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Automated Report

Technical Report for

AECOM, INC.

N6274223F0104 RH Fire Suppression System

60697810

SGS Job Number: FC8439

Sampling Date: 08/03/23



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Total number of pages in report: 59



Test results contained within this data package meet the requirements of the National Environmental Laboratory Accreditation Program and/or state specific certification programs as applicable unless noted in the narrative, comments or footnotes.

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Technical Director

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Certifications: FL(E83510), LA(03051), KS(E-10327), NC(573), NJ(FL002), NY(12022), SC(96038001)

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Test results relate only to samples analyzed.

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Sample Summary

AECOM, INC.

Job No: FC8439

N6274223F0104 RH Fire Suppression System
Project No: 60697810

Sample Number	Collected Date	Time By	Received	Matrix Code	Type	Client Sample ID
FC8439-1	08/03/23	09:30	MGAY08/05/23	AQ	Ground Water	AF-RHMW12A-WGN01LF-2308
FC8439-2	08/03/23	09:30	MGAY08/05/23	AQ	Ground Water	AF-RHMW12A-WGFD01LF-2308
FC8439-3	08/03/23	11:25	MGAY08/05/23	AQ	Ground Water	AF-RHMW16-WGN01LF-2308
FC8439-4	08/03/23	09:35	MYCW08/05/23	AQ	Ground Water	AF-RHMW02-WGN01LF-2308
FC8439-5	08/03/23	09:35	MYCW08/05/23	AQ	Ground Water	AF-RHMW02-WGFD01LF-2308
FC8439-6	08/03/23	11:20	MYCW08/05/23	AQ	Ground Water	AF-RHMW03-WGN01LF-2308

SAMPLE DELIVERY GROUP CASE NARRATIVE

Client: AECOM, INC.

Job No: FC8439

Site: N6274223F0104 RH Fire Suppression System

Report Date: 8/14/2023 5:14:28 PM

On 08/05/2023, 6 Sample(s), 0 Trip Blank(s) and 0 Field Blank(s) were received at SGS North America Inc - Orlando. at a maximum corrected temperature of 3.2 C. Samples were intact and chemically preserved, unless noted below. A SGS North America Inc. - Orlando Job Number of FC8439 was assigned to the project.

Laboratory sample ID, client sample ID and dates of sample collection are detailed in the report's Results Summary Section. Specified quality control criteria were achieved for this job except as noted below. For more information, please refer to the analytical results and QC summary pages.

MS Semi-volatiles By Method EPA DRAFT 1633

Matrix: AQ

Batch ID: OP98297

Sample(s) FC8439-3MS, FC8439-4DUP were used as the QC samples indicated.

Matrix Spike Recovery(s) for 8:2 Fluorotelomer sulfonate are outside control limits. Probable cause is due to matrix interference.

RPD(s) for Duplicate for Perfluorooctanoic acid are outside control limits for sample OP98297-DUP. Probable cause is due to sample non-homogeneity.

Sample(s) FC8439-2, FC8439-4, FC8439-5, FC8439-6 have surrogates outside control limits.

OP98297-LLBS for 13C2-8:2FTS: Outside control limits.

OP98297-LLBS for 13C2-6:2FTS: Outside control limits.

OP98297-MB: All results and recoveries corrected for double EIS.

FC8439-1 for 8:2 Fluorotelomer sulfonate: Associated CCV outside of control limits high, sample was ND.

FC8439-1 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

FC8439-2 for 8:2 Fluorotelomer sulfonate: Associated CCV outside of control limits high, sample was ND.

FC8439-2 for 13C2-4:2FTS: Outside control limits.

FC8439-2: Dilution required (ID recovery standard failure).

FC8439-2 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

FC8439-3 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

FC8439-4: Dilution required (ID recovery standard failure).

FC8439-4 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

FC8439-4 for 13C2-8:2FTS: Outside control limits.

FC8439-4 for 13C2-6:2FTS: Outside control limits.

FC8439-4 for 13C2-4:2FTS: Outside control limits.

FC8439-5 for 13C7-PFUnDA: Outside control limits.

FC8439-5 for 13C2-4:2FTS: Outside control limits.

FC8439-5 for 13C2-6:2FTS: Outside control limits.

FC8439-5: Dilution required (ID recovery standard failure).

FC8439-5 for d5-EtFOSAA: Outside control limits.

FC8439-5 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

FC8439-6 for 9Cl-PF3ONS (F-53B Major): Associated CCV outside control limits high. Sample was ND.

FC8439-6 for d5-EtFOSAA: Outside control limits.

FC8439-6 for d3-MeFOSAA: Outside control limits.

FC8439-6 for 13C2-6:2FTS: Outside control limits.

FC8439-6 for 13C2-4:2FTS: Outside control limits.

FC8439-6 for 13C8-PFOA: Outside control limits.

FC8439-6 for 13C7-PFUnDA: Outside control limits.

FC8439-6 for 13C5-PFHxA: Outside control limits.

FC8439-6 for 13C4-PFHpA: Outside control limits.

FC8439-6 for 13C4-PFBA: Outside control limits.

SGS North America Inc. - Orlando certifies that data reported for samples received, listed on the associated custody chain or analytical task order, were produced to specifications meeting the Quality System precision, accuracy and completeness objectives except as noted. Estimated non-standard method measurement uncertainty data is available on request, based on quality control bias and implicit for standard methods. Acceptable uncertainty requires tested parameter quality control data to meet method criteria. SGS North America Inc.- Orlando is not responsible for data quality assumptions if partial reports are used and recommends that this report be used in its entirety.

Narrative prepared by:

Kim Benham, Client Services (*Signature on File*)

Summary of Hits

Job Number: FC8439
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 08/03/23



Lab Sample ID	Client Sample ID	Result/ Qual	LOQ	LOD	Units	Method
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FC8439-1 AF-RHMW12A-WGN01LF-2308

Perfluoropentanoic acid	1.5 J	7.5	1.9	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.58 J	3.8	1.9	ng/l	EPA DRAFT 1633

FC8439-2 AF-RHMW12A-WGFD01LF-2308

Perfluoropentanoic acid	1.7 J	8.0	2.0	ng/l	EPA DRAFT 1633
Perfluorohexanoic acid	0.72 J	4.0	2.0	ng/l	EPA DRAFT 1633

FC8439-3 AF-RHMW16-WGN01LF-2308

No hits reported in this sample.

FC8439-4 AF-RHMW02-WGN01LF-2308

Perfluorooctanoic acid	0.95 J	3.7	0.93	ng/l	EPA DRAFT 1633
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FC8439-5 AF-RHMW02-WGFD01LF-2308

Perfluorooctanoic acid	0.69 J	3.7	0.93	ng/l	EPA DRAFT 1633
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FC8439-6 AF-RHMW03-WGN01LF-2308

Perfluoropentanoic acid	2.1 J	7.7	1.9	ng/l	EPA DRAFT 1633
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Sample Results

Report of Analysis

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGN01LF-2308		
Lab Sample ID:	FC8439-1	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q48785.D	1	08/09/23 20:31	AL	08/08/23 10:50	OP98297	S4Q713
Run #2							

Run #	Initial Volume	Final Volume
Run #1	530 ml	5.0 ml
Run #2		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.8 U	15	3.8	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.5	7.5	1.9	0.89	ng/l	J
307-24-4	Perfluorohexanoic acid	0.58	3.8	1.9	0.47	ng/l	J
375-85-9	Perfluoroheptanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
335-67-1	Perfluorooctanoic acid	0.94 U	3.8	0.94	0.47	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.57	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.79	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.47	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.7	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.66	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.47	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.51	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.54	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.60	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.7	3.8	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.0	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	7.5 U	19	7.5	3.3	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate ^a	7.5 U	19	7.5	3.9	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.8	1.9	0.63	ng/l	
31506-32-8	MeFOSA	3.8 U	7.5	3.8	0.94	ng/l	
4151-50-2	EtFOSA	3.8 U	7.5	3.8	0.94	ng/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGN01LF-2308		
Lab Sample ID:	FC8439-1	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.8 U	4.7	3.8	0.94	ng/l	
2991-50-6	EtFOSAA	3.8 U	4.7	3.8	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.0	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.94	ng/l	
919005-14-4	ADONA	3.8 U	7.5	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.5	1.9	0.94	ng/l	
863090-89-5	PFMBA	3.8 U	7.5	3.8	1.1	ng/l	
151772-58-6	NFDHA	3.8 U	7.5	3.8	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major) ^b	3.8 U	7.5	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.5	3.8	1.7	ng/l	
113507-82-7	PFEESA	1.9 U	7.5	1.9	0.74	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.4 U	19	9.4	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	94	19	8.2	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	94	19	7.4	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%		20-150%
	13C5-PFPeA	118%		20-150%
	13C5-PFHxA	132%		20-150%
	13C4-PFHpA	135%		20-150%
	13C8-PFOA	123%		20-150%
	13C9-PFNA	119%		20-150%
	13C6-PFDA	136%		20-150%
	13C7-PFUnDA	133%		20-150%
	13C2-PFDoDA	126%		20-150%
	13C2-PFTeDA	103%		20-150%
	13C3-PFBS	109%		20-150%
	13C3-PFHxS	117%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGN01LF-2308		
Lab Sample ID:	FC8439-1	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	118%		20-150%
	13C8-FOSA	96%		20-150%
	d3-MeFOSA	106%		20-150%
	d5-EtFOSA	108%		20-150%
	d3-MeFOSAA	121%		20-150%
	d5-EtFOSAA	127%		20-150%
	d7-MeFOSE	86%		20-150%
	d9-EtFOSE	94%		20-150%
	13C2-4:2FTS	148%		20-180%
	13C2-6:2FTS	159%		20-180%
	13C2-8:2FTS	159%		20-180%
	13C3-HFPO-DA	111%		20-150%

- (a) Associated CCV outside of control limits high, sample was ND.
- (b) Associated CCV outside control limits high. Sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGFD01LF-2308		
Lab Sample ID:	FC8439-2	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q48786.D	1	08/09/23 20:46	AL	08/08/23 10:50	OP98297	S4Q713
Run #2 ^a	6Q22666.D	5	08/10/23 19:50	MV	08/08/23 10:50	OP98297	S6Q330

	Initial Volume	Final Volume
Run #1	500 ml	5.0 ml
Run #2	500 ml	5.0 ml

CAS No. Compound Result LOQ LOD DL Units Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	4.0 U	16	4.0	1.9	ng/l	
2706-90-3	Perfluoropentanoic acid	1.7	8.0	2.0	0.94	ng/l	J
307-24-4	Perfluorohexanoic acid	0.72	4.0	2.0	0.50	ng/l	J
375-85-9	Perfluoroheptanoic acid	2.0 U	4.0	2.0	0.50	ng/l	
335-67-1	Perfluorooctanoic acid	1.0 U	4.0	1.0	0.50	ng/l	
375-95-1	Perfluorononanoic acid	2.0 U	4.0	2.0	0.61	ng/l	
335-76-2	Perfluorodecanoic acid	2.0 U	4.0	2.0	0.50	ng/l	
2058-94-8	Perfluoroundecanoic acid	2.0 U	4.0	2.0	0.60	ng/l	
307-55-1	Perfluorododecanoic acid	2.0 U	4.0	2.0	0.60	ng/l	
72629-94-8	Perfluorotridecanoic acid	2.0 U	4.0	2.0	0.84	ng/l	
376-06-7	Perfluorotetradecanoic acid	2.0 U	4.0	2.0	0.50	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	2.0 U	4.0	2.0	0.50	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	4.0 U	5.0	4.0	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	2.0 U	4.0	2.0	0.70	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	2.0 U	4.0	2.0	0.50	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	2.0 U	4.0	2.0	0.54	ng/l	
68259-12-1	Perfluorononanesulfonic acid	2.0 U	4.0	2.0	0.57	ng/l	
335-77-3	Perfluorodecanesulfonic acid	2.0 U	4.0	2.0	0.64	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	4.0 U	5.0	4.0	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	40 U ^b	100	40	16	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	8.0 U	20	8.0	3.5	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate ^c	8.0 U	20	8.0	4.1	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	2.0 U	4.0	2.0	0.67	ng/l	
31506-32-8	MeFOSA	4.0 U	8.0	4.0	1.0	ng/l	
4151-50-2	EtFOSA	4.0 U	8.0	4.0	1.0	ng/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGFD01LF-2308		
Lab Sample ID:	FC8439-2	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	4.0 U	5.0	4.0	1.0	ng/l	
2991-50-6	EtFOSAA	4.0 U	5.0	4.0	1.3	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	20 U	40	20	4.4	ng/l	
1691-99-2	EtFOSE	20 U	40	20	7.4	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	2.0 U	4.0	2.0	1.0	ng/l	
919005-14-4	ADONA	4.0 U	8.0	4.0	1.9	ng/l	
377-73-1	PFMPA	2.0 U	8.0	2.0	1.0	ng/l	
863090-89-5	PFMBA	4.0 U	8.0	4.0	1.1	ng/l	
151772-58-6	NFDHA	4.0 U	8.0	4.0	1.2	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major) ^d	4.0 U	8.0	4.0	1.4	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	4.0 U	8.0	4.0	1.8	ng/l	
113507-82-7	PFEESA	2.0 U	8.0	2.0	0.78	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	10 U	20	10	4.5	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	20 U	100	20	8.7	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	20 U	100	20	7.9	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	67%	62%	20-150%
	13C5-PFPeA	110%	123%	20-150%
	13C5-PFHxA	127%	124%	20-150%
	13C4-PFHpA	127%	119%	20-150%
	13C8-PFOA	124%	126%	20-150%
	13C9-PFNA	104%	117%	20-150%
	13C6-PFDA	122%	118%	20-150%
	13C7-PFUnDA	123%	111%	20-150%
	13C2-PFDoDA	114%	115%	20-150%
	13C2-PFTeDA	96%	102%	20-150%
	13C3-PFBS	116%	118%	20-150%
	13C3-PFHxS	122%	122%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW12A-WGFD01LF-2308		Date Sampled:	08/03/23
Lab Sample ID:	FC8439-2		Date Received:	08/05/23
Matrix:	AQ - Ground Water		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	106%	102%	20-150%
	13C8-FOSA	89%	95%	20-150%
	d3-MeFOSA	99%	105%	20-150%
	d5-EtFOSA	98%	96%	20-150%
	d3-MeFOSAA	109%	114%	20-150%
	d5-EtFOSAA	113%	108%	20-150%
	d7-MeFOSE	80%	85%	20-150%
	d9-EtFOSE	84%	91%	20-150%
	13C2-4:2FTS	183% ^e	129%	20-180%
	13C2-6:2FTS	163%	132%	20-180%
	13C2-8:2FTS	165%	123%	20-180%
	13C3-HFPO-DA	109%	120%	20-150%

- (a) Dilution required (ID recovery standard failure).
- (b) Result is from Run# 2
- (c) Associated CCV outside of control limits high, sample was ND.
- (d) Associated CCV outside control limits high. Sample was ND.
- (e) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.2
4

Report of Analysis

Client Sample ID:	AF-RHMW16-WGN01LF-2308		
Lab Sample ID:	FC8439-3	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q48789.D	1	08/09/23 21:30	AL	08/08/23 10:50	OP98297	S4Q713
Run #2							

Run #	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2		

CAS No. Compound Result LOQ LOD DL Units Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.7 U	15	3.7	1.8	ng/l
2706-90-3	Perfluoropentanoic acid	1.9 U	7.4	1.9	0.87	ng/l
307-24-4	Perfluorohexanoic acid	1.9 U	3.7	1.9	0.46	ng/l
375-85-9	Perfluoroheptanoic acid	1.9 U	3.7	1.9	0.46	ng/l
335-67-1	Perfluorooctanoic acid	0.93 U	3.7	0.93	0.46	ng/l
375-95-1	Perfluorononanoic acid	1.9 U	3.7	1.9	0.56	ng/l
335-76-2	Perfluorodecanoic acid	1.9 U	3.7	1.9	0.46	ng/l
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.7	1.9	0.56	ng/l
307-55-1	Perfluorododecanoic acid	1.9 U	3.7	1.9	0.56	ng/l
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.7	1.9	0.78	ng/l
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.7	1.9	0.46	ng/l

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.7	1.9	0.65	ng/l
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.7	1.9	0.50	ng/l
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.7	1.9	0.53	ng/l
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.7	1.9	0.59	ng/l
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.0	ng/l
27619-97-2	6:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.2	ng/l
39108-34-4	8:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.8	ng/l

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.7	1.9	0.62	ng/l
31506-32-8	MeFOSA	3.7 U	7.4	3.7	0.93	ng/l
4151-50-2	EtFOSA	3.7 U	7.4	3.7	0.93	ng/l

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW16-WGN01LF-2308		
Lab Sample ID:	FC8439-3	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.7 U	4.6	3.7	0.93	ng/l	
2991-50-6	EtFOSAA	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	37	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	37	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.7	1.9	0.93	ng/l	
919005-14-4	ADONA	3.7 U	7.4	3.7	1.7	ng/l	
377-73-1	PFMPA	1.9 U	7.4	1.9	0.93	ng/l	
863090-89-5	PFMBA	3.7 U	7.4	3.7	1.1	ng/l	
151772-58-6	NFDHA	3.7 U	7.4	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major) ^a	3.7 U	7.4	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	7.4	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	7.4	1.9	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	19	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	93	19	8.1	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	93	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
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	13C4-PFBA	108%		20-150%
	13C5-PFPeA	108%		20-150%
	13C5-PFHxA	128%		20-150%
	13C4-PFHpA	129%		20-150%
	13C8-PFOA	120%		20-150%
	13C9-PFNA	102%		20-150%
	13C6-PFDA	122%		20-150%
	13C7-PFUnDA	128%		20-150%
	13C2-PFDoDA	115%		20-150%
	13C2-PFTeDA	98%		20-150%
	13C3-PFBS	108%		20-150%
	13C3-PFHxS	114%		20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID: AF-RHMW16-WGN01LF-2308		Date Sampled: 08/03/23
Lab Sample ID: FC8439-3		Date Received: 08/05/23
Matrix: AQ - Ground Water		Percent Solids: n/a
Method: EPA DRAFT 1633 EPA 1633 DRAFT		
Project: N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	114%		20-150%
	13C8-FOSA	90%		20-150%
	d3-MeFOSA	101%		20-150%
	d5-EtFOSA	91%		20-150%
	d3-MeFOSAA	109%		20-150%
	d5-EtFOSAA	120%		20-150%
	d7-MeFOSE	82%		20-150%
	d9-EtFOSE	87%		20-150%
	13C2-4:2FTS	156%		20-180%
	13C2-6:2FTS	162%		20-180%
	13C2-8:2FTS	165%		20-180%
	13C3-HFPO-DA	106%		20-150%

(a) Associated CCV outside control limits high. Sample was ND.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2308		
Lab Sample ID:	FC8439-4	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q48791.D	1	08/09/23 22:00	AL	08/08/23 10:50	OP98297	S4Q713
Run #2 ^a	6Q22667.D	10	08/10/23 20:04	MV	08/08/23 10:50	OP98297	S6Q330

	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2	540 ml	5.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.7 U	15	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.4	1.9	0.87	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
335-67-1	Perfluorooctanoic acid	0.95	3.7	0.93	0.46	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.7	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.7	1.9	0.65	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.7	1.9	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.7	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.7	1.9	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	74 U ^b	190	74	30	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	74 U ^b	190	74	32	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	74 U ^b	190	74	38	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.7	1.9	0.62	ng/l	
31506-32-8	MeFOSA	3.7 U	7.4	3.7	0.93	ng/l	
4151-50-2	EtFOSA	3.7 U	7.4	3.7	0.93	ng/l	

U = Not detected

LOD = Limit of Detection

J = Indicates an estimated value

LOQ = Limit of Quantitation

DL = Detection Limit

B = Indicates analyte found in associated method blank

E = Indicates value exceeds calibration range

N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2308		
Lab Sample ID:	FC8439-4	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.7 U	4.6	3.7	0.93	ng/l	
2991-50-6	EtFOSAA	3.7 U	4.6	3.7	1.2	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	37	19	4.1	ng/l	
1691-99-2	EtFOSE	19 U	37	19	6.9	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.7	1.9	0.93	ng/l	
919005-14-4	ADONA	3.7 U	7.4	3.7	1.7	ng/l	
377-73-1	PFMPA	1.9 U	7.4	1.9	0.93	ng/l	
863090-89-5	PFMBA	3.7 U	7.4	3.7	1.1	ng/l	
151772-58-6	NFDHA	3.7 U	7.4	3.7	1.1	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major) ^C	3.7 U	7.4	3.7	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	7.4	3.7	1.6	ng/l	
113507-82-7	PFEESA	1.9 U	7.4	1.9	0.72	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	19	9.3	4.2	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	93	19	8.1	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	19 U	93	19	7.3	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	96%	91%	20-150%
	13C5-PFPeA	80%	121%	20-150%
	13C5-PFHxA	131%	127%	20-150%
	13C4-PFHpA	139%	131%	20-150%
	13C8-PFOA	118%	117%	20-150%
	13C9-PFNA	106%	115%	20-150%
	13C6-PFDA	126%	121%	20-150%
	13C7-PFUnDA	135%	121%	20-150%
	13C2-PFDoDA	114%	107%	20-150%
	13C2-PFTeDA	88%	91%	20-150%
	13C3-PFBS	114%	116%	20-150%
	13C3-PFHxS	116%	113%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW02-WGN01LF-2308		Date Sampled:	08/03/23
Lab Sample ID:	FC8439-4		Date Received:	08/05/23
Matrix:	AQ - Ground Water		Percent Solids:	n/a
Method:	EPA DRAFT 1633 EPA 1633 DRAFT			
Project:	N6274223F0104 RH Fire Suppression System			

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	120%	113%	20-150%
	13C8-FOSA	109%	106%	20-150%
	d3-MeFOSA	101%	89%	20-150%
	d5-EtFOSA	92%	94%	20-150%
	d3-MeFOSAA	138%	113%	20-150%
	d5-EtFOSAA	146%	106%	20-150%
	d7-MeFOSE	86%	92%	20-150%
	d9-EtFOSE	92%	94%	20-150%
	13C2-4:2FTS	258% ^d	109%	20-180%
	13C2-6:2FTS	227% ^d	137%	20-180%
	13C2-8:2FTS	184% ^d	142%	20-180%
	13C3-HFPO-DA	92%	120%	20-150%

- (a) Dilution required (ID recovery standard failure).
- (b) Result is from Run# 2
- (c) Associated CCV outside control limits high. Sample was ND.
- (d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW02-WGFD01LF-2308		
Lab Sample ID:	FC8439-5	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q48793.D	1	08/09/23 22:29	AL	08/08/23 10:50	OP98297	S4Q713
Run #2 ^a	6Q22669.D	10	08/10/23 20:33	MV	08/08/23 10:50	OP98297	S6Q330

Run #	Initial Volume	Final Volume
Run #1	540 ml	5.0 ml
Run #2	540 ml	5.0 ml

CAS No. Compound Result LOQ LOD DL Units Q

PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	3.7 U	15	3.7	1.8	ng/l	
2706-90-3	Perfluoropentanoic acid	1.9 U	7.4	1.9	0.87	ng/l	
307-24-4	Perfluorohexanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
375-85-9	Perfluoroheptanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
335-67-1	Perfluorooctanoic acid	0.69	3.7	0.93	0.46	ng/l	J
375-95-1	Perfluorononanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	
2058-94-8	Perfluoroundecanoic acid	19 U ^b	37	19	5.6	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.7	1.9	0.56	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.7	1.9	0.78	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.7	1.9	0.46	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.7 U	4.6	3.7	1.0	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.7	1.9	0.65	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.7	1.9	0.46	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.7	1.9	0.50	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.7	1.9	0.53	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.7	1.9	0.59	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.7 U	4.6	3.7	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	74 U ^b	190	74	30	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	74 U ^b	190	74	32	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.4 U	19	7.4	3.8	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.7	1.9	0.62	ng/l	
31506-32-8	MeFOSA	3.7 U	7.4	3.7	0.93	ng/l	
4151-50-2	EtFOSA	3.7 U	7.4	3.7	0.93	ng/l	

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.5
4

Report of Analysis

Client Sample ID:	AF-RHMW02-WGFD01LF-2308		
Lab Sample ID:	FC8439-5	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No. Compound Result LOQ LOD DL Units Q

PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	3.7 U	4.6	3.7	0.93	ng/l
2991-50-6	EtFOSAA	37 U ^b	46	37	12	ng/l

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	37	19	4.1	ng/l
1691-99-2	EtFOSE	19 U	37	19	6.9	ng/l

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.7	1.9	0.93	ng/l
919005-14-4	ADONA	3.7 U	7.4	3.7	1.7	ng/l
377-73-1	PFMPA	1.9 U	7.4	1.9	0.93	ng/l
863090-89-5	PFMBA	3.7 U	7.4	3.7	1.1	ng/l
151772-58-6	NFDHA	3.7 U	7.4	3.7	1.1	ng/l

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major) ^c	3.7 U	7.4	3.7	1.3	ng/l
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.7 U	7.4	3.7	1.6	ng/l
113507-82-7	PFEESA	1.9 U	7.4	1.9	0.72	ng/l

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.3 U	19	9.3	4.2	ng/l
914637-49-3	5:3 Fluorotelomer carboxylate	19 U	93	19	8.1	ng/l
812-70-4	7:3 Fluorotelomer carboxylate	19 U	93	19	7.3	ng/l

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	103%	92%	20-150%
	13C5-PFPeA	91%	123%	20-150%
	13C5-PFHxA	139%	130%	20-150%
	13C4-PFHpA	149%	132%	20-150%
	13C8-PFOA	138%	123%	20-150%
	13C9-PFNA	123%	127%	20-150%
	13C6-PFDA	145%	133%	20-150%
	13C7-PFUnDA	154% ^d	122%	20-150%
	13C2-PFDoDA	133%	102%	20-150%
	13C2-PFTeDA	105%	99%	20-150%
	13C3-PFBS	131%	133%	20-150%
	13C3-PFHxS	135%	130%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.5
4

Report of Analysis

Client Sample ID:	AF-RHMW02-WGFD01LF-2308		
Lab Sample ID:	FC8439-5	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	122%	127%	20-150%
	13C8-FOSA	109%	107%	20-150%
	d3-MeFOSA	111%	109%	20-150%
	d5-EtFOSA	103%	102%	20-150%
	d3-MeFOSAA	142%	122%	20-150%
	d5-EtFOSAA	155% ^d	115%	20-150%
	d7-MeFOSE	90%	99%	20-150%
	d9-EtFOSE	100%	104%	20-150%
	13C2-4:2FTS	310% ^d	140%	20-180%
	13C2-6:2FTS	238% ^d	139%	20-180%
	13C2-8:2FTS	176%	145%	20-180%
	13C3-HFPO-DA	104%	117%	20-150%

- (a) Dilution required (ID recovery standard failure).
- (b) Result is from Run# 2
- (c) Associated CCV outside control limits high. Sample was ND.
- (d) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2308		
Lab Sample ID:	FC8439-6	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

Run #	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
Run #1	4Q48794.D	1	08/09/23 22:44	AL	08/08/23 10:50	OP98297	S4Q713
Run #2	6Q22670.D	10	08/10/23 20:48	MV	08/08/23 10:50	OP98297	S6Q330

Run #	Initial Volume	Final Volume
Run #1	520 ml	5.0 ml
Run #2	520 ml	5.0 ml

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROALKYL CARBOXYLIC ACIDS

375-22-4	Perfluorobutanoic acid	38 U ^a	150	38	18	ng/l	
2706-90-3	Perfluoropentanoic acid	2.1	7.7	1.9	0.90	ng/l	J
307-24-4	Perfluorohexanoic acid	19 U ^a	38	19	4.8	ng/l	
375-85-9	Perfluoroheptanoic acid	19 U ^a	38	19	4.8	ng/l	
335-67-1	Perfluorooctanoic acid	9.6 U ^a	38	9.6	4.8	ng/l	
375-95-1	Perfluorononanoic acid	1.9 U	3.8	1.9	0.59	ng/l	
335-76-2	Perfluorodecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	
2058-94-8	Perfluoroundecanoic acid	19 U ^a	38	19	5.8	ng/l	
307-55-1	Perfluorododecanoic acid	1.9 U	3.8	1.9	0.58	ng/l	
72629-94-8	Perfluorotridecanoic acid	1.9 U	3.8	1.9	0.81	ng/l	
376-06-7	Perfluorotetradecanoic acid	1.9 U	3.8	1.9	0.48	ng/l	

PERFLUOROALKYL SULFONIC ACIDS

375-73-5	Perfluorobutanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
2706-91-4	Perfluoropentanesulfonic acid	3.8 U	4.8	3.8	1.1	ng/l	
355-46-4	Perfluorohexanesulfonic acid	1.9 U	3.8	1.9	0.67	ng/l	
375-92-8	Perfluoroheptanesulfonic acid	1.9 U	3.8	1.9	0.48	ng/l	
1763-23-1	Perfluorooctanesulfonic acid	1.9 U	3.8	1.9	0.52	ng/l	
68259-12-1	Perfluorononanesulfonic acid	1.9 U	3.8	1.9	0.55	ng/l	
335-77-3	Perfluorodecanesulfonic acid	1.9 U	3.8	1.9	0.62	ng/l	
79780-39-5	Perfluorododecanesulfonic aci	3.8 U	4.8	3.8	1.1	ng/l	

FLUOROTELOMER SULFONIC ACIDS

757124-72-4	4:2 Fluorotelomer sulfonate	77 U ^a	190	77	31	ng/l	
27619-97-2	6:2 Fluorotelomer sulfonate	77 U ^a	190	77	33	ng/l	
39108-34-4	8:2 Fluorotelomer sulfonate	7.7 U	19	7.7	4.0	ng/l	

PERFLUOROOCCTANE SULFONAMIDES

754-91-6	PFOSA	1.9 U	3.8	1.9	0.64	ng/l	
31506-32-8	MeFOSA	3.8 U	7.7	3.8	0.96	ng/l	
4151-50-2	EtFOSA	3.8 U	7.7	3.8	0.96	ng/l	

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 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.6
4

Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2308	
Lab Sample ID:	FC8439-6	Date Sampled: 08/03/23
Matrix:	AQ - Ground Water	Date Received: 08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids: n/a
Project:	N6274223F0104 RH Fire Suppression System	

CAS No.	Compound	Result	LOQ	LOD	DL	Units	Q
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PERFLUOROOCCTANE SULFONAMIDOACETIC ACIDS

2355-31-9	MeFOSAA	38 U ^a	48	38	9.6	ng/l	
2991-50-6	EtFOSAA	38 U ^a	48	38	13	ng/l	

PERFLUOROOCCTANE SULFONAMIDO ETHANOLS

24448-09-7	MeFOSE	19 U	38	19	4.2	ng/l	
1691-99-2	EtFOSE	19 U	38	19	7.1	ng/l	

PER and POLYFLUOROETHER CARBOXYLIC ACIDS

13252-13-6	HFPO-DA (GenX)	1.9 U	3.8	1.9	0.96	ng/l	
919005-14-4	ADONA	3.8 U	7.7	3.8	1.8	ng/l	
377-73-1	PFMPA	1.9 U	7.7	1.9	0.96	ng/l	
863090-89-5	PFMBA	3.8 U	7.7	3.8	1.1	ng/l	
151772-58-6	NFDHA	38 U ^a	77	38	12	ng/l	

PER and POLYFLUOROETHER SULFONIC ACIDS

756426-58-1	9Cl-PF3ONS (F-53B Major) ^b	3.8 U	7.7	3.8	1.3	ng/l	
763051-92-9	11Cl-PF3OUdS (F-53B Minor)	3.8 U	7.7	3.8	1.7	ng/l	
113507-82-7	PFEESA	19 U ^a	77	19	7.5	ng/l	

FLUOROTELOMER CARBOXYLIC ACIDS

356-02-5	3:3 Fluorotelomer carboxylate	9.6 U	19	9.6	4.3	ng/l	
914637-49-3	5:3 Fluorotelomer carboxylate	190 U ^a	960	190	84	ng/l	
812-70-4	7:3 Fluorotelomer carboxylate	190 U ^a	960	190	75	ng/l	

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C4-PFBA	160% ^c	122%	20-150%
	13C5-PFPeA	138%	135%	20-150%
	13C5-PFHxA	168% ^c	137%	20-150%
	13C4-PFHpA	169% ^c	138%	20-150%
	13C8-PFOA	155% ^c	147%	20-150%
	13C9-PFNA	131%	135%	20-150%
	13C6-PFDA	146%	116%	20-150%
	13C7-PFUnDA	156% ^c	103%	20-150%
	13C2-PFDoDA	133%	103%	20-150%
	13C2-PFTeDA	104%	86%	20-150%
	13C3-PFBS	145%	135%	20-150%
	13C3-PFHxS	148%	119%	20-150%

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

4.6
4

Report of Analysis

Client Sample ID:	AF-RHMW03-WGN01LF-2308		
Lab Sample ID:	FC8439-6	Date Sampled:	08/03/23
Matrix:	AQ - Ground Water	Date Received:	08/05/23
Method:	EPA DRAFT 1633 EPA 1633 DRAFT	Percent Solids:	n/a
Project:	N6274223F0104 RH Fire Suppression System		

CAS No.	ID Standard Recoveries	Run# 1	Run# 2	Limits
	13C8-PFOS	141%	143%	20-150%
	13C8-FOSA	105%	94%	20-150%
	d3-MeFOSA	120%	100%	20-150%
	d5-EtFOSA	116%	109%	20-150%
	d3-MeFOSAA	156% ^c	133%	20-150%
	d5-EtFOSAA	162% ^c	116%	20-150%
	d7-MeFOSE	93%	82%	20-150%
	d9-EtFOSE	98%	92%	20-150%
	13C2-4:2FTS	228% ^c	122%	20-180%
	13C2-6:2FTS	203% ^c	141%	20-180%
	13C2-8:2FTS	158%	116%	20-180%
	13C3-HFPO-DA	135%	127%	20-150%

- (a) Result is from Run# 2
- (b) Associated CCV outside control limits high. Sample was ND.
- (c) Outside control limits.

U = Not detected LOD = Limit of Detection J = Indicates an estimated value
 LOQ = Limit of Quantitation DL = Detection Limit B = Indicates analyte found in associated method blank
 E = Indicates value exceeds calibration range N = Indicates presumptive evidence of a compound

Misc. Forms

Custody Documents and Other Forms

Includes the following where applicable:

- Chain of Custody
- QC Evaluation: DOD QSM5.x Limits



Chain of Custody

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TEL: 407-425-6700 FAX: 407-425-0707
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Client / Reporting Information			Project Information			SGS - ORLANDO Quote #		SKIFF #											
Company Name: AECOM			Project Name: N6274223F0104 RH Fire Suppression System			PFAS EPA Draft 1683		<table border="1"> <tr><th colspan="2">Analytical Information</th></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> <tr><td> </td><td> </td></tr> </table>		Analytical Information									
Analytical Information																			
Address: 1001 Bishop St. ste 1600			Street																
City: Honolulu State: HI Zip: 96813			City: HONOLULU State: Hawaii																
Project Contact: Katie Abbott Email: katie.abbott@aecom.com			Project # 60697810																
Project Manager: Watson Tanji Email: watson.tanji@aecom.com			Fax #																
Sampler(s) Name(s) (Printed) Sampler 1: <i>Marah Gasco</i> Sampler 2: <i>Andy Young</i>			Client Purchase Order #																
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION		CONTAINER INFORMATION										PFAS EPA Draft 1683	LAB USE ONLY				
		DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	IC	ANCH	INCS	RESD	MS/MS/MS			DI WATER	WESH		
1	AF-RHMM12A-WGN01LF-2308	8/3/23	0930	MG, NY	GW	3		X											
2	AF-RHMM12A-WGFD01LF-2308	8/3/23	0930	MG, NY	GW	3		X											
Turnaround Time (Business days)			Data Deliverable Information			Comments / Remarks													
10 Day (Business) _____ 7 Day _____ <input checked="" type="checkbox"/> 5 Day _____ 3 Day RUSH _____ 2 Day RUSH _____ 1 Day RUSH _____ Other _____ Rush T/A Data Available VIA Email or Lablink			Approved By: / Date: _____ <input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S			EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB: 010-14920146													
Relinquished by Sampler/Affiliation			Sample Custody must be documented below each time samples change possession. Including courier delivery.			Date Time:													
1 <i>Andy Young / AECOM</i>			2 <i>Brittany Tominez / AECOM</i>			3 <i>Brittany Tominez / AECOM</i>													
Date Time: 8/3/23/1230			Date Time:			Date Time: 08/03/23 1300													
Received By/Affiliation			Received By/Affiliation			Received By/Affiliation													
4 <i>z...</i>			5			6													
Date Time:			Date Time:			Date Time:													
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92			93			94													
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Date Time:			Date Time:			Date Time:													
98			99			100													

5.1
5





SGS North America Inc - Orlando

Chain of Custody

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FC8439

COC #: 2308AFSG06

SGS - ORLANDO JOB # :

PAGE 1 OF 1

Client / Reporting Information		Project Information		Analytical Information										Matrix Codes		
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System		<div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;">PFAS EPA Draft: 1683</div> <div style="border: 1px solid black; padding: 5px; text-align: center;"> </div> </div>										DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe		
Address: 1001 Bishop St. ste 1600		Street														
City: Honolulu State: HI Zip: 96813		City: Honolulu State: Hawaii														
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 60697810														
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #														
Sampler(s) Name(s) (Printed) Sampler 1: <i>Mariah Gascho</i> Sampler 2: <i>Andy Young</i>		Client Purchase Order #												LAB USE ONLY		
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION											
3	AF-RHMW16-WGN01LF-2308	DATE	TIME	SAMPLED BY:	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HCl	H2SO4	HNO3	H2SO4	MACH-ZNAC	DI WATER	MEOH	
		8/13/23	1125	MG,AY	GW	3	X									
Turnaround Time (Business days)		Data Deliverable Information				Comments / Remarks										
10 Day (Business) _____ Approved By: / Date: _____ 7 Day _____ <input checked="" type="checkbox"/> 5 Day _____ 3 Day RUSH _____ 2 Day RUSH _____ 1 Day RUSH _____ Other _____ Rush T/A Data Available VIA Email or Lablink		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United ANB: 06-19920146										
Sample Custody must be documented below each time samples change possession, including courier delivery.																
Relinquished by Sampler/Affiliation		Date Time:		Received By/Affiliation		Date Time:		Relinquished By/Affiliation		Date Time:		Received By/Affiliation				
1 <i>Andy Young / AECOM</i>		8/13/23 1234		2 <i>Brittany Tominez / AECOM</i>		8/13/23 1300		3 <i>Brittany Tominez / AECOM</i>		8/13/23 1300		4 <i>[Signature] / AECOM</i>				
5				6				7				8				
Lab Use Only : Cooler Temperature (s) Celsius (corrected):													http://www.sgs.com/en/terms-and-conditions			

PFAS_COCs_ALL_082023.xls Rev 031318

FC8439: Chain of Custody

Page 2 of 5



5.1
5



SGS North America Inc - Orlando

FC 8439

COC #: 2308AFSG01

Chain of Custody

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SGS - ORLANDO JOB #:

PAGE 1 OF 1

Client / Reporting Information		Project Information		Analytical Information		Matrix Codes												
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System				DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe												
Address: 1001 Bishop St. ste 1600		Street																
City: Honolulu State: HI Zip: 96813		City Honolulu State Hawaii																
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 60697810																
Project Manager: Watson Tanii Email: watson.tanii@aecom.com		Fax #																
Phone #: 305-796-4624 / 808-954-4512		Client Purchase Order #																
Sampler(s) Name(s) (Printed) Sampler 1: Matt Yin Sampler 2: Chris Lomak																		
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION										PFAS EPA Draft 1693	LAB USE ONLY		
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NONE	HC	HC3	HC33	HC333	HC3333	HC33333			DI WATER	MECH
4	AF-RHMW02-WGN01LF-2308	8/31/23	0935	MYLW	GW	3		X										X
5	AF-RHMW02-WGFD01LF-2308	8/31/23	0935	MYLW	GW	3		X										X
Turnaround Time (Business days)		Data Deliverable Information					Comments / Remarks											
10 Day (Business) 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other		Approved By: / Date: <input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S					EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AWB: 016-14920146											
Rush T/A Data Available VIA Email or Lablink												Sample Custody must be documented below each time samples change possession, including courier delivery.						
Relinquished by Sampler/Affiliation 1 Matt Yin, NAB for AECOM		Date Time: 8/31/23		Received By/Affiliation 2 Brittany Tommez / AECOM		Date Time: 8/31/23 13:08		Relinquished By/Affiliation 3 Brittany Tommez / AECOM		Date Time:		Received By/Affiliation 4 [Signature] 9/5/23						
Relinquished by/Affiliation 5		Date Time:		Received By/Affiliation 6		Date Time:		Relinquished By/Affiliation 7		Date Time:		Received By/Affiliation 8						
Lab Use Only: Cooler Temperature (s) Celsius (corrected):												http://www.sgs.com/en/terms-and-conditions						

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FC8439: Chain of Custody

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SGS North America Inc - Orlando
Chain of Custody

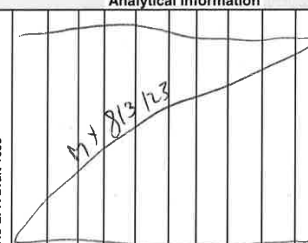
4405 Vinecland Road, Suite C-15 Orlando, FL 32811
TEL: 407-425-6700 FAX: 407-425-0707
www.sgs.com

FC 8439

COC #: 2308AFSG02

SGS - ORLANDO JOB #:

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Client / Reporting Information		Project Information				Analytical Information										Matrix Codes	
Company Name: AECOM		Project Name: N6274223F0104 RH Fire Suppression System														DW - Drinking Water GW - Ground Water WW - Water SW - Surface Water SO - Soil SL - Sludge OL - Oil LIQ - Other Liquid AIR - Air SOL - Other Solid WP - Wipe	
Address: 1001 Bishop St. ste 1600		Street															
City: Honolulu State: HI Zip: 96813		City Honolulu State Hawaii															
Project Contact: Katie Abbott Email: katie.abbott@aecom.com		Project # 60697810															
Project Manager: Watson Tanji Email: watson.tanji@aecom.com		Fax #															
Phone #: 303-796-4624 / 808-954-4512		Client Purchase Order #				PFAS EPA Draft 1683											
Sampler(s) Name(s) (Printed) Sampler 1: <i>Math Yin</i> Sampler 2: <i>Chris Waback</i>		LAB USE ONLY															
SGS Orlando Sample #	Field ID / Point of Collection	COLLECTION			CONTAINER INFORMATION												
		DATE	TIME	SAMPLED BY	MATRIX	TOTAL # OF BOTTLES	OTHER	NIHIE	ICL	NIOSH	PH03	RES04	NIOSH-DWAC	DWATER	MEQH		
6	AF-RHMW03-WGN01LF-2308	8/13/23	1120	MY, CW	GW	3		X									
		MY 8/13/23															
Turnaround Time (Business days)				Data Deliverable Information				Comments / Remarks									
10 Day (Business) 7 Day <input checked="" type="checkbox"/> 5 Day 3 Day RUSH 2 Day RUSH 1 Day RUSH Other		Approved By: / Date:		<input type="checkbox"/> COMMERCIAL "A" (RESULTS ONLY) <input type="checkbox"/> COMMERCIAL "B" (RESULTS PLUS QC) <input type="checkbox"/> REDT1 (EPA LEVEL 3) <input checked="" type="checkbox"/> FULLT1 (EPA LEVEL 4) <input checked="" type="checkbox"/> EDD'S				EDMS upload database: JBPHE EDMS Coverage: AFFF Assessment Sampling GW United AQB: 016-14920146									
Rush T/A Data Available VIA Email or Lablink																	
Sample Custody must be documented below each time samples change possession, including courier delivery.																	
Relinquished by Sampler/Affiliation <i>Math Yin Math Yin AECOM</i>		Date Time: 8/13/23 1230		Received By/Affiliation <i>Brittany Tominec Math / AECOM</i>				Relinquished By/Affiliation <i>Brittany Tominec Math / AECOM</i>		Date Time: 8/13/23 1300		Received By/Affiliation 1060 <i>JSN 8/15/23</i>					
Relinquished by/Affiliation		Date Time:		Received By/Affiliation				Relinquished By/Affiliation		Date Time:		Received By/Affiliation					
5				6				7				8					
Lab Use Only : Cooler Temperature (s) Celsius (corrected): 5										http://www.sgs.com/en/terms-and-conditions							

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FC8439: Chain of Custody

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SGS Sample Receipt Summary

Job Number: FC8439

Client: AECOM

Project: N6274223F0104 RH Fire Suppression System

Date / Time Received: 8/5/2023 10:00:00 AM

Delivery Method: United Cargo/Airspace

Airbill #'s: United Cargo AWB #: 016-14920146

Therm ID: IR 1;

Therm CF: -0.2;

of Coolers: 1

Cooler Temps (Raw Measured) °C: Cooler 1: (3.4);

Cooler Temps (Corrected) °C: Cooler 1: (3.2);

Cooler Information

Y or N

- 1. Custody Seals Present
- 2. Custody Seals Intact
- 3. Temp criteria achieved
- 4. Cooler temp verification IR Gun
- 5. Cooler media Ice (Bag)

Trip Blank Information

Y or N N/A

- 1. Trip Blank present / cooler
 - 2. Trip Blank listed on COC
- W or S N/A
- 3. Type Of TB Received

Sample Information

Y or N N/A

- 1. Sample labels present on bottles
- 2. Samples preserved properly
- 3. Sufficient volume/containers recvd for analysis:
- 4. Condition of sample Intact
- 5. Sample recvd within HT
- 6. Dates/Times/IDs on COC match Sample Label
- 7. VOCs have headspace
- 8. Bottles received for unspecified tests
- 9. Compositing instructions clear
- 10. Voa Soil Kits/Jars received past 48hrs?
- 11. % Solids Jar received?
- 12. Residual Chlorine Present?

Misc. Information

Number of Encores: 25-Gram _____ 5-Gram _____ Number of 5035 Field Kits: _____ Number of Lab Filtered Metals: _____
 Test Strip Lot #s: pH 0-3 230320 pH 10-12 _____ Other: (Specify) pH 1.0 - 12.0 222221
 Residual Chlorine Test Strip Lot #: _____

Comments

SM001
Rev. Date 05/24/17

Technician: ZANEB

Date: 8/5/2023 10:00:00 AM

Reviewer: CD

Date: 8/9/2023

FC8439: Chain of Custody

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QC Evaluation: DOD QSM5.x Limits

Job Number: FC8439
Account: AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System
Collected: 08/03/23

QC Sample ID	CAS#	Analyte	Sample Result Type	Result Type	Units	Limits
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No DOD QSM5.x Limits found for methods in this job.

* Sample used for QC is not from job FC8439

5.2
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MS Semi-volatiles

QC Data Summaries

Includes the following where applicable:

- Method Blank Summaries
- Blank Spike Summaries
- Matrix Spike and Duplicate Summaries

Instrument Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-IBLK	4Q48763.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	0.0020	0.0080	0.0010	ug/l	J
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Instrument Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-IBLK	4Q48763.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	106% 20-150%
	13C5-PFPeA	95% 20-150%
	13C5-PFHxA	100% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	99% 20-150%
	13C9-PFNA	96% 20-150%
	13C6-PFDA	102% 20-150%
	13C7-PFUnDA	111% 20-150%
	13C2-PFDoDA	101% 20-150%
	13C2-PFTeDA	100% 20-150%
	13C3-PFBS	90% 20-150%
	13C3-PFHxS	94% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	92% 20-150%
	d3-MeFOSAA	105% 20-150%
	d5-EtFOSAA	103% 20-150%
	13C2-4:2FTS	148% 20-180%
	13C2-6:2FTS	130% 20-180%
	13C2-8:2FTS	138% 20-180%

Instrument Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-IBLK	6Q22648.D	1	08/10/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-2, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100%
	13C5-PFPeA	103%
	13C5-PFHxA	101%
	13C4-PFHpA	103%
	13C8-PFOA	94%
	13C9-PFNA	95%
	13C6-PFDA	99%
	13C7-PFUnDA	96%
	13C2-PFDoDA	99%
	13C2-PFTeDA	98%
	13C3-PFBS	99%
	13C3-PFHxS	105%
	13C8-PFOS	105%
	13C8-FOSA	104%
	d3-MeFOSAA	106%
	d5-EtFOSAA	100%
	13C2-4:2FTS	109%
	13C2-6:2FTS	110%

Instrument Blank

Job Number: FC8439
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-IBLK	6Q22648.D	1	08/10/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-2, FC8439-4, FC8439-5, FC8439-6

CAS No.	ID Standard Recoveries	Limits
	13C2-8:2FTS	111% 20-180%

6.12
6

Instrument Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-IBLK	6Q22737.D	1	08/11/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-2, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	100%
	13C5-PFPeA	101%
	13C5-PFHxA	98%
	13C4-PFHpA	104%
	13C8-PFOA	99%
	13C9-PFNA	95%
	13C6-PFDA	103%
	13C7-PFUnDA	98%
	13C2-PFDoDA	98%
	13C2-PFTeDA	98%
	13C3-PFBS	97%
	13C3-PFHxS	96%
	13C8-PFOS	99%
	13C8-FOSA	100%
	d3-MeFOSAA	100%
	d5-EtFOSAA	105%
	13C2-4:2FTS	102%
	13C2-6:2FTS	102%

Instrument Blank

Job Number: FC8439
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-IBLK	6Q22737.D	1	08/11/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-2, FC8439-4, FC8439-5, FC8439-6

CAS No.	ID Standard Recoveries	Limits
	13C2-8:2FTS	104% 20-180%

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48777.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48777.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	110% 20-150%
	13C5-PFPeA	89% 20-150%
	13C5-PFHxA	102% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	101% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	107% 20-150%
	13C7-PFUnDA	110% 20-150%
	13C2-PFDoDA	108% 20-150%
	13C2-PFTeDA	103% 20-150%
	13C3-PFBS	90% 20-150%
	13C3-PFHxS	97% 20-150%
	13C8-PFOS	93% 20-150%
	13C8-FOSA	93% 20-150%
	d3-MeFOSAA	106% 20-150%
	d5-EtFOSAA	108% 20-150%
	13C2-4:2FTS	125% 20-180%
	13C2-6:2FTS	135% 20-180%
	13C2-8:2FTS	133% 20-180%

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48788.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48788.D	1	08/09/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	111% 20-150%
	13C5-PFPeA	88% 20-150%
	13C5-PFHxA	99% 20-150%
	13C4-PFHpA	103% 20-150%
	13C8-PFOA	102% 20-150%
	13C9-PFNA	84% 20-150%
	13C6-PFDA	101% 20-150%
	13C7-PFUnDA	116% 20-150%
	13C2-PFDoDA	106% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	91% 20-150%
	13C3-PFHxS	99% 20-150%
	13C8-PFOS	93% 20-150%
	13C8-FOSA	92% 20-150%
	d3-MeFOSAA	104% 20-150%
	d5-EtFOSAA	104% 20-150%
	13C2-4:2FTS	141% 20-180%
	13C2-6:2FTS	119% 20-180%
	13C2-8:2FTS	139% 20-180%

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48800.D	1	08/10/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S4Q713-ICCB	4Q48800.D	1	08/10/23	AL	n/a	n/a	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	111% 20-150%
	13C5-PFPeA	88% 20-150%
	13C5-PFHxA	97% 20-150%
	13C4-PFHpA	99% 20-150%
	13C8-PFOA	100% 20-150%
	13C9-PFNA	93% 20-150%
	13C6-PFDA	100% 20-150%
	13C7-PFUnDA	105% 20-150%
	13C2-PFDoDA	103% 20-150%
	13C2-PFTeDA	94% 20-150%
	13C3-PFBS	90% 20-150%
	13C3-PFHxS	102% 20-150%
	13C8-PFOS	91% 20-150%
	13C8-FOSA	89% 20-150%
	d3-MeFOSAA	96% 20-150%
	d5-EtFOSAA	100% 20-150%
	13C2-4:2FTS	131% 20-180%
	13C2-6:2FTS	137% 20-180%
	13C2-8:2FTS	142% 20-180%

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-ICCB	6Q22663.D	1	08/10/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-2, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101% 20-150%
	13C5-PFPeA	100% 20-150%
	13C5-PFHxA	95% 20-150%
	13C4-PFHpA	101% 20-150%
	13C8-PFOA	104% 20-150%
	13C9-PFNA	101% 20-150%
	13C6-PFDA	105% 20-150%
	13C7-PFUnDA	100% 20-150%
	13C2-PFDoDA	102% 20-150%
	13C2-PFTeDA	99% 20-150%
	13C3-PFBS	99% 20-150%
	13C3-PFHxS	98% 20-150%
	13C8-PFOS	100% 20-150%
	13C8-FOSA	95% 20-150%
	d3-MeFOSAA	97% 20-150%
	d5-EtFOSAA	97% 20-150%
	13C2-4:2FTS	104% 20-180%
	13C2-6:2FTS	101% 20-180%

Continuing Calibration Blank

Job Number: FC8439
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-ICCB	6Q22663.D	1	08/10/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-2, FC8439-4, FC8439-5, FC8439-6

CAS No.	ID Standard Recoveries	Limits
	13C2-8:2FTS	100% 20-180%

6.1.7
6

Method Blank Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MB ^a	4Q48781.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
2706-90-3	Perfluoropentanoic acid	ND	0.0080	0.00094	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
375-95-1	Perfluorononanoic acid	ND	0.0040	0.00061	ug/l	
335-76-2	Perfluorodecanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
307-55-1	Perfluorododecanoic acid	ND	0.0040	0.00060	ug/l	
72629-94-8	Perfluorotridecanoic acid	ND	0.0040	0.00084	ug/l	
376-06-7	Perfluorotetradecanoic acid	ND	0.0040	0.00050	ug/l	
375-73-5	Perfluorobutanesulfonic acid	ND	0.0040	0.00050	ug/l	
2706-91-4	Perfluoropentanesulfonic acid	ND	0.0050	0.0011	ug/l	
355-46-4	Perfluorohexanesulfonic acid	ND	0.0040	0.00070	ug/l	
375-92-8	Perfluoroheptanesulfonic acid	ND	0.0040	0.00050	ug/l	
1763-23-1	Perfluorooctanesulfonic acid	ND	0.0040	0.00054	ug/l	
68259-12-1	Perfluorononanesulfonic acid	ND	0.0040	0.00057	ug/l	
335-77-3	Perfluorodecanesulfonic acid	ND	0.0040	0.00064	ug/l	
79780-39-5	Perfluorododecanesulfonic aci	ND	0.0050	0.0011	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
754-91-6	PFOSA	ND	0.0040	0.00067	ug/l	
31506-32-8	MeFOSA	ND	0.0080	0.0010	ug/l	
4151-50-2	EtFOSA	ND	0.0080	0.0010	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
24448-09-7	MeFOSE	ND	0.040	0.0044	ug/l	
1691-99-2	EtFOSE	ND	0.040	0.0074	ug/l	
13252-13-6	HFPO-DA (GenX)	ND	0.0040	0.0010	ug/l	
919005-14-4	ADONA	ND	0.0080	0.0019	ug/l	
377-73-1	PFMPA	ND	0.0080	0.0010	ug/l	
863090-89-5	PFMBA	ND	0.0080	0.0011	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
756426-58-19	Cl-PF3ONS (F-53B Major)	ND	0.0080	0.0014	ug/l	
763051-92-91	Cl-PF3OUdS (F-53B Minor)	ND	0.0080	0.0018	ug/l	

Method Blank Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MB ^a	4Q48781.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Result	RL	MDL	Units	Q
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
356-02-5	3:3 Fluorotelomer carboxylate	ND	0.020	0.0045	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	85% 20-150%
	13C5-PFPeA	74% 20-150%
	13C5-PFHxA	81% 20-150%
	13C4-PFHpA	84% 20-150%
	13C8-PFOA	77% 20-150%
	13C9-PFNA	72% 20-150%
	13C6-PFDA	79% 20-150%
	13C7-PFUnDA	80% 20-150%
	13C2-PFDoDA	77% 20-150%
	13C2-PFTeDA	71% 20-150%
	13C3-PFBS	76% 20-150%
	13C3-PFHxS	79% 20-150%
	13C8-PFOS	81% 20-150%
	13C8-FOSA	44% 20-150%
	d3-MeFOSA	49% 20-150%
	d5-EtFOSA	51% 20-150%
	d3-MeFOSAA	77% 20-150%
	d5-EtFOSAA	82% 20-150%
	d7-MeFOSE	37% 20-150%
	d9-EtFOSE	45% 20-150%
	13C2-4:2FTS	112% 20-180%
	13C2-6:2FTS	111% 20-180%
	13C2-8:2FTS	104% 20-180%
	13C3-HFPO-DA	73% 20-150%

(a) All results and recoveries corrected for double EIS.

Continuing Calibration Blank

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-ICCB	6Q22733.D	1	08/11/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

S6Q330-IBLK

CAS No.	Compound	Result	RL	MDL	Units	Q
375-22-4	Perfluorobutanoic acid	ND	0.016	0.0019	ug/l	
307-24-4	Perfluorohexanoic acid	ND	0.0040	0.00050	ug/l	
375-85-9	Perfluoroheptanoic acid	ND	0.0040	0.00050	ug/l	
335-67-1	Perfluorooctanoic acid	ND	0.0040	0.00050	ug/l	
2058-94-8	Perfluoroundecanoic acid	ND	0.0040	0.00060	ug/l	
757124-72-44:2	Fluorotelomer sulfonate	ND	0.020	0.0032	ug/l	
27619-97-2	6:2 Fluorotelomer sulfonate	ND	0.020	0.0035	ug/l	
39108-34-4	8:2 Fluorotelomer sulfonate	ND	0.020	0.0041	ug/l	
2355-31-9	MeFOSAA	ND	0.0050	0.0010	ug/l	
2991-50-6	EtFOSAA	ND	0.0050	0.0013	ug/l	
151772-58-6	NFDHA	ND	0.0080	0.0012	ug/l	
113507-82-7	PFEESA	ND	0.0080	0.00078	ug/l	
914637-49-35:3	Fluorotelomer carboxylate	ND	0.10	0.0087	ug/l	
812-70-4	7:3 Fluorotelomer carboxylate	ND	0.10	0.0079	ug/l	

CAS No.	ID Standard Recoveries	Limits
	13C4-PFBA	101%
	13C5-PFPeA	105%
	13C5-PFHxA	106%
	13C4-PFHpA	100%
	13C8-PFOA	99%
	13C9-PFNA	99%
	13C6-PFDA	104%
	13C7-PFUnDA	105%
	13C2-PFDoDA	103%
	13C2-PFTeDA	98%
	13C3-PFBS	99%
	13C3-PFHxS	101%
	13C8-PFOS	102%
	13C8-FOSA	99%
	d3-MeFOSAA	101%
	d5-EtFOSAA	103%
	13C2-4:2FTS	102%
	13C2-6:2FTS	99%

Continuing Calibration Blank

Job Number: FC8439
Account: AECOMCOD AECOM, INC.
Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
S6Q330-ICCB	6Q22733.D	1	08/11/23	MV	n/a	n/a	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

S6Q330-IBLK

CAS No.	ID Standard Recoveries	Limits
	13C2-8:2FTS	94% 20-180%

6.1.9

6

Blank Spike Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-LLBS	4Q48780.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.03	0.0319	106	40-150
2706-90-3	Perfluoropentanoic acid	0.015	0.0180	120	40-150
307-24-4	Perfluorohexanoic acid	0.0075	0.0090	120	40-150
375-85-9	Perfluoroheptanoic acid	0.0075	0.0078	104	40-150
335-67-1	Perfluorooctanoic acid	0.0075	0.0090	120	40-150
375-95-1	Perfluorononanoic acid	0.0075	0.0088	117	40-150
335-76-2	Perfluorodecanoic acid	0.0075	0.0084	112	40-150
2058-94-8	Perfluoroundecanoic acid	0.0075	0.0079	105	40-150
307-55-1	Perfluorododecanoic acid	0.0075	0.0080	107	40-150
72629-94-8	Perfluorotridecanoic acid	0.0075	0.0089	119	40-150
376-06-7	Perfluorotetradecanoic acid	0.0075	0.0084	112	40-150
375-73-5	Perfluorobutanesulfonic acid	0.00665	0.0084	126	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.00706	0.0079	112	40-150
355-46-4	Perfluorohexanesulfonic acid	0.00686	0.0082	120	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.00715	0.0072	101	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.00696	0.0090	129	40-150
68259-12-1	Perfluorononanesulfonic acid	0.00722	0.0082	114	40-150
335-77-3	Perfluorodecanesulfonic acid	0.00724	0.0077	106	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.00728	0.0079	109	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0281	0.0321	114	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.0285	0.0316	111	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.0288	0.0284	99	40-150
754-91-6	PFOSA	0.0075	0.0083	111	40-150
31506-32-8	MeFOSA	0.015	0.0138	92	40-150
4151-50-2	EtFOSA	0.015	0.0158	105	40-150
2355-31-9	MeFOSAA	0.0075	0.0090	120	40-150
2991-50-6	EtFOSAA	0.0075	0.0079	105	40-150
24448-09-7	MeFOSE	0.0375	0.0381	102	40-150
1691-99-2	EtFOSE	0.0375	0.0363	97	40-150
13252-13-6	HFPO-DA (GenX)	0.015	0.0166	111	40-150
919005-14-4	ADONA	0.0142	0.0174	123	40-150
377-73-1	PFMPA	0.015	0.0175	117	40-150
863090-89-5	PFMBA	0.015	0.0177	118	40-150
151772-58-6	NFDHA	0.015	0.0154	103	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.014	0.0175	125	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0142	0.0157	111	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-LLBS	4Q48780.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0134	0.0141	106	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.0375	0.0248	66	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.188	0.172	92	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.188	0.192	102	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	142%	20-150%
	13C5-PFPeA	114%	20-150%
	13C5-PFHxA	132%	20-150%
	13C4-PFHpA	137%	20-150%
	13C8-PFOA	127%	20-150%
	13C9-PFNA	115%	20-150%
	13C6-PFDA	127%	20-150%
	13C7-PFUnDA	133%	20-150%
	13C2-PFDoDA	118%	20-150%
	13C2-PFTeDA	106%	20-150%
	13C3-PFBS	121%	20-150%
	13C3-PFHxS	127%	20-150%
	13C8-PFOS	111%	20-150%
	13C8-FOSA	60%	20-150%
	d3-MeFOSA	73%	20-150%
	d5-EtFOSA	74%	20-150%
	d3-MeFOSAA	118%	20-150%
	d5-EtFOSAA	120%	20-150%
	d7-MeFOSE	58%	20-150%
	d9-EtFOSE	70%	20-150%
	13C2-4:2FTS	168%	20-180%
	13C2-6:2FTS	181%* a	20-180%
	13C2-8:2FTS	200%* a	20-180%
	13C3-HFPO-DA	114%	20-150%

(a) Outside control limits.

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-BS	4Q48779.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
375-22-4	Perfluorobutanoic acid	0.1	0.111	111	40-150
2706-90-3	Perfluoropentanoic acid	0.05	0.0643	129	40-150
307-24-4	Perfluorohexanoic acid	0.025	0.0284	114	40-150
375-85-9	Perfluoroheptanoic acid	0.025	0.0282	113	40-150
335-67-1	Perfluorooctanoic acid	0.025	0.0300	120	40-150
375-95-1	Perfluorononanoic acid	0.025	0.0319	128	40-150
335-76-2	Perfluorodecanoic acid	0.025	0.0318	127	40-150
2058-94-8	Perfluoroundecanoic acid	0.025	0.0292	117	40-150
307-55-1	Perfluorododecanoic acid	0.025	0.0274	110	40-150
72629-94-8	Perfluorotridecanoic acid	0.025	0.0304	122	40-150
376-06-7	Perfluorotetradecanoic acid	0.025	0.0302	121	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0222	0.0315	142	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0235	0.0257	109	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0229	0.0299	131	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0238	0.0272	114	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0232	0.0299	129	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0241	0.0308	128	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0241	0.0274	114	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0243	0.0280	115	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.0938	0.108	115	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.095	0.108	114	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.096	0.119	124	40-150
754-91-6	PFOSA	0.025	0.0293	117	40-150
31506-32-8	MeFOSA	0.05	0.0533	107	40-150
4151-50-2	EtFOSA	0.05	0.0562	112	40-150
2355-31-9	MeFOSAA	0.025	0.0310	124	40-150
2991-50-6	EtFOSAA	0.025	0.0360	144	40-150
24448-09-7	MeFOSE	0.125	0.140	112	40-150
1691-99-2	EtFOSE	0.125	0.138	110	40-150
13252-13-6	HFPO-DA (GenX)	0.05	0.0545	109	40-150
919005-14-4	ADONA	0.0473	0.0604	128	40-150
377-73-1	PFMPA	0.05	0.0621	124	40-150
863090-89-5	PFMBA	0.05	0.0632	126	40-150
151772-58-6	NFDHA	0.05	0.0577	115	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0468	0.0629	135	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0473	0.0608	129	40-150

* = Outside of Control Limits.

Blank Spike Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-BS	4Q48779.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	Spike ug/l	BSP ug/l	BSP %	Limits
113507-82-7	PFEESA	0.0445	0.0489	110	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.125	0.0953	76	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.625	0.610	98	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.625	0.672	108	40-150

CAS No.	ID Standard Recoveries	BSP	Limits
	13C4-PFBA	140%	20-150%
	13C5-PFPeA	111%	20-150%
	13C5-PFHxA	130%	20-150%
	13C4-PFHpA	135%	20-150%
	13C8-PFOA	127%	20-150%
	13C9-PFNA	108%	20-150%
	13C6-PFDA	130%	20-150%
	13C7-PFUnDA	137%	20-150%
	13C2-PFDoDA	135%	20-150%
	13C2-PFTeDA	116%	20-150%
	13C3-PFBS	114%	20-150%
	13C3-PFHxS	125%	20-150%
	13C8-PFOS	112%	20-150%
	13C8-FOSA	68%	20-150%
	d3-MeFOSA	74%	20-150%
	d5-EtFOSA	74%	20-150%
	d3-MeFOSAA	123%	20-150%
	d5-EtFOSAA	101%	20-150%
	d7-MeFOSE	58%	20-150%
	d9-EtFOSE	69%	20-150%
	13C2-4:2FTS	159%	20-180%
	13C2-6:2FTS	168%	20-180%
	13C2-8:2FTS	173%	20-180%
	13C3-HFPO-DA	114%	20-150%

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MS	4Q48790.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-3	4Q48789.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	FC8439-3 ug/l	Spike Q	MS ug/l	MS %	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	0.0909	0.106	117	40-150
2706-90-3	Perfluoropentanoic acid	0.0074 U	0.0455	0.0603	133	40-150
307-24-4	Perfluorohexanoic acid	0.0037 U	0.0227	0.0260	114	40-150
375-85-9	Perfluoroheptanoic acid	0.0037 U	0.0227	0.0268	118	40-150
335-67-1	Perfluorooctanoic acid	0.0037 U	0.0227	0.0290	128	40-150
375-95-1	Perfluorononanoic acid	0.0037 U	0.0227	0.0279	123	40-150
335-76-2	Perfluorodecanoic acid	0.0037 U	0.0227	0.0292	128	40-150
2058-94-8	Perfluoroundecanoic acid	0.0037 U	0.0227	0.0270	119	40-150
307-55-1	Perfluorododecanoic acid	0.0037 U	0.0227	0.0269	118	40-150
72629-94-8	Perfluorotridecanoic acid	0.0037 U	0.0227	0.0276	121	40-150
376-06-7	Perfluorotetradecanoic acid	0.0037 U	0.0227	0.0284	125	40-150
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	0.0202	0.0295	146	40-150
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	0.0214	0.0260	122	40-150
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	0.0208	0.0282	136	40-150
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	0.0217	0.0250	115	40-150
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	0.0211	0.0252	119	40-150
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	0.0219	0.0282	129	40-150
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	0.0219	0.0247	113	40-150
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	0.022	0.0250	113	40-150
757124-72-44:2	Fluorotelomer sulfonate	0.019 U	0.0852	0.0991	116	40-150
27619-97-2	6:2 Fluorotelomer sulfonate	0.019 U	0.0864	0.0981	114	40-150
39108-34-4	8:2 Fluorotelomer sulfonate	0.019 U	0.0873	0.133	152*	40-150
754-91-6	PFOSA	0.0037 U	0.0227	0.0279	123	40-150
31506-32-8	MeFOSA	0.0074 U	0.0455	0.0473	104	40-150
4151-50-2	EtFOSA	0.0074 U	0.0455	0.0545	120	40-150
2355-31-9	MeFOSAA	0.0046 U	0.0227	0.0328	144	40-150
2991-50-6	EtFOSAA	0.0046 U	0.0227	0.0254	112	40-150
24448-09-7	MeFOSE	0.037 U	0.114	0.121	106	40-150
1691-99-2	EtFOSE	0.037 U	0.114	0.126	111	40-150
13252-13-6	HFPO-DA (GenX)	0.0037 U	0.0455	0.0512	113	40-150
919005-14-4	ADONA	0.0074 U	0.043	0.0574	134	40-150
377-73-1	PFMPA	0.0074 U	0.0455	0.0548	121	40-150
863090-89-5	PFMBA	0.0074 U	0.0455	0.0587	129	40-150
151772-58-6	NFDHA	0.0074 U	0.0455	0.0524	115	40-150
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	0.0425	0.0587	138	40-150
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	0.043	0.0549	128	40-150

* = Outside of Control Limits.

Matrix Spike Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-MS	4Q48790.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-3	4Q48789.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	FC8439-3 ug/l	Spike Q	MS ug/l	MS %	Limits
113507-82-7	PFEESA	0.0074 U	0.0405	0.0449	111	40-150
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	0.114	0.111	98	40-150
914637-49-35:3	Fluorotelomer carboxylate	0.093 U	0.568	0.593	104	40-150
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	0.568	0.664	117	40-150

CAS No.	ID Standard Recoveries	MS	FC8439-3	Limits
	13C4-PFBA	107%	108%	20-150%
	13C5-PFPeA	107%	108%	20-150%
	13C5-PFHxA	124%	128%	20-150%
	13C4-PFHpA	126%	129%	20-150%
	13C8-PFOA	120%	120%	20-150%
	13C9-PFNA	101%	102%	20-150%
	13C6-PFDA	127%	122%	20-150%
	13C7-PFUnDA	130%	128%	20-150%
	13C2-PFDoDA	123%	115%	20-150%
	13C2-PFTeDA	103%	98%	20-150%
	13C3-PFBS	120%	108%	20-150%
	13C3-PFHxS	129%	114%	20-150%
	13C8-PFOS	113%	114%	20-150%
	13C8-FOSA	83%	90%	20-150%
	d3-MeFOSA	102%	101%	20-150%
	d5-EtFOSA	91%	91%	20-150%
	d3-MeFOSAA	118%	109%	20-150%
	d5-EtFOSAA	127%	120%	20-150%
	d7-MeFOSE	75%	82%	20-150%
	d9-EtFOSE	85%	87%	20-150%
	13C2-4:2FTS	170%	156%	20-180%
	13C2-6:2FTS	179%	162%	20-180%
	13C2-8:2FTS	155%	165%	20-180%
	13C3-HFPO-DA	107%	106%	20-150%

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-DUP	4Q48792.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4	4Q48791.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4 ^a	6Q22667.D	10	08/10/23	MV	08/08/23	OP98297	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	FC8439-4 ug/l	DUP Q ug/l	Q	RPD	Limits
375-22-4	Perfluorobutanoic acid	0.015 U	ND		nc	30
2706-90-3	Perfluoropentanoic acid	0.0074 U	ND		nc	30
307-24-4	Perfluorohexanoic acid	0.0037 U	ND		nc	30
375-85-9	Perfluoroheptanoic acid	0.0037 U	ND		nc	30
335-67-1	Perfluorooctanoic acid	0.00095 J	0.00056 J		52*	30
375-95-1	Perfluorononanoic acid	0.0037 U	ND		nc	30
335-76-2	Perfluorodecanoic acid	0.0037 U	ND		nc	30
2058-94-8	Perfluoroundecanoic acid	0.0037 U	ND		nc	30
307-55-1	Perfluorododecanoic acid	0.0037 U	ND		nc	30
72629-94-8	Perfluorotridecanoic acid	0.0037 U	ND		nc	30
376-06-7	Perfluorotetradecanoic acid	0.0037 U	ND		nc	30
375-73-5	Perfluorobutanesulfonic acid	0.0037 U	ND		nc	30
2706-91-4	Perfluoropentanesulfonic acid	0.0046 U	ND		nc	30
355-46-4	Perfluorohexanesulfonic acid	0.0037 U	ND		nc	30
375-92-8	Perfluoroheptanesulfonic acid	0.0037 U	ND		nc	30
1763-23-1	Perfluorooctanesulfonic acid	0.0037 U	ND		nc	30
68259-12-1	Perfluorononanesulfonic acid	0.0037 U	ND		nc	30
335-77-3	Perfluorodecanesulfonic acid	0.0037 U	ND		nc	30
79780-39-5	Perfluorododecanesulfonic aci	0.0046 U	ND		nc	30
757124-72-44:2	Fluorotelomer sulfonate	0.19 U ^b	ND		nc	30
27619-97-2	6:2 Fluorotelomer sulfonate	0.19 U ^b	ND		nc	30
39108-34-4	8:2 Fluorotelomer sulfonate	0.19 U ^b	ND		nc	30
754-91-6	PFOSA	0.0037 U	ND		nc	30
31506-32-8	MeFOSA	0.0074 U	ND		nc	30
4151-50-2	EtFOSA	0.0074 U	ND		nc	30
2355-31-9	MeFOSAA	0.0046 U	ND		nc	30
2991-50-6	EtFOSAA	0.0046 U	ND		nc	30
24448-09-7	MeFOSE	0.037 U	ND		nc	30
1691-99-2	EtFOSE	0.037 U	ND		nc	30
13252-13-6	HFPO-DA (GenX)	0.0037 U	ND		nc	30
919005-14-4	ADONA	0.0074 U	ND		nc	30
377-73-1	PFMPA	0.0074 U	ND		nc	30
863090-89-5	PFMBA	0.0074 U	ND		nc	30
151772-58-6	NFDHA	0.0074 U	ND		nc	30
756426-58-19	Cl-PF3ONS (F-53B Major)	0.0074 U	ND		nc	30
763051-92-91	Cl-PF3OUdS (F-53B Minor)	0.0074 U	ND		nc	30

* = Outside of Control Limits.

Duplicate Summary

Job Number: FC8439
 Account: AECOMCOD AECOM, INC.
 Project: N6274223F0104 RH Fire Suppression System

Sample	File ID	DF	Analyzed	By	Prep Date	Prep Batch	Analytical Batch
OP98297-DUP	4Q48792.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4	4Q48791.D	1	08/09/23	AL	08/08/23	OP98297	S4Q713
FC8439-4 ^a	6Q22667.D	10	08/10/23	MV	08/08/23	OP98297	S6Q330

The QC reported here applies to the following samples:

Method: EPA DRAFT 1633

FC8439-1, FC8439-2, FC8439-3, FC8439-4, FC8439-5, FC8439-6

CAS No.	Compound	FC8439-4 ug/l	DUP Q ug/l	Q	RPD	Limits
113507-82-7	PFEESA	0.0074 U	ND		nc	30
356-02-5	3:3 Fluorotelomer carboxylate	0.019 U	ND		nc	30
914637-49-35:3	Fluorotelomer carboxylate	0.093 U	ND		nc	30
812-70-4	7:3 Fluorotelomer carboxylate	0.093 U	ND		nc	30

CAS No.	ID Standard Recoveries	DUP	FC8439-4	FC8439-4	Limits
	13C4-PFBA	88%	96%	91%	20-150%
	13C5-PFPeA	77%	80%	121%	20-150%
	13C5-PFHxA	125%	131%	127%	20-150%
	13C4-PFHpA	133%	139%	131%	20-150%
	13C8-PFOA	121%	118%	117%	20-150%
	13C9-PFNA	107%	106%	115%	20-150%
	13C6-PFDA	120%	126%	121%	20-150%
	13C7-PFUnDA	124%	135%	121%	20-150%
	13C2-PFDoDA	106%	114%	107%	20-150%
	13C2-PFTeDA	82%	88%	91%	20-150%
	13C3-PFBS	113%	114%	116%	20-150%
	13C3-PFHxS	128%	116%	113%	20-150%
	13C8-PFOS	110%	120%	113%	20-150%
	13C8-FOSA	101%	109%	106%	20-150%
	d3-MeFOSA	98%	101%	89%	20-150%
	d5-EtFOSA	94%	92%	94%	20-150%
	d3-MeFOSAA	138%	138%	113%	20-150%
	d5-EtFOSAA	145%	146%	106%	20-150%
	d7-MeFOSE	83%	86%	92%	20-150%
	d9-EtFOSE	85%	92%	94%	20-150%
	13C2-4:2FTS	265%* c	258%* c	109%	20-180%
	13C2-6:2FTS	254%* c	227%* c	137%	20-180%
	13C2-8:2FTS	180%	184%* c	142%	20-180%
	13C3-HFPO-DA	88%	92%	120%	20-150%

- (a) Dilution required (ID recovery standard failure).
- (b) Result is from Run #2.
- (c) Outside control limits.

* = Outside of Control Limits.