

ANALYTICAL RESULTS

Sample ID: Method Blank						PFAS Isotope Dilution Method					
Client Data Name: SKOOKUM Contract Services Project: PFC Monthly Sampling Part A, FY19 Aug						Laboratory Data Lab Sample: B9H0347-BLK1 Column: BEH C18					
Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFHxA	307-24-4	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFHpA	375-85-9	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFHxS	355-46-4	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFOA	335-67-1	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFNA	375-95-1	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFOS	1763-23-1	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFDA	335-76-2	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
MeFOSAA	2355-31-9	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
EtFOSAA	2991-50-6	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFUnA	2058-94-8	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFDaA	307-55-1	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFTDA	72629-94-8	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
PFTeDA	376-06-7	ND	2.74	4.00	8.00		B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers		Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	106	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C2-PFHxA	IS	93.7	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C4-PFHpA	IS	95.3	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C3-PFHxS	IS	97.3	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C5-PFNA	IS	92.4	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C2-PFOA	IS	91.7	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C8-PFOS	IS	96.2	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C2-PFDA	IS	92.4	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
d3-MeFOSAA	IS	84.5	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C2-PFUnA	IS	80.2	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
d5-EtFOSAA	IS	85.9	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C2-PFDaA	IS	80.7	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1
13C2-PFTeDA	IS	72.8	50 - 150				B9H0347	30-Aug-19	0.125 L	04-Sep-19 19:31	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LCSD										PFAS Isotope Dilution Method						
Name: SKOOKUM Contract Services Project: PFC Monthly Sampling Part A, FY19 Aug Matrix: Aqueous				Lab Sample: B9H0347-BS1/B9H0347-BSD1 QC Batch: B9H0347 Samp Size: 0.125/0.125 L				Date Extracted: 30-Aug-19 Column: BEH C18								
Analyte	CAS Number	LCS (ng/L)	LCS Spike	LCS % Rec	LCS Quals	LCSD (ng/L)	LCSD Spike	LCSD % Rec	RPD	LCSD Quals	%Rec Limits	RPD Limits	LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
PFBS	375-73-5	85.7	80.0	107		75.9	80.0	94.9	12.2		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFHxA	307-24-4	92.2	80.0	115		80.5	80.0	101	13.5		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFHpA	375-85-9	92.7	80.0	116		76.2	80.0	95.3	19.5		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFHxS	355-46-4	94.2	80.0	118		81.0	80.0	101	15.0		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFOA	335-67-1	92.0	80.0	115		85.0	80.0	106	7.89		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFNA	375-95-1	90.4	80.0	113		81.2	80.0	102	10.7		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFOS	1763-23-1	86.9	80.0	109		76.8	80.0	96.0	12.4		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFDA	335-76-2	92.1	80.0	115		85.4	80.0	107	7.47		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
MeFOSAA	2355-31-9	90.6	80.0	113		79.6	80.0	99.4	12.9		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
EtFOSAA	2991-50-6	91.4	80.0	114		81.0	80.0	101	12.0		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFUnA	2058-94-8	90.5	80.0	113		83.9	80.0	105	7.51		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFDoA	307-55-1	90.5	80.0	113		86.4	80.0	108	4.66		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFTrDA	72629-94-8	88.4	80.0	111		85.0	80.0	106	3.94		60-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
PFTeDA	376-06-7	101	80.0	126		91.1	80.0	114	10.2		70-130	30	04-Sep-19 19:10	1	04-Sep-19 19:20	1
Labeled Standards	Type			LCS % Rec	LCS Quals			LCSD % Rec		LCSD Quals	Limits		LCS Analyzed	LCS Dil	LCSD Analyzed	LCSD Dil
13C3-PFBS	IS			102				116			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C2-PFHxA	IS			92.0				104			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C4-PFHpA	IS			89.3				102			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C3-PFHxS	IS			94.6				106			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C5-PFNA	IS			93.8				95.9			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C2-PFOA	IS			96.2				99.0			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C8-PFOS	IS			91.9				96.5			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C2-PFDA	IS			86.1				94.3			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
d3-MeFOSAA	IS			82.6				90.1			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C2-PFUnA	IS			82.7				83.8			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
d5-EtFOSAA	IS			78.0				88.2			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C2-PFDoA	IS			76.4				81.9			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1
13C2-PFTeDA	IS			75.3				79.0			50-150		04-Sep-19 19:10	1	04-Sep-19 19:20	1

Sample ID: PFC-AF-01-03-082719 **PFAS Isotope Dilution Method**

Client Data				Laboratory Data			
Name:	SKOOKUM Contract Services	Matrix:	Aqueous	Lab Sample:	1902866-03	Column:	BEH C18
Project:	PFC Monthly Sampling Part A, FY19 Aug	Date Collected:	27-Aug-19 14:05	Date Received:	29-Aug-19 10:09		
Location:	#3 E. Property Grid E13						

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	8.24	3.14	4.59	9.17	J	B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFHxA	307-24-4	19.9	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFHpA	375-85-9	5.43	3.14	4.59	9.17	J	B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFHxS	355-46-4	44.3	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFOA	335-67-1	39.3	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFNA	375-95-1	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFOS	1763-23-1	76.5	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFDA	335-76-2	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
MeFOSAA	2355-31-9	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
EtFOSAA	2991-50-6	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFUnA	2058-94-8	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFDaA	307-55-1	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFTDA	72629-94-8	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
PFTeDA	376-06-7	ND	3.14	4.59	9.17		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1

Labeled Standards	Type	% Recovery	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C3-PFBS	IS	96.8	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C2-PFHxA	IS	86.4	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C4-PFHpA	IS	88.6	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C3-PFHxS	IS	95.9	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C5-PFNA	IS	94.8	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C2-PFOA	IS	97.4	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C8-PFOS	IS	93.0	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C2-PFDA	IS	93.9	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
d3-MeFOSAA	IS	96.3	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C2-PFUnA	IS	85.7	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
d5-EtFOSAA	IS	97.9	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C2-PFDaA	IS	91.5	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1
13C2-PFTeDA	IS	92.6	50 - 150		B9H0347	30-Aug-19	0.109 L	04-Sep-19 20:03	1

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	The ion transition ratio is outside of the acceptance criteria.
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	19-013-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777-23
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Massachusetts Department of Environmental Protection	N/A
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1521520
New Hampshire Environmental Accreditation Program	207718-B
New Jersey Department of Environmental Protection	190001
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-010
Pennsylvania Department of Environmental Protection	016
Texas Commission on Environmental Quality	T104704189-19-10
Vermont Department of Health	VT-4042
Virginia Department of General Services	10272
Washington Department of Ecology	C584-19
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A