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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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BATCH SUMMARY

Batch ID: WG79483	Date: 01-Feb-2022
Analysis Type: Per- and Polyfluoroalkyl Substances (PFAS)	Matrix Type: Biosolids human
BATCH MAKEUP	
Contract: 4066 Samples: L35979-1 SIWWTP-BIOS-1A (FA89217-1) - ISM L35979-2 LIWWTP-BIOS-1A (FA89217-2) - ISM L35979-3 LIWWTP-BIOS-1B (FA89217-3) - ISM L35979-4 LIWWTP-BIOS-1C (FA89217-4) - ISM L35979-5 HIWWTP-BIOS-1 (FA89217-5) - ISM L35979-6 KIWWTP-BIOS-1A (FA89217-6) - ISM L35979-7 KIWWTP-BIOS-1B (FA89217-7) - ISM L35979-8 KIWWTP-BIOS-1C (FA89217-8) - ISM	Blank: WG79483-101 Reference or Spike: WG79483-102 WG79483-103 Duplicate: WG79483-104
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. In the continuing calibration verification (FC2L_015 S:43), the surrogate compounds D3-MeFOSAA, D5-EtFOSAA, and D9-N-EtFOSE were observed outside the method control limits. As the target analytes MeFOSAA, EtFOSAA, and N-EtFOSE were observed within method specifications, this is deemed not to have any effect on the data. 5. In the continuing calibration verification (FC2L_015 S:43) ADONA was observed above the method control limits. As this analyte was not detected in the field samples, data are not considered to be affected. NFDHA was observed well below the method limit and is deemed not quantifiable; data are flagged as 'NQ'. 6. In the low level OPR (SGS AXYS ID: WG79483-102) ADONA was observed above the method control limit and is flagged with an 'N'. As this analyte was not detected in the client samples, this is deemed not to have any effect on the sample data. Data are not similarly affected. 7. Percent recoveries of several surrogates in the client samples were observed to be outside the method limits and these surrogates have been flagged with a 'V' on the report forms. As the isotope dilution method of quantification produces data that are recovery corrected, the slight variance from the method acceptance criteria is deemed not to affect the quantification of these analytes. Percent surrogate recoveries are used as a general method performance indicator only. 8. A Relative Percent Difference (RPD) value of above 40% was observed for PFHxA. Overall, the duplicate sample showed good reproducibility. 9. The reported concentration values represent the acid forms of the compounds. 	

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February 2017

L35979

Client ID	Axys ID	
SIWWTP-BIOS-1A (FA89217-1)	L35979-1	SIWWTP-BIOS-1A (FA89217-1) - ISM
SIWWTP-BIOS-1A (FA89217-2)	L35979-2	LIWWTP-BIOS-1A (FA89217-2) - ISM
SIWWTP-BIOS-1A (FA89217-3)	L35979-3	LIWWTP-BIOS-1B (FA89217-3) - ISM
SIWWTP-BIOS-1A (FA89217-4)	L35979-4	LIWWTP-BIOS-1C (FA89217-4) - ISM
SIWWTP-BIOS-1A (FA89217-5)	L35979-5	HIWWTP-BIOS-1 (FA89217-5) - ISM
SIWWTP-BIOS-1A (FA89217-6)	L35979-6	KIWWTP-BIOS-1A (FA89217-6) - ISM
SIWWTP-BIOS-1A (FA89217-7)	L35979-7	KIWWTP-BIOS-1B (FA89217-7) - ISM
SIWWTP-BIOS-1A (FA89217-8)	L35979-8	KIWWTP-BIOS-1C (FA89217-8) - ISM

(IDs corrected by DPR 23-Dec-21)

12:00

14-OCT-2021

Received by: 

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
SIWWTP-BIOS-1A (FA89217-1) -
ISM
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.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35979-1

Contract No.: 4066

Lab Sample I.D.:

Matrix: BIOSOLIDS HUMAN

Sample Size: 4.71 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022 Time: 12:51:56

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_015 S: 49

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture: 7.14

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.64 (Q)		
PFPeA	U		0.819 (Q)		
PFHxA	J	0.901	0.409 (Q)	4.63	1.000
PFHpA	U		0.409 (Q)		
PFOA	U		0.409 (Q)		
PFNA	U		0.409 (Q)		
PFDA	J	1.19	0.409 (Q)	2.43	1.001
PFUnA	J	0.995	0.409 (Q)	4.67	1.000
PFDoA	J	1.34	0.409 (Q)	9.22	1.000
PFTTrDA	J	0.892	0.409 (Q)	3.09	0.962
PFTeDA	J	0.720	0.409 (Q)	2.63	0.999
PFBS	U		1.50 (S)		
PFPeS	U		2.01 (S)		
PFHxS	U		3.23 (S)		
PFHpS	U		2.10 (S)		
PFOS	R	12.4	0.409 (Q)	4.43	
PFNS	U		0.409 (Q)		
PFDS	R	3.09	0.580 (S)	15.7	1.080
PFDoS	U		0.409 (Q)		
4:2 FTS	U		1.64 (Q)		
6:2 FTS	J	2.13	1.48 (Q)	0.29	0.999
8:2 FTS	U		1.64 (Q)		
PFOSA	J	1.36	0.409 (Q)		
N-MeFOSA	U		0.471 (Q)		
N-EtFOSA	U		1.02 (Q)		
MeFOSAA	R	2.10	0.409 (Q)	2.93	
EtFOSAA	R	3.06	0.409 (Q)	1.71	
N-MeFOSE	J	6.72	4.09 (Q)		
N-EtFOSE	U		3.06 (Q)		
HFPO-DA	U		1.56 (Q)		
ADONA	U		1.64 (Q)		
9CI-PF3ONS	U		1.64 (Q)		
11CI-PF3OUdS	U		1.64 (Q)		
3:3 FTCA	U		1.64 (Q)		
5:3 FTCA	J	29.6	10.2 (Q)	1.28	1.051
7:3 FTCA	U		10.2 (Q)		
PFEESA	U		0.409 (Q)		
PFMPA	U		0.819 (Q)		
PFMBA	U		0.409 (Q)		

NFDHA

NQ

(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; NQ = data not quantifiable.
(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: _____Jordan Berends_____

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SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
SIWWTP-BIOS-1A (FA89217-1) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

L35979-1

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.71 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 12:51:56

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 49

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture:

7.14

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Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	398	99.6		0.995
13C5-PFPeA		200	189	94.6		0.864
13C5-PFHxA		100	106	106	23.1	1.000
13C4-PFHpA		100	106	106		0.899
13C8-PFOA		100	93.8	93.8		1.000
13C9-PFNA		50.0	49.3	98.7		1.000
13C6-PFDA		50.0	51.1	102		0.999
13C7-PFUnA		50.0	29.0	57.9		1.044
13C2-PFDoA	V	50.0	18.0	35.9		1.081
13C2-PFTeDA	V	50.0	23.0	46.1		1.162
13C3-PFBS		100	113	112	2.83	0.806
13C3-PFHxS		100	103	102	2.35	1.000
13C8-PFOS		101	105	105	2.76	1.000
13C2-4:2 FTS		202	260	129	1.87	0.842
13C2-6:2 FTS		200	202	101	2.20	1.001
13C2-8:2 FTS		200	158	78.9	2.96	1.266
13C8-PFOA		100	68.1	68.1		1.161
D3-N-MeFOSA		100	37.6	37.6		1.349
D5-N-EtFOSA		100	27.3	27.3		1.387
D3-MeFOSAA	V	200	63.6	31.8		1.312
D5-EtFOSAA	V	200	34.6	17.3		1.332
d7-NMe-FOSE		1000	355	35.5		1.332
d9-NEt-FOSE	V	1000	203	20.3		1.370
13C3-HFPO-DA		400	317	79.3	3.25	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LIWWTP-BIOS-1A (FA89217-2) -
ISM
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.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35979-2

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.63 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:05:18

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 50

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

9.05

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COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.72 (Q)		
PFPeA	U		0.860 (Q)		
PFHxA		5.55	0.430 (Q)	5.65	1.000
PFHpA	U		0.430 (Q)		
PFOA		1.88	0.430 (Q)	1.63	
PFNA	J	0.682	0.430 (Q)	3.55	
PFDA		7.65	0.430 (Q)	3.11	1.000
PFUnA		2.15	0.430 (Q)	3.69	1.000
PFDoA		6.29	0.430 (Q)	5.79	1.000
PFTTrDA		1.86	0.430 (Q)	2.52	0.963
PFTeDA		2.75	0.431 (S)	2.58	0.999
PFBS	J	0.892	0.430 (Q)	26.6	1.001
PFPeS	U		0.566 (S)		
PFHxS	U		0.661 (S)		
PFHpS	U		0.643 (S)		
PFOS		23.3	0.516 (S)	2.85	
PFNS	U		0.430 (Q)		
PFDS	R	3.71	0.430 (Q)	4.54	1.081
PFDoS	U		0.430 (Q)		
4:2 FTS	U		1.72 (Q)		
6:2 FTS	J	4.24	1.55 (Q)	0.39	1.000
8:2 FTS	U		1.72 (Q)		
PFOSA		1.74	0.430 (Q)		
N-MeFOSA	U		0.494 (Q)		
N-EtFOSA	U		1.07 (Q)		
MeFOSAA		12.0	0.430 (Q)	1.97	
EtFOSAA		8.34	0.430 (Q)	1.33	
N-MeFOSE		18.8	4.30 (Q)		
N-EtFOSE	J	7.51	3.22 (Q)		
HFPO-DA	U		1.63 (Q)		
ADONA	U		1.72 (Q)		
9CI-PF3ONS	U		1.72 (Q)		
11CI-PF3OUdS	U		1.72 (Q)		
3:3 FTCA	U		1.72 (Q)		
5:3 FTCA		56.6	10.7 (Q)	1.11	1.048
7:3 FTCA	J	21.9	10.7 (Q)	0.70	1.336
PFEESA	U		0.430 (Q)		
PFMPA	U		0.860 (Q)		
PFMBA	U		0.430 (Q)		

NFDHA

NQ

(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; NQ = data not quantifiable.
(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: _____Jordan Berends_____

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SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
LIWWTP-BIOS-1A (FA89217-2) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

L35979-2

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.63 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:05:18

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 50

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture:

9.05

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LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	368	91.9		0.995
13C5-PFPeA		200	168	84.0		0.863
13C5-PFHxA		100	93.2	93.2	27.7	1.001
13C4-PFHpA		100	103	103		0.899
13C8-PFOA		100	88.7	88.7		0.999
13C9-PFNA		50.0	44.5	88.9		1.000
13C6-PFDA		50.0	44.4	88.8		1.000
13C7-PFUnA		50.0	32.7	65.3		1.047
13C2-PFDoA	V	50.0	22.0	44.0		1.082
13C2-PFTeDA	V	50.0	16.9	33.8		1.162
13C3-PFBS		100	94.7	94.4	2.71	0.807
13C3-PFHxS		100	96.2	96.0	2.23	1.000
13C8-PFOS		101	92.5	92.0	2.44	1.000
13C2-4:2 FTS		202	225	112	1.89	0.841
13C2-6:2 FTS		200	190	95.0	2.13	1.001
13C2-8:2 FTS		200	160	79.7	3.25	1.266
13C8-PFOA		100	63.9	63.9		1.158
D3-N-MeFOSA		100	27.4	27.4		1.346
D5-N-EtFOSA	V	100	22.1	22.1		1.384
D3-MeFOSAA	V	200	79.1	39.6		1.314
D5-EtFOSAA	V	200	52.6	26.3		1.335
d7-NMe-FOSE		1000	380	38.0		1.329
d9-NEt-FOSE	V	1000	205	20.5		1.367
13C3-HFPO-DA		400	310	77.6	2.76	1.031

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.
LIWWTP-BIOS-1B (FA89217-3) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

L35979-3

Matrix: BIOSOLIDS HUMAN

Sample Size:

3.68 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:18:40

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 51

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

27.3

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		2.15 (Q)		
PFPeA	U		1.08 (Q)		
PFHxA		4.16	0.538 (Q)	4.95	1.001
PFHpA	U		0.538 (Q)		
PFOA	J	1.61	0.538 (Q)	1.57	
PFNA	J	0.710	0.626 (S)	3.18	
PFDA		7.19	0.538 (Q)	3.31	1.000
PFUnA		2.25	0.538 (Q)	4.20	0.999
PFDoA		7.85	0.538 (Q)	8.33	1.000
PFTTrDA		2.44	0.538 (Q)	3.05	0.962
PFTeDA		2.89	0.538 (Q)	2.69	1.000
PFBS	U		0.538 (Q)		
PFPeS	U		1.06 (S)		
PFHxS	U		0.538 (Q)		
PFHpS	U		0.538 (Q)		
PFOS		25.6	0.538 (Q)	2.68	
PFNS	U		0.538 (Q)		
PFDS	R	4.61	0.538 (Q)	4.60	1.082
PFDoS	U		0.538 (Q)		
4:2 FTS	U		2.15 (Q)		
6:2 FTS	J	3.81	1.94 (Q)	0.46	1.000
8:2 FTS	U		2.15 (Q)		
PFOSA	J	1.93	0.538 (Q)		
N-MeFOSA	J	0.770	0.619 (Q)	0.75	
N-EtFOSA	U		1.35 (Q)		
MeFOSAA		12.1	0.538 (Q)	1.82	
EtFOSAA		8.35	0.538 (Q)	1.38	
N-MeFOSE	J	16.7	5.38 (Q)		
N-EtFOSE	J	8.63	4.03 (Q)		
HFPO-DA	U		2.05 (Q)		
ADONA	U		2.15 (Q)		
9CI-PF3ONS	U		2.16 (Q)		
11CI-PF3OUdS	U		2.16 (Q)		
3:3 FTCA	U		2.15 (Q)		
5:3 FTCA		63.9	13.5 (Q)	1.12	1.049
7:3 FTCA	J	23.3	13.5 (Q)	0.72	1.338
PFEESA	U		0.538 (Q)		
PFMPA	U		1.08 (Q)		
PFMBA	U		0.538 (Q)		

NFDHA

NQ

(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; NQ = data not quantifiable.
(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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-3_Form1A_FC2L_015S51_SJ3014986.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
LIWWTP-BIOS-1B (FA89217-3) -
ISMSample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)
L35979-3

Contract No.: 4066

Lab Sample I.D.:

Matrix: BIOSOLIDS HUMAN

Sample Size: 3.68 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:18:40

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_015 S: 51

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture: 27.3

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	378	94.4		1.000
13C5-PFPeA		200	157	78.7		0.861
13C5-PFHxA		100	96.4	96.4	21.3	1.000
13C4-PFHpA		100	95.3	95.3		0.898
13C8-PFOA		100	85.0	85.0		0.999
13C9-PFNA		50.0	49.0	98.0		1.001
13C6-PFDA		50.0	50.4	101		1.000
13C7-PFUnA		50.0	31.2	62.5		1.047
13C2-PFDoA	V	50.0	22.0	44.1		1.081
13C2-PFTeDA	V	50.0	16.7	33.3		1.161
13C3-PFBS		100	103	103	2.75	0.808
13C3-PFHxS		100	96.7	96.6	2.36	1.001
13C8-PFOS		101	86.4	85.9	2.02	0.999
13C2-4:2 FTS		202	213	106	1.89	0.841
13C2-6:2 FTS		200	193	96.6	2.03	1.001
13C2-8:2 FTS		200	166	82.9	3.14	1.264
13C8-PFOA		100	60.8	60.8		1.158
D3-N-MeFOSA		100	30.7	30.7		1.346
D5-N-EtFOSA	V	100	21.2	21.2		1.384
D3-MeFOSAA	V	200	74.1	37.1		1.313
D5-EtFOSAA	V	200	41.9	21.0		1.334
d7-NMe-FOSE		1000	386	38.6		1.329
d9-NEt-FOSE	V	1000	217	21.7		1.367
13C3-HFPO-DA		400	315	78.7	2.82	1.031

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LIWWTP-BIOS-1C (FA89217-4) -
ISM
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.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35979-4

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.54 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:32:01

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 52

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

9.88

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.69 (Q)		
PFPeA	U		0.844 (Q)		
PFHxA		4.24	0.422 (Q)	3.86	1.000
PFHpA	U		0.422 (Q)		
PFOA		2.11	0.422 (Q)	1.82	
PFNA	U		0.422 (Q)		
PFDA		7.49	0.422 (Q)	3.17	1.000
PFUnA		2.58	0.422 (Q)	4.38	1.000
PFDoA		6.67	0.422 (Q)	6.43	1.000
PFTTrDA		1.96	0.422 (Q)	3.72	0.963
PFTeDA		2.51	0.422 (Q)	3.22	1.000
PFBS	J	0.706	0.422 (Q)	34.1	1.001
PFPeS	U		1.84 (S)		
PFHxS	U		0.744 (S)		
PFHpS	U		0.422 (Q)		
PFOS		23.9	0.422 (Q)	2.79	
PFNS	U		0.422 (Q)		
PFDS	R	3.91	0.422 (Q)	4.09	1.081
PFDoS	U		0.422 (Q)		
4:2 FTS	U		1.69 (Q)		
6:2 FTS	J	3.39	1.52 (Q)	0.40	1.001
8:2 FTS	U		1.69 (Q)		
PFOSA		1.82	0.422 (Q)		
N-MeFOSA	U		0.485 (Q)		
N-EtFOSA	U		1.06 (Q)		
MeFOSAA		13.9	0.422 (Q)	2.04	
EtFOSAA		6.41	0.623 (S)	1.44	
N-MeFOSE	J	14.2	4.22 (Q)		
N-EtFOSE	J	7.92	3.16 (Q)		
HFPO-DA	U		1.60 (Q)		
ADONA	U		1.69 (Q)		
9CI-PF3ONS	U		1.69 (Q)		
11CI-PF3OUdS	U		1.69 (Q)		
3:3 FTCA	U		1.69 (Q)		
5:3 FTCA	J	35.6	10.6 (Q)	0.98	1.050
7:3 FTCA	J	17.1	10.6 (Q)	0.71	1.333
PFEESA	U		0.422 (Q)		
PFMPA	U		0.844 (Q)		
PFMBA	U		0.422 (Q)		

NFDHA

NQ

(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; NQ = data not quantifiable.
(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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-4_Form1A_FC2L_015S52_SJ3014987.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
LIWWTP-BIOS-1C (FA89217-4) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

L35979-4

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.54 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:32:01

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 52

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture:

9.88

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	383	95.6		0.995
13C5-PFPeA		200	177	88.6		0.861
13C5-PFHxA		100	93.9	93.9	20.7	1.000
13C4-PFHpA		100	109	109		0.900
13C8-PFOA		100	88.2	88.2		1.000
13C9-PFNA		50.0	47.6	95.3		0.999
13C6-PFDA		50.0	48.2	96.4		1.000
13C7-PFUnA		50.0	33.7	67.3		1.048
13C2-PFDoA		50.0	25.0	49.9		1.082
13C2-PFTeDA	V	50.0	16.0	32.0		1.161
13C3-PFBS		100	103	103	2.77	0.808
13C3-PFHxS		100	92.2	92.1	2.27	1.001
13C8-PFOS		101	101	100	2.29	1.000
13C2-4:2 FTS		202	223	111	2.02	0.841
13C2-6:2 FTS		200	196	98.1	1.99	1.000
13C2-8:2 FTS		200	162	81.0	3.25	1.266
13C8-PFOA		100	70.8	70.8		1.157
D3-N-MeFOSA		100	34.5	34.5		1.344
D5-N-EtFOSA		100	24.6	24.6		1.383
D3-MeFOSAA	V	200	80.1	40.0		1.314
D5-EtFOSAA	V	200	57.7	28.8		1.337
d7-NMe-FOSE		1000	414	41.4		1.327
d9-NEt-FOSE	V	1000	215	21.5		1.366
13C3-HFPO-DA		400	299	74.8	2.46	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HIWWTP-BIOS-1 (FA89217-5) -
ISM
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

Contract No.: 4066

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35979-5

Lab Sample I.D.:

Matrix: BIOSOLIDS HUMAN

Sample Size: 4.54 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:45:22

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_015 S: 53

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture: 10.4

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.69 (Q)		
PFPeA	U		0.845 (Q)		
PFHxA		2.03	0.423 (Q)	4.39	1.000
PFHpA	U		0.423 (Q)		
PFOA	J	0.643	0.423 (Q)	1.88	
PFNA	U		0.423 (Q)		
PFDA		1.95	0.423 (Q)	3.85	1.000
PFUnA	J	1.23	0.423 (Q)	4.87	1.000
PFDoA		3.17	0.423 (Q)	6.51	1.000
PFTTrDA	J	1.31	0.423 (Q)	2.89	0.962
PFTeDA	J	1.53	0.423 (Q)	2.39	0.999
PFBS	U		0.423 (Q)		
PFPeS	U		1.00 (S)		
PFHxS	U		0.855 (S)		
PFHpS	U		1.74 (S)		
PFOS		6.66	0.423 (Q)	3.57	
PFNS	U		0.423 (Q)		
PFDS	R	4.20	0.708 (S)	6.57	1.080
PFDoS	U		0.423 (Q)		
4:2 FTS	U		1.69 (Q)		
6:2 FTS	U		1.52 (Q)		
8:2 FTS	U		1.69 (Q)		
PFOSA	J	0.915	0.423 (Q)		
N-MeFOSA	U		0.486 (Q)		
N-EtFOSA	U		1.06 (Q)		
MeFOSAA		5.06	0.423 (Q)	1.73	
EtFOSAA		3.42	0.423 (Q)	1.13	
N-MeFOSE	J	12.6	4.23 (Q)		
N-EtFOSE	J	6.23	3.16 (Q)		
HFPO-DA	U		1.61 (Q)		
ADONA	U		1.69 (Q)		
9CI-PF3ONS	U		1.69 (Q)		
11CI-PF3OUdS	U		1.69 (Q)		
3:3 FTCA	U		1.69 (Q)		
5:3 FTCA	J	22.3	10.6 (Q)	1.21	1.049
7:3 FTCA	J	11.2	10.6 (Q)	0.71	1.339
PFEESA	U		0.423 (Q)		
PFMPA	U		0.845 (Q)		
PFMBA	U		0.423 (Q)		

NFDHA

NQ

(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; NQ = data not quantifiable.
(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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-5_Form1A_FC2L_015S53_SJ3014988.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
HIWWTP-BIOS-1 (FA89217-5) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

L35979-5

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.54 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:45:22

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 53

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture:

10.4

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	388	96.9		0.995
13C5-PFPeA		200	176	87.9		0.862
13C5-PFHxA		100	102	102	25.9	1.000
13C4-PFHpA		100	108	108		0.899
13C8-PFOA		100	97.4	97.4		1.000
13C9-PFNA		50.0	48.4	96.8		1.001
13C6-PFDA		50.0	51.5	103		1.000
13C7-PFUnA		50.0	37.2	74.3		1.047
13C2-PFDoA	V	50.0	23.8	47.6		1.082
13C2-PFTeDA		50.0	25.0	49.9		1.161
13C3-PFBS		100	100	99.8	2.78	0.807
13C3-PFHxS		100	98.7	98.5	2.30	1.000
13C8-PFOS		101	105	105	2.52	1.000
13C2-4:2 FTS		202	254	126	2.04	0.841
13C2-6:2 FTS		200	197	98.7	2.11	1.001
13C2-8:2 FTS		200	175	87.5	3.10	1.266
13C8-PFOA		100	79.2	79.2		1.159
D3-N-MeFOSA		100	33.5	33.5		1.346
D5-N-EtFOSA		100	28.3	28.3		1.384
D3-MeFOSAA	V	200	74.8	37.4		1.313
D5-EtFOSAA	V	200	58.8	29.4		1.337
d7-NMe-FOSE	V	1000	318	31.8		1.328
d9-NEt-FOSE	V	1000	231	23.1		1.367
13C3-HFPO-DA		400	299	74.8	2.72	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-BIOS-1A (FA89217-6) -
ISM
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.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35979-6

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.49 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:58:43

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 54

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

11.7

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.71 (Q)		
PFPeA		4.77	0.856 (Q)		0.998
PFHxA		3.53	0.428 (Q)	5.39	1.001
PFHpA		0.723	0.428 (Q)	2.63	1.000
PFOA		7.47	0.428 (Q)	1.93	
PFNA		1.23	0.428 (Q)	3.91	
PFDA		18.8	0.428 (Q)	2.86	1.000
PFUnA		1.60	0.428 (Q)	3.80	0.999
PFDoA		10.1	0.428 (Q)	6.59	1.000
PFTTrDA		1.48	0.428 (Q)	3.54	0.964
PFTeDA		3.34	0.428 (Q)	2.76	1.001
PFBS		1.30	0.428 (Q)	4.53	1.001
PFPeS	U		0.430 (Q)		
PFHxS	U		0.428 (Q)		
PFHpS	U		0.428 (Q)		
PFOS		10.1	0.428 (Q)	2.28	
PFNS	U		0.428 (Q)		
PFDS	U		0.428 (Q)		
PFDoS	U		0.428 (Q)		
4:2 FTS	U		1.71 (Q)		
6:2 FTS	U		1.54 (Q)		
8:2 FTS	U		1.71 (Q)		
PFOSA		0.529	0.428 (Q)		
N-MeFOSA	R	0.806	0.492 (Q)	1.41	
N-EtFOSA	U		1.07 (Q)		
MeFOSAA		3.82	0.428 (Q)	2.17	
EtFOSAA		2.85	0.428 (Q)	1.05	
N-MeFOSE	X				
N-EtFOSE	U		3.20 (Q)		
HFPO-DA	U		1.63 (Q)		
ADONA	U		1.71 (Q)		
9CI-PF3ONS	U		1.72 (Q)		
11CI-PF3OUdS	U		1.71 (Q)		
3:3 FTCA	U		1.71 (Q)		
5:3 FTCA		26.9	10.7 (Q)	1.25	1.049
7:3 FTCA		15.0	10.7 (Q)	0.81	1.339
PFEESA	U		0.428 (Q)		
PFMPA	U		0.856 (Q)		
PFMBA	U		0.428 (Q)		

NFDHA

NQ

- (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; X = result reported separately; NQ = data not quantifiable.
- (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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-6_Form1A_FC2L_015S54_SJ3014989.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
KIWWTP-BIOS-1A (FA89217-6) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)
L35979-6

Contract No.: 4066

Lab Sample I.D.:

Matrix: BIOSOLIDS HUMAN

Sample Size: 4.49 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022 Time: 13:58:43

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_015 S: 54

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture: 11.7

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	378	94.5		0.994
13C5-PFPeA		200	167	83.4		0.863
13C5-PFHxA		100	102	102	22.4	0.999
13C4-PFHpA		100	103	103		0.898
13C8-PFOA		100	88.6	88.6		1.000
13C9-PFNA		50.0	45.4	90.8		1.001
13C6-PFDA		50.0	48.5	97.0		0.999
13C7-PFUnA		50.0	41.5	83.1		1.049
13C2-PFDoA		50.0	34.3	68.6		1.082
13C2-PFTeDA	V	50.0	20.0	39.9		1.157
13C3-PFBS		100	96.6	96.3	2.62	0.806
13C3-PFHxS		100	96.3	96.1	2.33	1.000
13C8-PFOS		101	112	111	2.20	1.000
13C2-4:2 FTS		202	238	118	1.87	0.841
13C2-6:2 FTS		200	207	104	2.15	1.001
13C2-8:2 FTS		200	152	75.9	3.02	1.266
13C8-PFOA		100	120	120		1.155
D3-N-MeFOSA		100	35.8	35.8		1.343
D5-N-EtFOSA		100	26.1	26.1		1.381
D3-MeFOSAA		200	120	60.0		1.314
D5-EtFOSAA		200	135	67.3		1.342
d7-NMe-FOSE	X					
d9-NEt-FOSE	V	1000	239	23.9		1.364
13C3-HFPO-DA		400	315	78.8	2.94	1.030

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

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-BIOS-1A (FA89217-6) -
ISM
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.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35979-6 N

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.49 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 19-Jan-2022 Time: 13:46:43

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_022 S: 25

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: 3

Cal. Ver. Data Filename:

FC2L_022 S: 16

Concentration Units: ng/g (dry weight basis)

% Moisture:

11.7

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	X				
PFPeA	X				
PFHxA	X				
PFHpA	X				
PFOA	X				
PFNA	X				
PFDA	X				
PFUnA	X				
PFDoA	X				
PFTTrDA	X				
PFTeDA	X				
PFBS	X				
PFPeS	X				
PFHxS	X				
PFHpS	X				
PFOS	X				
PFNS	X				
PFDS	X				
PFDoS	X				
4:2 FTS	X				
6:2 FTS	X				
8:2 FTS	X				
PFOSA	X				
N-MeFOSA	X				
N-EtFOSA	X				
MeFOSAA	X				
EtFOSAA	X				
N-MeFOSE	U D		12.8 (Q)		
N-EtFOSE	X				
HFPO-DA	X				
ADONA	X				
9CI-PF3ONS	X				
11CI-PF3OUdS	X				
3:3 FTCA	X				
5:3 FTCA	X				
7:3 FTCA	X				
PFEESA	X				
PFMPA	X				
PFMBA	X				

NFDHA

NQ

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; D = dilution data; X = result reported separately; NQ = data not quantifiable.
- (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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-6_Form1A_FC2L_022S25_SJ3020548.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
KIWWTP-BIOS-1A (FA89217-6) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4066

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)
L35979-6 N

Lab Sample I.D.:

Matrix: BIOSOLIDS HUMAN

Sample Size: 4.49 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 19-Jan-2022 Time: 13:46:43

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_022 S: 25

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: 3

Cal. Ver. Data Filename: FC2L_022 S: 16

Concentration Units: ng absolute

% Moisture: 11.7

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA	X					
13C5-PFPeA	X					
13C5-PFHxA	X					
13C4-PFHpA	X					
13C8-PFOA	X					
13C9-PFNA	X					
13C6-PFDA	X					
13C7-PFUnA	X					
13C2-PFDoA	X					
13C2-PFTeDA	X					
13C3-PFBS	X					
13C3-PFHxS	X					
13C8-PFOS	X					
13C2-4:2 FTS	X					
13C2-6:2 FTS	X					
13C2-8:2 FTS	X					
13C8-PFOA	X					
D3-N-MeFOSA	X					
D5-N-EtFOSA	X					
D3-MeFOSAA	X					
D5-EtFOSAA	X					
d7-NMe-FOSE	D V	1000	288	28.8		1.324
d9-NEt-FOSE	X					
13C3-HFPO-DA	X					

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

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-BIOS-1B (FA89217-7) -
ISM
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.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Contract No.: 4066

Lab Sample I.D.:

L35979-7

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.48 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 14:12:05

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 55

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

12.2

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.79 (Q)		
PFPeA		4.07	0.894 (Q)		0.999
PFHxA	R	4.37	0.448 (S)	7.40	1.000
PFHpA	J	0.808	0.447 (Q)	2.31	1.000
PFOA		6.92	0.447 (Q)	1.99	
PFNA	J	1.08	0.447 (Q)	3.04	
PFDA		20.4	0.447 (Q)	3.19	1.000
PFUnA	J	1.53	0.447 (Q)	4.64	1.000
PFDoA		10.3	0.447 (Q)	7.06	0.999
PFTTrDA	J	1.47	0.447 (Q)	3.39	0.963
PFTeDA		3.13	0.588 (S)	2.57	1.001
PFBS		2.17	0.447 (Q)	3.80	0.999
PFPeS	U		0.449 (Q)		
PFHxS	U		0.447 (Q)		
PFHpS	U		0.447 (Q)		
PFOS		11.0	0.447 (Q)	2.36	
PFNS	U		0.447 (Q)		
PFDS	U		0.447 (Q)		
PFDoS	U		0.447 (Q)		
4:2 FTS	U		1.79 (Q)		
6:2 FTS	U		1.61 (Q)		
8:2 FTS	U		1.79 (Q)		
PFOSA	J	0.549	0.447 (Q)		
N-MeFOSA	U		0.514 (Q)		
N-EtFOSA	U		1.12 (Q)		
MeFOSAA		3.72	0.447 (Q)	1.88	
EtFOSAA		3.42	0.447 (Q)	1.16	
N-MeFOSE	U		4.47 (Q)		
N-EtFOSE	U		3.34 (Q)		
HFPO-DA	U		1.70 (Q)		
ADONA	U		1.79 (Q)		
9CI-PF3ONS	U		1.79 (Q)		
11CI-PF3OUdS	U		1.79 (Q)		
3:3 FTCA	U		1.79 (Q)		
5:3 FTCA	J	34.4	11.2 (Q)	1.14	1.049
7:3 FTCA	J	17.7	11.2 (Q)	0.71	1.337
PFEESA	U		0.447 (Q)		
PFMPA	U		0.894 (Q)		
PFMBA	U		0.447 (Q)		

NFDHA

NQ

(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; NQ = data not quantifiable.
(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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-7_Form1A_FC2L_015S55_SJ3014990.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
KIWWTP-BIOS-1B (FA89217-7) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)
L35979-7

Contract No.: 4066

Lab Sample I.D.:

Matrix: BIOSOLIDS HUMAN

Sample Size: 4.48 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022 Time: 14:12:05

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_015 S: 55

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture: 12.2

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	380	95.0		0.994
13C5-PFPeA		200	170	84.8		0.863
13C5-PFHxA		100	73.0	73.0	17.2	1.000
13C4-PFHpA		100	100	100		0.898
13C8-PFOA		100	86.2	86.2		0.999
13C9-PFNA		50.0	46.3	92.6		1.000
13C6-PFDA		50.0	49.2	98.4		1.000
13C7-PFUnA		50.0	44.2	88.4		1.049
13C2-PFDoA		50.0	38.0	76.0		1.085
13C2-PFTeDA	V	50.0	21.2	42.4		1.160
13C3-PFBS		100	104	104	2.93	0.805
13C3-PFHxS		100	99.6	99.5	2.29	0.998
13C8-PFOS		101	103	102	2.09	1.000
13C2-4:2 FTS		202	208	103	2.05	0.841
13C2-6:2 FTS		200	192	96.3	2.13	1.000
13C2-8:2 FTS		200	160	79.9	3.17	1.267
13C8-PFOA		100	82.5	82.5		1.155
D3-N-MeFOSA		100	30.1	30.1		1.343
D5-N-EtFOSA	V	100	20.2	20.2		1.381
D3-MeFOSAA		200	117	58.7		1.314
D5-EtFOSAA		200	128	64.0		1.342
d7-NMe-FOSE	V	1000	244	24.4		1.326
d9-NEt-FOSE	V	1000	227	22.7		1.364
13C3-HFPO-DA		400	299	74.7	3.47	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-BIOS-1C (FA89217-8) -
ISM
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

Contract No.: 4066

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Lab Sample I.D.:

L35979-8 (A)

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.17 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 14:25:26

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 56

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

17.4

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.92 (Q)		
PFPeA		5.05	0.958 (Q)		1.000
PFHxA		2.79	0.479 (Q)	2.87	0.999
PFHpA	J	0.846	0.479 (Q)	2.53	0.999
PFOA		7.47	0.479 (Q)	1.97	
PFNA	J	1.24	0.479 (Q)	3.60	
PFDA		19.8	0.479 (Q)	2.92	1.000
PFUnA	J	1.76	0.479 (Q)	4.22	1.000
PFDoA		10.5	0.479 (Q)	7.08	1.000
PFTTrDA	J	1.35	0.479 (Q)	4.16	0.963
PFTeDA		3.19	0.479 (Q)	2.36	0.999
PFBS		2.12	0.479 (Q)	3.17	1.000
PFPeS	U		0.482 (Q)		
PFHxS	U		0.479 (Q)		
PFHpS	U		0.479 (Q)		
PFOS		11.0	0.479 (Q)	2.41	
PFNS	U		0.479 (Q)		
PFDS	U		0.479 (Q)		
PFDoS	U		0.479 (Q)		
4:2 FTS	U		1.92 (Q)		
6:2 FTS	U		1.73 (Q)		
8:2 FTS	U		1.92 (Q)		
PFOSA	J	0.573	0.479 (Q)		
N-MeFOSA	U		0.551 (Q)		
N-EtFOSA	U		1.20 (Q)		
MeFOSAA		3.28	0.479 (Q)	2.04	
EtFOSAA		3.24	0.479 (Q)	1.19	
N-MeFOSE	U		4.79 (Q)		
N-EtFOSE	U		3.58 (Q)		
HFPO-DA	U		1.82 (Q)		
ADONA	U		1.92 (Q)		
9CI-PF3ONS	U		1.92 (Q)		
11CI-PF3OUdS	U		1.92 (Q)		
3:3 FTCA	U		1.92 (Q)		
5:3 FTCA	J	34.8	12.0 (Q)	1.22	1.048
7:3 FTCA	J	17.4	12.0 (Q)	0.69	1.338
PFEESA	U		0.479 (Q)		
PFMPA	U		0.958 (Q)		
PFMBA	U		0.479 (Q)		

NFDHA

NQ

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

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_L35979-8_Form1A_FC2L_015S56_SJ3014991.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
KIWWTP-BIOS-1C (FA89217-8) -
ISM
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

L35979-8 (A)

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.17 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 14:25:26

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 56

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture:

17.4

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	374	93.6		0.995
13C5-PFPeA		200	145	72.7		0.863
13C5-PFHxA		100	89.6	89.6	21.3	1.000
13C4-PFHpA		100	104	104		0.899
13C8-PFOA		100	87.2	87.2		0.999
13C9-PFNA		50.0	45.5	91.0		1.000
13C6-PFDA		50.0	50.5	101		1.000
13C7-PFUnA		50.0	44.2	88.4		1.049
13C2-PFDoA		50.0	37.5	75.1		1.084
13C2-PFTeDA	V	50.0	22.7	45.5		1.160
13C3-PFBS		100	97.6	97.3	3.17	0.807
13C3-PFHxS		100	96.8	96.6	2.39	1.000
13C8-PFOS		101	100	99.4	2.09	1.000
13C2-4:2 FTS		202	230	114	2.29	0.841
13C2-6:2 FTS		200	195	97.7	2.11	1.000
13C2-8:2 FTS		200	159	79.4	3.27	1.266
13C8-PFOA		100	82.8	82.8		1.155
D3-N-MeFOSA		100	32.6	32.6		1.343
D5-N-EtFOSA	V	100	22.6	22.6		1.381
D3-MeFOSAA		200	116	58.1		1.314
D5-EtFOSAA		200	132	66.2		1.342
d7-NMe-FOSE	V	1000	236	23.6		1.326
d9-NEt-FOSE	V	1000	249	24.9		1.364
13C3-HFPO-DA		400	314	78.5	4.38	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
KIWWTP-BIOS-1C (FA89217-8) -
ISM (Duplicate)
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

Contract No.: 4066

Project No.

HDOH - PFAS IN MULTIMEDIA
(TO-17403)

Lab Sample I.D.:

WG79483-104 (DUP L35979-8)

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.32 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 14:38:47

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 57

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g (dry weight basis)

% Moisture:

14.8

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.84 (Q)		
PFPeA	J	3.55	0.922 (Q)		1.002
PFHxA		4.28	0.461 (Q)	5.74	1.000
PFHpA	J	0.767	0.461 (Q)	2.52	1.000
PFOA		7.01	0.461 (Q)	2.05	
PFNA	J	1.12	0.461 (Q)	2.98	
PFDA		20.8	0.461 (Q)	3.80	1.000
PFUnA	J	1.75	0.461 (Q)	4.66	1.000
PFDoA		10.6	0.461 (Q)	7.53	1.000
PFTTrDA	J	1.65	0.461 (Q)	4.16	0.963
PFTeDA		2.79	0.461 (Q)	2.66	0.999
PFBS		1.97	0.461 (Q)	3.57	1.001
PFPeS	U		0.463 (Q)		
PFHxS	U		0.461 (Q)		
PFHpS	U		0.461 (Q)		
PFOS		11.2	0.461 (Q)	2.51	
PFNS	U		0.461 (Q)		
PFDS	U		0.461 (Q)		
PFDoS	U		0.461 (Q)		
4:2 FTS	U		1.84 (Q)		
6:2 FTS	U		1.66 (Q)		
8:2 FTS	U		1.84 (Q)		
PFOSA	J	0.525	0.461 (Q)		
N-MeFOSA	U		0.530 (Q)		
N-EtFOSA	U		1.15 (Q)		
MeFOSAA		3.96	0.461 (Q)	1.92	
EtFOSAA		2.74	0.461 (Q)	1.57	
N-MeFOSE	U		4.61 (Q)		
N-EtFOSE	U		3.45 (Q)		
HFPO-DA	U		1.75 (Q)		
ADONA	U		1.84 (Q)		
9CI-PF3ONS	U		1.85 (Q)		
11CI-PF3OUdS	U		1.85 (Q)		
3:3 FTCA	U		1.84 (Q)		
5:3 FTCA	J	31.2	11.5 (Q)	1.26	1.049
7:3 FTCA	J	15.4	11.5 (Q)	0.76	1.340
PFEESA	U		0.461 (Q)		
PFMPA	U		0.922 (Q)		
PFMBA	U		0.461 (Q)		

NFDHA

NQ

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

(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: _____Jordan Berends_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_WG79483-104_Form1A_FC2L_015S57_SJ3014992.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.
KIWWTP-BIOS-1C (FA89217-8) -
ISM (Duplicate)
Sample Collection:
N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

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)

Contract No.: 4066

Lab Sample I.D.:

WG79483-104 (DUP L35979-8)

Matrix: BIOSOLIDS HUMAN

Sample Size:

4.32 g (dry)

Sample Receipt Date: 14-Oct-2021

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 14:38:47

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 57

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng absolute

% Moisture:

14.8

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	378	94.4		0.994
13C5-PFPeA		200	184	92.1		0.862
13C5-PFHxA		100	102	102	25.6	1.000
13C4-PFHpA		100	98.0	98.0		0.899
13C8-PFOA		100	86.9	86.9		1.000
13C9-PFNA		50.0	45.6	91.3		1.000
13C6-PFDA		50.0	49.5	99.0		1.000
13C7-PFUnA		50.0	46.6	93.1		1.049
13C2-PFDoA		50.0	39.8	79.5		1.084
13C2-PFTeDA	V	50.0	22.7	45.4		1.160
13C3-PFBS		100	92.4	92.1	2.75	0.806
13C3-PFHxS		100	97.3	97.1	2.42	1.000
13C8-PFOS		101	107	106	2.11	0.999
13C2-4:2 FTS		202	203	100	1.81	0.841
13C2-6:2 FTS		200	192	96.0	2.12	1.001
13C2-8:2 FTS		200	157	78.5	3.27	1.266
13C8-PFOA		100	95.5	95.5		1.155
D3-N-MeFOSA		100	32.2	32.2		1.343
D5-N-EtFOSA	V	100	21.1	21.1		1.381
D3-MeFOSAA		200	111	55.3		1.314
D5-EtFOSAA		200	129	64.4		1.342
d7-NMe-FOSE	V	1000	263	26.3		1.326
d9-NEt-FOSE	V	1000	234	23.4		1.364
13C3-HFPO-DA		400	309	77.1	2.51	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

PERFLUORINATED ORGANICS ANALYSIS REPORT
RELATIVE PERCENT DIFFERENCE

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)

Contract No.: 4066

Client ID: KIWWTP-BIOS-1C (FA89217-8) - ISM

Concentration Units: ng/g (dry weight basis)

COMPOUND	L35979-8 (A)		WG79483-104		MEAN	RELATIVE PERCENT DIFFERENCE
	LAB FLAG ¹	CONC. FOUND	LAB FLAG ¹	CONC. FOUND		
PFBA	U		U			
PFPeA		5.05	J	3.55	4.30	34.9
PFHxA		2.79		4.28	3.54	42.1
PFHpA	J	0.846	J	0.767	0.807	9.73
PFOA		7.47		7.01	7.24	6.38
PFNA	J	1.24	J	1.12	1.18	10.7
PFDA		19.8		20.8	20.3	5.16
PFUnA	J	1.76	J	1.75	1.75	0.701
PFDoA		10.5		10.6	10.5	1.22
PFTTrDA	J	1.35	J	1.65	1.50	19.7
PFTeDA		3.19		2.79	2.99	13.1
PFBS		2.12		1.97	2.05	7.74
PFPeS	U		U			
PFHxS	U		U			
PFHpS	U		U			
PFOS		11.0		11.2	11.1	2.42
PFNS	U		U			
PFDS	U		U			
PFDoS	U		U			
4:2 FTS	U		U			
6:2 FTS	U		U			
8:2 FTS	U		U			
PFOSA	J	0.573	J	0.525	0.549	8.74
N-MeFOSA	U		U			
N-EtFOSA	U		U			
MeFOSAA		3.28		3.96	3.62	18.7
EtFOSAA		3.24		2.74	2.99	17.0
N-MeFOSE	U		U			
N-EtFOSE	U		U			
HFPO-DA	U		U			
ADONA	U		U			
9CI-PF3ONS	U		U			
11CI-PF3OUdS	U		U			
3:3 FTCA	U		U			
5:3 FTCA	J	34.8	J	31.2	33.0	11.1
7:3 FTCA	J	17.4	J	15.4	16.4	11.8
PFEESA	U		U			
PFMPA	U		U			
PFMBA	U		U			
NFDHA	NQ		NQ			

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

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

Signed: Jordan Berends

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.

For Axys Internal Use Only [XSL Template: RPD.xsl; Created: 01-Feb-2022 09:34:34; Application: XMLTransformer-1.18.31;
Report Filename: RPD_FC_LC_PFAS-RPD_WG79483-104_L35979-8_.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

Lab Blank

Sample Collection:

N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4066

Project No.

N/A

Lab Sample I.D.:

WG79483-101

Matrix: SOLID

Sample Size:

5.00 g

Sample Receipt Date: N/A

Initial Calibration Date:

22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID:

LCMS/MS

Analysis Date: 14-Jan-2022 Time: 12:38:35

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC2L_015 S: 48

Injection Volume (uL): 2

Blank Data Filename:

FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC2L_015 S: 43

Concentration Units: ng/g

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.60 (Q)		
PFPeA	U		0.798 (Q)		
PFHxA	U		0.399 (Q)		
PFHpA	U		0.399 (Q)		
PFOA	U		0.399 (Q)		
PFNA	U		0.399 (Q)		
PFDA	U		0.399 (Q)		
PFUnA	U		0.399 (Q)		
PFDaA	U		0.399 (Q)		
PFTTrDA	U		0.399 (Q)		
PFTeDA	U		0.399 (Q)		
PFBS	U		0.399 (Q)		
PFPeS	U		0.401 (Q)		
PFHxS	U		0.399 (Q)		
PFHpS	U		0.399 (Q)		
PFOS	U		0.399 (Q)		
PFNS	U		0.399 (Q)		
PFDS	U		0.399 (Q)		
PFDoS	U		0.399 (Q)		
4:2 FTS	U		1.60 (Q)		
6:2 FTS	U		1.44 (Q)		
8:2 FTS	U		1.60 (Q)		
PFOSA	U		0.399 (Q)		
N-MeFOSA	U		0.459 (Q)		
N-EtFOSA	U		0.997 (Q)		
MeFOSAA	U		0.399 (Q)		
EtFOSAA	U		0.399 (Q)		
N-MeFOSE	U		3.99 (Q)		
N-EtFOSE	U		2.98 (Q)		
HFPO-DA	U		1.52 (Q)		
ADONA	U		1.60 (Q)		
9CI-PF3ONS	U		1.60 (Q)		
11CI-PF3OUdS	U		1.60 (Q)		
3:3 FTCA	U		1.60 (Q)		
5:3 FTCA	U		9.97 (Q)		
7:3 FTCA	U		9.97 (Q)		
PFEESA	U		0.399 (Q)		
PFMPA	U		0.798 (Q)		
PFMBA	U		0.399 (Q)		
NFDHA	NQ				

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; NQ = data not quantifiable.
- (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: _____Jordan Berends_____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31;
Report Filename: PFC_FC_LC_PFAS_WG79483-101_Form1A_FC2L_015S48_SJ3014982.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.

Lab Blank

Sample Collection:

N/A

PERFLUORINATED ORGANICS ANALYSIS REPORT

SGS AXYS ANALYTICAL SERVICES

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

Contract No.: 4066

Project No. N/A

Lab Sample I.D.: WG79483-101

Matrix: SOLID

Sample Size: 5.00 g

Sample Receipt Date: N/A

Initial Calibration Date: 22-Feb-2021

Extraction Date: 12-Jan-2022

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022 Time: 12:38:35

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC2L_015 S: 48

Injection Volume (uL): 2

Blank Data Filename: FC2L_015 S: 48

Dilution Factor: N/A

Cal. Ver. Data Filename: FC2L_015 S: 43

Concentration Units: ng absolute

This page is part of a total report that contains information necessary for accreditation compliance.
Results are compliant with NELAP accreditation described in the total report. Sample results relate only to the sample tested.

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		400	382	95.4		1.000
13C5-PFPeA		200	164	82.0		0.862
13C5-PFHxA		100	106	106	27.7	1.000
13C4-PFHpA		100	107	107		0.898
13C8-PFOA		100	91.5	91.5		0.999
13C9-PFNA		50.0	41.4	82.9		1.000
13C6-PFDA		50.0	46.4	92.7		1.000
13C7-PFUnA		50.0	44.2	88.3		1.050
13C2-PFDoA		50.0	38.0	76.0		1.083
13C2-PFTeDA		50.0	32.3	64.7		1.160
13C3-PFBS		100	90.4	90.2	2.69	0.806
13C3-PFHxS		100	94.2	94.0	2.36	1.000
13C8-PFOS		101	103	102	2.09	1.000
13C2-4:2 FTS		202	243	120	2.33	0.842
13C2-6:2 FTS		200	197	98.6	2.14	1.001
13C2-8:2 FTS		200	164	81.6	3.18	1.267
13C8-PFOA		100	87.9	87.9		1.155
D3-N-MeFOSA		100	47.7	47.7		1.342
D5-N-EtFOSA		100	42.6	42.6		1.380
D3-MeFOSAA		200	107	53.5		1.316
D5-EtFOSAA		200	115	57.4		1.343
d7-NMe-FOSE		1000	514	51.4		1.325
d9-NEt-FOSE		1000	452	45.2		1.364
13C3-HFPO-DA		400	297	74.2	2.62	1.030

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

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.:	WG79483-102
Matrix:	SOLID	Initial Calibration Date:	22-Feb-2021
Extraction Date:	12-Jan-2022	Instrument ID:	LCMS/MS
Analysis Date:	14-Jan-2022 Time: 12:11:52	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC2L_015 S: 46
Injection Volume (uL):	2	Blank Data Filename:	FC2L_015 S: 48
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC2L_015 S: 43

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			200	203	102	1.006
PFPeA			100	96.5	96.5	1.002
PFHxA		4.42	50.0	42.4	84.8	1.000
PFHpA		2.20	50.0	51.7	103	1.000
PFOA		1.82	50.0	43.1	86.2	
PFNA		2.90	50.0	50.0	100	
PFDA		2.97	50.0	50.2	100	1.000
PFUnA		4.66	50.0	53.4	107	1.000
PFDoA		7.58	50.0	49.5	99.0	1.000
PFTTrDA		2.73	50.0	49.4	98.8	0.963
PFTeDA		2.67	50.0	53.9	108	1.000
PFBS		2.78	50.0	50.2	100	1.000
PFPeS		2.28	50.1	55.1	110	0.890
PFHxS		2.45	50.0	50.7	101	
PFHpS		2.14	50.1	50.7	101	0.918
PFOS		2.63	50.0	50.2	100	
PFNS		2.31	50.1	47.2	94.2	1.047
PFDS		2.29	50.0	46.9	93.9	1.080
PFDoS		2.18	50.1	40.0	79.9	1.164
4:2 FTS		0.42	200	259	130	1.000
6:2 FTS		0.41	180	170	94.5	1.000
8:2 FTS		0.54	200	219	109	1.001
PFOSA			50.0	49.5	99.0	
N-MeFOSA		0.58	57.5	57.1	99.2	
N-EtFOSA		0.54	125	118	94.6	
MeFOSAA		1.97	50.0	53.2	106	
EtFOSAA		1.19	50.0	48.5	97.1	
N-MeFOSE			500	513	103	
N-EtFOSE			375	445	119	
HFPO-DA		2.34	190	192	101	1.000
ADONA		1.03	201	262	131	1.093
9CI-PF3ONS		3.10	200	239	119	0.966
11CI-PF3OUdS		3.28	200	206	103	1.031
3:3 FTCA		1.74	200	142	71.2	0.823
5:3 FTCA		1.20	1250	957	76.6	1.050

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
7:3 FTCA		0.68	1250	807	64.5	1.338
PFEESA		8.10	50.0	41.6	83.1	1.031
PFMPA			100	99.5	99.5	0.580
PFMBA			50.0	44.2	88.5	1.067
NFDHA	NQ					

(1) Where applicable, custom lab flags have been used on this report; NQ = data not quantifiable.

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

Signed: _____Jordan Berends_____

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.

For Axys Internal Use Only [XSL Template: FC2-Form8A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_WG79483-102_Form8A_SJ3014979.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

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.:	WG79483-102
Matrix:	SOLID	Initial Calibration Date:	22-Feb-2021
Extraction Date:	12-Jan-2022	Instrument ID:	LCMS/MS
Analysis Date:	14-Jan-2022 Time: 12:11:52	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC2L_015 S: 46
Injection Volume (uL):	2	Blank Data Filename:	FC2L_015 S: 48
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC2L_015 S: 43

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			400	391	97.6	0.995
13C5-PFPeA			200	210	105	0.862
13C5-PFHxA		30.1	100	133	133	1.000
13C4-PFHpA			100	104	104	0.898
13C8-PFOA			100	92.4	92.4	0.999
13C9-PFNA			50.0	41.2	82.4	1.000
13C6-PFDA			50.0	44.5	89.0	1.000
13C7-PFUnA			50.0	43.9	87.8	1.049
13C2-PFDoA			50.0	37.7	75.4	1.083
13C2-PFTeDA			50.0	32.1	64.3	1.160
13C3-PFBS		2.79	100	100	99.7	0.806
13C3-PFHxS		2.28	100	96.5	96.4	1.000
13C8-PFOS		2.10	101	101	101	1.000
13C2-4:2 FTS		1.51	202	210	104	0.841
13C2-6:2 FTS		2.09	200	201	100	1.001
13C2-8:2 FTS		2.97	200	172	85.9	1.267
13C8-PFOSA			100	90.4	90.4	1.155
D3-N-MeFOSA			100	54.7	54.7	1.342
D5-N-EtFOSA			100	50.9	50.9	1.380
D3-MeFOSAA			200	107	53.4	1.316
D5-EtFOSAA			200	119	59.7	1.343
d7-NMe-FOSE			1000	578	57.8	1.325
d9-NEt-FOSE			1000	500	50.0	1.364
13C3-HFPO-DA		3.65	400	366	91.6	1.030

(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: _____ Jordan Berends _____

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-110 Rev 02

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.:	WG79483-103
Matrix:	SOLID	Initial Calibration Date:	22-Feb-2021
Extraction Date:	12-Jan-2022	Instrument ID:	LCMS/MS
Analysis Date:	14-Jan-2022 Time: 11:58:31	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC2L_015 S: 45
Injection Volume (uL):	2	Blank Data Filename:	FC2L_015 S: 48
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC2L_015 S: 43

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			64.0	67.5	105	1.006
PFPeA			32.0	35.2	110	1.001
PFHxA		5.81	16.0	19.6	122	0.999
PFHpA		2.02	16.0	15.9	99.1	1.000
PFOA		2.08	16.0	15.6	97.4	
PFNA		2.95	16.0	16.5	103	
PFDA		3.45	16.0	17.9	112	1.000
PFUnA		4.70	16.0	17.6	110	1.001
PFDoA		8.21	16.0	16.3	102	1.000
PFTTrDA		2.93	16.0	18.0	112	0.963
PFTeDA		2.72	16.0	16.8	105	1.000
PFBS		2.63	16.0	15.6	97.2	1.000
PFPeS		2.40	16.0	18.6	116	0.891
PFHxS		2.36	16.0	15.7	98.0	
PFHpS		1.96	16.0	16.1	101	0.920
PFOS		2.53	16.0	15.3	95.9	
PFNS		2.27	16.0	16.2	101	1.047
PFDS		2.36	16.0	16.4	103	1.080
PFDoS		2.32	16.0	13.5	84.5	1.164
4:2 FTS		0.41	64.0	65.5	102	1.000
6:2 FTS		0.41	57.7	54.8	95.0	1.000
8:2 FTS		0.52	64.0	70.9	111	0.999
PFOSA			16.0	15.8	98.8	
N-MeFOSA		0.51	18.4	20.6	112	
N-EtFOSA		0.51	40.0	39.3	98.3	
MeFOSAA		1.86	16.0	16.2	101	
EtFOSAA		1.61	16.0	17.7	111	
N-MeFOSE			160	163	102	
N-EtFOSE			120	148	123	
HFPO-DA		2.96	60.8	67.3	111	1.001
ADONA	N	1.07	64.2	92.1	143	1.094
9CI-PF3ONS		3.20	64.1	82.7	129	0.966
11CI-PF3OUdS		3.30	64.1	68.9	107	1.031
3:3 FTCA		1.47	64.0	49.0	76.6	0.816
5:3 FTCA		1.23	400	379	94.6	1.048

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
7:3 FTCA		0.72	400	317	79.4	1.339
PFEESA		6.27	16.0	15.3	95.8	1.031
PFMPA			32.0	31.5	98.6	0.584
PFMBA			16.0	13.5	84.5	1.069
NFDHA	NQ					

(1) Where applicable, custom lab flags have been used on this report; N = authentic recovery in the OPR is not within method/contract control limits; NQ = data not quantifiable.

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

Signed: _____ Jordan Berends _____

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.

For Axys Internal Use Only [XSL Template: FC2-Form8A.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFC_FC_LC_PFAS_WG79483-103_Form8A_SJ3014977.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

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.:	WG79483-103
Matrix:	SOLID	Initial Calibration Date:	22-Feb-2021
Extraction Date:	12-Jan-2022	Instrument ID:	LCMS/MS
Analysis Date:	14-Jan-2022 Time: 11:58:31	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC2L_015 S: 45
Injection Volume (uL):	2	Blank Data Filename:	FC2L_015 S: 48
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC2L_015 S: 43

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			400	393	98.3	1.000
13C5-PFPeA			200	163	81.5	0.862
13C5-PFHxA		25.6	100	87.3	87.3	1.000
13C4-PFHpA			100	107	107	0.899
13C8-PFOA			100	91.4	91.4	1.000
13C9-PFNA			50.0	43.4	86.8	0.999
13C6-PFDA			50.0	45.7	91.4	1.000
13C7-PFUnA			50.0	44.2	88.4	1.049
13C2-PFDoA			50.0	39.1	78.2	1.083
13C2-PFTeDA			50.0	34.6	69.2	1.160
13C3-PFBS		2.87	100	95.6	95.3	0.806
13C3-PFHxS		2.28	100	93.1	93.0	0.999
13C8-PFOS		2.05	101	100	99.9	1.000
13C2-4:2 FTS		1.63	202	225	112	0.841
13C2-6:2 FTS		2.10	200	191	95.8	1.001
13C2-8:2 FTS		3.27	200	161	80.1	1.268
13C8-PFOSA			100	89.8	89.8	1.154
D3-N-MeFOSA			100	43.6	43.6	1.342
D5-N-EtFOSA			100	40.2	40.2	1.380
D3-MeFOSAA			200	108	54.2	1.316
D5-EtFOSAA			200	117	58.7	1.342
d7-NMe-FOSE			1000	490	49.0	1.324
d9-NEt-FOSE			1000	413	41.3	1.364
13C3-HFPO-DA		2.40	400	273	68.1	1.029

(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: _____ Jordan Berends _____

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-110 Rev 02

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: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

RELATIVE RESPONSE (RR)

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
PFBA		1.06	1.05	1.05	1.00	1.01	0.98	0.99	0.96	0.94	1.00	4.20
PFPeA		1.37	1.29	1.24	1.19	1.21	1.17	1.20	1.15	1.12	1.21	6.24
PFHxA		1.16	1.28	1.12	1.05	1.03	0.97	1.04	0.97	0.94	1.06	10.2
PFHpA		1.19	1.14	1.09	1.14	1.10	1.11	1.08	1.05	0.96	1.10	5.97
PFOA		1.57	1.71	1.56	1.40	1.43	1.41	1.37	1.39	1.32	1.46	8.45
PFNA		0.99	1.13	1.10	1.01	0.99	1.02	1.06	0.97	0.99	1.03	5.34
PFDA		0.89	0.87	0.91	0.82	0.83	0.83	0.84	0.83	0.72	0.84	6.35
PFUnA		0.76	0.78	0.88	0.69	0.76	0.74	0.75	0.75		0.76	7.31
PFDaA		1.02	1.34	1.15	1.05	1.09	1.04	1.08	0.99	0.86	1.07	12.1
PFTrDA		0.97	0.93	0.92	0.86	0.83	0.81	0.82	0.61		0.84	13.1
PFTeDA		0.86	0.77	0.79	0.73	0.76	0.72	0.72	0.62		0.74	9.15
PFBS		1.24	1.18	1.13	1.14	1.21	1.14	1.16	1.11	1.10	1.16	4.01
PFPeS		0.96	1.07	1.12	1.04	1.03	1.02	1.01	0.88	0.77	0.99	10.8
PFHxS		1.26	1.23	1.21	1.20	1.14	1.15	1.15	1.08	1.14	1.17	4.74
PFHpS		1.11	1.07	1.14	1.10	1.09	1.12	1.05	1.05	1.10	1.09	2.81
PFOS		1.25	1.39	1.30	1.17	1.28	1.24	1.20	1.16	1.26	1.25	5.50
PFNS		1.31	1.22	1.18	1.17	1.25	1.18	1.18	1.10	1.10	1.19	5.56
PFDS		1.10	1.23	1.17	1.14	1.16	1.16	1.12	1.04	1.08	1.13	5.03
PFDoS		0.95	0.93	0.96	0.88	0.93	0.93	0.90	0.91	1.00	0.93	3.65
4:2 FTS		0.43	0.50	0.50	0.51	0.52	0.47	0.45	0.42		0.48	8.19
6:2 FTS		0.63	0.54	0.58	0.50	0.52	0.49	0.47	0.40		0.52	13.6
8:2 FTS		0.30	0.27	0.26	0.27	0.25	0.28	0.27	0.23		0.27	7.98
PFOSA		1.04	1.05	1.02	0.99	0.98	0.99	0.97	0.94		1.00	3.72
N-MeFOSA		1.09	1.26	1.14	1.11	1.12	1.09	1.10	0.98		1.11	6.86
N-EtFOSA		1.20	1.27	1.24	1.19	1.18	1.19	1.23	1.15	1.16	1.20	3.34
MeFOSAA		0.86	0.81	0.86	0.84	0.91	0.89	0.86	0.81	0.81	0.85	4.20
EtFOSAA		0.78	0.63	0.92	0.72	0.73	0.74	0.78	0.68		0.75	11.3
N-MeFOSE		1.14	1.16	1.16	1.11	1.12	1.10	1.09	1.03	0.98	1.10	5.47
N-EtFOSE		1.25	1.25	1.27	1.21	1.21	1.18	1.20	1.10	1.04	1.19	6.47
HFPO-DA		1.16	1.24	1.13	1.10	1.08	1.02	1.05	0.96		1.09	7.93
ADONA		7.27	7.33	6.94	6.75	7.00	6.76	7.15	6.93		7.02	3.07
9CI-PF3ONS		2.07	2.11	2.07	2.00	1.93	1.86	1.98	1.90		1.99	4.46
11CI-PF3OUdS		1.05	1.11	1.06	1.04	1.02	1.06	1.12	1.14		1.07	3.83
3:3 FTCA		0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.10		0.08	9.63
5:3 FTCA		0.19	0.18	0.17	0.17	0.16	0.16	0.17	0.17		0.17	6.49
7:3 FTCA		0.10	0.10	0.10	0.10	0.10	0.09	0.10	0.11		0.10	4.46
PFEESA		3.72	3.25	3.11	3.23	3.09	2.95	3.20	2.99	2.87	3.16	7.86
PFMPA		1.78	1.77	1.75	1.69	1.72	1.72	1.78	1.94	2.27	1.82	10.1

RELATIVE RESPONSE (RR)

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
PFMBA		2.48	2.43	2.35	2.30	2.32	2.33	2.26	2.60	2.81	2.43	7.22
NFDHA		0.05	0.04	0.04	0.04	0.05	0.05	0.04			0.04	17.6

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-110 Rev 02

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 _____

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SGS AXYS METHOD MLA-110 Rev 02

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: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

RELATIVE RESPONSE (RR)

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	1.16	1.14	1.16	1.13	1.13	1.13	1.13	1.11	1.14	1.73
13C5-PFPeA		0.83	0.85	0.85	0.88	0.87	0.84	0.81	0.79	0.69	0.82	7.00
13C5-PFHxA		0.67	0.69	0.72	0.70	0.74	0.73	0.68	0.70	0.66	0.70	3.78
13C4-PFHpA		3.63	3.49	3.60	3.42	3.44	3.25	3.33	2.97	2.73	3.32	8.93
13C8-PFOA		3.82	3.60	3.79	3.80	3.79	3.66	3.71	3.61	3.76	3.73	2.31
13C9-PFNA		1.16	1.15	1.14	1.17	1.16	1.13	1.10	1.17	1.15	1.15	2.03
13C6-PFDA		1.13	1.06	0.97	1.06	0.99	0.99	0.92	1.02	0.90	1.01	7.22
13C7-PFUnA		1.23	1.22	1.07	1.22	1.08	1.08	0.99	0.84		1.09	12.2
13C2-PFDoA		1.04	0.95	0.90	0.92	0.94	0.93	0.89	0.98	0.91	0.94	5.00
13C2-PFTeDA		0.86	0.85	0.81	0.83	0.80	0.77	0.74	0.94	1.11	0.86	13.0
13C3-PFBS		1.33	1.36	1.31	1.41	1.25	1.29	1.31	1.00	0.99	1.25	12.1
13C3-PFHxS		1.20	1.16	1.10	1.15	1.12	1.15	1.17	1.16	1.05	1.14	3.86
13C8-PFOS		0.96	0.91	0.93	0.94	0.92	0.87	0.93	0.94	0.90	0.92	3.08
13C2-4:2 FTS		1.25	1.08	1.11	1.04	1.05	1.03	1.06	1.14	1.47	1.14	12.5
13C2-6:2 FTS		0.98	0.88	0.86	0.84	0.90	0.84	0.91	1.06		0.91	8.52
13C2-8:2 FTS		1.50	1.37	1.48	1.38	1.53	1.32	1.40	1.52		1.44	5.42
13C8-PFOA		1.84	1.83	1.86	1.78	1.80	1.74	1.82	2.08		1.84	5.54
D3-N-MeFOSA		0.29	0.28	0.28	0.27	0.28	0.27	0.27	0.32		0.28	6.63
D5-N-EtFOSA		0.28	0.28	0.28	0.27	0.28	0.26	0.27	0.30	0.33	0.28	6.96
D3-MeFOSAA		0.96	0.84	0.87	0.86	0.91	0.83	0.97	1.12	1.21	0.95	13.9
D5-EtFOSAA		0.82	0.76	0.72	0.74	0.77	0.70	0.77	1.00		0.78	12.0
d7-NMe-FOSE		1.93	1.87	1.80	1.81	1.86	1.76	1.81	1.95	2.09	1.88	5.39
d9-NET-FOSE		2.46	2.39	2.35	2.36	2.44	2.27	2.30	2.52	2.79	2.43	6.37
13C3-HFPO-DA		0.33	0.33	0.34	0.34	0.36	0.33	0.31	0.27		0.33	8.42

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-110 Rev 02.

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-110 Rev 02

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: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PFBA										
PFPeA										
PFHxA		4.58	5.38	6.09	4.84	4.81	4.94	4.81	4.64	4.80
PFHpA		2.19	2.08	2.00	2.16	2.04	1.97	2.06	2.06	2.02
PFOA		1.85	2.15	2.04	1.95	2.03	2.00	1.96	2.06	2.02
PFNA		2.97	2.96	2.87	2.85	2.95	2.94	2.87	2.87	2.86
PFDA		3.23	3.02	3.02	3.06	3.07	3.16	2.96	3.21	3.03
PFUnA		4.29	4.50	4.89	4.31	4.74	4.28	4.73	4.49	
PFDoA		5.72	8.83	6.70	7.41	7.85	7.83	7.95	7.48	7.67
PFTTrDA		3.32	3.58	2.95	3.08	3.04	3.14	3.22	3.02	
PFTeDA		2.75	2.65	2.75	2.82	2.80	2.68	2.71	2.70	
PFBS		2.27	2.65	2.32	2.59	2.71	2.59	2.67	2.60	2.59
PFPeS		1.83	2.06	2.39	2.25	2.35	2.31	2.27	2.26	2.33
PFHxS		2.64	2.36	2.44	2.39	2.28	2.34	2.44	2.32	2.38
PFHpS		2.08	1.90	2.00	2.12	2.08	2.20	2.08	2.10	2.08
PFOS		2.29	2.51	2.55	2.58	2.67	2.70	2.60	2.59	2.66
PFNS		2.07	2.08	2.27	2.36	2.41	2.26	2.32	2.18	2.30
PFDS		2.08	2.80	2.21	2.35	2.38	2.17	2.36	2.18	2.30
PFDoS		2.31	2.11	2.33	2.23	2.18	2.26	2.25	2.27	2.28
4:2 FTS		0.38	0.41	0.44	0.43	0.45	0.46	0.43	0.45	
6:2 FTS		0.51	0.43	0.47	0.44	0.43	0.47	0.45	0.44	
8:2 FTS		0.58	0.48	0.55	0.57	0.53	0.57	0.54	0.54	
PFOSA										
N-MeFOSA		0.52	0.55	0.50	0.54	0.53	0.53	0.53	0.53	
N-EtFOSA		0.52	0.56	0.54	0.53	0.53	0.53	0.53	0.53	0.54
MeFOSAA		1.88	2.07	2.11	1.85	1.98	2.02	1.98	1.94	1.94
EtFOSAA		1.85	1.56	1.58	1.09	1.16	1.10	1.15	1.10	
N-MeFOSE										
N-EtFOSE										
HFPO-DA		2.58	3.07	2.82	2.87	2.67	2.50	2.63	2.75	
ADONA		1.15	1.12	1.08	1.08	1.20	1.11	1.13	1.06	
9CI-PF3ONS		3.24	3.13	3.02	3.20	3.02	3.04	3.13	3.07	
11CI-PF3OUdS		2.63	3.01	3.14	3.13	3.06	3.19	3.14	3.05	
3:3 FTCA		1.69	1.51	1.64	1.78	1.89	1.91	1.92	1.96	
5:3 FTCA		0.85	1.08	1.14	1.21	1.22	1.24	1.26	1.31	

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
7:3 FTCA		0.69	0.69	0.70	0.71	0.69	0.68	0.71	0.68	
PFEESA		8.11	7.52	8.32	9.28	8.69	8.99	9.71	9.18	9.28
PFMPA										
PFMBA										
NFDHA		0.83	1.08	1.12	0.95	1.69	1.32	1.19		

(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 _____

For Axys Internal Use Only [XSL Template: FC2-Form3C.xsl; Created: 01-Feb-2022 09:30:27; Application: XMLTransformer-1.18.31; Report Filename: PFOA_FC_LC_22-Feb-2021_FC1L_Form3C_GS95845.html; Workgroup: WG79483; Design ID: 4411]

SGS AXYS METHOD MLA-110 Rev 02

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: 22-Feb-2021

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: FC1L_080 S: 16

CS1 Data Filename: FC1L_080 S: 17

CS2 Data Filename: FC1L_080 S: 18

CS3 Data Filename: FC1L_080 S: 19

CS4 Data Filename: FC1L_080 S: 20

CS5 Data Filename: FC1L_080 S: 21

CS6 Data Filename: FC1L_080 S: 22

CS7 Data Filename: FC1L_080 S: 23

CS8 Data Filename: FC1L_080 S: 24

LABELED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C4-PFBA										
13C5-PFPeA										
13C5-PFHxA		24.2	23.3	27.8	23.3	25.6	26.9	25.6	24.5	26.7
13C4-PFHpA										
13C8-PFOA										
13C9-PFNA										
13C6-PFDA										
13C7-PFUnA										
13C2-PFDoA										
13C2-PFTeDA										
13C3-PFBS		2.57	2.71	2.73	2.73	2.72	2.72	2.79	2.69	2.85
13C3-PFHxS		2.40	2.29	2.34	2.38	2.29	2.40	2.49	2.36	2.28
13C8-PFOS		2.08	2.05	2.09	2.33	2.09	2.15	2.22	2.37	2.14
13C2-4:2 FTS		1.84	1.90	1.74	1.62	1.51	1.55	1.25	0.54	0.24
13C2-6:2 FTS		1.93	2.03	1.87	1.87	1.80	1.74	1.44	0.71	
13C2-8:2 FTS		3.89	3.55	3.84	3.75	3.20	3.03	2.50	1.10	
13C8-PFOA										
D3-N-MeFOSA										
D5-N-EtFOSA										
D3-MeFOSAA										
D5-EtFOSAA										
d7-NMe-FOSE										
d9-NEt-FOSE										
13C3-HFPO-DA		2.67	2.74	2.54	2.64	2.57	2.89	2.76	2.91	

(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-110 Rev 02

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: 22-Feb-2021

VER Data Filename: FC2L_015 S: 43

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022

LC Column ID: C18

Analysis Time: 11:31:47

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.006	213 > 169		20.0	20.2	101
PFPeA		1.002	263 > 219		10.0	10.1	101
PFHxA		1.000	313 > 269	5.32	5.00	4.92	98.4
PFHpA		1.000	363 > 319	2.24	5.00	4.99	99.7
PFOA		1.001	413 > 369	1.95	5.00	4.51	90.2
PFNA		1.000	463 > 419	2.80	5.00	4.85	96.9
PFDA		1.000	513 > 469	3.15	5.00	5.26	105
PFUnA		1.000	563 > 519	4.79	5.00	5.23	105
PFDoA		1.000	613 > 569	6.72	5.00	4.79	95.7
PFTTrDA		0.963	663 > 619	2.90	5.00	5.01	100
PFTTeDA		1.000	713 > 669	2.81	5.00	5.29	106
PFBS		1.000	299 > 80	2.90	5.00	5.28	106
PFPeS		0.890	349 > 80	2.19	5.01	5.62	112
PFHxS		1.001	399 > 80	2.45	5.00	4.99	99.9
PFHpS		0.919	449 > 80	2.03	5.01	4.75	94.8
PFOS		1.000	499 > 80	2.51	5.00	4.77	95.5
PFNS		1.047	549 > 80	2.22	5.01	4.84	96.5
PFDS		1.081	599 > 80	2.16	5.00	4.96	99.1
PFDoS		1.164	699 > 80	2.24	5.01	4.61	92.0
4:2 FTS		0.999	327 > 307	0.39	20.0	19.2	95.9
6:2 FTS		1.000	427 > 407	0.43	18.0	18.4	102
8:2 FTS		1.001	527 > 507	0.52	20.0	22.7	114
PFOSA		1.000	498 > 78		5.00	5.00	100
N-MeFOSA		1.000	512 > 219	0.54	5.75	6.16	107
N-EtFOSA		1.001	526 > 219	0.54	12.5	13.0	104
MeFOSAA		1.001	570 > 419	1.92	5.00	4.53	90.6
EtFOSAA		1.000	584 > 419	1.34	5.00	5.17	103
N-MeFOSE		1.002	616 > 59		50.0	51.9	104
N-EtFOSE		1.002	630 > 59		37.5	45.5	121
HFPO-DA		1.000	285 > 169	3.88	19.0	19.5	103
ADONA		1.093	377 > 251	1.03	20.0	26.2	131
9CI-PF3ONS		0.966	531 > 351	3.15	20.0	24.5	122
11CI-PF3OUdS		1.032	631 > 451	3.12	20.0	22.1	111
3:3 FTCA		0.822	241 > 177	1.88	20.0	15.4	77.1
5:3 FTCA		1.050	341 > 237	1.30	125	97.2	77.8
7:3 FTCA		1.340	441 > 317	0.69	125	88.5	70.8
PFEESA		1.031	315 > 135	9.09	5.00	4.88	97.7
PFMPA		0.585	229 > 85		10.0	10.7	107
PFMBA		1.067	279 > 85		5.00	4.65	93.1
NFDHA		0.987	295 > 201	1.02	10.0	2.43	24.3

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

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: 22-Feb-2021

VER Data Filename: FC2L_015 S: 43

Instrument ID: LCMS/MS

Analysis Date: 14-Jan-2022

LC Column ID: C18

Analysis Time: 11:31:47

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	40.5	101
13C5-PFPeA		0.862	268 > 223		20.0	17.2	85.8
13C5-PFHxA		1.000	318 > 273	21.7	10.0	10.4	104
13C4-PFHpA		0.898	367 > 322		10.0	11.3	113
13C8-PFOA		0.999	421 > 376		10.0	9.65	96.5
13C9-PFNA		1.000	472 > 427		5.00	4.44	88.8
13C6-PFDA		1.000	519 > 474		5.00	5.48	110
13C7-PFUnA		1.050	570 > 525		5.00	5.63	113
13C2-PFDoA		1.083	615 > 570		5.00	5.20	104
13C2-PFTeDA		1.160	715 > 670		5.00	4.22	84.5
13C3-PFBS		0.807	302 > 80	2.67	10.0	10.1	101
13C3-PFHxS		1.000	402 > 80	2.33	10.0	10.4	104
13C8-PFOS		1.000	507 > 80	2.02	10.1	10.7	107
13C2-4:2 FTS		0.842	329 > 81	2.07	20.2	23.6	117
13C2-6:2 FTS		1.001	429 > 81	2.00	20.0	20.5	102
13C2-8:2 FTS		1.267	529 > 81	2.99	20.0	16.9	84.2
13C8-PFOSA		1.155	506 > 78		10.0	11.0	110
D3-N-MeFOSA		1.342	515 > 219		10.0	8.34	83.4
D5-N-EtFOSA		1.380	531 > 219		10.0	7.51	75.1
D3-MeFOSAA		1.316	573 > 419		20.0	12.9	64.5
D5-EtFOSAA		1.343	589 > 419		20.0	13.7	68.6
d7-NMe-FOSE		1.324	623 > 59		100	77.9	77.9
d9-NEt-FOSE		1.364	639 > 59		100	66.6	66.6
13C3-HFPO-DA		1.030	287 > 169	2.73	40.0	31.6	79.1

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

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: 22-Feb-2021

VER Data Filename: FC2L_022 S: 16

Instrument ID: LCMS/MS

Analysis Date: 19-Jan-2022

LC Column ID: C18

Analysis Time: 11:46:19

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.005	213 > 169		20.0	20.4	102
PFPeA		1.003	263 > 219		10.0	3.65	36.5
PFHxA		1.001	313 > 269	5.20	5.00	5.49	110
PFHpA		1.000	363 > 319	2.10	5.00	5.15	103
PFOA		1.000	413 > 369	1.89	5.00	4.45	89.0
PFNA		1.000	463 > 419	2.71	5.00	4.89	97.7
PFDA		1.000	513 > 469	2.97	5.00	4.96	99.2
PFUnA		1.000	563 > 519	4.47	5.00	5.28	106
PFDoA		1.000	613 > 569	7.25	5.00	5.12	102
PFTTrDA		0.963	663 > 619	2.73	5.00	4.93	98.6
PFTTeDA		1.000	713 > 669	2.58	5.00	4.92	98.4
PFBS		1.000	299 > 80	2.76	5.00	4.40	88.0
PFPeS		0.889	349 > 80	2.22	5.01	5.43	108
PFHxS		1.001	399 > 80	2.30	5.00	4.31	86.3
PFHpS	NDR	0.937	449 > 80	0.55	5.01	0.00	0.0
PFOS		1.000	499 > 80	2.30	5.00	3.97	79.4
PFNS		1.046	549 > 80	2.17	5.01	4.69	93.5
PFDS		1.080	599 > 80	2.05	5.00	4.63	92.6
PFDoS		1.165	699 > 80	2.25	5.01	4.50	89.8
4:2 FTS		1.000	327 > 307	0.41	20.0	23.1	115
6:2 FTS		1.000	427 > 407	0.44	18.0	18.7	104
8:2 FTS		1.000	527 > 507	0.53	20.0	21.7	108
PFOSA		1.000	498 > 78		5.00	4.59	91.7
N-MeFOSA		1.000	512 > 219	0.52	5.75	5.14	89.4
N-EtFOSA		1.001	526 > 219	0.55	12.5	9.81	78.5
MeFOSAA		1.000	570 > 419	2.17	5.00	4.28	85.6
EtFOSAA		1.000	584 > 419	1.22	5.00	3.89	77.7
N-MeFOSE		1.002	616 > 59		50.0	51.5	103
N-EtFOSE		1.002	630 > 59		37.5	33.4	89.0
HFPO-DA		1.001	285 > 169	2.88	19.0	19.7	104
ADONA		1.094	377 > 251	1.09	20.0	23.8	119
9CI-PF3ONS		0.967	531 > 351	3.09	20.0	22.3	111
11CI-PF3OUdS		1.032	631 > 451	3.20	20.0	21.1	105
3:3 FTCA		0.831	241 > 177	1.46	20.0	13.3	66.6
5:3 FTCA		1.050	341 > 237	1.29	125	107	85.3
7:3 FTCA		1.343	441 > 317	0.45	125	62.8	50.3
PFEESA		1.033	315 > 135	9.46	5.00	5.56	111
PFMPA		0.593	229 > 85		10.0	9.26	92.6
PFMBA		1.067	279 > 85		5.00	4.37	87.4
NFDHA		0.989	295 > 201	0.64	10.0	2.84	28.4

(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: _____ Jordan Berends _____

SGS AXYS METHOD MLA-110 Rev 02

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: 22-Feb-2021

VER Data Filename: FC2L_022 S: 16

Instrument ID: LCMS/MS

Analysis Date: 19-Jan-2022

LC Column ID: C18

Analysis Time: 11:46:19

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		0.995	217 > 172		40.0	34.7	86.7
13C5-PFPeA		0.864	268 > 223		20.0	18.5	92.5
13C5-PFHxA		0.999	318 > 273	18.5	10.0	9.00	90.0
13C4-PFHpA		0.898	367 > 322		10.0	10.3	103
13C8-PFOA		1.000	421 > 376		10.0	9.83	98.3
13C9-PFNA		1.001	472 > 427		5.00	4.83	96.6
13C6-PFDA		1.000	519 > 474		5.00	4.87	97.3
13C7-PFUnA		1.049	570 > 525		5.00	4.85	97.0
13C2-PFDoA		1.082	615 > 570		5.00	4.57	91.5
13C2-PFTeDA		1.159	715 > 670		5.00	4.12	82.3
13C3-PFBS		0.805	302 > 80	2.81	10.0	11.3	112
13C3-PFHxS		1.000	402 > 80	2.39	10.0	10.4	104
13C8-PFOS		1.000	507 > 80	2.06	10.1	11.1	110
13C2-4:2 FTS		0.841	329 > 81	2.21	20.2	19.6	97.4
13C2-6:2 FTS		1.001	429 > 81	2.13	20.0	20.5	102
13C2-8:2 FTS		1.268	529 > 81	3.16	20.0	17.6	87.6
13C8-PFOSA		1.155	506 > 78		10.0	10.0	100
D3-N-MeFOSA		1.341	515 > 219		10.0	7.46	74.6
D5-N-EtFOSA		1.378	531 > 219		10.0	6.92	69.2
D3-MeFOSAA		1.315	573 > 419		20.0	13.5	67.3
D5-EtFOSAA		1.342	589 > 419		20.0	14.3	71.5
d7-NMe-FOSE		1.323	623 > 59		100	71.7	71.7
d9-NEt-FOSE		1.362	639 > 59		100	56.4	56.4
13C3-HFPO-DA		1.029	287 > 169	3.18	40.0	34.5	86.2

(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: _____ Jordan Berends _____

Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-103 Rev. 60

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	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 **	AFFF	ANAB ISO 17025
Virginia DGS	Virginia Department of General Services, Division of Consolidated Laboratory Services, Lab ID 460224, (NELAC Standard)																																							
Alaska DEC	Alaska Department of Environmental Conservation, Contaminated Sites Laboratory Approval 17-014																																							
Maine DOH	Maine Center for Disease Control and Prevention, Department of Health and Human Services, Lab ID CN00003																																							

ANAB DoD ANSI National Accreditation Board, certificate ADE-1861, (US DoD QSM 5.3 Standard)



CALA Canadian Association for Laboratory Accreditation Inc., Lab ID A2637, (ISO/IEC 17025:2017 Standard)

