date and Time Analyzed	Instrument	Parameter	IS Outside Area Count and/or RT Criteria	__IS Area	RT Shift	Acceptable Range (IS area or RT shift)	Action

Validator: JK

Date: 03/09/12

See DV Report

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-VIII

VIII. MATRIX SPIKE/MATRIX SPIKE DUPLICATE - List all MS/MSD analytes that are outside method QC acceptance criteria.

Use a separate worksheet for each MS/MSD pair.

Sample # _____ Matrix _____ Concentration Level _____

Parameter	Compound	MS %Rec	MSD %Rec	RPD	Method QC Limits		Concentration			% RSD	Action
					% Rec	RPD	Unspiked Sample	MS	MSD		

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-IX

See DV Report

IX. FIELD DUPLICATE PRECISION - List all field duplicate analytes that are outside criteria.

Use a separate worksheet for each field duplicate pair.

Sample Number _____ Duplicate Sample Number _____ Matrix _____

Parameter	Compound	Sample Conc.	Sample QL		Duplicate Conc.	Duplicate QL		RPD	QC Acceptance Criteria RPD or NA*	Action
			SQL	2xSQL		SQL	2xSQL			

* For instances where one duplicate result is ND (or reported less than the sample QL).

Does the MS/MSD data indicate acceptable laboratory precision? Y N

Comments: _____

_____

Sampler Name: _____ Contractor Name: _____ Date Contacted: _____

Reason for Contact and resolution obtained: _____

Validator: _____ Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-X

X. SENSITIVITY CHECK (Method Detection Limit Study)

See DV Report

List all compounds, surrogates, and internal standards that are outside the MDL criteria.

- Has an appropriate MDL study been submitted with seven replicates for each compound and matrix of interest? **Y N**
- Date of Preparation/Analysis: _____ Within 1 year? **Y N**
- Instrument I.D.: _____ Same as samples? **Y N**
- Column I.D.: _____ Same as samples? **Y N**

Matrix	Compound	MDL > QL	Method QC Limits < 80% or > 120%	IS Outside Area Count and/or RT Criteria	RSD > 20%	Samples Affected	Action

If an MDL study has not been submitted, use only the LFB results to evaluate data.

(Laboratory Fortified Blank) - List all LFB compounds, surrogates and internal standards that are outside criteria.

- Has an appropriate and complete LFB been submitted at the proper frequency? **Y N**
- Does it contain all target compounds at the method-required QLs? **Y N**
- Was the LFB spiked with a standard from a source (vendor) independent of the calibration standard? **Y N**

Matrix	Compound	Method QC Limits < 60% or > 140% Other:	IS Outside Area Count and/or RT Criteria	Samples Affected	Action

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XI

See DV Report

XI. ACCURACY CHECK (Performance Evaluation Results) - List all analytes that are outside criteria.

SDG No: _____ CASE: _____

Are more than one-half of the PES analytes within criteria for each parameter. **Y N**

PE Sample Number	Ampule Number	Parameter	Type of PES	Matrix	Analyte	Conc.	Region I EPA PES Scores*	Non-EPA PES Scores**	Samples Affected	Action

* For Region I PESs indicate the Region I PES Score Report Result: Action High; Action Low; TCL MISS; TCL CONTAMINANT; TIC HIT; TIC MISS; TIC CONTAMINANT

** For Non-EPA PESs indicate the Non-EPA PES Score: PES COMPOUND MISS; PES COMPOUND CONTAMINANT; PES COMPOUND HIT (% Recovery Limits)

Validator: _____ Date: 03/09/12

See DV Report

XII. TARGET COMPOUND IDENTIFICATION - List the analytes that are outside the acceptance criteria.

Sample Number	Compound	___MS Ions	_____RRT	Action

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV - Pest/PCB-XIII

See DV Report

XIII. SAMPLE QUANTITATION

Recalculate, from the raw data, the concentrations for one positive detect and one reported sample quantitation limit for a non-detect in a diluted sample or soil sample per fraction. (Note: Although Section XIII, C.1.a, requires that one calculation for each fraction in each sample be performed, the validator is only required to reproduce an example, for each fraction, of one positive detect and one sample quantitation limit calculation on this worksheet.)

Do all soil/sediment samples have % solids greater than 30%? **Y N**
If no, list sample numbers_____

Fraction		Calculation
VOA		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		
BNA		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		
Pesticide/PCB		
Sample No.:		
Reported Compound:		
Reported Value:		
Not Detected Compound:		
Reported Quantitation Limit:		

Validator: 

Date: 03/09/12

XIV. TENTATIVELY IDENTIFIED COMPOUNDS (TICs)

See DV Report

List the 5 TICs having the highest concentration for each sample parameter.

Sample Number	Parameter	Compound	____RRT	__Est. Conc.	Action

Validator: _____

Date: 03/09/12

EPA-NE - Data Validation Worksheet
VOA/SV-XV

See DV Report

XV. SEMIVOLATILE CLEANUP - List all analytes that are outside method cleanup QC criteria.

Cleanup Procedure	Instrument # or Lot #	Date/Time GPC Calibrated or Check Solution Analyzed	Compound	% Rec	QC Limits	Samples Affected	Action

Did the GPC column meet; resolution requirements? Y or N
peak shape requirements? Y or N
retention time shift requirements? Y or N

Was the GPC calibration, Silica Gel cleanup checked at the method required frequency with correct compounds and concentrations? Y or N

Were all compounds less than QL for the GPC/Silica Gel/Acid-Partition blank? Y or N

Did the blank surrogate recoveries and IS area counts and RTs (if added) meet method QC acceptance criteria? Y or N

Comments: _____

Validator: _____ Date: 03/09/12

APPENDIX D

SUPPORT DOCUMENTATION

HOLDTIME

SDG 280-25758-1

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
ACID	UG/KG	AFFF-SO-SB25-0507	280-25758-6	NM	2/16/2012	2/22/2012	2/26/2012	6	4	10
ACID	UG/KG	AFFF-SO-DUP01-021612	280-25758-10	NM	2/16/2012	2/22/2012	2/26/2012	6	4	10
ACID	UG/KG	AFFF-SD-SD04-0004	280-25758-9	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-DUP01-021612	280-25758-3	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB22-0507	280-25758-5	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB23-0507	280-25758-1	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB23-0507	280-25758-1	NM	2/16/2012	2/22/2012	2/26/2012	6	4	10
ACID	UG/KG	AFFF-SO-DUP01-021612	280-25758-10	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB25-0507	280-25758-6	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB26-0003	280-25758-2	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB26-0003	280-25758-2	NM	2/16/2012	2/22/2012	2/26/2012	6	4	10
ACID	UG/KG	AFFF-SO-SB26-0507	280-25758-4	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB26-0507	280-25758-4	NM	2/16/2012	2/22/2012	2/26/2012	6	4	10
ACID	UG/KG	AFFF-SO-SB27-0507	280-25758-8	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8
ACID	UG/KG	AFFF-SO-SB24-0507	280-25758-7	NM	2/16/2012	2/22/2012	2/24/2012	6	2	8

SORT	UNITS	NSAMPLE	LAB_ID	QC_TYPE	SAMP_DATE	EXTR_DATE	ANAL_DATE	SMP_EXTR	EXTR_ANL	SMP_ANL
ACID	UG/L	AFFF-SW-SW04-0212	280-25758-11	NM	2/16/2012	2/21/2012	2/23/2012	5	2	7
ACID	UG/L	AFFF-SW-DUP01-021612	280-25758-12	NM	2/16/2012	2/21/2012	2/23/2012	5	2	7

Chain of Custody Record

Sampler ID _____

Temperature on Receipt 2.1, 3.0 °C RP 2/17/12

Drinking Water? Yes ☐ No ☐

TestAmerica THE LEADER IN ENVIRONMENTAL TESTING

TAL-4124-280 (0508)

Client	Project Manager	Date	Chain of Custody Number
TetraTech	Phoebe Call	2/16/12	157771
Address	**Telephone Number (Area Code)/Fax Number**	**Lab Number**	**Page** 1 **of** _____
250 Andover St, Suite 200	978-474-8400 / 978-474-8499		
City / **State** / **Zip Code**	**Site Contact**	**Lab Contact**	
Wilmington / MA / 01870	Johanna Trault	Michelle Johnston	
Project Name and Location (State)	**Carrier/Waybill Number**		
PFCs, NAS South Weymouth, MA			
Contract/Purchase Order/Quote No.			
1126020073 / CTO WE11			

Sample I.D. No. and Description (Containers for each sample may be combined on one line)	Date	Time	Matrix: Air	Aqueous	Sed.	Soil	Containers & Preservatives: Unpres.	H2SO4	HNO3	HCl	NaOH	ZnAcl/NaOH	Analysis: PFOA/PFOS	Special Instructions/ Conditions of Receipt
AFFF-SO-SB23-0507	2/16/12	0960				X	X						1	
AFFF-SO-SB26-0003	2/16/12	0910				X	X						1	
AFFF-SD-DUP01-021612 (-SD-) JK 2/17/12	2/16/12	0000				X	X						1	
AFFF-SO-SB26-0507	2/16/12	0925				X	X						1	
AFFF-SO-SB22-0507	2/16/12	0955				X	X						1	
AFFF-SO-SB25-0507	2/16/12	1010				X	X						1	
AFFF-SO-SB24-0507	2/16/12	1030				X	X						1	
AFFF-SO-SB27-0507	2/16/12	1100				X	X						(2) OT 2/16/12	Lab QC soil
AFFF-SD-SD04-0004	2/16/12	1235			X		X						2	Lab QC sediment
AFFF-SD-DUP01-021612 (-SO-) 2/16/12 JK	2/16/12	0000			X		X						1	
AFFF-SW-SW04-0212	2/16/12	1230		X			X						12	Lab QC surface water
AFFF-SW-DUP01-021612	2/16/12	0000		X			X						4	

Possible Hazard Identification

☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal

☐ Return To Client ☒ Disposal By Lab ☐ Archive For _____ Months (A fee may be assessed if samples are retained longer than 1 month)

Turn Around Time Required

☐ 24 Hours ☐ 48 Hours ☐ 7 Days ☐ 14 Days ☒ 21 Days ☐ Other _____

QC Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: Johanna Trault	2/16/12	1400	1. Received By: FedEx		
2. Relinquished By			2. Received By	2/17/12	0915
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Returned to Client with Report; CANARY - Stays with the Sample; PINK - Field Copy

Login Sample Receipt Checklist

Client: Tetra Tech, Inc.

Job Number: 280-25758-1

Login Number: 25758

List Source: TestAmerica Denver

List Number: 1

Creator: Philipp, Nicholas A

Question	Answer	Comment
Radioactivity either was not measured or, if measured, is at or below background	True	
The cooler's custody seal, if present, is intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the sample IDs on the containers and the COC.	True	
Samples are received within Holding Time.	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
VOA sample vials do not have headspace or bubble is <6mm (1/4") in diameter.	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Historical Internal Chain of Custody

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
280-25758	1	AFFF-SO-SB23-0507	Solid	280-1270657	280-25758-A-1	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	1	AFFF-SO-SB23-0507	Solid	280-1270657	280-25758-A-1	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	1	AFFF-SO-SB23-0507	Solid	280-1270657	280-25758-A-1	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	1	AFFF-SO-SB23-0507	Solid	280-1270657	280-25758-A-1	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	1	AFFF-SO-SB23-0507	Solid	280-1276898	280-25758-A-1-A						
280-25758	2	AFFF-SO-SB26-0003	Solid	280-1270658	280-25758-A-2	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	2	AFFF-SO-SB26-0003	Solid	280-1270658	280-25758-A-2	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	2	AFFF-SO-SB26-0003	Solid	280-1270658	280-25758-A-2	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	2	AFFF-SO-SB26-0003	Solid	280-1270658	280-25758-A-2	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	2	AFFF-SO-SB26-0003	Solid	280-1276899	280-25758-A-2-A						
280-25758	3	AFFF-SO-DUP01-0216	Solid	280-1270659	280-25758-A-3	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	3	AFFF-SO-DUP01-0216	Solid	280-1270659	280-25758-A-3	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	3	AFFF-SO-DUP01-0216	Solid	280-1270659	280-25758-A-3	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	3	AFFF-SO-DUP01-0216	Solid	280-1270659	280-25758-A-3	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	3	AFFF-SO-DUP01-0216	Solid	280-1276900	280-25758-A-3-A						
280-25758	4	AFFF-SO-SB26-0507	Solid	280-1270660	280-25758-A-4	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	4	AFFF-SO-SB26-0507	Solid	280-1270660	280-25758-A-4	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	4	AFFF-SO-SB26-0507	Solid	280-1270660	280-25758-A-4	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	4	AFFF-SO-SB26-0507	Solid	280-1270660	280-25758-A-4	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	4	AFFF-SO-SB26-0507	Solid	280-1276901	280-25758-A-4-A						
280-25758	5	AFFF-SO-SB22-0507	Solid	280-1270661	280-25758-A-5	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	5	AFFF-SO-SB22-0507	Solid	280-1270661	280-25758-A-5	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	5	AFFF-SO-SB22-0507	Solid	280-1270661	280-25758-A-5	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	5	AFFF-SO-SB22-0507	Solid	280-1270661	280-25758-A-5	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	5	AFFF-SO-SB22-0507	Solid	280-1276902	280-25758-A-5-A						
280-25758	6	AFFF-SO-SB25-0507	Solid	280-1270662	280-25758-A-6	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	6	AFFF-SO-SB25-0507	Solid	280-1270662	280-25758-A-6	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	6	AFFF-SO-SB25-0507	Solid	280-1270662	280-25758-A-6	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	6	AFFF-SO-SB25-0507	Solid	280-1270662	280-25758-A-6	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	6	AFFF-SO-SB25-0507	Solid	280-1276903	280-25758-A-6-A						
280-25758	7	AFFF-SO-SB24-0507	Solid	280-1270663	280-25758-A-7	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	7	AFFF-SO-SB24-0507	Solid	280-1270663	280-25758-A-7	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	7	AFFF-SO-SB24-0507	Solid	280-1270663	280-25758-A-7	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	7	AFFF-SO-SB24-0507	Solid	280-1270663	280-25758-A-7	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	7	AFFF-SO-SB24-0507	Solid	280-1276904	280-25758-A-7-A						
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270664	280-25758-A-8	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270664	280-25758-A-8	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270809	280-25758-A-8	No Container					
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270810	280-25758-A-8	No Container					
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1276905	280-25758-A-8-A						

Historical Internal Chain of Custody

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1276906	280-25758-A-8-B						
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1276907	280-25758-A-8-C						
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270665	280-25758-B-8	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270665	280-25758-B-8	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270665	280-25758-B-8	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	8	AFFF-SO-SB27-0507	Solid	280-1270665	280-25758-B-8	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270666	280-25758-A-9	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270666	280-25758-A-9	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270666	280-25758-A-9	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270666	280-25758-A-9	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270811	280-25758-A-9	No Container					
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270812	280-25758-A-9	No Container					
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270667	280-25758-B-9	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1270667	280-25758-B-9	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1276908	280-25758-B-9-A						
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1276909	280-25758-B-9-B						
280-25758	9	AFFF-SD-SD04-0004	Solid	280-1276910	280-25758-B-9-C						
280-25758	10	AFFF-SD-DUP01-0216	Solid	280-1270668	280-25758-A-10	Soil jar 16oz	66	Frey, Alan C	I	280-114599	02/22/12 10:58
280-25758	10	AFFF-SD-DUP01-0216	Solid	280-1270668	280-25758-A-10	Soil jar 16oz	OP Dpt	Frey, Alan C	I	280-114597	02/22/12 10:57
280-25758	10	AFFF-SD-DUP01-0216	Solid	280-1270668	280-25758-A-10	Soil jar 16oz	66	Taylor, Juli M	I	280-114479	02/21/12 16:08
280-25758	10	AFFF-SD-DUP01-0216	Solid	280-1270668	280-25758-A-10	Soil jar 16oz	WC Dpt	Taylor, Juli M	I	280-114417	02/21/12 13:10
280-25758	10	AFFF-SD-DUP01-0216	Solid	280-1276911	280-25758-A-10-A						
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270669	280-25758-A-11	Plastic 250ml - unpreserved	D: Waste Stream A-Flammable Vial Waste/A12B02A	Chavez, Lawrence	I	280-114559	02/22/12 08:56
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270669	280-25758-A-11	Plastic 250ml - unpreserved	OP Dpt	Vu, John Dat C	I	280-114347	02/21/12 09:25
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270813	280-25758-A-11	No Container					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270814	280-25758-A-11	No Container					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1274833	280-25758-A-11-A						
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270670	280-25758-B-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270671	280-25758-C-11	Plastic 250ml - unpreserved	D: Waste Stream A-Flammable Vial Waste/A12B02A	Chavez, Lawrence	I	280-114559	02/22/12 08:56
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270671	280-25758-C-11	Plastic 250ml - unpreserved	OP Dpt	Vu, John Dat C	I	280-114347	02/21/12 09:25
280-25758	11	AFFF-SW-SW04-0212	Water	280-1274835	280-25758-C-11-						
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270672	280-25758-D-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270673	280-25758-E-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270674	280-25758-F-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270675	280-25758-G-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270676	280-25758-H-11	Plastic 250ml - unpreserved					

Historical Internal Chain of Custody

Login	Smp	Customer Sample ID	Matrix	Container ID	Lab Sample ID	Container Type	Location	Custody User	I/O	ICOC ID	ICOC Date
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270677	280-25758-I-11	Plastic 250ml - unpreserved	D: Waste Stream A-Flammable Vial Waste/A12B02A	Chavez, Lawrence	I	280-114559	02/22/12 08:56
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270677	280-25758-I-11	Plastic 250ml - unpreserved	OP Dpt	Vu, John Dat C	I	280-114347	02/21/12 09:25
280-25758	11	AFFF-SW-SW04-0212	Water	280-1274834	280-25758-I-11-A						
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270678	280-25758-J-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270679	280-25758-K-11	Plastic 250ml - unpreserved					
280-25758	11	AFFF-SW-SW04-0212	Water	280-1270680	280-25758-L-11	Plastic 250ml - unpreserved					
280-25758	12	AFFF-SW-DUP01-021	Water	280-1270681	280-25758-A-12	Plastic 250ml - unpreserved					
280-25758	12	AFFF-SW-DUP01-021	Water	280-1270682	280-25758-B-12	Plastic 250ml - unpreserved					
280-25758	12	AFFF-SW-DUP01-021	Water	280-1270683	280-25758-C-12	Plastic 250ml - unpreserved	D: Waste Stream A-Flammable Vial Waste/A12B02A	Chavez, Lawrence	I	280-114559	02/22/12 08:56
280-25758	12	AFFF-SW-DUP01-021	Water	280-1270683	280-25758-C-12	Plastic 250ml - unpreserved	OP Dpt	Vu, John Dat C	I	280-114347	02/21/12 09:25
280-25758	12	AFFF-SW-DUP01-021	Water	280-1274836	280-25758-C-12-						
280-25758	12	AFFF-SW-DUP01-021	Water	280-1270684	280-25758-D-12	Plastic 250ml - unpreserved					

CASE NARRATIVE
Client: Tetra Tech
Project: NAS South Weymouth
Contract Task Order: WE11 / N62470-08-D-1001
Project Manager: Phoebe Call
Report Number: 280-25758-1

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.

The PFC method DV-LC-0012 is an isotope dilution method; therefore, the internal standards are added prior to the extraction process. This technique inherently corrects for variability in the extraction efficiency due to sample matrix. Dilution of samples beyond the ability of the instrument to detect the internal standards is not recommended. Analyses performed at a dilution level requiring additional internal standard to be added after the extraction step in order to quantitate results has been shown to yield results with a significant low bias. As a result, data have been reported that exceed the calibration range and are qualified as estimated.

The PFC method is an isotope dilution method where the internal standards are added prior to extraction and used to quantitate results; therefore, the use of dilution factors is inappropriate. Application of dilution factors would yield results that are artificially high. Reporting limits and method detection limits are not adjusted for dilutions unless samples are fortified with additional internal standard, which is not recommended.

Internal standard abundances may vary depending upon both recovery and the dilution at which the analysis is performed. This is an inherent feature of the isotope dilution technique and is not indicative of bias to the reported results.

RECEIPT

The following report contains the analytical results for twelve samples received at TestAmerica Denver on February 17, 2012, according to documented sample acceptance procedures. The samples were received in good condition at temperatures of 2.8°C and 3.0°C. No anomalies were encountered during sample receipt.

PFOA & PFOS

-SD- * 3/8/12

Samples AFFF-SO-SB23-0507 (280-25758-1), AFFF-SO-SB26-0003 (280-25758-2), AFFF-SO-DUP01-021612 (280-25758-3), AFFF-SO-SB26-0507 (280-25758-4), AFFF-SO-SB22-0507 (280-25758-5), AFFF-SO-SB25-0507 (280-25758-6), AFFF-SO-SB24-0507 (280-25758-7), AFFF-SO-SB27-0507 (280-25758-8), AFFF-SD-SD04-0004 (280-25758-9) and AFFF-SO-DUP01-021612 (280-25758-10) were analyzed for PFOA/PFOS LC/MS/MS in accordance with LCMS PFOA. The samples were prepared on 02/22/2012 and analyzed on 02/24/2012 and 02/26/2012.

-SO- * 3/8/12

Samples AFFF-SW-SW04-0212 (280-25758-11) and AFFF-SW-DUP01-021612 (280-25758-12) were analyzed for PFC in accordance with SOP DV-LC-0012. The samples were prepared on 02/21/2012 and analyzed on 02/23/2012.

Each sample is analyzed to achieve the lowest possible reporting limits within the constraints of the method. Due to high concentrations of target analytes, several samples required dilution as outlined below.

AFFF-SO-SB23-0507 (280-25758-1) 5X for run type DL
AFFF-SO-SB26-0003 (280-25758-2) 5X for run type DL
AFFF-SO-SB26-0507 (280-25758-4) 5X for run type DL
AFFF-SO-SB25-0507 (280-25758-6) 5X for run type DL
AFFF-SO-DUP01-021612 (280-25758-10) 10X for run type DL * 3/8/12

-SO-

Internal standards (IS) were not fortified, therefore, the IS percent recoveries need to be multiplied by 5 or10 and the MDLs/RLs were not updated due to limitations in the software.

The MS/MSD associated with prep batch 280-108553 was performed on sample AFFF-SW-SW04-0212 (280-25758-11). The MS/MSD spike compound recoveries and RPD data could not be reliably calculated for Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) because the sample concentration was greater than four times the spike amounts. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary. The associated data in the parent sample have been flagged "J" in accordance with the DoD QSM.

The MS/MSD associated with prep batch 280-108709 was performed on sample AFFF-SO-SB27-0507 (280-25758-8). The MS/MSD exhibited a spike compound recovery outside the control limits for Perfluorooctane Sulfonate (PFOS). The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary. The associated

data in the parent sample has been flagged "J" in accordance with the DoD QSM.

The second MS/MSD associated with prep batch 280-108709 was performed on sample AFFF-SD-SD04-0004 (280-25758-9). The MS/MSD spike compound recoveries and RPD data could not be reliably calculated for Perfluorooctane Sulfonate (PFOS) and Perfluorooctanoic acid (PFOA) because the sample concentration was greater than four times the spike amounts. The acceptable LCS analysis data indicated that the analytical system was operating within control; therefore, corrective action is deemed unnecessary. The associated data in the parent sample have been flagged "J" in accordance with the DoD QSM.

Internal standard responses were outside the control limits for samples AFFF-SO-DUP01-021612 (280-25758-3), AFFF-SO-SB25-0507 (280-25758-6), AFFF-SD-SD04-0004 (280-25758-9), AFFF-SD-SD04-0004 (280-25758-9 MSD), AFFF-SD-SD04-0004 (280-25758-9 MS) and AFFF-SO-DUP01-021612 (280-25758-10) in analytical batch 280-109197. The samples show evidence of matrix interferences. The internal standards were in control for the Method Blank and LCS, indicating that the sample matrix may be causing the internal standard outages.

Refer to the QC report for details.

No other difficulties were encountered during the LCMS analyses.

All other quality control parameters were within the acceptance limits.

PERCENT SOLIDS

Samples AFFF-SO-SB23-0507 (280-25758-1), AFFF-SO-SB26-0003 (280-25758-2), AFFF-SO-DUP01-021612 (280-25758-3), AFFF-SO-SB26-0507 (280-25758-4), AFFF-SO-SB22-0507 (280-25758-5), AFFF-SO-SB25-0507 (280-25758-6), AFFF-SO-SB24-0507 (280-25758-7), AFFF-SO-SB27-0507 (280-25758-8), AFFF-SD-SD04-0004 (280-25758-9) and AFFF-SO-DUP01-021612 (280-25758-10) were analyzed for percent solids in accordance with EPA SW846 3550C. The samples were analyzed on 02/21/2012.

No difficulties were encountered during the % solids analyses.

All quality control parameters were within the acceptance limits.

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calibration End Date: 02/23/2012 21:09

Calibration ID: 8621

		OA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		12261263	4.04	3562890	4.18		
UPPER LIMIT		19004958	4.54	4631757	4.68		
LOWER LIMIT		7356758	3.54	1603301	3.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
CCB 280-109060/12		13176206	4.04	3660807	4.18		
ICV 280-109060/13		14147589	4.03	4019517	4.18		
DLCK 280-109060/14		13453617	4.03	3709808	4.18		
MB 280-108553/1-A		11528496	4.01	3180408	4.16		
LCS 280-108553/2-A		13137073	4.00	3489135	4.15		
280-25758-11	AFFF-SW-SW04-0212	7878188	4.00	2001996	4.14		
280-25758-11 MS	AFFF-SW-SW04-0212 MS	8795003	4.00	2378094	4.13		
280-25758-11 MSD	AFFF-SW-SW04-0212 MSD	10665789	4.00	3180706	4.13		
280-25758-12	AFFF-SW-DUP01-021612	10569143	3.99	2568563	4.13		
CCV 280-109060/22		14365036	4.00	3952066	4.14		
CCV 280-109197/29		13178962	3.99	3826590	4.13		
MB 280-108709/1-A		11335606	4.00	3521743	4.14		
LCS 280-108709/2-A		10567709	4.00	3473566	4.14		
280-25758-1	AFFF-SO-SB23-0507	10448819	4.00	2353547	4.13		
280-25758-2	AFFF-SO-SB26-0003	8474127	4.00	2033568	4.13		
280-25758-3	AFFF-SO-DUP01-021612	5286648Q	3.99	1715222	4.13		
280-25758-4	AFFF-SO-SB26-0507	9920812	3.99	1849078	4.13		
280-25758-5	AFFF-SO-SB22-0507	10132474	3.98	3508055	4.13		
280-25758-6	AFFF-SO-SB25-0507	10296246	3.99	1587889Q	4.13		
CCV 280-109197/38		12915126	3.99	3788820	4.12		
280-25758-7	AFFF-SO-SB24-0507	11182716	3.99	3293762	4.13		
280-25758-8	AFFF-SO-SB27-0507	11222863	3.99	3187580	4.13		
280-25758-8 MS	AFFF-SO-SB27-0507 MS	10461506	4.00	3109292	4.13		
280-25758-8 MSD	AFFF-SO-SB27-0507 MSD	10720751	3.99	3246300	4.13		
280-25758-9	AFFF-SD-SD04-0004	3421797Q	3.98	1737073	4.12		
280-25758-9 MS	AFFF-SD-SD04-0004 MS	3951018Q	3.98	1872106	4.12		
280-25758-9 MSD	AFFF-SD-SD04-0004 MSD	3995733Q	3.98	1828561	4.12		
280-25758-10	AFFF-SD-DUP01-021612	8502327	3.99	1428553Q	4.13		
CCV 280-109197/47		11210388	3.98	3470018	4.12		
CCV 280-109440/61		10493377	3.98	3300483	4.12		

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)

Area Limit = 60%-155% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII PFOA/PFOS

SAMPLE SUMMARY

Client: Tetra Tech, Inc. Job Number: 280-25758-1

Lab Sample ID	Client Sample ID	Client Matrix	Date/Time Sampled	Date/Time Received
280-25758-1	AFFF-SO-SB23-0507	Solid	02/16/2012 0900	02/17/2012 0915
280-25758-2	AFFF-SO-SB26-0003	Solid	02/16/2012 0910	02/17/2012 0915
280-25758-3FD	AFFF-SO-DUP01-021612	Solid	02/16/2012 0000	02/17/2012 0915
280-25758-4	AFFF-SO-SB26-0507	Solid	02/16/2012 0925	02/17/2012 0915
280-25758-5	AFFF-SO-SB22-0507	Solid	02/16/2012 0955	02/17/2012 0915
280-25758-6	AFFF-SO-SB25-0507	Solid	02/16/2012 1010	02/17/2012 0915
280-25758-7	AFFF-SO-SB24-0507	Solid	02/16/2012 1030	02/17/2012 0915
280-25758-8	AFFF-SO-SB27-0507	Solid	02/16/2012 1100	02/17/2012 0915
280-25758-8MS	AFFF-SO-SB27-0507	Solid	02/16/2012 1100	02/17/2012 0915
280-25758-8MSD	AFFF-SO-SB27-0507	Solid	02/16/2012 1100	02/17/2012 0915
280-25758-9	AFFF-SD-SD04-0004	Solid	02/16/2012 1235	02/17/2012 0915
280-25758-9MS	AFFF-SD-SD04-0004	Solid	02/16/2012 1235	02/17/2012 0915
280-25758-9MSD	AFFF-SD-SD04-0004	Solid	02/16/2012 1235	02/17/2012 0915
280-25758-10FD	AFFF-SO-DUP01-021612	Solid	02/16/2012 0000	02/17/2012 0915
280-25758-11	AFFF-SW-SW04-0212	Water	02/16/2012 1230	02/17/2012 0915
280-25758-11MS	AFFF-SW-SW04-0212	Water	02/16/2012 1230	02/17/2012 0915
280-25758-11MSD	AFFF-SW-SW04-0212	Water	02/16/2012 1230	02/17/2012 0915
280-25758-12FD	AFFF-SW-DUP01-021612	Water	02/16/2012 0000	02/17/2012 0915

METHOD SUMMARY

Client: Tetra Tech, Inc. Job Number: 280-25758-1

Description	Lab Location	Method	Preparation Method
Matrix: Solid			
PFOA/PFOS LC/MS/MS	TAL DEN	TestAmerica SOP PFOA/PFOS	
Leaching procedure for PFCs	TAL DEN		TAL-DEN PFC leach
Percent Moisture	TAL DEN	EPA Moisture	
Matrix: Water			
PFOA/PFOS LC/MS/MS	TAL DEN	TestAmerica SOP PFOA/PFOS	
Solid-Phase Extraction (SPE)	TAL DEN		SW846 3535

Lab References:

TAL DEN = TestAmerica Denver

Method References:

EPA = US Environmental Protection Agency

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

TAL-DEN = TestAmerica Laboratories, Denver, Facility Standard Operating Procedure.

TestAmerica SOP = TestAmerica, Inc., Standard Operating Procedure

METHOD / ANALYST SUMMARY

Client: Tetra Tech, Inc. Job Number: 280-25758-1

Method	Analyst	Analyst ID
TestAmerica SOP PFOA/PFOS	Bonnett, Jaqueline C	JCB
EPA Moisture	Taylor, Juli M	JMT

DATA REPORTING QUALIFIERS

Client: Tetra Tech, Inc. Job Number: 280-25758-1

Lab Section	Qualifier	Description
LCMS		
	J	Estimated: The analyte was positively identified; the quantitation is an estimation
	J	Estimated: The quantitation is an estimation due to discrepancies in meeting certain analyte-specific quality control criteria.
	M	Manual integrated compound.
	4	MS, MSD: The analyte present in the original sample is 4 times greater than the matrix spike concentration; therefore, control limits are not applicable.
	D	The reported value is from a dilution.
	U	Undetected at the Limit of Detection.

Method LCMS PFOA

PFOA/PFOS (LC/MS/MS) by Method LCMS_PFOA

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 02/23/2012 20:07

Analysis Batch Number: 109060 End Date: 02/23/2012 22:34

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD0002 280-109060/3 IC		02/23/2012 20:07	1	PC512b23032.d	Gemini-NX
STD0005 280-109060/4 IC		02/23/2012 20:15	1	PC512b23033.d	Gemini-NX
STD0010 280-109060/5 IC		02/23/2012 20:23	1	PC512b23034.d	Gemini-NX
ICISAV 280-109060/6		02/23/2012 20:31	1	PC512b23035.d	Gemini-NX
STD0050 280-109060/7 IC		02/23/2012 20:38	1	PC512b23036.d	Gemini-NX
STD0100 280-109060/8 IC		02/23/2012 20:46	1	PC512b23037.d	Gemini-NX
STD0200 280-109060/9 IC		02/23/2012 20:54	1	PC512b23038.d	Gemini-NX
STD0500 280-109060/10 IC		02/23/2012 21:02	1	PC512b23039.d	Gemini-NX
STD1250 280-109060/11 IC		02/23/2012 21:09	1	PC512b23040.d	Gemini-NX
CCB 280-109060/12		02/23/2012 21:17	1	PC512b23041.d	Gemini-NX
ICV 280-109060/13		02/23/2012 21:25	1	PC512b23042.d	Gemini-NX
DLCK 280-109060/14		02/23/2012 21:33	1	PC512b23043.d	Gemini-NX
ZZZZZ		02/23/2012 21:40	1		Gemini-NX
MB 280-108553/1-A		02/23/2012 21:48	1	PC512b23045.d	Gemini-NX
LCS 280-108553/2-A		02/23/2012 21:56	1	PC512b23046.d	Gemini-NX
280-25758-11	AFFF-SW-SW04-0212	02/23/2012 22:03	1	PC512b23047.d	Gemini-NX
280-25758-11 MS	AFFF-SW-SW04-0212 MS	02/23/2012 22:11	1	PC512b23048.d	Gemini-NX
280-25758-11 MSD	AFFF-SW-SW04-0212 MSD	02/23/2012 22:19	1	PC512b23049.d	Gemini-NX
280-25758-12	AFFF-SW-DUP01-021612	02/23/2012 22:27	1	PC512b23050.d	Gemini-NX
CCV 280-109060/22		02/23/2012 22:34	1	PC512b23051.d	Gemini-NX

PFOA/PFOS

FORM VI
LCMS INITIAL CALIBRATION DATA
INTERNAL STANDARD CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-25758-1 Analy Batch No.: 109060

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/23/2012 20:07 Calibration End Date: 02/23/2012 21:09 Calibration ID: 8621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-109060/3	PC512b23032.d
Level 2	STD0005 280-109060/4	PC512b23033.d
Level 3	STD0010 280-109060/5	PC512b23034.d
Level 4	ICISAV 280-109060/6	PC512b23035.d
Level 5	STD0050 280-109060/7	PC512b23036.d
Level 6	STD0100 280-109060/8	PC512b23037.d
Level 7	STD0200 280-109060/9	PC512b23038.d
Level 8	STD0500 280-109060/10	PC512b23039.d
Level 9	STD1250 280-109060/11	PC512b23040.d

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5		B	M1	M2								
Ammonium Perfluorooctanoate (APFO)	1.3019 0.9188	0.9555 0.9790	0.9935 0.8602	0.9522 0.7187	0.9194	Lin2	0.0848	0.8751							0.9910		0.9800
Perfluorooctanoic acid (PFOA)	1.3547 0.9584	1.0122 1.0220	1.0338 0.8956	1.0001 0.7480	0.9641	Lin2	0.0849	0.9151							0.9910		0.9800
Perfluorooctane Sulfonate (PFOS)	1.3470 1.1602	1.1732 1.3016	1.1825 1.0795	1.2064 0.9322	1.1709	Lin2	0.0400	1.1313							0.9910		0.9800
13C8 PFOA	0.9905 0.8439	0.8812 0.8403	0.8692 0.7912	0.8545 0.6560	0.8283	Lin2	0.0405	0.7995							0.9940		0.9800
13C8 PFOS	1.0341 0.9009	0.8485 0.9194	0.8721 0.8232	0.8863 0.7073	0.8791	Lin2	0.0334	0.8401							0.9930		0.9800

Note: The m1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS INITIAL CALIBRATION DATA
INTERNAL STANDARD RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-25758-1 Analy Batch No.: 109060

SDG No.:

Instrument ID: LC_LCMS5 GC Column: Gemini-NX ID: Heated Purge: (Y/N) N

Calibration Start Date: 02/23/2012 20:07 Calibration End Date: 02/23/2012 21:09 Calibration ID: 8621

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD0002 280-109060/3	PC512b23032.d
Level 2	STD0005 280-109060/4	PC512b23033.d
Level 3	STD0010 280-109060/5	PC512b23034.d
Level 4	ICISAV 280-109060/6	PC512b23035.d
Level 5	STD0050 280-109060/7	PC512b23036.d
Level 6	STD0100 280-109060/8	PC512b23037.d
Level 7	STD0200 280-109060/9	PC512b23038.d
Level 8	STD0500 280-109060/10	PC512b23039.d
Level 9	STD1250 280-109060/11	PC512b23040.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4 LVL 9	LVL 5
Ammonium Perfluorooctanoate (APFO)	OA	Lin2	365649 12271053	666720 22996181	1368509 47413072	2648340 82604448	6359198	0.208 10.4	0.520 20.8	1.04 52.0	2.08 130	5.20
Perfluorooctanoic acid (PFOA)	OA	Lin2	365649 12299687	678762 23069576	1368509 47438106	2673031 82624640	6408817	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
Perfluorooctane Sulfonate (PFOS)	PFOS	Lin2	104325 4384300	222797 8759658	453269 17269883	933637 29782181	2220797	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78
13C8 PFOA	OA	Lin2	267333 10830249	590894 18966335	1150621 41910657	2283685 72463270	5505729	0.200 10.0	0.500 20.0	1.00 50.0	2.00 125	5.00
13C8 PFOS	PFOS	Lin2	80090 3404706	161136 6187625	334299 13170135	685868 22598692	1667237	0.191 9.56	0.478 19.1	0.956 47.8	1.91 120	4.78

Curve Type Legend:
Lin2 = Linear 1/conc^2 ISTD

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.:

Client Sample ID: | Lab Sample ID: CCB 280-109060/12

Matrix: Water | Lab File ID: PC512b23041.d

Analysis Method: PFOA/PFOS | Date Collected:

Extraction Method: | Date Extracted:

Sample wt/vol: 1(mL) | Date Analyzed: 02/23/2012 21:17

Con. Extract Vol.: 1.0(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109060 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0080	U	0.55	0.0080	0.0012
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0076	U	0.15	0.0076	0.0016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA			
STL01054	13C8 PFOS			

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: ICV 280-109060/13 Calibration Date: 02/23/2012 21:25

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b23042.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9699		2.21	2.08	6.2	30.0
Perfluorooctanoic acid (PFOA)	Lin2		1.023		2.14	2.00	7.0	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.266		2.22	2.02	9.9	30.0
13C8 PFOA	Lin2		0.8441		2.06	2.00	3.0	30.0
13C8 PFOS	Lin2		0.9142		2.04	1.91	6.7	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: CCV 280-109060/22 Calibration Date: 02/23/2012 22:34

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b23051.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9253		5.40	5.20	3.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9704		5.21	5.00	4.2	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.174		4.92	4.78	2.9	30.0
13C8 PFOA	Lin2		0.8499		5.26	5.00	5.2	30.0
13C8 PFOS	Lin2		0.9184		5.19	4.78	8.6	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 02/24/2012 20:52

Analysis Batch Number: 109197 End Date: 02/24/2012 23:11

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-109197/29		02/24/2012 20:52	1	PC512b24037.d	Gemini-NX
MB 280-108709/1-A		02/24/2012 20:59	1	PC512b24038.d	Gemini-NX
LCS 280-108709/2-A		02/24/2012 21:07	1	PC512b24039.d	Gemini-NX
280-25758-1	AFFF-SO-SB23-0507	02/24/2012 21:15	1	PC512b24040.d	Gemini-NX
280-25758-2	AFFF-SO-SB26-0003	02/24/2012 21:23	1	PC512b24041.d	Gemini-NX
280-25758-3	AFFF-SO-DUP01-021612	02/24/2012 21:30	1	PC512b24042.d	Gemini-NX
280-25758-4	AFFF-SO-SB26-0507	02/24/2012 21:38	1	PC512b24043.d	Gemini-NX
280-25758-5	AFFF-SO-SB22-0507	02/24/2012 21:46	1	PC512b24044.d	Gemini-NX
280-25758-6	AFFF-SO-SB25-0507	02/24/2012 21:54	1	PC512b24045.d	Gemini-NX
CCV 280-109197/38		02/24/2012 22:01	1	PC512b24046.d	Gemini-NX
280-25758-7	AFFF-SO-SB24-0507	02/24/2012 22:09	1	PC512b24047.d	Gemini-NX
280-25758-8	AFFF-SO-SB27-0507	02/24/2012 22:17	1	PC512b24048.d	Gemini-NX
280-25758-8 MS	AFFF-SO-SB27-0507 MS	02/24/2012 22:24	1	PC512b24049.d	Gemini-NX
280-25758-8 MSD	AFFF-SO-SB27-0507 MSD	02/24/2012 22:32	1	PC512b24050.d	Gemini-NX
280-25758-9	AFFF-SD-SD04-0004	02/24/2012 22:40	1	PC512b24051.d	Gemini-NX
280-25758-9 MS	AFFF-SD-SD04-0004 MS	02/24/2012 22:48	1	PC512b24052.d	Gemini-NX
280-25758-9 MSD	AFFF-SD-SD04-0004 MSD	02/24/2012 22:55	1	PC512b24053.d	Gemini-NX
280-25758-10	AFFF-SO-DUP01-021612	02/24/2012 23:03	1	PC512b24054.d	Gemini-NX
CCV 280-109197/47		02/24/2012 23:11	1	PC512b24055.d	Gemini-NX

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-26-

3/8/12

-50-

PFOA/PFOS

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: CCV 280-109197/29 Calibration Date: 02/24/2012 20:52

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b24037.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9153		10.8	10.4	3.8	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9557		10.4	10.0	4.0	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.159		9.76	9.56	2.1	30.0
13C8 PFOA	Lin2		0.8175		10.2	10.0	2.0	30.0
13C8 PFOS	Lin2		0.8862		10.0	9.56	4.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: CCV 280-109197/38 Calibration Date: 02/24/2012 22:01

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b24046.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9427		5.51	5.20	5.9	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9874		5.30	5.00	6.0	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.182		4.96	4.78	3.8	30.0
13C8 PFOA	Lin2		0.7938		4.91	5.00	-1.8	30.0
13C8 PFOS	Lin2		0.8954		5.05	4.78	5.6	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: CCV 280-109197/47 Calibration Date: 02/24/2012 23:11

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b24055.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9254		10.9	10.4	4.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9662		10.5	10.0	5.0	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.155		9.72	9.56	1.7	30.0
13C8 PFOA	Lin2		0.7869		9.79	10.0	-2.1	30.0
13C8 PFOS	Lin2		0.8884		10.1	9.56	5.6	30.0

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Instrument ID: LC_LCMS5 Start Date: 02/26/2012 16:35

Analysis Batch Number: 109440 End Date: 02/26/2012 17:21

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-109440/61		02/26/2012 16:35	1	PC512b26008.d	Gemini-NX
280-25758-1 DL	AFFF-SO-SB23-0507 DL	02/26/2012 16:43	1	PC512b26009.d	Gemini-NX
280-25758-2 DL	AFFF-SO-SB26-0003 DL	02/26/2012 16:51	1	PC512b26010.d	Gemini-NX
280-25758-4 DL	AFFF-SO-SB26-0507 DL	02/26/2012 16:58	1	PC512b26011.d	Gemini-NX
280-25758-6 DL	AFFF-SO-SB25-0507 DL	02/26/2012 17:06	1	PC512b26012.d	Gemini-NX
280-25758-10 DL	AFFF-SO-DUP01-021612 DL	02/26/2012 17:14	1	PC512b26013.d	Gemini-NX
CCV 280-109440/67		02/26/2012 17:21	1	PC512b26014.d	Gemini-NX

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PFOA/PFOS

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: CCV 280-109440/61 Calibration Date: 02/26/2012 16:35

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b26008.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9389		11.1	10.4	6.7	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9800		10.6	10.0	6.0	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.180		9.93	9.56	3.9	30.0
13C8 PFOA	Lin2		0.8755		10.9	10.0	9.0	30.0
13C8 PFOS	Lin2		0.8753		9.92	9.56	3.8	30.0

FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab Sample ID: CCV 280-109440/67 Calibration Date: 02/26/2012 17:21

Instrument ID: LC_LCMS5 Calib Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calib End Date: 02/23/2012 21:09

Lab File ID: PC512b26014.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
Ammonium Perfluorooctanoate (APFO)	Lin2		0.9175		5.36	5.20	3.0	30.0
Perfluorooctanoic acid (PFOA)	Lin2		0.9596		5.15	5.00	3.0	30.0
Perfluorooctane Sulfonate (PFOS)	Lin2		1.171		4.91	4.78	2.7	30.0
13C8 PFOA	Lin2		0.7805		4.83	5.00	-3.4	30.0
13C8 PFOS	Lin2		0.8550		4.83	4.78	1.0	30.0

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab File ID: PC512b23045.d Lab Sample ID: MB 280-108553/1-A

Matrix: Water Date Extracted: 02/21/2012 13:05

Instrument ID: LC_LCMS5 Date Analyzed: 02/23/2012 21:48

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-108553/2-A	PC512b23046.d	02/23/2012 21:56
AFFF-SW-SW04-0212	280-25758-11	PC512b23047.d	02/23/2012 22:03
AFFF-SW-SW04-0212 MS	280-25758-11 MS	PC512b23048.d	02/23/2012 22:11
AFFF-SW-SW04-0212 MSD	280-25758-11 MSD	PC512b23049.d	02/23/2012 22:19
AFFF-SW-DUP01-021612	280-25758-12	PC512b23050.d	02/23/2012 22:27

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-108553/1-A

Matrix: Water | Lab File ID: PC512b23045.d

Analysis Method: PFOA/PFOS | Date Collected:

Extraction Method: 3535 | Date Extracted: 02/21/2012 13:05

Sample wt/vol: 250(mL) | Date Analyzed: 02/23/2012 21:48

Con. Extract Vol.: 5(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109060 | Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.0080	U	0.020	0.0080	0.0012
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.0076	U	0.030	0.0076	0.0016

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	109		60-155
STL01054	13C8 PFOS	104		45-130

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC512b23046.d

Lab ID: LCS 280-108553/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.200	0.208	104	70-130	
Perfluorooctane Sulfonate (PFOS)	0.191	0.193	101	60-128	

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Lab File ID: PC512b24038.d Lab Sample ID: MB 280-108709/1-A

Matrix: Solid Date Extracted: 02/22/2012 10:30

Instrument ID: LC_LCMS5 Date Analyzed: 02/24/2012 20:59

Level:(Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-108709/2-A	PC512b24039.d	02/24/2012 21:07
AFFF-SO-SB23-0507	280-25758-1	PC512b24040.d	02/24/2012 21:15
AFFF-SO-SB26-0003	280-25758-2	PC512b24041.d	02/24/2012 21:23
AFFF-SO-DUP01-021612	280-25758-3	PC512b24042.d	02/24/2012 21:30
AFFF-SO-SB26-0507	280-25758-4	PC512b24043.d	02/24/2012 21:38
AFFF-SO-SB22-0507	280-25758-5	PC512b24044.d	02/24/2012 21:46
AFFF-SO-SB25-0507	280-25758-6	PC512b24045.d	02/24/2012 21:54
AFFF-SO-SB24-0507	280-25758-7	PC512b24047.d	02/24/2012 22:09
AFFF-SO-SB27-0507	280-25758-8	PC512b24048.d	02/24/2012 22:17
AFFF-SO-SB27-0507 MS	280-25758-8 MS	PC512b24049.d	02/24/2012 22:24
AFFF-SO-SB27-0507 MSD	280-25758-8 MSD	PC512b24050.d	02/24/2012 22:32
AFFF-SD-SD04-0004	280-25758-9	PC512b24051.d	02/24/2012 22:40
AFFF-SD-SD04-0004 MS	280-25758-9 MS	PC512b24052.d	02/24/2012 22:48
AFFF-SD-SD04-0004 MSD	280-25758-9 MSD	PC512b24053.d	02/24/2012 22:55
AFFF-SO-DUP01-021612	280-25758-10	PC512b24054.d	02/24/2012 23:03
AFFF-SO-SB23-0507 DL	280-25758-1 DL	PC512b26009.d	02/26/2012 16:43
AFFF-SO-SB26-0003 DL	280-25758-2 DL	PC512b26010.d	02/26/2012 16:51
AFFF-SO-SB26-0507 DL	280-25758-4 DL	PC512b26011.d	02/26/2012 16:58
AFFF-SO-SB25-0507 DL	280-25758-6 DL	PC512b26012.d	02/26/2012 17:06
AFFF-SO-DUP01-021612 DL	280-25758-10 DL	PC512b26013.d	02/26/2012 17:14

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver | Job No.: 280-25758-1

SDG No.:

Client Sample ID: | Lab Sample ID: MB 280-108709/1-A

Matrix: Solid | Lab File ID: PC512b24038.d

Analysis Method: PFOA/PFOS | Date Collected:

Extraction Method: PFC leach | Date Extracted: 02/22/2012 10:30

Sample wt/vol: 10.88(g) | Date Analyzed: 02/24/2012 20:59

Con. Extract Vol.: 20(mL) | Dilution Factor: 1

Injection Volume: 20(uL) | GC Column: Gemini-NX ID:

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

Analysis Batch No.: 109197 | Units: ug/Kg

CAS NO.	COMPOUND NAME	RESULT	Q	LOQ	LOD	DL
335-67-1	Perfluorooctanoic acid (PFOA)	0.55	U	0.74	0.55	0.19
1763-23-1	Perfluorooctane Sulfonate (PFOS)	0.55	U	0.74	0.55	0.17

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL01052	13C8 PFOA	108		57-153
STL01054	13C8 PFOS	106		70-130

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC512b24039.d

Lab ID: LCS 280-108709/2-A Client ID:

COMPOUND	SPIKE ADDED (ug/Kg)	LCS CONCENTRATION (ug/Kg)	LCS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	19.9	21.5	108	70-130	
Perfluorooctane Sulfonate (PFOS)	19.0	19.4	102	74-115	

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC512b24049.d

Lab ID: 280-25758-8 MS Client ID: AFFF-SO-SB27-0507 MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	19.2	1.9	23.1	111	70-130	
Perfluorooctane Sulfonate (PFOS)	18.4	44	63.3	107	74-115	

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC512b24050.d

Lab ID: 280-25758-8 MSD Client ID: AFFF-SO-SB27-0507 MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	19.8	23.2	108	0	20	70-130	
Perfluorooctane Sulfonate (PFOS)	18.9	57.5	73	10	20	74-115	J

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC512b23048.d

Lab ID: 280-25758-11 MS Client ID: AFFF-SW-SW04-0212 MS

COMPOUND	SPIKE ADDED (ug/L)	SAMPLE CONCENTRATION (ug/L)	MS CONCENTRATION (ug/L)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.195	0.96	1.07	56	70-130	4
Perfluorooctane Sulfonate (PFOS)	0.187	1.5	1.47	-11	60-128	4

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC512b23049.d

Lab ID: 280-25758-11 MSD Client ID: AFFF-SW-SW04-0212 MSD

COMPOUND	SPIKE ADDED (ug/L)	MSD CONCENTRATION (ug/L)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.194	0.925	-16	14	20	70-130	4
Perfluorooctane Sulfonate (PFOS)	0.185	1.18	-170	22	20	60-128	4 J

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM III
LCMS MATRIX SPIKE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC512b24052.d

Lab ID: 280-25758-9 MS Client ID: AFFF-SD-SD04-0004 MS

COMPOUND	SPIKE ADDED (ug/Kg)	SAMPLE CONCENTRATION (ug/Kg)	MS CONCENTRATION (ug/Kg)	MS % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	19.8	99	142	217	70-130	4
Perfluorooctane Sulfonate (PFOS)	18.9	100	90.1	-62	74-115	4

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM III
LCMS MATRIX SPIKE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Solid Level: Low Lab File ID: PC512b24053.d

Lab ID: 280-25758-9 MSD Client ID: AFFF-SD-SD04-0004 MSD

COMPOUND	SPIKE ADDED (ug/Kg)	MSD CONCENTRATION (ug/Kg)	MSD % REC	% RPD	QC LIMITS RPD	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	19.7	126	138	12	20	70-130	4
Perfluorooctane Sulfonate (PFOS)	18.8	91.3	-56	1	20	74-115	4

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Solid Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA	#	PFOS	#
AFFF-SO-SB23-0507	280-25758-1	102		107	
AFFF-SO-SB23-0507 DL	280-25758-1 DL	107	D	107 M	D
AFFF-SO-SB26-0003	280-25758-2	105		106	
AFFF-SO-SB26-0003 DL	280-25758-2 DL	110	D	108	D
AFFF-SO-DUP01-0216 12 -SO-	280-25758-3	110		105	
AFFF-SO-SB26-0507	280-25758-4	107		102	
AFFF-SO-SB26-0507 DL	280-25758-4 DL	104	D	109	D
AFFF-SO-SB22-0507	280-25758-5	107		102	
AFFF-SO-SB25-0507	280-25758-6	100		110	
AFFF-SO-SB25-0507 DL	280-25758-6 DL	102	D	103	D
AFFF-SO-SB24-0507	280-25758-7	105		102	
AFFF-SO-SB27-0507	280-25758-8	101		103	
AFFF-SD-SD04-0004	280-25758-9	103		107	
AFFF-SO-DUP01-0216 12 -SO-	280-25758-10	102		107	
AFFF-SO-DUP01-0216 12 DL -SO-	280-25758-10 DL	107	D	103 M	D
	MB 280-108709/1-A	108		106	
	LCS 280-108709/2-A	106		105	
AFFF-SO-SB27-0507 MS	280-25758-8 MS	104		107	
AFFF-SD-SD04-0004 MS	280-25758-9 MS	106		108	
AFFF-SO-SB27-0507 MSD	280-25758-8 MSD	101		105	
AFFF-SD-SD04-0004 MSD	280-25758-9 MSD	102		108	

	QC LIMITS
PFOA = 13C8 PFOA	57-153
PFOS = 13C8 PFOS	70-130

Column to be used to flag recovery values

FORM II PFOA/PFOS

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
	DLCK 280-109060/14	108	111

	QC LIMITS
PFOA = 13C8 PFOA	57-153
PFOS = 13C8 PFOS	70-130

Column to be used to flag recovery values

FORM II PFOA/PFOS

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Water Level: Low

GC Column (1): Gemini-NX ID:

Client Sample ID	Lab Sample ID	PFOA #	PFOS #
AFFF-SW-SW04-0212	280-25758-11	109	107
AFFF-SW-DUP01-0216 12	280-25758-12	112	106
	MB 280-108553/1-A	109	104
	LCS 280-108553/2-A	110	106
AFFF-SW-SW04-0212 MS	280-25758-11 MS	111	107
AFFF-SW-SW04-0212 MSD	280-25758-11 MSD	107	107

	QC LIMITS
PFOA = 13C8 PFOA	60-155
PFOS = 13C8 PFOS	45-130

Column to be used to flag recovery values

FORM II PFOA/PFOS

FORM VIII
LCMS INTERNAL STANDARD AREA AND RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Instrument ID: LC_LCMS5 Calibration Start Date: 02/23/2012 20:07

GC Column: Gemini-NX ID: Calibration End Date: 02/23/2012 21:09

Calibration ID: 8621

		OA		PFOS			
		AREA #	RT #	AREA #	RT #	AREA #	RT #
INITIAL CALIBRATION MEAN AREA AND MEAN RT		12261263	4.04	3562890	4.18		
UPPER LIMIT		19004958	4.54	4631757	4.68		
LOWER LIMIT		7356758	3.54	1603301	3.68		
LAB SAMPLE ID	CLIENT SAMPLE ID						
280-25758-1 DL	AFFF-SO-SB23-0507 DL	2075544Q	3.98	598884Q	4.12		
280-25758-2 DL	AFFF-SO-SB26-0003 DL	2049862Q	3.97	608011Q	4.12		
280-25758-4 DL	AFFF-SO-SB26-0507 DL	2179251Q	3.98	551843Q	4.12		
280-25758-6 DL	AFFF-SO-SB25-0507 DL	2297783Q	3.97	576403Q	4.12		
280-25758-10 DL	AFFF-SO-DUP01-021612 DL	1131807Q	3.97	310855Q	4.12		
CCV 280-109440/67		11521585	3.97	3499886	4.12		

3/8/12

OA = 13C4 PFOA (IS)
PFOS = 13C4 PFOS (IS)

Area Limit = 60%-155% of internal standard area
RT Limit = ± 0.5 minutes of internal standard RT

Column used to flag values outside QC limits

FORM VIII PFOA/PFOS

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-25758-1

SDG No.:

Matrix: Water Level: Low Lab File ID: PC512b23043.d

Lab ID: DLCK 280-109060/14 Client ID:

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
Perfluorooctanoic acid (PFOA)	0.200	0.181 J	90	70-130	
Perfluorooctane Sulfonate (PFOS)	0.191	0.210	110	70-130	

Column to be used to flag recovery and RPD values

FORM III PFOA/PFOS

NAS SOUTH WEYMOUTH
WATER DATA
280-25758-1

FRACTION	CHEMICAL	AFFF-SW-DUP01-021612	UNITS	AFFF-SW-SW04-0212	RPD	D
MISC	PENTADECAFLUOROOCTANOIC ACID	0.72	UG/L	0.96	28.57	0.24
MISC	PERFLUOROOCTANE SULFONIC ACID	1.1 J	UG/L	1.5 J	30.77	0.40

Current RPD Quality Control Limit: 30 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NAS SOUTH WEYMOUTH
SOIL DATA
280-25758-1

FRACTION	CHEMICAL	AFFF-SO-DUP01-021612	UNITS	AFFF-SO-SB25-0507	RPD	D
MISC	PENTADECAFLUOROOCTANOIC ACID	7.5	UG/KG	7	6.90	0.50

Current RPD Quality Control Limit: 50 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NAS SOUTH WEYMOUTH
SOIL DATA
280-25758-1

FRACTION	CHEMICAL	AFFF-SO-DUP01-021612D	UNITS	AFFF-SO-SB25-0507DL	RPD	D
MISC	PERFLUOROOCTANE SULFONIC ACID	1200	UG/KG	1000 J	18.18	200.00

Current RPD Quality Control Limit: 50 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

NAS SOUTH WEYMOUTH
SEDIMENT DATA
280-25758-1

FRACTION	CHEMICAL	AFFF-SD-DUP01-021612	UNITS	AFFF-SD-SD04-0004	RPD	D
MISC	PENTADECAFLUOROOCTANOIC ACID	130 J	UG/KG	99 J	27.07	31.00
MISC	PERFLUOROOCTANE SULFONIC ACID	84	UG/KG	100	17.39	16.00

Current RPD Quality Control Limit: 50 %.
Shaded cells indicate RPDs that exceed the applicable quality control limit.

TestAmerica Laboratories
Target Compound Quantitation Report

Data File: \\Denchrom\chromdata\LC_LCMS5\20120224-3131.b\PC512b23040.d
Lims ID: std1250 Client ID:
Inject. Date: 23-Feb-2012 21:09:50 Dil. Factor: 1.0000
Sample Type: IC Calib Level: 9
Sample ID: STD1250, Sample
Misc. Info.:
Operator: TW/JB Instrument ID: LC_LCMS5
Vol. Injected: 20.0000 ALS Bottle#: 0
Lims Batch ID: 109060 Lims Sample ID: 11
Sublist: chrom-8321_PFOA_S*sub1
Raw Data: Smoothed
Detector: MS QQQ

Method: \\Denchrom\chromdata\LC_LCMS5\20120224-3131.b\8321_PFOA_S.m
Last Update: 24-Feb-2012 10:48:52 Calib Date: 23-Feb-2012 21:09:50
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\Denchrom\chromdata\LC_LCMS5\20120224-3131.b\PC512b23040.d
Limit Group: LC - PFOA
Integrator: Falcon
Process Host: DENPC285

Signal	RT	EXP RT	DLT RT	REL RT	Response	On-Col Amt ug/L	Ratio Range	Ratio	Flags
$ 9 13C8 PFOA									
421.0 > 375.9	4.030	4.039	-0.009	1.000	72463270	102.5			
* 4 13C4 PFOA (IS)									
417.0 > 371.9	4.031	4.040	-0.009		8836325	10.0			
Perfluorooctanoic acid									
413.0 > 368.9	4.031	4.040	-0.009	1.000	82624640	102.1	0.70- 1.30	1.00	
413.0 > 169.0	4.031	4.040	-0.009	1.000	15674116		3.68- 6.84	5.27	
3 Ammonium Perfluorooctanoate (APFO)									
413.0 > 368.9	4.031	4.040	-0.009	1.000	82604448	106.7	0.70- 1.30	1.00	
413.0 > 169.0	4.031	4.040	-0.009	1.000	15652296		3.67- 6.82	5.28	
$ 6 13C8 PFOS									
506.9 > 80.0	4.177	4.186	-0.009	1.000	22598692	100.6			
* 5 13C4 PFOS (IS)									
502.9 > 80.0	4.178	4.187	-0.009		2555978	9.56			
2 Perfluorooctanoic Sulfonate									
498.9 > 79.9	4.179	4.188	-0.009	1.000	29782181	98.4	0.70- 1.30	1.00	
498.9 > 98.9	4.179	4.188	-0.009	1.000	16554512		1.26- 2.33	1.80	

Highest STD ~~or~~ no dilution

SAP Addendum Worksheet #17 -- Reference Limits and Evaluation Table
(UFP-QAPP Manual Section 2.8.1)

Matrix: Soil/Sediment
Analytical Group: PFCs
Preparation and Analysis Method/ SOP DV-LC-0012
Method Modified (Yes/No)? N
Data Type (definitive or screening): Definitive

Analyte	Project Screening Level (PSL)[1] (mg/kg)	Limit of Quantitation (LOQ) Goal (mg/kg)	Test America/Denver Limits[2]		
			LOQ (mg/kg)	Limit of Detection (LOD) (mg/kg)	Detection Limit (DL) (mg/kg)
PFCs					
Perfluorooctane sulfonate, PFOS	6.4	0.64	0.002	0.002	0.000376
Perfluorooctanoic acid, PFOA	16	0.16	0.005	0.002	0.001015

[1] EPA Region 1 calculated risk-based child resident soil exposure values, 2010.
[2] Laboratory-specific LOQs, LODs, and DLs from Test America/Denver for listed method. The laboratory updates DLs at least every 12 months; therefore, the LOQs, LODs, and DLs may be different at the time of analysis.

Matrix: Groundwater/Surface Water
Analytical Group; PFCs
Preparation and Analysis Method/ SOP DV-LC-0012
Method Modified (Yes/No)? N
Data Type (definitive or screening): Definitive

Analyte	PSL (µg/L)	LOQ Goal (µg/L)	Test America/Denver Limits[1]		
			LOQ (µg/L)	LOD (µg/L)	DL (µg/L)
PFCs					
Perfluorooctane sulfonate, PFOS	0.2[2]	0.02	0.03	0.02	0.01331
Perfluorooctanoic acid, PFOA	0.4[2]	0.05	0.02	0.01	0.00979

[1] Laboratory-specific LOQs, LODs, and DLs from Test America/Denver for listed method. The laboratory updates DLs at least every 12 months; therefore, the LOQs, LODs, and DLs may be different at the time of analysis.
[2] EPA provisional health advisories, 2009.

DODCMD_ID	INSTALLATION_ID	SDG	SITE_NAME	NORM_SITE_NAME	LOCATION_NAME	LOCATION_TYPE_DESC	COORD_X	COORD_Y	CONTRACT_ID	DO_CTO_NUMBER	CONTR_NAME	SAMPLE_NAME	SAMPLE_MATRIX_DESC	SAMPLE_TYPE_DESC	COLLECT_DATE	ANALYTICAL_METHOD	ANALYTICAL_METHOD_GRP_DESC
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB24	Borehole/Soil boring	808495.4627	2881577.781	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB24-0507	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB27	Borehole/Soil boring	808509.8092	2881569.107	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB27-0507	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB25	Borehole/Soil boring	808467.309	2881549.206	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB25-0507-D	Soil	Field duplicate	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB22	Borehole/Soil boring	808455.0297	2881562.822	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB22-0507	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB26	Borehole/Soil boring	808473.1872	2881553.83	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB26-0507	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB23	Borehole/Soil boring	808479.0569	2881563.97	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB23-0507	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SD04	Sediment e.g., Marine Sediment	809964.8383	2879543.37	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SD-SD04-0004	Sediment	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SW04	Surface water body - nonspecific	809964.8383	2879543.37	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SW-SW04-0212-D	Surface water	Field duplicate	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SW04	Surface water body - nonspecific	809964.8383	2879543.37	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SW-SW04-0212	Surface water	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SD04	Sediment e.g., Marine Sediment	809964.8383	2879543.37	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SD-SD04-0004-D	Sediment	Field duplicate	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB26	Borehole/Soil boring	808473.1872	2881553.83	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB26-0003	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds
MID_ATLANTIC	SOUTH_WEYMOUTH_NAS	280-25758-1	SITE 00004	SITE 00004	AFFF-SB25	Borehole/Soil boring	808467.309	2881549.206	N62470-08D100	WE11	TETRA TECH NUS, INC.	AFFF-SO-SB25-0507	Soil	Normal (Regular)	16-Feb-12	TA_WS-LC-0025	Perfluoroalkyl Compounds