

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

TestAmerica Sacramento

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West Sacramento, CA 95605

Tel: (916)373-5600

TestAmerica Job ID: 320-48064-1

Client Project/Site: Dillingham

Revision: 1

For:

Shannon & Wilson, Inc

2355 Hill Rd.

Fairbanks, Alaska 99709-5244

Attn: Marcy Nadel



Authorized for release by:

3/20/2019 12:04:52 PM

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

Table of Contents

Cover Page 1

Table of Contents 2

Definitions/Glossary 3

Case Narrative 4

Detection Summary 5

Client Sample Results 9

Isotope Dilution Summary 33

QC Sample Results 34

QC Association Summary 38

Lab Chronicle 41

Certification Summary 46

Method Summary 47

Sample Summary 48

Chain of Custody 49

Receipt Checklists 52



Definitions/Glossary

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

TestAmerica Job ID: 320-48064-1

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: 320-48064-1

Job ID: 320-48064-1

Laboratory: TestAmerica Sacramento

Narrative

Job Narrative 320-48064-1

Revision:

This report has been revised to include re-extraction of sample 200150 (320-480604-21) at the client's request. Re-extraction confirms original results. Both sets of data are reported.

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 1.3° C.

Receipt Exceptions

The container label for the following sample did not match the information listed on the Chain-of-Custody (COC): 191760 (320-48064-7). The container labels list time at 14:38, while COC lists 14:36. Labeled according to COC.

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 320-280411.

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.

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: 320-48064-1

Client Sample ID: 172320

Lab Sample ID: 320-48064-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.3	J	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	6.8		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.7		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	9.7		2.0	0.75	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: 191841

Lab Sample ID: 320-48064-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.0		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.85	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

Client Sample ID: 200340

Lab Sample ID: 320-48064-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	3.6		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	12		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)	1.6	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	7.2		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 172340

Lab Sample ID: 320-48064-4

No Detections.

Client Sample ID: 200380

Lab Sample ID: 320-48064-5

No Detections.

Client Sample ID: 172030

Lab Sample ID: 320-48064-6

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	3.0		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191760

Lab Sample ID: 320-48064-7

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Detection Summary

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191760 (Continued)

Lab Sample ID: 320-48064-7

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	3.5		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	5.7	I	2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 171345

Lab Sample ID: 320-48064-8

No Detections.

Client Sample ID: 172300

Lab Sample ID: 320-48064-9

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorooctanoic acid (PFOA)	6.6		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 172399

Lab Sample ID: 320-48064-10

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

Client Sample ID: 172392

Lab Sample ID: 320-48064-11

No Detections.

Client Sample ID: 171352

Lab Sample ID: 320-48064-12

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	3.9		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 172241

Lab Sample ID: 320-48064-13

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 191770

Lab Sample ID: 320-48064-14

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.7	J	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 291770

Lab Sample ID: 320-48064-15

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.5		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: 320-48064-1

Client Sample ID: 172320.2

Lab Sample ID: 320-48064-16

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.85	J	2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	1.9	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 272320.2

Lab Sample ID: 320-48064-17

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	0.86	J	2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	2.1		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS)	1.6	J	2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 171351

Lab Sample ID: 320-48064-18

No Detections.

Client Sample ID: 191110

Lab Sample ID: 320-48064-19

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	9.9		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	18		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.8	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

Client Sample ID: 172410

Lab Sample ID: 320-48064-20

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	1.9	J	2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 200150

Lab Sample ID: 320-48064-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	7.9		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	53		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	2.4		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	5.1		2.0	0.75	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: 320-48064-1

Client Sample ID: 200150 (Continued)

Lab Sample ID: 320-48064-21

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorooctanesulfonic acid (PFOS)	60		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorobutanesulfonic acid (PFBS) - RE	7.5		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS) - RE	52		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA) - RE	2.4		2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA) - RE	5.3		2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanesulfonic acid (PFOS) - RE	60		2.0	1.3	ng/L	1			WS-LC-0025 At1	Total/NA

Client Sample ID: 172250

Lab Sample ID: 320-48064-22

No Detections.

Client Sample ID: 191381

Lab Sample ID: 320-48064-23

No Detections.

Client Sample ID: 200090

Lab Sample ID: 320-48064-24

Analyte	Result	Qualifier	RL	MDL	Unit	Dil	Fac	D	Method	Prep Type
Perfluorobutanesulfonic acid (PFBS)	5.0		2.0	0.92	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	0.87	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluoroheptanoic acid (PFHpA)	1.4	J	2.0	0.80	ng/L	1			WS-LC-0025 At1	Total/NA
Perfluorooctanoic acid (PFOA)	1.2	J	2.0	0.75	ng/L	1			WS-LC-0025 At1	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172320

Date Collected: 02/27/19 14:27

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-1

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.3	J	2.0	0.92	ng/L		03/08/19 11:15	03/09/19 09:16	1
Perfluorohexanesulfonic acid (PFHxS)	6.8		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 09:16	1
Perfluoroheptanoic acid (PFHpA)	2.7		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 09:16	1
Perfluorooctanoic acid (PFOA)	9.7		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 09:16	1
Perfluorooctanesulfonic acid (PFOS)	1.5	J	2.0	1.3	ng/L		03/08/19 11:15	03/09/19 09:16	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 09:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				03/08/19 11:15	03/09/19 09:16	1
13C4 PFHpA	108		25 - 150				03/08/19 11:15	03/09/19 09:16	1
13C4 PFOA	100		25 - 150				03/08/19 11:15	03/09/19 09:16	1
13C4 PFOS	101		25 - 150				03/08/19 11:15	03/09/19 09:16	1
13C5 PFNA	105		25 - 150				03/08/19 11:15	03/09/19 09:16	1
13C3 PFBS	99		25 - 150				03/08/19 11:15	03/09/19 09:16	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191841

Date Collected: 02/26/19 15:28

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-2

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.0	0.92	ng/L		03/08/19 11:15	03/09/19 09:34	1
Perfluorohexanesulfonic acid (PFHxS)	2.0		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 09:34	1
Perfluoroheptanoic acid (PFHpA)	0.85	J	2.0	0.80	ng/L		03/08/19 11:15	03/09/19 09:34	1
Perfluorooctanoic acid (PFOA)	1.5	J	2.0	0.75	ng/L		03/08/19 11:15	03/09/19 09:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 09:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 09:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	103		25 - 150				03/08/19 11:15	03/09/19 09:34	1
13C4 PFHpA	110		25 - 150				03/08/19 11:15	03/09/19 09:34	1
13C4 PFOA	105		25 - 150				03/08/19 11:15	03/09/19 09:34	1
13C4 PFOS	101		25 - 150				03/08/19 11:15	03/09/19 09:34	1
13C5 PFNA	104		25 - 150				03/08/19 11:15	03/09/19 09:34	1
13C3 PFBS	99		25 - 150				03/08/19 11:15	03/09/19 09:34	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 200340

Date Collected: 02/27/19 16:08

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-3

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	3.6		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 09:53	1
Perfluorohexanesulfonic acid (PFHxS)	12		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 09:53	1
Perfluoroheptanoic acid (PFHpA)	1.2	J	2.0	0.80	ng/L		03/08/19 11:15	03/09/19 09:53	1
Perfluorooctanoic acid (PFOA)	1.6	J	2.0	0.75	ng/L		03/08/19 11:15	03/09/19 09:53	1
Perfluorooctanesulfonic acid (PFOS)	7.2		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 09:53	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 09:53	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	100		25 - 150				03/08/19 11:15	03/09/19 09:53	1
13C4 PFHpA	101		25 - 150				03/08/19 11:15	03/09/19 09:53	1
13C4 PFOA	98		25 - 150				03/08/19 11:15	03/09/19 09:53	1
13C4 PFOS	96		25 - 150				03/08/19 11:15	03/09/19 09:53	1
13C5 PFNA	95		25 - 150				03/08/19 11:15	03/09/19 09:53	1
13C3 PFBS	98		25 - 150				03/08/19 11:15	03/09/19 09:53	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172340

Date Collected: 02/27/19 11:28

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-4

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 10:11	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 10:11	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 10:11	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 10:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 10:11	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 10:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	97		25 - 150				03/08/19 11:15	03/09/19 10:11	1
13C4 PFHpA	100		25 - 150				03/08/19 11:15	03/09/19 10:11	1
13C4 PFOA	99		25 - 150				03/08/19 11:15	03/09/19 10:11	1
13C4 PFOS	100		25 - 150				03/08/19 11:15	03/09/19 10:11	1
13C5 PFNA	99		25 - 150				03/08/19 11:15	03/09/19 10:11	1
13C3 PFBS	95		25 - 150				03/08/19 11:15	03/09/19 10:11	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 200380

Date Collected: 02/28/19 10:57

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-5

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 11:15	03/09/19 10:30	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 10:30	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 10:30	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 10:30	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 10:30	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 10:30	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:15	03/09/19 10:30	1
13C4 PFHpA	107		25 - 150				03/08/19 11:15	03/09/19 10:30	1
13C4 PFOA	104		25 - 150				03/08/19 11:15	03/09/19 10:30	1
13C4 PFOS	102		25 - 150				03/08/19 11:15	03/09/19 10:30	1
13C5 PFNA	105		25 - 150				03/08/19 11:15	03/09/19 10:30	1
13C3 PFBS	102		25 - 150				03/08/19 11:15	03/09/19 10:30	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172030

Date Collected: 02/28/19 10:11

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-6

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 10:48	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	J	2.0	0.87	ng/L		03/08/19 11:15	03/09/19 10:48	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 10:48	1
Perfluorooctanoic acid (PFOA)	3.0		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 10:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 10:48	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 10:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				03/08/19 11:15	03/09/19 10:48	1
13C4 PFHpA	107		25 - 150				03/08/19 11:15	03/09/19 10:48	1
13C4 PFOA	105		25 - 150				03/08/19 11:15	03/09/19 10:48	1
13C4 PFOS	103		25 - 150				03/08/19 11:15	03/09/19 10:48	1
13C5 PFNA	104		25 - 150				03/08/19 11:15	03/09/19 10:48	1
13C3 PFBS	103		25 - 150				03/08/19 11:15	03/09/19 10:48	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191760

Date Collected: 02/26/19 14:36

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-7

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	3.5		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 11:07	1
Perfluorohexanesulfonic acid (PFHxS)	5.7	I	2.0	0.87	ng/L		03/08/19 11:15	03/09/19 11:07	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 11:07	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 11:07	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 11:07	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 11:07	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				03/08/19 11:15	03/09/19 11:07	1
13C4 PFHpA	110		25 - 150				03/08/19 11:15	03/09/19 11:07	1
13C4 PFOA	100		25 - 150				03/08/19 11:15	03/09/19 11:07	1
13C4 PFOS	105		25 - 150				03/08/19 11:15	03/09/19 11:07	1
13C5 PFNA	106		25 - 150				03/08/19 11:15	03/09/19 11:07	1
13C3 PFBS	103		25 - 150				03/08/19 11:15	03/09/19 11:07	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 171345

Date Collected: 02/28/19 14:43

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-8

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 11:25	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 11:25	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 11:25	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 11:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 11:25	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 11:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	100		25 - 150				03/08/19 11:15	03/09/19 11:25	1
13C4 PFHpA	108		25 - 150				03/08/19 11:15	03/09/19 11:25	1
13C4 PFOA	101		25 - 150				03/08/19 11:15	03/09/19 11:25	1
13C4 PFOS	100		25 - 150				03/08/19 11:15	03/09/19 11:25	1
13C5 PFNA	102		25 - 150				03/08/19 11:15	03/09/19 11:25	1
13C3 PFBS	99		25 - 150				03/08/19 11:15	03/09/19 11:25	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172300

Date Collected: 02/28/19 11:59

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-9

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 11:43	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 11:43	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 11:43	1
Perfluorooctanoic acid (PFOA)	6.6		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 11:43	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 11:43	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 11:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	104		25 - 150				03/08/19 11:15	03/09/19 11:43	1
13C4 PFHpA	112		25 - 150				03/08/19 11:15	03/09/19 11:43	1
13C4 PFOA	107		25 - 150				03/08/19 11:15	03/09/19 11:43	1
13C4 PFOS	101		25 - 150				03/08/19 11:15	03/09/19 11:43	1
13C5 PFNA	115		25 - 150				03/08/19 11:15	03/09/19 11:43	1
13C3 PFBS	98		25 - 150				03/08/19 11:15	03/09/19 11:43	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172399

Date Collected: 02/27/19 09:46

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-10

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 11:15	03/09/19 12:20	1
Perfluorohexanesulfonic acid (PFHxS)	1.4	J	2.0	0.87	ng/L		03/08/19 11:15	03/09/19 12:20	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 12:20	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 12:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 12:20	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 12:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	104		25 - 150				03/08/19 11:15	03/09/19 12:20	1
13C4 PFHpA	108		25 - 150				03/08/19 11:15	03/09/19 12:20	1
13C4 PFOA	106		25 - 150				03/08/19 11:15	03/09/19 12:20	1
13C4 PFOS	106		25 - 150				03/08/19 11:15	03/09/19 12:20	1
13C5 PFNA	105		25 - 150				03/08/19 11:15	03/09/19 12:20	1
13C3 PFBS	100		25 - 150				03/08/19 11:15	03/09/19 12:20	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172392

Date Collected: 02/28/19 18:11

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-11

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:15	03/09/19 12:39	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 12:39	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 12:39	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 12:39	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 12:39	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 12:39	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150				03/08/19 11:15	03/09/19 12:39	1
13C4 PFHpA	110		25 - 150				03/08/19 11:15	03/09/19 12:39	1
13C4 PFOA	107		25 - 150				03/08/19 11:15	03/09/19 12:39	1
13C4 PFOS	102		25 - 150				03/08/19 11:15	03/09/19 12:39	1
13C5 PFNA	106		25 - 150				03/08/19 11:15	03/09/19 12:39	1
13C3 PFBS	105		25 - 150				03/08/19 11:15	03/09/19 12:39	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 171352
Date Collected: 02/28/19 16:10
Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-12
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 11:15	03/09/19 12:57	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:15	03/09/19 12:57	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:15	03/09/19 12:57	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:15	03/09/19 12:57	1
Perfluorooctanesulfonic acid (PFOS)	3.9		2.0	1.3	ng/L		03/08/19 11:15	03/09/19 12:57	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:15	03/09/19 12:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	107		25 - 150				03/08/19 11:15	03/09/19 12:57	1
13C4 PFHpA	111		25 - 150				03/08/19 11:15	03/09/19 12:57	1
13C4 PFOA	107		25 - 150				03/08/19 11:15	03/09/19 12:57	1
13C4 PFOS	105		25 - 150				03/08/19 11:15	03/09/19 12:57	1
13C5 PFNA	111		25 - 150				03/08/19 11:15	03/09/19 12:57	1
13C3 PFBS	101		25 - 150				03/08/19 11:15	03/09/19 12:57	1

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172241

Date Collected: 02/28/19 17:12

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-13

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 11:21	03/09/19 14:29	1
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 14:29	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 14:29	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 14:29	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 14:29	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 14:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	100		25 - 150				03/08/19 11:21	03/09/19 14:29	1
13C4 PFHpA	102		25 - 150				03/08/19 11:21	03/09/19 14:29	1
13C4 PFOA	100		25 - 150				03/08/19 11:21	03/09/19 14:29	1
13C4 PFOS	93		25 - 150				03/08/19 11:21	03/09/19 14:29	1
13C5 PFNA	98		25 - 150				03/08/19 11:21	03/09/19 14:29	1
13C3 PFBS	94		25 - 150				03/08/19 11:21	03/09/19 14:29	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191770
Date Collected: 03/01/19 13:30
Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-14
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.7	J	2.0	0.92	ng/L		03/08/19 11:21	03/09/19 14:48	1
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 14:48	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 14:48	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 14:48	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 14:48	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 14:48	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	99		25 - 150				03/08/19 11:21	03/09/19 14:48	1
13C4 PFHpA	100		25 - 150				03/08/19 11:21	03/09/19 14:48	1
13C4 PFOA	100		25 - 150				03/08/19 11:21	03/09/19 14:48	1
13C4 PFOS	91		25 - 150				03/08/19 11:21	03/09/19 14:48	1
13C5 PFNA	102		25 - 150				03/08/19 11:21	03/09/19 14:48	1
13C3 PFBS	94		25 - 150				03/08/19 11:21	03/09/19 14:48	1

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 291770

Date Collected: 03/01/19 13:35

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-15

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.8	J	2.0	0.92	ng/L		03/08/19 11:21	03/09/19 15:06	1
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 15:06	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 15:06	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 15:06	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 15:06	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 15:06	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	102		25 - 150				03/08/19 11:21	03/09/19 15:06	1
13C4 PFHpA	102		25 - 150				03/08/19 11:21	03/09/19 15:06	1
13C4 PFOA	98		25 - 150				03/08/19 11:21	03/09/19 15:06	1
13C4 PFOS	90		25 - 150				03/08/19 11:21	03/09/19 15:06	1
13C5 PFNA	94		25 - 150				03/08/19 11:21	03/09/19 15:06	1
13C3 PFBS	94		25 - 150				03/08/19 11:21	03/09/19 15:06	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172320.2

Date Collected: 03/01/19 12:29

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-16

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 11:21	03/09/19 15:25	1
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 15:25	1
Perfluoroheptanoic acid (PFHpA)	0.85	J	2.0	0.80	ng/L		03/08/19 11:21	03/09/19 15:25	1
Perfluorooctanoic acid (PFOA)	1.9	J	2.0	0.75	ng/L		03/08/19 11:21	03/09/19 15:25	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 15:25	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 15:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	106		25 - 150				03/08/19 11:21	03/09/19 15:25	1
13C4 PFHpA	105		25 - 150				03/08/19 11:21	03/09/19 15:25	1
13C4 PFOA	102		25 - 150				03/08/19 11:21	03/09/19 15:25	1
13C4 PFOS	98		25 - 150				03/08/19 11:21	03/09/19 15:25	1
13C5 PFNA	104		25 - 150				03/08/19 11:21	03/09/19 15:25	1
13C3 PFBS	98		25 - 150				03/08/19 11:21	03/09/19 15:25	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 272320.2

Date Collected: 03/01/19 12:35

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-17

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 11:21	03/09/19 15:43	1
Perfluorohexanesulfonic acid (PFHxS)	11		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 15:43	1
Perfluoroheptanoic acid (PFHpA)	0.86	J	2.0	0.80	ng/L		03/08/19 11:21	03/09/19 15:43	1
Perfluorooctanoic acid (PFOA)	2.1		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 15:43	1
Perfluorooctanesulfonic acid (PFOS)	1.6	J	2.0	1.3	ng/L		03/08/19 11:21	03/09/19 15:43	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 15:43	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	96		25 - 150				03/08/19 11:21	03/09/19 15:43	1
13C4 PFHpA	98		25 - 150				03/08/19 11:21	03/09/19 15:43	1
13C4 PFOA	94		25 - 150				03/08/19 11:21	03/09/19 15:43	1
13C4 PFOS	92		25 - 150				03/08/19 11:21	03/09/19 15:43	1
13C5 PFNA	97		25 - 150				03/08/19 11:21	03/09/19 15:43	1
13C3 PFBS	95		25 - 150				03/08/19 11:21	03/09/19 15:43	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 171351

Date Collected: 03/01/19 11:27

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-18

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 11:21	03/09/19 16:02	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 16:02	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 16:02	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 16:02	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 16:02	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 16:02	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	97		25 - 150				03/08/19 11:21	03/09/19 16:02	1
13C4 PFHpA	106		25 - 150				03/08/19 11:21	03/09/19 16:02	1
13C4 PFOA	98		25 - 150				03/08/19 11:21	03/09/19 16:02	1
13C4 PFOS	94		25 - 150				03/08/19 11:21	03/09/19 16:02	1
13C5 PFNA	99		25 - 150				03/08/19 11:21	03/09/19 16:02	1
13C3 PFBS	93		25 - 150				03/08/19 11:21	03/09/19 16:02	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191110
Date Collected: 03/01/19 18:45
Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-19
Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	9.9		2.0	0.92	ng/L		03/08/19 11:21	03/09/19 16:20	1
Perfluorohexanesulfonic acid (PFHxS)	18		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 16:20	1
Perfluoroheptanoic acid (PFHpA)	1.8	J	2.0	0.80	ng/L		03/08/19 11:21	03/09/19 16:20	1
Perfluorooctanoic acid (PFOA)	1.5	J	2.0	0.75	ng/L		03/08/19 11:21	03/09/19 16:20	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 16:20	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 16:20	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	96		25 - 150				03/08/19 11:21	03/09/19 16:20	1
13C4 PFHpA	98		25 - 150				03/08/19 11:21	03/09/19 16:20	1
13C4 PFOA	99		25 - 150				03/08/19 11:21	03/09/19 16:20	1
13C4 PFOS	95		25 - 150				03/08/19 11:21	03/09/19 16:20	1
13C5 PFNA	100		25 - 150				03/08/19 11:21	03/09/19 16:20	1
13C3 PFBS	94		25 - 150				03/08/19 11:21	03/09/19 16:20	1

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172410

Date Collected: 02/27/19 18:46

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-20

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	1.9	J	2.0	0.92	ng/L		03/08/19 11:21	03/09/19 16:57	1
Perfluorohexanesulfonic acid (PFHxS)	2.6		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 16:57	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 16:57	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 16:57	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 16:57	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 16:57	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	99		25 - 150				03/08/19 11:21	03/09/19 16:57	1
13C4 PFHpA	100		25 - 150				03/08/19 11:21	03/09/19 16:57	1
13C4 PFOA	92		25 - 150				03/08/19 11:21	03/09/19 16:57	1
13C4 PFOS	91		25 - 150				03/08/19 11:21	03/09/19 16:57	1
13C5 PFNA	93		25 - 150				03/08/19 11:21	03/09/19 16:57	1
13C3 PFBS	93		25 - 150				03/08/19 11:21	03/09/19 16:57	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 200150

Date Collected: 02/28/19 17:20

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-21

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	7.9		2.0	0.92	ng/L		03/08/19 11:21	03/09/19 17:16	1
Perfluorohexanesulfonic acid (PFHxS)	53		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 17:16	1
Perfluoroheptanoic acid (PFHpA)	2.4		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 17:16	1
Perfluorooctanoic acid (PFOA)	5.1		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 17:16	1
Perfluorooctanesulfonic acid (PFOS)	60		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 17:16	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 17:16	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	99		25 - 150				03/08/19 11:21	03/09/19 17:16	1
13C4 PFHpA	101		25 - 150				03/08/19 11:21	03/09/19 17:16	1
13C4 PFOA	99		25 - 150				03/08/19 11:21	03/09/19 17:16	1
13C4 PFOS	100		25 - 150				03/08/19 11:21	03/09/19 17:16	1
13C5 PFNA	97		25 - 150				03/08/19 11:21	03/09/19 17:16	1
13C3 PFBS	98		25 - 150				03/08/19 11:21	03/09/19 17:16	1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	7.5		2.0	0.92	ng/L		03/15/19 13:10	03/16/19 09:47	1
Perfluorohexanesulfonic acid (PFHxS)	52		2.0	0.87	ng/L		03/15/19 13:10	03/16/19 09:47	1
Perfluoroheptanoic acid (PFHpA)	2.4		2.0	0.80	ng/L		03/15/19 13:10	03/16/19 09:47	1
Perfluorooctanoic acid (PFOA)	5.3		2.0	0.75	ng/L		03/15/19 13:10	03/16/19 09:47	1
Perfluorooctanesulfonic acid (PFOS)	60		2.0	1.3	ng/L		03/15/19 13:10	03/16/19 09:47	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/15/19 13:10	03/16/19 09:47	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	116		25 - 150				03/15/19 13:10	03/16/19 09:47	1
13C4 PFHpA	118		25 - 150				03/15/19 13:10	03/16/19 09:47	1
13C4 PFOA	113		25 - 150				03/15/19 13:10	03/16/19 09:47	1
13C4 PFOS	111		25 - 150				03/15/19 13:10	03/16/19 09:47	1
13C5 PFNA	107		25 - 150				03/15/19 13:10	03/16/19 09:47	1
13C3 PFBS	109		25 - 150				03/15/19 13:10	03/16/19 09:47	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172250

Date Collected: 02/28/19 18:12

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-22

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:21	03/09/19 17:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 17:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 17:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 17:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 17:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 17:34	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	98		25 - 150				03/08/19 11:21	03/09/19 17:34	1
13C4 PFHpA	97		25 - 150				03/08/19 11:21	03/09/19 17:34	1
13C4 PFOA	96		25 - 150				03/08/19 11:21	03/09/19 17:34	1
13C4 PFOS	95		25 - 150				03/08/19 11:21	03/09/19 17:34	1
13C5 PFNA	98		25 - 150				03/08/19 11:21	03/09/19 17:34	1
13C3 PFBS	93		25 - 150				03/08/19 11:21	03/09/19 17:34	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191381

Date Collected: 02/27/19 14:53

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-23

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/08/19 11:21	03/09/19 17:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 17:52	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 17:52	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 17:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 17:52	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 17:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	100		25 - 150				03/08/19 11:21	03/09/19 17:52	1
13C4 PFHpA	102		25 - 150				03/08/19 11:21	03/09/19 17:52	1
13C4 PFOA	97		25 - 150				03/08/19 11:21	03/09/19 17:52	1
13C4 PFOS	95		25 - 150				03/08/19 11:21	03/09/19 17:52	1
13C5 PFNA	91		25 - 150				03/08/19 11:21	03/09/19 17:52	1
13C3 PFBS	96		25 - 150				03/08/19 11:21	03/09/19 17:52	1

TestAmerica Sacramento

Client Sample Results

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 200090

Date Collected: 02/27/19 17:25

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-24

Matrix: Water

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	5.0		2.0	0.92	ng/L		03/08/19 11:21	03/09/19 18:11	1
Perfluorohexanesulfonic acid (PFHxS)	2.5		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 18:11	1
Perfluoroheptanoic acid (PFHpA)	1.4	J	2.0	0.80	ng/L		03/08/19 11:21	03/09/19 18:11	1
Perfluorooctanoic acid (PFOA)	1.2	J	2.0	0.75	ng/L		03/08/19 11:21	03/09/19 18:11	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 18:11	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 18:11	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
18O2 PFHxS	97		25 - 150				03/08/19 11:21	03/09/19 18:11	1
13C4 PFHpA	100		25 - 150				03/08/19 11:21	03/09/19 18:11	1
13C4 PFOA	101		25 - 150				03/08/19 11:21	03/09/19 18:11	1
13C4 PFOS	91		25 - 150				03/08/19 11:21	03/09/19 18:11	1
13C5 PFNA	90		25 - 150				03/08/19 11:21	03/09/19 18:11	1
13C3 PFBS	91		25 - 150				03/08/19 11:21	03/09/19 18:11	1

Isotope Dilution Summary

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

TestAmerica Job ID: 320-48064-1

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)
320-48064-1	172320	102	108	100	101	105	99
320-48064-2	191841	103	110	105	101	104	99
320-48064-3	200340	100	101	98	96	95	98
320-48064-4	172340	97	100	99	100	99	95
320-48064-5	200380	106	107	104	102	105	102
320-48064-6	172030	108	107	105	103	104	103
320-48064-7	191760	108	110	100	105	106	103
320-48064-8	171345	100	108	101	100	102	99
320-48064-9	172300	104	112	107	101	115	98
320-48064-10	172399	104	108	106	106	105	100
320-48064-11	172392	108	110	107	102	106	105
320-48064-12	171352	107	111	107	105	111	101
320-48064-13	172241	100	102	100	93	98	94
320-48064-14	191770	99	100	100	91	102	94
320-48064-15	291770	102	102	98	90	94	94
320-48064-16	172320.2	106	105	102	98	104	98
320-48064-17	272320.2	96	98	94	92	97	95
320-48064-18	171351	97	106	98	94	99	93
320-48064-19	191110	96	98	99	95	100	94
320-48064-20	172410	99	100	92	91	93	93
320-48064-21	200150	99	101	99	100	97	98
320-48064-21 - RE	200150	116	118	113	111	107	109
320-48064-22	172250	98	97	96	95	98	93
320-48064-23	191381	100	102	97	95	91	96
320-48064-24	200090	97	100	101	91	90	91
LCS 320-280409/2-A	Lab Control Sample	102	102	101	101	108	102
LCS 320-280411/2-A	Lab Control Sample	109	107	103	109	98	103
LCS 320-281963/2-A	Lab Control Sample	106	103	103	106	107	99
LCSD 320-280409/3-A	Lab Control Sample Dup	99	99	93	97	97	96
LCSD 320-280411/3-A	Lab Control Sample Dup	94	97	98	99	94	94
LCSD 320-281963/3-A	Lab Control Sample Dup	103	102	104	103	104	102
MB 320-280409/1-A	Method Blank	108	107	102	102	101	105
MB 320-280411/1-A	Method Blank	108	102	107	101	102	101
MB 320-281963/1-A	Method Blank	111	108	108	111	109	108

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: 320-48064-1

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

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	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
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	Limit	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

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-48064-1

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

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
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

Isotope Dilution	LCSD %Recovery	LCSD 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

Lab Sample ID: MB 320-280411/1-A

Matrix: Water

Analysis Batch: 280591

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 280411

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 11:21	03/09/19 13:34	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/08/19 11:21	03/09/19 13:34	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/08/19 11:21	03/09/19 13:34	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/08/19 11:21	03/09/19 13:34	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/08/19 11:21	03/09/19 13:34	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/08/19 11:21	03/09/19 13:34	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
18O2 PFHxS	108		25 - 150	03/08/19 11:21	03/09/19 13:34	1
13C4 PFHpA	102		25 - 150	03/08/19 11:21	03/09/19 13:34	1
13C4 PFOA	107		25 - 150	03/08/19 11:21	03/09/19 13:34	1
13C4 PFOS	101		25 - 150	03/08/19 11:21	03/09/19 13:34	1
13C5 PFNA	102		25 - 150	03/08/19 11:21	03/09/19 13:34	1
13C3 PFBS	101		25 - 150	03/08/19 11:21	03/09/19 13:34	1

Lab Sample ID: LCS 320-280411/2-A

Matrix: Water

Analysis Batch: 280591

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 280411

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	16.7		ng/L		92	73 - 157
Perfluoroheptanoic acid (PFHpA)	20.0	18.2		ng/L		91	71 - 138
Perfluorooctanoic acid (PFOA)	20.0	21.0		ng/L		105	70 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	17.2		ng/L		93	69 - 144
Perfluorononanoic acid (PFNA)	20.0	21.1		ng/L		106	73 - 147

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
18O2 PFHxS	109		25 - 150
13C4 PFHpA	107		25 - 150

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-48064-1

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

Lab Sample ID: LCS 320-280411/2-A

Matrix: Water

Analysis Batch: 280591

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 280411

	LCS	LCS	
Isotope Dilution	%Recovery	Qualifier	Limits
13C4 PFOA	103		25 - 150
13C4 PFOS	109		25 - 150
13C5 PFNA	98		25 - 150
13C3 PFBS	103		25 - 150

Lab Sample ID: LCSD 320-280411/3-A

Matrix: Water

Analysis Batch: 280591

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 280411

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	17.7	18.6		ng/L		105	72 - 151	8	30
Perfluorohexanesulfonic acid (PFHxS)	18.2	17.7		ng/L		97	73 - 157	6	30
Perfluoroheptanoic acid (PFHpA)	20.0	19.7		ng/L		98	71 - 138	8	30
Perfluorooctanoic acid (PFOA)	20.0	22.6		ng/L		113	70 - 140	7	30
Perfluorooctanesulfonic acid (PFOS)	18.6	17.7		ng/L		96	69 - 144	3	30
Perfluorononanoic acid (PFNA)	20.0	19.3		ng/L		96	73 - 147	9	30

	LCSD	LCSD	
Isotope Dilution	%Recovery	Qualifier	Limits
18O2 PFHxS	94		25 - 150
13C4 PFHpA	97		25 - 150
13C4 PFOA	98		25 - 150
13C4 PFOS	99		25 - 150
13C5 PFNA	94		25 - 150
13C3 PFBS	94		25 - 150

Lab Sample ID: MB 320-281963/1-A

Matrix: Water

Analysis Batch: 282181

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 281963

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanesulfonic acid (PFBS)	ND		2.0	0.92	ng/L		03/15/19 13:10	03/16/19 08:52	1
Perfluorohexanesulfonic acid (PFHxS)	ND		2.0	0.87	ng/L		03/15/19 13:10	03/16/19 08:52	1
Perfluoroheptanoic acid (PFHpA)	ND		2.0	0.80	ng/L		03/15/19 13:10	03/16/19 08:52	1
Perfluorooctanoic acid (PFOA)	ND		2.0	0.75	ng/L		03/15/19 13:10	03/16/19 08:52	1
Perfluorooctanesulfonic acid (PFOS)	ND		2.0	1.3	ng/L		03/15/19 13:10	03/16/19 08:52	1
Perfluorononanoic acid (PFNA)	ND		2.0	0.65	ng/L		03/15/19 13:10	03/16/19 08:52	1

	MB	MB							
Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac			
18O2 PFHxS	111		25 - 150	03/15/19 13:10	03/16/19 08:52	1			
13C4 PFHpA	108		25 - 150	03/15/19 13:10	03/16/19 08:52	1			
13C4 PFOA	108		25 - 150	03/15/19 13:10	03/16/19 08:52	1			
13C4 PFOS	111		25 - 150	03/15/19 13:10	03/16/19 08:52	1			
13C5 PFNA	109		25 - 150	03/15/19 13:10	03/16/19 08:52	1			
13C3 PFBS	108		25 - 150	03/15/19 13:10	03/16/19 08:52	1			

TestAmerica Sacramento

QC Sample Results

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

TestAmerica Job ID: 320-48064-1

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

Lab Sample ID: LCS 320-281963/2-A

Matrix: Water

Analysis Batch: 282181

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 281963

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanesulfonic acid (PFBS)	17.7	17.2		ng/L		97	72 - 151
Perfluorohexanesulfonic acid (PFHxS)	18.2	16.4		ng/L		90	73 - 157
Perfluoroheptanoic acid (PFHpA)	20.0	18.6		ng/L		93	71 - 138
Perfluorooctanoic acid (PFOA)	20.0	19.9		ng/L		99	70 - 140
Perfluorooctanesulfonic acid (PFOS)	18.6	17.3		ng/L		93	69 - 144
Perfluorononanoic acid (PFNA)	20.0	16.7		ng/L		83	73 - 147

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
18O2 PFHxS	106		25 - 150
13C4 PFHpA	103		25 - 150
13C4 PFOA	103		25 - 150
13C4 PFOS	106		25 - 150
13C5 PFNA	107		25 - 150
13C3 PFBS	99		25 - 150

Lab Sample ID: LCSD 320-281963/3-A

Matrix: Water

Analysis Batch: 282181

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 281963

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanesulfonic acid (PFBS)	17.7	17.5		ng/L		99	72 - 151	2	30
Perfluorohexanesulfonic acid (PFHxS)	18.2	17.6		ng/L		97	73 - 157	7	30
Perfluoroheptanoic acid (PFHpA)	20.0	18.0		ng/L		90	71 - 138	3	30
Perfluorooctanoic acid (PFOA)	20.0	18.4		ng/L		92	70 - 140	8	30
Perfluorooctanesulfonic acid (PFOS)	18.6	17.9		ng/L		96	69 - 144	3	30
Perfluorononanoic acid (PFNA)	20.0	18.7		ng/L		94	73 - 147	11	30

Isotope Dilution	LCSD %Recovery	LCSD Qualifier	Limits
18O2 PFHxS	103		25 - 150
13C4 PFHpA	102		25 - 150
13C4 PFOA	104		25 - 150
13C4 PFOS	103		25 - 150
13C5 PFNA	104		25 - 150
13C3 PFBS	102		25 - 150

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-48064-1

LCMS

Prep Batch: 280409

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-1	172320	Total/NA	Water	PFAS Prep	
320-48064-2	191841	Total/NA	Water	PFAS Prep	
320-48064-3	200340	Total/NA	Water	PFAS Prep	
320-48064-4	172340	Total/NA	Water	PFAS Prep	
320-48064-5	200380	Total/NA	Water	PFAS Prep	
320-48064-6	172030	Total/NA	Water	PFAS Prep	
320-48064-7	191760	Total/NA	Water	PFAS Prep	
320-48064-8	171345	Total/NA	Water	PFAS Prep	
320-48064-9	172300	Total/NA	Water	PFAS Prep	
320-48064-10	172399	Total/NA	Water	PFAS Prep	
320-48064-11	172392	Total/NA	Water	PFAS Prep	
320-48064-12	171352	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	

Prep Batch: 280411

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-13	172241	Total/NA	Water	PFAS Prep	
320-48064-14	191770	Total/NA	Water	PFAS Prep	
320-48064-15	291770	Total/NA	Water	PFAS Prep	
320-48064-16	172320.2	Total/NA	Water	PFAS Prep	
320-48064-17	272320.2	Total/NA	Water	PFAS Prep	
320-48064-18	171351	Total/NA	Water	PFAS Prep	
320-48064-19	191110	Total/NA	Water	PFAS Prep	
320-48064-20	172410	Total/NA	Water	PFAS Prep	
320-48064-21	200150	Total/NA	Water	PFAS Prep	
320-48064-22	172250	Total/NA	Water	PFAS Prep	
320-48064-23	191381	Total/NA	Water	PFAS Prep	
320-48064-24	200090	Total/NA	Water	PFAS Prep	
MB 320-280411/1-A	Method Blank	Total/NA	Water	PFAS Prep	
LCS 320-280411/2-A	Lab Control Sample	Total/NA	Water	PFAS Prep	
LCSD 320-280411/3-A	Lab Control Sample Dup	Total/NA	Water	PFAS Prep	

Analysis Batch: 280588

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-1	172320	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-2	191841	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-3	200340	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-4	172340	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-5	200380	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-6	172030	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-7	191760	Total/NA	Water	WS-LC-0025	280409
				At1	
320-48064-8	171345	Total/NA	Water	WS-LC-0025	280409
				At1	

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-48064-1

LCMS (Continued)

Analysis Batch: 280588 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-9	172300	Total/NA	Water	WS-LC-0025 At1	280409
320-48064-10	172399	Total/NA	Water	WS-LC-0025 At1	280409
320-48064-11	172392	Total/NA	Water	WS-LC-0025 At1	280409
320-48064-12	171352	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

Analysis Batch: 280591

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-13	172241	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-14	191770	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-15	291770	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-16	172320.2	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-17	272320.2	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-18	171351	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-19	191110	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-20	172410	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-21	200150	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-22	172250	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-23	191381	Total/NA	Water	WS-LC-0025 At1	280411
320-48064-24	200090	Total/NA	Water	WS-LC-0025 At1	280411
MB 320-280411/1-A	Method Blank	Total/NA	Water	WS-LC-0025 At1	280411
LCS 320-280411/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025 At1	280411
LCSD 320-280411/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025 At1	280411

Prep Batch: 281963

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-21 - RE	200150	Total/NA	Water	PFAS Prep	
MB 320-281963/1-A	Method Blank	Total/NA	Water	PFAS Prep	
LCS 320-281963/2-A	Lab Control Sample	Total/NA	Water	PFAS Prep	
LCSD 320-281963/3-A	Lab Control Sample Dup	Total/NA	Water	PFAS Prep	

TestAmerica Sacramento

QC Association Summary

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

TestAmerica Job ID: 320-48064-1

LCMS (Continued)

Analysis Batch: 282181

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-48064-21 - RE	200150	Total/NA	Water	WS-LC-0025 At1	281963
MB 320-281963/1-A	Method Blank	Total/NA	Water	WS-LC-0025 At1	281963
LCS 320-281963/2-A	Lab Control Sample	Total/NA	Water	WS-LC-0025 At1	281963
LCSD 320-281963/3-A	Lab Control Sample Dup	Total/NA	Water	WS-LC-0025 At1	281963

Lab Chronicle

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172320

Date Collected: 02/27/19 14:27

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-1

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 09:16	D1R	TAL SAC

Client Sample ID: 191841

Date Collected: 02/26/19 15:28

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-2

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 09:34	D1R	TAL SAC

Client Sample ID: 200340

Date Collected: 02/27/19 16:08

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-3

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 09:53	D1R	TAL SAC

Client Sample ID: 172340

Date Collected: 02/27/19 11:28

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-4

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 10:11	D1R	TAL SAC

Client Sample ID: 200380

Date Collected: 02/28/19 10:57

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-5

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 10:30	D1R	TAL SAC

Client Sample ID: 172030

Date Collected: 02/28/19 10:11

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-6

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 10:48	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191760

Date Collected: 02/26/19 14:36

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-7

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 11:07	D1R	TAL SAC

Client Sample ID: 171345

Date Collected: 02/28/19 14:43

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-8

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 11:25	D1R	TAL SAC

Client Sample ID: 172300

Date Collected: 02/28/19 11:59

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-9

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 11:43	D1R	TAL SAC

Client Sample ID: 172399

Date Collected: 02/27/19 09:46

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-10

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 12:20	D1R	TAL SAC

Client Sample ID: 172392

Date Collected: 02/28/19 18:11

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-11

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 12:39	D1R	TAL SAC

Client Sample ID: 171352

Date Collected: 02/28/19 16:10

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-12

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	280409	03/08/19 11:15	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280588	03/09/19 12:57	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 172241

Date Collected: 02/28/19 17:12

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-13

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 14:29	D1R	TAL SAC

Client Sample ID: 191770

Date Collected: 03/01/19 13:30

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-14

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 14:48	D1R	TAL SAC

Client Sample ID: 291770

Date Collected: 03/01/19 13:35

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-15

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 15:06	D1R	TAL SAC

Client Sample ID: 172320.2

Date Collected: 03/01/19 12:29

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-16

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 15:25	D1R	TAL SAC

Client Sample ID: 272320.2

Date Collected: 03/01/19 12:35

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-17

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 15:43	D1R	TAL SAC

Client Sample ID: 171351

Date Collected: 03/01/19 11:27

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-18

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 16:02	D1R	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 191110

Date Collected: 03/01/19 18:45

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-19

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 16:20	D1R	TAL SAC

Client Sample ID: 172410

Date Collected: 02/27/19 18:46

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-20

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 16:57	D1R	TAL SAC

Client Sample ID: 200150

Date Collected: 02/28/19 17:20

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-21

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 17:16	D1R	TAL SAC
Total/NA	Prep	PFAS Prep	RE		1.00 mL	1.66 mL	281963	03/15/19 13:10	DTH	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1	RE	1			282181	03/16/19 09:47	D1R	TAL SAC

Client Sample ID: 172250

Date Collected: 02/28/19 18:12

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-22

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 17:34	D1R	TAL SAC

Client Sample ID: 191381

Date Collected: 02/27/19 14:53

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-23

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	280411	03/08/19 11:21	JRM	TAL SAC
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 17:52	D1R	TAL SAC

Client Sample ID: 200090

Date Collected: 02/27/19 17:25

Date Received: 03/05/19 11:25

Lab Sample ID: 320-48064-24

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	280411	03/08/19 11:21	JRM	TAL SAC

TestAmerica Sacramento

Lab Chronicle

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

TestAmerica Job ID: 320-48064-1

Client Sample ID: 200090

Lab Sample ID: 320-48064-24

Date Collected: 02/27/19 17:25

Matrix: Water

Date Received: 03/05/19 11:25

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	WS-LC-0025 At1		1			280591	03/09/19 18:11	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: 320-48064-1

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: 320-48064-1

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: 320-48064-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
320-48064-1	172320	Water	02/27/19 14:27	03/05/19 11:25
320-48064-2	191841	Water	02/26/19 15:28	03/05/19 11:25
320-48064-3	200340	Water	02/27/19 16:08	03/05/19 11:25
320-48064-4	172340	Water	02/27/19 11:28	03/05/19 11:25
320-48064-5	200380	Water	02/28/19 10:57	03/05/19 11:25
320-48064-6	172030	Water	02/28/19 10:11	03/05/19 11:25
320-48064-7	191760	Water	02/26/19 14:36	03/05/19 11:25
320-48064-8	171345	Water	02/28/19 14:43	03/05/19 11:25
320-48064-9	172300	Water	02/28/19 11:59	03/05/19 11:25
320-48064-10	172399	Water	02/27/19 09:46	03/05/19 11:25
320-48064-11	172392	Water	02/28/19 18:11	03/05/19 11:25
320-48064-12	171352	Water	02/28/19 16:10	03/05/19 11:25
320-48064-13	172241	Water	02/28/19 17:12	03/05/19 11:25
320-48064-14	191770	Water	03/01/19 13:30	03/05/19 11:25
320-48064-15	291770	Water	03/01/19 13:35	03/05/19 11:25
320-48064-16	172320.2	Water	03/01/19 12:29	03/05/19 11:25
320-48064-17	272320.2	Water	03/01/19 12:35	03/05/19 11:25
320-48064-18	171351	Water	03/01/19 11:27	03/05/19 11:25
320-48064-19	191110	Water	03/01/19 18:45	03/05/19 11:25
320-48064-20	172410	Water	02/27/19 18:46	03/05/19 11:25
320-48064-21	200150	Water	02/28/19 17:20	03/05/19 11:25
320-48064-22	172250	Water	02/28/19 18:12	03/05/19 11:25
320-48064-23	191381	Water	02/27/19 14:53	03/05/19 11:25
320-48064-24	200090	Water	02/27/19 17:25	03/05/19 11:25

TestAmerica Sacramento

2355 Hill Road
Fairbanks, AK 99709
(907) 479-0600
www.shannonwilson.com

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	X							Total	Composition/Grab? Sample Containers
172320		1427	2/27/19	X							2	groundwater
191841		1528	2/26/19	X							2	
200340		1608	2/27/19	X							2	
172340		1128	2/27/19	X							2	
200380		1057	2/28/19	X							2	
172030		1011	2/28/19	X							2	
191760		1436	2/26/19	X							2	
171345		1443	2/28/19	X							2	
172300		1519	2/28/19	X							2	
172399		0946	2/27/19	X							2	

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Number: 102581-003		Total No. of Containers: 48		Signature: [Signature] Time: 1245		Signature: _____ Time: _____		Signature: _____ Time: _____	
Name: Dillingham		COC Seals/Intact? Y/N/NA		Printed Name: [Signature] Date: 3/4/19		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
Contact: MDN		Received Good Cond./Cold		Company: Shannon & Wilson		Company: _____		Company: _____	
Ongoing Project? Yes ☒ No ☐		Temp: _____		Received By: 1.		Received By: 2.		Received By: 3.	
Sampler: ARN/MDN		Delivery Method: Goldstreak		Signature: [Signature] Time: 1125		Signature: _____ Time: _____		Signature: _____ Time: _____	
Notes:				Printed Name: [Signature] Date: _____		Printed Name: _____ Date: _____		Printed Name: _____ Date: _____	
				Company: [Signature]		Company: _____		Company: _____	
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - job file									

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

Time on container 10 74:38 icon 1436

1.3°C

No. 35796

CHAIN-OF-CUSTODY RECORD

Page 2 of 3
Laboratory Test America
Attn: David Althaus

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
172392		1811	2/25/14	2	Groundwater
171352		1610	2/25/14	2	
172241		1712	2/25/14	2	
191770		1330	3/1/14	2	
291770		1335		2	
172320.2		1229		2	
272320.2	121335			2	
171351		1127		2	
191110		1845		2	
172410		1846	2/27/18	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>1245</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>[Signature]</u> Time: <u>1125</u>		Signature: _____ Time: _____		Signature: _____ Time: _____	
Notes: <u>See PD</u>				Printed Name: <u>Sanford L. Lingen</u> Date: <u>5 March 19</u>		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

CHAIN-OF-CUSTODY RECORD

Laboratory Test American
Attn: David Attwater

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
200150		1720	2/28/19	✓				2	grandwater
172250		1812	2/28/19	✓				2	
191381		1453	2/27/19	✓				2	
200090		1725	2/27/19	✓				2	
200170		1637	2/28/19	✓				2	sample water

Project Information		Sample Receipt		Relinquished By: 1.		Relinquished By: 2.		Relinquished By: 3.	
Number:		Total No. of Containers:		Signature:	Time: 1245	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, Inc.	Company:		Company:	
Ongoing Project? Yes ☐ No ☐		Temp:		Received By: 1.		Received By: 2.		Received By: 3.	
Sampler:		Delivery Method:		Signature:	Time: 1125	Signature:	Time:	Signature:	Time:
Notes: see 13				Printed Name:	Date: 5 March 19	Printed Name:	Date:	Printed Name:	Date:
Distribution: White - w/shipment - returned to Shannon & Wilson w/ laboratory report Yellow - w/shipment - for consignee files Pink - Shannon & Wilson - job file				Company:	TAWS Inc	Company:		Company:	

Login Sample Receipt Checklist

Client: Shannon & Wilson, Inc

Job Number: 320-48064-1

Login Number: 48064

List Source: TestAmerica Sacramento

List Number: 1

Creator: Horner, Nathaniel A

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	seals
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	
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.	False	Refer to Job Narrative for details.
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	