



2045 Mills Road West

TEL: (250) 655-5800

Sidney, BC, Canada V8L5X2

TOLL-FREE: 1-888-373-0881

SGS AXYS Client No.: 4066

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

The SGS AXYS contact for these data is Dale Robinson.

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BATCH SUMMARY

Batch ID: WG88609	Date: 08-Jul-2024
Analysis Type: Per- and Polyfluoroalkyl Substances (PFAS)_UltraShort	Matrix Type: Aqueous
BATCH MAKEUP	
Contract: 4066 Samples: L40552-1 SIWWTP-BIOS_SPLP (FC10214-1L) L40552-2 HUWWTP-BIOS_SPLP (FC10214-2L) L40552-3 LAWWTP-BIOS_SPLP (FC10214-3L) L40552-4 LAWWTP-COMP_SPLP (FC10214-4L)	Blank: WG88609-101 Reference or Spike: WG88609-102 WG88609-103 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. The reported concentration values represent the acid forms of the compounds. 5. All samples were not filtered prior to extraction – data represents whole-water results. 6. For all the field samples, recoveries of some labeled surrogates were slightly below the method lower control limits and flagged with a 'V' on reports. Since isotope dilution method produces data that are recovery corrected, slight variances from the method specifications are deemed not to affect the quantification of the associated analytes. 7. For the calibration verification (FC4V_008 S: 4), recovery of the labeled surrogate 13C2-PFEtA was slightly below the method lower control limit. However, the recovery of the associated analyte met the method specifications, data is not considered affected. 	

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February 2017

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

CHAIN OF CUSTODY

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

SGS AXYS CLIENT #: **4066**

REPORT TO: Company: <u>Hawaii Doh-HEER Office</u> Address: <u>2385 Waimanu Home Rd #100</u> <u>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</u> <u>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 MLA-110 MLA-111 MLA-119 SPLP (MLA-110, 111, 119) Method 1314 - msls-11 b11-119 b11-119 b11-119						
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)					
LAWWTP-BIOS SI WWTP-BIOS 1	biosolids	9/27/23	8:00 am	Freezer bag	L40552-1	X	X	X	X	
HU WWTP-BIOS 2	"	9/28/23	11:00 am	"	-2	X	X	X	X	
LAWWTP-BIOS 3	"	9/20/23	12:00 pm	"	-3	X	X	X	X	
LAWWTP-COMP 4	compost	9/20/23	12:00 pm	"	-4	X	X	X	X	X
AJS 16-NOV-23 + WATER						INITIAL ASSESSMENT				
						LABEL VERIFICATION				
Relinquished by (Signature)		Date	Time	Received by (Signature)		Courier		Waybill No.		
<u>Roger Brewer</u>		10/3/23	9:00 am	<u>AJS 15-NOV-23</u>		Fx				
Relinquished by (Signature)		Date	Time	Received by (Signature)		Sample Receipt				
Fx				<u>[Signature]</u>						
Remarks				Date		Temp °C		Cooler		
Process using Multi-Increment sampling procedures (Client 22A) - Test minimum 5g subsample - Recombine compost sample and send to Rob Caldwell at the Lakeview, Ontario lab for a soil column test. (two leachate samples generated) - Test leachate samples using MLA-110 and MLA-111 and MLA-119 - Send subsamples of leachate to Eurofins, Sacramento, for PFAS MTA analysis (+TOP1 + AUF) + CDC included with compost sample - SGS-Axys should also test the leachate for TOP1 + TOF (filter before testing)				10/05/23		5.2 IR#1				

SGS AXYS METHOD MLA-120 Rev 1

Form 1A

CLIENT SAMPLE NO.
SIWWTP-BIOS_SPLP (FC10214-1L)
Sample Collection:
27-Sep-2023 08:00

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. WWTP BIOS AND COMP
Lab Sample I.D.: L40552-1
Sample Size: 0.0206 L
Initial Calibration Date: 22-Mar-2024
Instrument ID: LC MS/MS
Column ID: POLAR X
Sample Data Filename: FC4V_008 S: 23
Blank Data Filename: FC4V_008 S: 10
Cal. Ver. Data Filename: FC4V_008 S: 4

Matrix: AQUEOUS
Sample Receipt Date: 15-Nov-2023
Extraction Date: 09-Apr-2024
Analysis Date: 12-Apr-2024 Time: 04:54:11
Extract Volume (uL): 2000
Injection Volume (uL): 4
Dilution Factor: N/A
Concentration Units: ng/L

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

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFMes	U		9.70 (L)		
PFEtS	U		21.6 (S)		
PFPrS	U		4.94 (L)		
PFEtA	U		923 (S)		
PFPrA	U		37.1 (S)		

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

Form 2

CLIENT SAMPLE NO.
SIWWTP-BIOS_SPLP (FC10214-1L)Sample Collection:
27-Sep-2023 08:00

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.

WWTP BIOS AND COMP

Lab Sample I.D.:

L40552-1

Matrix: AQUEOUS

Sample Size:

0.0206 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 04:54:11

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 23

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng absolute

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

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C2-PFEtA	V	84.7	3.16	3.73	0.16	1.190
13C3-PFPrA	V	84.0	11.0	13.0	0.72	1.051

(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: _____Henry Huang_____

SGS AXYS METHOD MLA-120 Rev 1

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HUWWTP-BIOS_SPLP
(FC10214-2L)
Sample Collection:
28-Sep-2023 11:00

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.

WWTP BIOS AND COMP

Lab Sample I.D.:

L40552-2

Matrix: AQUEOUS

Sample Size:

0.0210 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 05:09:57

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 24

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng/L

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

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PFMes	U		9.54 (L)		
PFEtS	U		5.77 (S)		
PFPrS	U		4.86 (L)		
PFEtA		133	125 (S)	0.05	1.000
PFPrA	U		19.1 (L)		

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
HUWWTP-BIOS_SPLP
(FC10214-2L)
Sample Collection:
28-Sep-2023 11:00

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.

WWTP BIOS AND COMP

Lab Sample I.D.:

L40552-2

Matrix: AQUEOUS

Sample Size:

0.0210 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 05:09:57

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 24

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng absolute

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

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C2-PFETa	V	84.7	16.4	19.4	0.35	1.191
13C3-PFPrA		84.0	28.1	33.4	0.57	1.051

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LAWWTP-BIOS_SPLP
(FC10214-3L)
Sample Collection:
20-Sep-2023 12:00

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.

WWTP BIOS AND COMP

Lab Sample I.D.:

L40552-3

Matrix: AQUEOUS

Sample Size:

0.0206 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 05:25:42

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 25

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng/L

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

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PfMeS	U		9.72 (L)		
PfEtS	U		6.44 (S)		
PfPrS	U		4.95 (L)		
PfEtA	R	401	305 (S)	0.02	0.990
PfPrA	U		19.5 (L)		

(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.

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

Form 2

CLIENT SAMPLE NO.
LAWWTP-BIOS_SPLP
(FC10214-3L)
Sample Collection:
20-Sep-2023 12:00

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.

WWTP BIOS AND COMP

Contract No.: 4066

Lab Sample I.D.:

L40552-3

Matrix: AQUEOUS

Sample Size:

0.0206 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 05:25:42

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 25

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng absolute

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

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C2-PFEtA	V	84.7	9.38	11.1	0.32	1.190
13C3-PFPrA		84.0	38.0	45.3	0.55	1.051

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

Form 1A

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LAWWTP-COMP_SPLP
(FC10214-4L)
Sample Collection:
20-Sep-2023 12:00

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.

WWTP BIOS AND COMP

Lab Sample I.D.:

L40552-4

Matrix: AQUEOUS

Sample Size:

0.0205 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 05:41:27

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 26

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng/L

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

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PfMeS		532	9.78 (L)	0.18	0.751
PfEtS	U		23.5 (S)		
PfPrS	U		4.98 (L)		
PfEtA		5410	871 (S)	0.09	1.000
PfPrA	U		35.9 (S)		

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

Form 2

PERFLUORINATED ORGANICS ANALYSIS REPORT

CLIENT SAMPLE NO.
LAWWTP-COMP_SPLP
(FC10214-4L)
Sample Collection:
20-Sep-2023 12:00

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.

WWTP BIOS AND COMP

Lab Sample I.D.:

L40552-4

Matrix: AQUEOUS

Sample Size:

0.0205 L

Sample Receipt Date: 15-Nov-2023

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 05:41:27

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 26

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng absolute

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

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C2-PFETa	V	84.7	2.80	3.31	0.32	1.204
13C3-PFPrA	V	84.0	7.46	8.88	0.40	1.063

(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: _____Henry Huang_____

SGS AXYS METHOD MLA-120 Rev 1

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.:

WG88609-101

Matrix: AQUEOUS

Sample Size:

0.0200 L

Sample Receipt Date: N/A

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 01:29:20

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 10

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng/L

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

COMPOUND	LAB FLAG ¹	CONC. FOUND	REPORTING LIMIT (RL) ²	RATIO	RRT
PfMeS	U		10.0 (L)		
PfEtS	U		5.15 (L)		
PfPrS	U		5.10 (L)		
PfEtA	U		102 (L)		
PfPrA	U		20.0 (L)		

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

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

Project No.

N/A

Contract No.: 4066

Lab Sample I.D.:

WG88609-101

Matrix: AQUEOUS

Sample Size:

0.0200 L

Sample Receipt Date: N/A

Initial Calibration Date:

22-Mar-2024

Extraction Date: 09-Apr-2024

Instrument ID:

LC MS/MS

Analysis Date: 12-Apr-2024 Time: 01:29:20

Column ID:

POLAR X

Extract Volume (uL): 2000

Sample Data Filename:

FC4V_008 S: 10

Injection Volume (uL): 4

Blank Data Filename:

FC4V_008 S: 10

Dilution Factor: N/A

Cal. Ver. Data Filename:

FC4V_008 S: 4

Concentration Units: ng absolute

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

LABELED COMPOUND	LAB FLAG ¹	SPIKE CONC.	CONC. FOUND	R(%) ²	RATIO	RRT
13C2-PFEtA		84.7	44.5	52.5	0.36	1.202
13C3-PFPPrA		84.0	60.6	72.2	0.66	1.063

(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: _____ Henry Huang _____

SGS AXYS METHOD MLA-120 Rev 1

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.:	WG88609-102
Matrix:	AQUEOUS	Initial Calibration Date:	22-Mar-2024
Extraction Date:	09-Apr-2024	Instrument ID:	LC MS/MS
Analysis Date:	12-Apr-2024 Time: 00:42:04	Column ID:	POLAR X
Extract Volume (uL):	2000	OPR Data Filename:	FC4V_008 S: 7
Injection Volume (uL):	4	Blank Data Filename:	FC4V_008 S: 10
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4V_008 S: 4

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
PfMeS		0.16	100	107	107	0.754
PfEtS		0.10	51.5	60.7	118	0.721
PfPrS		0.39	51.0	67.5	132	0.688
PfEtA		0.19	1020	829	81.2	1.000
PfPrA		0.40	200	186	93.0	1.000

(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 _____

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.

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Report Filename: PFC_FC_LC_PFAS_ULTRASHORT_WG88609-102_Form8A_SJ3447309.html; Workgroup: WG88609; Design ID: 3989]

SGS AXYS METHOD MLA-120 Rev 1

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.:	WG88609-102
Matrix:	AQUEOUS	Initial Calibration Date:	22-Mar-2024
Extraction Date:	09-Apr-2024	Instrument ID:	LC MS/MS
Analysis Date:	12-Apr-2024 Time: 00:42:04	Column ID:	POLAR X
Extract Volume (uL):	2000	OPR Data Filename:	FC4V_008 S: 7
Injection Volume (uL):	4	Blank Data Filename:	FC4V_008 S: 10
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4V_008 S: 4

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
13C2-PFEtA		0.34	84.7	21.4	25.2	1.202
13C3-PFPrA		0.68	84.0	48.5	57.7	1.063

(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_____

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SGS AXYS METHOD MLA-120 Rev 1

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.:	WG88609-103
Matrix:	AQUEOUS	Initial Calibration Date:	22-Mar-2024
Extraction Date:	09-Apr-2024	Instrument ID:	LC MS/MS
Analysis Date:	12-Apr-2024 Time: 00:26:18	Column ID:	POLAR X
Extract Volume (uL):	2000	OPR Data Filename:	FC4V_008 S: 6
Injection Volume (uL):	4	Blank Data Filename:	FC4V_008 S: 10
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4V_008 S: 4

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
PfMeS		0.17	32.0	30.3	94.7	0.754
PfEtS		0.09	16.5	15.5	94.0	0.721
PfPrS		0.37	16.3	17.1	105	0.699
PfEtA		0.18	327	256	78.4	1.000
PfPrA		0.38	64.1	58.2	90.8	1.000

(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_____

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Report Filename: PFC_FC_LC_PFAS_ULTRASHORT_WG88609-103_Form8A_SJ3447308.html; Workgroup: WG88609; Design ID: 3989]

SGS AXYS METHOD MLA-120 Rev 1

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.:	WG88609-103
Matrix:	AQUEOUS	Initial Calibration Date:	22-Mar-2024
Extraction Date:	09-Apr-2024	Instrument ID:	LC MS/MS
Analysis Date:	12-Apr-2024 Time: 00:26:18	Column ID:	POLAR X
Extract Volume (uL):	2000	OPR Data Filename:	FC4V_008 S: 6
Injection Volume (uL):	4	Blank Data Filename:	FC4V_008 S: 10
Dilution Factor:	N/A	Cal. Ver. Data Filename:	FC4V_008 S: 4

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
13C2-PFEtA		0.36	84.7	38.3	45.2	1.188
13C3-PFPrA		0.67	84.0	62.2	74.1	1.051

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

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Signed: _____Henry Huang_____

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-Form8B.xsl; Created: 08-Jul-2024 18:19:21; Application: XMLTransformer-1.18.50; Report Filename: PFC_FC_LC_PFAS_ULTRASHORT_WG88609-103_Form8B_SJ3447308.html; Workgroup: WG88609; Design ID: 3989]

SGS AXYS METHOD MLA-120 Rev 1

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-Mar-2024

Instrument ID: LC MS/MS

LC Column ID: POLAR X

CS0 Data Filename: FC4V_002 S: 7

CS1 Data Filename: FC4V_002 S: 9

CS2 Data Filename: FC4V_002 S: 10

CS3 Data Filename: FC4V_002 S: 11

CS4 Data Filename: FC4V_002 S: 12

CS5 Data Filename: FC4V_002 S: 13

CS6 Data Filename: FC4V_002 S: 14

CS7 Data Filename: FC4V_002 S: 15

CS8 Data Filename: FC4V_002 S: 16

RELATIVE RESPONSE (RR)

COMPOUND	LAB FLAG ¹	RELATIVE RESPONSE (RR)								MEAN RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
PfMeS		0.57	0.50	0.66	0.61	0.64	0.63	0.65	0.57	0.56	0.60	8.78
PfEtS		0.80	0.63	0.56	0.59	0.57	0.60	0.66	0.63	0.61	0.63	11.8
PfPrS		1.14	1.21	1.33	1.26	1.34	1.40	1.57	1.75	1.83	1.43	16.8
PfEtA		0.44	0.54	0.57	0.55	0.57	0.56	0.55	0.54	0.54	0.54	7.13
PfPrA		0.97	0.70	0.76	0.68	0.72	0.71	0.75	0.73	0.73	0.75	11.5

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

(2) For contract CV specifications, see SGS AXYS METHOD MLA-120 Rev 1

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-120 Rev 1

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-Mar-2024

Instrument ID: LC MS/MS

LC Column ID: POLAR X

CS0 Data Filename: FC4V_002 S: 7

CS1 Data Filename: FC4V_002 S: 9

CS2 Data Filename: FC4V_002 S: 10

CS3 Data Filename: FC4V_002 S: 11

CS4 Data Filename: FC4V_002 S: 12

CS5 Data Filename: FC4V_002 S: 13

CS6 Data Filename: FC4V_002 S: 14

CS7 Data Filename: FC4V_002 S: 15

CS8 Data Filename: FC4V_002 S: 16

Labeled Compound	Lab Flag ¹	Relative Response (RR)								Mean RR	CV (%RSD) ²	
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7			CS8
13C2-PFEtA		0.09	0.10	0.09	0.09	0.08	0.07				0.09	12.7
13C3-PFPrA		0.42	0.46	0.43	0.45	0.42	0.41	0.36			0.42	7.45

(1) Where applicable, custom lab flags have been used on this report.
(2) For contract CV specifications, see SGS AXYS METHOD MLA-120 Rev 1.

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-120 Rev 1

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-Mar-2024

Instrument ID: LC MS/MS

LC Column ID: POLAR X

CS0 Data Filename: FC4V_002 S: 7

CS1 Data Filename: FC4V_002 S: 9

CS2 Data Filename: FC4V_002 S: 10

CS3 Data Filename: FC4V_002 S: 11

CS4 Data Filename: FC4V_002 S: 12

CS5 Data Filename: FC4V_002 S: 13

CS6 Data Filename: FC4V_002 S: 14

CS7 Data Filename: FC4V_002 S: 15

CS8 Data Filename: FC4V_002 S: 16

COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
PfMeS		0.14	0.13	0.17	0.16	0.16	0.16	0.16	0.16	0.16
PfEtS		0.12	0.11	0.09	0.10	0.09	0.10	0.10	0.10	0.10
PfPrS		0.44	0.36	0.38	0.38	0.39	0.39	0.40	0.40	0.41
PfEtA		0.19	0.19	0.24	0.25	0.24	0.25	0.25	0.26	0.26
PfPrA		0.43	0.36	0.37	0.36	0.40	0.40	0.40	0.39	0.39

(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 _____

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**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-Mar-2024

Instrument ID: LC MS/MS

LC Column ID: POLAR X

CS0 Data Filename: FC4V_002 S: 7
CS1 Data Filename: FC4V_002 S: 9
CS2 Data Filename: FC4V_002 S: 10
CS3 Data Filename: FC4V_002 S: 11
CS4 Data Filename: FC4V_002 S: 12
CS5 Data Filename: FC4V_002 S: 13
CS6 Data Filename: FC4V_002 S: 14
CS7 Data Filename: FC4V_002 S: 15
CS8 Data Filename: FC4V_002 S: 16

LABELED COMPOUND	LAB FLAG ¹	RATIOS								
		CS0	CS1	CS2	CS3	CS4	CS5	CS6	CS7	CS8
13C2-PFEtA		0.36	0.37	0.36	0.35	0.36	0.34			
13C3-PFPrA		0.57	0.61	0.59	0.61	0.60	0.61	0.57		

(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-120 Rev 1

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-Mar-2024

VER Data Filename: FC4V_008 S: 4

Instrument ID: LC MS/MS

Analysis Date: 11-Apr-2024

LC Column ID: POLAR X

Analysis Time: 23:54:47

COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
PfMeS		0.767	149 >99	0.17	50.0	51.1	102
PfEtS		0.724	199 >99	0.09	25.8	27.8	108
PfPrS		0.702	249 > 99	0.38	25.5	24.4	95.8
PfEtA		1.000	113 > 69	0.18	511	395	77.4
PfPrA		1.000	163 > 119	0.40	100	94.3	94.2

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

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Signed: _____ Henry Huang _____

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Report Filename: PFOA_FC_LC_FC4V_008S4__Form4A_SJ3447306.html; Workgroup: WG88609; Design ID: 3989]

SGS AXYS METHOD MLA-120 Rev 1

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-Mar-2024 **VER Data Filename:** FC4V_008 S: 4
Instrument ID: LC MS/MS **Analysis Date:** 11-Apr-2024
LC Column ID: POLAR X **Analysis Time:** 23:54:47

LABELED COMPOUND	LAB FLAG ¹	RRT	QUANT TRANSITION	RATIO	EXPECTED CONC. (ng)	CONC. FOUND (ng)	RECOVERY (%)
13C2-PF ₆ EtA		1.186	115 > 70	0.35	169	101	59.7
13C3-PF ₆ PrA		1.050	166 > 121	0.69	168	147	87.5

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

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Signed: _____ Henry Huang _____

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Accreditation Scope

SGS AXYS Analytical Services Ltd.
file ref.: ACC-103 Rev. 73

Compound Class	Compound	Accredited Method ID	SGS AXYS Method ID	Serum	Solids	Tissue and Tissue Flora	Urine	Water	Water, Non-Portable
				CALA	Alaska DEC ANAB DoD/DOE ** ANAB ISO 17025 CALA California WB Florida DOH Maine DOH Minnesota DOH New Jersey DEP New York DOH Virginia DGS Washington DE	ANAB DoD/DOE ** ANAB ISO 17025 CALA Florida DOH Minnesota DOH New Jersey DEP Virginia DGS	CALA	CALA	Alaska DEC ANAB DoD/DOE ** 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/DOE ** ANAB ISO 17025

Legend

- Y Accreditation scope
- AFFF Aqueous film forming foam
- AO Antiozonants
- BFR Brominated flame retardants (non-PBDPE)
- BPA and mPE Bisphenol A and mono-Phthalate Esters
- OC Pesticides Organochlorine Pesticides
- PAH Polycyclic Aromatic Hydrocarbons
- PBDPE Polybrominated diphenylethers
- PCB Polychlorinated Biphenyls
- PCDDF Polychlorinated dibenzodioxins/furans
- PFAS Per- and Polyfluoroalkyl Substances
- PPCP Pharmaceutical and Personal Care Products
- TOP Total Oxidizable Precursors
- California WB California Water Boards, Lab ID 2911
- Florida DOH Florida Department of Health, Lab ID E871007, (NELAC Standard)
- Pennsylvania DEP Pennsylvania Department of Environmental Protection
- Minnesota DOH Minnesota Department of Health, Lab ID 232-999-430, (NELAC Standard)
- New Jersey DEP New Jersey Department of Environmental Protection, Lab ID CANA005, (NELAC Standard)
- New York DOH New York Department of Health, Lab ID 11674, (NELAC Standard)
- Washington DE Washington Department of Ecology, Lab ID C404
- 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, 5.4, US DoD/DOE QSM 6.0 Standard)



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

