



2045 Mills Road West

TEL: (250) 655-5800

Sidney, BC, Canada V8L5X2

TOLL-FREE: 1-888-373-0881

SGS AXYS Client No.: 4066

Client Address: Tetra Tech, Inc. - Pacific Guardian Ctr.
737 Bishop St., Suite 2340, Mauka Tower
Honolulu, HI, US, 96813-3201

The SGS AXYS contact for these data is Dale Robinson.

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"The sample(s) to which the findings recorded herein (the "Findings") relate was[were] drawn and [or] provided by the Client or by a third party acting at the Client's direction. The Findings constitute no warranty of the sample's representativeness of any goods and strictly relate to the sample(s). The Company accepts no liability with regard to the origin or source from which the sample(s) is[are] said to be extracted."

BATCH SUMMARY

Batch ID: WG82067	Date: 19-Aug-2022
Analysis Type: Perfluorinated Organic (Post)	Matrix Type: Aqueous
BATCH MAKEUP	
Contract: 4066 Samples: L35976-2 SIWWTP-BIOS-1A (FA89217-1) - SPLP L35976-3 LIWWTP-BIOS-1A (FA89217-2) - SPLP L35976-4 LIWWTP-BIOS-1A (FA89217-2) - SPLP_DUP L35976-5 HIWWTP-BIOS-1 (FA89217-5) - SPLP L35976-6 KIWWTB-BIOS-1A (FA89217-6) - SPLP	Blank: WG82067-101 Reference or Spike: WG82067-102 Duplicate:
Comments: <ol style="list-style-type: none"> 1. Data are considered final. 2. Data are not blank corrected. Blank data should be taken into consideration when evaluating sample data. 3. Blank data should be evaluated against specifications using the same blank sample size as the size of the client samples. 4. The reported concentration values represent the acid forms of the compounds. 5. All samples, including batch QC, were filtered prior to extraction/analysis – data in this report represent dissolved phase results. 6. Percent recovery of labeled compound 13C2-PFTeDA in the Lab Blank, OPR, and samples LIWWTP-BIOS-1A (FA89217-2) - SPLP_DUP and KIWWTB-BIOS-1A (FA89217-6) - SPLP (SGS AXYS ID: WG82067-101, -102, L35976-4 and -6, respectively) were below the method nominal limit and were flagged with a 'V'. As the isotope dilution method of quantification produces data that are recovery corrected, the variances from the method acceptance criteria are deemed not to affect the quantification of the analytes. Percent labeled compound recoveries are used as a general method performance indicator only. 7. The precursor analyte 6:2 FTS in sample LIWWTP-BIOS-1A (FA89217-2) - SPLP_DUP (SGS AXYS ID: L35976-4) was detected above the method blank limit indicating incomplete oxidation. Sample data are affected. 	

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February 2017

FQA-006 Rev. 4. 20-Sep-2013

CHAIN OF CUSTODY

2045 Mills Road West TEL: (250) 655-5800 TOLL FREE 1-888-373-0881
 Sidney, British Columbia, Canada V8L 5X2 FAX: (250) 655-5811

SGS AXYS CLIENT #: 4066

REPORT TO:			INVOICE TO:			ANALYSIS REQUESTED				
Company <u>Hawaii DOH-HEER office</u>			Company <u>Tetrattech</u>			PFAS-MLA IIO TDP-MLA III TDF-CIC SPLP				
Address <u>2385 Walmano Home Rd #100 Pearl City, HI 96782</u>			Address <u>737 Bishop St Ste 2340 Honolulu HI 96813</u>							
Contact <u>Diana Felton</u>			Contact <u>Eric Jensen</u>							
Phone <u>808-586-0963</u>			Phone <u>808-225-7084</u>							
FAX			FAX							
E-mail <u>Liana.felton@doh.hawaii.gov</u>			E-mail <u>eric.jensen@tetrattech.com</u>							
Project Name/Number: <u>HDOH-PFAS-MM/</u>			Sampler's Name:							
Signature:										
Client Sample Identification		Matrix	Sampling Date	Sampling Time	Container Type/No.	SGS AXYS Lab Sample ID (Lab use only)				
<u>SIWWTP-BIOS-1A</u>		<u>biol.d</u>	<u>8/31/21</u>	<u>9:00am</u>	<u>HDP Bag</u>					
<u>LIWWTP-BIOS-1A</u>		<u>"</u>	<u>9/2/21</u>	<u>2:00pm</u>	<u>"</u>	X	X	X	X	<u>(1)</u>
<u>LIWWTP-BIOS-1B</u>		<u>"</u>	<u>9/2/21</u>	<u>2:00pm</u>	<u>"</u>	X	X		X	<u>(2)</u>
<u>LIWWTP-BIOS-1C</u>		<u>"</u>	<u>9/2/21</u>	<u>2:00pm</u>	<u>"</u>	X				<u>(3)</u>
<u>HIWWTP-BIOS-1</u>		<u>"</u>	<u>9/7/21</u>	<u>1:30pm</u>	<u>"</u>	X	X		X	<u>(4)</u>
<u>KIWWTP-BIOS-1A</u>		<u>"</u>	<u>9/14/21</u>	<u>1:30pm</u>	<u>"</u>	X	X		X	<u>(5)</u>
<u>KIWWTP-BIOS-1B</u>		<u>"</u>	<u>9/14/21</u>	<u>1:30pm</u>	<u>"</u>	X				<u>(6)</u>
<u>KIWWTP-BIOS-1C</u>		<u>"</u>	<u>9/14/21</u>	<u>1:30pm</u>	<u>"</u>	X				<u>(7)</u>
										<u>(8)</u>
Relinquished by (Signature) <u>[Signature]</u>			Date <u>9/21/21</u>	Time <u>10:00am</u>	Received by (Signature) <u>[Signature]</u>			Courier		Waybill No.
Relinquished by (Signature) <u>[Signature]</u>			Date	Time	Received by (Signature) <u>[Signature]</u>			Sample Receipt		
Remarks			Date <u>9/23/21</u>	Time <u>1045</u>						
<u>INITIAL ASSESSMENT</u> <u>SP</u>			<u>23.4 FRI</u>			Temp °C			Cooler	
<u>LABEL VERIFICATION</u>			<u>NO ICE</u>			Custody Seal #				
						Seal Intact Y/N				
						Sample Tag: Y/N				



SGS North America Inc - Orlando

Chain of Custody

SGS - ORLANDO JOB #: FA8 PAGE 1 OF 1

4405 Vineland Road, Suite C-15 Orlando, FL 32811
 TEL 407-425-6700 FAX 407-425-0707
 www.sgs.com

Client / Reporting Information				Project Information				SGS - ORLANDO Quote #								SKIFF #																				
Hawaii DOH HEER Office				Project Name:				Analytical Information Matrix Codes DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OI - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid								LAB USE ONLY																				
Address:				Street																																
City:		State: FL		Zip:		City														State																
Project Contact: Diane Felton				Project #																																
808-586-0963				Fax #																																
Sampler(s) Name(s) (Printed)				Client Purchase Order #																																
Sampler 1:				Sampler 2:																																
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION											TOP MLA 111 (raw aliquots)	PFAS MLA 110 (dried and ground aliquots)	TOF by CIC	PFAS by SPLP																	
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	NaOH	HNO3	H2SO4	NaOH+ZnAc	DI WATER	MEOH																					
1	FA89217-1				solid	8											1	2	1	4																
2	FA89217-2				solid	7											1	1		4																
3	FA89217-3				solid	1											3	1																		
4	FA89217-4				solid	1											1	1																		
5	FA89217-5				solid	7											1	1		4																
6	FA89217-6				solid	7											1	1		4																
7	FA89217-7				solid	1											1	1																		
8	FA89217-8				solid	1											1	1																		
	Leachate Blank																			4																
	Leachate Duplicate																			4																
Turnaround Time (Business days)				Data Deliverable Information				Comments / Remarks																												
10 Day (Business) Approved By: / Date: _____ 7 Day _____ 5 Day _____ 3 Day RUSH _____ 2 Day RUSH _____ 1 Day RUSH _____ Other _____ Rush TIA Data Available VIA Email or Lablink				<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input type="checkbox"/> FULLT1 (EPA LEVEL 4) <input type="checkbox"/> EDD'S				MLA 111 2 x 5gr Raw aliquots (not dried) (Bottles sent for all samples) MLA 110 small jar dried and ground TOF by CIC (100gr aliquot) SPLP PFAS (2 x 500ml, 2 x 60ml) Remaining Dried Sample sent for Archival Remaining Wet sent for spare																												
Sample Custody must be documented below each time samples change possession, including courier delivery.																																				
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation				Date Time:		Received By/Affiliation																						
1 Norman Farmer		10/11/2021		2				3				14 Oct 2021 12:00		4																						
Relinquished by/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation				Date Time:		Received By/Affiliation																						
5				6				7						8																						

Lab Use Only : Cooler Temperature (s) Celsius (corrected):



L35976

Client ID	Axys ID
SPLP BLANK	L35976-1
SIWWTP-BIOS-1A (FA89217-1) - SPLP	L35976-2
SIWWTP-BIOS-1A (FA89217-2) - SPLP	L35976-3
SIWWTP-BIOS-1A (FA89217-2) - SPLP_DUP	L35976-4
SIWWTP-BIOS-1A (FA89217-5) - SPLP	L35976-5
SIWWTP-BIOS-1A (FA89217-6) - SPLP	L35976-6
	LIWWTP-BIOS-1A (FA89217-2) - SPLP
	LIWWTP-BIOS-1A (FA89217-2) - SPLP_DUP
	HIWWTP-BIOS-1 (FA89217-5) - SPLP
	KIWWTP-BIOS-1A (FA89217-6) - SPLP

(IDs corrected by DPR 23-Dec-21)

12:00

14-Oct-2021

Received by: 

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
SIWWTP-BIOS-1A (FA89217-1) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-2

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0651 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:00:41

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 42

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		67.5	12.3 (Q)		1.003
PFPeA		40.4	6.15 (Q)		1.001
PFHxA		45.6	3.07 (Q)	4.99	1.001
PFHpA	J	6.45	3.07 (Q)	2.57	1.000
PFOA	J	8.81	3.07 (Q)	1.81	
PFNA	U		3.07 (Q)		
PFDA	U		3.07 (Q)		
PFUnA	U		3.07 (Q)		
PFDoA	U		2.46 (Q)		
PFTTrDA	U		3.07 (Q)		
PFTeDA	U		3.07 (Q)		
PFBS	J	3.89	3.07 (Q)	2.51	1.001
PFPeS	U		3.09 (Q)		
PFHxS	U		3.07 (Q)		
PFHpS	U		3.07 (Q)		
PFOS	J	8.52	3.07 (Q)	2.72	
PFNS	U		3.07 (Q)		
PFDS	U		3.07 (Q)		
PFDoS	U		3.07 (Q)		
4:2 FTS	U		12.3 (Q)		
6:2 FTS		69.6	11.1 (Q)	0.48	1.000
8:2 FTS	U		10.5 (Q)		
PFOSA	U		3.07 (Q)		
N-MeFOSA	U		3.07 (Q)		
N-EtFOSA	U		8.61 (Q)		
MeFOSAA	U		3.07 (Q)		
EtFOSAA	U		3.07 (Q)		
N-MeFOSE	U		30.7 (Q)		
N-EtFOSE	U		30.7 (Q)		
3:3 FTCA	U		12.3 (Q)		
5:3 FTCA	U		76.9 (Q)		
7:3 FTCA	U		76.9 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
SIWWTP-BIOS-1A (FA89217-1) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-2

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0651 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:00:41

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 42

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	32.5	81.1		0.997
13C5-PFPeA		20.0	17.3	86.7		0.878
13C5-PFHxA		10.0	7.86	78.6	23.5	1.000
13C4-PFHpA		10.0	8.60	86.0		0.886
13C8-PFOA		10.0	8.85	88.5		1.000
13C9-PFNA		5.00	4.78	95.6		1.000
13C6-PFDA		5.00	4.60	92.0		1.000
13C7-PFUnA		5.00	4.19	83.7		1.040
13C2-PFDoA		5.00	3.70	74.0		1.072
13C2-PFTeDA		5.00	2.65	53.1		1.157
13C3-PFBS		10.0	9.67	96.5	2.70	0.790
13C3-PFHxS		10.0	9.80	97.9	2.33	0.999
13C8-PFOS		10.1	9.14	90.8	2.08	1.000
13C2-4:2 FTS		20.2	26.6	132	1.77	0.833
13C2-6:2 FTS		20.0	19.8	99.2	2.05	1.002
13C2-8:2 FTS		20.0	19.5	97.1	3.19	1.269
13C8-PFOA		10.0	9.89	98.9		1.135
D3-N-MeFOSA		10.0	10.3	103		1.312
D5-N-EtFOSA		10.0	9.72	97.2		1.348
D3-MeFOSAA		20.0	19.4	97.0		1.307
D5-EtFOSAA		20.0	19.4	96.8		1.328
d7-NMe-FOSE		100	80.6	80.4		1.297
d9-NEt-FOSE		100	99.0	98.9		1.332

(1) Where applicable, custom lab flags have been used on this report.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
LIWWTP-BIOS-1A (FA89217-2) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-3

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0594 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:13:46

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 43

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		123	13.5 (Q)		1.003
PFPeA		84.9	6.74 (Q)		1.001
PFHxA		154	3.37 (Q)	4.81	1.000
PFHpA		18.6	3.37 (Q)	2.09	1.000
PFOA		29.2	3.37 (Q)	2.10	
PFNA	J	4.62	3.37 (Q)	3.13	
PFDA	J	6.12	3.37 (Q)	3.20	0.999
PFUnA	U		3.37 (Q)		
PFDaA	R J	3.82	2.69 (Q)	12.9	1.000
PFTTrDA	U		3.37 (Q)		
PFTeDA	U		3.37 (Q)		
PFBS		16.0	3.37 (Q)	2.42	1.000
PFPeS	U		3.39 (Q)		
PFHxS	U		3.37 (Q)		
PFHpS	U		3.37 (Q)		
PFOS	J	11.4	3.37 (Q)	2.64	
PFNS	U		3.37 (Q)		
PFDS	U		3.37 (Q)		
PFDoS	U		3.37 (Q)		
4:2 FTS	U		13.5 (Q)		
6:2 FTS		95.7	12.1 (Q)	0.46	1.000
8:2 FTS	U		11.5 (Q)		
PFOSA	U		3.37 (Q)		
N-MeFOSA	U		3.37 (Q)		
N-EtFOSA	U		9.43 (Q)		
MeFOSAA	U		3.37 (Q)		
EtFOSAA	U		3.37 (Q)		
N-MeFOSE	U		33.7 (Q)		
N-EtFOSE	U		33.7 (Q)		
3:3 FTCA	U		13.5 (Q)		
5:3 FTCA	U		84.2 (Q)		
7:3 FTCA	U		84.2 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

For Alys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 19-Aug-2022 09:25:54; Application: XMLTransformer-1.18.38;
Report Filename: PFC_FC_LC_PFAS_POSTTOP_L35976-3_Form1A_FC2L_336S43_SJ3107402.html; Workgroup: WG82067; Design ID: 3989]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
LIWWTP-BIOS-1A (FA89217-2) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-3

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0594 L

Sample Receipt Date: 14-Oct-2021

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Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:13:46

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 43

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	31.7	79.2		1.000
13C5-PFPeA		20.0	18.0	90.2		0.877
13C5-PFHxA		10.0	8.11	81.1	24.6	1.000
13C4-PFHpA		10.0	7.86	78.6		0.887
13C8-PFOA		10.0	8.51	85.1		1.000
13C9-PFNA		5.00	4.71	94.2		1.000
13C6-PFDA		5.00	4.39	87.8		1.000
13C7-PFUnA		5.00	4.27	85.3		1.040
13C2-PFDoA		5.00	3.56	71.2		1.071
13C2-PFTeDA		5.00	2.55	51.0		1.157
13C3-PFBS		10.0	9.78	97.6	2.71	0.792
13C3-PFHxS		10.0	9.49	94.8	2.38	1.000
13C8-PFOS		10.1	9.55	94.9	2.25	1.000
13C2-4:2 FTS		20.2	25.8	128	1.87	0.834
13C2-6:2 FTS		20.0	19.9	99.4	2.11	1.002
13C2-8:2 FTS		20.0	19.1	95.4	3.37	1.269
13C8-PFOA		10.0	9.82	98.2		1.136
D3-N-MeFOSA		10.0	10.7	107		1.313
D5-N-EtFOSA		10.0	10.0	100		1.348
D3-MeFOSAA		20.0	19.0	95.1		1.307
D5-EtFOSAA		20.0	19.1	95.5		1.328
d7-NMe-FOSE		100	79.7	79.5		1.297
d9-NEt-FOSE		100	101	101		1.332

(1) Where applicable, custom lab flags have been used on this report.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
LIWWTP-BIOS-1A (FA89217-2) -
SPLP_DUP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-4

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0638 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:26:51

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 44

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		156	12.5 (Q)		1.003
PFPeA		119	6.27 (Q)		1.001
PFHxA		214	3.13 (Q)	4.64	1.000
PFHpA		18.8	3.13 (Q)	1.97	1.000
PFOA		37.0	3.13 (Q)	2.12	
PFNA	J	4.30	3.13 (Q)	2.73	
PFDA	J	6.68	3.13 (Q)	3.88	1.000
PFUnA	U		3.13 (Q)		
PFDaA	J	2.98	2.51 (Q)	7.94	1.000
PFTTrDA	U		3.13 (Q)		
PFTeDA	U		3.13 (Q)		
PFBS		25.5	3.13 (Q)	2.78	1.000
PFPeS	U		3.15 (Q)		
PFHxS	U		3.13 (Q)		
PFHpS	U		3.13 (Q)		
PFOS		18.0	3.13 (Q)	2.27	
PFNS	U		3.13 (Q)		
PFDS	U		3.13 (Q)		
PFDoS	U		3.13 (Q)		
4:2 FTS	U		12.5 (Q)		
6:2 FTS		184	11.3 (Q)	0.45	1.000
8:2 FTS	U		10.7 (Q)		
PFOSA	U		3.13 (Q)		
N-MeFOSA	U		3.13 (Q)		
N-EtFOSA	U		8.78 (Q)		
MeFOSAA	U		3.13 (Q)		
EtFOSAA	U		3.13 (Q)		
N-MeFOSE	U		31.3 (Q)		
N-EtFOSE	U		31.3 (Q)		
3:3 FTCA	U		12.5 (Q)		
5:3 FTCA	J	111	78.4 (Q)	1.20	1.049
7:3 FTCA	U		78.4 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
LIWWTP-BIOS-1A (FA89217-2) -
SPLP_DUP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-4

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0638 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:26:51

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 44

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	31.4	78.6		0.997
13C5-PFPeA		20.0	17.0	84.9		0.877
13C5-PFHxA		10.0	7.43	74.3	24.5	1.000
13C4-PFHpA		10.0	8.26	82.6		0.887
13C8-PFOA		10.0	8.39	83.9		1.000
13C9-PFNA		5.00	4.53	90.5		1.000
13C6-PFDA		5.00	4.09	81.8		1.000
13C7-PFUnA		5.00	3.50	70.0		1.040
13C2-PFDoA		5.00	3.01	60.3		1.072
13C2-PFTeDA	V	5.00	2.45	49.0		1.157
13C3-PFBS		10.0	9.04	90.2	2.64	0.791
13C3-PFHxS		10.0	9.03	90.2	2.37	0.999
13C8-PFOS		10.1	8.72	86.7	2.18	1.000
13C2-4:2 FTS		20.2	27.0	134	1.81	0.833
13C2-6:2 FTS		20.0	19.9	99.6	1.98	1.001
13C2-8:2 FTS		20.0	19.9	99.1	3.28	1.268
13C8-PFOA		10.0	9.84	98.4		1.136
D3-N-MeFOSA		10.0	9.49	94.9		1.313
D5-N-EtFOSA		10.0	9.30	93.0		1.348
D3-MeFOSAA		20.0	18.8	94.1		1.306
D5-EtFOSAA		20.0	19.8	99.1		1.327
d7-NMe-FOSE		100	80.6	80.3		1.297
d9-NEt-FOSE		100	96.6	96.5		1.334

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: Bryan Alonzo

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
HIWWTP-BIOS-1 (FA89217-5) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-5

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0635 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:39:48

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 45

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		62.6	12.6 (Q)		1.003
PFPeA		33.9	6.30 (Q)		1.001
PFHxA		38.9	3.15 (Q)	4.91	1.000
PFHpA	J	5.64	3.15 (Q)	2.17	1.000
PFOA	J	10.8	3.15 (Q)	2.28	
PFNA	U		3.15 (Q)		
PFDA	U		3.15 (Q)		
PFUnA	U		3.15 (Q)		
PFDoA	U		2.52 (Q)		
PFTTrDA	U		3.15 (Q)		
PFTeDA	U		3.15 (Q)		
PFBS	U		3.15 (Q)		
PFPeS	U		3.16 (Q)		
PFHxS	U		3.15 (Q)		
PFHpS	U		3.15 (Q)		
PFOS		26.5	3.15 (Q)	2.33	
PFNS	U		3.15 (Q)		
PFDS	U		3.15 (Q)		
PFDoS	U		3.15 (Q)		
4:2 FTS	U		12.6 (Q)		
6:2 FTS	U		11.3 (Q)		
8:2 FTS	U		10.7 (Q)		
PFOSA	U		3.15 (Q)		
N-MeFOSA	U		3.15 (Q)		
N-EtFOSA	U		8.81 (Q)		
MeFOSAA	U		3.15 (Q)		
EtFOSAA	U		3.15 (Q)		
N-MeFOSE	U		31.5 (Q)		
N-EtFOSE	U		31.5 (Q)		
3:3 FTCA	U		12.6 (Q)		
5:3 FTCA	U		78.7 (Q)		
7:3 FTCA	U		78.7 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
HIWWTP-BIOS-1 (FA89217-5) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-5

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0635 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:39:48

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 45

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	32.1	80.2		1.000
13C5-PFPeA		20.0	18.6	92.9		0.878
13C5-PFHxA		10.0	8.52	85.2	26.5	1.000
13C4-PFHpA		10.0	8.53	85.3		0.886
13C8-PFOA		10.0	8.89	88.9		1.000
13C9-PFNA		5.00	4.95	99.0		1.000
13C6-PFDA		5.00	4.79	95.8		1.000
13C7-PFUnA		5.00	4.61	92.2		1.040
13C2-PFDoA		5.00	4.03	80.6		1.071
13C2-PFTeDA		5.00	2.50	50.1		1.157
13C3-PFBS		10.0	10.5	105	2.71	0.791
13C3-PFHxS		10.0	10.1	101	2.36	1.000
13C8-PFOS		10.1	10.2	101	2.15	1.000
13C2-4:2 FTS		20.2	28.1	139	1.85	0.833
13C2-6:2 FTS		20.0	21.1	106	2.07	1.001
13C2-8:2 FTS		20.0	20.2	101	3.33	1.269
13C8-PFOA		10.0	9.95	99.5		1.135
D3-N-MeFOSA		10.0	8.96	89.6		1.313
D5-N-EtFOSA		10.0	11.6	116		1.347
D3-MeFOSAA		20.0	20.4	102		1.306
D5-EtFOSAA		20.0	20.4	102		1.328
d7-NMe-FOSE		100	83.6	83.4		1.297
d9-NEt-FOSE		100	89.2	89.1		1.333

(1) Where applicable, custom lab flags have been used on this report.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
KIWWTP-BIOS-1A (FA89217-6) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-6

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0613 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:53:01

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 46

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA		55.9	13.1 (Q)		1.000
PFPeA		101	6.53 (Q)		1.001
PFHxA		78.8	3.26 (Q)	4.90	1.000
PFHpA		14.8	3.26 (Q)	2.01	1.000
PFOA		59.2	3.26 (Q)	2.01	
PFNA	J	6.51	3.26 (Q)	3.63	
PFDA		17.6	3.26 (Q)	3.41	1.000
PFUnA	U		3.26 (Q)		
PFDaA	R J	3.73	2.61 (Q)	13.5	1.000
PFTTrDA	U		3.26 (Q)		
PFTeDA	U		3.26 (Q)		
PFBS		22.3	3.26 (Q)	2.60	1.001
PFPeS	U		3.28 (Q)		
PFHxS	U		3.26 (Q)		
PFHpS	U		3.26 (Q)		
PFOS	J	11.6	3.26 (Q)	2.39	
PFNS	U		3.26 (Q)		
PFDS	U		3.26 (Q)		
PFDoS	U		3.26 (Q)		
4:2 FTS	U		13.1 (Q)		
6:2 FTS	U		11.8 (Q)		
8:2 FTS	U		11.1 (Q)		
PFOSA	U		3.26 (Q)		
N-MeFOSA	U		3.26 (Q)		
N-EtFOSA	U		9.14 (Q)		
MeFOSAA	U		3.26 (Q)		
EtFOSAA	U		3.26 (Q)		
N-MeFOSE	U		32.6 (Q)		
N-EtFOSE	U		32.6 (Q)		
3:3 FTCA	U		13.1 (Q)		
5:3 FTCA	J	140	81.6 (Q)	1.35	1.049
7:3 FTCA	U		81.6 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

For Alys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 19-Aug-2022 09:25:54; Application: XMLTransformer-1.18.38;
Report Filename: PFC_FC_LC_PFAS_POSTTOP_L35976-6_Form1A_FC2L_336S46_SJ3107405.html; Workgroup: WG82067; Design ID: 3989]

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORTCLIENT SAMPLE NO.
KIWWTP-BIOS-1A (FA89217-6) -
SPLP
Sample Collection:
07-Oct-2021 08:00

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35976-6

Contract No.: 4066

Lab Sample I.D.:

Matrix: AQUEOUS

Sample Size: 0.0613 L

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022 Time: 03:53:01

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_336 S: 46

Injection Volume (uL): 2

Blank Data Filename: FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_336 S: 37

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	30.6	76.4		1.000
13C5-PFPeA		20.0	17.8	89.2		0.877
13C5-PFHxA		10.0	8.16	81.6	23.1	1.000
13C4-PFHpA		10.0	8.31	83.1		0.886
13C8-PFOA		10.0	8.78	87.8		1.000
13C9-PFNA		5.00	4.56	91.2		1.000
13C6-PFDA		5.00	4.23	84.6		0.999
13C7-PFUnA		5.00	4.10	82.0		1.040
13C2-PFDoA		5.00	3.64	72.8		1.071
13C2-PFTeDA	V	5.00	2.45	49.0		1.157
13C3-PFBS		10.0	9.19	91.7	2.70	0.791
13C3-PFHxS		10.0	9.30	92.8	2.32	1.000
13C8-PFOS		10.1	8.66	86.1	2.08	1.000
13C2-4:2 FTS		20.2	24.6	122	1.82	0.833
13C2-6:2 FTS		20.0	19.7	98.7	2.10	1.001
13C2-8:2 FTS		20.0	18.7	93.4	3.17	1.269
13C8-PFOA		10.0	9.76	97.6		1.136
D3-N-MeFOSA		10.0	10.1	101		1.313
D5-N-EtFOSA		10.0	10.4	104		1.348
D3-MeFOSAA		20.0	17.9	89.4		1.306
D5-EtFOSAA		20.0	17.8	88.9		1.327
d7-NMe-FOSE		100	80.5	80.2		1.298
d9-NEt-FOSE		100	92.8	92.7		1.334

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 1A

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

Lab Blank

Sample Collection:

N/A

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

N/A

Contract No.: 4066

Lab Sample I.D.:

WG82067-101

Matrix: AQUEOUS

Sample Size:

0.0600 L

Sample Receipt Date: N/A

Initial Calibration Date:

11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID:

LCMS/MS

Analysis Date: 11-Aug-2022 Time: 02:47:36

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_336 S: 41

Injection Volume (uL): 2

Blank Data Filename:

FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_336 S: 37

Concentration Units: ng/L

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		13.3 (Q)		
PFPeA	U		6.67 (Q)		
PFHxA	U		3.33 (Q)		
PFHpA	U		3.33 (Q)		
PFOA	U		3.33 (Q)		
PFNA	U		3.33 (Q)		
PFDA	U		3.33 (Q)		
PFUnA	U		3.33 (Q)		
PFDaA	U		2.67 (Q)		
PFTTrDA	U		3.33 (Q)		
PFTeDA	U		3.33 (Q)		
PFBS	U		3.33 (Q)		
PFPeS	U		3.35 (Q)		
PFHxS	U		3.33 (Q)		
PFHpS	U		3.33 (Q)		
PFOS	U		3.33 (Q)		
PFNS	U		3.33 (Q)		
PFDS	U		3.33 (Q)		
PFDoS	U		3.33 (Q)		
4:2 FTS	U		13.3 (Q)		
6:2 FTS	U		12.0 (Q)		
8:2 FTS	U		11.3 (Q)		
PFOSA	U		3.33 (Q)		
N-MeFOSA	U		3.33 (Q)		
N-EtFOSA	U		9.33 (Q)		
MeFOSAA	U		3.33 (Q)		
EtFOSAA	U		3.33 (Q)		
N-MeFOSE	U		33.3 (Q)		
N-EtFOSE	U		33.3 (Q)		
3:3 FTCA	U		13.3 (Q)		
5:3 FTCA	U		83.3 (Q)		
7:3 FTCA	U		83.3 (Q)		

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL.

(2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 2

TOTAL OXIDIZABLE PRECURSOR - POSTOXIDATION ANALYSIS
REPORT

CLIENT SAMPLE NO.

Lab Blank

Sample Collection:

N/A

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Project No.

N/A

Contract No.: 4066

Lab Sample I.D.:

WG82067-101

Matrix: AQUEOUS

Sample Size:

0.0600 L

Sample Receipt Date: N/A

Initial Calibration Date:

11-Apr-2022

Extraction Date: 08-Aug-2022

Instrument ID:

LCMS/MS

Analysis Date: 11-Aug-2022 Time: 02:47:36

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_336 S: 41

Injection Volume (uL): 2

Blank Data Filename:

FC2L_336 S: 41

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_336 S: 37

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
This test is not NELAP accredited. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	28.8	71.9		1.000
13C5-PFPeA		20.0	15.4	77.1		0.878
13C5-PFHxA		10.0	7.14	71.4	25.9	1.000
13C4-PFHpA		10.0	7.59	75.9		0.886
13C8-PFOA		10.0	7.90	79.0		1.000
13C9-PFNA		5.00	4.47	89.5		1.000
13C6-PFDA		5.00	3.78	75.5		0.999
13C7-PFUnA		5.00	3.37	67.3		1.040
13C2-PFDoA		5.00	2.99	59.9		1.071
13C2-PFTeDA	V	5.00	2.45	49.0		1.157
13C3-PFBS		10.0	8.88	88.6	2.57	0.791
13C3-PFHxS		10.0	8.78	87.7	2.30	1.000
13C8-PFOS		10.1	8.48	84.2	2.13	1.000
13C2-4:2 FTS		20.2	28.7	143	1.91	0.833
13C2-6:2 FTS		20.0	20.5	103	2.10	1.002
13C2-8:2 FTS		20.0	20.2	101	3.15	1.269
13C8-PFOA		10.0	9.85	98.5		1.135
D3-N-MeFOSA		10.0	9.90	99.0		1.313
D5-N-EtFOSA		10.0	9.13	91.3		1.346
D3-MeFOSAA		20.0	19.2	95.8		1.306
D5-EtFOSAA		20.0	19.7	98.5		1.328
d7-NMe-FOSE		100	79.8	79.5		1.297
d9-NEt-FOSE		100	98.0	97.9		1.331

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

(2) R(%) = percent recovery.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 8A

PERFLUORINATED ORGANICS ONGOING PRECISION AND RECOVERY (OPR)

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.:	4066	Lab Sample I.D.:	WG82067-102
Matrix:	AQUEOUS	Initial Calibration Date:	11-Apr-2022
Extraction Date:	08-Aug-2022	Instrument ID:	LCMS/MS
Analysis Date:	11-Aug-2022 Time: 02:21:26	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC2L_336 S: 39
Injection Volume (uL):	2	Blank Data Filename:	FC2L_336 S: 41
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC2L_336 S: 37

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT, BASED ON A 1 mL EXTRACT VOLUME.

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
PFBA			45.2	52.5	116	1.003
PFPeA			33.3	33.9	102	1.001
PFHxA		4.74	32.1	29.7	92.7	1.000
PFHpA		2.21	28.5	23.8	83.6	1.000
PFOA		2.01	100	98.4	98.0	
PFNA		2.97	7.73	7.03	91.0	
PFDA		3.15	5.00	5.76	115	1.000
PFUnA		4.49	5.00	5.17	103	1.000
PFDoA		7.48	5.00	4.74	94.9	1.000
PFTTrDA		3.24	5.00	5.37	107	0.959
PFTeDA		2.78	5.00	4.71	94.3	1.001
PFBS		2.47	5.00	4.78	95.5	1.000
PFPeS		2.17	4.98	5.02	101	0.876
PFHxS		2.47	5.00	4.51	90.2	
PFHpS		1.97	5.01	5.20	104	0.935
PFOS		2.72	5.42	5.73	106	
PFNS		2.30	5.00	4.48	89.5	1.038
PFDS		2.33	5.00	4.00	80.0	1.071
PFDoS		2.32	5.00	2.72	54.5	1.166
4:2 FTS	U		100		0	
6:2 FTS	U		90.0		0	
8:2 FTS	U		100		0	
MeFOSAA	U		70.0		0	
EtFOSAA	U		70.0		0	

(1) Where applicable, custom lab flags have been used on this report; U = not detected at RL.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo_____

These pages are part of a larger report that may contain information necessary for full data evaluation. Results reported relate only to the sample tested.

SGS AXYS METHOD MLA-111 Rev 03

Form 8B

PERFLUORINATED ORGANICS ONGOING PRECISION AND RECOVERY (OPR)

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Contract No.:	4066	Lab Sample I.D.:	WG82067-102
Matrix:	AQUEOUS	Initial Calibration Date:	11-Apr-2022
Extraction Date:	08-Aug-2022	Instrument ID:	LCMS/MS
Analysis Date:	11-Aug-2022 Time: 02:21:26	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC2L_336 S: 39
Injection Volume (uL):	2	Blank Data Filename:	FC2L_336 S: 41
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC2L_336 S: 37

ALL CONCENTRATIONS REPORTED ON THIS FORM ARE CONCENTRATIONS IN EXTRACT, BASED ON A 1 mL EXTRACT VOLUME.

LABELLED COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
13C4-PFBA			40.0	29.5	73.8	1.000
13C5-PFPeA			20.0	16.5	82.3	0.877
13C5-PFHxA		23.7	10.0	7.20	72.0	1.000
13C4-PFHpA			10.0	8.23	82.3	0.886
13C8-PFOA			10.0	8.12	81.2	1.000
13C9-PFNA			5.00	4.49	89.9	1.000
13C6-PFDA			5.00	3.81	76.3	1.000
13C7-PFUnA			5.00	3.46	69.3	1.040
13C2-PFDoA			5.00	3.07	61.3	1.071
13C2-PFTeDA	V		5.00	2.24	44.9	1.157
13C3-PFBS		2.65	10.0	9.25	92.3	0.791
13C3-PFHxS		2.27	10.0	8.84	88.2	0.999
13C8-PFOS		2.11	10.1	8.61	85.6	1.000
13C2-4:2 FTS		1.88	20.2	30.2	150	0.834
13C2-6:2 FTS		1.98	20.0	20.0	100	1.002
13C2-8:2 FTS		3.33	20.0	19.8	98.6	1.269
D3-MeFOSAA			20.0	19.6	97.9	1.306
D5-EtFOSAA			20.0	20.2	101	1.328

(1) Where applicable, custom lab flags have been used on this report; V = surrogate recovery is not within method/contract control limits.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: Bryan Alonzo

These pages are part of a larger report that may contain information necessary for full data evaluation. Results reported relate only to the sample tested.

SGS AXYS METHOD MLA-111 Rev 03

Form 3A
INITIAL CALIBRATION RELATIVE RESPONSES

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 11-Apr-2022

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC2L_156 S: 13
CS2 Data Filename: FC2L_156 S: 14
CS3 Data Filename: FC2L_156 S: 15
CS4 Data Filename: FC2L_156 S: 16
CS5 Data Filename: FC2L_156 S: 17
CS6 Data Filename: FC2L_156 S: 18
CS7 Data Filename: FC2L_156 S: 19
CS8 Data Filename: FC2L_156 S: 20

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7		
PFBA		0.96	0.90	0.89	0.82	0.87	0.85	0.83	0.84	0.87	4.96
PFPeA		1.29	1.13	1.19	1.16	1.16	1.09	1.08	1.15	1.16	5.67
PFHxA		1.19	1.15	1.02	1.01	0.91	0.91	0.98	1.02	1.03	9.88
PFHpA		1.40	1.35	1.31	1.08	1.22	1.04	1.14	1.13	1.21	11.0
PFOA		1.66	1.29	1.29	1.18	1.32	1.25	1.17	1.26	1.30	11.7
PFNA		1.11	1.04	1.12	0.96	1.01	0.96	0.97	0.99	1.02	6.35
PFDA		0.83	0.80	0.88	0.73	0.79	0.74	0.75	0.73	0.78	6.80
PFUnA		0.78	0.76	0.73	0.69	0.71	0.71	0.69		0.72	4.94
PFDaA		1.27	1.12	1.08	1.00	1.01	0.98	1.01	1.02	1.06	9.13
PFTrDA		0.83	0.87	0.88	0.82	0.82	0.77	0.79	0.73	0.81	6.11
PFTeDA		0.91	0.78	0.85	0.76	0.80	0.76	0.78	0.72	0.80	7.64
PFBS		1.36	1.07	1.19	1.10	1.08	1.14	1.05	1.10	1.14	8.93
PFPeS		1.04	1.14	1.07	1.02	1.05	1.06	1.02	0.97	1.05	4.62
PFHxS		1.35	1.25	1.30	1.24	1.31	1.27	1.29	1.28	1.29	2.78
PFHpS		1.09	1.04	1.01	1.04	1.11	1.03	0.98	1.02	1.04	3.83
PFOS		1.24	1.03	1.13	1.11	1.17	1.21	1.09	1.09	1.13	6.15
PFNS		1.08	1.02	1.10	1.06	1.12	1.08	1.00	1.07	1.07	3.91
PFDS		0.93	0.88	0.96	0.95	1.01	0.96	0.89	0.96	0.94	4.21
PFDoS		0.82	0.72	0.78	0.79	0.87	0.80	0.75	0.82	0.79	5.78
4:2 FTS		0.49	0.46	0.49	0.49	0.46	0.45	0.42	0.40	0.46	7.07
6:2 FTS		0.54	0.49	0.48	0.47	0.50	0.46	0.48	0.42	0.48	7.21
8:2 FTS		0.36	0.36	0.32	0.32	0.34	0.34	0.32	0.27	0.33	8.80
PFOSA		1.03	0.91	0.92	0.89	0.89	0.88	0.89	0.88	0.91	5.60
N-MeFOSA		1.13	1.02	1.01	0.93	1.03	0.91	0.95	0.95	0.99	7.46
N-EtFOSA		1.15	1.13	1.15	1.09	1.15	1.14	1.11	1.17	1.14	2.40
MeFOSAA		0.82	0.71	0.84	0.87	0.92	0.86	0.89		0.84	7.89
EtFOSAA		0.76	0.63	0.71	0.80	0.79	0.77	0.77		0.75	7.93
N-MeFOSE		0.84	0.79	0.78	0.76	0.75	0.79	0.76	0.80	0.78	3.72
N-EtFOSE		1.01	1.08	1.03	1.07	1.02	1.02	1.04	0.99	1.03	2.85
3:3 FTCA		0.09	0.08	0.08	0.08	0.09	0.08	0.08	0.11	0.09	9.41
5:3 FTCA		0.16	0.15	0.15	0.14	0.15	0.15	0.15	0.16	0.15	3.52
7:3 FTCA		0.08	0.09	0.08	0.08	0.09	0.09	0.09	0.10	0.09	5.44

(1) Where applicable, custom lab flags have been used on this report.

(2) For contract CV specifications, see SGS AXYS METHOD MLA-111 Rev 03

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Henry Huang _____

SGS AXYS METHOD MLA-111 Rev 03

Form 3B

INITIAL CALIBRATION RELATIVE RESPONSES

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 11-Apr-2022

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
 CS1 Data Filename: FC2L_156 S: 13
 CS2 Data Filename: FC2L_156 S: 14
 CS3 Data Filename: FC2L_156 S: 15
 CS4 Data Filename: FC2L_156 S: 16
 CS5 Data Filename: FC2L_156 S: 17
 CS6 Data Filename: FC2L_156 S: 18
 CS7 Data Filename: FC2L_156 S: 19
 CS8 Data Filename: FC2L_156 S: 20

Labeled Compound	Lab Flag ¹	Relative Response (RR)								Mean RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
13C4-PFBA			1.17	1.22	1.16	1.16	1.19	1.16	1.19	1.18	1.18	1.72
13C5-PFPeA			0.81	0.83	0.77	0.71	0.76	0.93	0.75	0.69	0.78	9.57
13C5-PFHxA			0.75	0.69	0.72	0.67	0.70	0.83	0.69	0.70	0.72	6.89
13C4-PFHpA			3.43	3.37	3.08	3.71	3.41	3.43	3.46	3.41	3.41	4.92
13C8-PFOA			3.89	3.66	3.70	3.96	3.51	3.63	3.91	3.59	3.73	4.49
13C9-PFNA			1.05	1.07	1.03	1.05	1.11	1.07	1.05	1.09	1.06	2.43
13C6-PFDA			1.02	1.07	0.96	1.03	1.03	1.03	1.01	0.99	1.02	3.28
13C7-PFUnA			1.11	1.16	1.11	1.08	1.09	1.08	1.01		1.09	3.95
13C2-PFDoA			0.83	0.88	0.83	0.84	0.85	0.90	0.87	0.88	0.86	3.09
13C2-PFTeDA			0.73	0.75	0.68	0.66	0.69	0.71	0.68	0.73	0.70	4.58
13C3-PFBS			1.31	1.41	1.31	1.34	1.44	1.34	1.41	1.17	1.34	6.49
13C3-PFHxS			1.14	1.13	1.07	1.13	1.13	1.09	1.11	1.13	1.12	2.28
13C8-PFOS			0.98	1.01	1.00	0.93	0.92	0.96	1.01	1.00	0.98	3.84
13C2-4:2 FTS			1.09	1.14	1.07	0.97	1.00	0.98	0.95	0.88	1.01	8.29
13C2-6:2 FTS			1.01	1.00	1.01	0.93	0.91	0.93	0.93	0.97	0.96	4.25
13C2-8:2 FTS			1.42	1.45	1.37	1.27	1.24	1.22	1.29	1.27	1.32	6.52
13C8-PFOA			1.77	1.85	1.90	1.77	1.85	1.83	1.86	2.12	1.87	5.96
D3-N-MeFOSA			0.21	0.23	0.23	0.21	0.22	0.23	0.23	0.26	0.23	6.84
D5-N-EtFOSA			0.21	0.22	0.23	0.21	0.21	0.21	0.22	0.22	0.22	3.03
D3-MeFOSAA			0.68	0.74	0.74	0.65	0.69	0.72	0.78		0.71	6.19
D5-EtFOSAA			0.58	0.62	0.63	0.53	0.58	0.61	0.67		0.60	7.41
d7-NMe-FOSE			1.83	1.96	2.06	1.89	2.03	1.94	1.93	1.97	1.95	3.81
d9-NEt-FOSE			1.63	1.65	1.66	1.53	1.65	1.60	1.58	1.70	1.63	3.29

(1) Where applicable, custom lab flags have been used on this report.

(2) For contract CV specifications, see SGS AXYS METHOD MLA-111 Rev 03.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Henry Huang _____

SGS AXYS METHOD MLA-111 Rev 03

Form 3C
LC MS/MS INITIAL CALIBRATION RATIOS

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 11-Apr-2022

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A

CS1 Data Filename: FC2L_156 S: 13

CS2 Data Filename: FC2L_156 S: 14

CS3 Data Filename: FC2L_156 S: 15

CS4 Data Filename: FC2L_156 S: 16

CS5 Data Filename: FC2L_156 S: 17

CS6 Data Filename: FC2L_156 S: 18

CS7 Data Filename: FC2L_156 S: 19

CS8 Data Filename: FC2L_156 S: 20

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PFBA										
PFPeA										
PFHxA		6.05	5.62	5.38	4.93	5.14	4.62	4.97	5.19	
PFHpA		2.24	2.26	2.05	2.06	2.21	1.95	2.14	2.25	
PFOA		2.39	1.95	2.09	2.00	2.03	2.05	2.03	2.04	
PFNA		2.89	3.21	3.16	2.93	2.89	2.94	2.93	2.99	
PFDA		3.61	3.72	3.10	3.53	3.18	3.05	3.12	3.05	
PFUnA		5.71	4.82	4.60	4.64	4.55	4.77	4.55		
PFDoA		8.19	6.94	6.46	7.87	7.04	7.62	7.04	7.62	
PFTTrDA		2.95	3.32	3.13	3.20	3.19	3.12	3.16	3.20	
PFTeDA		3.16	2.93	2.95	2.73	2.72	2.78	2.74	2.84	
PFBS		3.08	2.79	2.44	2.54	2.66	2.72	2.63	2.51	
PFPeS		2.01	2.61	2.37	2.21	2.42	2.41	2.30	2.21	
PFHxS		1.86	2.17	2.12	2.30	2.41	2.33	2.39	2.38	
PFHpS		2.02	2.25	1.90	2.02	2.09	2.06	2.04	2.06	
PFOS		2.51	2.22	2.65	2.59	2.65	2.61	2.70	2.55	
PFNS		2.34	2.00	2.26	2.22	2.23	2.31	2.19	2.30	
PFDS		2.12	2.15	2.29	2.24	2.26	2.35	2.25	2.30	
PFDoS		2.30	2.13	2.19	2.18	2.37	2.35	2.25	2.26	
4:2 FTS		0.43	0.39	0.39	0.43	0.41	0.43	0.40	0.47	
6:2 FTS		0.52	0.45	0.46	0.45	0.45	0.43	0.44	0.42	
8:2 FTS		0.57	0.63	0.53	0.53	0.56	0.57	0.55	0.56	
PFOSA										
N-MeFOSA		0.60	0.59	0.51	0.50	0.56	0.49	0.53	0.53	
N-EtFOSA		0.53	0.51	0.53	0.51	0.52	0.51	0.52	0.50	
MeFOSAA		1.26	1.06	1.62	2.05	2.04	1.91	1.99		
EtFOSAA		1.36	1.10	1.18	1.13	1.22	1.22	1.22		
N-MeFOSE										
N-EtFOSE										
3:3 FTCA		1.85	1.84	1.93	1.95	1.99	1.98	1.98	2.02	
5:3 FTCA		1.34	1.26	1.37	1.26	1.27	1.27	1.25	1.27	
7:3 FTCA		0.66	0.67	0.67	0.68	0.67	0.68	0.67	0.68	

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____Henry Huang_____

SGS AXYS METHOD MLA-111 Rev 03

Form 3D
LC MS/MS INITIAL CALIBRATION RATIOS

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 11-Apr-2022

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC2L_156 S: 13
CS2 Data Filename: FC2L_156 S: 14
CS3 Data Filename: FC2L_156 S: 15
CS4 Data Filename: FC2L_156 S: 16
CS5 Data Filename: FC2L_156 S: 17
CS6 Data Filename: FC2L_156 S: 18
CS7 Data Filename: FC2L_156 S: 19
CS8 Data Filename: FC2L_156 S: 20

LABELED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C4-PFBA										
13C5-PFPeA										
13C5-PFHxA			23.5	22.8	24.1	22.5	21.7	23.4	22.9	20.9
13C4-PFHpA										
13C8-PFOA										
13C9-PFNA										
13C6-PFDA										
13C7-PFUnA										
13C2-PFDoA										
13C2-PFTeDA										
13C3-PFBS			2.60	2.66	2.57	2.65	2.86	2.73	2.68	2.60
13C3-PFHxS			2.44	2.39	2.30	2.29	2.38	2.34	2.31	2.37
13C8-PFOS			2.24	2.20	2.08	2.04	2.04	2.05	2.24	2.13
13C2-4:2 FTS			1.77	2.31	1.80	1.75	1.98	1.52	1.28	0.55
13C2-6:2 FTS			2.16	2.02	2.04	1.98	1.94	1.80	1.47	0.68
13C2-8:2 FTS			3.21	3.44	3.27	3.14	2.90	2.62	2.29	1.11
13C8-PFOA										
D3-N-MeFOSA										
D5-N-EtFOSA										
D3-MeFOSAA										
D5-EtFOSAA										
d7-NMe-FOSE										
d9-NEt-FOSE										

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____Henry Huang_____

SGS AXYS METHOD MLA-111 Rev 03

Form 4A

LC MS/MS CALIBRATION VERIFICATION

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 11-Apr-2022

VER Data Filename: FC2L_336 S: 37

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022

LC Column ID: C18

Analysis Time: 01:55:16

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.003	213 > 169		20.0	19.0	95.2
PFPeA		1.001	263 > 219		10.0	8.96	89.6
PFHxA		1.000	313 > 269	4.82	5.00	4.73	94.5
PFHpA		1.000	363 > 319	2.13	5.00	4.71	94.2
PFOA		1.000	413 > 369	2.10	5.00	4.80	95.9
PFNA		1.000	463 > 419	2.85	5.00	4.82	96.5
PFDA		1.000	513 > 469	3.04	5.00	4.27	85.4
PFUnA		1.000	563 > 519	4.48	5.00	4.75	95.1
PFDoA		1.000	613 > 569	7.39	4.06	4.11	101
PFTTrDA		0.958	663 > 619	3.13	5.00	4.94	98.8
PFTTeDA		1.000	713 > 669	2.70	5.00	4.58	91.5
PFBS		1.000	299 > 80	2.52	5.00	4.50	90.0
PFPeS		0.876	349 > 80	2.29	5.00	4.88	97.7
PFHxS		1.001	399 > 80	2.31	5.00	4.56	91.2
PFHpS		0.936	449 > 80	1.97	5.00	4.74	94.7
PFOS		1.000	499 > 80	2.47	5.00	4.55	91.1
PFNS		1.038	549 > 80	2.29	5.00	4.78	95.5
PFDS		1.072	599 > 80	2.31	5.00	5.05	101
PFDoS		1.167	699 > 80	2.38	5.00	4.92	98.4
4:2 FTS		1.000	327 > 307	0.42	20.0	20.1	101
6:2 FTS		1.000	427 > 407	0.43	18.0	17.6	97.9
8:2 FTS		1.000	527 > 507	0.55	17.0	17.2	102
PFOSA		1.000	498 > 78		5.00	4.81	96.1
N-MeFOSA		0.999	512 > 219	0.43	5.00	4.53	90.7
N-EtFOSA		1.000	526 > 219	0.55	14.0	15.1	108
MeFOSAA		1.000	570 > 419	1.95	5.00	5.12	102
EtFOSAA		1.001	584 > 419	1.15	5.00	4.49	89.7
N-MeFOSE		1.002	616 > 59		50.0	47.6	95.2
N-EtFOSE		1.002	630 > 59		50.0	48.8	97.6
3:3 FTCA		0.878	241 > 177	1.83	20.0	15.7	78.6
5:3 FTCA		1.050	341 > 237	1.29	125	134	107
7:3 FTCA		1.362	441 > 317	0.66	125	114	90.8

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

SGS AXYS METHOD MLA-111 Rev 03

Form 4B

LC MS/MS CALIBRATION VERIFICATION

SGS AXYS ANALYTICAL SERVICES

2045 MILLS RD., SIDNEY, B.C., CANADA
V8L 5X2 TEL (250) 655-5800 FAX (250) 655-5811

Initial Calibration Date: 11-Apr-2022

VER Data Filename: FC2L_336 S: 37

Instrument ID: LCMS/MS

Analysis Date: 11-Aug-2022

LC Column ID: C18

Analysis Time: 01:55:16

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	38.6	96.5
13C5-PFPeA		0.878	268 > 223		20.0	22.2	111
13C5-PFHxA		1.000	318 > 273	23.6	10.0	9.52	95.2
13C4-PFHpA		0.886	367 > 322		10.0	10.0	100
13C8-PFOA		1.000	421 > 376		10.0	9.76	97.6
13C9-PFNA		1.000	472 > 427		5.00	4.84	96.8
13C6-PFDA		1.000	519 > 474		5.00	4.90	97.9
13C7-PFUnA		1.040	570 > 525		5.00	4.74	94.7
13C2-PFDoA		1.072	615 > 570		5.00	4.52	90.4
13C2-PFTeDA		1.157	715 > 670		5.00	4.68	93.7
13C3-PFBS		0.790	302 > 80	2.69	10.0	9.99	99.7
13C3-PFHxS		0.999	402 > 80	2.35	10.0	9.88	98.7
13C8-PFOS		1.000	507 > 80	2.12	10.1	10.1	100
13C2-4:2 FTS		0.833	329 > 81	1.71	20.2	25.8	128
13C2-6:2 FTS		1.002	429 > 81	2.01	20.0	18.4	92.0
13C2-8:2 FTS		1.269	529 > 81	3.07	20.0	17.4	86.9
13C8-PFOSA		1.136	506 > 78		10.0	10.1	101
D3-N-MeFOSA		1.314	515 > 219		10.0	8.82	88.2
D5-N-EtFOSA		1.349	531 > 219		10.0	8.59	85.9
D3-MeFOSAA		1.307	573 > 419		20.0	18.0	90.0
D5-EtFOSAA		1.328	589 > 419		20.0	18.7	93.6
d7-NMe-FOSE		1.297	623 > 59		100	108	107
d9-NEt-FOSE		1.333	639 > 59		100	93.9	93.8

(1) Where applicable, custom lab flags have been used on this report.

These data are validated and reported as accurate and in accord with SGS AXYS Analytical Services Ltd. ISO17025 compliant quality assurance processes.

Signed: _____ Bryan Alonzo _____

Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-103 Rev. 65

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	CALA	Solids										Tissue and Tissue Flora	Urine	Water	Water, Non-Portable	AFF		
					Alaska DEC	ANAB DoD **	ANAB ISO 17025	CALA	California WB	Florida DOH	Maine DOH	Minnesota DOH	New Jersey DEP	New York DOH						Virginia DGS	Washington DE
PCB 4 2,2'-Dichlorobiphenyl	EPA 1668	MLA-010																			
	SGS AXYS MLA-010	MLA-010	Y		Y	Y															
	SGS AXYS MLA-210	MLA-210			Y	Y															
	SGS AXYS MLA-908	MLA-908			Y	Y				Y	Y										
	EPA 1628	MLA-908				Y															
	EPA 8270	MLA-007																			
	PCB 4/10	EPA 1668	MLA-010				Y	Y		Y	Y	Y	Y								
		SGS AXYS MLA-010	MLA-010	Y		Y	Y														
		EPA 8270	MLA-007										Y								
		SGS AXYS MLA-010	MLA-010			Y	Y						Y	Y							
		SGS AXYS MLA-007	MLA-007										Y								
		SGS AXYS MLA-210	MLA-210			Y	Y					Y	Y								
		SGS AXYS MLA-908	MLA-908			Y	Y					Y	Y								
		EPA 1628	MLA-908				Y														
		EPA 8270	MLA-007																		
		PCB 40 2,2',3,3'-Tetrachlorobiphenyl	EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y													
			EPA 8270	MLA-007																	
			SGS AXYS MLA-010	MLA-010			Y	Y						Y	Y						
			SGS AXYS MLA-007	MLA-007										Y							
SGS AXYS MLA-210			MLA-210			Y	Y						Y	Y							
SGS AXYS MLA-908			MLA-908			Y	Y						Y	Y							
EPA 1628			MLA-908				Y														
EPA 8270			MLA-007																		
PCB 41 2,2',3,4'-Tetrachlorobiphenyl			EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y						Y	Y						
	SGS AXYS MLA-210		MLA-210			Y	Y						Y	Y							
	SGS AXYS MLA-908		MLA-908			Y	Y						Y	Y							
	EPA 1628		MLA-908				Y														
	EPA 8270		MLA-007																		
	PCB 41/71/64/68		EPA 1668	MLA-010																	
			SGS AXYS MLA-007	MLA-007				Y													
			EPA 8270	MLA-010																	
			SGS AXYS MLA-010	MLA-010	Y		Y	Y						Y	Y						
			SGS AXYS MLA-007	MLA-007										Y							
		SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y							
		SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y							
		EPA 1628	MLA-908				Y														
		EPA 8270	MLA-007																		
		PCB 42 2,2',3,4'-Tetrachlorobiphenyl	EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y													
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
EPA 8270			MLA-007																		
PCB 42/59			EPA 1668	MLA-010																	
			SGS AXYS MLA-007	MLA-007				Y													
			EPA 8270	MLA-010																	
			SGS AXYS MLA-010	MLA-010	Y		Y	Y						Y	Y						
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
	SGS AXYS MLA-908		MLA-908			Y	Y						Y	Y							
	EPA 1628		MLA-908				Y														
	EPA 8270		MLA-007																		
	PCB 43 2,2',3,5'-Tetrachlorobiphenyl		EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y						Y	Y						
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
			EPA 8270	MLA-007																	
		PCB 44 2,2',3,5'-Tetrachlorobiphenyl	EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y						Y	Y						
			SGS AXYS MLA-007	MLA-007										Y							
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
EPA 8270			MLA-007																		
PCB 45 2,2',3,6'-Tetrachlorobiphenyl			EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y													
			SGS AXYS MLA-007	MLA-007																	
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
			EPA 8270	MLA-007																	
	PCB 46 2,2',3,6'-Tetrachlorobiphenyl		EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y													
			SGS AXYS MLA-007	MLA-007																	
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
		EPA 8270	MLA-007																		
		PCB 47 2,2',4,4'-Tetrachlorobiphenyl	EPA 1668	MLA-010					Y	Y		Y	Y	Y	Y						
			SGS AXYS MLA-010	MLA-010	Y		Y	Y													
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
			EPA 8270	MLA-007																	
PCB 47/48/75			EPA 1668	MLA-010																	
			SGS AXYS MLA-007	MLA-007				Y													
			EPA 8270	MLA-010																	
			SGS AXYS MLA-010	MLA-010	Y		Y	Y													
			SGS AXYS MLA-210	MLA-210			Y	Y						Y	Y						
			SGS AXYS MLA-908	MLA-908			Y	Y						Y	Y						
			EPA 1628	MLA-908				Y													
	EPA 8270		MLA-007																		
	PCB 48 2,2',4,5'-Tetrachlorobiphenyl		EPA 1668	MLA																	

Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-103 Rev. 65

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	Serum Solids											Tissue and Tissue Flora	Urine	Water	Water, Non-Portable	AFF									
				ALA	Alaska DEC	ANAB DoD **	ANAB ISO 17025	ALA	California WB	Florida DOH	Maine DOH	Minnesota DOH	New Jersey DEP	New York DOH	Virginia DGS	Washington DE	ANAB DoD **	ANAB ISO 17025	ALA	California WB	Florida DOH	Minnesota DOH	New Jersey DEP	New York DOH	Pennsylvania DEP	Virginia DGS	Washington DE **	ANAB DoD **
PCB 8 2,4-Dichlorobiphenyl	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
PCB 8/5	EPA 1668	MLA-010																										
	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
PCB 80 3,3',5,5'-Tetrachlorobiphenyl	EPA 8270	MLA-007																										
	SGS AXYS MLA-007	MLA-007																										
	EPA 1668	MLA-010																										
	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
PCB 81 3,4,4',5-Tetrachlorobiphenyl	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 1668	MLA-010																										
	EPA 8270	MLA-007																										
	SGS AXYS MLA-010	MLA-010	Y																									
PCB 82 2,2',3,3',4-Pentachlorobiphenyl	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 1668	MLA-010																										
	EPA 8270	MLA-007																										
PCB 83 2,2',3,3',5-Pentachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 1668	MLA-010																										
PCB 84 2,2',3,3',6-Pentachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 8270	MLA-007																										
PCB 85 2,2',3,4,4'-Pentachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 8270	MLA-007																										
PCB 86 2,2',3,4,5-Pentachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 1668	MLA-010																										
PCB 87 2,2',3,4,5'-Pentachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 8270	MLA-007																										
PCB 88 2,2',3,4,6-Pentachlorobiphenyl	SGS AXYS MLA-010	MLA-010	Y																									
	SGS AXYS MLA-210	MLA-210																										
	SGS AXYS MLA-908	MLA-908																										
	EPA 1628	MLA-908																										
	EPA 8270	MLA-007																										
PCB 88/121	EPA 8270	MLA-007																										
PCB 89 2,2',3,4,6'-Pentachlorobiphenyl	EPA 1668	MLA-010																										

Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-103 Rev. 65

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	Serum Solids	Tissue and Tissue Flora	Urine Water Water, Non-Portable
				CALA Alaska DEC ANAB DoD ** ANAB ISO 17025 CALA California WB Florida DOH Maine DOH Minnesota DOH New Jersey DEP New York DOH Virginia DGS Washington DE	ANAB DoD ** ANAB ISO 17025 CALA Florida DOH Minnesota DOH New Jersey DEP Virginia DGS	CALA CALA Alaska DEC ANAB DoD ** ANAB ISO 17025 California WB Florida DOH Maine DOH Minnesota DOH New Jersey DEP New York DOH Pennsylvania DEP Virginia DGS Washington DE * ANAB DoD ** ANAB ISO 17025
ANAB DoD	ANSI National Accreditation Board, certificate ADE-1861, (US DoD QSM 5.3 and 5.4 Standard)			 		
CALA	Canadian Association for Laboratory Accreditation Inc., Lab ID A2637, (ISO/IEC 17025:2017 Standard)			 		