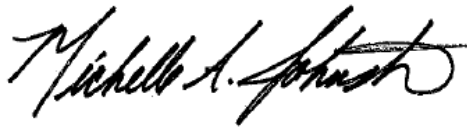


ANALYTICAL REPORT

Job Number: 280-98869-1

Job Description: Brunswick Co. 211 Water Treatment Plant

For:
Brunswick County Public Utilities
3954 Clearwell Drive NE
Leland, NC 28451
Attention: Mr. Glenn Walker



Approved for release.
Michelle A Johnston
Project Manager II
7/12/2017 4:38 PM

Michelle A Johnston, Project Manager II
4955 Yarrow Street, Arvada, CO, 80002
(303)736-0110
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07/12/2017

The test results in this report relate only to the samples in this report and meet all requirements of NELAC, with any exceptions noted. Pursuant to NELAP, this report shall not be reproduced except in full, without the written approval of the laboratory. All questions regarding this report should be directed to the TestAmerica Denver Project Manager.

The Lab Certification ID# is 4025.

Reporting limits are adjusted for sample size used, dilutions and moisture content if applicable.

TestAmerica Laboratories, Inc.

TestAmerica Denver 4955 Yarrow Street, Arvada, CO 80002
Tel (303) 736-0100 Fax (303) 431-7171 www.testamericainc.com

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Definitions/Glossary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Qualifiers

LCMS

Qualifier	Qualifier Description
X	Surrogate is outside control limits

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

CASE NARRATIVE
Client: Brunswick County Public Utilities
Work Order: Brunswick County 211 Water Treatment Plant
Report Number: 280-98869-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In some cases, due to interference or analytes present at high concentrations, samples were diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

Calculations are performed before rounding to avoid round-off errors in calculated results.

All holding times were met and proper preservation noted for the methods performed on these samples, unless otherwise detailed in the individual sections below.

RECEIPT

The sample was received on 6/30/2017 8:50 AM; the sample arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C. No anomalies were encountered during sample receipt.

HFPO-DA

Sample E02 (280-98869-1) was analyzed for Perfluorinated Hydrocarbons in accordance with DV-LC-0012. The sample was prepared on 07/06/2017 and analyzed on 07/10/2017.

The method required MS/MSD analyses could not be performed on prep batch 280-379911, due to insufficient sample volume. Method precision and accuracy have been verified by the acceptable low-level LCS and mid-level LCS/LCSD data.

Internal standard response was outside of acceptance limits for the following sample: E02 (280-98869-1). The sample shows evidence of matrix interference. The internal standards were in control for the Method Blank, low-level LCS and mid-level LCS/LCSD, indicating that the sample matrix may be causing the internal standard outage.

No additional analytical or quality issues were noted, other than those described in the Definitions/Glossary page.

Detection Summary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Client Sample ID: E02

Lab Sample ID: 280-98869-1

No Detections.

This Detection Summary does not include radiochemical test results.

TestAmerica Denver

Client Sample Results

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Client Sample ID: E02

Date Collected: 06/29/17 07:00

Date Received: 06/30/17 08:50

Lab Sample ID: 280-98869-1

Matrix: Water

Method: 8321A - HFPO-DA

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.0096	0.0049	ug/L	—	07/06/17 10:36	07/10/17 10:20	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
¹³ C3 HFPO-DA	27	X	50 - 200				07/06/17 10:36	07/10/17 10:20	1

Default Detection Limits

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Method: 8321A - HFPO-DA

Prep: 3535

Analyte	RL	MDL	Units	Method
HFPO-DA	0.010	0.0051	ug/L	8321A

Surrogate Summary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Method: 8321A - HFPO-DA

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

**13C3 HFPO-DA
(50-200)**

Lab Sample ID

Client Sample ID

280-98869-1

E02

27 X

DLCK 280-368501/14

Lab Control Sample

108

LCS 280-379911/2-A

Lab Control Sample

64

LCSD 280-379911/3-A

Lab Control Sample Dup

59

LLCS 280-379911/4-A

Lab Control Sample

55

MB 280-379911/1-A

Method Blank

57

Surrogate Legend

13C3 HFPO-DA = 13C3 HFPO-DA

QC Sample Results

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Method: 8321A - HFPO-DA

Lab Sample ID: DLCK 280-368501/14

Matrix: Water

Analysis Batch: 368501

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte			Spike Added	DLCK Result	DLCK Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA			0.250	ND		ug/L		90	70 - 130
Surrogate	DLCK %Recovery	DLCK Qualifier	Limits						
13C3 HFPO-DA	108		50 - 200						

Lab Sample ID: MB 280-379911/1-A

Matrix: Water

Analysis Batch: 380269

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 379911

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
HFPO-DA	ND		0.010	0.0051	ug/L		07/06/17 10:36	07/10/17 09:54	1
Surrogate	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C3 HFPO-DA	57		50 - 200				07/06/17 10:36	07/10/17 09:54	1

Lab Sample ID: LCS 280-379911/2-A

Matrix: Water

Analysis Batch: 380269

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 379911

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA			0.200	0.211		ug/L		106	70 - 130
Surrogate	LCS %Recovery	LCS Qualifier	Limits						
13C3 HFPO-DA	64		50 - 200						

Lab Sample ID: LCSD 280-379911/3-A

Matrix: Water

Analysis Batch: 380269

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Prep Batch: 379911

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
HFPO-DA			0.200	0.222		ug/L		111	70 - 130	5	20
Surrogate	LCSD %Recovery	LCSD Qualifier	Limits								
13C3 HFPO-DA	59		50 - 200								

Lab Sample ID: LLCS 280-379911/4-A

Matrix: Water

Analysis Batch: 380269

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 379911

Analyte			Spike Added	LLCS Result	LLCS Qualifier	Unit	D	%Rec	%Rec. Limits
HFPO-DA			0.0200	0.0176		ug/L		88	70 - 130
Surrogate	LLCS %Recovery	LLCS Qualifier	Limits						
13C3 HFPO-DA	55		50 - 200						

TestAmerica Denver

QC Association Summary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

LCMS

Analysis Batch: 368501

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
DLCK 280-368501/14	Lab Control Sample	Total/NA	Water	8321A	

Prep Batch: 379911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98869-1	E02	Total/NA	Water	3535	
MB 280-379911/1-A	Method Blank	Total/NA	Water	3535	
LCS 280-379911/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 280-379911/3-A	Lab Control Sample Dup	Total/NA	Water	3535	
LLCS 280-379911/4-A	Lab Control Sample	Total/NA	Water	3535	

Analysis Batch: 380269

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
280-98869-1	E02	Total/NA	Water	8321A	379911
MB 280-379911/1-A	Method Blank	Total/NA	Water	8321A	379911
LCS 280-379911/2-A	Lab Control Sample	Total/NA	Water	8321A	379911
LCSD 280-379911/3-A	Lab Control Sample Dup	Total/NA	Water	8321A	379911
LLCS 280-379911/4-A	Lab Control Sample	Total/NA	Water	8321A	379911

Lab Chronicle

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Client Sample ID: E02

Date Collected: 06/29/17 07:00

Date Received: 06/30/17 08:50

Lab Sample ID: 280-98869-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.4 mL	5 mL	379911	07/06/17 10:36	HMA	TAL DEN
Total/NA	Analysis	8321A		1			380269	07/10/17 10:20	AGCM	TAL DEN

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Accreditation/Certification Summary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Laboratory: TestAmerica Denver

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
North Carolina (WW/SW)	State Program	4	358	12-31-17

The following analytes are included in this report, but accreditation/certification is not offered by the governing authority:

Analysis Method	Prep Method	Matrix	Analyte
8321A	3535	Water	HFPO-DA

Method Summary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Method	Method Description	Protocol	Laboratory
8321A	HFPO-DA	SW846	TAL DEN

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

Sample Summary

Client: Brunswick County Public Utilities
Project/Site: Brunswick Co. 211 Water Treatment Plant

TestAmerica Job ID: 280-98869-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
280-98869-1	E02	Water	06/29/17 07:00	06/30/17 08:50

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-98869-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS_MeOH_00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
							13C3 HFPO-DA (IS)	0.5 ug/mL
.13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
							13C3 HFPO-DA (IS)	50 ug/mL
HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
.HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-0_00027	04/21/17	04/07/17	BFC Dill_Solvent, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
HFPO_CAL-1_00027	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	0.5 uL	HFPO-DA	0.25 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS_MeOH_00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
							13C3 HFPO-DA (IS)	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
							13C3 HFPO-DA (IS)	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-2_00028	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	1 uL	HFPO-DA	0.5 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS_MeOH_00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
							13C3 HFPO-DA (IS)	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
							13C3 HFPO-DA (IS)	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-3_00027	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	2 uL	HFPO-DA	1 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS_MeOH_00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
							13C3 HFPO-DA (IS)	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-98869-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	13C3 HFPO-DA (IS) HFPO-DA	50 ug/mL 0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-4_00027	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	4 uL	HFPO-DA	2 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS_MeOH_00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA (IS) 13C3 HFPO-DA	0.5 ug/mL 50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-5_00053	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	10 uL	HFPO-DA	5 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS_MeOH_00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA (IS) 13C3 HFPO-DA	0.5 ug/mL 50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-5_00060	07/24/17	07/10/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	10 uL	HFPO-DA	5 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA (IS) 13C3 HFPO-DA	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-6_00053	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	20 uL	HFPO-DA	10 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver

Job No.: 280-98869-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..13C3 HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot M3HFPOADA0213		(Purchased Reagent)		13C3 HFPO-DA (IS)	0.5 ug/mL
							13C3 HFPO-DA	50 ug/mL
							13C3 HFPO-DA (IS)	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot HFPODA0213		(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-6_00060	07/24/17	07/10/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
					HFPO Spike_00003	20 uL	HFPO-DA	10 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot M3HFPOADA0213		(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot HFPODA0213		(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-7_00027	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	50 uL	HFPO-DA	25 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
							13C3 HFPO-DA (IS)	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot M3HFPOADA0213		(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
							13C3 HFPO-DA (IS)	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot HFPODA0213		(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_CAL-8_00027	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
							13C3 HFPO-DA (IS)	10 ug/L
					HFPO Spike_00003	100 uL	HFPO-DA	50 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL
							13C3 HFPO-DA (IS)	0.5 ug/mL
..13C3 HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot M3HFPOADA0213		(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
							13C3 HFPO-DA (IS)	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18		Wellington Laboratories, Lot HFPODA0213		(Purchased Reagent)		HFPO-DA	50 ug/mL
HFPO_ICV_00028	04/21/17	04/07/17	80:20 Methanol : H2O, Lot 00016	1 mL	HFPO I.S._00003	20 uL	13C3 HFPO-DA	10 ug/L
					HFPO Spike_00003	4 uL	HFPO-DA	2 ug/L
.HFPO I.S._00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	13C3 HFPO-DA_00003	1 mL	13C3 HFPO-DA	0.5 ug/mL

REAGENT TRACEABILITY SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-98869-1

SDG No.: _____

Reagent ID	Exp Date	Prep Date	Dilutant Used	Reagent Final Volume	Parent Reagent		Analyte	Concentration
					Reagent ID	Volume Added		
..13C3 HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot M3HFPOADA0213			(Purchased Reagent)		13C3 HFPO-DA	50 ug/mL
.HFPO Spike_00003	01/11/18	01/10/17	LCMS Grade MeOH, Lot LCMS MeOH 00110	100 mL	HFPO-DA_00003	1 mL	HFPO-DA	0.5 ug/mL
..HFPO-DA_00003	12/16/18	Wellington Laboratories, Lot HFPODA0213			(Purchased Reagent)		HFPO-DA	50 ug/mL

Reagent

HFPO-DA_00003



WELLINGTON LABORATORIES

CERTIFICATE OF ANALYSIS DOCUMENTATION

PRODUCT CODE:

HFPO-DA

LOT NUMBER: HFPODA0213

COMPOUND:

2,2,3,3-Tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy)-propanoic acid

STRUCTURE:

CAS #:

13262-13-6



MOLECULAR FORMULA:

C₉H₅F₁₁O₅

MOLECULAR WEIGHT:

330.05

CONCENTRATION:

50 ± 2.5 µg/ml

SOLVENT(S):

Methanol

CHEMICAL PURITY:

>98%

LAST TESTED: (mm/dd/yyyy)

02/05/2014

EXPIRY DATE: (mm/dd/yyyy)

Stability studies ongoing

RECOMMENDED STORAGE:

Store ampoule in a cool, dark place

DOCUMENTATION/ DATA ATTACHED:

Figure 1: LC/MS Data (TIC and Mass Spectrum)

Figure 2: LC/MS/MS Data (Selected MRM Transitions)

ADDITIONAL INFORMATION:

See page 2 for further details.

FOR LABORATORY USE ONLY: NOT FOR HUMAN OR DRUG USE

Certified By:

B.G. Chittim

Date:

02/13/2014
(mm/dd/yyyy)

Wellington Laboratories Inc., 345 Southgate Dr. Guelph ON N1G 3M5 CANADA
519-822-2436 • Fax: 519-822-2849 • info@well-labs.com

INTENDED USE:

The products prepared by Wellington Laboratories Inc. are for laboratory use only. They are designed to be used as reference standards for the identification and/or quantification of specific chemical compound(s).

HAZARDS:

This product should only be used by qualified personnel familiar with its potential hazards and trained in the handling of hazardous chemicals. Due care should be exercised to prevent unnecessary human contact or ingestion. All procedures should be carried out in a well-functioning fume hood and suitable gloves, eye protection and clothing should be worn at all times. Waste should be disposed of according to national and regional regulations. Material Safety Data Sheets (MSDSs) are available upon request.

SYNTHESIS / CHARACTERIZATION:

Where possible, all of our products are synthesized using single-product, unambiguous routes. They are then characterized, and their structures and purities confirmed, using a combination of the most relevant techniques, such as NMR, GC/MS, LC/MS/MS, x-ray crystallography and melting point. Isotopic purities of mass-labelled compounds are also confirmed using HRGC/HRMS and/or LC/MS/MS.

HOMOGENEITY:

Prior to solution preparation, crystalline material is tested for homogeneity using a variety of techniques (as stated above) and its solubility in a given solvent is taken into consideration. Duplicate solutions of a new product are prepared from the same crystalline lot and, after the addition of an appropriate internal standard, they are compared by GC/MS and/or LC/MS/MS. The relative response factors of the analyte of interest in each solution are required to be <5% RSD. New solution lots of existing products are compared to older lots in the same manner, which further confirms the homogeneity of the crystalline material as well as the stability and homogeneity of the solutions in the storage containers.

UNCERTAINTY:

The maximum combined relative standard uncertainty of our reference standard solutions is calculated using the following equation:

The combined relative standard uncertainty, $u_c(y)$, of a value y and the uncertainty of the independent parameters

$x_1, x_2, \dots, x_n$ on which it depends is:

$$u_c(y(x_1, x_2, \dots, x_n)) = \sqrt{\sum_{i=1}^n u(y, x_i)^2}$$

where x is expressed as a relative standard uncertainty of the individual parameter.

The individual uncertainties taken into account include those associated with weights (calibration of the balance) and volumes (calibration of the volumetric glassware). An expanded maximum combined percent relative uncertainty of $\pm 5\%$ (calculated with a coverage factor of 2 and a level of confidence of 95%) is stated on the Certificate of Analysis for all our products.

TRACEABILITY:

All reference standard solutions are traceable to specific crystalline lots. The microbalances used for solution preparation are regularly tested by an external, ISO/IEC 17026:2006 accredited calibration company. In addition, their calibration is verified prior to each weighing using NIST and/or NRC traceable external weights. All volumetric glassware used is of Class A tolerance and has been tested according to the appropriate ASTM procedures, which are ultimately traceable to NIST. For certain products, traceability to international interlaboratory studies has also been established.

EXPIRY DATE / PERIOD OF VALIDITY:

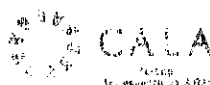
Ongoing stability studies of this product have demonstrated stability in its composition and concentration for the period of time specified by the expiry date in the unopened ampoule. Monitoring for any degradation or change in concentration of the listed analyte(s) is performed on a routine basis.

LIMITED WARRANTY:

At the time of shipment, all products are warranted to be free of defects in material and workmanship and to conform to the stated technical and purity specifications.

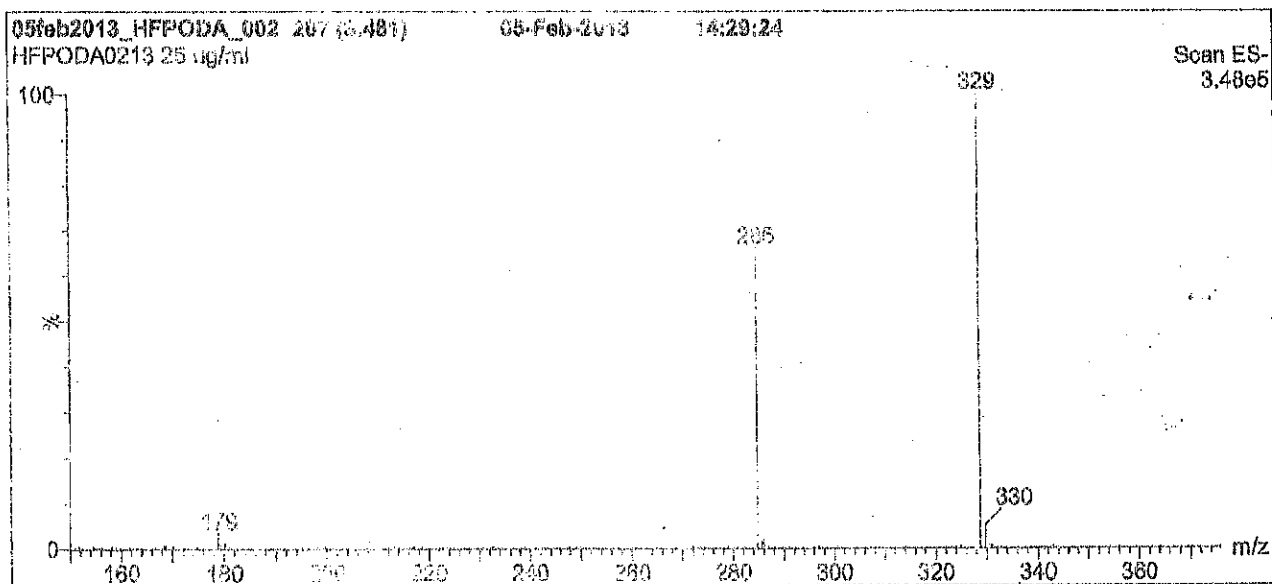
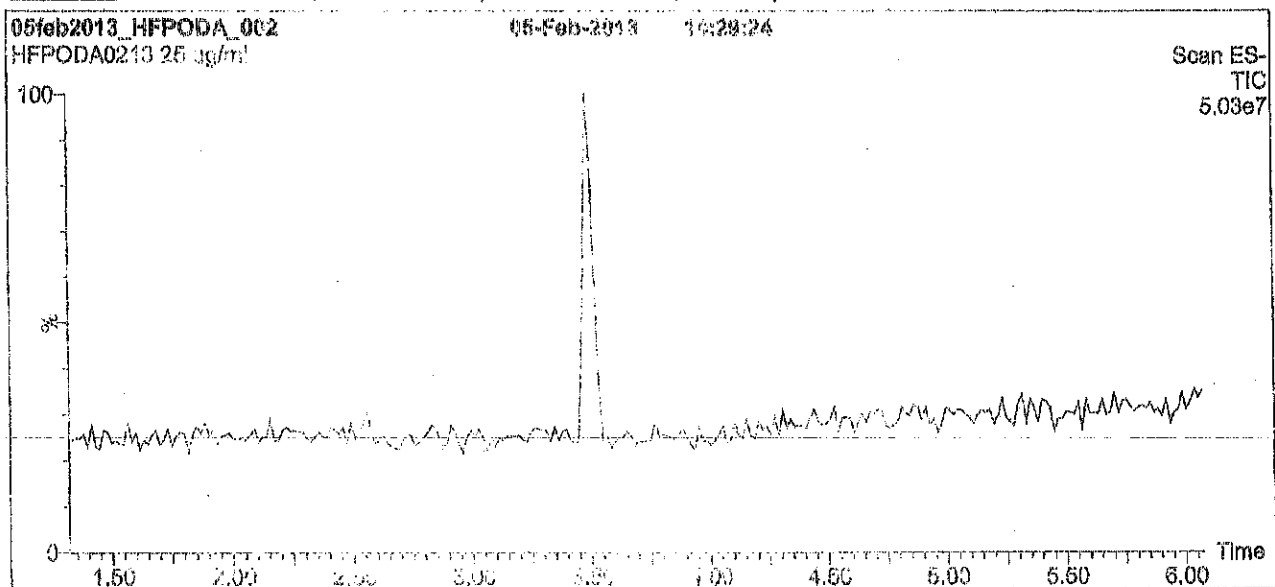
QUALITY MANAGEMENT:

This product was produced using a Quality Management System registered to ISO 9001:2008 by SAI Global, ISO/IEC 17025:2005 by the Canadian Association for Laboratory Accreditation Inc. (CALA, A 1226), and ISO GUIDE 34:2009 by ACLASS (certificate number AS-520).



*For additional information or assistance concerning this or any other products from Wellington Laboratories Inc., please visit our website at www.well-labs.com or contact us directly at info@well-labs.com**

Figure 1: HFPO-DA; LC/MS Data (TIC and Mass Spectrum)



Conditions for Figure 1:

LC: Waters Acquity UPLC Performance LC
MS: Micromass Quattro micro API MS

Chromatographic Conditions

Column: Kinetex PFP
2.6 μ m, 4.8 x 100 mm

Mobile phase: Gradient

Start: 40% (00:20 AcOH/H₂O)
(both at 10 mM NH₄Ac buffer)
Ramp to 80% organic over 9 min and hold for 1 min
before returning to initial conditions in 0.5 min.
Time: 11 min

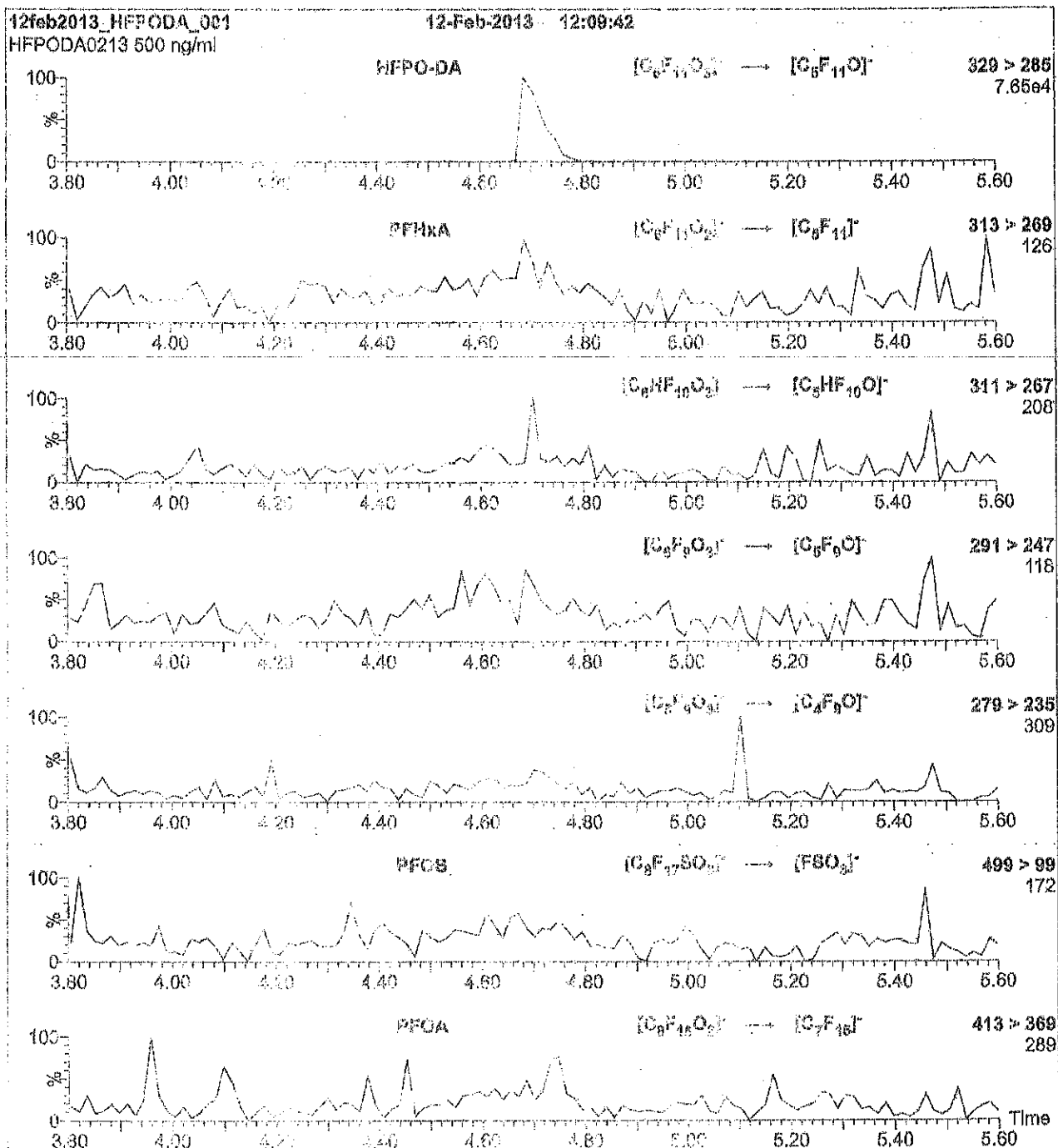
Flow: 800 μ l/min

MS Parameters

Experiment: Full Scan (150 - 850 amu)

Source: Electrospray (negative)
Capillary Voltage (kV): 3.00
Cone Voltage (V): 8.00
Cone Gas Flow (l/hr): 50
Desolvation Gas Flow (l/hr): 750

Figure 2: HFPO-DA: LC/MS/MS Data (Selected MRM Transitions)



Conditions for Figure 2:

Injection: Direct loop injection
10 μ l (500 ng/ml PFOA-DA)

Mobile phase: Isocratic 80% (50:20 MeOH:ACN) / 20% H_2O
(both with 10 mM NH₄OAc buffer)

Flow: 300 μ l/min

MS Parameters:

Collision Gas (mbar) = 3.87e-3
Collision Energy (eV) = 5

8321A_HFPO_Du

HFPO-DA

FORM II
LCMS SURROGATE RECOVERY

Lab Name: TestAmerica Denver

Job No.: 280-98869-1

SDG No.: _____

Matrix: Water

Level: Low

GC Column (1): IonPac ID: 2 (mm)

Client Sample ID	Lab Sample ID	HFPODA #
E02	280-98869-1	27 X
	MB 280-379911/1-A	57
	LCS 280-379911/2-A	64
	LCSD 280-379911/3-A	59
	LLCS 280-379911/4-A	55
	DLCK 280-368501/14	108

HFPODA = 13C3 HFPO-DA

QC LIMITS
50-200

Column to be used to flag recovery values

FORM II 8321A

FORM III
LCMS LAB CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: hfp47G10032.d
Lab ID: LCS 280-379911/2-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCS CONCENTRATION (ug/L)	LCS % REC	QC LIMITS REC	#
HFPO-DA	0.200	0.211	106	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LAB CONTROL SAMPLE DUPLICATE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: hfp47G10033.d
Lab ID: LCSD 280-379911/3-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LCSD CONCENTRATION (ug/L)	LCSD % REC	% RPD	QC LIMITS		#
					RPD	REC	
HFPO-DA	0.200	0.222	111	5	20	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS LOW LEVEL CONTROL SAMPLE RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: hfp47G10034.d
Lab ID: LLCS 280-379911/4-A Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	LLCS CONCENTRATION (ug/L)	LLCS % REC	QC LIMITS REC	#
HFPO-DA	0.0200	0.0176	88	70-130	

Column to be used to flag recovery and RPD values

FORM III
LCMS DETECTION LIMIT CHECK STANDARD RECOVERY

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Matrix: Water Level: Low Lab File ID: hfp47D07035.d
Lab ID: DLCK 280-368501/14 Client ID: _____

COMPOUND	SPIKE ADDED (ug/L)	DLCK CONCENTRATION (ug/L)	DLCK % REC	QC LIMITS REC	#
HFPO-DA	0.250	ND	90	70-130	

Column to be used to flag recovery and RPD values

FORM IV
LCMS METHOD BLANK SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Lab File ID: hfp47G10031.d Lab Sample ID: MB 280-379911/1-A
Matrix: Water Date Extracted: 07/06/2017 10:36
Instrument ID: LC_LCMS4 Date Analyzed: 07/10/2017 09:54
Level: (Low/Med) Low

THIS METHOD BLANK APPLIES TO THE FOLLOWING SAMPLES:

CLIENT SAMPLE ID	LAB SAMPLE ID	LAB FILE ID	DATE ANALYZED
	LCS 280-379911/2-A	hfp47G10032 .d	07/10/2017 09:58
	LCSD 280-379911/3-A	hfp47G10033 .d	07/10/2017 10:02
	LLCS 280-379911/4-A	hfp47G10034 .d	07/10/2017 10:05
E02	280-98869-1	hfp47G10038 .d	07/10/2017 10:20

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-98869-1</u>
SDG No.: _____	
Client Sample ID: <u>E02</u>	Lab Sample ID: <u>280-98869-1</u>
Matrix: <u>Water</u>	Lab File ID: <u>hfp47G10038.d</u>
Analysis Method: <u>8321A</u>	Date Collected: <u>06/29/2017 07:00</u>
Extraction Method: <u>3535</u>	Date Extracted: <u>07/06/2017 10:36</u>
Sample wt/vol: <u>259.4 (mL)</u>	Date Analyzed: <u>07/10/2017 10:20</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>40 (uL)</u>	GC Column: <u>IonPac</u> ID: <u>2 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>380269</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	ND		0.0096	0.0049

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	27	X	50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10038.d
Lims ID: 280-98869-B-1-A
Client ID: E02
Sample Type: Client
Inject. Date: 10-Jul-2017 10:20:01 ALS Bottle#: 86 Worklist Smp#: 12
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 280-98869-B-1-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:50

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

* 2 13C3 HFPO-DA (IS)

s

331.8 > 286.8 1.127 1.174 -0.047 16355 10.0 127

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.127 1.174 -0.047 1.000 16355 2.71 127

QC Flag Legend

Processing Flags

s - Failed ISTD Recovery Test

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10038.d

Injection Date: 10-Jul-2017 10:20:01

Instrument ID: LC_LCMS4

Lims ID: 280-98869-B-1-A

Lab Sample ID: 280-98869-1

Client ID: E02

Operator ID: acm

ALS Bottle#: 86

Worklist Smp#: 12

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

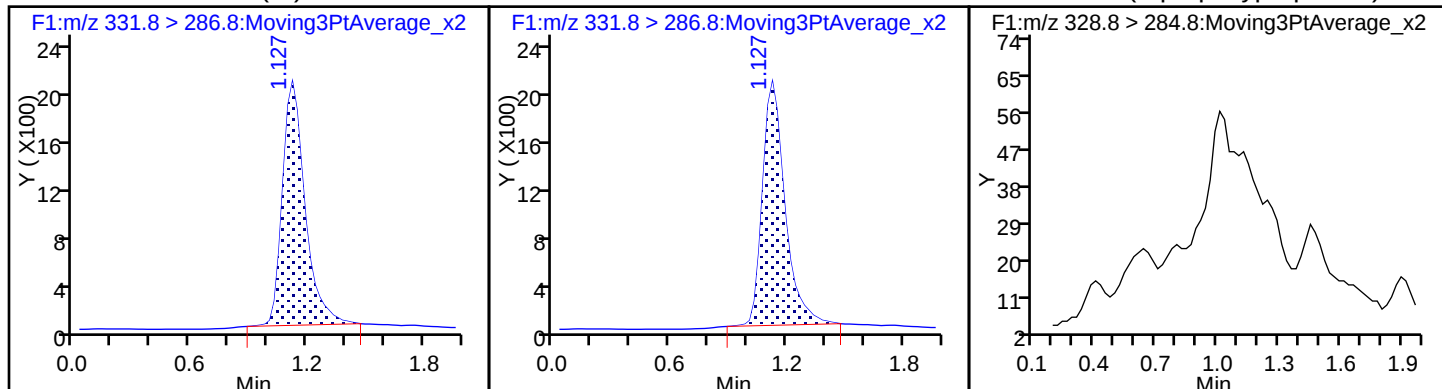
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10038.d
Lims ID: 280-98869-B-1-A
Client ID: E02
Sample Type: Client
Inject. Date: 10-Jul-2017 10:20:01 ALS Bottle#: 86 Worklist Smp#: 12
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 280-98869-B-1-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:50

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	2.71	27.05

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RETENTION TIME SUMMARY

Lab Name: TestAmerica Denver Job No.: 280-98869-1 Analy Batch No.: 368501

SDG No.: _____

Instrument ID: LC_LCMS4 GC Column: IonPac ID: 2 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/07/2017 10:06 Calibration End Date: 04/07/2017 10:31 Calibration ID: 28651

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD00025 280-368501/4	hfp47D07025.d
Level 2	STD00050 280-368501/5	hfp47D07026.d
Level 3	STD0010 280-368501/6	hfp47D07027.d
Level 4	STD0020 280-368501/7	hfp47D07028.d
Level 5	STD0050 280-368501/8	hfp47D07029.d
Level 6	STD0100 280-368501/9	hfp47D07030.d
Level 7	STD0250 280-368501/10	hfp47D07031.d
Level 8	STD0500 280-368501/11	hfp47D07032.d

ANALYTE	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5	LVL 6	LVL 7	LVL 8			RT WINDOW	AVG RT
HFPO-DA	1.198	1.174	1.198	1.174	1.198	1.198	1.198	1.198			0.692 - 1.692	1.192
13C3 HFPO-DA	1.174	1.174	1.174	1.174	1.174	1.174	1.174	1.174			0.674 - 1.674	1.174

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-98869-1 Analy Batch No.: 368501

SDG No.: _____

Instrument ID: LC_LCMS4 GC Column: IonPac ID: 2 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/07/2017 10:06 Calibration End Date: 04/07/2017 10:31 Calibration ID: 28651

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD00025 280-368501/4	hfp47D07025.d
Level 2	STD00050 280-368501/5	hfp47D07026.d
Level 3	STD0010 280-368501/6	hfp47D07027.d
Level 4	STD0020 280-368501/7	hfp47D07028.d
Level 5	STD0050 280-368501/8	hfp47D07029.d
Level 6	STD0100 280-368501/9	hfp47D07030.d
Level 7	STD0250 280-368501/10	hfp47D07031.d
Level 8	STD0500 280-368501/11	hfp47D07032.d

ANALYTE	CF				CURVE TYPE	COEFFICIENT			#	MIN CF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1 LVL 5	LVL 2 LVL 6	LVL 3 LVL 7	LVL 4 LVL 8		B	M1	M2								
13C3 HFPO-DA	6900.9 6325.1	6490.6 5768.2	6452.7 4889.4	6222.4 5316.4	Ave		6045.71250				11.1		30.0			

Note: The M1 coefficient is the same as Ave CF for an Ave curve type.

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
CURVE EVALUATION

Lab Name: TestAmerica Denver Job No.: 280-98869-1 Analy Batch No.: 368501
 SDG No.: _____
 Instrument ID: LC_LCMS4 GC Column: IonPac ID: 2 (mm) Heated Purge: (Y/N) N
 Calibration Start Date: 04/07/2017 10:06 Calibration End Date: 04/07/2017 10:31 Calibration ID: 28651

ANALYTE	RRF					CURVE TYPE	COEFFICIENT			#	MIN RRF	%RSD	#	MAX %RSD	R^2 OR COD	#	MIN R^2 OR COD
	LVL 1	LVL 2	LVL 3	LVL 4	LVL 5		B	M1	M2								
	LVL 6	LVL 7	LVL 8														
HFPO-DA	1.3650 0.9487	1.1512 0.9307	1.1164 0.8882	1.0504	1.0341	Lin1	0.1541	0.9092							0.9990		0.9900

Note: The M1 coefficient is the same as Ave RRF for an Ave curve type.

FORM VI
LCMS BY EXTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-98869-1 Analy Batch No.: 368501

SDG No.: _____

Instrument ID: LC_LCMS4 GC Column: IonPac ID: 2 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/07/2017 10:06 Calibration End Date: 04/07/2017 10:31 Calibration ID: 28651

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD00025 280-368501/4	hfp47D07025.d
Level 2	STD00050 280-368501/5	hfp47D07026.d
Level 3	STD0010 280-368501/6	hfp47D07027.d
Level 4	STD0020 280-368501/7	hfp47D07028.d
Level 5	STD0050 280-368501/8	hfp47D07029.d
Level 6	STD0100 280-368501/9	hfp47D07030.d
Level 7	STD0250 280-368501/10	hfp47D07031.d
Level 8	STD0500 280-368501/11	hfp47D07032.d

ANALYTE	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
		LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
13C3 HFPO-DA	Ave	69009 57682	64906 48894	64527 53164	62224	63251	10.0 10.0	10.0 10.0	10.0 10.0	10.0	10.0

Curve Type Legend:

Ave = Average

FORM VI
LCMS BY INTERNAL STANDARD - INITIAL CALIBRATION DATA
RESPONSE AND CONCENTRATION

Lab Name: TestAmerica Denver Job No.: 280-98869-1 Analy Batch No.: 368501

SDG No.: _____

Instrument ID: LC_LCMS4 GC Column: IonPac ID: 2 (mm) Heated Purge: (Y/N) N

Calibration Start Date: 04/07/2017 10:06 Calibration End Date: 04/07/2017 10:31 Calibration ID: 28651

Calibration Files:

LEVEL:	LAB SAMPLE ID:	LAB FILE ID:
Level 1	STD00025 280-368501/4	hfp47D07025.d
Level 2	STD00050 280-368501/5	hfp47D07026.d
Level 3	STD0010 280-368501/6	hfp47D07027.d
Level 4	STD0020 280-368501/7	hfp47D07028.d
Level 5	STD0050 280-368501/8	hfp47D07029.d
Level 6	STD0100 280-368501/9	hfp47D07030.d
Level 7	STD0250 280-368501/10	hfp47D07031.d
Level 8	STD0500 280-368501/11	hfp47D07032.d

ANALYTE	IS REF	CURVE TYPE	RESPONSE					CONCENTRATION (UG/L)				
			LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5	LVL 1 LVL 6	LVL 2 LVL 7	LVL 3 LVL 8	LVL 4	LVL 5
HFPO-DA	13CP ODA	Lin1	2355 54723	3736 113769	7204 236106	13072	32704	0.250 10.0	0.500 25.0	1.00 50.0	2.00	5.00

Curve Type Legend:

Lin1 = Linear 1/conc ISTD

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07025.d
 Lims ID: STD00025
 Client ID:
 Sample Type: IC Calib Level: 1
 Inject. Date: 07-Apr-2017 10:06:37 ALS Bottle#: 99 Worklist Smp#: 4
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL1 std00025
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:10 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyera

Date: 07-Apr-2017 12:01:29

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 69009 10.0 848

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 69009 11.4 848

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 2355 0.2059 29.5

Reagents:

HFPO_CAL-1_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07025.d

Injection Date: 07-Apr-2017 10:06:37

Instrument ID: LC_LCMS4

Lims ID: STD00025

Client ID:

Operator ID: acm

ALS Bottle#: 99

Worklist Smp#: 4

Injection Vol: 40.0 ul

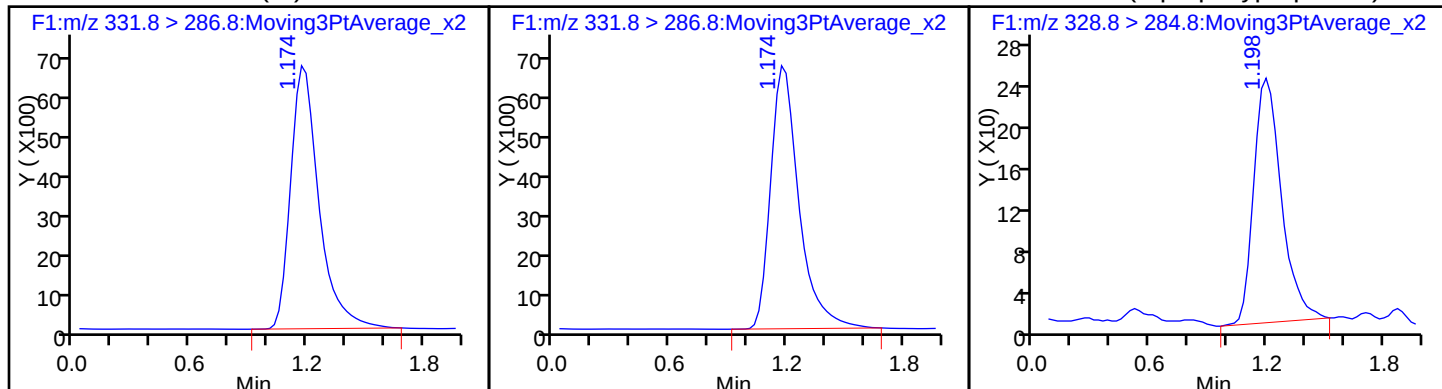
Dil. Factor: 1.0000

Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 ¹³C3 HFPO-DA (IS)\$ 3 ¹³C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07026.d
 Lims ID: STD00050
 Client ID:
 Sample Type: IC Calib Level: 2
 Inject. Date: 07-Apr-2017 10:10:12 ALS Bottle#: 100 Worklist Smp#: 5
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL2 std00050
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:11 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:34

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 64906 10.7 702

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 64906 10.0 702

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.174 1.192 -0.018 1.000 3736 0.4636 97.5

Reagents:

HFPO_CAL-2_00028

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07026.d

Injection Date: 07-Apr-2017 10:10:12

Instrument ID: LC_LCMS4

Lims ID: STD00050

Client ID:

Operator ID: acm

ALS Bottle#: 100

Worklist Smp#: 5

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

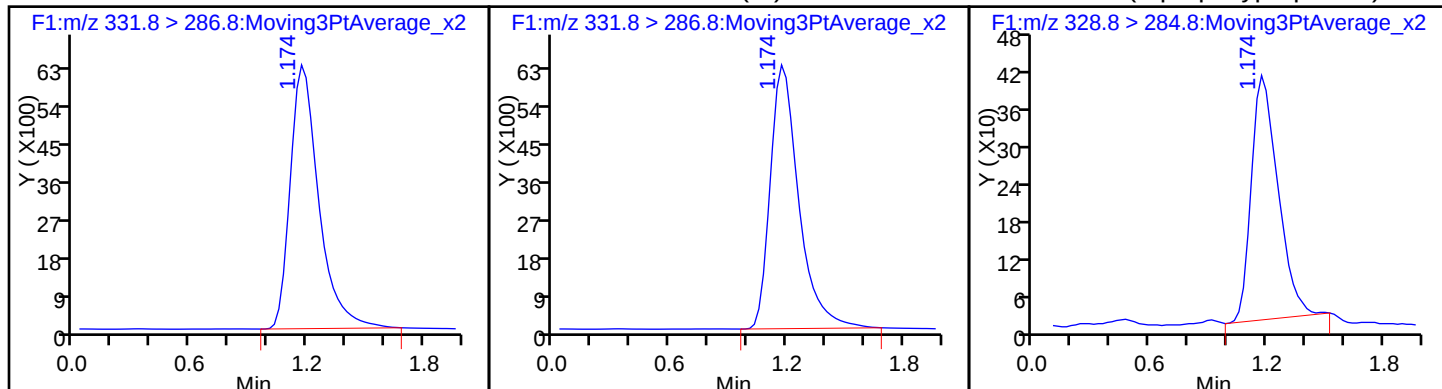
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

\$ 3 13C3 HFPO-DA

* 2 13C3 HFPO-DA (IS)

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07027.d
 Lims ID: STD0010
 Client ID:
 Sample Type: IC Calib Level: 3
 Inject. Date: 07-Apr-2017 10:13:47 ALS Bottle#: 101 Worklist Smp#: 6
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL3 std00100
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:13 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:38

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 64527 10.0 1256

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 64527 10.7 1256

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 7204 1.06 134

Reagents:

HFPO_CAL-3_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07027.d

Injection Date: 07-Apr-2017 10:13:47

Instrument ID: LC_LCMS4

Lims ID: STD0010

Client ID:

Operator ID: acm

ALS Bottle#: 101

Worklist Smp#: 6

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

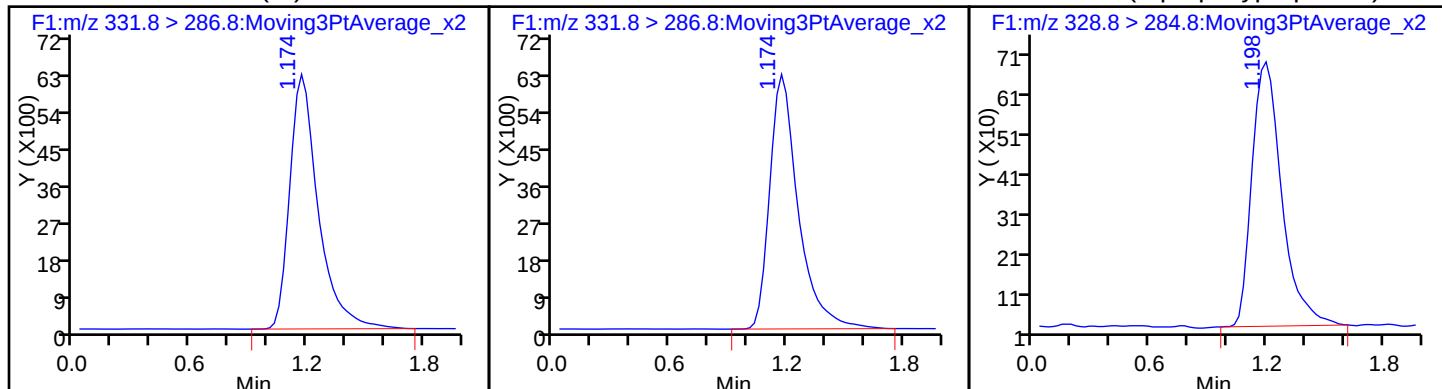
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07028.d
 Lims ID: STD0020
 Client ID:
 Sample Type: IC Calib Level: 4
 Inject. Date: 07-Apr-2017 10:17:22 ALS Bottle#: 102 Worklist Smp#: 7
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL4 std00200
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:16 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:43

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 62224 10.3 465

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 62224 10.0 465

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.174 1.192 -0.018 1.000 13072 2.14 247

Reagents:

HFPO_CAL-4_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07028.d

Injection Date: 07-Apr-2017 10:17:22

Instrument ID: LC_LCMS4

Lims ID: STD0020

Client ID:

Operator ID: acm

ALS Bottle#: 102

Worklist Smp#: 7

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

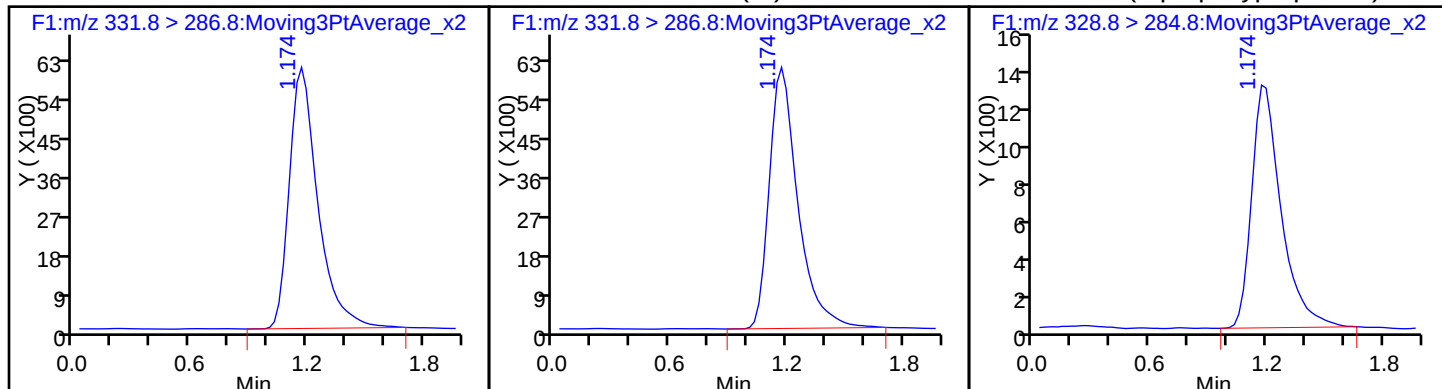
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

\$ 3 13C3 HFPO-DA

* 2 13C3 HFPO-DA (IS)

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07029.d
 Lims ID: STD0050
 Client ID:
 Sample Type: IC Calib Level: 5
 Inject. Date: 07-Apr-2017 10:20:56 ALS Bottle#: 103 Worklist Smp#: 8
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL5 std00500
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:17 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:47

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 63251 10.0 903

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 63251 10.5 903

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 32704 5.52 792

Reagents:

HFPO_CAL-5_00053

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07029.d

Injection Date: 07-Apr-2017 10:20:56

Instrument ID: LC_LCMS4

Lims ID: STD0050

Client ID:

Operator ID: acm

ALS Bottle#: 103

Worklist Smp#: 8

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

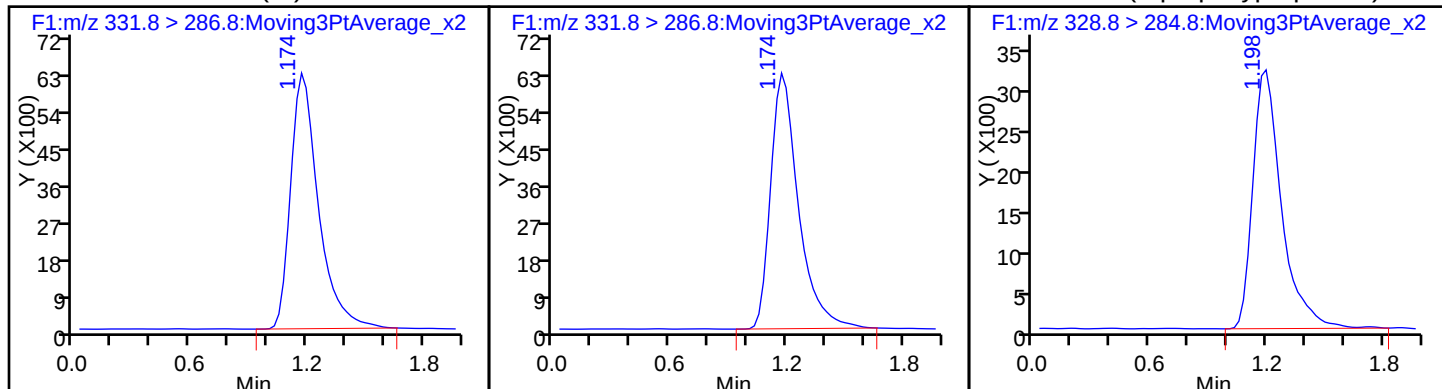
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07030.d
 Lims ID: STD0100
 Client ID:
 Sample Type: IC Calib Level: 6
 Inject. Date: 07-Apr-2017 10:24:31 ALS Bottle#: 104 Worklist Smp#: 9
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL6 std0100
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:18 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:51

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 57682 9.54 643

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 57682 10.0 643

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 54723 10.3 550

Reagents:

HFPO_CAL-6_00053

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07030.d

Injection Date: 07-Apr-2017 10:24:31

Instrument ID: LC_LCMS4

Lims ID: STD0100

Client ID:

Operator ID: acm

ALS Bottle#: 104

Worklist Smp#: 9

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

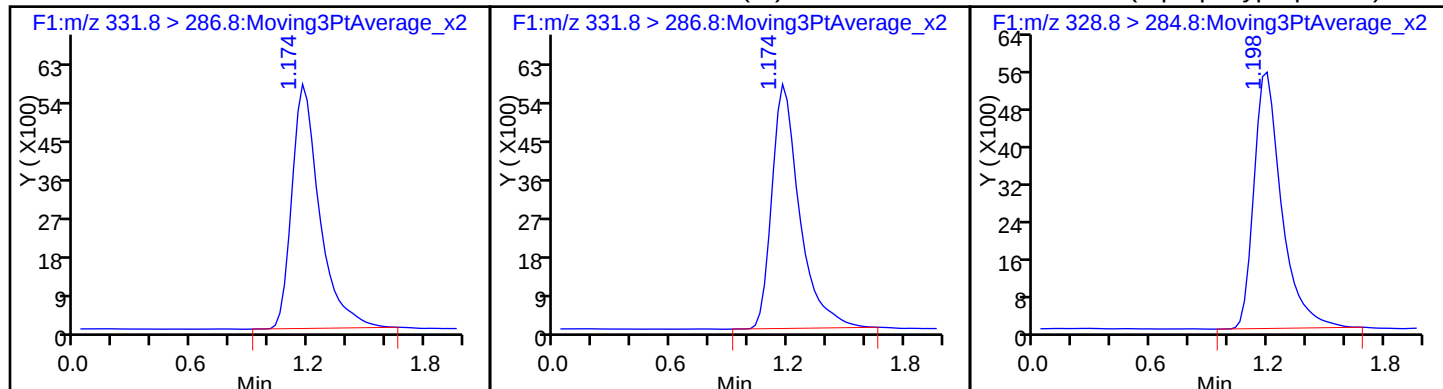
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

\$ 3 13C3 HFPO-DA

* 2 13C3 HFPO-DA (IS)

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07031.d
 Lims ID: STD0250
 Client ID:
 Sample Type: IC Calib Level: 7
 Inject. Date: 07-Apr-2017 10:28:05 ALS Bottle#: 105 Worklist Smp#: 10
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL7 std0250
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:19 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 48894 10.0 602

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 48894 8.09 602

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 113769 25.4 841

Reagents:

HFPO_CAL-7_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07031.d

Injection Date: 07-Apr-2017 10:28:05

Instrument ID: LC_LCMS4

Lims ID: STD0250

Client ID:

Operator ID: acm

ALS Bottle#: 105

Worklist Smp#: 10

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

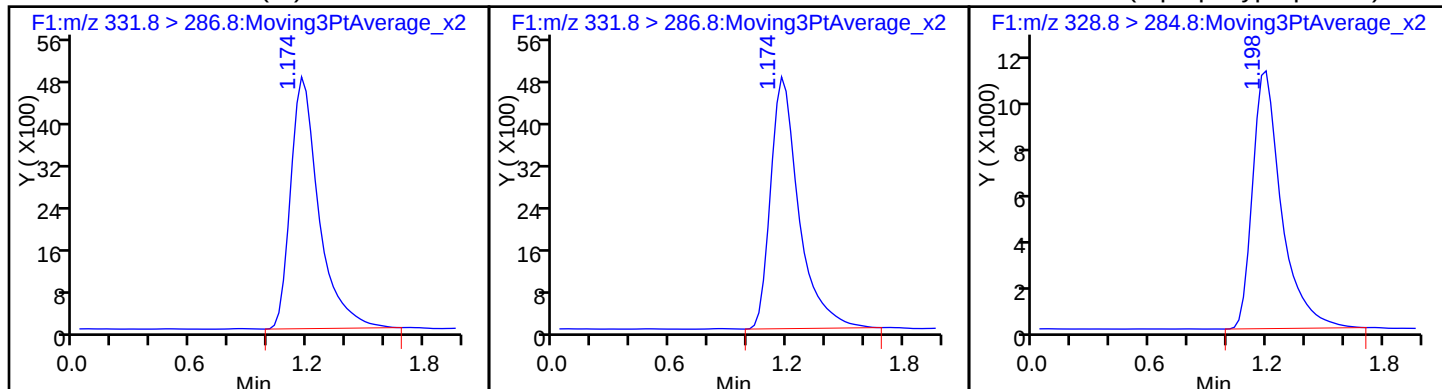
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Lims ID: STD0500
Client ID:
Sample Type: IC Calib Level: 8
Inject. Date: 07-Apr-2017 10:31:40 ALS Bottle#: 106 Worklist Smp#: 11
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 04/07/2017 CAL8 std0500
Misc. Info.: 03/29/2017
Operator ID: acm Instrument ID: LC_LCMS4
Sublist: chrom-8321HFPO*sub1
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 07-Apr-2017 12:03:20 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK007

First Level Reviewer: meyer

Date: 07-Apr-2017 12:01:58

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 53164 8.79 641

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 53164 10.0 641

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 236106 48.7 1033

Reagents:

HFPO_CAL-8_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Injection Date: 07-Apr-2017 10:31:40

Instrument ID: LC_LCMS4

Lims ID: STD0500

Client ID:

Operator ID: acm

ALS Bottle#: 106

Worklist Smp#: 11

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

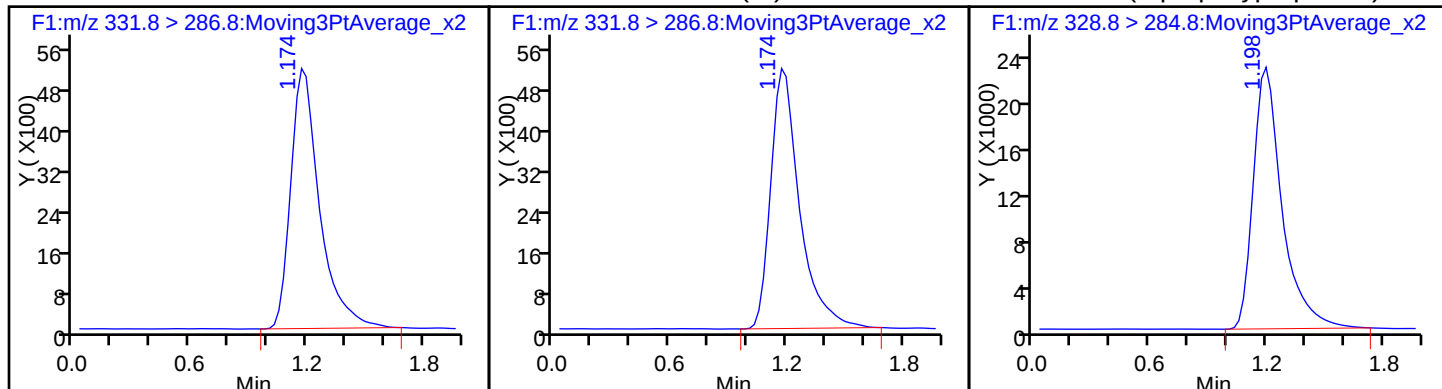
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

\$ 3 13C3 HFPO-DA

* 2 13C3 HFPO-DA (IS)

1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Lab Sample ID: ICV 280-368501/13 Calibration Date: 04/07/2017 10:39
Instrument ID: LC_LCMS4 Calib Start Date: 04/07/2017 10:06
GC Column: IonPac ID: 2.00 (mm) Calib End Date: 04/07/2017 10:31
Lab File ID: hfp47D07034.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
HFPO-DA	Lin1		0.9611		1.94	2.00	-2.8	20.0
13C3 HFPO-DA	Ave	6046	5783		9.56	10.0	-4.4	

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07034.d
 Lims ID: ICV
 Client ID:
 Sample Type: ICV
 Inject. Date: 07-Apr-2017 10:39:11 ALS Bottle#: 107 Worklist Smp#: 13
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 ICV ICV
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist:
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:22 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK007

First Level Reviewer: meyer Date: 07-Apr-2017 12:02:06

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
--------	----	-----------	-----------	-----------	----------	----------------	-----	-------

* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 57827 10.0 582

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 57827 9.56 582

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.174 1.192 -0.018 1.000 11116 1.94 74.8

Reagents:

HFPO_ICV_00028 Amount Added: 1.00 Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07034.d

Injection Date: 07-Apr-2017 10:39:11

Instrument ID: LC_LCMS4

Lims ID: ICV

Client ID:

Operator ID: acm

ALS Bottle#: 107

Worklist Smp#: 13

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

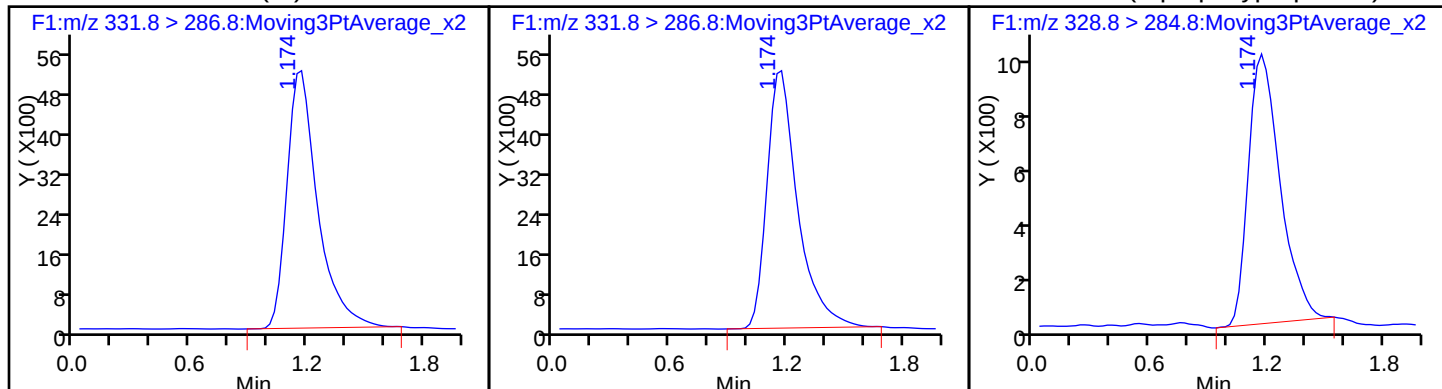
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Lab Sample ID: CCV 280-368501/22 Calibration Date: 04/07/2017 11:11
Instrument ID: LC_LCMS4 Calib Start Date: 04/07/2017 10:06
GC Column: IonPac ID: 2.00 (mm) Calib End Date: 04/07/2017 10:31
Lab File ID: hfp47D07043.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
HFPO-DA	Lin1		0.9899		5.27	5.00	5.5	20.0
13C3 HFPO-DA	Ave	6046	7102		11.7	10.0	17.5	

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07043.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 07-Apr-2017 11:11:37 ALS Bottle#: 103 Worklist Smp#: 22
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 04/07/2017 CAL5 CCV 5
Misc. Info.: 03/29/2017
Operator ID: acm Instrument ID: LC_LCMS4
Sublist: chrom-8321HFPO*sub1
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 07-Apr-2017 12:03:28 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM
Process Host: XAWRK007

First Level Reviewer: meyer Date: 07-Apr-2017 12:02:42

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.127 1.174 -0.047 71015 10.0 788

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.127 1.174 -0.047 1.000 71015 11.7 788

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.151 1.192 -0.041 1.000 35147 5.27 645

Reagents:

HFPO_CAL-5_00053

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07043.d

Injection Date: 07-Apr-2017 11:11:37

Instrument ID: LC_LCMS4

Lims ID: CCV L5

Client ID:

Operator ID: acm

ALS Bottle#: 103

Worklist Smp#: 22

Injection Vol: 40.0 ul

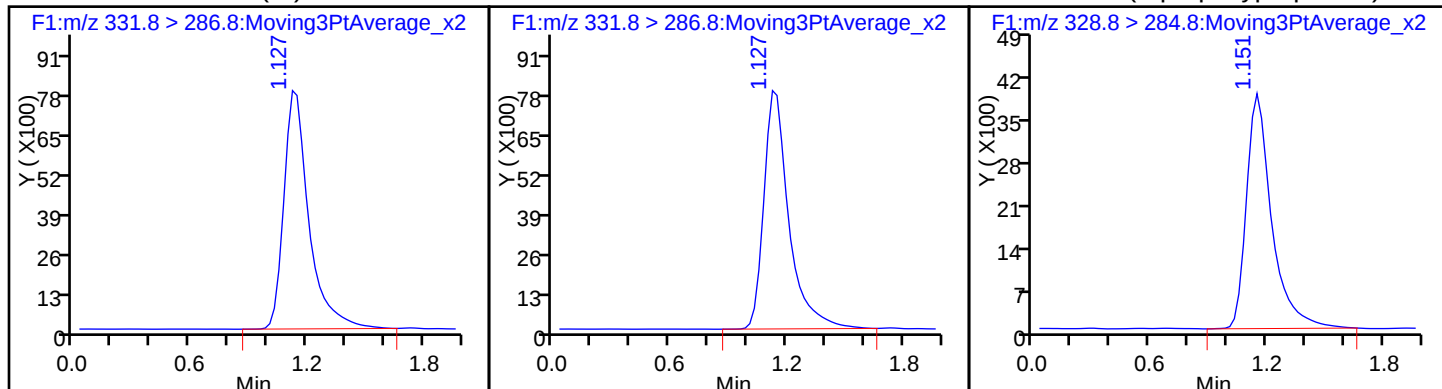
Dil. Factor: 1.0000

Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 ¹³C3 HFPO-DA (IS)\$ 3 ¹³C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Lab Sample ID: CCV 280-380269/4 Calibration Date: 07/10/2017 09:50
Instrument ID: LC_LCMS4 Calib Start Date: 04/07/2017 10:06
GC Column: IonPac ID: 2.00 (mm) Calib End Date: 04/07/2017 10:31
Lab File ID: hfp47G10030.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
HFPO-DA	Lin1		0.9706		5.17	5.00	3.4	20.0
13C3 HFPO-DA	Ave	6046	4203		6.95	10.0	-30.5	

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10030.d
Lims ID: CCV L5
Client ID:
Sample Type: CCV
Inject. Date: 10-Jul-2017 09:50:52 ALS Bottle#: 78 Worklist Smp#: 4
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 07/10/2017 CCV L5
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Sublist: chrom-8321HFPO*sub1
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyer Date: 10-Jul-2017 13:39:14

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.198 1.174 0.024 42028 10.0 235

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.198 1.174 0.024 1.000 42028 6.95 235

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.221 1.192 0.029 1.000 20397 5.17 171

Reagents:

HFPO_CAL-5_00060

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10030.d

Injection Date: 10-Jul-2017 09:50:52

Instrument ID: LC_LCMS4

Lims ID: CCV L5

Client ID:

Operator ID: acm

ALS Bottle#: 78

Worklist Smp#: 4

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

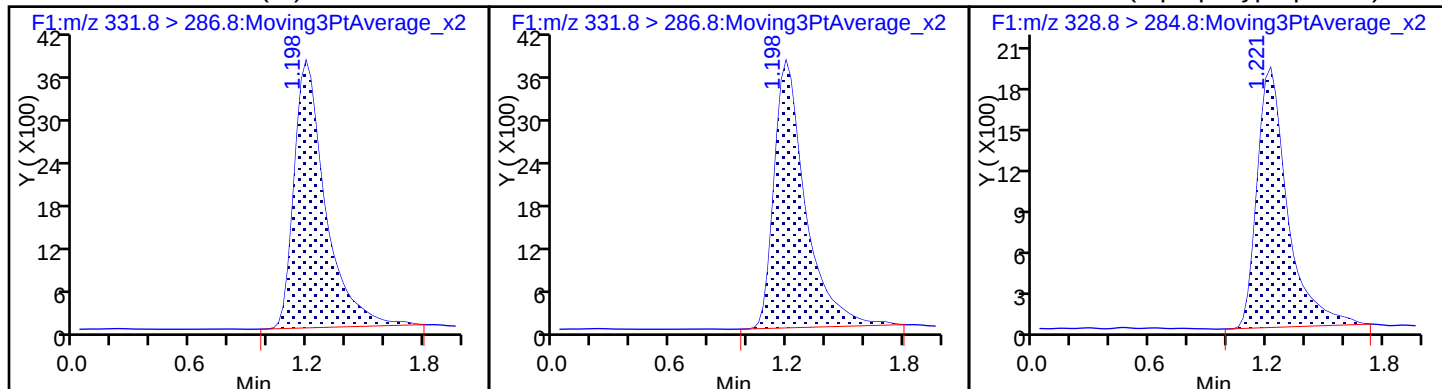
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Lab Sample ID: CCV 280-380269/13 Calibration Date: 07/10/2017 10:23
Instrument ID: LC_LCMS4 Calib Start Date: 04/07/2017 10:06
GC Column: IonPac ID: 2.00 (mm) Calib End Date: 04/07/2017 10:31
Lab File ID: hfp47G10039.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
HFPO-DA	Lin1		0.9112		9.85	10.0	-1.5	20.0
13C3 HFPO-DA	Ave	6046	5724		9.47	10.0	-5.3	

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10039.d
 Lims ID: CCV L6
 Client ID:
 Sample Type: CCV
 Inject. Date: 10-Jul-2017 10:23:53 ALS Bottle#: 87 Worklist Smp#: 13
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 07/10/2017 CCV L6
 Misc. Info.: 06/272017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 10-Jul-2017 13:44:55 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM
 Process Host: XAWRK025

First Level Reviewer: meyer Date: 10-Jul-2017 13:39:54

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.151 1.174 -0.023 57244 10.0 270

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.151 1.174 -0.023 1.000 57244 9.47 270

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.151 1.192 -0.041 1.000 52161 9.85 215

Reagents:

HFPO_CAL-6_00060

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10039.d

Injection Date: 10-Jul-2017 10:23:53

Instrument ID: LC_LCMS4

Lims ID: CCV L6

Client ID:

Operator ID: acm

ALS Bottle#: 87

Worklist Smp#: 13

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

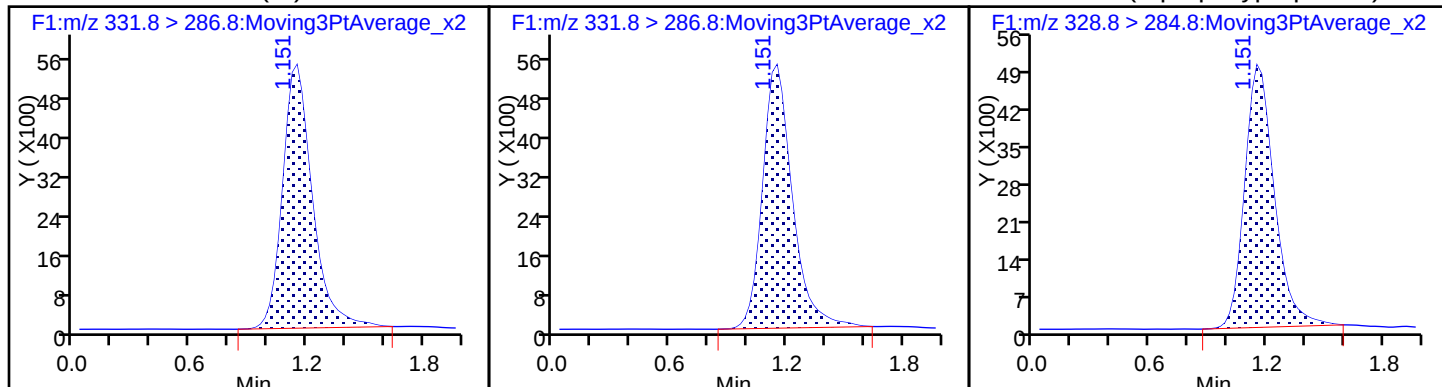
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



FORM VII
LCMS CONTINUING CALIBRATION DATA

Lab Name: TestAmerica Denver Job No.: 280-98869-1
SDG No.: _____
Lab Sample ID: CCV 280-380269/18 Calibration Date: 07/10/2017 10:41
Instrument ID: LC_LCMS4 Calib Start Date: 04/07/2017 10:06
GC Column: IonPac ID: 2.00 (mm) Calib End Date: 04/07/2017 10:31
Lab File ID: hfp47G10044.d Conc. Units: ug/L

ANALYTE	CURVE TYPE	AVE RRF	RRF	MIN RRF	CALC AMOUNT	SPIKE AMOUNT	%D	MAX %D
HFPO-DA	Lin1		1.014		5.41	5.00	8.1	20.0
13C3 HFPO-DA	Ave	6046	5047		8.35	10.0	-16.5	

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10044.d
 Lims ID: CCV L5
 Client ID:
 Sample Type: CCV
 Inject. Date: 10-Jul-2017 10:41:45 ALS Bottle#: 78 Worklist Smp#: 18
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 07/10/2017 CCV L5
 Misc. Info.: 06/272017
 Operator ID: acm Instrument ID: LC_LCMS4
 Sublist: chrom-8321HFPO*sub1
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 10-Jul-2017 13:45:00 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d

Column 1 : Det: F1:MRM

Process Host: XAWRK025

First Level Reviewer: meyer

Date: 10-Jul-2017 13:40:55

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 50466 10.0 172

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 50466 8.35 172

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.174 1.192 -0.018 1.000 25582 5.41 164

Reagents:

HFPO_CAL-5_00060

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10044.d

Injection Date: 10-Jul-2017 10:41:45

Instrument ID: LC_LCMS4

Lims ID: CCV L5

Client ID:

Operator ID: acm

ALS Bottle#: 78

Worklist Smp#: 18

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

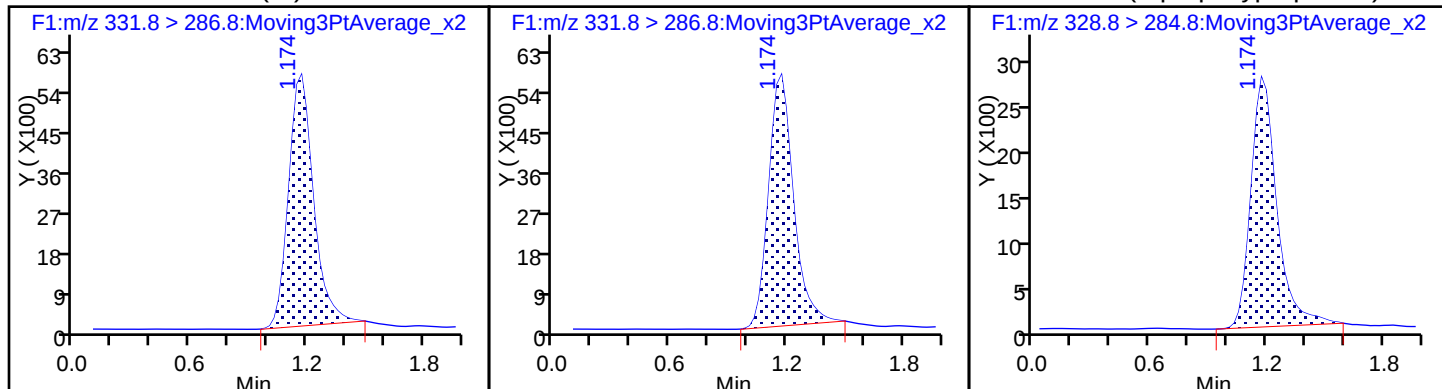
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

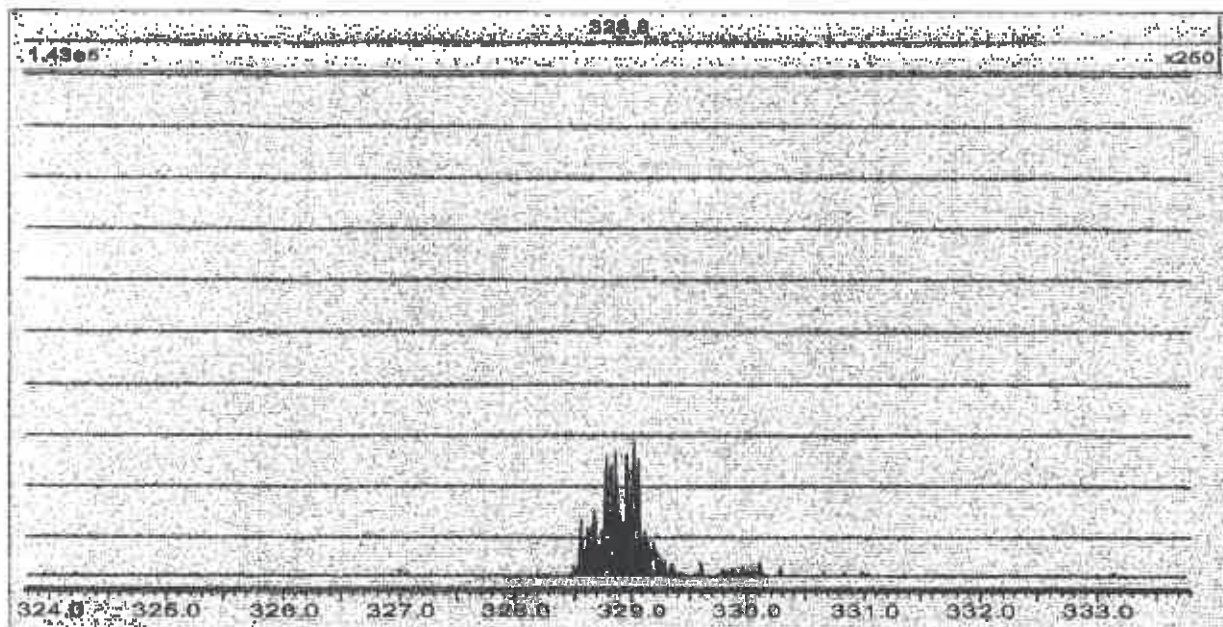
1 Perfluoro(2-propoxypropanoic) acid



File: C:\MassLynx\HFPO.PRO\ACQ\UDB\HFPOparent.lpr

Instrument: QUATTROMICRO

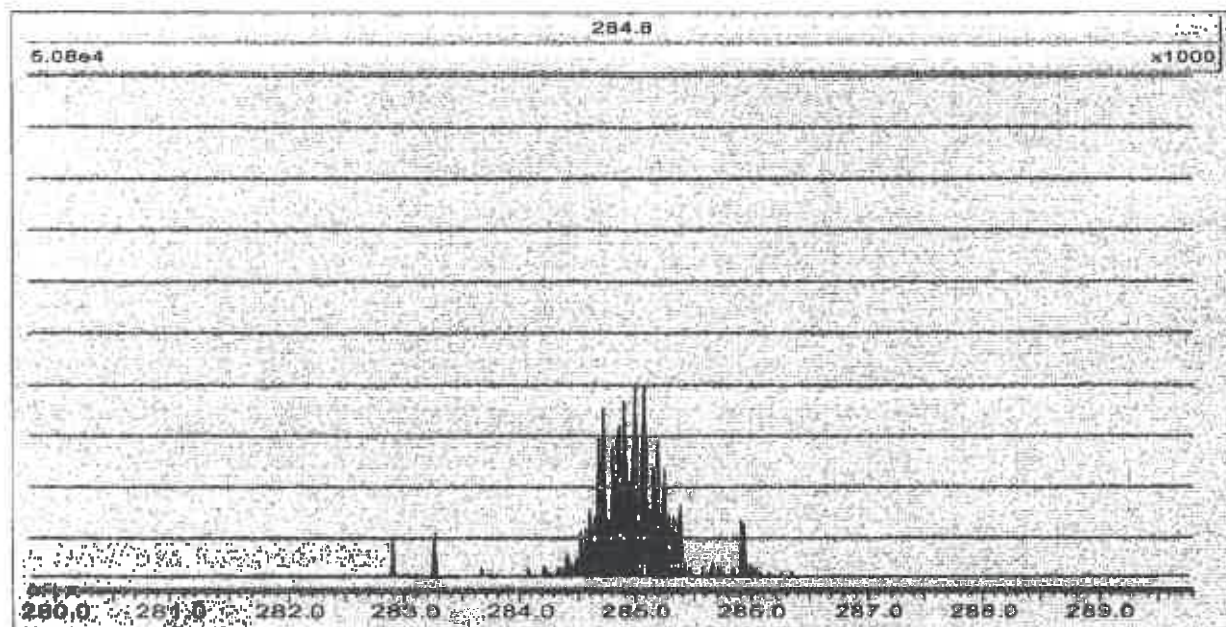
Printed: Monday, July 10, 2017 07:24:28 Mountain Daylight Time



Type	Start Mass	End Mass	Set Mass
MS Scan	323.80	333.80	
Source (ES-)	Settings	Readbacks	
Capillary (kV)	1.00	1.04	
Cone (V)	9.00	-11.11	
Extractor (V)	1.00	-2.32	
RF Lens (V)	1.0	-1.0	
Source Temperature (°C)	100	99	
Desolvation Temperature (°C)	300	295	
Cone Gas Flow (L/Hr)	100	111	
Desolvation Gas Flow (L/Hr)	500	512	
Analyser	Settings	Readbacks	
LM 1 Resolution	15.0		
HM 1 Resolution	15.0		
Ion Energy 1	1.0		
Entrance	20	20	
Collision	6	6	
Exit	20	20	
LM 2 Resolution	15.0		
HM 2 Resolution	15.0		
Ion Energy 2	3.0		
Multiplier (V)	650	-849	
Syringe Pump Flow (uL/min)	50.0		
Pressure Gauges			
Gas Cell Pirani Pressure(mbar)	< 1e-4 mBars		

Phuriga
7/10/2017

File: C:\MassLynx\HFPO.PROVACQUDB\HFPO.lpr
 Instrument: QUATTROMICRO
 Printed: Monday, July 10, 2017 07:25:16 Mountain Daylight Time



Type	Start Mass	End Mass	Set Mass
Daughter Scan	279.80	289.80	328.80
Source (ES-)	Settings	Readbacks	
Capillary (kV)	1.00	1.04	
Cone (V)	9.00	-11.11	
Extractor (V)	1.00	-2.32	
RF Lens (V)	1.0	-1.0	
Source Temperature (°C)	100	99	
Desolvation Temperature (°C)	300	295	
Cone Gas Flow (L/Hr)	100	111	
Desolvation Gas Flow (L/Hr)	500	512	
Analyser	Settings	Readbacks	
LM 1 Resolution	7.0		
HM 1 Resolution	7.0		
Ion Energy 1	1.0		
Entrance	10	16	
Collision	6	6	
Exit	20	26	
LM 2 Resolution	15.0		
HM 2 Resolution	15.0		
Ion Energy 2	3.0		
Multiplier (V)	650	-649	
Syringe Pump Flow (uL/min)	50.0		
Pressure Gauges			
Gas Cell Pirani Pressure(mbar)	2.98e-3		

*Phuriga
7/10/2017*

File: c:\masslynx\hfpo.pro\acqddb\hfpo.exp

Printed: Tuesday, August 30, 2016 12:20:47 Mountain Daylight Time

Creation Time Fri 09 Jan 2016 13:59:17
Instrument Identifier QUATTROZQ
Version Number 1.0
Duration (min) 5.0
Calibration Filename C:\MassLynx\Service 2016.PROVACQUDBNaCsl_January_20_2016.cal
Solvent Delay Divert Valve Enabled 0
Number Of Functions 1

Function 1 : MRM of 2 mass pairs, Time 0.00 to 5.00, ES-

Type MRM
Ion Mode ES-
Inter Channel Delay (sec) 0.100
InterScan Time (sec) 0.100
Start Time (min) 0.0
End Time (min) 5.0

Ch	Prnt(Da)	Dau(Da)	Dwell(s)	Cone(V)	Coll(eV)	Delay(s)	Compound
1	329.80	284.80	0.600	9.00	6.00	0.100	HFPO
2	331.80	286.80	0.600	9.00	6.00	0.100	HFPO 13C3

Phoxima
7/1/2017

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-98869-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: MB 280-379911/1-A
 Matrix: Water Lab File ID: hfp47G10031.d
 Analysis Method: 8321A Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/06/2017 10:36
 Sample wt/vol: 250 (mL) Date Analyzed: 07/10/2017 09:54
 Con. Extract Vol.: 5 (mL) Dilution Factor: 1
 Injection Volume: 40 (uL) GC Column: IonPac ID: 2 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 380269 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	ND		0.010	0.0051

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	57		50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10031.d
Lims ID: MB 280-379911/1-A
Client ID:
Sample Type: MB
Inject. Date: 10-Jul-2017 09:54:29 ALS Bottle#: 79 Worklist Smp#: 5
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-379911/1-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:18

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.080 1.174 -0.094 34493 10.0 141

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.080 1.174 -0.094 1.000 34493 5.71 141

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10031.d

Injection Date: 10-Jul-2017 09:54:29

Instrument ID: LC_LCMS4

Lims ID: MB 280-379911/1-A

Client ID:

Operator ID: acm

ALS Bottle#: 79

Worklist Smp#: 5

Injection Vol: 40.0 ul

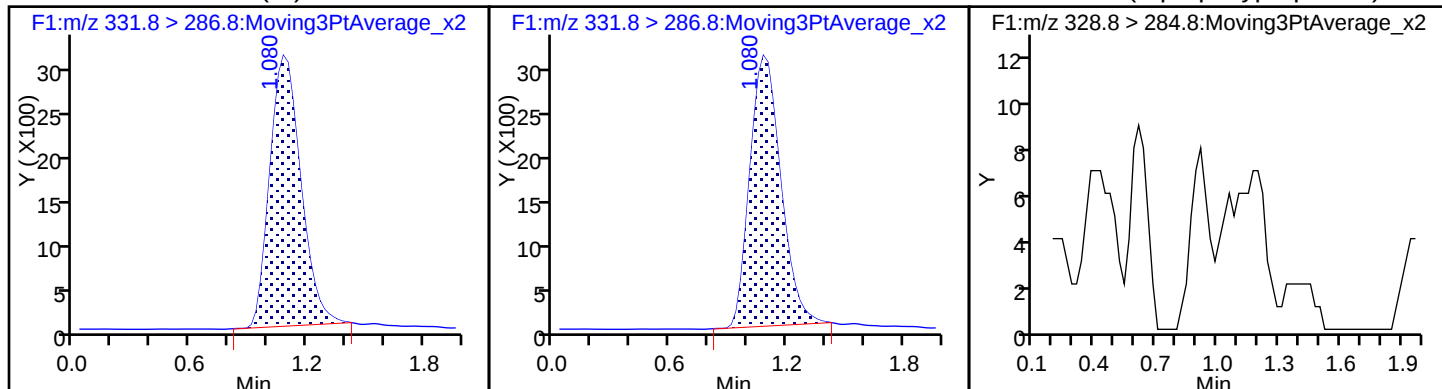
Dil. Factor: 1.0000

Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 ¹³C3 HFPO-DA (IS)\$ 3 ¹³C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid (ND)



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10031.d
Lims ID: MB 280-379911/1-A
Client ID:
Sample Type: MB
Inject. Date: 10-Jul-2017 09:54:29 ALS Bottle#: 79 Worklist Smp#: 5
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: MB 280-379911/1-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:18

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	5.71	57.05

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-98869-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: ICB 280-368501/12
 Matrix: Water Lab File ID: hfp47D07033.d
 Analysis Method: 8321A Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1 (mL) Date Analyzed: 04/07/2017 10:35
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 40 (uL) GC Column: IonPac ID: 2 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 368501 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	ND		0.50	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	110		50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07033.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 07-Apr-2017 10:35:35 ALS Bottle#: 98 Worklist Smp#: 12
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 04/07/2017 CAL0 ICB
Misc. Info.: 03/29/2017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 07-Apr-2017 12:03:20 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK007

First Level Reviewer: meyera

Date: 07-Apr-2017 12:02:02

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 66430 10.0 937

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 66430 11.0 937

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 487 -0.0888 5.3

Reagents:

HFPO_CAL-0_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07033.d

Injection Date: 07-Apr-2017 10:35:35

Instrument ID: LC_LCMS4

Lims ID: ICB

Client ID:

Operator ID: acm

ALS Bottle#: 98

Worklist Smp#: 12

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

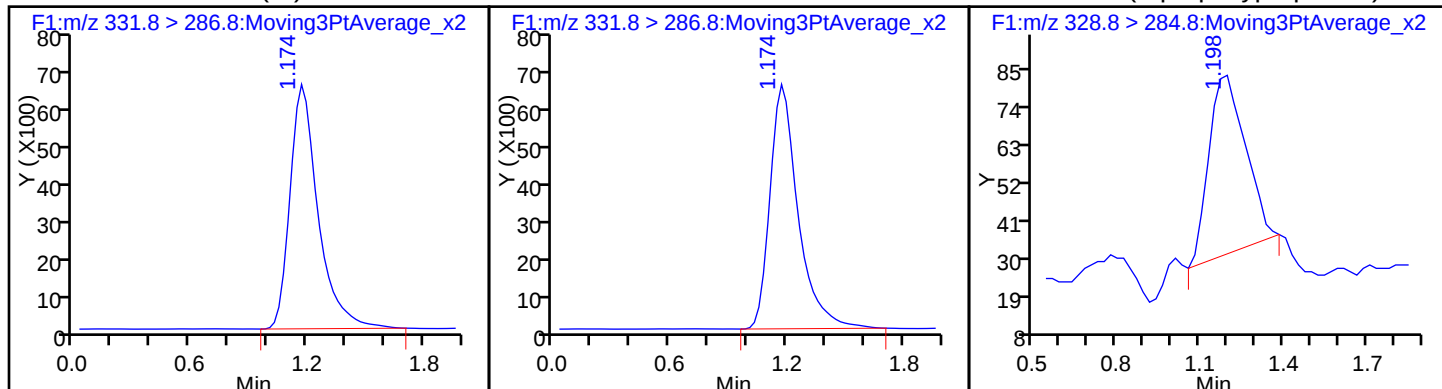
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07033.d
Lims ID: ICB
Client ID:
Sample Type: ICB
Inject. Date: 07-Apr-2017 10:35:35 ALS Bottle#: 98 Worklist Smp#: 12
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 04/07/2017 CAL0 ICB
Misc. Info.: 03/29/2017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 07-Apr-2017 12:03:20 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK007

First Level Reviewer: meyera

Date: 07-Apr-2017 12:02:02

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	11.0	109.88

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-98869-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LCS 280-379911/2-A
 Matrix: Water Lab File ID: hfp47G10032.d
 Analysis Method: 8321A Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/06/2017 10:36
 Sample wt/vol: 250 (mL) Date Analyzed: 07/10/2017 09:58
 Con. Extract Vol.: 5 (mL) Dilution Factor: 1
 Injection Volume: 40 (uL) GC Column: IonPac ID: 2 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 380269 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	0.211		0.010	0.0051

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	64		50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10032.d
Lims ID: LCS 280-379911/2-A
Client ID:
Sample Type: LCS
Inject. Date: 10-Jul-2017 09:58:03 ALS Bottle#: 80 Worklist Smp#: 6
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-379911/2-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:22

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.080 1.174 -0.094 38559 10.0 280

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.080 1.174 -0.094 1.000 38559 6.38 280

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.080 1.192 -0.112 1.000 37625 10.6 237

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10032.d

Injection Date: 10-Jul-2017 09:58:03

Instrument ID: LC_LCMS4

Lims ID: LCS 280-379911/2-A

Client ID:

Operator ID: acm

ALS Bottle#: 80

Worklist Smp#: 6

Injection Vol: 40.0 ul

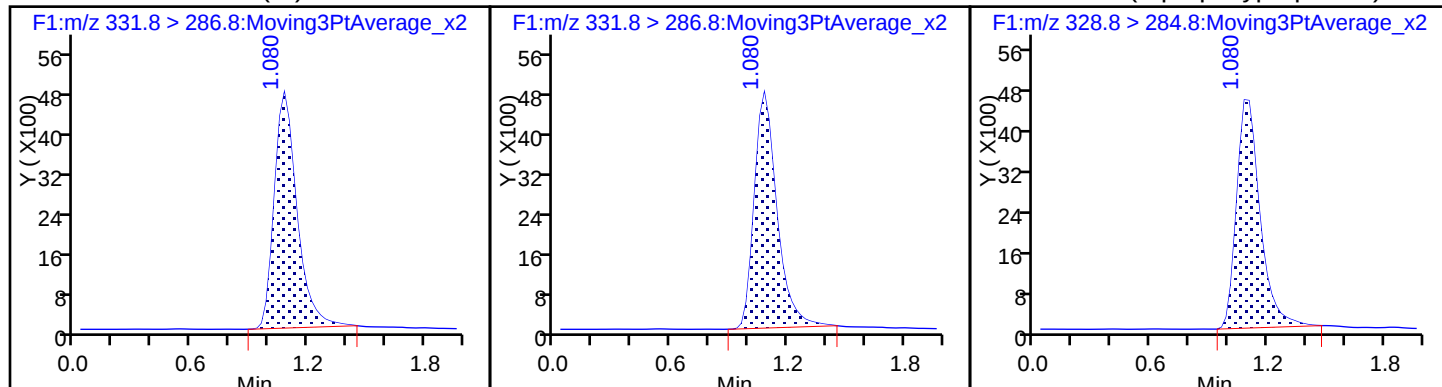
Dil. Factor: 1.0000

Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 ¹³C3 HFPO-DA (IS)\$ 3 ¹³C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10032.d
Lims ID: LCS 280-379911/2-A
Client ID:
Sample Type: LCS
Inject. Date: 10-Jul-2017 09:58:03 ALS Bottle#: 80 Worklist Smp#: 6
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: LCS 280-379911/2-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:22

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	6.38	63.78

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: <u>TestAmerica Denver</u>	Job No.: <u>280-98869-1</u>
SDG No.: _____	
Client Sample ID: _____	Lab Sample ID: <u>LCSD 280-379911/3-A</u>
Matrix: <u>Water</u>	Lab File ID: <u>hfp47G10033.d</u>
Analysis Method: <u>8321A</u>	Date Collected: _____
Extraction Method: <u>3535</u>	Date Extracted: <u>07/06/2017 10:36</u>
Sample wt/vol: <u>250 (mL)</u>	Date Analyzed: <u>07/10/2017 10:02</u>
Con. Extract Vol.: <u>5 (mL)</u>	Dilution Factor: <u>1</u>
Injection Volume: <u>40 (uL)</u>	GC Column: <u>IonPac</u> ID: <u>2 (mm)</u>
% Moisture: _____	GPC Cleanup: (Y/N) <u>N</u>
Analysis Batch No.: <u>380269</u>	Units: <u>ug/L</u>

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	0.222		0.010	0.0051

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	59		50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10033.d
Lims ID: LCSD 280-379911/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 10-Jul-2017 10:02:08 ALS Bottle#: 81 Worklist Smp#: 7
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-379911/3-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyer

Date: 10-Jul-2017 13:39:27

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.033 1.174 -0.141 35469 10.0 187

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.033 1.174 -0.141 1.000 35469 5.87 187

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.057 1.192 -0.135 1.000 36324 11.1 200

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10033.d

Injection Date: 10-Jul-2017 10:02:08

Instrument ID: LC_LCMS4

Lims ID: LCSD 280-379911/3-A

Client ID:

Operator ID: acm

ALS Bottle#: 81

Worklist Smp#: 7

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

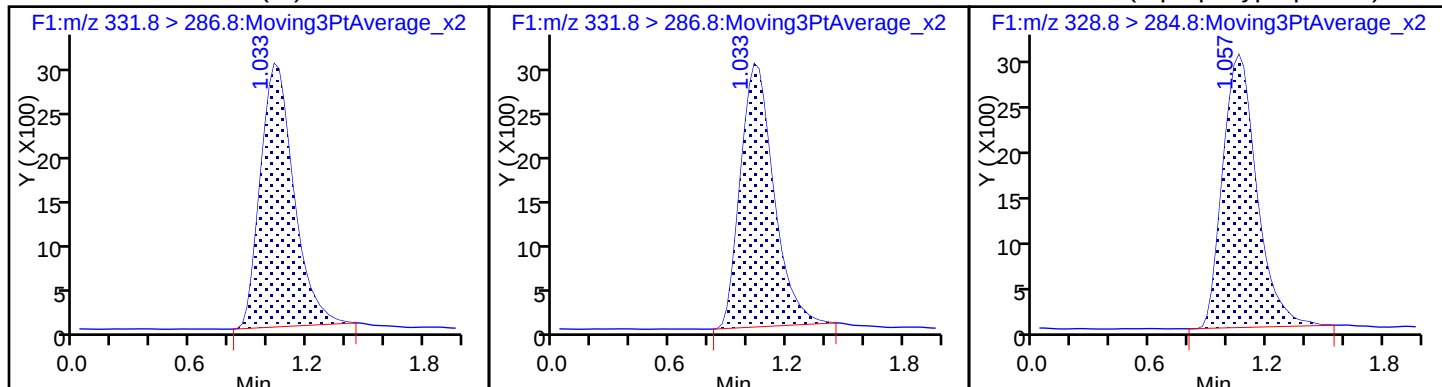
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10033.d
Lims ID: LCSD 280-379911/3-A
Client ID:
Sample Type: LCSD
Inject. Date: 10-Jul-2017 10:02:08 ALS Bottle#: 81 Worklist Smp#: 7
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: LCSD 280-379911/3-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:27

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	5.87	58.67

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-98869-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: LLCS 280-379911/4-A
 Matrix: Water Lab File ID: hfp47G10034.d
 Analysis Method: 8321A Date Collected: _____
 Extraction Method: 3535 Date Extracted: 07/06/2017 10:36
 Sample wt/vol: 250 (mL) Date Analyzed: 07/10/2017 10:05
 Con. Extract Vol.: 5 (mL) Dilution Factor: 1
 Injection Volume: 40 (uL) GC Column: IonPac ID: 2 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 380269 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	0.0176		0.010	0.0051

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	55		50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10034.d
 Lims ID: LLCS 280-379911/4-A
 Client ID:
 Sample Type: LLCS
 Inject. Date: 10-Jul-2017 10:05:42 ALS Bottle#: 82 Worklist Smp#: 8
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: LLCS 280-379911/4-A
 Misc. Info.: 06/272017
 Operator ID: acm Instrument ID: LC_LCMS4
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:30

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8	1.033	1.174	-0.141		33510	10.0	149
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\$ 3 13C3 HFPO-DA

331.8 > 286.8	1.033	1.174	-0.141	1.000	33510	5.54	149
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1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8	1.057	1.192	-0.135	1.000	3196	0.8795	127
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TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10034.d

Injection Date: 10-Jul-2017 10:05:42

Instrument ID: LC_LCMS4

Lims ID: LLCS 280-379911/4-A

Client ID:

Operator ID: acm

ALS Bottle#: 82

Worklist Smp#: 8

Injection Vol: 40.0 ul

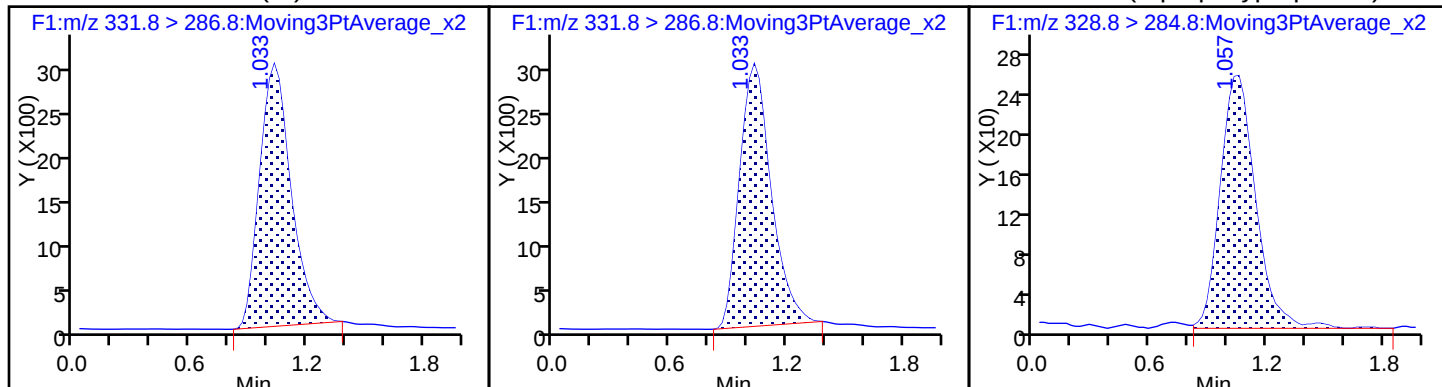
Dil. Factor: 1.0000

Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 ¹³C3 HFPO-DA (IS)\$ 3 ¹³C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\hfp47G10034.d
Lims ID: LLCS 280-379911/4-A
Client ID:
Sample Type: LLCS
Inject. Date: 10-Jul-2017 10:05:42 ALS Bottle#: 82 Worklist Smp#: 8
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: LLCS 280-379911/4-A
Misc. Info.: 06/272017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170710-60562.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 10-Jul-2017 13:44:48 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK025

First Level Reviewer: meyera

Date: 10-Jul-2017 13:39:30

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	5.54	55.43

FORM I
LCMS ORGANICS ANALYSIS DATA SHEET

Lab Name: TestAmerica Denver Job No.: 280-98869-1
 SDG No.: _____
 Client Sample ID: _____ Lab Sample ID: DLCK 280-368501/14
 Matrix: Water Lab File ID: hfp47D07035.d
 Analysis Method: 8321A Date Collected: _____
 Extraction Method: _____ Date Extracted: _____
 Sample wt/vol: 1 (mL) Date Analyzed: 04/07/2017 10:42
 Con. Extract Vol.: _____ Dilution Factor: 1
 Injection Volume: 40 (uL) GC Column: IonPac ID: 2 (mm)
 % Moisture: _____ GPC Cleanup: (Y/N) N
 Analysis Batch No.: 368501 Units: ug/L

CAS NO.	COMPOUND NAME	RESULT	Q	RL	MDL
13252-13-6	HFPO-DA	ND		0.50	0.26

CAS NO.	SURROGATE	%REC	Q	LIMITS
STL02255	13C3 HFPO-DA	108		50-200

TestAmerica Denver
Target Compound Quantitation Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07035.d
 Lims ID: DLCK
 Client ID:
 Sample Type: QC
 Inject. Date: 07-Apr-2017 10:42:46 ALS Bottle#: 99 Worklist Smp#: 14
 Injection Vol: 40.0 ul Dil. Factor: 1.0000
 Sample Info: 04/07/2017 CAL1 DLCK
 Misc. Info.: 03/29/2017
 Operator ID: acm Instrument ID: LC_LCMS4
 Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
 Limit Group: LC - 8321A_HFPO_Du
 Last Update: 07-Apr-2017 12:03:22 Calib Date: 07-Apr-2017 10:31:40
 Integrator: Picker
 Quant Method: Internal/External Standard Quant By: Initial Calibration
 Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
 Column 1 : Det: F1:MRM
 Process Host: XAWRK007

First Level Reviewer: meyera

Date: 07-Apr-2017 12:02:10

Signal	RT	EXP RT	DLT RT	REL RT	Response	Amount ug/l	S/N	Flags
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* 2 13C3 HFPO-DA (IS)

331.8 > 286.8 1.174 1.174 0.0 65240 10.0 1061

\$ 3 13C3 HFPO-DA

331.8 > 286.8 1.174 1.174 0.0 1.000 65240 10.8 1061

1 Perfluoro(2-propoxypropanoic) acid

328.8 > 284.8 1.198 1.192 0.006 1.000 2338 0.2247 45.6

Reagents:

HFPO_CAL-1_00027

Amount Added: 1.00

Units: mL

TestAmerica Denver

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07035.d

Injection Date: 07-Apr-2017 10:42:46

Instrument ID: LC_LCMS4

Lims ID: DLCK

Client ID:

Operator ID: acm

ALS Bottle#: 99

Worklist Smp#: 14

Injection Vol: 40.0 ul

Dil. Factor: 1.0000

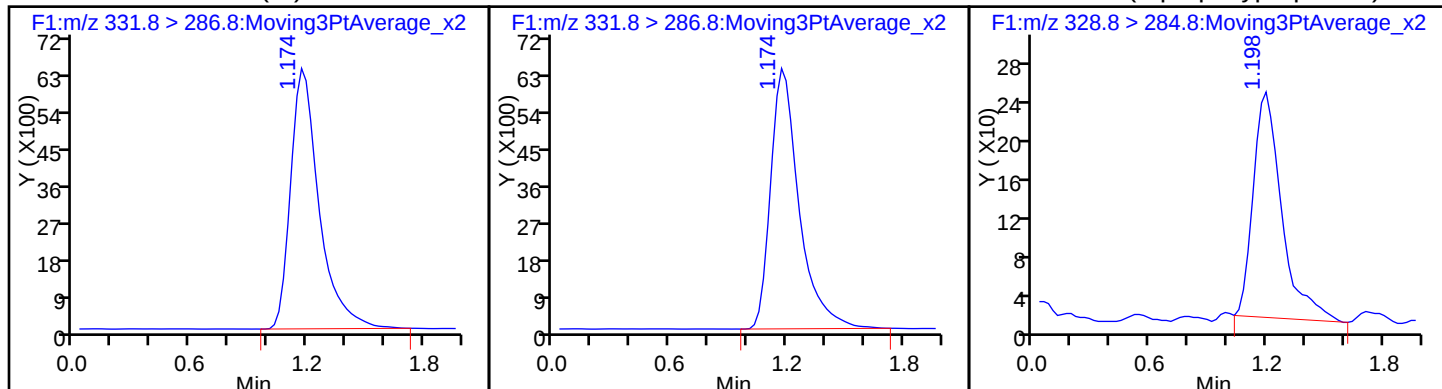
Method: 8321HFPO

Limit Group: LC - 8321A_HFPO_Du

* 2 13C3 HFPO-DA (IS)

\$ 3 13C3 HFPO-DA

1 Perfluoro(2-propoxypropanoic) acid



TestAmerica Denver
Recovery Report

Data File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07035.d
Lims ID: DLCK
Client ID:
Sample Type: QC
Inject. Date: 07-Apr-2017 10:42:46 ALS Bottle#: 99 Worklist Smp#: 14
Injection Vol: 40.0 ul Dil. Factor: 1.0000
Sample Info: 04/07/2017 CAL1 DLCK
Misc. Info.: 03/29/2017
Operator ID: acm Instrument ID: LC_LCMS4
Method: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\8321HFPO.m
Limit Group: LC - 8321A_HFPO_Du
Last Update: 07-Apr-2017 12:03:22 Calib Date: 07-Apr-2017 10:31:40
Integrator: Picker
Quant Method: Internal/External Standard Quant By: Initial Calibration
Last ICal File: \\ChromNA\Denver\ChromData\LC_LCMS4\20170407-57333.b\hfp47D07032.d
Column 1 : Det: F1:MRM
Process Host: XAWRK007

First Level Reviewer: meyera

Date: 07-Apr-2017 12:02:10

Compound	Amount Added	Amount Recovered	% Rec.
\$ 3 13C3 HFPO-DA	10.0	10.8	107.91

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica DenverJob No.: 280-98869-1

SDG No.: _____

Instrument ID: LC_LCMS4Start Date: 04/07/2017 10:06Analysis Batch Number: 368501End Date: 04/07/2017 11:11

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
STD00025 280-368501/4 IC		04/07/2017 10:06	1	hfp47D07025.d	IonPac 2 (mm)
STD00050 280-368501/5 IC		04/07/2017 10:10	1	hfp47D07026.d	IonPac 2 (mm)
STD0010 280-368501/6 IC		04/07/2017 10:13	1	hfp47D07027.d	IonPac 2 (mm)
STD0020 280-368501/7 IC		04/07/2017 10:17	1	hfp47D07028.d	IonPac 2 (mm)
STD0050 280-368501/8 IC		04/07/2017 10:20	1	hfp47D07029.d	IonPac 2 (mm)
STD0100 280-368501/9 IC		04/07/2017 10:24	1	hfp47D07030.d	IonPac 2 (mm)
STD0250 280-368501/10 IC		04/07/2017 10:28	1	hfp47D07031.d	IonPac 2 (mm)
STD0500 280-368501/11 IC		04/07/2017 10:31	1	hfp47D07032.d	IonPac 2 (mm)
ICB 280-368501/12		04/07/2017 10:35	1	hfp47D07033.d	IonPac 2 (mm)
ICV 280-368501/13		04/07/2017 10:39	1	hfp47D07034.d	IonPac 2 (mm)
DLCK 280-368501/14		04/07/2017 10:42	1	hfp47D07035.d	IonPac 2 (mm)
ZZZZZ		04/07/2017 10:46	1		IonPac 2 (mm)
ZZZZZ		04/07/2017 10:50	1		IonPac 2 (mm)
ZZZZZ		04/07/2017 10:53	1		IonPac 2 (mm)
ZZZZZ		04/07/2017 10:57	20		IonPac 2 (mm)
ZZZZZ		04/07/2017 11:00	20		IonPac 2 (mm)
ZZZZZ		04/07/2017 11:04	20		IonPac 2 (mm)
ZZZZZ		04/07/2017 11:08	20		IonPac 2 (mm)
CCV 280-368501/22		04/07/2017 11:11	1	hfp47D07043.d	IonPac 2 (mm)

LCMS ANALYSIS RUN LOG

Lab Name: TestAmerica Denver Job No.: 280-98869-1

SDG No.: _____

Instrument ID: LC_LCMS4 Start Date: 07/10/2017 09:50Analysis Batch Number: 380269 End Date: 07/10/2017 10:41

LAB SAMPLE ID	CLIENT SAMPLE ID	DATE ANALYZED	DILUTION FACTOR	LAB FILE ID	COLUMN ID
CCV 280-380269/4		07/10/2017 09:50	1	hfp47G10030.d	IonPac 2 (mm)
MB 280-379911/1-A		07/10/2017 09:54	1	hfp47G10031.d	IonPac 2 (mm)
LCS 280-379911/2-A		07/10/2017 09:58	1	hfp47G10032.d	IonPac 2 (mm)
LCSD 280-379911/3-A		07/10/2017 10:02	1	hfp47G10033.d	IonPac 2 (mm)
LLCS 280-379911/4-A		07/10/2017 10:05	1	hfp47G10034.d	IonPac 2 (mm)
ZZZZZ		07/10/2017 10:09	50		IonPac 2 (mm)
ZZZZZ		07/10/2017 10:12	1		IonPac 2 (mm)
ZZZZZ		07/10/2017 10:16	50		IonPac 2 (mm)
280-98869-1		07/10/2017 10:20	1	hfp47G10038.d	IonPac 2 (mm)
CCV 280-380269/13		07/10/2017 10:23	1	hfp47G10039.d	IonPac 2 (mm)
ZZZZZ		07/10/2017 10:27	10		IonPac 2 (mm)
ZZZZZ		07/10/2017 10:31	10		IonPac 2 (mm)
ZZZZZ		07/10/2017 10:34	10		IonPac 2 (mm)
ZZZZZ		07/10/2017 10:38	10		IonPac 2 (mm)
CCV 280-380269/18		07/10/2017 10:41	1	hfp47G10044.d	IonPac 2 (mm)

LCMS BATCH WORKSHEET

Lab Name: TestAmerica Denver Job No.: 280-98869-1

SDG No.: _____

Batch Number: 379911 Batch Start Date: 07/06/17 10:36 Batch Analyst: Atkinson, Hannah MBatch Method: 3535 Batch End Date: _____

Lab Sample ID	Client Sample ID	Method Chain	Basis	GrossWeight	TareWeight	InitialAmount	FinalAmount	HFPO I.S. 00003	HFPO Spike 00003
MB 280-379911/1		3535, 8321A				250 mL	5 mL	0.1 mL	
LCS 280-379911/2		3535, 8321A				250 mL	5 mL	0.1 mL	0.1 mL
LCSD 280-379911/3		3535, 8321A				250 mL	5 mL	0.1 mL	0.1 mL
LLCS 280-379911/4		3535, 8321A				250 mL	5 mL	0.1 mL	0.01 mL
280-98869-B-1	E02	3535, 8321A	T	286.5 g	27.1 g	259.4 mL	5 mL	0.1 mL	

Batch Notes	
Acid ID	2% Formic Aci_00122
Acid Name	2% Formic Acid
Balance ID	24950441
Batch Comment	Reviewer:RC; CC Supervisor
First End time	12:077
H2O ID	HPLC_Water_00769
Pipette ID	M2, SPE-1
Reagent ID	10% NH4OH
Reagent Lot Number	10% NH4OH_00091
Solvent Lot #	Methanol_00175
Solvent Name	Methanol
SOP Number	DV-OP-0019
SPE Cartridge Type	STRATA-X-AW
Solid Phase Extraction Disk ID	S308-0072
First Start time	11:19

Basis	Basis Description
T	Total/NA

The pound sign (#) in the amount added field denotes that the reagent was used undiluted. All calculations are performed using the stated concentration for this reagent.



Reagent ID: HFPO_CAL-5_00060

Description: level5
No. of Bottles: 1
Storage Location: LCMS
Reagent Volume: 1.000 mL
Creation Date: 07/10/2017
Open Date:
Container(s): 4629504
Comment: level-5

Expiration Date: 07/24/2017
Laboratory: TestAmerica Denver
Prepared By: Meyer, Andrew GC
Solvent: 80:20 Methanol : H2O
Solvent Lot: 00016

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
13C3 HFPO-DA	HFPO I.S._00003	01/11/2018	0.50000	ug/mL	10.00000	ug/L
13C3 HFPO-DA (IS)	HFPO I.S._00003	01/11/2018	0.50000	ug/mL	10.00000	ug/L
Perfluoro(2-propoxypropanoic) acid	HFPO Spike_00003	01/11/2018	0.50000	ug/mL	5.00000	ug/L

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
HFPO I.S._00003	Internal Standard for HFPO 0.5ug/ml		01/11/18				20.00000	uL
HFPO Spike_00003	HFPO LCS/Calibration Spike 0.5ug/ml		01/11/18				10.00000	uL

*Phuriga
7/10/2017*



Reagent ID: HFPO_CAL-6_00060

Description: level6
No. of Bottles: 1
Storage Location: LCMS
Reagent Volume: 1.000 mL
Creation Date: 07/10/2017
Open Date:
Container(s): 4629505
Comment: level-6

Expiration Date: 07/24/2017
Laboratory: TestAmerica Denver
Prepared By: Meyer, Andrew GC
Solvent: 80:20 Methanol : H2O
Solvent Lot: 00016

Reagent Analyte Information

Analyte	Source ID	Source Exp. Date	Source Conc.	Source Conc. Units	Final Conc.	Final Conc. Units
13C3 HFPO-DA	HFPO I.S._00003	01/11/2018	0.50000	ug/mL	10.00000	ug/L
13C3 HFPO-DA (IS)	HFPO I.S._00003	01/11/2018	0.50000	ug/mL	10.00000	ug/L
Perfluoro(2-propoxypropanoic) acid	HFPO Spike_00003	01/11/2018	0.50000	ug/mL	10.00000	ug/L

Source Reagents

Reagent	Description	Type	Expiration	Vendor	Vendor Lot #	Vendor Cat Lot #	Volume Used	Volume Units
HFPO I.S._00003	Internal Standard for HFPO 0.5ug/ml		01/11/18				20.00000	uL
HFPO Spike_00003	HFPO LCS/Calibration Spike 0.5ug/ml		01/11/18				20.00000	uL

*Phuriga
7/19/2017*

Shipping and Receiving Documents

Chain of Custody Record

Client Information Client Contact: <u>Glenn Walker</u> Company: <u>Brunswick County PUD</u> Address: <u>PO Box 249</u> City: <u>Bolivia</u> State, Zip: <u>NC 28422</u> Phone: <u>910-371-3490</u> Email: <u>glenn.walker@brunswickcountync.gov</u> Project Name: <u>Brunswick County HFPO-DA</u> Site: <u>211 WTP</u>		Sampler: <u>Glenn Walker</u> Lab PM: <u>Johnston, Michelle A</u> Phone: <u>910-371-3490</u> E-Mail: <u>michelle.johnston@testamericainc.com</u>		Carrier Tracking No(s): Job #:		COC No: Page:				
Due Date Requested: TAT Requested (days): PO #: <u>Purchase Order Requested</u> WFO #: <u>28016954</u> Project #: <u>28016954</u> SSOW#:		Analysis Requested								
Sample Identification <u>E02</u>		Sample Date <u>6/29/17</u>	Sample Time <u>0700</u>	Sample Type (C=Comp, G=grab) <u>G</u>	Matrix (W=water, S=solid, O=waste/soil, BT=tissue, AA=air) <u>W</u>	Field Filled Sample (Yes or No) ☒ Yes ☒ No	Perform MS/MSD (Yes or No) ☒ Yes ☒ No	8321A - HFPO-DA ☒ Yes ☒ No	Total Number of containers <u>2</u>	Special Instructions/Note: 280-98869 Chain of Custody
Possible Hazard Identification ☒ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown ☐ Radiological Deliverable Requested: I, II, III, IV, Other (specify)		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month) ☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months		Special Instructions/QC Requirements:						
Empty Kit Relinquished by: <u>Glenn Walker</u> Relinquished by: <u>Glenn Walker</u> Relinquished by:		Date/Time: <u>6/29/17</u> Date/Time:		Method of Shipment:						
Custody Seals Intact: ☐ Yes ☐ No		Date/Time: <u>6/29/17</u> Date/Time:		Date/Time: <u>6/29/17</u> Date/Time: <u>6/30/17 0850</u> Date/Time:						
Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: <u>0.8 to 0.0 FET 7 transferred by JS 6/30/17</u>		Company: <u>BCPUD</u> Company: <u>FEDEX</u> Company: <u>745</u> Company:						

Login Sample Receipt Checklist

Client: Brunswick County Public Utilities

Job Number: 280-98869-1

Login Number: 98869

List Source: TestAmerica Denver

List Number: 1

Creator: True, Joshua A

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is $<6\text{mm}$ (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	