

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Sacramento

880 Riverside Parkway

West Sacramento, CA 95605

Tel: (916)373-5600

TestAmerica Job ID: 320-48062-1

Client Project/Site: Dillingham

For:

Shannon & Wilson, Inc

2355 Hill Rd.

Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:

3/12/2019 2:13:11 PM

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

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Definitions/Glossary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Qualifiers

LCMS

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
I	Value is EMPC (estimated maximum possible concentration).

Glossary

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

Case Narrative

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Job ID: 320-48062-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative 320-48062-1

Receipt

The samples were received on 3/5/2019 11:25 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.5° C.

LCMS

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

Organic Prep

Method(s) PFAS Prep: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-280409.

Method(s) PFAS Prep: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-280406.

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

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 180040

Lab Sample ID: 320-48062-1

No Detections.

Client Sample ID: 172040

Lab Sample ID: 320-48062-2

No Detections.

Client Sample ID: 191050

Lab Sample ID: 320-48062-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	57		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	170		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.4		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	4.2		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	42		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 291050

Lab Sample ID: 320-48062-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	54		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	160		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	3.2		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	3.8		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	42		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191420

Lab Sample ID: 320-48062-5

No Detections.

Client Sample ID: 191741

Lab Sample ID: 320-48062-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	20		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	46		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.3	J	2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	1.5	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	8.8		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 291741

Lab Sample ID: 320-48062-7

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 291741 (Continued)

Lab Sample ID: 320-48062-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	20		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	47		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.2	J	2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	9.5		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191750

Lab Sample ID: 320-48062-8

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	13		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	28		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.5		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191090

Lab Sample ID: 320-48062-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.1	J	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191040

Lab Sample ID: 320-48062-10

No Detections.

Client Sample ID: 191132

Lab Sample ID: 320-48062-11

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	4.9		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	51		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191810

Lab Sample ID: 320-48062-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191440

Lab Sample ID: 320-48062-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.9	J	2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191101

Lab Sample ID: 320-48062-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	2.2	I	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	4.6		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	2.3		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 200030

Lab Sample ID: 320-48062-15

No Detections.

Client Sample ID: 200020

Lab Sample ID: 320-48062-16

No Detections.

Client Sample ID: 200020.2

Lab Sample ID: 320-48062-17

No Detections.

Client Sample ID: 200060

Lab Sample ID: 320-48062-18

No Detections.

Client Sample ID: 300060

Lab Sample ID: 320-48062-19

No Detections.

Client Sample ID: 133370

Lab Sample ID: 320-48062-20

No Detections.

Client Sample ID: 133340

Lab Sample ID: 320-48062-21

No Detections.

Client Sample ID: 191480

Lab Sample ID: 320-48062-22

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	5.7		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	14		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	5.1		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	2.7		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	4.3		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191490

Lab Sample ID: 320-48062-23

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191490 (Continued)

Lab Sample ID: 320-48062-23

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	3.2		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	4.1		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	2.4		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	5.0		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 172420

Lab Sample ID: 320-48062-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.9		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.7	J	2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.5	J	2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 172430

Lab Sample ID: 320-48062-25

No Detections.

Client Sample ID: 191450

Lab Sample ID: 320-48062-26

No Detections.

Client Sample ID: 172440

Lab Sample ID: 320-48062-27

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 180040

Date Collected: 02/26/19 10:19

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-1

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/08/19 22:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/08/19 22:30	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/08/19 22:30	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/08/19 22:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/08/19 22:30	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/08/19 22:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	101		25 - 150				03/08/19 11:11	03/08/19 22:30	1
13C4 PFHpA	108		25 - 150				03/08/19 11:11	03/08/19 22:30	1
13C4 PFOA	102		25 - 150				03/08/19 11:11	03/08/19 22:30	1
13C4 PFOS	104		25 - 150				03/08/19 11:11	03/08/19 22:30	1
13C5 PFNA	108		25 - 150				03/08/19 11:11	03/08/19 22:30	1
13C3 PFBS	97		25 - 150				03/08/19 11:11	03/08/19 22:30	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 172040

Date Collected: 02/26/19 11:56

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-2

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/08/19 22:49	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/08/19 22:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/08/19 22:49	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/08/19 22:49	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/08/19 22:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/08/19 22:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	99		25 - 150				03/08/19 11:11	03/08/19 22:49	1
13C4 PFHpA	101		25 - 150				03/08/19 11:11	03/08/19 22:49	1
13C4 PFOA	99		25 - 150				03/08/19 11:11	03/08/19 22:49	1
13C4 PFOS	101		25 - 150				03/08/19 11:11	03/08/19 22:49	1
13C5 PFNA	100		25 - 150				03/08/19 11:11	03/08/19 22:49	1
13C3 PFBS	97		25 - 150				03/08/19 11:11	03/08/19 22:49	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191050

Date Collected: 02/26/19 12:31

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-3

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	57		2.0	0.92	ng/L		03/08/19 11:11	03/08/19 23:07	1
Perfluorohexanesulfonic acid (PFHxS)	170		2.0	0.87	ng/L		03/08/19 11:11	03/08/19 23:07	1
Perfluoroheptanoic acid (PFHpA)	3.4		2.0	0.80	ng/L		03/08/19 11:11	03/08/19 23:07	1
Perfluorooctanoic acid (PFOA)	4.2		2.0	0.75	ng/L		03/08/19 11:11	03/08/19 23:07	1
Perfluorooctanesulfonic acid (PFOS)	42		2.0	1.3	ng/L		03/08/19 11:11	03/08/19 23:07	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/08/19 23:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	94		25 - 150				03/08/19 11:11	03/08/19 23:07	1
13C4 PFHpA	103		25 - 150				03/08/19 11:11	03/08/19 23:07	1
13C4 PFOA	100		25 - 150				03/08/19 11:11	03/08/19 23:07	1
13C4 PFOS	103		25 - 150				03/08/19 11:11	03/08/19 23:07	1
13C5 PFNA	103		25 - 150				03/08/19 11:11	03/08/19 23:07	1
13C3 PFBS	95		25 - 150				03/08/19 11:11	03/08/19 23:07	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 291050

Date Collected: 02/26/19 12:34

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-4

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	54		2.0	0.92	ng/L		03/08/19 11:11	03/08/19 23:26	1
Perfluorohexanesulfonic acid (PFHxS)	160		2.0	0.87	ng/L		03/08/19 11:11	03/08/19 23:26	1
Perfluoroheptanoic acid (PFHpA)	3.2		2.0	0.80	ng/L		03/08/19 11:11	03/08/19 23:26	1
Perfluorooctanoic acid (PFOA)	3.8		2.0	0.75	ng/L		03/08/19 11:11	03/08/19 23:26	1
Perfluorooctanesulfonic acid (PFOS)	42		2.0	1.3	ng/L		03/08/19 11:11	03/08/19 23:26	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/08/19 23:26	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	109		25 - 150				03/08/19 11:11	03/08/19 23:26	1
13C4 PFHpA	109		25 - 150				03/08/19 11:11	03/08/19 23:26	1
13C4 PFOA	108		25 - 150				03/08/19 11:11	03/08/19 23:26	1
13C4 PFOS	104		25 - 150				03/08/19 11:11	03/08/19 23:26	1
13C5 PFNA	118		25 - 150				03/08/19 11:11	03/08/19 23:26	1
13C3 PFBS	107		25 - 150				03/08/19 11:11	03/08/19 23:26	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191420

Date Collected: 02/26/19 13:38

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-5

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/08/19 23:44	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/08/19 23:44	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/08/19 23:44	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/08/19 23:44	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/08/19 23:44	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/08/19 23:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				03/08/19 11:11	03/08/19 23:44	1
13C4 PFHpA	113		25 - 150				03/08/19 11:11	03/08/19 23:44	1
13C4 PFOA	106		25 - 150				03/08/19 11:11	03/08/19 23:44	1
13C4 PFOS	99		25 - 150				03/08/19 11:11	03/08/19 23:44	1
13C5 PFNA	108		25 - 150				03/08/19 11:11	03/08/19 23:44	1
13C3 PFBS	103		25 - 150				03/08/19 11:11	03/08/19 23:44	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191741

Date Collected: 02/26/19 15:18

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-6

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	20		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 00:03	1
Perfluorohexanesulfonic acid (PFHxS)	46		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 00:03	1
Perfluoroheptanoic acid (PFHpA)	1.3	J	2.0	0.80	ng/L		03/08/19 11:11	03/09/19 00:03	1
Perfluorooctanoic acid (PFOA)	1.5	J	2.0	0.75	ng/L		03/08/19 11:11	03/09/19 00:03	1
Perfluorooctanesulfonic acid (PFOS)	8.8		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 00:03	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 00:03	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				03/08/19 11:11	03/09/19 00:03	1
13C4 PFHpA	101		25 - 150				03/08/19 11:11	03/09/19 00:03	1
13C4 PFOA	96		25 - 150				03/08/19 11:11	03/09/19 00:03	1
13C4 PFOS	96		25 - 150				03/08/19 11:11	03/09/19 00:03	1
13C5 PFNA	103		25 - 150				03/08/19 11:11	03/09/19 00:03	1
13C3 PFBS	95		25 - 150				03/08/19 11:11	03/09/19 00:03	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 291741

Date Collected: 02/26/19 15:20

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-7

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	20		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 00:40	1
Perfluorohexanesulfonic acid (PFHxS)	47		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 00:40	1
Perfluoroheptanoic acid (PFHpA)	1.2	J	2.0	0.80	ng/L		03/08/19 11:11	03/09/19 00:40	1
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.75	ng/L		03/08/19 11:11	03/09/19 00:40	1
Perfluorooctanesulfonic acid (PFOS)	9.5		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 00:40	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 00:40	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	101		25 - 150				03/08/19 11:11	03/09/19 00:40	1
13C4 PFHpA	107		25 - 150				03/08/19 11:11	03/09/19 00:40	1
13C4 PFOA	99		25 - 150				03/08/19 11:11	03/09/19 00:40	1
13C4 PFOS	98		25 - 150				03/08/19 11:11	03/09/19 00:40	1
13C5 PFNA	105		25 - 150				03/08/19 11:11	03/09/19 00:40	1
13C3 PFBS	97		25 - 150				03/08/19 11:11	03/09/19 00:40	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191750

Date Collected: 02/26/19 16:00

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-8

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	13		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 00:58	1
Perfluorohexanesulfonic acid (PFHxS)	28		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 00:58	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 00:58	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 00:58	1
Perfluorooctanesulfonic acid (PFOS)	2.5		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 00:58	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 00:58	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:11	03/09/19 00:58	1
13C4 PFHpA	113		25 - 150				03/08/19 11:11	03/09/19 00:58	1
13C4 PFOA	108		25 - 150				03/08/19 11:11	03/09/19 00:58	1
13C4 PFOS	105		25 - 150				03/08/19 11:11	03/09/19 00:58	1
13C5 PFNA	113		25 - 150				03/08/19 11:11	03/09/19 00:58	1
13C3 PFBS	105		25 - 150				03/08/19 11:11	03/09/19 00:58	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191090

Date Collected: 02/27/19 11:17

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-9

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.1	J	2.0	0.92	ng/L		03/08/19 11:11	03/09/19 01:16	1
Perfluorohexanesulfonic acid (PFHxS)	1.5	J	2.0	0.87	ng/L		03/08/19 11:11	03/09/19 01:16	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 01:16	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 01:16	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 01:16	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 01:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:11	03/09/19 01:16	1
13C4 PFHpA	110		25 - 150				03/08/19 11:11	03/09/19 01:16	1
13C4 PFOA	105		25 - 150				03/08/19 11:11	03/09/19 01:16	1
13C4 PFOS	103		25 - 150				03/08/19 11:11	03/09/19 01:16	1
13C5 PFNA	106		25 - 150				03/08/19 11:11	03/09/19 01:16	1
13C3 PFBS	102		25 - 150				03/08/19 11:11	03/09/19 01:16	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191040

Date Collected: 02/27/19 14:30

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-10

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 01:35	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 01:35	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 01:35	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 01:35	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 01:35	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 01:35	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				03/08/19 11:11	03/09/19 01:35	1
13C4 PFHpA	104		25 - 150				03/08/19 11:11	03/09/19 01:35	1
13C4 PFOA	102		25 - 150				03/08/19 11:11	03/09/19 01:35	1
13C4 PFOS	100		25 - 150				03/08/19 11:11	03/09/19 01:35	1
13C5 PFNA	101		25 - 150				03/08/19 11:11	03/09/19 01:35	1
13C3 PFBS	98		25 - 150				03/08/19 11:11	03/09/19 01:35	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191132

Date Collected: 02/27/19 15:05

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-11

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	4.9		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 01:53	1
Perfluorohexanesulfonic acid (PFHxS)	51		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 01:53	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 01:53	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 01:53	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 01:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 01:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	95		25 - 150				03/08/19 11:11	03/09/19 01:53	1
13C4 PFHpA	100		25 - 150				03/08/19 11:11	03/09/19 01:53	1
13C4 PFOA	97		25 - 150				03/08/19 11:11	03/09/19 01:53	1
13C4 PFOS	94		25 - 150				03/08/19 11:11	03/09/19 01:53	1
13C5 PFNA	99		25 - 150				03/08/19 11:11	03/09/19 01:53	1
13C3 PFBS	93		25 - 150				03/08/19 11:11	03/09/19 01:53	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191810

Date Collected: 02/27/19 16:27

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-12

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 02:12	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	2.0	0.87	ng/L		03/08/19 11:11	03/09/19 02:12	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 02:12	1
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.75	ng/L		03/08/19 11:11	03/09/19 02:12	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 02:12	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 02:12	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	100		25 - 150				03/08/19 11:11	03/09/19 02:12	1
13C4 PFHpA	99		25 - 150				03/08/19 11:11	03/09/19 02:12	1
13C4 PFOA	98		25 - 150				03/08/19 11:11	03/09/19 02:12	1
13C4 PFOS	93		25 - 150				03/08/19 11:11	03/09/19 02:12	1
13C5 PFNA	102		25 - 150				03/08/19 11:11	03/09/19 02:12	1
13C3 PFBS	93		25 - 150				03/08/19 11:11	03/09/19 02:12	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191440

Date Collected: 02/27/19 17:57

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-13

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 02:30	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	J	2.0	0.87	ng/L		03/08/19 11:11	03/09/19 02:30	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 02:30	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 02:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 02:30	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 02:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:11	03/09/19 02:30	1
13C4 PFHpA	103		25 - 150				03/08/19 11:11	03/09/19 02:30	1
13C4 PFOA	99		25 - 150				03/08/19 11:11	03/09/19 02:30	1
13C4 PFOS	101		25 - 150				03/08/19 11:11	03/09/19 02:30	1
13C5 PFNA	106		25 - 150				03/08/19 11:11	03/09/19 02:30	1
13C3 PFBS	102		25 - 150				03/08/19 11:11	03/09/19 02:30	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191101

Date Collected: 02/28/19 10:08

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-14

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	2.2	I	2.0	0.92	ng/L		03/08/19 11:11	03/09/19 02:49	1
Perfluorohexanesulfonic acid (PFHxS)	4.6		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 02:49	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 02:49	1
Perfluorooctanoic acid (PFOA)	1.4	J	2.0	0.75	ng/L		03/08/19 11:11	03/09/19 02:49	1
Perfluorooctanesulfonic acid (PFOS)	2.3		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 02:49	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 02:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	103		25 - 150				03/08/19 11:11	03/09/19 02:49	1
13C4 PFHpA	104		25 - 150				03/08/19 11:11	03/09/19 02:49	1
13C4 PFOA	100		25 - 150				03/08/19 11:11	03/09/19 02:49	1
13C4 PFOS	98		25 - 150				03/08/19 11:11	03/09/19 02:49	1
13C5 PFNA	101		25 - 150				03/08/19 11:11	03/09/19 02:49	1
13C3 PFBS	99		25 - 150				03/08/19 11:11	03/09/19 02:49	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 200030

Date Collected: 02/28/19 11:21

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-15

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 03:07	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 03:07	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 03:07	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 03:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 03:07	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 03:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	95		25 - 150				03/08/19 11:11	03/09/19 03:07	1
13C4 PFHpA	96		25 - 150				03/08/19 11:11	03/09/19 03:07	1
13C4 PFOA	92		25 - 150				03/08/19 11:11	03/09/19 03:07	1
13C4 PFOS	96		25 - 150				03/08/19 11:11	03/09/19 03:07	1
13C5 PFNA	97		25 - 150				03/08/19 11:11	03/09/19 03:07	1
13C3 PFBS	91		25 - 150				03/08/19 11:11	03/09/19 03:07	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 200020

Date Collected: 02/28/19 14:20

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-16

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 03:25	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 03:25	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 03:25	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 03:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 03:25	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 03:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	97		25 - 150				03/08/19 11:11	03/09/19 03:25	1
13C4 PFHpA	100		25 - 150				03/08/19 11:11	03/09/19 03:25	1
13C4 PFOA	98		25 - 150				03/08/19 11:11	03/09/19 03:25	1
13C4 PFOS	97		25 - 150				03/08/19 11:11	03/09/19 03:25	1
13C5 PFNA	99		25 - 150				03/08/19 11:11	03/09/19 03:25	1
13C3 PFBS	94		25 - 150				03/08/19 11:11	03/09/19 03:25	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 200020.2

Date Collected: 02/28/19 14:55

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-17

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 04:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 04:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 04:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 04:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 04:02	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 04:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	95		25 - 150				03/08/19 11:11	03/09/19 04:02	1
13C4 PFHpA	97		25 - 150				03/08/19 11:11	03/09/19 04:02	1
13C4 PFOA	95		25 - 150				03/08/19 11:11	03/09/19 04:02	1
13C4 PFOS	90		25 - 150				03/08/19 11:11	03/09/19 04:02	1
13C5 PFNA	90		25 - 150				03/08/19 11:11	03/09/19 04:02	1
13C3 PFBS	91		25 - 150				03/08/19 11:11	03/09/19 04:02	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 200060

Date Collected: 02/28/19 14:48

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-18

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 04:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 04:21	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 04:21	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 04:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 04:21	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 04:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	98		25 - 150				03/08/19 11:11	03/09/19 04:21	1
13C4 PFHpA	102		25 - 150				03/08/19 11:11	03/09/19 04:21	1
13C4 PFOA	96		25 - 150				03/08/19 11:11	03/09/19 04:21	1
13C4 PFOS	98		25 - 150				03/08/19 11:11	03/09/19 04:21	1
13C5 PFNA	97		25 - 150				03/08/19 11:11	03/09/19 04:21	1
13C3 PFBS	96		25 - 150				03/08/19 11:11	03/09/19 04:21	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 300060

Date Collected: 02/28/19 14:50

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-19

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/09/19 04:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/09/19 04:39	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/09/19 04:39	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/09/19 04:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/09/19 04:39	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/09/19 04:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	103		25 - 150				03/08/19 11:11	03/09/19 04:39	1
13C4 PFHpA	105		25 - 150				03/08/19 11:11	03/09/19 04:39	1
13C4 PFOA	98		25 - 150				03/08/19 11:11	03/09/19 04:39	1
13C4 PFOS	100		25 - 150				03/08/19 11:11	03/09/19 04:39	1
13C5 PFNA	101		25 - 150				03/08/19 11:11	03/09/19 04:39	1
13C3 PFBS	94		25 - 150				03/08/19 11:11	03/09/19 04:39	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 133370

Date Collected: 02/28/19 17:53

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-20

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 06:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 06:30	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 06:30	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 06:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 06:30	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 06:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	103		25 - 150				03/08/19 11:15	03/09/19 06:30	1
13C4 PFHpA	103		25 - 150				03/08/19 11:15	03/09/19 06:30	1
13C4 PFOA	99		25 - 150				03/08/19 11:15	03/09/19 06:30	1
13C4 PFOS	99		25 - 150				03/08/19 11:15	03/09/19 06:30	1
13C5 PFNA	96		25 - 150				03/08/19 11:15	03/09/19 06:30	1
13C3 PFBS	98		25 - 150				03/08/19 11:15	03/09/19 06:30	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 133340

Date Collected: 02/28/19 18:33

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-21

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 06:48	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 06:48	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 06:48	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 06:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 06:48	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 06:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	105		25 - 150				03/08/19 11:15	03/09/19 06:48	1
13C4 PFHpA	102		25 - 150				03/08/19 11:15	03/09/19 06:48	1
13C4 PFOA	102		25 - 150				03/08/19 11:15	03/09/19 06:48	1
13C4 PFOS	104		25 - 150				03/08/19 11:15	03/09/19 06:48	1
13C5 PFNA	106		25 - 150				03/08/19 11:15	03/09/19 06:48	1
13C3 PFBS	102		25 - 150				03/08/19 11:15	03/09/19 06:48	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191480

Date Collected: 02/27/19 09:25

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-22

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	5.7		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 07:07	1
Perfluorohexanesulfonic acid (PFHxS)	14		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 07:07	1
Perfluoroheptanoic acid (PFHpA)	5.1		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 07:07	1
Perfluorooctanoic acid (PFOA)	2.7		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 07:07	1
Perfluorooctanesulfonic acid (PFOS)	4.3		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 07:07	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 07:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:15	03/09/19 07:07	1
13C4 PFHpA	107		25 - 150				03/08/19 11:15	03/09/19 07:07	1
13C4 PFOA	100		25 - 150				03/08/19 11:15	03/09/19 07:07	1
13C4 PFOS	103		25 - 150				03/08/19 11:15	03/09/19 07:07	1
13C5 PFNA	98		25 - 150				03/08/19 11:15	03/09/19 07:07	1
13C3 PFBS	100		25 - 150				03/08/19 11:15	03/09/19 07:07	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191490

Date Collected: 02/27/19 09:38

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-23

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	3.2		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 07:25	1
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 07:25	1
Perfluoroheptanoic acid (PFHpA)	4.1		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 07:25	1
Perfluorooctanoic acid (PFOA)	2.4		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 07:25	1
Perfluorooctanesulfonic acid (PFOS)	5.0		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 07:25	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 07:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	104		25 - 150				03/08/19 11:15	03/09/19 07:25	1
13C4 PFHpA	110		25 - 150				03/08/19 11:15	03/09/19 07:25	1
13C4 PFOA	95		25 - 150				03/08/19 11:15	03/09/19 07:25	1
13C4 PFOS	95		25 - 150				03/08/19 11:15	03/09/19 07:25	1
13C5 PFNA	98		25 - 150				03/08/19 11:15	03/09/19 07:25	1
13C3 PFBS	99		25 - 150				03/08/19 11:15	03/09/19 07:25	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 172420

Date Collected: 02/27/19 11:18

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-24

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 07:44	1
Perfluorohexanesulfonic acid (PFHxS)	2.9		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 07:44	1
Perfluoroheptanoic acid (PFHpA)	1.7 J		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 07:44	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 07:44	1
Perfluorooctanesulfonic acid (PFOS)	1.5 J		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 07:44	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 07:44	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:15	03/09/19 07:44	1
13C4 PFHpA	103		25 - 150				03/08/19 11:15	03/09/19 07:44	1
13C4 PFOA	97		25 - 150				03/08/19 11:15	03/09/19 07:44	1
13C4 PFOS	100		25 - 150				03/08/19 11:15	03/09/19 07:44	1
13C5 PFNA	104		25 - 150				03/08/19 11:15	03/09/19 07:44	1
13C3 PFBS	102		25 - 150				03/08/19 11:15	03/09/19 07:44	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 172430

Date Collected: 02/27/19 12:06

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-25

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 08:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 08:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 08:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 08:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 08:02	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 08:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				03/08/19 11:15	03/09/19 08:02	1
13C4 PFHpA	114		25 - 150				03/08/19 11:15	03/09/19 08:02	1
13C4 PFOA	103		25 - 150				03/08/19 11:15	03/09/19 08:02	1
13C4 PFOS	103		25 - 150				03/08/19 11:15	03/09/19 08:02	1
13C5 PFNA	107		25 - 150				03/08/19 11:15	03/09/19 08:02	1
13C3 PFBS	102		25 - 150				03/08/19 11:15	03/09/19 08:02	1

TestAmerica Sacramento

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191450

Date Collected: 02/27/19 15:36

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-26

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 08:21	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 08:21	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 08:21	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 08:21	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 08:21	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 08:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	111		25 - 150				03/08/19 11:15	03/09/19 08:21	1
13C4 PFHpA	116		25 - 150				03/08/19 11:15	03/09/19 08:21	1
13C4 PFOA	111		25 - 150				03/08/19 11:15	03/09/19 08:21	1
13C4 PFOS	106		25 - 150				03/08/19 11:15	03/09/19 08:21	1
13C5 PFNA	106		25 - 150				03/08/19 11:15	03/09/19 08:21	1
13C3 PFBS	108		25 - 150				03/08/19 11:15	03/09/19 08:21	1

Client Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 172440

Date Collected: 02/27/19 18:10

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-27

Matrix: Water

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 08:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 08:57	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 08:57	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 08:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 08:57	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 08:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	121		25 - 150				03/08/19 11:15	03/09/19 08:57	1
13C4 PFHpA	112		25 - 150				03/08/19 11:15	03/09/19 08:57	1
13C4 PFOA	110		25 - 150				03/08/19 11:15	03/09/19 08:57	1
13C4 PFOS	109		25 - 150				03/08/19 11:15	03/09/19 08:57	1
13C5 PFNA	114		25 - 150				03/08/19 11:15	03/09/19 08:57	1
13C3 PFBS	107		25 - 150				03/08/19 11:15	03/09/19 08:57	1

TestAmerica Sacramento

Isotope Dilution Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Lab Sample ID	Client Sample ID	Percent Isotope Dilution Recovery (Acceptance Limits)					
		PFHxS (25-150)	PFHpA (25-150)	PFOA (25-150)	PFOS (25-150)	PFNA (25-150)	3C3-PFBs (25-150)
320-48062-1	180040	101	108	102	104	108	97
320-48062-2	172040	99	101	99	101	100	97
320-48062-3	191050	94	103	100	103	103	95
320-48062-4	291050	109	109	108	104	118	107
320-48062-5	191420	108	113	106	99	108	103
320-48062-6	191741	102	101	96	96	103	95
320-48062-7	291741	101	107	99	98	105	97
320-48062-8	191750	106	113	108	105	113	105
320-48062-9	191090	106	110	105	103	106	102
320-48062-10	191040	102	104	102	100	101	98
320-48062-11	191132	95	100	97	94	99	93
320-48062-12	191810	100	99	98	93	102	93
320-48062-13	191440	106	103	99	101	106	102
320-48062-14	191101	103	104	100	98	101	99
320-48062-15	200030	95	96	92	96	97	91
320-48062-16	200020	97	100	98	97	99	94
320-48062-17	200020.2	95	97	95	90	90	91
320-48062-18	200060	98	102	96	98	97	96
320-48062-19	300060	103	105	98	100	101	94
320-48062-20	133370	103	103	99	99	96	98
320-48062-21	133340	105	102	102	104	106	102
320-48062-22	191480	106	107	100	103	98	100
320-48062-23	191490	104	110	95	95	98	99
320-48062-24	172420	106	103	97	100	104	102
320-48062-25	172430	108	114	103	103	107	102
320-48062-26	191450	111	116	111	106	106	108
320-48062-27	172440	121	112	110	109	114	107
LCS 320-280406/2-A	Lab Control Sample	106	109	102	109	113	103
LCS 320-280409/2-A	Lab Control Sample	102	102	101	101	108	102
LCSD 320-280406/3-A	Lab Control Sample Dup	103	106	103	104	99	105
LCSD 320-280409/3-A	Lab Control Sample Dup	99	99	93	97	97	96
MB 320-280406/1-A	Method Blank	101	111	100	101	108	97
MB 320-280409/1-A	Method Blank	108	107	102	102	101	105

Surrogate Legend

PFHxS = 18O2 PFHxS

PFHpA = 13C4 PFHpA

PFOA = 13C4 PFOA

PFOS = 13C4 PFOS

PFNA = 13C5 PFNA

13C3-PFBS = 13C3 PFBS

TestAmerica Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-280406/1-A

Matrix: Water

Analysis Batch: 280586

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 280406

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:11	03/08/19 21:17	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:11	03/08/19 21:17	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:11	03/08/19 21:17	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:11	03/08/19 21:17	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:11	03/08/19 21:17	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:11	03/08/19 21:17	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	101		25 - 150	03/08/19 11:11	03/08/19 21:17	1
13C4 PFHpA	111		25 - 150	03/08/19 11:11	03/08/19 21:17	1
13C4 PFOA	100		25 - 150	03/08/19 11:11	03/08/19 21:17	1
13C4 PFOS	101		25 - 150	03/08/19 11:11	03/08/19 21:17	1
13C5 PFNA	108		25 - 150	03/08/19 11:11	03/08/19 21:17	1
13C3 PFBS	97		25 - 150	03/08/19 11:11	03/08/19 21:17	1

Lab Sample ID: LCS 320-280406/2-A

Matrix: Water

Analysis Batch: 280586

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 280406

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorobutanesulfonic acid (PFBS)	17.7	16.9		ng/L		95	72 - 151
Perfluorohexanesulfonic acid (PFHxS)	18.2	17.0		ng/L		93	73 - 157
Perfluoroheptanoic acid (PFHpA)	20.0	18.0		ng/L		90	71 - 138
Perfluorooctanoic acid (PFOA)	20.0	19.6		ng/L		98	70 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	16.2		ng/L		87	69 - 144
Perfluorononanoic acid (PFNA)	20.0	16.4		ng/L		82	73 - 147

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
18O2 PFHxS	106		25 - 150
13C4 PFHpA	109		25 - 150
13C4 PFOA	102		25 - 150
13C4 PFOS	109		25 - 150
13C5 PFNA	113		25 - 150
13C3 PFBS	103		25 - 150

Lab Sample ID: LCSD 320-280406/3-A

Matrix: Water

Analysis Batch: 280586

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 280406

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	17.7	16.7		ng/L		94	72 - 151	1	30
Perfluorohexanesulfonic acid (PFHxS)	18.2	17.4		ng/L		95	73 - 157	2	30
Perfluoroheptanoic acid (PFHpA)	20.0	18.0		ng/L		90	71 - 138	0	30
Perfluorooctanoic acid (PFOA)	20.0	20.1		ng/L		101	70 - 140	3	30

TestAmerica Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCSD 320-280406/3-A

Matrix: Water

Analysis Batch: 280586

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 280406

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorooctanesulfonic acid (PFOS)	18.6	17.8		ng/L		96	69 - 144	9	30
Perfluorononanoic acid (PFNA)	20.0	20.2		ng/L		101	73 - 147	21	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
18O2 PFHxS	103		25 - 150
13C4 PFHpA	106		25 - 150
13C4 PFOA	103		25 - 150
13C4 PFOS	104		25 - 150
13C5 PFNA	99		25 - 150
13C3 PFBS	105		25 - 150

Lab Sample ID: MB 320-280409/1-A

Matrix: Water

Analysis Batch: 280588

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 280409

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 05:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 05:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 05:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 05:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 05:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 05:34	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150	03/08/19 11:15	03/09/19 05:34	1
13C4 PFHpA	107		25 - 150	03/08/19 11:15	03/09/19 05:34	1
13C4 PFOA	102		25 - 150	03/08/19 11:15	03/09/19 05:34	1
13C4 PFOS	102		25 - 150	03/08/19 11:15	03/09/19 05:34	1
13C5 PFNA	101		25 - 150	03/08/19 11:15	03/09/19 05:34	1
13C3 PFBS	105		25 - 150	03/08/19 11:15	03/09/19 05:34	1

Lab Sample ID: LCS 320-280409/2-A

Matrix: Water

Analysis Batch: 280588

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 280409

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	17.7	17.1		ng/L		97	72 - 151
Perfluorohexanesulfonic acid (PFHxS)	18.2	16.8		ng/L		92	73 - 157
Perfluoroheptanoic acid (PFHpA)	20.0	18.1		ng/L		91	71 - 138
Perfluorooctanoic acid (PFOA)	20.0	18.8		ng/L		94	70 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	16.2		ng/L		88	69 - 144
Perfluorononanoic acid (PFNA)	20.0	17.7		ng/L		89	73 - 147

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
18O2 PFHxS	102		25 - 150
13C4 PFHpA	102		25 - 150

TestAmerica Sacramento

QC Sample Results

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Method: WS-LC-0025 At1 - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-280409/2-A

Matrix: Water

Analysis Batch: 280588

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 280409

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C4 PFOA	101		25 - 150
13C4 PFOS	101		25 - 150
13C5 PFNA	108		25 - 150
13C3 PFBS	102		25 - 150

Lab Sample ID: LCSD 320-280409/3-A

Matrix: Water

Analysis Batch: 280588

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 280409

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	17.7	17.8		ng/L		101	72 - 151	4	30
Perfluorohexanesulfonic acid (PFHxS)	18.2	16.7		ng/L		92	73 - 157	0	30
Perfluoroheptanoic acid (PFHpA)	20.0	19.0		ng/L		95	71 - 138	5	30
Perfluorooctanoic acid (PFOA)	20.0	20.9		ng/L		104	70 - 140	10	30
Perfluorooctanesulfonic acid (PFOS)	18.6	17.6		ng/L		95	69 - 144	8	30
Perfluorononanoic acid (PFNA)	20.0	19.4		ng/L		97	73 - 147	9	30

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
18O2 PFHxS	99		25 - 150
13C4 PFHpA	99		25 - 150
13C4 PFOA	93		25 - 150
13C4 PFOS	97		25 - 150
13C5 PFNA	97		25 - 150
13C3 PFBS	96		25 - 150

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

LCMS

Prep Batch: 280406

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48062-1	180040	Total/NA	Water	PFAS Prep	
320-48062-2	172040	Total/NA	Water	PFAS Prep	
320-48062-3	191050	Total/NA	Water	PFAS Prep	
320-48062-4	291050	Total/NA	Water	PFAS Prep	
320-48062-5	191420	Total/NA	Water	PFAS Prep	
320-48062-6	191741	Total/NA	Water	PFAS Prep	
320-48062-7	291741	Total/NA	Water	PFAS Prep	
320-48062-8	191750	Total/NA	Water	PFAS Prep	
320-48062-9	191090	Total/NA	Water	PFAS Prep	
320-48062-10	191040	Total/NA	Water	PFAS Prep	
320-48062-11	191132	Total/NA	Water	PFAS Prep	
320-48062-12	191810	Total/NA	Water	PFAS Prep	
320-48062-13	191440	Total/NA	Water	PFAS Prep	
320-48062-14	191101	Total/NA	Water	PFAS Prep	
320-48062-15	200030	Total/NA	Water	PFAS Prep	
320-48062-16	200020	Total/NA	Water	PFAS Prep	
320-48062-17	200020.2	Total/NA	Water	PFAS Prep	
320-48062-18	200060	Total/NA	Water	PFAS Prep	
320-48062-19	300060	Total/NA	Water	PFAS Prep	
MB 320-280406/1-A	Method Blank	Total/NA	Water	PFAS Prep	
LCS 320-280406/2-A	Lab Control Sample	Total/NA	Water	PFAS Prep	
LCSD 320-280406/3-A	Lab Control Sample Dup	Total/NA	Water	PFAS Prep	

Prep Batch: 280409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48062-20	133370	Total/NA	Water	PFAS Prep	
320-48062-21	133340	Total/NA	Water	PFAS Prep	
320-48062-22	191480	Total/NA	Water	PFAS Prep	
320-48062-23	191490	Total/NA	Water	PFAS Prep	
320-48062-24	172420	Total/NA	Water	PFAS Prep	
320-48062-25	172430	Total/NA	Water	PFAS Prep	
320-48062-26	191450	Total/NA	Water	PFAS Prep	
320-48062-27	172440	Total/NA	Water	PFAS Prep	
MB 320-280409/1-A	Method Blank	Total/NA	Water	PFAS Prep	
LCS 320-280409/2-A	Lab Control Sample	Total/NA	Water	PFAS Prep	
LCSD 320-280409/3-A	Lab Control Sample Dup	Total/NA	Water	PFAS Prep	

Analysis Batch: 280586

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48062-1	180040	Total/NA	Water	WS-LC-0025	280406
				At1	
320-48062-2	172040	Total/NA	Water	WS-LC-0025	280406
				At1	
320-48062-3	191050	Total/NA	Water	WS-LC-0025	280406
				At1	
320-48062-4	291050	Total/NA	Water	WS-LC-0025	280406
				At1	
320-48062-5	191420	Total/NA	Water	WS-LC-0025	280406
				At1	
320-48062-6	191741	Total/NA	Water	WS-LC-0025	280406
				At1	

TestAmerica Sacramento

QC Association Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

LCMS (Continued)

Analysis Batch: 280586 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48062-7	291741	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-8	191750	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-9	191090	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-10	191040	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-11	191132	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-12	191810	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-13	191440	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-14	191101	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-15	200030	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-16	200020	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-17	200020.2	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-18	200060	Total/NA	Water	WS-LC-0025 At1	280406
320-48062-19	300060	Total/NA	Water	WS-LC-0025 At1	280406
MB 320-280406/1-A	Method Blank	Total/NA	Water	WS-LC-0025 At1	280406
LCS 320-280406/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025 At1	280406
LCSD 320-280406/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025 At1	280406

Analysis Batch: 280588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48062-20	133370	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-21	133340	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-22	191480	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-23	191490	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-24	172420	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-25	172430	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-26	191450	Total/NA	Water	WS-LC-0025 At1	280409
320-48062-27	172440	Total/NA	Water	WS-LC-0025 At1	280409
MB 320-280409/1-A	Method Blank	Total/NA	Water	WS-LC-0025 At1	280409
LCS 320-280409/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025 At1	280409
LCSD 320-280409/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025 At1	280409

TestAmerica Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 180040

Date Collected: 02/26/19 10:19

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/08/19 22:30	D1R	TAL SAC

Client Sample ID: 172040

Date Collected: 02/26/19 11:56

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/08/19 22:49	D1R	TAL SAC

Client Sample ID: 191050

Date Collected: 02/26/19 12:31

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/08/19 23:07	D1R	TAL SAC

Client Sample ID: 291050

Date Collected: 02/26/19 12:34

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/08/19 23:26	D1R	TAL SAC

Client Sample ID: 191420

Date Collected: 02/26/19 13:38

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/08/19 23:44	D1R	TAL SAC

Client Sample ID: 191741

Date Collected: 02/26/19 15:18

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 00:03	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 291741

Date Collected: 02/26/19 15:20

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 00:40	D1R	TAL SAC

Client Sample ID: 191750

Date Collected: 02/26/19 16:00

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-8

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 00:58	D1R	TAL SAC

Client Sample ID: 191090

Date Collected: 02/27/19 11:17

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-9

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 01:16	D1R	TAL SAC

Client Sample ID: 191040

Date Collected: 02/27/19 14:30

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 01:35	D1R	TAL SAC

Client Sample ID: 191132

Date Collected: 02/27/19 15:05

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 01:53	D1R	TAL SAC

Client Sample ID: 191810

Date Collected: 02/27/19 16:27

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 02:12	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 191440

Date Collected: 02/27/19 17:57

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 02:30	D1R	TAL SAC

Client Sample ID: 191101

Date Collected: 02/28/19 10:08

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 02:49	D1R	TAL SAC

Client Sample ID: 200030

Date Collected: 02/28/19 11:21

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 03:07	D1R	TAL SAC

Client Sample ID: 200020

Date Collected: 02/28/19 14:20

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 03:25	D1R	TAL SAC

Client Sample ID: 200020.2

Date Collected: 02/28/19 14:55

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 04:02	D1R	TAL SAC

Client Sample ID: 200060

Date Collected: 02/28/19 14:48

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 04:21	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 300060

Date Collected: 02/28/19 14:50

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280406	03/08/19 11:11	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280586	03/09/19 04:39	D1R	TAL SAC

Client Sample ID: 133370

Date Collected: 02/28/19 17:53

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-20

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 06:30	D1R	TAL SAC

Client Sample ID: 133340

Date Collected: 02/28/19 18:33

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-21

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 06:48	D1R	TAL SAC

Client Sample ID: 191480

Date Collected: 02/27/19 09:25

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 07:07	D1R	TAL SAC

Client Sample ID: 191490

Date Collected: 02/27/19 09:38

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-23

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 07:25	D1R	TAL SAC

Client Sample ID: 172420

Date Collected: 02/27/19 11:18

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-24

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 07:44	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Client Sample ID: 172430

Date Collected: 02/27/19 12:06

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-25

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 08:02	D1R	TAL SAC

Client Sample ID: 191450

Date Collected: 02/27/19 15:36

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-26

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 08:21	D1R	TAL SAC

Client Sample ID: 172440

Date Collected: 02/27/19 18:10

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48062-27

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	PFAS Prep			1.00 mL	1.66 mL	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 08:57	D1R	TAL SAC

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Laboratory: TestAmerica Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Alaska (UST)	State Program	10	17-020	01-20-21
ANAB	DoD / DOE		L2468	01-20-21
Arizona	State Program	9	AZ0708	08-11-19
Arkansas DEQ	State Program	6	88-0691	06-17-19
California	State Program	9	2897	01-31-20
Colorado	State Program	8	CA00044	08-31-19
Connecticut	State Program	1	PH-0691	06-30-19
Florida	NELAP	4	E87570	06-30-19
Georgia	State Program	4	N/A	01-28-19 *
Hawaii	State Program	9	N/A	01-29-20
Illinois	NELAP	5	200060	03-17-19 *
Kansas	NELAP	7	E-10375	10-31-19
Louisiana	NELAP	6	30612	06-30-19
Maine	State Program	1	CA0004	04-14-20
Michigan	State Program	5	9947	01-31-20
Nevada	State Program	9	CA00044	07-31-19
New Hampshire	NELAP	1	2997	04-18-19
New Jersey	NELAP	2	CA005	06-30-19
New York	NELAP	2	11666	03-31-19 *
Oregon	NELAP	10	4040	01-29-20
Pennsylvania	NELAP	3	68-01272	03-31-19 *
Texas	NELAP	6	T104704399	05-31-19
US Fish & Wildlife	Federal		LE148388-0	07-31-19
USDA	Federal		P330-18-00239	01-17-21
USEPA UCMR	Federal	1	CA00044	12-31-20
Utah	NELAP	8	CA00044	02-28-19 *
Vermont	State Program	1	VT-4040	04-30-19
Virginia	NELAP	3	460278	03-14-19 *
Washington	State Program	10	C581	05-05-19
West Virginia (DW)	State Program	3	9930C	12-31-19
Wyoming	State Program	8	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

TestAmerica Sacramento

Method Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Method	Method Description	Protocol	Laboratory
WS-LC-0025 At1	Fluorinated Alkyl Substances	TAL-SAC	TAL SAC
PFAS Prep	Preparation, Direct Inject PFAS	TAL-SAC	TAL SAC

Protocol References:

TAL-SAC = TestAmerica Laboratories, West Sacramento, Facility Standard Operating Procedure.

Laboratory References:

TAL SAC = TestAmerica Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: Shannon & Wilson, Inc
Project/Site: Dillingham

TestAmerica Job ID: 320-48062-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-48062-1	180040	Water	02/26/19 10:19	03/05/19 11:25
320-48062-2	172040	Water	02/26/19 11:56	03/05/19 11:25
320-48062-3	191050	Water	02/26/19 12:31	03/05/19 11:25
320-48062-4	291050	Water	02/26/19 12:34	03/05/19 11:25
320-48062-5	191420	Water	02/26/19 13:38	03/05/19 11:25
320-48062-6	191741	Water	02/26/19 15:18	03/05/19 11:25
320-48062-7	291741	Water	02/26/19 15:20	03/05/19 11:25
320-48062-8	191750	Water	02/26/19 16:00	03/05/19 11:25
320-48062-9	191090	Water	02/27/19 11:17	03/05/19 11:25
320-48062-10	191040	Water	02/27/19 14:30	03/05/19 11:25
320-48062-11	191132	Water	02/27/19 15:05	03/05/19 11:25
320-48062-12	191810	Water	02/27/19 16:27	03/05/19 11:25
320-48062-13	191440	Water	02/27/19 17:57	03/05/19 11:25
320-48062-14	191101	Water	02/28/19 10:08	03/05/19 11:25
320-48062-15	200030	Water	02/28/19 11:21	03/05/19 11:25
320-48062-16	200020	Water	02/28/19 14:20	03/05/19 11:25
320-48062-17	200020.2	Water	02/28/19 14:55	03/05/19 11:25
320-48062-18	200060	Water	02/28/19 14:48	03/05/19 11:25
320-48062-19	300060	Water	02/28/19 14:50	03/05/19 11:25
320-48062-20	133370	Water	02/28/19 17:53	03/05/19 11:25
320-48062-21	133340	Water	02/28/19 18:33	03/05/19 11:25
320-48062-22	191480	Water	02/27/19 09:25	03/05/19 11:25
320-48062-23	191490	Water	02/27/19 09:38	03/05/19 11:25
320-48062-24	172420	Water	02/27/19 11:18	03/05/19 11:25
320-48062-25	172430	Water	02/27/19 12:06	03/05/19 11:25
320-48062-26	191450	Water	02/27/19 15:36	03/05/19 11:25
320-48062-27	172440	Water	02/27/19 18:10	03/05/19 11:25

TestAmerica Sacramento

CHAIN-OF-CUSTODY RECORD

Page 1 of 3
Laboratory Test America
Attn: David Alltucker

Analytical Methods (include preservative if used)

Turn Around Time:
☒ Normal ☐ Rush
Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Sample Identity	Lab No.	Time	Date Sampled	Total Number of Containers				Remarks/Matrix Composition/Grab? Sample Containers
180040		1019	2/26/19	2				Groundwater
172040		1154		2				
191050		1231		2				
291050		1234		2				
191420		1338		2				
191741		1518		2				
291741		1520		2				
191750		1600		2				
191090		1117	2/27/19	2				
191040		1430	2/27/19	2				



320-48062 Chain of Custody

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Number: <u>102581-003</u>		Total No. of Containers: <u>24</u>		Signature: <u>M. Nadel</u> Time: <u>1300</u>		Signature: _____ Time: _____		Signature: _____ Time: _____	
Name: <u>Dillingham P&S</u>		COC Seals/Intact? Y/N/NA		Printed Name: _____ Date: <u>3/4/19</u>		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
Contact: <u>MDN</u>		Received Good Cond./Cold		Company: <u>Shannon & Wilson, Inc.</u>		Company: _____		Company: _____	
Ongoing Project? Yes ☒ No ☐		Temp: _____		Received By: 1. Signature: <u>Jennifer Dillingham</u> Time: <u>1125</u>		Received By: 2. Signature: _____ Time: _____		Received By: 3. Signature: _____ Time: _____	
Sampler: <u>MDN/MXS</u>		Delivery Method: <u>Goldstream</u>		Printed Name: _____ Date: <u>5/16/19</u>		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
Notes:				Company: <u>SW Inc</u>		Company: _____		Company: _____	

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

1.5°C

No. 35686

CHAIN-OF-CUSTODY RECORD

Page 2 of 3

Laboratory Test American
Attn: David Alltucker

Analytical Methods (include preservative if used)

Turn Around Time:

☒ Normal ☐ Rush

Please Specify

Quote No:

J-Flags: ☒ Yes ☐ No

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods (include preservative if used)					Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
191132		1505	2/27/19	2						Groundwater
191810		1627		2						
191440		1751		2						
191101		1008	2/28/19	2						
200030		1121		2						
200020		1420		2						
200020.2		1455		2						
200060		1448		2						
300060		1450		2						
133370		1753		2						

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Number:		Total No. of Containers:		Signature: <u>M. Nadel</u> Time: <u>1300</u>		Signature: _____ Time: _____		Signature: _____ Time: _____	
Name:		COC Seals/Intact? Y/N/NA <u>Y</u>		Printed Name: <u>Marcy Nadel</u> Date: <u>3/4/19</u>		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
Contact:		Received Good Cond./Cold		Company: <u>Shannon & Wilson, Inc.</u>		Company: _____		Company: _____	
Ongoing Project? Yes ☐ No ☐		Temp:		Received By: 1.		Received By: 2.		Received By: 3.	
Sampler:		Delivery Method:		Signature: <u>Jennifer Sedgwick</u> Time: <u>1125</u>		Signature: _____ Time: _____		Signature: _____ Time: _____	
Notes: <u>See pg 1</u>				Printed Name: <u>Jennifer Sedgwick</u> Date: _____		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
				Company: <u>TAW Inc</u>		Company: _____		Company: _____	

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

1.5°C

No. 35687

CHAIN-OF-CUSTODY RECORD

Page 3 of 3
Laboratory Test America
Attn: Daniel Hiltunen

Analytical Methods (include preservative if used)

Turn Around Time:
☒ Normal ☐ Rush
Please Specify

Quote No:
J-Flags: ☒ Yes ☐ No

Sample Identity	Lab No.	Time	Date Sampled	Analytical Methods (include preservative if used)					Total Number of Containers	Remarks/Matrix Composition/Grab? Sample Containers
133340		1833	2/22/19	✓					2	gravel
191480		0925	2/27/19	✓					2	
191490		0938		✓					2	
172420		1118		✓					2	
172430		1206		✓					2	
191381		1453		✓					2	
191450		1536		✓					2	
200040		1725		✓					2	
172440		1810		✓					2	
172410		1846		✓					2	

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Number:		Total No. of Containers:		Signature:	Time: 1300	Signature:	Time:	Signature:	Time:
Name:		COC Seals/Intact? Y/N/NA	✓	Printed Name:	Date: 3/4/19	Printed Name:	Date:	Printed Name:	Date:
Contact:		Received Good Cond/Cold		Company:	Shannon & Wilson	Company:		Company:	
Ongoing Project? Yes ☐ No ☒		Temp:							
Sampler:		Delivery Method:							
Notes:		Received By: 1.		Received By: 2.		Received By: 3.			
Notes: 1.5°C		Signature:	Time: 1125	Signature:	Time:	Signature:	Time:		
		Printed Name:	Date: 3/4/19	Printed Name:	Date:	Printed Name:	Date:		
		Company:	TAWS Inc	Company:		Company:			

Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report
Yellow - w/shipment - for consignee files
Pink - Shannon & Wilson - job file

No. 35791

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-48062-1

Login Number: 48062

List Source: TestAmerica Sacramento

List Number: 1

Creator: Badhan, Manpreet

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	gel packs
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 containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	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.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	