



2045 Mills Road West

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Sidney, BC, Canada V8L5X2

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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: WG88608	Date: 01-Mar-2024
Analysis Type: Per- and Polyfluoroalkyl Substances (PFAS)	Matrix Type: Aqueous
BATCH MAKEUP	
Contract: 4066 Samples: L40347-3 HNWWTP-EFFL-EB L40347-6 HNWWTP-EFFL L40347-9 HNWWTP-INFL-EB L40347-12 HNWWTP-INFL	Blank: WG88608-101 Reference or Spike: WG88608-102 WG88608-103 Duplicate:
Comments: <ol style="list-style-type: none"> 1. Data are considered final. 2. Data are not blank corrected. Blank data should be taken into consideration when evaluating sample data. 3. Blank data should be evaluated against specifications using the same blank sample size as the size of the client samples. 4. In the continuing calibration verification (filename: FC4G_042 S:15, S:31) some surrogates are observed above the upper method control limit. As the result for the associated targets are observed within method specifications data is not considered impacted. 5. The percent recovery of native 3:3 FTCA in the OPR and LLOPR (AXYS ID: WG88608-102, -103) was observed to be lower than method specifications and has been flagged with 'N'. Sample data may be similarly affected. 6. Percent recoveries of a few 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. 	

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February 2017

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

CHAIN OF CUSTODY

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

SGS AXYS CLIENT #: 4066

REPORT TO: Company <u>Hawaii DOH-HEER Office</u> Address <u>2385 Waimano Home Rd #100 Pearl City, HI 96782</u> Contact <u>Roger Brewer</u> Phone <u>808-586-4249</u> FAX _____ E-mail <u>roger.brewer@doh.hawaii.gov</u>			INVOICE TO: Company <u>TetraTech</u> Address <u>737 Bishop St Ste 2340 Honolulu, HI 96813</u> Contact <u>Eric Jensen</u> Phone <u>808-225-7084</u> FAX _____ E-mail <u>eric.jensen@tetratech.com</u>			ANALYSIS REQUESTED <div style="display: flex; justify-content: space-around; font-size: 2em; font-weight: bold;"> MLA-100 MLA-111 MLA-119 </div>				
Project Name/Number:			Sampler's Name:							
Signature:										
Client Sample Identification	Matrix	Sampling Date	Sampling Time	Container Type/No.	SGS AXYS Lab Sample ID (Lab use only)					
<u>HNWWTP-EFFL</u>	<u>H₂O</u>	<u>9/19/23</u>	<u>7:54am</u>	<u>3 50ml</u>	<u>L 40347-6</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>HNWWTP-INFL</u>	<u>"</u>	<u>9/19/23</u>	<u>7:37am</u>	<u>2 60ml</u>	<u>-12</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>HNWWTP-EFFL-EB</u>	<u>"</u>	<u>9/18/23</u>	<u>7:10am</u>	<u>"</u>	<u>-3</u>	<u>X</u>	<u>X</u>	<u>X</u>		
<u>HNWWTP-INFL-EB</u>	<u>"</u>	<u>9/18/23</u>	<u>7:30am</u>	<u>"</u>	<u>-9</u>	<u>X</u>	<u>X</u>	<u>X</u>		
Relinquished by (Signature) <u>Proger B</u>			Received by (Signature) <u>AJS</u>			Courier		Waybill No.		
Date <u>10/3/23</u> Time <u>9:00am</u>			Date <u>Oct-2023</u> Time <u>09:20</u>			Sample Receipt				
Relinquished by (Signature) _____			Received by (Signature) _____							
Date _____ Time _____			Date _____ Time _____							
Remarks <u>* Filter water samples prior to analysis (0.45um)</u>						Cooler				
						Temp °C				
						Custody Seal #				
						Seal Intact Y / N				
						Sample Tags Y / N				

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

HNWWTP-EFFL-EB

Sample Collection:

18-Sep-2023 07:10

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-3

Matrix: AQUEOUS

Sample Size:

0.513 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 02:58:55

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 24

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

Concentration Units: ng/L

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		1.56 (Q)		
PFPeA	U		0.780 (Q)		
PFHxA	U		0.390 (Q)		
PFHpA	U		0.390 (Q)		
PFOA	U		0.390 (Q)		
PFNA	U		0.390 (Q)		
PFDA	U		0.390 (Q)		
PFUnA	U		0.390 (Q)		
PFDaA	U		0.312 (Q)		
PFTTrDA	U		0.390 (Q)		
PFTeDA	U		0.390 (Q)		
PFBS	U		0.390 (Q)		
PFPeS	U		0.392 (Q)		
PFHxS	U		0.390 (Q)		
PFHpS	U		0.390 (Q)		
PFOS	U		0.390 (Q)		
PFNS	U		0.390 (Q)		
PFDS	U		0.390 (Q)		
PFDoS	U		0.390 (Q)		
4:2 FTS	U		1.56 (Q)		
6:2 FTS	U		1.41 (Q)		
8:2 FTS	U		1.33 (Q)		
PFOSA	U		0.390 (Q)		
N-MeFOSA	U		0.390 (Q)		
N-EtFOSA	U		1.09 (Q)		
MeFOSAA	U		0.390 (Q)		
EtFOSAA	U		0.390 (Q)		
N-MeFOSE	U		3.90 (Q)		
N-EtFOSE	U		3.90 (Q)		
HFPO-DA	U		1.56 (Q)		
ADONA	U		1.56 (Q)		
9CI-PF3ONS	U		1.56 (Q)		
11CI-PF3OUdS	U		1.56 (Q)		
3:3 FTCA	U		1.56 (Q)		
5:3 FTCA	U		9.74 (Q)		
7:3 FTCA	U		9.74 (Q)		
PFEESA	U		0.390 (Q)		
PFMPA	U		0.780 (Q)		
PFMBA	U		0.390 (Q)		
NFDHA	U		0.780 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

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

Signed: _____Aaron Kyle_____

For Axys Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFC_FC_LC_PFAS_L40347-3_Form1A_FC4G_042S24_SJ3384014.html; Workgroup: WG88608; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HNWWTP-EFFL-EB
Sample Collection:
18-Sep-2023 07:10

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-3

Matrix: AQUEOUS

Sample Size:

0.513 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 02:58:55

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 24

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

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.

LABELLED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C4-PFBA		40.0	31.6	79.0		1.000
13C5-PFPeA		20.0	22.8	114		0.874
13C5-PFHxA		10.0	8.36	83.6	15.5	1.000
13C4-PFHpA		10.0	8.03	80.3		0.895
13C8-PFOA		10.0	9.60	96.0		1.000
13C9-PFNA		5.00	4.76	95.1		1.000
13C6-PFDA		5.00	4.21	84.2		1.000
13C7-PFUnA		5.00	4.35	87.0		1.046
13C2-PFDoA		5.00	4.36	87.2		1.080
13C2-PFTeDA		5.00	3.83	76.6		1.158
13C3-PFBS		10.0	7.85	78.3	2.49	0.800
13C3-PFHxS		10.0	8.73	87.2	2.21	0.999
13C8-PFOS		10.1	9.73	96.7	2.01	1.000
13C2-4:2 FTS		20.2	14.4	71.4	1.75	0.839
13C2-6:2 FTS		20.0	18.4	92.0	1.99	1.002
13C2-8:2 FTS		20.0	14.9	74.4	3.29	1.259
13C8-PFOA		10.0	12.2	122		1.161
D3-N-MeFOSA		10.0	8.57	85.7		1.342
D5-N-EtFOSA		10.0	7.94	79.4		1.381
D3-MeFOSAA		20.0	12.9	64.7		1.302
D5-EtFOSAA		20.0	12.0	59.9		1.327
d7-NMe-FOSE		100	107	106		1.322
d9-NEt-FOSE		100	120	120		1.363
13C3-HFPO-DA		40.0	40.3	101	2.53	1.029

(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: _____Aaron Kyle_____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

HNWWTP-EFFL

Sample Collection:

19-Sep-2023 07:54

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-6

Matrix: EFFLUENT FINAL

Sample Size:

0.521 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 04:15:42

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 30

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

Concentration Units: ng/L

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	J	3.67	1.54 (Q)		1.003
PFPeA		7.61	0.768 (Q)		1.000
PFHxA		7.18	0.384 (Q)	4.73	1.000
PFHpA	J	1.01	0.384 (Q)	2.30	1.001
PFOA		2.80	0.384 (Q)	2.20	
PFNA	J	0.418	0.384 (Q)	2.79	
PFDA	J	0.502	0.384 (Q)	4.02	1.000
PFUnA	U		0.384 (Q)		
PFDaA	U		0.307 (Q)		
PFTTrDA	U		0.384 (Q)		
PFTeDA	U		0.384 (Q)		
PFBS	R	6.68	0.384 (Q)	15.9	0.998
PFPeS	U		0.386 (Q)		
PFHxS	J	1.40	0.384 (Q)	2.36	
PFHpS	U		0.384 (Q)		
PFOS		4.00	0.384 (Q)	3.47	
PFNS	U		0.384 (Q)		
PFDS	U		0.384 (Q)		
PFDoS	U		0.384 (Q)		
4:2 FTS	U		1.54 (Q)		
6:2 FTS	R J	2.52	1.38 (Q)	0.34	1.001
8:2 FTS	U		1.31 (Q)		
PFOSA	U		0.384 (Q)		
N-MeFOSA	U		0.384 (Q)		
N-EtFOSA	U		1.08 (Q)		
MeFOSAA	U		0.384 (Q)		
EtFOSAA	R J	0.403	0.384 (Q)	3.47	
N-MeFOSE	U		3.84 (Q)		
N-EtFOSE	U		3.84 (Q)		
HFPO-DA	U		1.54 (Q)		
ADONA	U		1.54 (Q)		
9CI-PF3ONS	U		1.54 (Q)		
11CI-PF3OUdS	U		1.54 (Q)		
3:3 FTCA	U		1.54 (Q)		
5:3 FTCA	J	11.7	9.60 (Q)	1.49	1.049
7:3 FTCA	U		9.60 (Q)		
PFEESA	U		0.384 (Q)		
PFMPA	U		0.768 (Q)		
PFMBA	U		0.384 (Q)		
NFDHA	U		0.768 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

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

Signed: _____Aaron Kyle_____

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SGS AXYS METHOD MLA-110 Rev 02

Form 2

CLIENT SAMPLE NO.

HNWWTP-EFFL

Sample Collection:

19-Sep-2023 07:54

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.

HONOULIULI WWTP

Contract No.: 4066

Lab Sample I.D.:

L40347-6

Matrix: EFFLUENT FINAL

Sample Size:

0.521 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 04:15:42

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 30

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

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	V	40.0	2.91	7.26		0.997
13C5-PFPeA		20.0	11.9	59.3		0.872
13C5-PFHxA		10.0	7.84	78.4	15.4	1.000
13C4-PFHpA		10.0	8.06	80.6		0.897
13C8-PFOA		10.0	9.35	93.5		1.000
13C9-PFNA		5.00	4.47	89.5		1.000
13C6-PFDA		5.00	4.11	82.3		1.000
13C7-PFUnA		5.00	3.79	75.8		1.047
13C2-PFDoA		5.00	3.21	64.2		1.081
13C2-PFTeDA		5.00	1.45	29.1		1.158
13C3-PFBS		10.0	8.39	83.7	2.60	0.803
13C3-PFHxS		10.0	8.95	89.4	2.27	1.000
13C8-PFOS		10.1	8.88	88.3	2.05	1.000
13C2-4:2 FTS		20.2	30.4	151	1.54	0.842
13C2-6:2 FTS		20.0	17.2	85.9	2.07	1.002
13C2-8:2 FTS	V	20.0	9.16	45.7	3.17	1.257
13C8-PFOA		10.0	11.1	111		1.160
D3-N-MeFOSA		10.0	7.75	77.5		1.341
D5-N-EtFOSA		10.0	7.16	71.6		1.380
D3-MeFOSAA		20.0	19.2	95.9		1.301
D5-EtFOSAA		20.0	22.2	111		1.326
d7-NMe-FOSE		100	77.9	77.7		1.322
d9-NEt-FOSE		100	90.6	90.5		1.362
13C3-HFPO-DA		40.0	34.4	86.0	2.50	1.029

(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: _____Aaron Kyle_____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.
HNWWTP-INFL-EB
Sample Collection:
18-Sep-2023 07:30

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-9

Matrix: AQUEOUS

Sample Size:

0.468 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 03:37:22

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 27

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

Concentration Units: ng/L

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COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFBA	U		1.71 (Q)		
PFPeA	U		0.854 (Q)		
PFHxA	U		0.427 (Q)		
PFHpA	U		0.427 (Q)		
PFOA	U		0.427 (Q)		
PFNA	U		0.427 (Q)		
PFDA	U		0.427 (Q)		
PFUnA	U		0.427 (Q)		
PFDaA	U		0.342 (Q)		
PFTTrDA	U		0.427 (Q)		
PFTeDA	U		0.427 (Q)		
PFBS	U		0.427 (Q)		
PFPeS	U		0.429 (Q)		
PFHxS	U		0.427 (Q)		
PFHpS	U		0.427 (Q)		
PFOS	U		0.427 (Q)		
PFNS	U		0.427 (Q)		
PFDS	U		0.427 (Q)		
PFDoS	U		0.427 (Q)		
4:2 FTS	U		1.71 (Q)		
6:2 FTS	U		1.54 (Q)		
8:2 FTS	U		1.45 (Q)		
PFOSA	U		0.427 (Q)		
N-MeFOSA	U		0.427 (Q)		
N-EtFOSA	U		1.20 (Q)		
MeFOSAA	U		0.427 (Q)		
EtFOSAA	U		0.427 (Q)		
N-MeFOSE	U		4.27 (Q)		
N-EtFOSE	U		4.27 (Q)		
HFPO-DA	U		1.71 (Q)		
ADONA	U		1.71 (Q)		
9CI-PF3ONS	U		1.71 (Q)		
11CI-PF3OUdS	U		1.71 (Q)		
3:3 FTCA	U		1.71 (Q)		
5:3 FTCA	U		10.7 (Q)		
7:3 FTCA	U		10.7 (Q)		
PFEESA	U		0.427 (Q)		
PFMPA	U		0.854 (Q)		
PFMBA	U		0.427 (Q)		
NFDHA	U		0.854 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

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

Signed: _____Aaron Kyle_____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFC_FC_LC_PFAS_L40347-9_Form1A_FC4G_042S27_SJ3384017.html; Workgroup: WG88608; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.

HNWWTP-INFL-EB

Sample Collection:

18-Sep-2023 07:30

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-9

Matrix: AQUEOUS

Sample Size:

0.468 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 03:37:22

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 27

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

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		40.0	32.6	81.5		1.000
13C5-PFPeA		20.0	23.2	116		0.872
13C5-PFHxA		10.0	8.54	85.4	16.1	1.000
13C4-PFHpA		10.0	8.46	84.6		0.897
13C8-PFOA		10.0	9.84	98.4		1.000
13C9-PFNA		5.00	4.93	98.5		1.000
13C6-PFDA		5.00	4.33	86.6		0.999
13C7-PFUnA		5.00	4.67	93.3		1.046
13C2-PFDoA		5.00	4.24	84.7		1.079
13C2-PFTeDA		5.00	3.21	64.3		1.156
13C3-PFBS		10.0	8.90	88.9	2.66	0.802
13C3-PFHxS		10.0	9.46	94.4	2.30	1.000
13C8-PFOS		10.1	10.6	105	2.09	1.000
13C2-4:2 FTS		20.2	14.3	70.8	1.70	0.841
13C2-6:2 FTS		20.0	19.1	95.6	2.11	1.002
13C2-8:2 FTS		20.0	15.3	76.1	3.01	1.259
13C8-PFOA		10.0	12.9	129		1.159
D3-N-MeFOSA		10.0	8.15	81.5		1.340
D5-N-EtFOSA		10.0	7.97	79.7		1.379
D3-MeFOSAA		20.0	12.7	63.5		1.303
D5-EtFOSAA		20.0	11.8	58.8		1.328
d7-NMe-FOSE		100	115	114		1.321
d9-NEt-FOSE		100	118	118		1.361
13C3-HFPO-DA		40.0	41.8	105	2.65	1.029

(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: _____Aaron Kyle_____

SGS AXYS METHOD MLA-110 Rev 02

Form 1A

CLIENT SAMPLE NO.

HNWWTP-INFL

Sample Collection:

19-Sep-2023 07:37

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-12

Matrix: INFLUENT

Sample Size:

0.481 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 05:19:48

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 35

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 31

Concentration Units: ng/L

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	J	2.67	1.66 (Q)		1.000
PFPeA		3.39	0.832 (Q)		1.001
PFHxA		3.80	0.416 (Q)	3.31	1.001
PFHpA	J	0.799	0.416 (Q)	2.11	1.000
PFOA		1.71	0.416 (Q)	2.50	
PFNA	U		0.416 (Q)		
PFDA	U		0.416 (Q)		
PFUnA	U		0.416 (Q)		
PFDoA	U		0.333 (Q)		
PFTTrDA	U		0.416 (Q)		
PFTeDA	U		0.416 (Q)		
PFBS	R	6.01	0.416 (Q)	12.1	0.997
PFPeS	U		0.418 (Q)		
PFHxS	J	1.37	0.416 (Q)	2.06	
PFHpS	U		0.416 (Q)		
PFOS	R	6.53	0.416 (Q)	6.15	
PFNS	U		0.416 (Q)		
PFDS	U		0.416 (Q)		
PFDoS	U		0.416 (Q)		
4:2 FTS	U		1.66 (Q)		
6:2 FTS	R J	3.98	1.50 (Q)	0.51	1.000
8:2 FTS	U		1.41 (Q)		
PFOSA	U		0.416 (Q)		
N-MeFOSA	U		0.416 (Q)		
N-EtFOSA	U		1.17 (Q)		
MeFOSAA	U		0.416 (Q)		
EtFOSAA	U		0.416 (Q)		
N-MeFOSE	U		4.16 (Q)		
N-EtFOSE	U		4.16 (Q)		
HFPO-DA	U		1.66 (Q)		
ADONA	U		1.66 (Q)		
9CI-PF3ONS	U		1.67 (Q)		
11CI-PF3OUdS	U		1.67 (Q)		
3:3 FTCA	U		1.66 (Q)		
5:3 FTCA	U		10.4 (Q)		
7:3 FTCA	U		10.4 (Q)		
PFEESA	U		0.416 (Q)		
PFMPA	U		0.832 (Q)		
PFMBA	U		0.416 (Q)		
NFDHA	U		0.832 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL; R = peak detected but did not meet quantification criteria, result reported represents the estimated maximum possible concentration; J = concentration less than limit of quantification.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

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

Signed: _____Aaron Kyle_____

For Axy's Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFC_FC_LC_PFAS_L40347-12_Form1A_FC4G_042S35_SJ3384027.html; Workgroup: WG88608; Design ID: 3989]

SGS AXYS METHOD MLA-110 Rev 02

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HNWWTP-INFL
Sample Collection:
19-Sep-2023 07:37

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.

HONOULIULI WWTP

Lab Sample I.D.:

L40347-12

Matrix: INFLUENT

Sample Size:

0.481 L

Sample Receipt Date: 06-Oct-2023

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 05:19:48

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 35

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 31

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		40.0	4.08	10.2		1.000
13C5-PFPeA		20.0	16.9	84.6		0.872
13C5-PFHxA		10.0	7.70	77.0	15.7	0.999
13C4-PFHpA		10.0	7.37	73.7		0.898
13C8-PFOA		10.0	8.96	89.6		1.000
13C9-PFNA		5.00	4.50	90.0		1.000
13C6-PFDA		5.00	3.87	77.4		0.999
13C7-PFUnA		5.00	3.37	67.4		1.049
13C2-PFDoA		5.00	2.73	54.6		1.083
13C2-PFTeDA		5.00	1.00	20.0		1.160
13C3-PFBS		10.0	8.11	80.9	2.73	0.804
13C3-PFHxS		10.0	8.63	86.2	2.30	1.000
13C8-PFOS		10.1	8.99	89.4	2.16	1.000
13C2-4:2 FTS		20.2	18.6	92.3	1.63	0.842
13C2-6:2 FTS		20.0	16.5	82.7	1.85	1.002
13C2-8:2 FTS	V	20.0	8.93	44.5	2.89	1.256
13C8-PFOA		10.0	11.0	110		1.163
D3-N-MeFOSA		10.0	7.85	78.5		1.345
D5-N-EtFOSA		10.0	7.59	75.9		1.384
D3-MeFOSAA		20.0	10.5	52.4		1.299
D5-EtFOSAA		20.0	9.40	47.0		1.324
d7-NMe-FOSE		100	78.8	78.5		1.325
d9-NEt-FOSE		100	104	104		1.366
13C3-HFPO-DA		40.0	30.5	76.1	2.38	1.028

(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: _____Aaron Kyle_____

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.:

WG88608-101

Matrix: AQUEOUS

Sample Size:

0.500 L

Sample Receipt Date: N/A

Initial Calibration Date:

19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID:

LC MS/MS

Analysis Date: 03-Feb-2024 Time: 02:20:27

Column ID:

C18

Extract Volume (uL): 4000

Sample Data Filename:

FC4G_042 S: 21

Injection Volume (uL): 2

Blank Data Filename:

FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4G_042 S: 15

Concentration Units: ng/L

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		0.800 (Q)		
PFHxA	U		0.400 (Q)		
PFHpA	U		0.400 (Q)		
PFOA	U		0.400 (Q)		
PFNA	U		0.400 (Q)		
PFDA	U		0.400 (Q)		
PFUnA	U		0.400 (Q)		
PFDaA	U		0.320 (Q)		
PFTTrDA	U		0.400 (Q)		
PFTeDA	U		0.400 (Q)		
PFBS	U		0.400 (Q)		
PFPeS	U		0.402 (Q)		
PFHxS	U		0.400 (Q)		
PFHpS	U		0.400 (Q)		
PFOS	U		0.400 (Q)		
PFNS	U		0.400 (Q)		
PFDS	U		0.400 (Q)		
PFDoS	U		0.400 (Q)		
4:2 FTS	U		1.60 (Q)		
6:2 FTS	U		1.44 (Q)		
8:2 FTS	U		1.36 (Q)		
PFOSA	U		0.400 (Q)		
N-MeFOSA	U		0.400 (Q)		
N-EtFOSA	U		1.12 (Q)		
MeFOSAA	U		0.400 (Q)		
EtFOSAA	U		0.400 (Q)		
N-MeFOSE	U		4.00 (Q)		
N-EtFOSE	U		4.00 (Q)		
HFPO-DA	U		1.60 (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		10.0 (Q)		
7:3 FTCA	U		10.0 (Q)		
PFEESA	U		0.400 (Q)		
PFMPA	U		0.800 (Q)		
PFMBA	U		0.400 (Q)		
NFDHA	U		0.800 (Q)		

- (1) Where applicable, custom lab flags have been used on this report; U = not detected at RL.
- (2) Reporting Limit (Code): S = sample detection limit; M = method detection limit; L = lowest calibration level equivalent; Q = minimum reporting level.

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

Signed: _____Aaron Kyle_____

For Axs Internal Use Only [XSL Template: FC2-Form1A.xsl; Created: 01-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48;
Report Filename: PFC_FC_LC_PFAS_WG88608-101_Form1A_FC4G_042S21_SJ3384010.html; Workgroup: WG88608; Design ID: 3989]

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.: WG88608-101

Matrix: AQUEOUS

Sample Size: 0.500 L

Sample Receipt Date: N/A

Initial Calibration Date: 19-Feb-2023

Extraction Date: 01-Feb-2024

Instrument ID: LC MS/MS

Analysis Date: 03-Feb-2024 Time: 02:20:27

Column ID: C18

Extract Volume (uL): 4000

Sample Data Filename: FC4G_042 S: 21

Injection Volume (uL): 2

Blank Data Filename: FC4G_042 S: 21

Dilution Factor: N/A

Cal. Ver. Data Filename: FC4G_042 S: 15

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	V	40.0	2.72	6.79		1.000
13C5-PFPeA	V	20.0	6.06	30.3		0.872
13C5-PFHxA		10.0	6.34	63.4	15.6	1.000
13C4-PFHpA		10.0	7.83	78.3		0.896
13C8-PFOA		10.0	9.49	94.9		1.000
13C9-PFNA		5.00	4.69	93.8		1.000
13C6-PFDA		5.00	4.11	82.2		1.000
13C7-PFUnA		5.00	4.32	86.3		1.045
13C2-PFDoA		5.00	4.01	80.1		1.079
13C2-PFTeDA		5.00	3.49	69.9		1.157
13C3-PFBS		10.0	8.09	80.8	2.54	0.801
13C3-PFHxS		10.0	8.89	88.7	2.32	1.001
13C8-PFOS		10.1	9.63	95.7	2.02	1.000
13C2-4:2 FTS	V	20.2	6.63	32.9	1.86	0.839
13C2-6:2 FTS		20.0	17.2	86.3	1.95	1.002
13C2-8:2 FTS		20.0	15.9	79.1	3.62	1.259
13C8-PFOA		10.0	12.5	125		1.160
D3-N-MeFOSA		10.0	11.0	110		1.340
D5-N-EtFOSA		10.0	10.5	105		1.379
D3-MeFOSAA		20.0	13.0	64.9		1.303
D5-EtFOSAA		20.0	14.3	71.3		1.328
d7-NMe-FOSE		100	106	106		1.321
d9-NEt-FOSE		100	118	118		1.362
13C3-HFPO-DA		40.0	30.9	77.2	2.39	1.028

(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: _____Aaron Kyle_____

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.:	WG88608-102
Matrix:	AQUEOUS	Initial Calibration Date:	19-Feb-2023
Extraction Date:	01-Feb-2024	Instrument ID:	LC MS/MS
Analysis Date:	03-Feb-2024 Time: 01:54:41	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC4G_042 S: 19
Injection Volume (uL):	2	Blank Data Filename:	FC4G_042 S: 21
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4G_042 S: 15

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			20.0	18.7	93.3	1.007
PFPeA			10.0	9.87	98.7	1.000
PFHxA		4.33	5.00	5.10	102	1.000
PFHpA		2.05	5.00	5.24	105	1.000
PFOA		2.11	5.00	5.51	110	
PFNA		2.82	5.00	5.59	112	
PFDA		2.43	5.00	4.54	90.8	1.000
PFUnA		3.83	5.00	5.24	105	1.000
PFDoA		6.98	4.06	4.46	110	1.000
PFTTrDA		2.86	5.00	5.06	101	0.963
PFTeDA		2.24	5.00	4.84	96.8	1.001
PFBS		2.43	5.00	4.90	98.0	1.000
PFPeS		2.17	5.00	4.81	96.1	0.885
PFHxS		2.31	5.00	4.59	91.8	
PFHpS		2.11	5.00	5.62	112	0.927
PFOS		2.55	5.00	4.81	96.2	
PFNS		2.24	5.00	4.27	85.4	1.043
PFDS		2.31	5.00	5.09	102	1.077
PFDoS		2.28	5.00	4.21	84.2	
4:2 FTS		0.46	20.0	20.4	102	1.000
6:2 FTS		0.49	18.0	22.5	126	1.000
8:2 FTS		0.52	16.9	16.9	99.9	1.000
PFOSA			5.00	5.35	107	
N-MeFOSA		0.58	5.00	5.27	105	
N-EtFOSA		0.60	14.0	15.0	107	
MeFOSAA		2.06	5.00	5.69	114	
EtFOSAA		1.18	5.00	5.19	104	
N-MeFOSE			50.0	47.9	95.9	
N-EtFOSE			50.0	40.5	81.1	
HFPO-DA		2.42	20.0	21.2	106	1.001
ADONA		1.28	20.0	21.0	105	1.099
9CI-PF3ONS		3.21	20.0	21.6	108	0.970
11CI-PF3OUdS		3.23	20.0	21.7	109	1.036
3:3 FTCA	N	1.63	20.0	4.77	23.9	
5:3 FTCA		1.25	125	135	108	1.049

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
7:3 FTCA		0.73	125	162	129	1.344
PFEESA		10.4	5.00	6.77	135	1.036
PFMPA			10.0	5.33	53.3	
PFMBA			5.00	6.27	125	1.060
NFDHA			10.0	11.3	113	

(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.

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

Signed: _____Aaron Kyle_____

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-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFC_FC_LC_PFAS_WG88608-102_Form8A_SJ3384007.html; Workgroup: WG88608; Design ID: 3989]

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.:	WG88608-102
Matrix:	AQUEOUS	Initial Calibration Date:	19-Feb-2023
Extraction Date:	01-Feb-2024	Instrument ID:	LC MS/MS
Analysis Date:	03-Feb-2024 Time: 01:54:41	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC4G_042 S: 19
Injection Volume (uL):	2	Blank Data Filename:	FC4G_042 S: 21
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4G_042 S: 15

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

LABELLED COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
13C4-PFBA			40.0	4.59	11.5	0.997
13C5-PFPeA			20.0	9.49	47.4	0.874
13C5-PFHxA		15.2	10.0	8.32	83.2	1.000
13C4-PFHpA			10.0	7.82	78.2	0.896
13C8-PFOA			10.0	9.37	93.7	1.000
13C9-PFNA			5.00	4.51	90.2	1.000
13C6-PFDA			5.00	4.51	90.2	1.000
13C7-PFUnA			5.00	4.50	90.0	1.046
13C2-PFDoA			5.00	4.45	88.9	1.079
13C2-PFTeDA			5.00	3.76	75.3	1.157
13C3-PFBS		2.57	10.0	8.44	84.3	0.801
13C3-PFHxS		2.21	10.0	9.22	92.1	1.001
13C8-PFOS		2.08	10.1	10.1	100	1.000
13C2-4:2 FTS		1.61	20.2	10.7	53.3	0.839
13C2-6:2 FTS		1.84	20.0	18.1	90.7	1.001
13C2-8:2 FTS		3.03	20.0	16.9	84.2	1.258
13C8-PFOSA			10.0	12.7	127	1.160
D3-N-MeFOSA			10.0	10.6	106	1.342
D5-N-EtFOSA			10.0	10.0	100	1.381
D3-MeFOSAA			20.0	14.2	70.9	1.302
D5-EtFOSAA			20.0	14.7	73.4	1.327
d7-NMe-FOSE			100	108	107	1.322
d9-NEt-FOSE			100	129	129	1.363
13C3-HFPO-DA		2.50	40.0	40.9	102	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: _____Aaron Kyle_____

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.:	WG88608-103
Matrix:	AQUEOUS	Initial Calibration Date:	19-Feb-2023
Extraction Date:	01-Feb-2024	Instrument ID:	LC MS/MS
Analysis Date:	03-Feb-2024 Time: 01:41:52	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC4G_042 S: 18
Injection Volume (uL):	2	Blank Data Filename:	FC4G_042 S: 21
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4G_042 S: 15

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			6.40	5.66	88.4	1.003
PFPeA			3.20	2.86	89.5	1.001
PFHxA		5.04	1.60	1.68	105	1.000
PFHpA		2.06	1.60	1.55	97.0	1.000
PFOA		2.14	1.60	1.67	104	
PFNA		2.60	1.60	1.49	93.3	
PFDA		2.38	1.60	1.45	90.7	1.000
PFUnA		4.15	1.60	1.59	99.5	1.000
PFDoA		6.42	1.30	1.27	97.7	0.999
PFTTrDA		2.70	1.60	1.56	97.7	0.962
PFTeDA		2.44	1.60	1.57	98.2	1.000
PFBS		2.39	1.60	1.46	91.3	1.000
PFPeS		2.14	1.60	1.37	85.9	0.886
PFHxS		2.20	1.60	1.41	88.0	
PFHpS		2.18	1.60	1.75	109	0.927
PFOS		2.23	1.60	1.49	93.1	
PFNS		2.16	1.60	1.32	82.7	1.043
PFDS		2.22	1.60	1.51	94.5	1.077
PFDoS		2.16	1.60	1.24	77.4	
4:2 FTS		0.45	6.40	6.34	99.1	1.000
6:2 FTS		0.48	5.75	7.93	138	1.002
8:2 FTS		0.52	5.42	4.98	91.9	1.000
PFOSA			1.60	1.63	102	
N-MeFOSA		0.57	1.60	1.63	102	
N-EtFOSA		0.56	4.48	4.26	95.0	
MeFOSAA		1.86	1.60	1.42	89.0	
EtFOSAA		1.97	1.60	1.45	90.6	
N-MeFOSE			16.0	14.1	87.9	
N-EtFOSE			16.0	12.3	76.7	
HFPO-DA		2.27	6.40	6.60	103	1.000
ADONA		1.30	6.40	6.28	98.1	1.099
9CI-PF3ONS		3.37	6.40	6.51	102	0.969
11CI-PF3OUdS		3.19	6.40	6.59	103	1.035
3:3 FTCA	N	0.67	6.40	1.95	30.4	
5:3 FTCA		1.20	40.0	43.1	108	1.048

COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
7:3 FTCA		0.75	40.0	48.8	122	1.343
PFEESA		10.7	1.60	1.97	123	1.036
PFMPA			3.20	1.77	55.3	
PFMBA			1.60	1.78	111	1.061
NFDHA			3.20	3.38	106	

(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.

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

Signed: _____Aaron Kyle_____

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-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFC_FC_LC_PFAS_WG88608-103_Form8A_SJ3384005.html; Workgroup: WG88608; Design ID: 3989]

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.:	WG88608-103
Matrix:	AQUEOUS	Initial Calibration Date:	19-Feb-2023
Extraction Date:	01-Feb-2024	Instrument ID:	LC MS/MS
Analysis Date:	03-Feb-2024 Time: 01:41:52	Column ID:	C18
Extract Volume (uL):	4000	OPR Data Filename:	FC4G_042 S: 18
Injection Volume (uL):	2	Blank Data Filename:	FC4G_042 S: 21
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4G_042 S: 15

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

LABELLED COMPOUND	LAB FLAG ¹	RATIO	SPIKE CONC. (ng/mL)	CONC. FOUND (ng/mL)	% RECOVERY	RRT
13C4-PFBA			40.0	9.73	24.3	0.997
13C5-PFPeA			20.0	15.4	76.9	0.873
13C5-PFHxA		16.9	10.0	8.30	83.0	1.000
13C4-PFHpA			10.0	8.38	83.8	0.895
13C8-PFOA			10.0	9.67	96.7	1.000
13C9-PFNA			5.00	4.81	96.2	1.000
13C6-PFDA			5.00	4.43	88.6	1.000
13C7-PFUnA			5.00	4.56	91.2	1.046
13C2-PFDoA			5.00	4.32	86.5	1.080
13C2-PFTeDA			5.00	3.68	73.6	1.158
13C3-PFBS		2.48	10.0	8.28	82.6	0.801
13C3-PFHxS		2.31	10.0	9.03	90.2	1.000
13C8-PFOS		2.00	10.1	9.97	99.1	1.000
13C2-4:2 FTS		1.59	20.2	12.5	62.0	0.839
13C2-6:2 FTS		1.85	20.0	17.7	88.6	1.001
13C2-8:2 FTS		3.19	20.0	16.1	80.5	1.259
13C8-PFOSA			10.0	12.9	129	1.160
D3-N-MeFOSA			10.0	9.95	99.5	1.341
D5-N-EtFOSA			10.0	9.61	96.1	1.380
D3-MeFOSAA			20.0	13.9	69.7	1.302
D5-EtFOSAA			20.0	14.1	70.3	1.327
d7-NMe-FOSE			100	112	112	1.322
d9-NEt-FOSE			100	123	123	1.362
13C3-HFPO-DA		2.31	40.0	39.7	99.3	1.028

(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: _____Aaron Kyle_____

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
 CS1 Data Filename: FC3G_006 S: 16
 CS2 Data Filename: FC3G_006 S: 17
 CS3 Data Filename: FC3G_006 S: 18
 CS4 Data Filename: FC3G_006 S: 19
 CS5 Data Filename: FC3G_006 S: 20
 CS6 Data Filename: FC3G_006 S: 21
 CS7 Data Filename: FC3G_006 S: 22
 CS8 Data Filename: FC3G_006 S: 23

RELATIVE RESPONSE (RR)

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7		
PFBA		1.14	0.93	0.92	0.86	0.90	0.86	0.86	0.86	0.92	10.4
PFPeA		1.21	1.06	1.02	0.98	1.03	0.98	0.98	0.97	1.03	7.90
PFHxA		1.30	1.13	1.04	0.94	0.98	0.95	0.94	0.97	1.03	12.1
PFHpA		1.38	1.18	1.11	1.16	1.20	1.11	1.14	1.13	1.18	7.43
PFOA		1.47	1.28	1.26	1.18	1.22	1.19	1.18	1.18	1.24	7.98
PFNA		1.21	1.05	1.00	1.01	1.05	1.04	1.02	1.02	1.05	6.47
PFDA		0.96	0.82	0.85	0.76	0.82	0.80	0.77	0.80	0.82	7.62
PFUnA		0.83	0.74	0.74	0.68	0.74	0.73	0.71	0.74	0.74	5.90
PFDoA		1.25	1.14	1.07	1.00	1.08	1.05	1.04	1.01	1.08	7.41
PFTrDA		1.02	0.84	0.84	0.82	0.86	0.81	0.81	0.73	0.84	9.87
PFTeDA		0.94	0.83	0.82	0.74	0.79	0.78	0.76	0.71	0.80	8.77
PFBS		1.07	1.05	1.00	1.01	1.02	1.00	1.01	1.02	1.02	2.48
PFPeS		1.01	0.98	1.01	0.99	1.03	1.04	1.03	0.98	1.01	2.30
PFHxS		1.38	1.39	1.37	1.26	1.35	1.32	1.34	1.32	1.34	3.07
PFHpS		1.01	0.98	1.09	0.97	1.02	1.02	1.00	0.99	1.01	3.72
PFOS		1.43	1.15	1.09	1.05	1.15	1.23	1.10	1.13	1.17	10.1
PFNS		1.17	1.19	1.19	1.10	1.16	1.15	1.14	1.11	1.15	2.93
PFDS		1.01	1.05	1.02	1.01	1.05	1.03	1.00	1.02	1.02	1.76
PFDoS		0.90	0.86	0.83	0.79	0.85	0.84	0.83	0.85	0.84	3.59
4:2 FTS		0.48	0.47	0.56	0.55	0.53	0.52	0.51	0.46	0.51	7.33
6:2 FTS		0.52	0.53	0.48	0.51	0.49	0.51	0.49	0.45	0.50	5.07
8:2 FTS		0.31	0.33	0.33	0.31	0.34	0.33	0.31	0.27	0.32	7.19
PFOSA		0.98	0.97	0.97	0.92	0.96	0.93	0.93	0.95	0.95	2.35
N-MeFOSA		0.97	0.97	1.03	0.93	0.96	0.96	0.98	0.90	0.96	4.03
N-EtFOSA		1.25	1.19	1.23	1.10	1.22	1.19	1.18	1.18	1.19	3.74
MeFOSAA		0.66	0.79	0.88	0.83	0.83	0.83	0.86	0.84	0.82	8.30
EtFOSAA		0.76	0.64	0.68	0.69	0.70	0.67	0.72	0.68	0.69	5.01
N-MeFOSE		0.81	0.78	0.78	0.74	0.78	0.77	0.75	0.74	0.77	3.09
N-EtFOSE		1.12	1.10	1.09	1.07	1.13	1.09	1.08	1.06	1.09	2.17
HFPO-DA		0.96	0.94	0.93	0.90	0.96	0.94	0.91	0.88	0.93	3.20
ADONA		8.26	7.79	7.49	7.42	7.83	7.38	7.65	7.14	7.62	4.53
9CI-PF3ONS		2.17	2.08	1.99	1.97	2.10	1.94	1.94	1.80	2.00	5.72
11CI-PF3OUdS		1.32	1.28	1.20	1.20	1.29	1.20	1.24	1.17	1.24	4.39
3:3 FTCA		0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.06	0.05	7.14
5:3 FTCA		0.22	0.18	0.19	0.17	0.18	0.17	0.17	0.18	0.18	9.21
7:3 FTCA		0.11	0.10	0.10	0.09	0.10	0.09	0.09	0.10	0.10	6.93
PFEESA		2.74	2.73	2.70	2.57	2.71	2.64	2.64	2.80	2.69	2.67
PFMPA		1.40	1.34	1.34	1.26	1.37	1.31	1.35	1.46	1.36	4.34

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			1.84	1.70	1.72	1.71	1.82	1.75	1.78	1.93	1.78	4.41
NFDHA			0.05	0.05	0.06	0.05	0.06	0.04	0.05	0.04	0.05	15.8

- (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: _____Kristina Coleman_____

For Axys Internal Use Only [XSL Template: FC2-Form3A.xsl; Created: 01-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFOA_FC_LC_19-Feb-2023_FC3G_Form3A_GS107461.html; Workgroup: WG88608; Design ID: 3989]

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3G_006 S: 16
CS2 Data Filename: FC3G_006 S: 17
CS3 Data Filename: FC3G_006 S: 18
CS4 Data Filename: FC3G_006 S: 19
CS5 Data Filename: FC3G_006 S: 20
CS6 Data Filename: FC3G_006 S: 21
CS7 Data Filename: FC3G_006 S: 22
CS8 Data Filename: FC3G_006 S: 23

Labeled Compound	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
13C4-PFBA			1.15	1.18	1.14	1.13	1.15	1.16	1.16	1.14	1.15	1.43
13C5-PFPeA			0.87	0.90	0.88	0.86	0.83	0.87	0.86	0.81	0.86	3.20
13C5-PFHxA			0.70	0.75	0.73	0.72	0.73	0.74	0.74	0.72	0.73	2.04
13C4-PFHpA			3.23	3.36	3.29	3.30	3.12	3.45	3.17	3.25	3.27	3.24
13C8-PFOA			3.52	3.75	3.58	3.76	3.61	3.80	3.62	3.76	3.67	2.82
13C9-PFNA			1.05	1.09	1.09	1.05	1.07	1.06	1.07	1.09	1.07	1.63
13C6-PFDA			0.97	1.07	1.00	1.01	0.97	1.02	1.04	0.98	1.01	3.74
13C7-PFUnA			1.09	1.21	1.11	1.13	1.12	1.07	1.03	0.77	1.07	12.3
13C2-PFDoA			0.87	1.00	0.93	0.94	0.93	0.95	0.96	0.98	0.94	4.10
13C2-PFTeDA			0.76	0.85	0.77	0.79	0.81	0.81	0.83	0.88	0.81	5.10
13C3-PFBS			1.33	1.32	1.30	1.27	1.34	1.30	1.29	1.15	1.29	4.67
13C3-PFHxS			1.07	1.14	1.07	1.05	1.09	1.07	1.05	1.08	1.08	2.55
13C8-PFOS			0.91	0.94	0.91	0.92	0.91	0.91	0.96	0.90	0.92	2.11
13C2-4:2 FTS			1.12	1.07	1.02	0.98	1.05	1.01	1.00	1.00	1.03	4.27
13C2-6:2 FTS			0.92	0.96	0.95	0.90	0.97	0.93	0.98	1.01	0.95	3.79
13C2-8:2 FTS			1.37	1.43	1.33	1.38	1.41	1.37	1.41	1.46	1.40	2.80
13C8-PFOA			1.76	1.80	1.79	1.71	1.71	1.74	1.84	1.82	1.77	2.87
D3-N-MeFOSA			0.25	0.26	0.24	0.24	0.25	0.24	0.25	0.28	0.25	4.94
D5-N-EtFOSA			0.23	0.24	0.23	0.23	0.22	0.22	0.23	0.23	0.23	3.19
D3-MeFOSAA			0.62	0.67	0.65	0.64	0.71	0.74	0.76	0.88	0.71	12.2
D5-EtFOSAA			0.52	0.59	0.54	0.54	0.58	0.61	0.63	0.75	0.59	12.4
d7-NMe-FOSE			1.88	2.01	1.94	1.89	1.90	1.88	1.99	1.96	1.93	2.67
d9-NEt-FOSE			1.49	1.62	1.55	1.51	1.51	1.51	1.60	1.58	1.55	3.09
13C3-HFPO-DA			0.28	0.31	0.31	0.30	0.29	0.31	0.29	0.27	0.29	5.27

(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: _____Kristina Coleman_____

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
CS1 Data Filename: FC3G_006 S: 16
CS2 Data Filename: FC3G_006 S: 17
CS3 Data Filename: FC3G_006 S: 18
CS4 Data Filename: FC3G_006 S: 19
CS5 Data Filename: FC3G_006 S: 20
CS6 Data Filename: FC3G_006 S: 21
CS7 Data Filename: FC3G_006 S: 22
CS8 Data Filename: FC3G_006 S: 23

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PFBA										
PFPeA										
PFHxA			5.63	5.90	5.29	4.81	5.06	4.89	4.87	5.02
PFHpA			2.04	2.02	2.06	2.01	2.00	1.95	2.00	2.00
PFOA			1.90	1.98	1.92	1.86	1.89	1.91	1.95	1.86
PFNA			3.21	2.58	2.42	2.64	2.78	2.71	2.66	2.67
PFDA			2.73	2.60	2.75	2.69	2.64	2.75	2.67	2.68
PFUnA			3.76	3.56	3.89	3.64	3.81	3.83	3.70	3.79
PFDoA			6.48	6.53	6.28	6.40	6.42	6.55	6.31	6.34
PFTTrDA			2.95	2.60	2.69	2.75	2.74	2.74	2.69	2.66
PFTeDA			3.00	2.18	2.31	2.19	2.29	2.29	2.28	2.31
PFBS			2.39	2.39	2.41	2.57	2.52	2.49	2.48	2.48
PFPeS			1.97	2.00	2.02	2.15	2.03	2.11	2.10	2.12
PFHxS			1.78	2.06	2.22	2.05	2.26	2.22	2.19	2.22
PFHpS			2.22	2.01	2.15	2.11	2.05	2.07	2.04	2.03
PFOS			2.03	2.34	2.37	2.33	2.57	2.48	2.38	2.49
PFNS			2.06	2.21	2.14	2.21	2.20	2.19	2.18	2.17
PFDS			2.14	2.11	2.26	2.27	2.23	2.22	2.21	2.23
PFDoS			2.14	2.14	2.07	2.12	2.12	2.17	2.16	2.14
4:2 FTS			0.43	0.42	0.49	0.52	0.49	0.48	0.48	0.50
6:2 FTS			0.48	0.51	0.48	0.50	0.46	0.47	0.48	0.49
8:2 FTS			0.49	0.50	0.51	0.50	0.53	0.51	0.51	0.50
PFOSA										
N-MeFOSA			0.64	0.57	0.59	0.56	0.57	0.58	0.58	0.58
N-EtFOSA			0.61	0.57	0.58	0.56	0.57	0.57	0.58	0.57
MeFOSAA			1.25	1.51	1.92	1.84	1.84	1.96	1.98	2.00
EtFOSAA			0.96	1.23	1.29	1.33	1.26	1.22	1.30	1.28
N-MeFOSE										
N-EtFOSE										
HFPO-DA			2.55	2.55	2.69	2.48	2.51	2.66	2.45	2.59
ADONA			1.16	1.17	1.16	1.18	1.15	1.18	1.17	1.18
9CI-PF3ONS			3.41	3.45	3.19	3.06	3.18	3.13	3.06	3.13
11CI-PF3OUdS			3.16	3.35	3.24	3.09	3.13	3.17	3.20	3.18
3:3 FTCA			1.08	1.07	1.14	1.13	1.16	1.16	1.19	1.18
5:3 FTCA			1.42	1.32	1.35	1.21	1.24	1.20	1.21	1.22

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
7:3 FTCA			0.81	0.77	0.81	0.76	0.79	0.76	0.78	0.77
PFEESA			8.87	9.36	9.77	10.1	10.3	10.1	10.4	10.5
PFMPA										
PFMBA										
NFDHA										

(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: _____Kristina Coleman_____

For Axys Internal Use Only [XSL Template: FC2-Form3C.xsl; Created: 01-Mar-2024 12:03:52; Application: XMLTransformer-1.18.48; Report Filename: PFOA_FC_LC_19-Feb-2023_FC3G_Form3C_GS107461.html; Workgroup: WG88608; Design ID: 3989]

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: 19-Feb-2023

Instrument ID: LC MS/MS

LC Column ID: C18

CS0 Data Filename: N/A
 CS1 Data Filename: FC3G_006 S: 16
 CS2 Data Filename: FC3G_006 S: 17
 CS3 Data Filename: FC3G_006 S: 18
 CS4 Data Filename: FC3G_006 S: 19
 CS5 Data Filename: FC3G_006 S: 20
 CS6 Data Filename: FC3G_006 S: 21
 CS7 Data Filename: FC3G_006 S: 22
 CS8 Data Filename: FC3G_006 S: 23

LABELED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C4-PFBA										
13C5-PFPeA										
13C5-PFHxA			20.2	21.2	22.4	21.8	24.1	19.9	23.9	21.1
13C4-PFHpA										
13C8-PFOA										
13C9-PFNA										
13C6-PFDA										
13C7-PFUnA										
13C2-PFDoA										
13C2-PFTeDA										
13C3-PFBS			2.56	2.45	2.51	2.44	2.54	2.53	2.48	2.47
13C3-PFHxS			2.22	2.29	2.28	2.25	2.22	2.24	2.19	2.24
13C8-PFOS			2.09	2.04	1.95	2.04	2.08	2.07	2.11	2.03
13C2-4:2 FTS			1.91	1.74	1.67	1.58	1.57	1.48	1.14	0.55
13C2-6:2 FTS			1.88	1.97	1.95	1.75	1.85	1.57	1.33	0.65
13C2-8:2 FTS			3.33	3.33	3.15	3.12	3.07	2.71	2.34	1.15
13C8-PFOSA										
D3-N-MeFOSA										
D5-N-EtFOSA										
D3-MeFOSAA										
D5-EtFOSAA										
d7-NMe-FOSE										
d9-NEt-FOSE										
13C3-HFPO-DA			2.38	2.43	2.52	2.53	2.46	2.51	2.47	2.55

(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: _____ Kristina Coleman _____

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: 19-Feb-2023

VER Data Filename: FC4G_042 S: 15

Instrument ID: LC MS/MS

Analysis Date: 03-Feb-2024

LC Column ID: C18

Analysis Time: 01:03:31

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.003	213 > 169		20.0	19.5	97.3
PFPeA		1.001	263 > 219		10.0	9.54	95.4
PFHxA		1.000	313 > 269	4.52	5.00	5.27	105
PFHpA		1.000	363 > 319	2.04	5.00	5.15	103
PFOA		1.000	413 > 369	2.22	5.00	5.66	113
PFNA		1.000	463 > 419	2.70	5.00	5.31	106
PFDA		1.000	513 > 469	2.52	5.00	4.42	88.4
PFUnA		1.000	563 > 519	3.74	5.00	4.97	99.3
PFDoA		0.999	613 > 569	6.88	4.06	4.57	113
PFTTrDA		0.962	663 > 619	2.82	5.00	5.27	105
PFTTeDA		1.000	713 > 669	2.35	5.00	4.91	98.1
PFBS		1.000	299 > 80	2.33	5.00	4.86	97.1
PFPeS		0.884	349 > 80	2.17	5.00	4.97	99.4
PFHxS		1.001	399 > 80	2.17	5.00	4.62	92.4
PFHpS		0.927	449 > 80	2.11	5.00	5.65	113
PFOS		1.000	499 > 80	2.38	5.00	4.56	91.2
PFNS		1.043	549 > 80	2.20	5.00	4.27	85.4
PFDS		1.077	599 > 80	2.29	5.00	5.14	103
PFDoS			699 > 80	2.31	5.00	5.56	111
4:2 FTS		0.999	327 > 307	0.51	20.0	22.5	112
6:2 FTS		1.000	427 > 407	0.48	18.0	20.1	112
8:2 FTS		1.000	527 > 507	0.51	17.0	19.0	112
PFOSA		1.000	498 > 78		5.00	5.58	112
N-MeFOSA		1.000	512 > 219	0.58	5.00	5.28	106
N-EtFOSA		1.001	526 > 219	0.55	14.0	13.8	98.4
MeFOSAA		1.001	570 > 419	1.91	5.00	5.24	105
EtFOSAA		1.001	584 > 419	1.09	5.00	4.43	88.6
N-MeFOSE		1.002	616 > 59		50.0	54.7	109
N-EtFOSE		1.002	630 > 59		50.0	49.4	98.7
HFPO-DA		1.000	285 > 169	2.50	20.0	22.6	113
ADONA		1.099	377 > 251	1.29	20.0	22.4	112
9CI-PF3ONS		0.969	531 > 351	3.17	20.0	22.3	111
11CI-PF3OUdS		1.036	631 > 451	3.22	20.0	26.0	130
3:3 FTCA			241 > 177	1.24	20.0	21.4	107
5:3 FTCA		1.049	341 > 237	1.27	125	139	112
7:3 FTCA		1.346	441 > 317	0.75	125	154	123
PFEESA		1.036	315 > 135	11.1	5.00	5.99	120
PFMPA			229 > 85		10.0	9.86	98.6
PFMBA		1.061	279 > 85		5.00	4.91	98.2
NFDHA			295 > 201		10.0	8.80	88.0

(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: _____ Aaron Kyle _____

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: 19-Feb-2023

VER Data Filename: FC4G_042 S: 15

Instrument ID: LC MS/MS

Analysis Date: 03-Feb-2024

LC Column ID: C18

Analysis Time: 01:03:31

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	32.9	82.3
13C5-PFPeA		0.874	268 > 223		20.0	24.8	124
13C5-PFHxA		1.000	318 > 273	15.1	10.0	8.84	88.4
13C4-PFHpA		0.895	367 > 322		10.0	8.72	87.2
13C8-PFOA		1.000	421 > 376		10.0	10.2	102
13C9-PFNA		1.000	472 > 427		5.00	5.14	103
13C6-PFDA		1.000	519 > 474		5.00	4.97	99.5
13C7-PFUnA		1.046	570 > 525		5.00	4.82	96.3
13C2-PFDoA		1.080	615 > 570		5.00	4.88	97.6
13C2-PFTeDA		1.158	715 > 670		5.00	5.54	111
13C3-PFBS		0.801	302 > 80	2.51	10.0	9.00	89.8
13C3-PFHxS		1.000	402 > 80	2.22	10.0	9.71	97.0
13C8-PFOS		1.000	507 > 80	2.08	10.1	11.5	114
13C2-4:2 FTS		0.840	329 > 81	1.68	20.2	14.8	73.6
13C2-6:2 FTS		1.002	429 > 81	1.84	20.0	21.0	105
13C2-8:2 FTS		1.259	529 > 81	3.11	20.0	16.4	81.7
13C8-PFOSA		1.162	506 > 78		10.0	13.1	131
D3-N-MeFOSA		1.342	515 > 219		10.0	11.8	118
D5-N-EtFOSA		1.380	531 > 219		10.0	11.9	119
D3-MeFOSAA		1.303	573 > 419		20.0	15.4	76.8
D5-EtFOSAA		1.328	589 > 419		20.0	17.2	86.2
d7-NMe-FOSE		1.322	623 > 59		100	131	130
d9-NEt-FOSE		1.363	639 > 59		100	142	142
13C3-HFPO-DA		1.028	287 > 169	2.37	40.0	40.1	100

(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: _____Aaron Kyle_____

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: 19-Feb-2023

VER Data Filename: FC4G_042 S: 31

Instrument ID: LC MS/MS

Analysis Date: 03-Feb-2024

LC Column ID: C18

Analysis Time: 04:28:31

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PFBA		1.003	213 > 169		20.0	19.2	96.1
PFPeA		1.001	263 > 219		10.0	9.76	97.6
PFHxA		1.000	313 > 269	4.52	5.00	5.28	106
PFHpA		1.000	363 > 319	2.04	5.00	5.10	102
PFOA		1.001	413 > 369	2.14	5.00	5.57	111
PFNA		1.001	463 > 419	2.70	5.00	5.23	105
PFDA		1.000	513 > 469	2.56	5.00	4.56	91.1
PFUnA		1.000	563 > 519	3.61	5.00	5.07	101
PFDoA		0.999	613 > 569	6.98	4.06	4.35	107
PFTTrDA		0.963	663 > 619	2.89	5.00	5.29	106
PFTeDA		1.001	713 > 669	2.31	5.00	4.84	96.9
PFBS		1.000	299 > 80	2.44	5.00	4.58	91.6
PFPeS		0.887	349 > 80	2.14	5.00	5.02	100
PFHxS		1.000	399 > 80	2.25	5.00	4.73	94.6
PFHpS		0.927	449 > 80	2.11	5.00	5.76	115
PFOS		1.000	499 > 80	2.57	5.00	4.95	99.1
PFNS		1.043	549 > 80	2.17	5.00	4.32	86.4
PFDS		1.077	599 > 80	2.32	5.00	5.22	104
PFDoS			699 > 80	2.29	5.00	5.65	113
4:2 FTS		1.000	327 > 307	0.50	20.0	21.4	107
6:2 FTS		0.999	427 > 407	0.50	18.0	20.4	114
8:2 FTS		1.000	527 > 507	0.51	17.0	17.7	104
PFOSA		1.000	498 > 78		5.00	5.53	111
N-MeFOSA		1.000	512 > 219	0.62	5.00	4.77	95.4
N-EtFOSA		1.001	526 > 219	0.62	14.0	10.3	73.3
MeFOSAA		1.000	570 > 419	2.31	5.00	5.47	109
EtFOSAA		1.001	584 > 419	1.22	5.00	5.34	107
N-MeFOSE		1.002	616 > 59		50.0	54.1	108
N-EtFOSE		1.002	630 > 59		50.0	49.1	98.3
HFPO-DA		1.000	285 > 169	2.36	20.0	21.7	108
ADONA		1.098	377 > 251	1.31	20.0	22.5	113
9CI-PF3ONS		0.969	531 > 351	3.23	20.0	22.0	110
11CI-PF3OUdS		1.035	631 > 451	3.17	20.0	25.3	126
3:3 FTCA			241 > 177	1.10	20.0	21.4	107
5:3 FTCA		1.050	341 > 237	1.26	125	143	115
7:3 FTCA		1.343	441 > 317	0.75	125	160	128
PFEESA		1.036	315 > 135	11.0	5.00	5.89	118
PFMPA			229 > 85		10.0	9.78	97.8
PFMBA		1.062	279 > 85		5.00	5.08	102
NFDHA			295 > 201		10.0	8.88	88.8

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

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

Signed: _____ Aaron Kyle _____

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: 19-Feb-2023

VER Data Filename: FC4G_042 S: 31

Instrument ID: LC MS/MS

Analysis Date: 03-Feb-2024

LC Column ID: C18

Analysis Time: 04:28:31

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C4-PFBA		1.000	217 > 172		40.0	32.9	82.1
13C5-PFPeA		0.873	268 > 223		20.0	24.7	123
13C5-PFHxA		1.000	318 > 273	14.5	10.0	8.99	89.9
13C4-PFHpA		0.897	367 > 322		10.0	9.24	92.4
13C8-PFOA		0.999	421 > 376		10.0	10.7	107
13C9-PFNA		1.000	472 > 427		5.00	5.33	107
13C6-PFDA		1.000	519 > 474		5.00	5.20	104
13C7-PFUnA		1.046	570 > 525		5.00	4.91	98.3
13C2-PFDoA		1.080	615 > 570		5.00	5.23	105
13C2-PFTeDA		1.156	715 > 670		5.00	5.56	111
13C3-PFBS		0.803	302 > 80	2.62	10.0	9.24	92.2
13C3-PFHxS		1.000	402 > 80	2.28	10.0	9.89	98.7
13C8-PFOS		1.000	507 > 80	2.03	10.1	11.2	111
13C2-4:2 FTS		0.841	329 > 81	1.58	20.2	15.9	78.8
13C2-6:2 FTS		1.002	429 > 81	1.88	20.0	21.6	108
13C2-8:2 FTS		1.258	529 > 81	3.14	20.0	18.0	89.7
13C8-PFOSA		1.159	506 > 78		10.0	13.2	132
D3-N-MeFOSA		1.340	515 > 219		10.0	11.9	119
D5-N-EtFOSA		1.379	531 > 219		10.0	11.9	119
D3-MeFOSAA		1.302	573 > 419		20.0	16.8	84.1
D5-EtFOSAA		1.327	589 > 419		20.0	17.2	86.2
d7-NMe-FOSE		1.321	623 > 59		100	138	138
d9-NEt-FOSE		1.362	639 > 59		100	147	147
13C3-HFPO-DA		1.029	287 > 169	2.49	40.0	41.2	103

(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: _____Aaron Kyle_____

