UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0229, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1802099 - SPFC										
Blank (1802099-BLK2)				Prepared: 02/28/18 Analyzed: 03/09/18						
PFHpA	U	40	ng/L							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	130	"							B-4, U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	200	"							QC-1, U
PFUdA	U	40	"							U
LCS (1802099-BS1)				Prepared: 02/28/18 Analyzed: 03/09/18						
ASB 100S										
4:2FTS	392	40	ng/L	373.25		105	70-130			
6:2FTS	399	40	"	379.24		105	70-130			
8:2FTS	403	40	"	383.23		105	70-130			
FOSA	415	40	"	399.20		104	70-130			
HFPO-DA	469	40	"	399.20		118	70-130			
NMeFOSAA	455	80	"	399.20		114	70-130			
PFBA	432	40	"	399.20		108	70-130			
PFBS	383	40	"	353.29		108	70-130			
PFDA	396	40	"	399.20		99.2	70-130			
PFDoA	456	40	"	399.20		114	70-130			QC-1, QC-5
PFDS	407	40	"	385.23		106	70-130			QC-1
PFHpA	432	40	"	399.20		108	70-130			
PFHpS	392	40	"	379.24		103	70-130			
PFHxA	435	40	"	399.20		109	70-130			
PFHxS	373	40	"	364.07		103	70-130			
PFNA	416	40	"	399.20		104	70-130			
PFNS	365	40	"	383.23		95.2	70-130			
PFOA	411	130	"	399.20		103	70-130			
PFOS	401	40	"	369.46		109	70-130			
PFPeA	416	40	"	399.20		104	70-130			
PFPeS	393	40	"	375.25		105	70-130			
PFTrDA	464	200	"	399.20		116	70-130			QC-1
PFUdA	421	40	"	399.20		105	70-130			

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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DART Id: 18-0033
Project: 18-0229, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1802099 - SPFC										
MRL Verification (1802099-PS1)				Prepared: 02/28/18 Analyzed: 03/09/18						
ASB 100S										
4:2FTS	34.0	40	ng/L	38.163		89.1	50-150			Q2, MRL-2
6:2FTS	11.1	40	"	38.776		28.5	50-150			Q2, MRL-2, QR-1
8:2FTS	27.0	40	"	39.184		69.0	50-150			Q2, MRL-2
FOSA	23.9	40	"	40.816		58.6	50-150			Q2, MRL-2
HFPO-DA	62.6	40	"	40.816		153	50-150			MRL-2, QR-2
N-MeFOSAA	82.7	81	"	40.816		203	50-150			MRL-2, QR-2
PFBA	36.9	40	"	40.816		90.4	50-150			Q2, MRL-2
PFBS	26.9	40	"	36.122		74.4	50-150			Q2, MRL-2
PFDA	51.7	40	"	40.816		127	50-150			MRL-2
PFDoA	39.5	40	"	40.816		96.7	50-150			Q2, MRL-2, QC-1, QC-5
PFDS	42.0	40	"	39.388		107	50-150			QC-1, MRL-2
PFHpA	31.1	40	"	40.816		76.2	50-150			Q2, MRL-2
PFHpS	29.8	40	"	38.776		76.8	50-150			Q2, MRL-2
PFHxA	41.3	40	"	40.816		101	50-150			MRL-2
PFHxS	23.8	40	"	37.224		63.9	50-150			Q2, MRL-2
PFNA	41.2	40	"	40.816		101	50-150			MRL-2
PFNS	34.6	40	"	39.184		88.3	50-150			Q2, MRL-2
PFOA	U	130	"	40.816			50-150			MRL-2, U
PFOS	25.9	40	"	37.776		68.5	50-150			Q2, MRL-2
PFPeA	34.3	40	"	40.816		84.1	50-150			Q2, MRL-2
PFPeS	33.1	40	"	38.367		86.3	50-150			Q2, MRL-2
PFTrDA	117	200	"	40.816		287	50-150			Q2, QC-1, MRL-2, QR-2
PFUdA	44.5	40	"	40.816		109	50-150			MRL-2

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1802099 - SPFC										
MRL Verification (1802099-PS1)				Prepared: 02/28/18 Analyzed: 03/09/18						
Batch 1803002 - SPFC										
Blank (1803002-BLK1)				Prepared: 03/01/18 Analyzed: 03/12/18						
ASB 100S										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							QC-5, U
8:2FTS	U	40	"							QS-3, U
FOSA	U	40	"							U
HFPO-DA	U	40	"							QL-1, U
NMeFOSAA	U	40	"							U
PFBA	U	40	"							QR-1, U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							QC-5, U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							QL-1, U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							QC-1, QC-5, U
PFUdA	U	40	"							U

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1803002 - SPFC										
Blank (1803002-BLK2)				Prepared: 03/01/18 Analyzed: 03/12/18						
ASB 100S										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							QC-5, U
8:2FTS	U	40	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							QL-1, U
NMeFOSAA	U	40	"							U
PFBA	U	40	"							QR-1, U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							QC-5, U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							QL-1, U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							QC-1, QC-5, U
PFUdA	U	40	"							U
LCS (1803002-BS1)				Prepared: 03/01/18 Analyzed: 03/12/18						
ASB 100S										
4:2FTS	313	40	ng/L	373.25		84.0	70-130			
6:2FTS	277	40	"	379.24		73.1	70-130			QC-5
8:2FTS	360	40	"	383.23		94.0	70-130			
FOSA	366	40	"	399.20		91.8	70-130			
HFPO-DA	270	40	"	399.20		67.6	70-130			QL-1
NMeFOSAA	328	40	"	399.20		82.1	70-130			
PFBA	382	40	"	399.20		95.6	70-130			
PFBS	305	40	"	353.29		86.4	70-130			
PFDA	362	40	"	399.20		90.7	70-130			
PFDoA	382	40	"	399.20		95.7	70-130			QC-5
PFDS	358	40	"	385.23		93.1	70-130			
PFHpA	343	40	"	399.20		85.9	70-130			

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Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1803002 - SPFC										
LCS (1803002-BS1)				Prepared: 03/01/18 Analyzed: 03/12/18						
PFHpS	310	40	ng/L	379.24		81.6	70-130			
PFHxA	370	40	"	399.20		92.8	70-130			
PFHxS	306	40	"	364.07		83.9	70-130			
PFNA	361	40	"	399.20		90.5	70-130			
PFNS	327	40	"	383.23		85.4	70-130			
PFOA	275	40	"	399.20		69.0	70-130			QL-1
PFOS	315	40	"	369.46		85.1	70-130			
PFPeA	334	40	"	399.20		83.7	70-130			
PFPeS	313	40	"	375.25		83.5	70-130			
PFTrDA	423	80	"	399.20		106	70-130			QC-1, QC-5
PFUdA	352	40	"	399.20		88.1	70-130			
MRL Verification (1803002-PS1)				Prepared: 03/01/18 Analyzed: 03/12/18						
ASB 100S										
4:2FTS	28.1	40	ng/L	37.325		75.4	50-150			Q2, MRL-2
6:2FTS	23.9	40	"	37.924		62.9	50-150			Q2, QC-5, MRL-2, U
8:2FTS	24.1	40	"	38.323		62.8	50-150			Q2, MRL-2
FOSA	41.4	40	"	39.920		104	50-150			MRL-2
HFPO-DA	38.7	40	"	39.920		97.0	50-150			Q2, MRL-2
NMeFOSAA	30.9	40	"	39.920		77.4	50-150			Q2, MRL-2
PFBA	16.7	40	"	39.920		41.8	50-150			Q2, MRL-2, QR-1
PFBS	35.6	40	"	35.329		101	50-150			Q2, MRL-2
PFDA	35.7	40	"	39.920		89.3	50-150			Q2, MRL-2
PFDoA	55.5	40	"	39.920		139	50-150			QC-5, MRL-2
PFDS	45.2	40	"	38.523		117	50-150			MRL-2
PFHpA	32.2	40	"	39.920		80.7	50-150			Q2, MRL-2
PFHpS	39.4	40	"	37.924		104	50-150			Q2, MRL-2
PFHxA	28.6	40	"	39.920		71.6	50-150			Q2, MRL-2

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DART Id: 18-0033
Project: 18-0229, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1803002 - SPFC										
MRL Verification (1803002-PS1)				Prepared: 03/01/18 Analyzed: 03/12/18						
PFHxS	21.4	40	ng/L	36.407		58.8	50-150			Q2, MRL-2
PFNA	27.2	40	"	39.920		68.0	50-150			Q2, MRL-2
PFNS	35.6	40	"	38.323		93.0	50-150			Q2, MRL-2
PFOA	26.5	40	"	39.920		66.3	50-150			Q2, MRL-2
PFOS	31.5	40	"	36.946		85.3	50-150			Q2, MRL-2
PFPeA	32.2	40	"	39.920		80.8	50-150			Q2, MRL-2
PFPeS	29.0	40	"	37.525		77.3	50-150			Q2, MRL-2
PFTrDA	80.6	80	"	39.920		202	50-150			QG-1, QG-5, QR-2, MRL-2
PFUdA	43.2	40	"	39.920		108	50-150			MRL-2

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
B-4	Level in blank impacts MRLs.
MRL-2	MRL verification for Non-Potable Water matrix
Q-2	Result greater than MDL but less than MRL
QC-1	Analyte concentration low in continuing calibration verification standard
QC-5	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits
QR-1	MRL verification recovery less than lower control limits.
QR-2	MRL verification recovery greater than upper control limits.
QS-3	Surrogate recovery is lower than established control limits.

QUALIFIER	QualifierDefinitions
U	The analyte was not detected at or above the reporting limit.
B-4	Level in blank impacts MRLs.
H-7	Recommended preparation holding time exceeded
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than MDL but less than MRL.
QC-1	Analyte concentration low in continuing calibration verification standard
QC-5	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits
QR-1	MRL verification recovery less than lower control limits.
QS-3	Surrogate recovery is lower than established control limits.
QS-5	Surrogate recovery is higher than established control limits

O Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.

Laboratory ProjectNumber Project CLP_CaseNo R4DART_SiteCode R4DART_SiteName
LabSampleNumber SampleName Station CLP_MDNo CLP_DNo LabMatrix
ClientMatrix DateSampled DateReceived GeneralMethod AnalysisDescription
Prepared Analyzed Method Dissolved_Analysis TIC CASNumber
Analyte Result Qualifiers PrimaryQualifiers Units MRL

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 757124-72-4 4:2FTS 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 27619-97-2 6:2FTS 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 39108-34-4 8:2FTS 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 754-91-6 FOSA 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 13252-13-6 HFPO-DA 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 2355-31-9 N-MeFOSAA 80 U,J,H-7
U,J,O ng/L 80

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 375-22-4 PFBA 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 375-73-5 PFBS 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 335-76-2 PFDA 40 U,J,H-7
U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 307-55-1 PFDoA 40 U,J,QC-
1,QC-5,H-7 U,J,O ng/L 40

US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR

E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 335-77-3 PFDS 40 U,J,QC-1,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 375-85-9 PFHpA 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 375-92-8 PFHpS 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 307-24-4 PFHxA 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 355-46-4 PFHxS 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 375-95-1 PFNA 14 J,H-7,Q-2
J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 68259-12-1 PFNS 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 335-67-1 PFOA 130 U,J,B-4,H-7
U,J,O ng/L 130
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 1763-23-1 PFOS 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 2706-93-3 PFPeA 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 2706-91-4 PFPeS 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018

12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 72629-94-8 PFTrDA 200 U,J,QC-
1,H-7 U,J,O ng/L 200
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-01 012818-01 012818-01 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 2058-94-8 PFUdA 40 U,J,H-7
U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 757124-72-4 4:2FTS 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 27619-97-2 6:2FTS 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 39108-34-4 8:2FTS 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 754-91-6 FOSA 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 13252-13-6 HFPO-DA 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
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03/10/2018 ASB 100S 2355-31-9 N-MeFOSAA 82 U,J,H-7
U,J,O ng/L 82
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 375-22-4 PFBA 41 U,J,H-7
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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03/10/2018 ASB 100S 375-73-5 PFBS 41 U,J,H-7
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
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03/10/2018 ASB 100S 335-76-2 PFDA 41 U,J,H-7
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-02 012818-02 012818-02 Water Water 01/28/2018
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03/10/2018 ASB 100S 307-55-1 PFDoA 41 U,J,QC-1,QC-5,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 335-77-3 PFDS 41 U,J,QC-1,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 375-85-9 PFHpA 41 U,J,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 375-92-8 PFHpS 41 U,J,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 307-24-4 PFHxA 41 U,J,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 355-46-4 PFHxS 41 U,J,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 375-95-1 PFNA 15 J,Q-2,H-7 J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 68259-12-1 PFNS 41 U,J,H-7 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 335-67-1 PFOA 140 U,J,B-4,H-7 U,J,O ng/L 140
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR E180704-02 012818-02 012818-02 Water Water 01/28/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018 03/10/2018 ASB 100S 2706-93-3 PFPeA 41 U,J,H-7 U,J,O ng/L 41
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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03/10/2018 ASB 100S 307-55-1 PFDoA 41 U,J,QC-
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
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03/10/2018 ASB 100S 307-24-4 PFHxA 41 U,J,H-7
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
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03/10/2018 ASB 100S 355-46-4 PFHxS 41 U,J,H-7
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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U,J,O ng/L 140
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
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03/10/2018 ASB 100S 1763-23-1 PFOS 41 U,J,H-7
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
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03/10/2018 ASB 100S 2706-93-3 PFPeA 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR

E180704-03 012818-06 012818-06 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 2706-91-4 PFPeS 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 72629-94-8 PFTrDA 210 U,J,H-
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-03 012818-06 012818-06 Water Water 01/28/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 02/28/2018
03/10/2018 ASB 100S 2058-94-8 PFUdA 41 U,J,H-7
U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-04 020418-01 020418-01 Water Water 02/04/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 03/01/2018
03/12/2018 ASB 100S 757124-72-4 4:2FTS 41 U
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-04 020418-01 020418-01 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-04 020418-01 020418-01 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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3,QL-1 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-04 020418-01 020418-01 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-04 020418-01 020418-01 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-05 020418-02 020418-02 Water Water 02/04/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 03/01/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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03/12/2018 ASB 100S 754-91-6 FOSA 41 U U
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E180704-05 020418-02 020418-02 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-05 020418-02 020418-02 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR

E180704-11 020418-08 020418-08 Water Water 02/04/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 03/01/2018
03/12/2018 ASB 100S 13252-13-6 HFPO-DA 46 J,QL-1
J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
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03/12/2018 ASB 100S 2355-31-9 N-MeFOSAA 41 U
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 03/01/2018
03/12/2018 ASB 100S 375-22-4 PFBA 41 U,J,QR-1
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 03/01/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics PFAS 03/01/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
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03/12/2018 ASB 100S 2706-93-3 PFPeA 41 U
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-11 020418-08 020418-08 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-12 020418-09 020418-09 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-12 020418-09 020418-09 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-12 020418-09 020418-09 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-13 020418-10 020418-10 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-13 020418-10 020418-10 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-13 020418-10 020418-10 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-13 020418-10 020418-10 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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03/12/2018 ASB 100S 72629-94-8 PFTrDA 80 U,J,QC-
5,QC-1 U,J,O ng/L 80
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-13 020418-10 020418-10 Water Water 02/04/2018
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 757124-72-4 4:2FTS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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DA 41 U,J,QL-1 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
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PFAS 03/01/2018 03/12/2018 ASB 100S 375-22-4 PFBA
41 U,J,QR-1 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 375-73-5 PFBS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 335-76-2 PFDA
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 307-55-1 PFDoA
41 U,J,QS-3,QC-5 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 335-77-3 PFDS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 375-85-9 PFHpA
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 375-92-8 PFHpS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics

PFAS 03/01/2018 03/12/2018 ASB 100S 307-24-4 PFHxA
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 355-46-4 PFHxS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 375-95-1 PFNA
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 68259-12-1 PFNS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 335-67-1 PFOA
41 U,J,QL-1 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 1763-23-1 PFOS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 2706-93-3 PFPeA
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 2706-91-4 PFPeS
41 U U ng/L 41
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 72629-94-8
PFTrDA 83 U,J,QC-1,QS-3,QC-5 U,J,O ng/L 83
US-EPA, Region 4, SESD 18-0229 Chemours - rain water - FWELLBOR
E180704-14 PFAS Free DI Water Water Trip Blank - Water
02/14/2018 12:00:00 AM 02/15/2018 09:55:00 AM Semi Volatile Organics
PFAS 03/01/2018 03/12/2018 ASB 100S 2058-94-8 PFUdA
41 U U ng/L 41

#SYS_SAMPLE_CODE SAMPLE_NAME SAMPLE_MATRIX_CODE
SAMPLE_TYPE_CODE SAMPLE_SOURCE PARENT_SAMPLE_CODE
SAMPLE_DELIVERY_GROUP SAMPLE_DATE SAMPLE_TIME
SYS_LOC_CODE START_DEPTH END_DEPTH DEPTH_UNIT
CHAIN_OF_CUSTODY SENT_TO_LAB_DATE SAMPLE_RECEIPT_DATE
SAMPLER SAMPLING_COMPANY_CODE SAMPLING_REASON
SAMPLING_TECHNIQUE TASK_CODE TASK_TYPE COLLECTION_QUARTER
COMPOSITE_YN COMPOSITE_DESC SAMPLE_CLASS CUSTOM_FIELD_1
CUSTOM_FIELD_2 CUSTOM_FIELD_3 COMMENT SAMPLE_RECEIPT_TIME

R4-E180704-01 012818-01 N Field 18-0229 01/28/2018
00:00 012818-01 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-02 012818-02 N Field 18-0229 01/28/2018
00:00 012818-02 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-03 012818-06 N Field 18-0229 01/28/2018
00:00 012818-06 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-04 020418-01 N Field 18-0229 02/04/2018
00:00 020418-01 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-05 020418-02 N Field 18-0229 02/04/2018
00:00 020418-02 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-06 020418-03 N Field 18-0229 02/04/2018
00:00 020418-03 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-07 020418-04 N Field 18-0229 02/04/2018
00:00 020418-04 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-08 020418-05 N Field 18-0229 02/04/2018
00:00 020418-05 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-09 020418-06 N Field 18-0229 02/04/2018
00:00 020418-06 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-10 020418-07 N Field 18-0229 02/04/2018
00:00 020418-07 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-11 020418-08 N Field 18-0229 02/04/2018
00:00 020418-08 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55

R4-E180704-12 020418-09 N Field 18-0229 02/04/2018
00:00 020418-09 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N

09:55
R4-E180704-13 020418-10 N Field 18-0229 02/04/2018
00:00 020418-10 02/15/2018 Pjetraj, Mike
PL-SESD 18-0033 N
09:55
R4-E180704-14 PFAS Free DI Water TW TW Field 18-0229
02/14/2018 00:00 02/15/2018
Bhavmik, Chaitali PL-SESD 18-0033 N
09:55

#SYS_SAMPLE_CODE LAB_ANL_METHOD_NAME ANALYSIS_DATE
ANALYSIS_TIME TOTAL_OR_DISSOLVED COLUMN_NUMBER TEST_TYPE
CAS_RN CHEMICAL_NAME RESULT_VALUE RESULT_ERROR_DELTA
RESULT_TYPE_CODE REPORTABLE_RESULT DETECT_FLAG
LAB_QUALIFIERS VALIDATED_QUALIFIERS INTERPRETED_QUALIFIERS
ORGANIC_YN METHOD_DETECTION_LIMIT MINIMUM_REPORTING_LIMIT
QUANTITATION_LIMIT RESULT_UNIT MINIMUM_REPORTING_LIMIT_UNIT
TIC_RETENTION_TIME RESULT_COMMENT

R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 13252-13-6 HFPO-DA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 1763-23-1 PFOS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 2058-94-8 PFUdA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 2355-31-9 N-MeFOSAA 80 TRG Yes N U,J,H-7 U,J,O
80 80 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 2706-91-4 PFPeS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 2706-93-3 PFPeA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 27619-97-2 6:2FTS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 307-24-4 PFHxA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 307-55-1 PFDoA 40 TRG Yes N U,J,QC-1,QC-5,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 335-67-1 PFOA 130 TRG Yes N U,J,B-4,H-7 U,J,O
130 130 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 335-76-2 PFDA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 335-77-3 PFDS 40 TRG Yes N U,J,QC-1,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 355-46-4 PFHxS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 375-22-4 PFBA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 375-73-5 PFBS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 375-85-9 PFHpA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L

R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 375-92-
8 PFHpS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 375-95-
1 PFNA 14 TRG Yes Y J,H-7,Q-2 J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 39108-
34-4 8:2FTS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 68259-
12-1 PFNS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 72629-
94-8 PFTrDA 200 TRG Yes N U,J,QC-1,H-7 U,J,O
200 200 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 754-91-
6 FOSA 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N 757124-
72-4 4:2FTS 40 TRG Yes N U,J,H-7 U,J,O
40 40 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 13252-
13-6 HFPO-DA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 1763-
23-1 PFOS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 2058-
94-8 PFUdA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 2355-
31-9 N-MeFOSAA 82 TRG Yes N U,J,H-7 U,J,O
82 82 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 2706-
91-4 PFPeS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 2706-
93-3 PFPeA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 307-24-
4 PFHxA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-1,QC-5,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 335-67-
1 PFOA 140 TRG Yes N U,J,B-4,H-7 U,J,O
140 140 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 335-76-
2 PFDA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 335-77-
3 PFDS 41 TRG Yes N U,J,QC-1,H-7 U,J,O

41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 355-46-
4 PFHxS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 375-22-
4 PFBA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 375-73-
5 PFBS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 375-85-
9 PFHpA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 375-92-
8 PFHpS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 375-95-
1 PFNA 15 TRG Yes Y J,Q-2,H-7 J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 39108-
34-4 8:2FTS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 68259-
12-1 PFNS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 72629-
94-8 PFTrDA 210 TRG Yes N U,J,QC-1,H-7 U,J,O
210 210 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 754-91-
6 FOSA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N 757124-
72-4 4:2FTS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 13252-
13-6 HFPO-DA 150 TRG Yes Y J,H-7 J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 1763-
23-1 PFOS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 2058-
94-8 PFUdA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 2355-
31-9 N-MeFOSAA 82 TRG Yes N U,J,H-7 U,J,O
82 82 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 2706-
91-4 PFPeS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 2706-
93-3 PFPeA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 307-24-

4 PFHxA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5,H-7,QC-1 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 335-67-
1 PFOA 140 TRG Yes N U,J,B-4,H-7 U,J,O
140 140 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 335-76-
2 PFDA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 335-77-
3 PFDS 41 TRG Yes N U,J,H-7,QC-1 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 355-46-
4 PFHxS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 375-22-
4 PFBA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 375-73-
5 PFBS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 375-85-
9 PFHpA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 375-92-
8 PFHpS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 375-95-
1 PFNA 12 TRG Yes Y J,H-7,Q-2 J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 39108-
34-4 8:2FTS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 68259-
12-1 PFNS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 72629-
94-8 PFTrDA 210 TRG Yes N U,J,H-7,QC-1 U,J,O
210 210 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 754-91-
6 FOSA 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N 757124-
72-4 4:2FTS 41 TRG Yes N U,J,H-7 U,J,O
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 13252-
13-6 HFPO-DA 41 TRG Yes N U,J,QS-3,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L

R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QS-3,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 72629-
94-8 PFTrDA 81 TRG Yes N U,J,QC-1,QC-5 U,J,O
81 81 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 754-91-
6 FOSA 41 TRG Yes N U U 41

41 ng/L ng/L
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 13252-
13-6 HFPO-DA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 375-95-

1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 72629-
94-8 PFTrDA 81 TRG Yes N U,J,QC-1,QC-5 U,J,O
81 81 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 13252-
13-6 HFPO-DA 38 TRG Yes Y J,Q-2,QL-1 J,O
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 2355-
31-9 N-MeFOSAA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 27619-
97-2 6:2FTS 40 TRG Yes N U,J,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 307-55-
1 PFDoA 40 TRG Yes N U,J,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 335-67-
1 PFOA 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L

R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 375-22-
4 PFBA 40 TRG Yes N U,J,QR-1 U,J,O
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 72629-
94-8 PFTrDA 81 TRG Yes N U,J,QC-1,QC-5 U,J,O
81 81 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 13252-
13-6 HFPO-DA 15 TRG Yes Y J,Q-2,QL-1,QS-5 J,O
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 2355-
31-9 N-MeFOSAA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 27619-
97-2 6:2FTS 40 TRG Yes N U,J,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 307-55-
1 PFDoA 40 TRG Yes N U,J,QC-5 U,J,O

40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 335-67-
1 PFOA 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 375-22-
4 PFBA 40 TRG Yes N U,J,QR-1 U,J,O
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 72629-
94-8 PFTrDA 80 TRG Yes N U,J,QC-1,QC-5 U,J,O
80 80 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 13252-
13-6 HFPO-DA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 2706-

91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 72629-
94-8 PFTrDA 82 TRG Yes N U,J,QC-1,QC-5 U,J,O
82 82 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L

R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 13252-
13-6 HFPO-DA 71 TRG Yes Y J,QL-1 J,O
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 39108-
34-4 8:2FTS 41 TRG Yes N U U

41 41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 72629-
94-8 PFTrDA 83 TRG Yes N U,J,QC-1,QC-5 U,J,O
83 83 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 13252-
13-6 HFPO-DA 63 TRG Yes Y J,QL-1 J,O
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 2355-
31-9 N-MeFOSAA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 27619-
97-2 6:2FTS 40 TRG Yes N U,J,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 307-55-
1 PFDoA 40 TRG Yes N U,J,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 335-67-
1 PFOA 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 375-22-
4 PFBA 40 TRG Yes N U,J,QR-1 U,J,O
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 375-73-

5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 72629-
94-8 PFTrDA 80 TRG Yes N U,J,QC-1,QC-5 U,J,O
80 80 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 13252-
13-6 HFPO-DA 46 TRG Yes Y J,QL-1 J,O
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L

R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 72629-
94-8 PFTrDA 83 TRG Yes N U,J,QC-5,QC-1 U,J,O
83 83 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 13252-
13-6 HFPO-DA 240 TRG Yes Y J,QL-1 J,O
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 2706-
93-3 PFPeA 41 TRG Yes N U U

41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 72629-
94-8 PFTrDA 82 TRG Yes N U,J,QC-5,QC-1 U,J,O
82 82 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 13252-
13-6 HFPO-DA 100 TRG Yes Y J,QL-1 J,O
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 1763-

23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 2355-
31-9 N-MeFOSAA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 27619-
97-2 6:2FTS 40 TRG Yes N U,J,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 307-55-
1 PFDoA 40 TRG Yes N U,J,QC-5,QS-3 U,J,O
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 335-67-
1 PFOA 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 375-22-
4 PFBA 40 TRG Yes N U,J,QR-1 U,J,O
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L

R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 72629-
94-8 PFTrDA 80 TRG Yes N U,J,QC-5,QC-1 U,J,O
80 80 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 13252-
13-6 HFPO-DA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 2355-
31-9 N-MeFOSAA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 27619-
97-2 6:2FTS 41 TRG Yes N U,J,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 307-55-
1 PFDoA 41 TRG Yes N U,J,QS-3,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 335-67-
1 PFOA 41 TRG Yes N U,J,QL-1 U,J,O
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 375-22-
4 PFBA 41 TRG Yes N U,J,QR-1 U,J,O
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 375-85-
9 PFHpA 41 TRG Yes N U U

41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 72629-
94-8 PFTrDA 83 TRG Yes N U,J,QC-1,QS-3,QC-5 U,J,O
83 83 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L

#SYS_SAMPLE_CODE LAB_ANL_METHOD_NAME ANALYSIS_DATE
ANALYSIS_TIME TOTAL_OR_DISSOLVED COLUMN_NUMBER TEST_TYPE
LAB_MATRIX_CODE ANALYSIS_LOCATION BASIS CONTAINER_ID
DILUTION_FACTOR LAB_PREP_METHOD_NAME PREP_DATE PREP_TIME
LEACHATE_METHOD LEACHATE_DATE LEACHATE_TIME LAB_NAME_CODE
QC_LEVEL LAB_SAMPLE_ID PERCENT_MOISTURE
SUBSAMPLE_AMOUNT SUBSAMPLE_AMOUNT_UNIT ANALYST_NAME
INSTRUMENT_ID COMMENT PRESERVATIVE FINAL_VOLUME
FINAL_VOLUME_UNIT

R4-E180704-01 SVOA:ASB 100S 03/10/2018 00:25 N Water
LB NA R4-SESD
R4E E180704-01
R4-E180704-02 SVOA:ASB 100S 03/10/2018 00:47 N Water
LB NA R4-SESD
R4E E180704-02
R4-E180704-03 SVOA:ASB 100S 03/10/2018 01:10 N Water
LB NA R4-SESD
R4E E180704-03
R4-E180704-04 SVOA:ASB 100S 03/12/2018 16:20 N Water
LB NA R4-SESD
R4E E180704-04
R4-E180704-05 SVOA:ASB 100S 03/12/2018 16:43 N Water
LB NA R4-SESD
R4E E180704-05
R4-E180704-06 SVOA:ASB 100S 03/12/2018 17:05 N Water
LB NA R4-SESD
R4E E180704-06
R4-E180704-07 SVOA:ASB 100S 03/12/2018 17:28 N Water
LB NA R4-SESD
R4E E180704-07
R4-E180704-08 SVOA:ASB 100S 03/12/2018 17:50 N Water
LB NA R4-SESD
R4E E180704-08
R4-E180704-09 SVOA:ASB 100S 03/12/2018 18:12 N Water
LB NA R4-SESD
R4E E180704-09
R4-E180704-10 SVOA:ASB 100S 03/12/2018 18:35 N Water
LB NA R4-SESD
R4E E180704-10
R4-E180704-11 SVOA:ASB 100S 03/12/2018 18:57 N Water
LB NA R4-SESD
R4E E180704-11
R4-E180704-12 SVOA:ASB 100S 03/12/2018 19:20 N Water
LB NA R4-SESD
R4E E180704-12
R4-E180704-13 SVOA:ASB 100S 03/12/2018 19:42 N Water
LB NA R4-SESD
R4E E180704-13
R4-E180704-14 SVOA:ASB 100S 03/12/2018 20:05 N Water
LB NA R4-SESD
R4E E180704-14

To: Wellborn, Floyd[Wellborn.Floyd@epa.gov]
Cc: R4SampleCustody[R4SampleCustody@epa.gov]; Monell, Carol[Monell.Carol@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Jones, Aaryn[Jones.Aaryn@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Toney, Anthony[Toney.Anthony@epa.gov]; Bookman, Robert[Bookman.Robert@epa.gov]; George, Verne[George.Verne@epa.gov]; Walker, Mary[walker.mary@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Hall, Renea[Hall.Renea@epa.gov]; Davis, Molly[Davis.Molly@epa.gov]; Moyer, Adam[moyer.adam@epa.gov]; Doa, Maria[Doa.Maria@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]; Morris, Eric B[eric.morris@ncdenr.gov]; Wellborn, Floyd[Wellborn.Floyd@epa.gov]; France, Danny[France.Danny@epa.gov]
From: R4SampleCustody@epa.gov
Sent: Thur 3/15/2018 2:47:20 AM
Subject: R4 LIMS Sample Log for Project 18-0245, WorkOrder E181101
E181101 WKO 03 14 18 1107.pdf
E181101_COC_01.pdf

Attached is a detailed work order report, in Adobe Acrobat PDF format, containing information about samples and their scheduled analyses for the following Project:

Project Number: 18-0245
Project Name: Chemours - rain water
City: Wilmington **State:** NC

Samples in the following categories have been submitted for analysis:
Semi Volatile Organics (SVOA)

Please review the attached report and notify our Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov if you have any questions, concerns, or if you notice any errors.

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WORK ORDER

Printed: 3/14/2018 11:07:30

E181101

US-EPA, Region 4, SESD

Client: Drinking Water (201B53, 000B53)	**Project Number** 18-0245
Project Chemours - rain water - FWELLBOR	**Acct #/ Location:** 000B53 Wilmington NC

Project Leader	**Wellborn, Floyd**	**Date Due:**	**04/18/18 (35 day TAT)**
Received By:	Beall, Mike	Date Received:	03/14/18 10:15
Logged In By:	Beall, Mike	Date Logged In:	03/14/18 10:45

Samples Received at 1.9°C	Placed in Cooler after Ice Removed:	D.A.R.T. Project ID 18-0033
Custody Seals: Yes	Sample Containers Intact: Yes	Program/Activity:
Custody Seals Intact: Yes	Samples &COC Match: Yes	Site/Waterbody : ()
COC Present: Yes	COC/Labels Agree: Yes	
Ice in Cooler: Yes	All Analyses on COC: Yes	

Analysis	Due	TAT	Expires	Comments
E181101-01 022818-00 / 022818-00 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-02 022818-02 / 022818-02 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-03 022818-07 / 022818-07 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-04 022818-09 / 022818-09 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-05 022818-10 / 022818-10 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-06 022818-11 / 022818-11 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-07 022818-12 / 022818-12 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-08 022818-14 / 022818-14 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-09 022818-15 / 022818-15 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-10 022818-16 / 022818-16 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	

ED_002003J_00039282-00001

WORK ORDER

Printed: 3/14/2018 11:07:30

E181101

US-EPA, Region 4, SESD

Client: Drinking Water (201B53, 000B53) **Project Number** 18-0245
Project Chemours - rain water - FWELLBOR **Acct #/ Location:** 000B53 Wilmington NC

Analysis	Due	TAT	Expires	Comments
E181101-11 022818-17 / 022818-17 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-12 022818-18 / 022818-18 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-13 022818-19 / 022818-19 [Water / Water] Sampled 02/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	04/18/18 00:00	35	03/28/18 00:00	
E181101-14 Trip Blank / [Water / Trip Blank - Water] Sampled 03/07/18 00:00				
A = 15 mL Plastic				
PFAS-Full List	04/18/18 00:00	35	04/04/18 00:00	

E181101

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0245

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-01	00518A ✓	022818-00	2/28/18		Nathan Miller	Water	GenX PFAS
-01	00519B ✓	00					GenX
-02	00462A ✓	02					GenX
-02	00463B ✓	02					GenX
-03	00630A ✓	07					GenX
-03	00631B ✓	07					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Chaitali Bhaumik	Chaitali Bhaumik	~~3/7/18~~ 3/8/18	10:30 AM	RM BEALL	RmBeall	3/14/18	1015

E181101

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0245

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-04	00632A ✓	022818-09	2/28/18		Nathan Miller	Water	GenX PFAS
-04	00633B ✓	09					GenX
-05	00634A ✓	10			Karen Clevenger		GenX
-05	00635B ✓	10					GenX
-06	00636A ✓	11			Nathan Miller		GenX
-06	00637B ✓	11					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Chaitali Bhaumik	Chaitali Bhaumik	~~3/7/18~~ 3/8/18 CB	10:30AM	RM BEALL	RM Beall	3/14/18	1015

E181101

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0245

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-07	00638A ✓	022818-12	2/28/18		Karen Clevenger	Water	GenX PFAS
-07	00639B ✓	12					GenX
-08	00640A ✓	14					GenX
-08	00641B ✓	14					GenX
-09	00642A ✓	15					GenX
-09	00643B ✓	15					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Chaitali Bhaumik	Chaitali Bhaumik	~~3/7/18~~ 3/8/18	10:30AM	R M BEALL	RMBeall	3/14/18	1015

E181101

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0245

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-10	00644A ✓	022818-16	2/28/18		Nathan Miller	Water	GenX PFAS
-10	00645B ✓	16					GenX
-11	00646A ✓	17			Karen Clevenger		GenX
-11	00647B ✓	17					GenX
-12	00650A ✓	18					GenX
-12	00651B ✓	18					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Chaitali Bhaumik	Chaitali Bhaumik	~~3/7/18~~ CB 3/8/18	10:30 AM	R M BEALL	RM Beall	3/14/18	1015

E181101

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0245

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-13	00652A ✓	022818-19	2/28/18		Nathan Miller	Water	GenX PFAS
-13	00653B ✓	↓ -19	2/28/18		↓	↓	GenX ↓
-14	00629A ✓	Trip BLK	3/7/18		Chaitali Bhaumik	↓	GenX ↓
		Temp. BLK	3/8/18		↓	Water	GenX PFAS
							GenX
							GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Chaitali Bhaumik	Chaitali Bhaumik	~~3/7/18~~ CB 3/8/18	10:30AM	RMBEALL	RMBeall	3/14/18	1015

To: Wellborn, Floyd[Wellborn.Floyd@epa.gov]
Cc: Monell, Carol[Monell.Carol@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Jones, Aaryn[Jones.Aaryn@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Toney, Anthony[Toney.Anthony@epa.gov]; Bookman, Robert[Bookman.Robert@epa.gov]; George, Verne[George.Verne@epa.gov]; Walker, Mary[walker.mary@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Hall, Renea[Hall.Renea@epa.gov]; Davis, Molly[Davis.Molly@epa.gov]; Moyer, Adam[moyer.adam@epa.gov]; Doa, Maria[Doa.Maria@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]; Burdette, Diana[Burdette.Diana@epa.gov]; Wellborn, Floyd[Wellborn.Floyd@epa.gov]; France, Danny[France.Danny@epa.gov]
From: R4LIMS@epa.gov
Sent: Fri 3/9/2018 3:46:10 AM
Subject: R4 LIMS Results: Project 18-0198, E180608 SVOA 03 08 18 1536
E180608 SVOA FINAL 03 08 18 1536.PDF
E180608 SVOA FINAL 03 08 18 1536 - 18-0198 - 03-08-2018..Dat

On Thursday, March 8, 2018, results for the following were released by the Region 4 Laboratory:

Analyses:
Semi Volatile Organics (SVOA)

Project Number: 18-0198
Project Name: Chemours - rain water
City: Wilmington **State:** NC

These results were reported by:
Diana Burdette (E-mail: Burdette.Diana@epa.gov)
If you have questions concerning the laboratory results, please feel free to contact the laboratory personnel shown above as having reported the data. We also encourage you to provide feedback to the Region 4 laboratory by filling out our online (*EPA internal network only*) Customer Survey Form.

These results are for the following Sample Type(s):
Water
Water (Trip Blank - Water)

PDF DATA RESULTS REPORT FILE ATTACHMENT:
An Adobe Acrobat PDF file is attached to this message that contains final results for the analyses as indicated in the data report.

DATA EXPORT FILE ATTACHMENT:
If attached, data export files will be tab delimited ASCII text files contained in a file that has been formatted using the ZIP archiving format (.Dat extension). Please consult your local computer support personnel if you have problems extracting these files. If you have questions about the data file formats and the information contained in these files, or if you would like to request export files for previously reported data, use the contact information shown below to contact the appropriate person with your concerns. To generate export files for previously reported data we'll need the name of the PDF report file that was attached to the original transmittal message.

For questions concerning this message and attachments, or any other LIMS or data reporting issues, please call the SESD PC Hotline at 706-355-8825 or send an email to r4lims@epa.gov.

SAMPLE DISPOSAL POLICY:
Due to limited space for long term sample storage, ASB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by

the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

****CONFIDENTIALITY NOTICE****
This e-mail is intended only for the use of the specific individual(s) to whom it is addressed. If you are not an intended recipient of this e-mail, you are hereby notified that any use, dissemination or copying of this e-mail or the information contained in it or attached to it is unauthorized. If you have received this e-mail in error, please immediately notify us by reply e-mail to R4LIMS@epa.gov and then delete this message.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

March 8, 2018

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0198, Chemours - rain water
Drinking Water

FROM: Diana Burdette
OCS Analyst

THRU: Floyd Wellborn, Chief
ASB Organic Chemistry Section

TO: Floyd Wellborn

Attached are the final results for the analytical groups listed below. These analyses were accordance with the Analytical Support Branch Laboratory Operations and Quality Assurance Manual (ASB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objecti specified in writing by the data requestor have also been incorporated into the data unless Report Narrative. Chemistry data have been verified based on the ASB LOQAM specifications and have qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Section 5.2 of the ASB LOQAM. For a listing of specific data qualifiers and explanations, please Data Qualifier Definitions included in this report. The reported results are accurate withi method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASB 100S (Water)	

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Sample Disposal Policy

Due to limited space for long term sample storage, ASB's policy is to dispose of samples on a
Air samples collected in summa canisters will be disposed of 30 days following the issuance o
other sample media including original samples, sample extracts and or digestates will be dis
accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the labo
the criminal investigators that case development and litigation are complete.

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beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at
R4SampleCustody@pa.gov

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0198, Chemours - rain water

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
012818-03	E180608-01	Water	1/28/18 00:00	2/8/18 14:15
012818-04	E180608-02	Water	1/28/18 00:00	2/8/18 14:15
012818-05	E180608-03	Water	1/28/18 00:00	2/8/18 14:15
012818-07	E180608-04	Water	1/28/18 00:00	2/8/18 14:15
012818-09	E180608-05	Water	1/28/18 00:00	2/8/18 14:15
012818-10	E180608-06	Water	1/28/18 00:00	2/8/18 14:15
Trip Blanks	E180608-07	Trip Blank - Water	1/28/18 00:00	2/8/18 14:15

ED_002003J_00039286-00003

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
D.A.R.T. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QC-5	Calibration check standard less than method control limits.

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA Identifier assigned by the EPA Substance Registry (www.epa.gov/srs), or beginning with "R4-U", the EPA Identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured a reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of quantitation. The MRL is sample-specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI National Accreditation Board

Refer to the certificate and scope of accreditation AT http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: 012818-03 **Lab ID:** E180608-01

Station ID: 012818 **Matrix:** Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
27619-97-2	6:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
13252-13-6	HFPO-DA	79 U	ng/L	79	2/13/18 12:09	2/26/18 21:26	ASB 100S
2355-31-9	N-MeFOSAA	79 U, J, QC-3	ng/L	79	2/13/18 12:09	2/21/18 9:51	ASB 100S
375-22-4	PFBA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
375-92-8	PFHpS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
2706-93-3	PFPeA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S
72629-94-8	PFTrDA	79 U, J, QC-5	ng/L	79	2/13/18 12:09	2/21/18 9:51	ASB 100S
2058-94-8	PFUdA	40 U	ng/L	40	2/13/18 12:09	2/21/18 9:51	ASB 100S

ED_002003J_00039286-00005

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: 012818-04 **Lab ID:** E180608-02

Station ID: 012818 **Matrix:** Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
27619-97-2	6:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
13252-13-6	HFPO-DA	80 U	ng/L	80	2/13/18 12:09	2/26/18 21:49	ASB 100S
2355-31-9	N-MeFOSAA	80 U, J, QC-3	ng/L	80	2/13/18 12:09	2/21/18 10:14	ASB 100S
375-22-4	PFBA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
375-92-8	PFHpS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
2706-93-3	PFPeA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S
72629-94-8	PFTrDA	80 U, J, QC-5	ng/L	80	2/13/18 12:09	2/21/18 10:14	ASB 100S
2058-94-8	PFUdA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:14	ASB 100S

ED_002003J_00039286-00006

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: 012818-05 **Lab ID:** E180608-03

Station ID: 012818 **Matrix:** Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
27619-97-2	6:2FTS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
39108-34-4	8:2FTS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
754-91-6	FOSA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
13252-13-6	HFPO-DA	31 J, Q-2	ng/L	81	2/13/18 12:09	2/26/18 22:11	ASB 100S
2355-31-9	N-MeFOSAA	81 U, J, QC-3	ng/L	81	2/13/18 12:09	2/21/18 10:36	ASB 100S
375-22-4	PFBA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
375-73-5	PFBS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
335-76-2	PFDA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
307-55-1	PFDoA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
335-77-3	PFDS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
375-85-9	PFHpA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
375-92-8	PFHpS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
307-24-4	PFHxA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
355-46-4	PFHxS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
375-95-1	PFNA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
68259-12-1	PFNS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
335-67-1	PFOA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
1763-23-1	PFOS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
2706-93-3	PFPeA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
2706-91-4	PFPeS	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S
72629-94-8	PFTrDA	81 U, J, QC-5	ng/L	81	2/13/18 12:09	2/21/18 10:36	ASB 100S
2058-94-8	PFUdA	41 U	ng/L	41	2/13/18 12:09	2/21/18 10:36	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: 012818-07 **Lab ID:** E180608-04

Station ID: 012818 **Matrix:** Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
27619-97-2	6:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
13252-13-6	HFPO-DA	76 J, Q-2	ng/L	80	2/13/18 12:09	2/26/18 22:34	ASB 100S
2355-31-9	N-MeFOSAA	80 U, J, QC-3	ng/L	80	2/13/18 12:09	2/21/18 10:58	ASB 100S
375-22-4	PFBA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
375-92-8	PFHpS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
2706-93-3	PFPeA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S
72629-94-8	PFTrDA	80 U, J, QC-5	ng/L	80	2/13/18 12:09	2/21/18 10:58	ASB 100S
2058-94-8	PFUdA	40 U	ng/L	40	2/13/18 12:09	2/21/18 10:58	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: 012818-09 **Lab ID:** E180608-05

Station ID: 012818 **Matrix:** Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
27619-97-2	6:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
13252-13-6	HFPO-DA	580	ng/L	81	2/13/18 12:09	2/26/18 22:56	ASB 100S
2355-31-9	N-MeFOSAA	81 U, J, QC-3	ng/L	81	2/13/18 12:09	2/21/18 11:21	ASB 100S
375-22-4	PFBA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
375-92-8	PFHpS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
2706-93-3	PFPeA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S
72629-94-8	PFTrDA	81 U, J, QC-5	ng/L	81	2/13/18 12:09	2/21/18 11:21	ASB 100S
2058-94-8	PFUdA	40 U	ng/L	40	2/13/18 12:09	2/21/18 11:21	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: 012818-10 **Lab ID:** E180608-06

Station ID: 012818 **Matrix:** Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
27619-97-2	6:2FTS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
39108-34-4	8:2FTS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
754-91-6	FOSA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
13252-13-6	HFPO-DA	61	J, Q-2	ng/L	82	2/13/18 12:09	2/26/18 23:19	ASB 100S
2355-31-9	N-MeFOSAA	82	U, J, QC-3	ng/L	82	2/13/18 12:09	2/21/18 11:43	ASB 100S
375-22-4	PFBA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
375-73-5	PFBS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
335-76-2	PFDA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
307-55-1	PFDoA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
335-77-3	PFDS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
375-85-9	PFHpA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
375-92-8	PFHpS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
307-24-4	PFHxA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
355-46-4	PFHxS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
375-95-1	PFNA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
68259-12-1	PFNS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
335-67-1	PFOA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
1763-23-1	PFOS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
2706-93-3	PFPeA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
2706-91-4	PFPeS	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S
72629-94-8	PFTrDA	82	U, J, QC-5	ng/L	82	2/13/18 12:09	2/21/18 11:43	ASB 100S
2058-94-8	PFUdA	41	U	ng/L	41	2/13/18 12:09	2/21/18 11:43	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0198, Chemours - rain water

Sample ID: Trip Blanks **Lab ID:** E180608-07

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 1/28/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
27619-97-2	6:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
13252-13-6	HFPO-DA	80 U	ng/L	80	2/13/18 12:09	2/26/18 18:27	ASB 100S
2355-31-9	N-MeFOSAA	80 U, J, QC-3	ng/L	80	2/13/18 12:09	2/21/18 1:14	ASB 100S
375-22-4	PFBA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
375-92-8	PFHpS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
2706-93-3	PFPeA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S
72629-94-8	PFTrDA	80 U, J, QC-5	ng/L	80	2/13/18 12:09	2/21/18 1:14	ASB 100S
2058-94-8	PFUdA	40 U	ng/L	40	2/13/18 12:09	2/21/18 1:14	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
D.A.R.T. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1802048 - SPFC										
Blank (1802048-BLK1)				Prepared: 02/13/18 Analyzed: 02/20/18						
ASB 100S										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							U
8:2FTS	U	40	"							U
FOSA	U	40	"							U
HFPO-DA	U	80	"							U
N-MeFOSAA	U	80	"							QC-3, U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							QC-5, U
PFUdA	U	40	"							U
Blank (1802048-BLK2)				Prepared: 02/13/18 Analyzed: 02/20/18						
ASB 100S										
4:2FTS	U	40	ng/L							U
6:2FTS	U	40	"							U
8:2FTS	U	40	"							QS-3, U
FOSA	U	40	"							U
HFPO-DA	U	80	"							U
N-MeFOSAA	U	80	"							QC-3, U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							U

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1802048 - SPFC										
Blank (1802048-BLK2)				Prepared: 02/13/18 Analyzed: 02/20/18						
PFHxA	U	40	ng/L							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	80	"							QC-5, U
PFUdA	U	40	"							U
LCS (1802048-BS1)				Prepared: 02/13/18 Analyzed: 02/20/18						
ASB 100S										
4:2FTS	290	40	ng/L	372.51		77.8	70-130			
6:2FTS	297	40	"	378.49		78.5	70-130			
8:2FTS	313	40	"	382.47		81.9	70-130			
FOSA	342	40	"	398.41		85.9	70-130			
HFPO-DA	317	80	"	398.41		79.5	70-130			
N-MeFOSAA	368	80	"	398.41		92.4	70-130			QC-3
PFBA	328	40	"	398.41		82.4	70-130			
PFBS	292	40	"	352.59		82.8	70-130			
PFDA	360	40	"	398.41		90.4	70-130			
PFDoA	348	40	"	398.41		87.3	70-130			
PFDS	339	40	"	384.46		88.3	70-130			
PFHpA	317	40	"	398.41		79.6	70-130			
PFHpS	309	40	"	378.49		81.5	70-130			
PFHxA	314	40	"	398.41		78.9	70-130			
PFHxS	286	40	"	363.35		78.7	70-130			
PFNA	334	40	"	398.41		83.7	70-130			
PFNS	289	40	"	382.47		75.5	70-130			
PFOA	303	40	"	398.41		76.1	70-130			
PFOS	330	40	"	368.73		89.6	70-130			
PFPeA	328	40	"	398.41		82.3	70-130			
PFPeS	317	40	"	374.50		84.5	70-130			
PFTrDA	351	80	"	398.41		88.1	70-130			QC-5
PFUdA	353	40	"	398.41		88.6	70-130			

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, GA 30605-2700
DART. Id: 18-0033
Project: 18-0198, Chemours - rain water - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1802048 - SPFC										
MRL Verification (1802048-PS1)				Prepared: 02/13/18 Analyzed: 02/21/18						
ASB 100S										
4:2FTS	36.1	40	ng/L	37.251		96.9	50-150			Q-2, MRL-2
6:2FTS	30.1	40	"	37.849		79.5	50-150			Q-2, MRL-2
8:2FTS	37.1	40	"	38.247		96.9	50-150			Q-2, MRL-2
FOSA	45.7	40	"	39.841		115	50-150			MRL-2
N-MeFOSAA	73.0	80	"	39.841		183	50-150			Q-2, QC-3, MRL-2, QR-2
PFBA	33.1	40	"	39.841		83.0	50-150			Q-2, MRL-2
PFBS	32.2	40	"	35.259		91.4	50-150			Q-2, MRL-2
PFDA	45.8	40	"	39.841		115	50-150			MRL-2
PFDoA	56.3	40	"	39.841		141	50-150			MRL-2
PFDS	51.2	40	"	38.446		133	50-150			MRL-2
PFHpA	40.2	40	"	39.841		101	50-150			MRL-2
PFHpS	38.8	40	"	37.849		102	50-150			Q-2, MRL-2
PFHxA	38.7	40	"	39.841		97.1	50-150			Q-2, MRL-2
PFHxS	33.5	40	"	36.335		92.2	50-150			Q-2, MRL-2
PFNA	42.3	40	"	39.841		106	50-150			MRL-2
PFNS	39.1	40	"	38.247		102	50-150			Q-2, MRL-2
PFOA	43.4	40	"	39.841		109	50-150			MRL-2
PFOS	41.4	40	"	36.873		112	50-150			MRL-2
PFPeA	30.1	40	"	39.841		75.5	50-150			Q-2, MRL-2
PFPeS	32.0	40	"	37.450		85.4	50-150			Q-2, MRL-2
PFTrDA	60.9	80	"	39.841		153	50-150			Q-2, QC-5, MRL-2, QR-2
PFUdA	56.4	40	"	39.841		142	50-150			MRL-2
MRL Verification (1802048-PS2)				Prepared: 02/21/18 Analyzed: 02/26/18						
ASB 100S										
HFPO-DA	46.3	80	ng/L	79.681		58.1	50-150			MRL-2, Q-2

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
MRL-2	MRL verification for Non-Potable Water matrix
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QC-5	Calibration check standard less than method control limits.
QR-2	MRL verification recovery greater than upper control limits.
QS-3	Surrogate recovery is lower than established control limits.

ED_002003J_00039286-00015

QUALIFIER	QualifierDefinitions
U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q-2	Result greater than MDL but less than MRL.
QC-3	Analyte calibration criteria not met
QC-5	Calibration check standard less than method control limits.

O Other qualifiers have been assigned providing additional information. These explanatory qualifiers are included in the printable pdf report and in other columns in the export files.

Laboratory ProjectNumber Project CLP_CaseNo R4DART_SiteCode R4DART_SiteName
LabSampleNumber SampleName Station CLP_MDNo CLP_DNo LabMatrix
ClientMatrix DateSampled DateReceived GeneralMethod AnalysisDescription
Prepared Analyzed Method Dissolved_Analysis TIC CASNumber
Analyte Result Qualifiers PrimaryQualifiers Units MRL
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-01 012818-03 012818 Water Water 01/28/2018
12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics PFAS 02/13/2018
02/21/2018 ASB 100S 757124-72-4 4:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-01 012818-03 012818 Water Water 01/28/2018
12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics PFAS 02/13/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-01 012818-03 012818 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-01 012818-03 012818 Water Water 01/28/2018
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02/21/2018 ASB 100S 754-91-6 FOSA 40 U U
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
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02/21/2018 ASB 100S 2355-31-9 N-MeFOSAA 79 U,J,QC-
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E180608-01 012818-03 012818 Water Water 01/28/2018
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E180608-01 012818-03 012818 Water Water 01/28/2018

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E180608-02 012818-04 012818 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-02 012818-04 012818 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
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02/21/2018 ASB 100S 72629-94-8 PFTrDA 80 U,J,QC-
5 U,J,O ng/L 80
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12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics PFAS 02/13/2018
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02/21/2018 ASB 100S 39108-34-4 8:2FTS 41 U
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
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02/21/2018 ASB 100S 754-91-6 FOSA 41 U U
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-03 012818-05 012818 Water Water 01/28/2018
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02/26/2018 ASB 100S 13252-13-6 HFPO-DA 31 J,Q-2
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-03 012818-05 012818 Water Water 01/28/2018
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02/21/2018 ASB 100S 68259-12-1 PFNS 41 U U
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-03 012818-05 012818 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-03 012818-05 012818 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR

E180608-03 012818-05 012818 Water Water 01/28/2018
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-03 012818-05 012818 Water Water 01/28/2018
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02/21/2018 ASB 100S 72629-94-8 PFTrDA 81 U,J,QC-
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
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US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
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E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 375-73-5 PFBS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 335-76-2 PFDA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 307-55-1 PFDoA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 335-77-3 PFDS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 375-85-9 PFHpA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 375-92-8 PFHpS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 307-24-4 PFHxA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 355-46-4 PFHxS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 375-95-1 PFNA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 68259-12-1 PFNS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 335-67-1 PFOA

40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 1763-23-1 PFOS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 2706-93-3 PFPeA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 2706-91-4 PFPeS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 72629-94-8
PFTrDA 80 U,J,QC-5 U,J,O ng/L 80
US-EPA, Region 4, SESD 18-0198 Chemours - rain water - FWELLBOR
E180608-07 Trip Blanks Water Trip Blank - Water
01/28/2018 12:00:00 AM 02/08/2018 02:15:00 PM Semi Volatile Organics
PFAS 02/13/2018 02/21/2018 ASB 100S 2058-94-8 PFUdA
40 U U ng/L 40

#SYS_SAMPLE_CODE SAMPLE_NAME SAMPLE_MATRIX_CODE
SAMPLE_TYPE_CODE SAMPLE_SOURCE PARENT_SAMPLE_CODE
SAMPLE_DELIVERY_GROUP SAMPLE_DATE SAMPLE_TIME
SYS_LOC_CODE START_DEPTH END_DEPTH DEPTH_UNIT
CHAIN_OF_CUSTODY SENT_TO_LAB_DATE SAMPLE_RECEIPT_DATE
SAMPLER SAMPLING_COMPANY_CODE SAMPLING_REASON
SAMPLING_TECHNIQUE TASK_CODE TASK_TYPE COLLECTION_QUARTER
COMPOSITE_YN COMPOSITE_DESC SAMPLE_CLASS CUSTOM_FIELD_1
CUSTOM_FIELD_2 CUSTOM_FIELD_3 COMMENT SAMPLE_RECEIPT_TIME
R4-E180608-01 012818-03 N Field 18-0198 01/28/2018
00:00 012818 02/08/2018 Mike P.
PL-SESD 18-0033 N
14:15
R4-E180608-02 012818-04 N Field 18-0198 01/28/2018
00:00 012818 02/08/2018 Mike P.
PL-SESD 18-0033 N
14:15
R4-E180608-03 012818-05 N Field 18-0198 01/28/2018
00:00 012818 02/08/2018 Mike P.
PL-SESD 18-0033 N
14:15
R4-E180608-04 012818-07 N Field 18-0198 01/28/2018
00:00 012818 02/08/2018 Mike P.
PL-SESD 18-0033 N
14:15
R4-E180608-05 012818-09 N Field 18-0198 01/28/2018
00:00 012818 02/08/2018 Mike P.
PL-SESD 18-0033 N
14:15
R4-E180608-06 012818-10 N Field 18-0198 01/28/2018
00:00 012818 02/08/2018 Mike P.
PL-SESD 18-0033 N
14:15
R4-E180608-07 Trip Blanks TW TW Field 18-0198 01/28/2018
00:00 02/08/2018 Mike P. PL-
SESD 18-0033 N
14:15

#SYS_SAMPLE_CODE LAB_ANL_METHOD_NAME ANALYSIS_DATE
ANALYSIS_TIME TOTAL_OR_DISSOLVED COLUMN_NUMBER TEST_TYPE
CAS_RN CHEMICAL_NAME RESULT_VALUE RESULT_ERROR_DELTA
RESULT_TYPE_CODE REPORTABLE_RESULT DETECT_FLAG
LAB_QUALIFIERS VALIDATED_QUALIFIERS INTERPRETED_QUALIFIERS
ORGANIC_YN METHOD_DETECTION_LIMIT MINIMUM_REPORTING_LIMIT
QUANTITATION_LIMIT RESULT_UNIT MINIMUM_REPORTING_LIMIT_UNIT
TIC_RETENTION_TIME RESULT_COMMENT

R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 2355-
31-9 N-MeFOSAA 79 TRG Yes N U,J,QC-3 U,J,O
79 79 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 27619-
97-2 6:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 375-22-
4 PFBA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L

R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 72629-
94-8 PFTrDA 79 TRG Yes N U,J,QC-5 U,J,O
79 79 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-01 SVOA:ASB 100S 02/26/2018 21:26 N 13252-
13-6 HFPO-DA 79 TRG Yes N U U
79 79 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 2355-
31-9 N-MeFOSAA 80 TRG Yes N U,J,QC-3 U,J,O
80 80 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 27619-
97-2 6:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 355-46-
4 PFHxS 40 TRG Yes N U U

40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 375-22-
4 PFBA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 72629-
94-8 PFTrDA 80 TRG Yes N U,J,QC-5 U,J,O
80 80 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-02 SVOA:ASB 100S 02/26/2018 21:49 N 13252-
13-6 HFPO-DA 80 TRG Yes N U U
80 80 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 2355-
31-9 N-MeFOSAA 81 TRG Yes N U,J,QC-3 U,J,O
81 81 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 27619-
97-2 6:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 307-55-

1 PFDoA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 335-67-
1 PFOA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 375-22-
4 PFBA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 72629-
94-8 PFTrDA 81 TRG Yes N U,J,QC-5 U,J,O
81 81 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-03 SVOA:ASB 100S 02/26/2018 22:11 N 13252-
13-6 HFPO-DA 31 TRG Yes Y J,Q-2 J,O
81 81 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 2355-
31-9 N-MeFOSAA 80 TRG Yes N U,J,QC-3 U,J,O
80 80 ng/L ng/L

R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 27619-
97-2 6:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 375-22-
4 PFBA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 72629-
94-8 PFTrDA 80 TRG Yes N U,J,QC-5 U,J,O
80 80 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N 757124-
72-4 4:2FTS 40 TRG Yes N U U

40 40 ng/L ng/L
R4-E180608-04 SVOA:ASB 100S 02/26/2018 22:34 N 13252-
13-6 HFPO-DA 76 TRG Yes Y J,Q-2 J,O
80 80 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 2355-
31-9 N-MeFOSAA 81 TRG Yes N U,J,QC-3 U,J,O
81 81 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 27619-
97-2 6:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 375-22-
4 PFBA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 39108-

34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 72629-
94-8 PFTrDA 81 TRG Yes N U,J,QC-5 U,J,O
81 81 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-05 SVOA:ASB 100S 02/26/2018 22:56 N 13252-
13-6 HFPO-DA 580 TRG Yes Y
81 81 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 1763-
23-1 PFOS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 2058-
94-8 PFUdA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 2355-
31-9 N-MeFOSAA 82 TRG Yes N U,J,QC-3 U,J,O
82 82 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 2706-
91-4 PFPeS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 2706-
93-3 PFPeA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 27619-
97-2 6:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 307-24-
4 PFHxA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 307-55-
1 PFDoA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 335-67-
1 PFOA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 355-46-
4 PFHxS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 375-22-
4 PFBA 41 TRG Yes N U U 41
41 ng/L ng/L

R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 375-85-
9 PFHpA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 375-92-
8 PFHpS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 375-95-
1 PFNA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 72629-
94-8 PFTrDA 82 TRG Yes N U,J,QC-5 U,J,O
82 82 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180608-06 SVOA:ASB 100S 02/26/2018 23:19 N 13252-
13-6 HFPO-DA 61 TRG Yes Y J,Q-2 J,O
82 82 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 2058-
94-8 PFUdA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 2355-
31-9 N-MeFOSAA 80 TRG Yes N U,J,QC-3 U,J,O
80 80 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 27619-
97-2 6:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 335-67-
1 PFOA 40 TRG Yes N U U 40

40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 375-22-
4 PFBA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 375-92-
8 PFHpS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 72629-
94-8 PFTrDA 80 TRG Yes N U,J,QC-5 U,J,O
80 80 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180608-07 SVOA:ASB 100S 02/26/2018 18:27 N 13252-
13-6 HFPO-DA 80 TRG Yes N U U
80 80 ng/L ng/L

#SYS_SAMPLE_CODE LAB_ANL_METHOD_NAME ANALYSIS_DATE
ANALYSIS_TIME TOTAL_OR_DISSOLVED COLUMN_NUMBER TEST_TYPE
LAB_MATRIX_CODE ANALYSIS_LOCATION BASIS CONTAINER_ID
DILUTION_FACTOR LAB_PREP_METHOD_NAME PREP_DATE PREP_TIME
LEACHATE_METHOD LEACHATE_DATE LEACHATE_TIME LAB_NAME_CODE
QC_LEVEL LAB_SAMPLE_ID PERCENT_MOISTURE
SUBSAMPLE_AMOUNT SUBSAMPLE_AMOUNT_UNIT ANALYST_NAME
INSTRUMENT_ID COMMENT PRESERVATIVE FINAL_VOLUME
FINAL_VOLUME_UNIT

R4-E180608-01 SVOA:ASB 100S 02/21/2018 09:51 N Water
LB NA R4-SESD
R4E E180608-01
R4-E180608-01 SVOA:ASB 100S 02/26/2018 21:26 N Water
LB NA R4-SESD
R4E E180608-01
R4-E180608-02 SVOA:ASB 100S 02/21/2018 10:14 N Water
LB NA R4-SESD
R4E E180608-02
R4-E180608-02 SVOA:ASB 100S 02/26/2018 21:49 N Water
LB NA R4-SESD
R4E E180608-02
R4-E180608-03 SVOA:ASB 100S 02/21/2018 10:36 N Water
LB NA R4-SESD
R4E E180608-03
R4-E180608-03 SVOA:ASB 100S 02/26/2018 22:11 N Water
LB NA R4-SESD
R4E E180608-03
R4-E180608-04 SVOA:ASB 100S 02/21/2018 10:58 N Water
LB NA R4-SESD
R4E E180608-04
R4-E180608-04 SVOA:ASB 100S 02/26/2018 22:34 N Water
LB NA R4-SESD
R4E E180608-04
R4-E180608-05 SVOA:ASB 100S 02/21/2018 11:21 N Water
LB NA R4-SESD
R4E E180608-05
R4-E180608-05 SVOA:ASB 100S 02/26/2018 22:56 N Water
LB NA R4-SESD
R4E E180608-05
R4-E180608-06 SVOA:ASB 100S 02/21/2018 11:43 N Water
LB NA R4-SESD
R4E E180608-06
R4-E180608-06 SVOA:ASB 100S 02/26/2018 23:19 N Water
LB NA R4-SESD
R4E E180608-06
R4-E180608-07 SVOA:ASB 100S 02/21/2018 01:14 N Water
LB NA R4-SESD
R4E E180608-07
R4-E180608-07 SVOA:ASB 100S 02/26/2018 18:27 N Water
LB NA R4-SESD
R4E E180608-07

To: Wellborn, Floyd[Wellborn.Floyd@epa.gov]
Cc: R4SampleCustody[R4SampleCustody@epa.gov]; Monell, Carol[Monell.Carol@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Jones, Aaryn[Jones.Aaryn@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Toney, Anthony[Toney.Anthony@epa.gov]; Bookman, Robert[Bookman.Robert@epa.gov]; George, Verne[George.Verne@epa.gov]; Walker, Mary[walker.mary@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Hall, Renea[Hall.Renea@epa.gov]; Davis, Molly[Davis.Molly@epa.gov]; Moyer, Adam[moyer.adam@epa.gov]; Doa, Maria[Doa.Maria@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]; Morris, Eric B[eric.morris@ncdenr.gov]; Wellborn, Floyd[Wellborn.Floyd@epa.gov]; France, Danny[France.Danny@epa.gov]
From: R4SampleCustody@epa.gov
Sent: Fri 2/16/2018 3:47:03 AM
Subject: R4 LIMS Sample Log for Project 18-0229, WorkOrder E180704
E180704 WKO 02 15 18 1249.pdf
E180704_COC_01.pdf
E180704_COC_02.pdf

Attached is a detailed work order report, in Adobe Acrobat PDF format, containing information about samples and their scheduled analyses for the following Project:

Project Number: 18-0229
Project Name: Chemours - storm water
City: Wilmington **State:** NC

Samples in the following categories have been submitted for analysis:
Semi Volatile Organics (SVOA)

Please review the attached report and notify our Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov if you have any questions, concerns, or if you notice any errors.

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WORK ORDER

Printed: 2/15/2018 12:49:16P

E180704

US-EPA, Region 4, SESD

Client:	Drinking Water (2001B53, 0001B53)	Project Number	18-0229
Project	Chemours - stormwater - FWELLBOR	Acct #/ Location:	0001B53 Wilmington NC

Project Leader	Wellborn, Floyd	Date Due:	03/22/18 (35 day TAT)
Received By:	Beall, Mike	Date Received:	02/15/18 09:55
Logged In By:	Beall, Mike	Date Logged In:	02/15/18 10:36

Samples Received at 4.8°C	Placed in Cooler after Ice Removed:	DART Project ID 18-0033
Custody Seals:	Sample Containers Intact: Yes	Program/Activity:
Custody Seals Intact:	Samples &COC Match:	Site/Waterbody : ()
COC Present: Yes	COC/Labels Agree: Yes	
Ice in Cooler:	All Analyses on COC: Yes	

Analysis	Due	TAT	Expires	Comments
E180704-01 012818-01 / 012818-01 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	02/25/18 00:00	
E180704-02 012818-02 / 012818-02 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	02/25/18 00:00	
E180704-03 012818-06 / 012818-06 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	02/25/18 00:00	
E180704-04 020418-01 / 020418-01 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-05 020418-02 / 020418-02 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-06 020418-03 / 020418-03 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-07 020418-04 / 020418-04 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-08 020418-05 / 020418-05 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-09 020418-06 / 020418-06 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-10 020418-07 / 020418-07 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	

ED_002003J_00039294-00001

WORK ORDER

Printed: 2/15/2018 12:49:16P

E180704

US-EPA, Region 4, SESD

Client: Drinking Water (201B53, 000B53)
Project Chemours - stormwater - FWELLBOR

Project Number 18-0229
Acct #/ Location: 000B53 Wilmington NC

Analysis	Due	TAT	Expires	Comments
E180704-11 020418-08 / 020418-08 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic	*B = 15 mL Plastic*			
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-12 020418-09 / 020418-09 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic	*B = 15 mL Plastic*			
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-13 020418-10 / 020418-10 [Water / Water] Sampled 02/04/18 00:00				
A = 15 mL Plastic	*B = 15 mL Plastic*			
PFAS-Full List	03/22/18 00:00	35	03/04/18 00:00	
E180704-14 PFAS Free DI Water / [Water / Trip Blank - Water] Sampled 02/14/18 00:00				
A = 15 mL Plastic	*B = 15 mL Plastic*			
PFAS-Full List	03/22/18 00:00	35	03/14/18 00:00	

E180704

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0229

E180704

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-01	00490A	92818-01	1-28-18		Mike Pjetraj	WATER	GenX PFAS
-01	00491B	01					GenX
-02	00492A	02					GenX
-02	00493B	02					GenX
-03	00494A	06					GenX
-03	00495B	06					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Karen Clevenger	Karen Clevenger	2-14-18		RM BEALL	KMBeall	2-15-18	0955

E180704

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0229
E180704

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-04	D0496A	020418-01	2-4-18		Mike Pjetraj	WATER	GenX PFAS
-04	00497B	01					GenX
-05	00498A	02					GenX
-05	00499B	02					GenX
-06	00500A	03					GenX
-06	00501B	03					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
KAREN CLEVENGER	Karen Clevenger	2-14-18		RM BEALL	RM Beall	2-15-18	0955

E180704

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0229
E180704

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-07	00502 A ✓	020418-04	2-4-18		Mike Pysteay	Water	GenX PFAS
-07	00503 B ✓	04					GenX
-08	00504 A ✓	05					GenX
-08	00505 B ✓	05					GenX
-09	00506 A ✓	06					GenX
-09	00507 B ✓	06					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Karen Clevenger	Karen Clevenger	2-14-18		RM BEALL	RMBeall	2-15-18	0955

E180704

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0229
E180704

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-10	00508-A	020418 -07	2-4-18		Mike Petraj	WATER	GenX PFAS
-10	00509-B	-07	↓		↓	↓	GenX ↓
-11	00510-A	-08					GenX
-11	00511 B	-08					GenX
-12	00512 A	-09					GenX
-12	00513 B	-09					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
KAREN CLEVENGER	Karen Clevenger	2-14-18		RM BEALL	RMBeall	2-15-18	0955

E180704

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

18-0229
E180704

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted:
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-13	00514 A ✓	020418 - 10	2-4-18		Mike Pyeteay	WATER	GenX PFAS
-13	00515 B ✓	020418 - 10	↓		↓	↓	GenX ↓
-14	00516 A ✓	PFAS FREE DI WATER	2-14-18		Chaitali Bhaumik	Water	GenX PFAS
-14	005178	RMB 2/15/18 EMAIL ATTACHED					GenX
							GenX
							GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
KAREN CLEVENGER	Karen Clevenger	2-14-18		RMBEALL	RMBeall	2-15-18	0955

Beall, Mike

From: Clevenger, Karen <karen.clevenger@ncdenr.gov>
Sent: Thursday, February 15, 2018 10:39 AM
To: Beall, Mike
Subject: RE: [External] RE: Scan 001 (003).pdf

E180704

Mike,
Thank you , yes the blank is 1 sample 2vials A & B
Sorry we will get the hang of this eventually , thank you so much for your help, if you need anything else from us please let us know.

KC

Karen E Clevenger
Environmental Technician
NC Department of Environmental Quality
DAQ, Laboratory Analysis Branch
4403 Reedy Creek Rd.
Raleigh, NC 27607
1622 Mail Service Center
Raleigh, NC 27699
Phone: 919-715-4484
Main Phone: 919-733-9777
www.ncair.org
Karen.Clevenger@ncdenr.gov

Nothing Compares

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Beall, Mike [mailto:Beall.Mike@epa.gov]
Sent: Thursday, February 15, 2018 10:25 AM
To: Clevenger, Karen <karen.clevenger@ncdenr.gov>
Cc: Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Sivertsen, Scott <Sivertsen.Scott@epa.gov>
Subject: RE: [External] RE: Scan 001 (003).pdf

CAUTION: [redacted]

Hi Karen,

Yes, samples here and working them up now.

We have two vials for the Free DI Water sample but you only have one on the COC. Did you mean for there to be two vials for the blank?

If so, no problem. I will enter as two containers received for that sample (PFAS Free DI Water). I will include your email replay so that no revised COC will be needed.

Thanks, Mike

From: Clevenger, Karen [mailto:karen.clevenger@ncdenr.gov]
Sent: Thursday, February 15, 2018 10:02 AM
To: Beall, Mike <Beall.Mike@epa.gov>
Subject: RE: [External] RE: Scan 001 (003).pdf

E180704

Mike,
I just got notification that the samples were delivered,
Do you have them?

Karen E Clevenger
Environmental Technician
NC Department of Environmental Quality
DAQ, Laboratory Analysis Branch
4403 Reedy Creek Rd.
Raleigh, NC 27607
1622 Mail Service Center
Raleigh, NC 27699
Phone: 919-715-4484
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www.ncair.org
Karen.Clevenger@ncdenr.gov

Nothing Compares

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Beall, Mike [mailto:Beall.Mike@epa.gov]
Sent: Wednesday, February 14, 2018 4:39 PM
To: Clevenger, Karen <karen.clevenger@ncdenr.gov>
Subject: RE: [External] RE: Scan 001 (003).pdf

CAUTION: External Email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report spam.

Should be fine. Have a good day in the field.

To: Wellborn, Floyd[Wellborn.Floyd@epa.gov]
Cc: Monell, Carol[Monell.Carol@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Jones, Aaryn[Jones.Aaryn@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Toney, Anthony[Toney.Anthony@epa.gov]; Bookman, Robert[Bookman.Robert@epa.gov]; George, Verne[George.Verne@epa.gov]; Walker, Mary[walker.mary@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Hall, Renea[Hall.Renea@epa.gov]; Davis, Molly[Davis.Molly@epa.gov]; Moyer, Adam[moyer.adam@epa.gov]; Doa, Maria[Doa.Maria@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]; Burdette, Diana[Burdette.Diana@epa.gov]; Wellborn, Floyd[Wellborn.Floyd@epa.gov]; France, Danny[France.Danny@epa.gov]
From: R4LIMS@epa.gov
Sent: Fri 2/16/2018 3:46:02 AM
Subject: R4 LIMS Results: Project 18-0145, E180205 SVOA 02 15 18 1535
E180205 SVOA FINAL 02 15 18 1535.PDF
E180205 SVOA FINAL 02 15 18 1535 - 18-0145 - 02-15-2018..Dat

On Thursday, February 15, 2018, results for the following were released by the Region 4 Laboratory:

Analyses:
Semi Volatile Organics (SVOA)

Project Number: 18-0145
Project Name: Chemours
City: Wilmington **State:** NC

These results were reported by:
Diana Burdette (E-mail: Burdette.Diana@epa.gov)
If you have questions concerning the laboratory results, please feel free to contact the laboratory personnel shown above as having reported the data. We also encourage you to provide feedback to the Region 4 laboratory by filling out our online (*EPA internal network only*) Customer Survey Form.

These results are for the following Sample Type(s):
Water
Water (Field Blank)
Water (Trip Blank - Water)

PDF DATA RESULTS REPORT FILE ATTACHMENT:
An Adobe Acrobat PDF file is attached to this message that contains final results for the analyses as indicated in the data report.

DATA EXPORT FILE ATTACHMENT:
If attached, data export files will be tab delimited ASCII text files contained in a file that has been formatted using the ZIP archiving format (.Dat extension). Please consult your local computer support personnel if you have problems extracting these files. If you have questions about the data file formats and the information contained in these files, or if you would like to request export files for previously reported data, use the contact information shown below to contact the appropriate person with your concerns. To generate export files for previously reported data we'll need the name of the PDF report file that was attached to the original transmittal message.

For questions concerning this message and attachments, or any other LIMS or data reporting issues, please call the SESD PC Hotline at 706-355-8825 or send an email to r4lims@epa.gov.

SAMPLE DISPOSAL POLICY:
Due to limited space for long term sample storage, ASB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

February 15, 2018

4SESD-ASB

MEMORANDUM

SUBJECT: FINAL Analytical Report
Project: 18-0145, Chemours
Drinking Water

FROM Diana Burdette
OCS Analyst

THRU: Floyd Vollborn, Chief
ASB Organic Chemistry Section

TO: Floyd Vollborn

Attached are the final results for the analytical groups listed below These analyses were performed in accordance with the Analytical Support Branch 's (ASB) Laboratory Operations and Quality Assurance Manual (ASB LOQAM) found at www.epa.gov/region4/sesd/asbsop. Any unique project data quality objectives specified in writing by the data requestor have also been incorporated into the data unless otherwise noted in the Report Narrative. Chemistry data have been verified based on the ASB LOQAM specifications and have been qualified by this laboratory if the applicable quality control criteria were not met. Verification is defined in Section 5.2 of the ASB LOQAM . For a listing of specific data qualifiers and explanations, please refer to the Data Qualifier Definitions included in this report. The reported results are accurate within the limits of the method(s) and are representative only of the samples as received by the laboratory.

Analyses Included in this report:	Method Used:	Accreditations:
Semi Volatile Organics (SVOA)		
PFAS	ASB 100S (Water)	

ED_002003J_00039298-00001

Sample Disposal Policy

Due to limited space for long term sample storage, ASB's policy is to dispose of samples on a periodic schedule. Air samples collected in summa canisters will be disposed of 30 days following the issuance of this report. All other sample media including original samples, sample extracts and or digestates will be disposed of, in accordance with applicable regulations, 60 days from the date of this report.

This sample disposal policy does not apply to criminal samples which are held until the laboratory is notified by the criminal investigators that case development and litigation are complete.

These samples may be held in the laboratory's custody for a longer period of time. If samples require storage beyond the 60-day period, please contact the Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov.

ED_002003J_00039298-00002

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

SAMPLES INCLUDED IN THIS REPORT

Project: 18-0145, Chemours

Sample ID	Laboratory ID	Matrix	Date Collected	Date Received
Chemours Outfall 002	E180205-01	Water	1/5/18 11:10	1/12/18 10:30
Chemours Outfall 002	E180205-02	Water	1/8/18 13:54	1/12/18 10:30
Chemours Raw Water Intake	E180205-03	Water	1/8/18 13:13	1/12/18 10:30
Filtered Water @Chemours Power House	E180205-04	Water	1/8/18 13:34	1/12/18 10:30
Trip Blank	E180205-05	Trip Blank - Water	1/11/18 00:00	1/12/18 10:30
Field Blank	E180205-06	Field Blank	1/3/18 10:35	1/12/18 10:30
CPF055C	E180205-07	Water	1/3/18 11:20	1/12/18 10:30
CPF087G	E180205-08	Water	1/3/18 10:50	1/12/18 10:30
B3900000	E180205-09	Water	1/3/18 12:40	1/12/18 10:30
B3040000	E180205-10	Water	1/3/18 13:00	1/12/18 10:30
B3670000	E180205-11	Water	1/3/18 13:10	1/12/18 10:30
B2100000	E180205-12	Water	1/3/18 13:45	1/12/18 10:30

ED_002003J_00039298-00003

DATA QUALIFIER DEFINITIONS

U	The analyte was not detected at or above the reporting limit.
J	The identification of the analyte is acceptable; the reported value is an estimate.
Q2	Result greater than MDL but less than MRL
QC-1	Analyte concentration low in continuing calibration verification standard
QC-5	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits

ACRONYMS AND ABBREVIATIONS

CAS Chemical Abstracts Service

Note: Analytes with no known CAS identifiers have been assigned codes beginning with "E", the EPA ID as assigned by the EPA Substance Registry System (www.epa.gov/srs), or beginning with "R4-", a unique identifier assigned by the EPA Region 4 laboratory.

MDL Method Detection Limit - The minimum concentration of a substance (an analyte) that can be measured and reported with a 99% confidence that the analyte concentration is greater than zero.

MRL Minimum Reporting Limit - Analyte concentration that corresponds to the lowest demonstrated level of acceptable quantitation. The MRL is sample -specific and accounts for preparation weights and volumes, dilutions, and moisture content of soil/sediments.

TIC Tentatively Identified Compound - An analyte identified based on a match with the instrument software's mass spectral library. A calibration standard has not been analyzed to confirm the compound 's identification or the estimated concentration reported.

ACCREDITATIONS:

ISO ASB is accredited by ISO/IEC 17025, including an amplification for forensic accreditation through ANSI -ASQ National Accreditation Board .

Refer to the certificate and scope of accreditation AT1644 at:
http://www.epa.gov/aboutepa/about-region-4s-science-and-ecosystem-support-division-sesd

NR The EPA Region 4 Laboratory has not requested accreditation for this test.

ED_002003J_00039298-00004

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: Chemours Outfall 002 **Lab ID:** E180205-01

Station ID: 002 **Matrix:** Water

Date Collected: 1/25/18 11:10

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
27619-97-2	6:2FTS	110 U	ng/L	110	1/30/18 8:12	2/07/18 2:32	ASB 100S
39108-34-4	8:2FTS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
754-91-6	FOSA	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
13252-13-6	HFPO-DA	130	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
2355-31-9	N-MeFOSAA	110 U	ng/L	110	1/30/18 8:12	2/07/18 2:32	ASB 100S
375-22-4	PFBA	27 J, Q-2	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
375-73-5	PFBS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
335-76-2	PFDA	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
307-55-1	PFDoA	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
335-77-3	PFDS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
375-85-9	PFHpA	71	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
375-92-8	PFHpS	38 U, J, QC-1	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
307-24-4	PFHxA	98	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
355-46-4	PFHxS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
375-95-1	PFNA	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
68259-12-1	PFNS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
335-67-1	PFOA	29 J, Q-2	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
1763-23-1	PFOS	23 J, Q-2	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
2706-93-3	PFPeA	68	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
2706-91-4	PFPeS	38 U	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
72629-94-8	PFTrDA	38 U, J, QC-1, QC-5	ng/L	38	1/30/18 8:12	2/07/18 2:32	ASB 100S
2058-94-8	PFUdA	77 U	ng/L	77	1/30/18 8:12	2/07/18 2:32	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: Chemours Outfall 002 **Lab ID:** E180205-02

Station ID: 002 **Matrix:** Water

Date Collected: 1/8/18 13:54

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
27619-97-2	6:2FTS	120	U	ng/L	120	1/30/18 8:12	2/07/18 2:55	ASB 100S
39108-34-4	8:2FTS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
754-91-6	FOSA	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
13252-13-6	HFPO-DA	140		ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
2355-31-9	N-MeFOSAA	120	U	ng/L	120	1/30/18 8:12	2/07/18 2:55	ASB 100S
375-22-4	PFBA	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
375-73-5	PFBS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
335-76-2	PFDA	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
307-55-1	PFDoA	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
335-77-3	PFDS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
375-85-9	PFHpA	48		ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
375-92-8	PFHpS	39	U, J, QL-1	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
307-24-4	PFHxA	91		ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
355-46-4	PFHxS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
375-95-1	PFNA	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
68259-12-1	PFNS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
335-67-1	PFOA	30	J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
1763-23-1	PFOS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
2706-93-3	PFPeA	58		ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
2706-91-4	PFPeS	39	U	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
72629-94-8	PFTrDA	39	U, J, QC-1, QC-5	ng/L	39	1/30/18 8:12	2/07/18 2:55	ASB 100S
2058-94-8	PFUdA	78	U	ng/L	78	1/30/18 8:12	2/07/18 2:55	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: Chemours Raw Water Intake **Lab ID:** E180205-03

Station ID: 014 **Matrix:** Water

Date Collected: 1/18/18 13:13

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 3:17	ASB 100S
39108-34-4	8:2FTS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
754-91-6	FOSA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
13252-13-6	HFPO-DA	35 J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 3:17	ASB 100S
375-22-4	PFBA	27 J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
375-73-5	PFBS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
335-76-2	PFDA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
307-55-1	PFDoA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
335-77-3	PFDS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
375-85-9	PFHpA	43	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
375-92-8	PFHpS	39 UJ, QL-1	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
307-24-4	PFHxA	69	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
355-46-4	PFHxS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
375-95-1	PFNA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
68259-12-1	PFNS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
335-67-1	PFOA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
1763-23-1	PFOS	23 J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
2706-93-3	PFPeA	49	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
2706-91-4	PFPeS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
72629-94-8	PFTrDA	39 UJ, QL-1, QC-5	ng/L	39	1/30/18 8:12	2/07/18 3:17	ASB 100S
2058-94-8	PFUdA	78 U	ng/L	78	1/30/18 8:12	2/07/18 3:17	ASB 100S

ED_002003J_00039298-00007

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: Filtered Water @Chemours Power House **Lab ID:** E180205-04
Station ID: 020 **Matrix:** Water

Date Collected: 1/8/18 13:34

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 3:40	ASB 100S
39108-34-4	8:2FTS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
754-91-6	FOSA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
13252-13-6	HFPO-DA	100	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 3:40	ASB 100S
375-22-4	PFBA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
375-73-5	PFBS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
335-76-2	PFDA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
307-55-1	PFDoA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
335-77-3	PFDS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
375-85-9	PFHpA	39	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
375-92-8	PFHpS	39 UJ, QL-1	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
307-24-4	PFHxA	53	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
355-46-4	PFHxS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
375-95-1	PFNA	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
68259-12-1	PFNS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
335-67-1	PFOA	27 J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
1763-23-1	PFOS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
2706-93-3	PFPeA	45	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
2706-91-4	PFPeS	39 U	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
72629-94-8	PFTrDA	39 UJ, J, QL-1, QL-5	ng/L	39	1/30/18 8:12	2/07/18 3:40	ASB 100S
2058-94-8	PFUdA	79 U	ng/L	79	1/30/18 8:12	2/07/18 3:40	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: Trip Blank **Lab ID:** E180205-05

Station ID: **Matrix:** Trip Blank - Water

Date Collected: 1/11/18 0:00

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 1:25	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
13252-13-6	HFPO-DA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 1:25	ASB 100S
375-22-4	PFBA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
375-92-8	PFHpS	40 U, J, QL-1	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
2706-93-3	PFPeA	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
72629-94-8	PFTrDA	40 U, J, QC-1, QC-5	ng/L	40	1/30/18 8:12	2/07/18 1:25	ASB 100S
2058-94-8	PFUdA	80 U	ng/L	80	1/30/18 8:12	2/07/18 1:25	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: Field Blank **Lab ID:** E180205-06

Station ID: **Matrix:** Field Blank

Date Collected: 1/31/18 10:35

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
27619-97-2	6:2FTS	120	U	ng/L	120	1/30/18 8:12	2/07/18 4:02	ASB 100S
39108-34-4	8:2FTS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
754-91-6	FOSA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
13252-13-6	HFPO-DA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
2355-31-9	N-MeFOSAA	120	U	ng/L	120	1/30/18 8:12	2/07/18 4:02	ASB 100S
375-22-4	PFBA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
375-73-5	PFBS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
335-76-2	PFDA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
307-55-1	PFDoA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
335-77-3	PFDS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
375-85-9	PFHpA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
375-92-8	PFHpS	39	U, J, QL-1	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
307-24-4	PFHxA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
355-46-4	PFHxS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
375-95-1	PFNA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
68259-12-1	PFNS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
335-67-1	PFOA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
1763-23-1	PFOS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
2706-93-3	PFPeA	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
2706-91-4	PFPeS	39	U	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
72629-94-8	PFTrDA	39	U, J, QC-1, QC-5	ng/L	39	1/30/18 8:12	2/07/18 4:02	ASB 100S
2058-94-8	PFUdA	78	U	ng/L	78	1/30/18 8:12	2/07/18 4:02	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: CPF055C
Station ID: CPF055C
Lab ID: E180205-07
Matrix: Water
Date Collected: 1/31/18 11:20

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 4:24	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
13252-13-6	HFPO-DA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 4:24	ASB 100S
375-22-4	PFBA	59	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
335-76-2	PFDA	20 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
375-85-9	PFHpA	210	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
375-92-8	PFHpS	40 U, J, QL-1	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
307-24-4	PFHxA	260	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
355-46-4	PFHxS	56	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
375-95-1	PFNA	17 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
335-67-1	PFOA	62	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
1763-23-1	PFOS	94	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
2706-93-3	PFPeA	150	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
2706-91-4	PFPeS	9.5 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
72629-94-8	PFTrDA	40 U, J, QL-1, QL-5	ng/L	40	1/30/18 8:12	2/07/18 4:24	ASB 100S
2058-94-8	PFUdA	80 U	ng/L	80	1/30/18 8:12	2/07/18 4:24	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: CPF087G
Station ID: CPF087G
Lab ID: E180205-08
Matrix: Water
Date Collected: 1/23/18 10:50

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 4:47	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
13252-13-6	HFPO-DA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 4:47	ASB 100S
375-22-4	PFBA	26 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
375-85-9	PFHpA	26 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
375-92-8	PFHpS	40 UJ, QL-1	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
1763-23-1	PFOS	32 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
2706-93-3	PFPeA	26 J, Q2	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
72629-94-8	PFTrDA	40 UJ, QL-1, QL-5	ng/L	40	1/30/18 8:12	2/07/18 4:47	ASB 100S
2058-94-8	PFUdA	79 U	ng/L	79	1/30/18 8:12	2/07/18 4:47	ASB 100S

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: FB3900000 **Lab ID:** E180205-09

Station ID: FB3900000 **Matrix:** Water

Date Collected: 1/30/18 12:40

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 5:09	ASB 100S
39108-34-4	8:2FTS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
754-91-6	FOSA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
13252-13-6	HFPO-DA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 5:09	ASB 100S
375-22-4	PFBA	18 J, Q-2	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
375-73-5	PFBS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
335-76-2	PFDA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
307-55-1	PFDoA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
335-77-3	PFDS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
375-85-9	PFHpA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
375-92-8	PFHpS	40 UJ, QL-1	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
307-24-4	PFHxA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
355-46-4	PFHxS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
375-95-1	PFNA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
68259-12-1	PFNS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
335-67-1	PFOA	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
1763-23-1	PFOS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
2706-93-3	PFPeA	22 J, Q-2	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
2706-91-4	PFPeS	40 U	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
72629-94-8	PFTrDA	40 UJ, QL-1, QL-5	ng/L	40	1/30/18 8:12	2/07/18 5:09	ASB 100S
2058-94-8	PFUdA	81 U	ng/L	81	1/30/18 8:12	2/07/18 5:09	ASB 100S

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: B3040000 **Lab ID:** E180205-10

Station ID: B3040000 **Matrix:** Water

Date Collected: 1/23/18 13:00

CAS Number	Analyte	Results	Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
27619-97-2	6:2FTS	120	U	ng/L	120	1/30/18 8:12	2/07/18 5:32	ASB 100S
39108-34-4	8:2FTS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
754-91-6	FOSA	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
13252-13-6	HFPO-DA	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
2355-31-9	N-MeFOSAA	120	U	ng/L	120	1/30/18 8:12	2/07/18 5:32	ASB 100S
375-22-4	PFBA	19	J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
375-73-5	PFBS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
335-76-2	PFDA	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
307-55-1	PFDoA	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
335-77-3	PFDS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
375-85-9	PFHpA	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
375-92-8	PFHpS	39	U, J, QC-1	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
307-24-4	PFHxA	31	J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
355-46-4	PFHxS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
375-95-1	PFNA	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
68259-12-1	PFNS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
335-67-1	PFOA	31	J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
1763-23-1	PFOS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
2706-93-3	PFPeA	37	J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
2706-91-4	PFPeS	39	U	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
72629-94-8	PFTrDA	39	U, J, QC-1, QC-5	ng/L	39	1/30/18 8:12	2/07/18 5:32	ASB 100S
2058-94-8	PFUdA	78	U	ng/L	78	1/30/18 8:12	2/07/18 5:32	ASB 100S

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: B3670000
Station ID: B3670000
Lab ID: E180205-11
Matrix: Water
Date Collected: 1/23/18 13:10

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 5:54	ASB 100S
39108-34-4	8:2FTS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
754-91-6	FOSA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
13252-13-6	HFPO-DA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 5:54	ASB 100S
375-22-4	PFBA	55	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
375-73-5	PFBS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
335-76-2	PFDA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
307-55-1	PFDoA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
335-77-3	PFDS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
375-85-9	PFHpA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
375-92-8	PFHpS	39 UJ, QL-1	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
307-24-4	PFHxA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
355-46-4	PFHxS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
375-95-1	PFNA	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
68259-12-1	PFNS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
335-67-1	PFOA	28 J, Q-2	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
1763-23-1	PFOS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
2706-93-3	PFPeA	45	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
2706-91-4	PFPeS	39 U	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
72629-94-8	PFTrDA	39 UJ, QL-1, QC-5	ng/L	39	1/30/18 8:12	2/07/18 5:54	ASB 100S
2058-94-8	PFUdA	78 U	ng/L	78	1/30/18 8:12	2/07/18 5:54	ASB 100S

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics

Project: 18-0145, Chemours

Sample ID: B2100000 **Lab ID:** E180205-12

Station ID: B2100000 **Matrix:** Water

Date Collected: 1/31/18 13:45

CAS Number	Analyte	Results Qualifiers	Units	MRL	Prepared	Analyzed	Method
757124-72-4	4:2FTS	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
27619-97-2	6:2FTS	120 U	ng/L	120	1/30/18 8:12	2/07/18 6:17	ASB 100S
39108-34-4	8:2FTS	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
754-91-6	FOSA	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
13252-13-6	HFPO-DA	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
2355-31-9	N-MeFOSAA	120 U	ng/L	120	1/30/18 8:12	2/07/18 6:17	ASB 100S
375-22-4	PFBA	54	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
375-73-5	PFBS	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
335-76-2	PFDA	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
307-55-1	PFDoA	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
335-77-3	PFDS	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
375-85-9	PFHpA	100	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
375-92-8	PFHpS	26 J, Q2, QL-1	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
307-24-4	PFHxA	170	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
355-46-4	PFHxS	71	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
375-95-1	PFNA	16 J, Q2	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
68259-12-1	PFNS	41 U	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
335-67-1	PFOA	90	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
1763-23-1	PFOS	590	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
2706-93-3	PFPeA	130	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
2706-91-4	PFPeS	15 J, Q2	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
72629-94-8	PFTrDA	41 U, J, QC-1, QC-5	ng/L	41	1/30/18 8:12	2/07/18 6:17	ASB 100S
2058-94-8	PFUdA	83 U	ng/L	83	1/30/18 8:12	2/07/18 6:17	ASB 100S

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1801026 - SPFC										
Blank (1801026-BLK1)				Prepared: 01/30/18 Analyzed: 02/06/18						
ASB 100S										
4:2FTS	U	40	ng/L							U
6:2FTS	U	120	"							U
8:2FTS	U	40	"							QS-3, U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
NMeFOSAA	U	120	"							U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U
PFHpS	U	40	"							QL-1, U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	40	"							QC-1, QC-5, U
PFUdA	U	80	"							QS-3, U
Blank (1801026-BLK2)				Prepared: 01/30/18 Analyzed: 02/07/18						
ASB 100S										
4:2FTS	U	40	ng/L							U
6:2FTS	U	120	"							U
8:2FTS	U	40	"							U
FOSA	U	40	"							U
HFPO-DA	U	40	"							U
NMeFOSAA	U	120	"							U
PFBA	U	40	"							U
PFBS	U	40	"							U
PFDA	U	40	"							U
PFDoA	U	40	"							U
PFDS	U	40	"							U
PFHpA	U	40	"							U

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control

US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1801026 - SPFC										
Blank (1801026-BLK2)				Prepared: 01/30/18 Analyzed: 02/07/18						
PFHpS	U	40	ng/L							QL-1, U
PFHxA	U	40	"							U
PFHxS	U	40	"							U
PFNA	U	40	"							U
PFNS	U	40	"							U
PFOA	U	40	"							U
PFOS	U	40	"							U
PFPeA	U	40	"							U
PFPeS	U	40	"							U
PFTrDA	U	40	"							QC-1, QC-5, U
PFUdA	U	80	"							U
LCS (1801026-BS1)				Prepared: 01/30/18 Analyzed: 02/07/18						
ASB 100S										
4:2FTS	323	40	ng/L	371.77		86.9	70-130			
6:2FTS	346	120	"	377.73		91.5	70-130			
8:2FTS	276	40	"	381.71		72.3	70-130			
FOSA	389	40	"	397.61		97.7	70-130			
HFPO-DA	296	40	"	397.61		74.5	70-130			
NMeFOSAA	482	120	"	397.61		121	70-130			
PFBA	333	40	"	397.61		83.8	70-130			
PFBS	312	40	"	351.89		88.6	70-130			
PFDA	355	40	"	397.61		89.4	70-130			
PFDoA	344	40	"	397.61		86.5	70-130			
PFDS	384	40	"	383.70		100	70-130			
PFHpA	344	40	"	397.61		86.5	70-130			
PFHpS	257	40	"	377.73		68.1	70-130			QL-1
PFHxA	359	40	"	397.61		90.4	70-130			
PFHxS	310	40	"	362.62		85.5	70-130			
PFNA	325	40	"	397.61		81.7	70-130			
PFNS	314	40	"	381.71		82.4	70-130			
PFOA	351	40	"	397.61		88.3	70-130			
PFOS	305	40	"	367.99		82.9	70-130			
PFPeA	335	40	"	397.61		84.3	70-130			
PFPeS	317	40	"	373.76		84.7	70-130			
PFTrDA	465	40	"	397.61		117	70-130			QC-1, QC-5
PFUdA	362	80	"	397.61		91.0	70-130			

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Semi Volatile Organics (SVOA) - Quality Control
US-EPA, Region 4, SESD

Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Batch 1801026 - SPFC										
MRL Verification (1801026-PS1)				Prepared: 01/30/18 Analyzed: 02/07/18						
ASB 100S										
4:2FTS	24.2	40	ng/L	37.177		65.2	50-150			MRL-2, Q2
6:2FTS	31.3	120	"	37.773		83.0	50-150			MRL-2, Q2
8:2FTS	32.8	40	"	38.171		85.9	50-150			MRL-2, Q2
FOSA	28.6	40	"	39.761		72.0	50-150			MRL-2, Q2
HFPO-DA	46.8	40	"	39.761		118	50-150			MRL-2
NMeFOSAA	62.6	120	"	39.761		158	50-150			MRL-2, Q2, QR-2
PFBA	52.7	40	"	39.761		132	50-150			MRL-2
PFBS	24.9	40	"	35.189		70.7	50-150			MRL-2, Q2
PFDA	32.2	40	"	39.761		81.0	50-150			MRL-2, Q2
PFDoA	50.7	40	"	39.761		128	50-150			MRL-2
PFDS	36.9	40	"	38.370		96.2	50-150			MRL-2, Q2
PFHpA	33.9	40	"	39.761		85.3	50-150			MRL-2, Q2
PFHpS	27.7	40	"	37.773		73.3	50-150			MRL-2, Q2
PFHxA	53.0	40	"	39.761		133	50-150			MRL-2
PFHxS	44.5	40	"	36.262		123	50-150			MRL-2
PFNA	44.9	40	"	39.761		113	50-150			MRL-2
PFNS	35.6	40	"	38.171		93.4	50-150			MRL-2, Q2
PFOA	51.7	40	"	39.761		130	50-150			MRL-2
PFOS	41.6	40	"	36.799		113	50-150			MRL-2
PFPeA	36.4	40	"	39.761		91.4	50-150			MRL-2, Q2
PFPeS	32.6	40	"	37.376		87.3	50-150			MRL-2, Q2
PFTrDA	46.4	40	"	39.761		117	50-150			MRL-2, QC-1, QC-5
PFUdA	64.8	80	"	39.761		163	50-150			MRL-2, Q2, QR-2

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Region 4 Science and Ecosystem Support Division
980 College Station Road, Athens, Georgia 30605-2700
DART Id: 18-0033
Project: 18-0145, Chemours - Reported by Diana Burdette

Notes and Definitions for QC Samples

U	The analyte was not detected at or above the reporting limit.
MRL-2	MRL verification for Non-Potable Water matrix
Q2	Result greater than MDL but less than MRL
QC-1	Analyte concentration low in continuing calibration verification standard
QC-5	Calibration check standard less than method control limits.
QL-1	Laboratory Control Spike Recovery less than method control limits
QR-2	MRL verification recovery greater than upper control limits.
QS-3	Surrogate recovery is lower than established control limits.

ED_002003J_00039298-00020

Laboratory ProjectNumber Project CLP_CaseNo R4DART_SiteCode R4DART_SiteName
LabSampleNumber SampleName Station CLP_MDNo CLP_DNo LabMatrix
ClientMatrix DateSampled DateReceived GeneralMethod AnalysisDescription
Prepared Analyzed Method Dissolved_Analysis TIC CASNumber
Analyte Result Qualifiers PrimaryQualifiers Units MRL

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 38 U
U ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 110 U
U ng/L 110

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 38 U
U ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 38 U U
ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 130
ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 110 U
U ng/L 110

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 27 J,Q-2 J,O
ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 38 U U
ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 38 U U
ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 38 U
U ng/L 38

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR

E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 38 U U
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 71
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 38 U,J,QL-
1 U,J,O ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 98
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 38 U
U ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 38 U U
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 38 U U
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 29 J,Q-2 J,O
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 23 J,Q-2 J,O
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 68
ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 38 U
U ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018

11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 38 U,J,QC-
1,QC-5 U,J,O ng/L 38
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-01 Chemours Outfall 002 002 Water Water 01/05/2018
11:10:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 77 U
U ng/L 77
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 140
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018

02/07/2018 ASB 100S 307-55-1 PFDoA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 48
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 39 U,J,QL-
1 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 91
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 30 J,Q-2 J,O
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 58
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 39 U

U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 39 U,J,QC-
1,QC-5 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-02 Chemours Outfall 002 002 Water Water 01/08/2018
01:54:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 78 U
U ng/L 78
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 757124-72-4 4:2FTS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 27619-97-2 6:2FTS
120 U U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 39108-34-4 8:2FTS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 754-91-6 FOSA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 13252-13-6 HFPO-
DA 35 J,Q-2 J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2355-31-9 N-
MeFOSAA 120 U U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-22-4 PFBA
27 J,Q-2 J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-73-5 PFBS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-76-2 PFDA
39 U U ng/L 39

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 307-55-1 PFDoA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-77-3 PFDS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-85-9 PFHpA
43 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-92-8 PFHpS
39 U,J,QL-1 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 307-24-4 PFHxA
69 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 355-46-4 PFHxS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-95-1 PFNA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 68259-12-1 PFNS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-67-1 PFOA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 1763-23-1 PFOS
23 J,Q-2 J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2706-93-3 PFPeA
49 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR

E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2706-91-4 PFPeS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 72629-94-8
PFTrDA 39 U,J,QC-1,QC-5 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-03 Chemours Raw Water Intake 014 Water Water
01/08/2018 01:13:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2058-94-8 PFUdA
78 U U ng/L 78
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 757124-72-4 4:2FTS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 27619-97-2 6:2FTS
120 U U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 39108-34-4 8:2FTS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 754-91-6 FOSA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 13252-13-6 HFPO-
DA 100 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2355-31-9 N-
MeFOSAA 120 U U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-22-4 PFBA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-73-5 PFBS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water

Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-76-2 PFDA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 307-55-1 PFDoA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-77-3 PFDS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-85-9 PFHpA
39 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-92-8 PFHpS
39 U,J,QL-1 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 307-24-4 PFHxA
53 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 355-46-4 PFHxS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-95-1 PFNA
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 68259-12-1 PFNS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-67-1 PFOA
27 J,Q-2 J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 1763-23-1 PFOS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics

PFAS 01/30/2018 02/07/2018 ASB 100S 2706-93-3 PFPeA
45 ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2706-91-4 PFPeS
39 U U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 72629-94-8
PFTrDA 39 U,J,QC-1,QC-5 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-04 Filtered Water @ Chemours Power House 020 Water
Water 01/08/2018 01:34:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2058-94-8 PFUdA
79 U U ng/L 79
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 757124-72-4 4:2FTS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 27619-97-2 6:2FTS
120 U U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 39108-34-4 8:2FTS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 754-91-6 FOSA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 13252-13-6 HFPO-
DA 40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2355-31-9 N-
MeFOSAA 120 U U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-22-4 PFBA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-73-5 PFBS

40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-76-2 PFDA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 307-55-1 PFDoA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-77-3 PFDS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-85-9 PFHpA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-92-8 PFHpS
40 U,J,QL-1 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 307-24-4 PFHxA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 355-46-4 PFHxS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 375-95-1 PFNA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 68259-12-1 PFNS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 335-67-1 PFOA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 1763-23-1 PFOS
40 U U ng/L 40

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2706-93-3 PFPeA
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2706-91-4 PFPeS
40 U U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 72629-94-8
PFTrDA 40 U,J,QC-1,QC-5 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-05 Trip Blank Water Trip Blank - Water
01/11/2018 12:00:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics
PFAS 01/30/2018 02/07/2018 ASB 100S 2058-94-8 PFUdA
80 U U ng/L 80
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR

E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 39 U,J,QL-
1 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018

10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 39 U,J,QC-
1,QC-5 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-06 Field Blank Water Field Blank 01/03/2018
10:35:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 78 U
U ng/L 78
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018

02/07/2018 ASB 100S 375-22-4 PFBA 59
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 20 J,Q-2 J,O
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 210
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 40 U,J,QL-
1 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 260
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 56
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 17 J,Q-2 J,O
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 62

ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 94
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 150
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 9.5 J,Q-2
J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 40 U,J,QC-
1,QC-5 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-07 CPF055C CPF055C Water Water 01/03/2018
11:20:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 80 U
U ng/L 80
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 26 J,Q-2 J,O
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 26 J,Q-2
J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 40 U,J,QL-
1 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR

E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 32 J,Q-2 J,O
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 26 J,Q-2
J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 40 U,J,QC-
1,QC-5 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-08 CPF087G CPF087G Water Water 01/03/2018
10:50:00 AM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 79 U
U ng/L 79
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018

12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 18 J,Q-2 J,O
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 40 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
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02/07/2018 ASB 100S 335-77-3 PFDS 40 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 40 U,J,QL-
1 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
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02/07/2018 ASB 100S 355-46-4 PFHxS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
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02/07/2018 ASB 100S 68259-12-1 PFNS 40 U U
ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 40 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
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12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 22 J,Q-2
J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
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02/07/2018 ASB 100S 2706-91-4 PFPeS 40 U
U ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
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02/07/2018 ASB 100S 72629-94-8 PFTrDA 40 U,J,QC-
1,QC-5 U,J,O ng/L 40
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-09 B3900000 B3900000 Water Water 01/03/2018
12:40:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 81 U
U ng/L 81
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
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02/07/2018 ASB 100S 757124-72-4 4:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
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02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
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02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 19 J,Q-2 J,O
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 39 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
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02/07/2018 ASB 100S 335-76-2 PFDA 39 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
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02/07/2018 ASB 100S 307-55-1 PFDoA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 39 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 39 U,J,QL-
1 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 31 J,Q-2
J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 39 U U
ng/L 39

US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 31 J,Q-2 J,O
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 39 U U
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US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
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01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 37 J,Q-2
J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 39 U,J,QC-
1,QC-5 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-10 B3040000 B3040000 Water Water 01/03/2018
01:00:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 78 U
U ng/L 78
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 754-91-6 FOSA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR

E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 55
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 39 U,J,QL-
1 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018

01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 28 J,Q-2 J,O
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 39 U U
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 45
ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 39 U
U ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 39 U,J,QC-
1,QC-5 U,J,O ng/L 39
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-11 B3670000 B3670000 Water Water 01/03/2018
01:10:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 78 U
U ng/L 78
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 757124-72-4 4:2FTS 41 U
U ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 27619-97-2 6:2FTS 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 39108-34-4 8:2FTS 41 U
U ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018

02/07/2018 ASB 100S 754-91-6 FOSA 41 U U
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
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01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 13252-13-6 HFPO-DA 41 U
U ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2355-31-9 N-MeFOSAA 120 U
U ng/L 120
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-22-4 PFBA 54
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-73-5 PFBS 41 U U
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-76-2 PFDA 41 U U
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-55-1 PFDoA 41 U
U ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-77-3 PFDS 41 U U
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-85-9 PFHpA 100
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-92-8 PFHpS 26 J,Q-
2,QL-1 J,O ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 307-24-4 PFHxA 170
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 355-46-4 PFHxS 71

ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 375-95-1 PFNA 16 J,Q-2 J,O
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 68259-12-1 PFNS 41 U U
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 335-67-1 PFOA 90
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 1763-23-1 PFOS 590
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-93-3 PFPeA 130
ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2706-91-4 PFPeS 15 J,Q-2
J,O ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 72629-94-8 PFTrDA 41 U,J,QC-
1,QC-5 U,J,O ng/L 41
US-EPA, Region 4, SESD 18-0145 Chemours - FWELLBOR
E180205-12 B2100000 B2100000 Water Water 01/03/2018
01:45:00 PM 01/12/2018 10:30:00 AM Semi Volatile Organics PFAS 01/30/2018
02/07/2018 ASB 100S 2058-94-8 PFUdA 83 U
U ng/L 83

#SYS_SAMPLE_CODE SAMPLE_NAME SAMPLE_MATRIX_CODE
SAMPLE_TYPE_CODE SAMPLE_SOURCE PARENT_SAMPLE_CODE
SAMPLE_DELIVERY_GROUP SAMPLE_DATE SAMPLE_TIME
SYS_LOC_CODE START_DEPTH END_DEPTH DEPTH_UNIT
CHAIN_OF_CUSTODY SENT_TO_LAB_DATE SAMPLE_RECEIPT_DATE
SAMPLER SAMPLING_COMPANY_CODE SAMPLING_REASON
SAMPLING_TECHNIQUE TASK_CODE TASK_TYPE COLLECTION_QUARTER
COMPOSITE_YN COMPOSITE_DESC SAMPLE_CLASS CUSTOM_FIELD_1
CUSTOM_FIELD_2 CUSTOM_FIELD_3 COMMENT SAMPLE_RECEIPT_TIME
R4-E180205-01 Chemours Outfall 002 N Field 18-0145
01/05/2018 11:10 002 01/12/2018
Brantley, Mark PL-SESD 18-0033 N
10:30
R4-E180205-02 Chemours Outfall 002 N Field 18-0145
01/08/2018 13:54 002 01/12/2018
Brantley, Mark PL-SESD 18-0033 N
10:30
R4-E180205-03 Chemours Raw Water Intake N Field 18-0145
01/08/2018 13:13 014 01/12/2018
Brantley, Mark PL-SESD 18-0033 N
10:30
R4-E180205-04 Filtered Water @ Chemours Power House N Field
18-0145 01/08/2018 13:34 020
01/12/2018 Brantley, Mark PL-SESD 18-0033
N 10:30
R4-E180205-05 Trip Blank TW TW Field 18-0145 01/11/2018
00:00 01/12/2018 Brantley, Mark PL-
SESD 18-0033 N
10:30
R4-E180205-06 Field Blank FL FL Field 18-0145 01/03/2018
10:35 01/12/2018 Morris, Eric PL-
SESD 18-0033 N
10:30
R4-E180205-07 CPF055C N Field 18-0145 01/03/2018
11:20 CPF055C 01/12/2018 Morris, Eric
PL-SESD 18-0033 N
10:30
R4-E180205-08 CPF087G N Field 18-0145 01/03/2018
10:50 CPF087G 01/12/2018 Morris, Eric
PL-SESD 18-0033 N
10:30
R4-E180205-09 B3900000 N Field 18-0145 01/03/2018
12:40 B3900000 01/12/2018 Morris, Eric
PL-SESD 18-0033 N
10:30
R4-E180205-10 B3040000 N Field 18-0145 01/03/2018
13:00 B3040000 01/12/2018 Morris, Eric
PL-SESD 18-0033 N
10:30
R4-E180205-11 B3670000 N Field 18-0145 01/03/2018
13:10 B3670000 01/12/2018 Morris, Eric
PL-SESD 18-0033 N
10:30
R4-E180205-12 B2100000 N Field 18-0145 01/03/2018
13:45 B2100000 01/12/2018 Morris, Eric
PL-SESD 18-0033 N

10:30

#SYS_SAMPLE_CODE LAB_ANL_METHOD_NAME ANALYSIS_DATE
ANALYSIS_TIME TOTAL_OR_DISSOLVED COLUMN_NUMBER TEST_TYPE
CAS_RN CHEMICAL_NAME RESULT_VALUE RESULT_ERROR_DELTA
RESULT_TYPE_CODE REPORTABLE_RESULT DETECT_FLAG
LAB_QUALIFIERS VALIDATED_QUALIFIERS INTERPRETED_QUALIFIERS
ORGANIC_YN METHOD_DETECTION_LIMIT MINIMUM_REPORTING_LIMIT
QUANTITATION_LIMIT RESULT_UNIT MINIMUM_REPORTING_LIMIT_UNIT
TIC_RETENTION_TIME RESULT_COMMENT

R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 13252-
13-6 HFPO-DA 130 TRG Yes Y
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 1763-
23-1 PFOS 23 TRG Yes Y J,Q-2 J,O 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 2058-
94-8 PFUdA 77 TRG Yes N U U
77 77 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 2355-
31-9 N-MeFOSAA 110 TRG Yes N U U
110 110 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 2706-
91-4 PFPeS 38 TRG Yes N U U
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 2706-
93-3 PFPeA 68 TRG Yes Y
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 27619-
97-2 6:2FTS 110 TRG Yes N U U
110 110 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 307-24-
4 PFHxA 98 TRG Yes Y
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 307-55-
1 PFDoA 38 TRG Yes N U U
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 335-67-
1 PFOA 29 TRG Yes Y J,Q-2 J,O 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 335-76-
2 PFDA 38 TRG Yes N U U 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 335-77-
3 PFDS 38 TRG Yes N U U 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 355-46-
4 PFHxS 38 TRG Yes N U U
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 375-22-
4 PFBA 27 TRG Yes Y J,Q-2 J,O 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 375-73-
5 PFBS 38 TRG Yes N U U 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 375-85-
9 PFHpA 71 TRG Yes Y
38 38 ng/L ng/L

R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 375-92-
8 PFHpS 38 TRG Yes N U,J,QL-1 U,J,O
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 375-95-
1 PFNA 38 TRG Yes N U U 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 39108-
34-4 8:2FTS 38 TRG Yes N U U
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 68259-
12-1 PFNS 38 TRG Yes N U U 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 72629-
94-8 PFTrDA 38 TRG Yes N U,J,QC-1,QC-5 U,J,O
38 38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 754-91-
6 FOSA 38 TRG Yes N U U 38
38 ng/L ng/L
R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N 757124-
72-4 4:2FTS 38 TRG Yes N U U
38 38 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 13252-
13-6 HFPO-DA 140 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 1763-
23-1 PFOS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 2058-
94-8 PFUdA 78 TRG Yes N U U
78 78 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 2706-
91-4 PFPeS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 2706-
93-3 PFPeA 58 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 307-24-
4 PFHxA 91 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 307-55-
1 PFDoA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 335-67-
1 PFOA 30 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 335-76-
2 PFDA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 335-77-
3 PFDS 39 TRG Yes N U U 39

39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 355-46-
4 PFHxS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 375-22-
4 PFBA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 375-73-
5 PFBS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 375-85-
9 PFHpA 48 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 375-92-
8 PFHpS 39 TRG Yes N U,J,QL-1 U,J,O
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 375-95-
1 PFNA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 39108-
34-4 8:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 68259-
12-1 PFNS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 72629-
94-8 PFTrDA 39 TRG Yes N U,J,QC-1,QC-5 U,J,O
39 39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 754-91-
6 FOSA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N 757124-
72-4 4:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 13252-
13-6 HFPO-DA 35 TRG Yes Y J,Q-2 J,O
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 1763-
23-1 PFOS 23 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 2058-
94-8 PFUdA 78 TRG Yes N U U
78 78 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 2706-
91-4 PFPeS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 2706-
93-3 PFPeA 49 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 307-24-

4 PFHxA 69 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 307-55-
1 PFDoA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 335-67-
1 PFOA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 335-76-
2 PFDA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 335-77-
3 PFDS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 355-46-
4 PFHxS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 375-22-
4 PFBA 27 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 375-73-
5 PFBS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 375-85-
9 PFHpA 43 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 375-92-
8 PFHpS 39 TRG Yes N U,J,QL-1 U,J,O
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 375-95-
1 PFNA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 39108-
34-4 8:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 68259-
12-1 PFNS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 72629-
94-8 PFTrDA 39 TRG Yes N U,J,QC-1,QC-5 U,J,O
39 39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 754-91-
6 FOSA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N 757124-
72-4 4:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 13252-
13-6 HFPO-DA 100 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 1763-
23-1 PFOS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 2058-
94-8 PFUdA 79 TRG Yes N U U
79 79 ng/L ng/L

R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 2706-
91-4 PFPeS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 2706-
93-3 PFPeA 45 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 307-24-
4 PFHxA 53 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 307-55-
1 PFDoA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 335-67-
1 PFOA 27 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 335-76-
2 PFDA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 335-77-
3 PFDS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 355-46-
4 PFHxS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 375-22-
4 PFBA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 375-73-
5 PFBS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 375-85-
9 PFHpA 39 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 375-92-
8 PFHpS 39 TRG Yes N U,J,QL-1 U,J,O
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 375-95-
1 PFNA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 39108-
34-4 8:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 68259-
12-1 PFNS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 72629-
94-8 PFTrDA 39 TRG Yes N U,J,QC-1,QC-5 U,J,O
39 39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 754-91-
6 FOSA 39 TRG Yes N U U 39

39 ng/L ng/L
R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N 757124-
72-4 4:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 13252-
13-6 HFPO-DA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 2058-
94-8 PFUdA 80 TRG Yes N U U
80 80 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 2706-
93-3 PFPeA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 375-22-
4 PFBA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 375-92-
8 PFHpS 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 375-95-

1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 72629-
94-8 PFTrDA 40 TRG Yes N U,J,QC-1,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 13252-
13-6 HFPO-DA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 1763-
23-1 PFOS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 2058-
94-8 PFUdA 78 TRG Yes N U U
78 78 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 2706-
91-4 PFPeS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 2706-
93-3 PFPeA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 307-24-
4 PFHxA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 307-55-
1 PFDoA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 335-67-
1 PFOA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 335-76-
2 PFDA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 335-77-
3 PFDS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 355-46-
4 PFHxS 39 TRG Yes N U U
39 39 ng/L ng/L

R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 375-22-
4 PFBA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 375-73-
5 PFBS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 375-85-
9 PFHpA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 375-92-
8 PFHpS 39 TRG Yes N U,J,QL-1 U,J,O
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 375-95-
1 PFNA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 39108-
34-4 8:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 68259-
12-1 PFNS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 72629-
94-8 PFTrDA 39 TRG Yes N U,J,QC-1,QC-5 U,J,O
39 39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 754-91-
6 FOSA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N 757124-
72-4 4:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 13252-
13-6 HFPO-DA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 1763-
23-1 PFOS 94 TRG Yes Y 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 2058-
94-8 PFUdA 80 TRG Yes N U U
80 80 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 2706-
91-4 PFPeS 9.5 TRG Yes Y J,Q-2 J,O
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 2706-
93-3 PFPeA 150 TRG Yes Y
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 307-24-
4 PFHxA 260 TRG Yes Y
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 307-55-
1 PFDoA 40 TRG Yes N U U

40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 335-67-
1 PFOA 62 TRG Yes Y 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 335-76-
2 PFDA 20 TRG Yes Y J,Q-2 J,O 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 355-46-
4 PFHxS 56 TRG Yes Y
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 375-22-
4 PFBA 59 TRG Yes Y 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 375-85-
9 PFHpA 210 TRG Yes Y
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 375-92-
8 PFHpS 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 375-95-
1 PFNA 17 TRG Yes Y J,Q-2 J,O 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 72629-
94-8 PFTrDA 40 TRG Yes N U,J,QC-1,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 13252-
13-6 HFPO-DA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 1763-
23-1 PFOS 32 TRG Yes Y J,Q-2 J,O 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 2058-
94-8 PFUdA 79 TRG Yes N U U
79 79 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 2706-

91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 2706-
93-3 PFPeA 26 TRG Yes Y J,Q-2 J,O
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 375-22-
4 PFBA 26 TRG Yes Y J,Q-2 J,O 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 375-85-
9 PFHpA 26 TRG Yes Y J,Q-2 J,O
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 375-92-
8 PFHpS 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 39108-
34-4 8:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 72629-
94-8 PFTrDA 40 TRG Yes N U,J,QC-1,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L

R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 13252-
13-6 HFPO-DA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 1763-
23-1 PFOS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 2058-
94-8 PFUdA 81 TRG Yes N U U
81 81 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 2706-
91-4 PFPeS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 2706-
93-3 PFPeA 22 TRG Yes Y J,Q-2 J,O
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 307-24-
4 PFHxA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 307-55-
1 PFDoA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 335-67-
1 PFOA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 335-76-
2 PFDA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 335-77-
3 PFDS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 355-46-
4 PFHxS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 375-22-
4 PFBA 18 TRG Yes Y J,Q-2 J,O 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 375-73-
5 PFBS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 375-85-
9 PFHpA 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 375-92-
8 PFHpS 40 TRG Yes N U,J,QL-1 U,J,O
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 375-95-
1 PFNA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 39108-
34-4 8:2FTS 40 TRG Yes N U U

40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 68259-
12-1 PFNS 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 72629-
94-8 PFTrDA 40 TRG Yes N U,J,QC-1,QC-5 U,J,O
40 40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 754-91-
6 FOSA 40 TRG Yes N U U 40
40 ng/L ng/L
R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N 757124-
72-4 4:2FTS 40 TRG Yes N U U
40 40 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 13252-
13-6 HFPO-DA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 1763-
23-1 PFOS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 2058-
94-8 PFUdA 78 TRG Yes N U U
78 78 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 2706-
91-4 PFPeS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 2706-
93-3 PFPeA 37 TRG Yes Y J,Q-2 J,O
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 307-24-
4 PFHxA 31 TRG Yes Y J,Q-2 J,O
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 307-55-
1 PFDoA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 335-67-
1 PFOA 31 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 335-76-
2 PFDA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 335-77-
3 PFDS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 355-46-
4 PFHxS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 375-22-
4 PFBA 19 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 375-73-

5 PFBS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 375-85-
9 PFHpA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 375-92-
8 PFHpS 39 TRG Yes N U,J,QL-1 U,J,O
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 375-95-
1 PFNA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 39108-
34-4 8:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 68259-
12-1 PFNS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 72629-
94-8 PFTrDA 39 TRG Yes N U,J,QC-1,QC-5 U,J,O
39 39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 754-91-
6 FOSA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N 757124-
72-4 4:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 13252-
13-6 HFPO-DA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 1763-
23-1 PFOS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 2058-
94-8 PFUdA 78 TRG Yes N U U
78 78 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 2706-
91-4 PFPeS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 2706-
93-3 PFPeA 45 TRG Yes Y
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 307-24-
4 PFHxA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 307-55-
1 PFDoA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 335-67-
1 PFOA 28 TRG Yes Y J,Q-2 J,O 39
39 ng/L ng/L

R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 335-76-
2 PFDA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 335-77-
3 PFDS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 355-46-
4 PFHxS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 375-22-
4 PFBA 55 TRG Yes Y 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 375-73-
5 PFBS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 375-85-
9 PFHpA 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 375-92-
8 PFHpS 39 TRG Yes N U,J,QL-1 U,J,O
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 375-95-
1 PFNA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 39108-
34-4 8:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 68259-
12-1 PFNS 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 72629-
94-8 PFTrDA 39 TRG Yes N U,J,QC-1,QC-5 U,J,O
39 39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 754-91-
6 FOSA 39 TRG Yes N U U 39
39 ng/L ng/L
R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N 757124-
72-4 4:2FTS 39 TRG Yes N U U
39 39 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 13252-
13-6 HFPO-DA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 1763-
23-1 PFOS 590 TRG Yes Y 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 2058-
94-8 PFUdA 83 TRG Yes N U U
83 83 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 2355-
31-9 N-MeFOSAA 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 2706-
91-4 PFPeS 15 TRG Yes Y J,Q-2 J,O
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 2706-
93-3 PFPeA 130 TRG Yes Y

41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 27619-
97-2 6:2FTS 120 TRG Yes N U U
120 120 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 307-24-
4 PFHxA 170 TRG Yes Y
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 307-55-
1 PFDoA 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 335-67-
1 PFOA 90 TRG Yes Y 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 335-76-
2 PFDA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 335-77-
3 PFDS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 355-46-
4 PFHxS 71 TRG Yes Y
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 375-22-
4 PFBA 54 TRG Yes Y 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 375-73-
5 PFBS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 375-85-
9 PFHpA 100 TRG Yes Y
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 375-92-
8 PFHpS 26 TRG Yes Y J,Q-2,QL-1 J,O
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 375-95-
1 PFNA 16 TRG Yes Y J,Q-2 J,O 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 39108-
34-4 8:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 68259-
12-1 PFNS 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 72629-
94-8 PFTrDA 41 TRG Yes N U,J,QC-1,QC-5 U,J,O
41 41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 754-91-
6 FOSA 41 TRG Yes N U U 41
41 ng/L ng/L
R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N 757124-
72-4 4:2FTS 41 TRG Yes N U U
41 41 ng/L ng/L

#SYS_SAMPLE_CODE LAB_ANL_METHOD_NAME ANALYSIS_DATE
ANALYSIS_TIME TOTAL_OR_DISSOLVED COLUMN_NUMBER TEST_TYPE
LAB_MATRIX_CODE ANALYSIS_LOCATION BASIS CONTAINER_ID
DILUTION_FACTOR LAB_PREP_METHOD_NAME PREP_DATE PREP_TIME
LEACHATE_METHOD LEACHATE_DATE LEACHATE_TIME LAB_NAME_CODE
QC_LEVEL LAB_SAMPLE_ID PERCENT_MOISTURE
SUBSAMPLE_AMOUNT SUBSAMPLE_AMOUNT_UNIT ANALYST_NAME
INSTRUMENT_ID COMMENT PRESERVATIVE FINAL_VOLUME
FINAL_VOLUME_UNIT

R4-E180205-01 SVOA:ASB 100S 02/07/2018 02:32 N Water
LB NA R4-SESD
R4E E180205-01

R4-E180205-02 SVOA:ASB 100S 02/07/2018 02:55 N Water
LB NA R4-SESD
R4E E180205-02

R4-E180205-03 SVOA:ASB 100S 02/07/2018 03:17 N Water
LB NA R4-SESD
R4E E180205-03

R4-E180205-04 SVOA:ASB 100S 02/07/2018 03:40 N Water
LB NA R4-SESD
R4E E180205-04

R4-E180205-05 SVOA:ASB 100S 02/07/2018 01:25 N Water
LB NA R4-SESD
R4E E180205-05

R4-E180205-06 SVOA:ASB 100S 02/07/2018 04:02 N Water
LB NA R4-SESD
R4E E180205-06

R4-E180205-07 SVOA:ASB 100S 02/07/2018 04:24 N Water
LB NA R4-SESD
R4E E180205-07

R4-E180205-08 SVOA:ASB 100S 02/07/2018 04:47 N Water
LB NA R4-SESD
R4E E180205-08

R4-E180205-09 SVOA:ASB 100S 02/07/2018 05:09 N Water
LB NA R4-SESD
R4E E180205-09

R4-E180205-10 SVOA:ASB 100S 02/07/2018 05:32 N Water
LB NA R4-SESD
R4E E180205-10

R4-E180205-11 SVOA:ASB 100S 02/07/2018 05:54 N Water
LB NA R4-SESD
R4E E180205-11

R4-E180205-12 SVOA:ASB 100S 02/07/2018 06:17 N Water
LB NA R4-SESD
R4E E180205-12

To: Wellborn, Floyd[Wellborn.Floyd@epa.gov]
Cc: R4SampleCustody[R4SampleCustody@epa.gov]; Monell, Carol[Monell.Carol@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Jones, Aaryn[Jones.Aaryn@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Toney, Anthony[Toney.Anthony@epa.gov]; Bookman, Robert[Bookman.Robert@epa.gov]; George, Verne[George.Verne@epa.gov]; Walker, Mary[walker.mary@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Hall, Renea[Hall.Renea@epa.gov]; Davis, Molly[Davis.Molly@epa.gov]; Moyer, Adam[moyer.adam@epa.gov]; Doa, Maria[Doa.Maria@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]; Wellborn, Floyd[Wellborn.Floyd@epa.gov]; France, Danny[France.Danny@epa.gov]
From: R4SampleCustody@epa.gov
Sent: Sat 2/10/2018 3:47:45 AM
Subject: R4 LIMS Sample Log for Project 18-0198, WorkOrder E180608
E180608 WKO 02 09 18 0930.pdf
E180608_COC_01.pdf
E180608_COC_02.pdf

Attached is a detailed work order report, in Adobe Acrobat PDF format, containing information about samples and their scheduled analyses for the following Project:

Project Number: 18-0198
Project Name: Chemours - storm water
City: Wilmington **State:** NC

Samples in the following categories have been submitted for analysis:
Semi Volatile Organics (SVOA)

Please review the attached report and notify our Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov if you have any questions, concerns, or if you notice any errors.

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WORK ORDER

Printed: 2/9/2018 9:30:

E180608

US-EPA, Region 4, SESD

Client: Drinking Water (201B53, 000B53) **Project Number** 18-0198
Project Chemours - stormwater - FWELLBOR **Acct #/ Location:** 000B53 Wilmington NC

Project Leader Wellborn, Floyd **Date Due:** 03/15/18 (35 day TAT)
Received By: Beall, Mike Date Received: 02/08/18 14:15
Logged In By: Beall, Mike Date Logged In: 02/09/18 09:00

Samples Received at 1.6°C Placed in Cooler after Ice Removed: YES ART. Project ID 18-0033
Custody Seals: Sample Containers Intact: Yes Program/Activity:
Custody Seals Intact: Samples &COC Match: Site/Waterbody : ()
COC Present: COC/Labels Agree: Yes
Ice in Cooler: Yes All Analyses on COC: Yes

Analysis	Due	TAT	Expires	Comments
E180608-01 012818-03 / 012818 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	
E180608-02 012818-04 / 012818 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	
E180608-03 012818-05 / 012818 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	
E180608-04 012818-07 / 012818 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	
E180608-05 012818-09 / 012818 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	
E180608-06 012818-10 / 012818 [Water / Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	
E180608-07 Trip Blanks / [Water / Trip Blank - Water] Sampled 01/28/18 00:00				
A = 15 mL Plastic *B = 15 mL Plastic* *C = 15 mL Plastic* *D = 15 mL Plastic*				
PFAS-Full List	03/15/18 00:00	35	02/25/18 00:00	

ED_002003J_00039306-00001

E180608

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

E180608
18-0198
CHEMOURS - STORM WATER

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted: 2-7-18
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-01	00450A	012818-03	1-28-18		Mike P	WATER	GenX PFAS
-01	00451-B	-03					GenX
-02	00452A	-04					GenX
-02	00453B	-04					GenX
-03	00454A	-05					GenX
-03	00455B	-05					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
KAREN CLEVENGER	Karen Clevenger	2-7-18	4:00	RM BEALL	RMBeall	2-8-18	1415

* TRIP BLANKS REC'D BUT NOT ON COC 2/9/18 RMBeall Logged in as -07

E180608

North Carolina Department of Environmental Quality
Division of Air Quality, Ambient Monitoring Section
Sample Chain of Custody Form

E180608
18-0198
CHEMOURS - STORM WATER

Investigation Name: Emerging Contaminants in Rainwater	Phone No: 919-733-9777
Agency: NC Division of Air Quality	Fax No: 919-715-0890
Address: 4403 Reedy Creek Rd.	Date Submitted: 2-7-18
City/County: Raleigh/Wake	Requested By
State: NC	Name (Print) Jim Bowyer
Zip Code: 27607	Signature

	Sample ID #	Sample Site	Date Sampled	Time Sampled	Collected By: (Print Name)	Sample Type (air, water, etc.)	Analysis Requested
-04	00456 A	012818-07	1-28-18		Mike D	WATER	GenX PFAS
-04	00457 B	07					GenX
-05	00458 A	09					GenX
-05	00459 B	09					GenX
-06	00460 A	10					GenX
-06	00461 B	10					GenX

Comments:

Relinquished By:				Relinquished To:			
Print Name	Signature	Date	Time	Print Name	Signature	Date	Time
Karen Clevenger	Karen Clevenger	2-7-18	4:00	RM BEALL	RMBeall	2-8-18	1415

E180608

Beall, Mike

From: Wellborn, Floyd
Sent: Thursday, February 08, 2018 5:38 PM
To: Beall, Mike
Cc: Sivertsen, Scott; Masters, Stacie; France, Danny
Subject: Re: trip blanks for Chemours Storm Water 18-0198

Yes. Please log in the trip blanks.

Floyd

Sent from my iPhone

On Feb 8, 2018, at 5:23 PM, Beall, Mike <Beall.Mike@epa.gov> wrote:

> Floyd,
> Looking over the latest Chemours shipment, they did not include the Trip Blanks on the COC but we received them. I think this happened the first time we got regular Chemours samples. I did not notice this while we were discussing the need for a signed COC to be sent to us overnight UPS, so I missed that option for them to correct.
>
> Can you authorize me to add the Trip Blanks samples to the work order? I will include your email in the file. I plan to log the samples Friday am.
> Thanks,
>
> Mike Beall
> Sample Custodian
> Analytical Services Branch
> Science and Ecosystem Support Division
> US EPA Region 4 - Athens, GA
> 706/355-8655
> Beall.Mike@epa.gov

E180608

Beall, Mike

From: Wellborn, Floyd
Sent: Thursday, February 08, 2018 12:58 PM
To: Sivertsen, Scott; Beall, Mike
Cc: Masters, Stacie
Subject: RE: Scan 001 (003).pdf

I verify that the samples are for the Chemours – storm water project (18-0198).

Floyd

From: Sivertsen, Scott
Sent: Thursday, February 08, 2018 10:26 AM
To: Beall, Mike <Beall.Mike@epa.gov>
Cc: Masters, Stacie <Masters.Stacie@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>
Subject: RE: Scan 001 (003).pdf

I believe these are to be designated Storm Water Chemours. Floyd can verify.

From: Beall, Mike
Sent: Thursday, February 08, 2018 10:07 AM
To: Sivertsen, Scott <Sivertsen.Scott@epa.gov>; karen.clevenger@ncdenr.gov
Cc: Masters, Stacie <Masters.Stacie@epa.gov>
Subject: RE: Scan 001 (003).pdf

Thanks Scott. Will this be under the normal Chemours or the new Storm Water Chemours?

An unsigned COC is somewhat problematic. If it was Superfund, we would need them to send a signed copy asap. Sometimes I use the email with the pdf attachment of the COC as a default signature. Perhaps Stacie can weigh in on this.

Thanks,

Mike Beall
Sample Custodian
Analytical Services Branch
Science and Ecosystem Support Division
US EPA Region 4 - Athens, GA
706/355-8655
Beall.Mike@epa.gov

From: Sivertsen, Scott
Sent: Thursday, February 08, 2018 9:45 AM
To: karen.clevenger@ncdenr.gov
Cc: Beall, Mike <Beall.Mike@epa.gov>
Subject: FW: Scan 001 (003).pdf

ED_002003J_00039308-00002

E180608

Beall, Mike

From: Beall, Mike
Sent: Thursday, February 08, 2018 10:06 AM
To: Sivertsen, Scott; karen.clevenger@ncdenr.gov
Cc: Masters, Stacie
Subject: RE: Scan 001 (003).pdf

Thanks Scott. Will this be under the normal Chemours or the new Storm Water Chemours?

An unsigned COC is somewhat problematic. If it was Superfund, we would need them to send a signed copy asap. Sometimes I use the email with the pdf attachment of the COC as a default signature.
Perhaps Stacie can weigh in on this.

Thanks,

Mike Beall
Sample Custodian
Analytical Services Branch
Science and Ecosystem Support Division
US EPA Region 4 - Athens, GA
706/355-8655
Beall.Mike@epa.gov

From: Sivertsen, Scott
Sent: Thursday, February 08, 2018 9:45 AM
To: karen.clevenger@ncdenr.gov
Cc: Beall, Mike <Beall.Mike@epa.gov>
Subject: FW: Scan 001 (003).pdf

Thanks Karen. I'm forwarding your message to Mike Beall, our sample custodian; Mike logs samples to our LIMS system and he may have questions or comments on the COC.

Scott

From: Clevenger, Karen [mailto:karen.clevenger@ncdenr.gov]
Sent: Wednesday, February 07, 2018 7:06 PM
To: Sivertsen, Scott <Sivertsen.Scott@epa.gov>
Subject: Scan 001 (003).pdf

Scott,
My name is Karen Clevenger and I work with Dr. Jim Bowyer he asked me to send you samples that he needs for you to analyze for GEN X and PFAS we used the tubes you supplied to us and followed your instructions on packaging them on ice shipping them UPS next day air in our rush to beat the UPS driver we forgot to send you COC forms I am attaching them to this e-mail I hope this is ok with you. If you have any questions please call me at 919-733-9777.

E180608

Karen E Clevenger
Environmental Technician
NC Department of Environmental Quality
DAQ, Laboratory Analysis Branch
4403 Reedy Creek Rd.
Raleigh, NC 27607
1622 Mail Service Center
Raleigh, NC 27699
Phone: 919-715-4484
Main Phone: 919-733-9777
www.ncair.org
Karen.Clevenger@ncdenr.gov

Nothing Compares

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

ED_002003J_00039308-00004

To: Wellborn, Floyd[Wellborn.Floyd@epa.gov]
Cc: R4SampleCustody[R4SampleCustody@epa.gov]; Monell, Carol[Monell.Carol@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Jones, Aaryn[Jones.Aaryn@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Toney, Anthony[Toney.Anthony@epa.gov]; Bookman, Robert[Bookman.Robert@epa.gov]; George, Verne[George.Verne@epa.gov]; Walker, Mary[walker.mary@epa.gov]; Allenbach, Becky[Allenbach.Becky@epa.gov]; Campbell-Dunbar, Shawneille[Campbell-Dunbar.Shawneille@epa.gov]; Hall, Renea[Hall.Renea@epa.gov]; Davis, Molly[Davis.Molly@epa.gov]; Moyer, Adam[moyer.adam@epa.gov]; Doa, Maria[Doa.Maria@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]; Wellborn, Floyd[Wellborn.Floyd@epa.gov]; France, Danny[France.Danny@epa.gov]
From: R4SampleCustody@epa.gov
Sent: Thur 2/8/2018 3:46:01 AM
Subject: R4 LIMS Sample Log for Project 18-0206, WorkOrder E180604
E180604 WKO 02 07 18 1559.pdf
E180604_COC_01.pdf
E180604_COC_02.pdf

Attached is a detailed work order report, in Adobe Acrobat PDF format, containing information about samples and their scheduled analyses for the following Project:

Project Number: 18-0206
Project Name: Chemours - stack testing
City: Wilmington **State:** NC

Samples in the following categories have been submitted for analysis:
Semi Volatile Organics (SVOA)

Please review the attached report and notify our Sample Control Coordinator by e-mail at R4SampleCustody@epa.gov if you have any questions, concerns, or if you notice any errors.

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WORK ORDER

Printed: 2/7/2018 3:59:28P

E180604

US-EPA, Region 4, SESD

Client:	Drinking Water (201H53, 000H53)	Project Number	18-0206
Project	Chemours - stack testing - FWELLBOR	Acct #/ Location:	000H53 Wilmington NC

Project Leader	Wilborn, Floyd	Date Due:	03/09/18 (35 day TAT)
Received By:	Beall, Mike	Date Received:	02/02/18 09:55
Logged In By:	Beall, Mike	Date Logged In:	02/07/18 13:30

Samples Received at 1.8°C	Placed in Cooler after Ice Removed: YES	DART Project ID 18-0033
Custody Seals: Yes	Sample Containers Intact: Yes	Program/Activity:
Custody Seals Intact: Yes	Samples &COC Match:	Site/Waterbody : ()()
COC Present: Yes	COC/Labels Agree:	
Ice in Cooler: Yes	All Analyses on COC: Yes	

Analysis	Due	TAT	Expires	Comments
E180604-01 140-10529-1 / 140-10529 [Water / Water] Sampled 01/22/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/19/18 00:00	
E180604-02 140-10529-2 / 140-10529 [Water / Water] Sampled 01/22/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/19/18 00:00	
E180604-03 140-10529-3 / 140-10529 [Water / Water] Sampled 01/22/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/19/18 00:00	
E180604-04 140-10529-4 / 140-10529 [Water / Water] Sampled 01/22/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/19/18 00:00	
E180604-05 140-10529-5 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-06 140-10529-6 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-07 140-10529-7 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-08 140-10529-8 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-09 140-10529-9 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-10 140-10529-10 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	

ED_002003J_00039310-00001

WORK ORDER

Printed: 2/7/2018 3:59:28P

E180604

US-EPA, Region 4, SESD

Client:	Drinking Water (201H53, 000H53)	Project Number	18-0206
Project	Chemours - stack testing - FWELLBOR	Acct #/ Location:	000H53 Wilmington NC

Analysis	Due	TAT	Expires	Comments
E180604-11 140-10529-11 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-12 140-10529-12 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-13 140-10529-14 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-14 140-10529-15 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-15 140-10529-16 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = No Container Received				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-16 140-10529-17 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-17 140-10529-18 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = No Container Received				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-18 140-10529-19 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-19 140-10529-20 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-20 140-10529-21 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-21 140-10529-22 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-22 140-10529-23 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 3L_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	

E180604

US-EPA, Region 4, SESD

Client: Drinking Water (201H53, 000H53)
Project Chemours - stack testing - FWELLBCR

Project Number 18-0206
Acct #/ Location: 000H53 Wilmington NC

Analysis	Due	TAT	Expires	Comments
E180604-23 140-10529-24 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-24 140-10529-25 / 140-10529 [Water / Water] Sampled 01/23/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/20/18 00:00	
E180604-25 MB 280-402754/1-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-26 LCS 280-402754/2-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-27 MB 280-402757/1-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-28 LCS 280-402938/2-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-29 MB 280-403009/1-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-30 LCS 280-403009/2-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-31 LCS 280-402757/2-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	
E180604-32 140-10553-1 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-33 140-10553-2 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-34 140-10553-3 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	

E180604

US-EPA, Region 4, SESD

Client: Drinking Water (201H53, 000H53)
Project: Chemours - stack testing - FWELLBCR

Project Number: 18-0206
Acct #/Location: 000H53 Wilmington NC

Analysis	Due	TAT	Expires	Comments
E180604-35 140-10553-4 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-36 140-10553-5 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-37 140-10553-6 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-38 140-10553-7 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-39 140-10553-8 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-40 140-10553-9 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-41 140-10553-10 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-42 140-10553-11 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-43 140-10553-12 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-44 140-10553-13 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-45 140-10553-14 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-46 140-10553-15 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = No Container Received				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	

WORK ORDER

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E180604

US-EPA, Region 4, SESD

Client: Drinking Water (201H53, 000H53)
Project Chemours - stack testing - FWELLBCR

Project Number 18-0206
Acct #/ Location: 000H53 Wilmington NC

Analysis	Due	TAT	Expires	Comments
E180604-47 140-10553-16 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-48 140-10553-17 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = No Container Received				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-49 140-10553-18 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-50 140-10553-19 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-51 140-10553-20 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-52 140-10553-21 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-53 140-10553-24 / 140-10553 [Water / Water] Sampled 01/24/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/21/18 00:00	
E180604-54 140-10553-25 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-55 140-10553-26 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-56 140-10553-27 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 250mL Plastic				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-57 140-10553-28 / 140-10553 [Water / Water] Sampled 01/25/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/22/18 00:00	
E180604-58 MB 280-402938/1-A/ [Water / Other Blank] Sampled 01/30/18 00:00				
A = 31_Other				
PFAS-Full List	03/09/18 00:00	35	02/27/18 00:00	

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 1 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10529-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
-01	Q-1601,1602 M0010 RUN 1 FH (140-10529-1)	1/22/18	Eastern	Extract	Air				1	✓ 140-10529-A-1
-02	Q-1603,1604,1606 M0010 RUN 1 BH (140-10529-2)	1/22/18	Eastern	Extract	Air				1	✓ 140-10529-A-2
-03	Q-1605 M0010 RUN 1 COND (140-10529-3)	1/22/18	Eastern	Extract	Air				1	✓ 140-10529-A-3 250mL
-04	Q-1607 M0010 RUN 1 XAD-2 (140-10529-4)	1/22/18	Eastern	Extract	Air				1	✓ 140-10529-A-4
-05	Q-1608,1609 M0010 RUN 2 FH (140-10529-5)	1/23/18	Eastern	Extract	Air				1	✓ -A-5
-06	Q-1610,1611,1613 M0010 RUN 2 BH (140-10529-6)	1/23/18	Eastern	Extract	Air				1	✓ -A-6
-07	Q-1612 M0010 RUN 2 COND (140-10529-7)	1/23/18	Eastern	Extract	Air				1	✓ -A-7 250mL
-08	Q-1614 M0010 RUN 2 XAD-2 (140-10529-8)	1/23/18	Eastern	Extract	Air				1	✓ -A-8
-09	Q-1615,1616 M0010 RUN 3 FH (140-10529-9)	1/23/18	Eastern	Extract	Air				1	✓ -A-9

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by: Date: Time: Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	2-1-18 16:12	TA Knx	KnBeal	2-2-18 0955	EPA SESD ASB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

ED_002003J_00039311-00001

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 2 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10529-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
-10	Q-1617,1618,1620 M0010 RUN 3 BH (140-10529-10)	1/23/18	Eastern	Extract	Air				1	✓ -A-10
-11	Q-1619 M0010 RUN 3 COND (140-10529-11)	1/23/18	Eastern	Extract	Air				1	✓ -A-11 250mL
-12	Q-1621 M0010 RUN 3 XAD-2 (140-10529-12)	1/23/18	Eastern	Extract	Air				1	✓ -A-12
-13	Q-1622,1623 M0010 RUN QC FH BT (140-10529-14)	1/23/18	Eastern	Extract	Air				1	✓ -A-14
-14	Q-1624,1625,1627 M0010 RUN QC BH BT (140-10529-15)	1/23/18	Eastern	Extract	Air				1	✓ -A-15
-15	Q-1626 M0010 RUN QC COND BT (140-10529-16)	1/23/18	Eastern	Extract	Air				1	
-16	Q-1628 M0010 RUN QC XAD-2 BT (140-10529-17)	1/23/18	Eastern	Extract	Air				1	✓ -A-17
-17	Q-1629 M0010 QC DI WATER RB (140-10529-18)	1/23/18	Eastern	Extract	Air				1	
-18	Q-1630 M0010 QC MEOH WITH 5% NH4OH RB (140-10529-19)	1/23/18	Eastern	Extract	Air				1	✓ -A-19

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* ____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 2-1-18 16:12	Company: TA KNX	Received by: [signature]	Date/Time: 2-2-18 0955	Company: EPA SESD ASB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 3 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10529-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
-19	Q-1631 M0010 QC XAD-2 RESIN TUBE RB (140-10529-20)	1/23/18	Eastern	Extract	Air				1	✓ -A-20
-20	Q-1632 M0010 QC METHANOL TB (140-10529-21)	1/23/18	Eastern	Extract	Air				1	✓ -A-21
-21	Q-1633 M0010 QC XAD-2 RESIN TUBE TB (140-10529-22)	1/23/18	Eastern	Extract	Air				1	✓ -A-22
-22	Q-1635 M0010 QC FH FILTER HOLDER & PROBE MEOH 5 5 NH4OH RINSE PB (140-10529-23)	1/23/18	Eastern	Extract	Air				1	✓ -A-23
-23	Q-1637 M0010 QC BH FILTER HOLDER & COIL COND MEOH 5% NH4OH RINSE PB (140-10529-24)	1/23/18	Eastern	Extract	Air				1	✓ -A-24
-24	Q-1639 M0010 QC IMP GLASSWARE MEOH / 5% NH4OH RINSE PB (140-10529-25)	1/23/18	Eastern	Extract	Air				1	✓ -A-25
-25	MB 280-402754/1-A (280-4935561)	1/30/18	Eastern	Extract	Air				1	Front Half Method Blank ✓
-26	LCS 280-402754/~~7~~2-A (280-4935561) CBA 2/1/18	1/30/18	Eastern	Extract	Air				1	Front Half Laboratory Control Sample ✓
-27	MB 280-402757/1-A (280-4935574)	1/30/18	Eastern	Extract	Air				1	Back Half Method Blank ✓

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 2-1-18 16:12	Company: TA KNX	Received by: Kim Beall	Date/Time: 2-2-18 0955	Company: EPA SESD ASB
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:
Relinquished by:	Date/Time:	Company:	Received by:	Date/Time:	Company:

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 4 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10553-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: PPA Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
-28	LCS 280-402938/2-A (280-4938841)	1/30/18	10:00 Eastern	Extract	Air				1	Back Half Laboratory Control Sample ✓
-29	MB 280-403009/1-A (280-4939863)	1/30/18	10:00 Eastern	Extract	Air				1	Back Half Method Blank Front CBA 2/1/18 ✓
-30	LCS 280-403009/2-A (280-4939864)	1/30/18	10:00 Eastern	Extract	Air				1	Back Half Laboratory Control Sample Front CBA 2/1/18 ✓
	CBA 2/1/18									

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	2-1-18 16:12	TA KNX	[signature]	2-2-18 0955	EPA SESD ASB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No (Yes circled)
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 4 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10529-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL
B - NaOH
C - Zn Acetate
D - Nitric Acid
E - NaHSO4
F - MeOH
G - Amchlor
H - Ascorbic Acid
I - Ice
J - DI Water
K - EDTA
L - EDA
M - Hexane
N - None
O - AsNaO2
P - Na2O4S
Q - Na2SO3
R - Na2S2O3
S - H2SO4
T - TSP Dodecahydrate
U - Acetone
V - MCAA
W - pH 4-5
Z - other (specify)

Other:

Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
			Preservation Code:						
-31 LCS 280-402757/2-A(280-4935575)	1/30/18	Eastern	Extract	Air				1	Back Half Laboratory Control Sample
								1	
								1	
								1	
								1	
								1	

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:		
Relinquished by: [signature]	Date/Time: 2-1-18 16:12	Company: TA KNX	Received by: [signature]	Date/Time: 2-2-18 0955	Company: EM SECD ASB
Relinquished by:	Date/Time:	Company	Received by	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 1 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10553-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA, M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
			Preservation Code:							
-32	E-2601,2602 M0010 RUN 1 FH (140-10553-1)	1/24/18	10:00 Eastern	Extract	Air				1	✓ 140-10553-A-1
-33	E-2603,2604,2606 M0010 RUN 1 BH (140-10553-2)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-2
-34	E-2605 M0010 RUN 1 COND (140-10553-3)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-3 250mL
-35	E-2607 M0010 RUN 1 XAD-2 (140-10553-4)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-4
-36	E-2608,E-2609 M0010 RUN 2 FH (140-10553-5)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-5
-37	E-2610,2611,2613 M0010 RUN 2 BH (140-10553-6)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-6
-38	E-2612 M0010 RUN 2 COND (140-10553-7)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-7 250mL
-39	E-2614 M0010 RUN 2 XAD-2 (140-10553-8)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-8
-40	E-2615,2616 M0010 RUN 3 FH (140-10553-9)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-9

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For ____ Months

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	2-1-18 16:12	TA KNX	[signature]	2-2-18 0955	EPA SESD ASB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No

Custody Seal No.: 036733

Cooler Temperature(s) °C and Other Remarks: 1.8 °C

Ver: 09/20/2016

ED_002003J_00039311-00006

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: Page 2 of 4
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10553-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:

A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)

Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
-41	E-2617,2618,2620 M0010 RUN 3 BH (140-10553-10)	1/25/18	10:00 Eastern	Extract	Air				1	✓ 140-10553-A-10
-42	E-2619 M0010 RUN 3 COND (140-10553-11)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-11 250mL
-43	E-2621 M0010 RUN 3 XAD-2 (140-10553-12)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-12
-44	E-2622,2623 M0010 RUN QC FH BT (140-10553-13)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-13
-45	E-2624,2625,2627 M0010 QC BH (140-10553-14)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-14
-46	E-2626 M0010 RUN QC COND BT (140-10553-15)	1/24/18	10:00 Eastern	Extract	Air				1	
-47	E-2628 M0010 RUN QC XAD-2 BT (140-10553-16)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-15
-48	E-2629 M0010 QC DI WATER RB (140-10553-17)	1/25/18	10:00 Eastern	Extract	Air				1	
-49	E-2630 M0010 QC MEOH WITH 5% NH4OH RB (140-10553-18)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-18

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ *Return To Client* ☐ *Disposal By Lab* ☐ *Archive For* _____ *Months*

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
[signature]	2-1-18 16:12	TA KNX	KnBeall	2-2-18 0955	EPA SESD ASB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: Δ Yes Δ No
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

ED_002003J_00039311-00007

TestAmerica Knoxville
5815 Middlebrook Pike
Knoxville, TN 37921
Phone (865) 291-3000 Fax (865) 584-4315

E180604

Chain of Custody Record

#18-0206

TestAmerica

Client Information (Sub Contract Lab)	Sampler: William C. Anderson	Lab PM: Adkins, Courtney M	Carrier Tracking No(s):	COC No: 140-3008.1
Client Contact: Danny France	Phone: (865) 291-3080	E-Mail: courtney.adkins@testamericainc.com	State of Origin: Tennessee	Page: 3 Page 3 of 4 CBA 2/1/18
Company: Region 4, EPA, Science and Ecosystems Support Division		Accreditations Required (See note):		Job #: 140-10553-1
Address: 980 College Station Rd	Due Date Requested:			
City: Athens	TAT Requested (days):			
State, Zip: GA, 30605				
Phone: 706-355-8738 (Tel)	PO #:			
Email: france.danny@epa.gov	WO #:			
Project Name: Division Stack Emissions Test	Project #:			
Site: Fayetteville, NC	SSOW#:			

Analysis Requested

Preservation Codes:
A - HCL, B - NaOH, C - Zn Acetate, D - Nitric Acid, E - NaHSO4, F - MeOH, G - Amchlor, H - Ascorbic Acid, I - Ice, J - DI Water, K - EDTA, L - EDA
M - Hexane, N - None, O - AsNaO2, P - Na2O4S, Q - Na2SO3, R - Na2S2O3, S - H2SO4, T - TSP Dodecahydrate, U - Acetone, V - MCAA, W - pH 4-5, Z - other (specify)
Other:

	Sample Identification - Client ID (Lab ID)	Sample Date	Sample Time	Sample Type (C=comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	HFPO-DA	Total Number of containers	Special Instructions/Note:
				Preservation Code:						
-50	E-2631 M0010 QC XAD-2 RESIN TUBE RB (140-10553-19)	1/24/18	10:00 Eastern	Extract	Air				1	✓ 140-10553-A-19
-51	E-2632 M0010 QC METHANOL TB (140-10553-20)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-20
-52	E-2633 M0010 QC XAD-2 RESIN TUBE TB (140-10553-21)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-21
-53	E-2639 M0010 QC IMP GLASSWARE MEOH / 5% NH4OH RINSE PB (140-10553-24)	1/24/18	10:00 Eastern	Extract	Air				1	✓ -A-24
-54	E-2640,2641 M0010 RUN 4 FH (140-10553-25)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-25
-55	E-2642,2643,2645 M0010 RUN 4 BH (140-10553-26)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-26
-56	E-2644 M0010 RUN 4 COND (140-10553-27)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-27 250mL
-57	E-2646 M0010 RUN 4 XAD-2 (140-10553-28)	1/25/18	10:00 Eastern	Extract	Air				1	✓ -A-28
-58	MB 280-402938/1-A (280-4938840)	1/30/18	10:00 Eastern	Extract	Air				1	Back Half Method Blank ✓

Possible Hazard Identification
Contains Methanol and Ammonium Hydroxide

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)
☐ Return To Client ☐ Disposal By Lab ☐ Archive For _____ Months

Deliverable Requested: I, II, III, IV, Other (specify) Primary Deliverable Rank: 4

Special Instructions/QC Requirements:

Empty Kit Relinquished by:	Date:	Time:	Method of Shipment:

Relinquished by	Date/Time	Company	Received by	Date/Time	Company
[signature]	2-1-18 16:12	TA KNX	[signature]	2-2-18 0955	EPA SESD ASB
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

Custody Seals Intact: ☒ Yes ☐ No
Custody Seal No.: 036733
Cooler Temperature(s) °C and Other Remarks: 1.8°C

Ver: 09/20/2016

ED_002003J_00039311-00008

E180604

Beall, Mike

From: Wellborn, Floyd
Sent: Friday, February 02, 2018 10:05 AM
To: Beall, Mike
Cc: France, Danny; Giles, John; Burdette, Diana; Vancuron, Francine; Sivertsen, Scott
Subject: FW: Chemours Method 0010 Sampling Train Extract Portions Have Been Processed and Sent to EPA

Heads up Mike, samples coming. I'll put a project in R4LIMS called Chemours – stack testing. I'm not sure how many samples there will be so the sample count in R4LIMS will be arbitrary. Also, I'm not sure what kind of COC there will be. In any case, please assign the PFAS – Full List analysis for water matrix to the samples.

Thanks,
Floyd

From: Mundrick, Doug
Sent: Friday, February 02, 2018 9:57 AM
To: Sivertsen, Scott <Sivertsen.Scott@epa.gov>; France, Danny <France.Danny@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Hendel, Jeffrey <Hendel.Jeffrey@epa.gov>
Subject: FW: Chemours Method 0010 Sampling Train Extract Portions Have Been Processed and Sent to EPA

FYI

From: Anderson, William [mailto:William.Anderson@testamericainc.com]
Sent: Friday, February 02, 2018 9:51 AM
To: 'Compton, Christel E' <CHRISTEL.E.COMPTON@chemours.com>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Gary Saunders <gary.saunders@ncdenr.gov>; Benzoni, Francisco <fbenzoni@ncdoj.gov>; Spiller, Asher <Aspiller@ncdoj.gov>; France, Danny <France.Danny@epa.gov>; Mundrick, Doug <Mundrick.Doug@epa.gov>; Mitchell, Ken <Mitchell.Ken@epa.gov>
Subject: Chemours Method 0010 Sampling Train Extract Portions Have Been Processed and Sent to EPA

Christel,

Please note that the TestAmerica Knoxville Laboratory prepared, labeled, and packed for shipping the emissions test Method 0010 Sampling Train extracts last night. The extract portions were shipped via FedEx priority overnight service to EPA's Laboratory group in Athens, GA.

The extracts are derived from sampling train fractions prepared for the Division Stack and the Polymer Processing Area (PPA) Stack at Chemours in Fayetteville, NC. The FedEx shipping notifications have been sent to Mr. Danny France to alert him regarding the delivery scheduled for today.

Please let me know if the shipments are slowed or delayed in the FedEx delivery systems. We'll do our best to make sure they get into the right place.

Thank you,

Billy Anderson
(865) 291-3080

From: Compton, Christel E [mailto:CHRISTEL.E.COMPTON@chemours.com]
Sent: Tuesday, January 30, 2018 6:29 PM
To: Pjetraj, Michael
Cc: Gross, Joel M.; Vickery, Richard S; Reeves, Gregory W; Saunders, Gary; Benzoni, Francisco; Spiller, Asher; France.danny@epa.gov; Mundrick.doug@epa.gov; Mitchell, Ken; Anderson, William
Subject: RE: Split Sample request - RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

External Email

Michael –

I spoke with Dr. Billy Anderson today and verified that the extracted samples from the stack sampling event during the week of Jan 22, 2018 are being split. Dr. Anderson will be preparing chain of custody and documentation for each sample, which will allow EPA to have a thorough understanding of the extractions and sample preparation. He will also be sure to walk through the procedure for analyzing each sample. This information and contact with EPA will occur next week.

Dr. Anderson will contact Danny France and Doug Murdock next week. He will also have you on the communications, as you requested during our meeting January 25. Ken Mitchell, EPA Region 4 will also be on those communications so you all remain informed of progress.

Thank you –

Christel

Christel Compton
Program Manager
The Chemours Company – Fayetteville Works
(o) 910-678-1213
(m) 910-975-3386

Chemours™

The Chemours Company FC, LLC
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Tuesday, January 30, 2018 3:08 PM
To: Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Saunders, Gary <gary.saunders@ncdenr.gov>; Benzoni, Francisco <fbenzoni@ncdoj.gov>; Spiller, Asher <Aspiller@ncdoj.gov>; France.danny@epa.gov; Mundrick.doug@epa.gov; Mitchell, Ken <Mitchell.Ken@epa.gov>
Subject: Split Sample request - RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Christel,

I have spoken with my EPA contacts @ the SESD lab (Danny France & Doug Mundrick) & Region 4 (Ken Mitchell)

They have not received any further contact from Chemours or Test America on the split samples after extraction from the January 22 week testing, as we discussed.

Please verify that the split sampling will still occur and that Test America will contact Danny France & Doug Mundrick.

Thanks
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

Nothing Compares

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Pjetraj, Michael
Sent: Friday, January 19, 2018 3:45 PM
To: Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Saunders, Gary (gary.saunders@ncdenr.gov) <gary.saunders@ncdenr.gov>; Benzoni, Francisco <Fbenzoni@ncdoj.gov>; Spiller, Asher (Aspiller@ncdoj.gov) <Aspiller@ncdoj.gov>
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Christel,
During the December 18th meeting with Chemours, DAQ discussed obtaining samples of the GenX air emissions tests. Initially we discussed dual sampling trains and then discussed split samples after extraction of the test media by Test America. The DAQ is reiterating our request for split samples after extraction.

Starting with testing during the week on 1/22/18 on the PPA & Division stacks, please inform your contractor to prepare split samples after extraction of each run at each stack. Please request that Test America converse with the EPA staff listed below to provide any testing or analytical data necessary to assist with the analysis of the samples. Transfer of the samples shall be directly to the EPA lab following instruction provided by EPA.

EPA Staff:
Danny France
EPA/SESD – Athens, GA

France.danny@epa.gov
706-355-8738

Doug Mundrick
EPA/SESD – Athens, GA
Mundrick.doug@epa.gov
706-355-8704

Thank you,

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

Nothing Compares

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From: Compton, Christel E [mailto:CHRISTEL.E.COMPTON@chemours.com]
Sent: Tuesday, January 16, 2018 5:06 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>
Subject: [External] Chemours - Stack Testing Schedule Week of Jan 22

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.

Michael and Greg –

I have confirmed with Weston Solutions that they will be on site next week (week of Jan 22) to perform the official stack testing of the Division and PPA stacks for HFPO Dimer Acid Fluoride. The schedule is as follows:

Mon, Jan 22 – arrive at the site and set up on the Division stack. They may try to get in one 3-hr run Monday afternoon.
Tues, Jan 23 – complete 2, 3-hr runs.
Wed, Jan 24 – complete 3rd, 3-hr run, if not completed on Tues. Mobilize to PPA. If able to get in 1, 3-hr run, then will do this on Wed.
Thurs, Jan 25 – complete either 2 or 3, 3-hr runs.
Fri, Jan 26 - complete remaining runs, if any.

I will be creating a sheet to document what operations are running during each test.

Please let me know what questions you may have.

Thanks –
Christel

Christel Compton
Program Manager
The Chemours Company – Fayetteville Works
(o) 910-678-1213
(m) 910-975-3386

The Chemours Company FC, LLC
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

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Francais Italiano Deutsch Portuges Espanol Japanese Chinese Korean

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To: Doa, Maria[Doa.Maria@epa.gov]
Cc: Shehee, Mina[mina.shehee@dhhs.nc.gov]
From: Dittman, Elizabeth
Sent: Wed 12/20/2017 6:32:21 PM
Subject: Question re: GenX toxicity studies

Maria,

The North Carolina Secretaries' Science Advisory Board (SAB) has recently started reviewing toxicological and health effect information for the chemical known as GenX. One of the questions raised by a member of the SAB was if the toxicology data (potentially found in the CBI) was sufficient to assess for dose-response. I think the board was specifically interested in if the data would be able to be used in benchmark dose modeling. Is there a toxicologist on your staff who may be an appropriate contact to discuss if BMD modeling is possible?

Thank you,

~Beth Dittman

Beth Dittman
Toxicologist and Public Health Assessor
Division of Public Health, Occupational and Environmental Epidemiology Branch
North Carolina Department of Health and Human Services

919 707 5906 office
919 870 4807 fax
Beth.Dittman@dhhs.nc.gov

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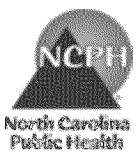
Raleigh, NC 27699



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To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
Cc: Culpepper, Linda[linda.culpepper@ncdenr.gov]; connie.brower@ncdenr.gov[connie.brower@ncdenr.gov]; Shehee, Mina[mina.shehee@dhhs.nc.gov]; Mort, Sandra L[sandy.mort@ncdenr.gov]; Doa, Maria[Doa.Maria@epa.gov]; Banister, Beverly[Banister.Beverly@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]
From: Kemker, Carol
Sent: Thur 6/29/2017 10:32:13 PM
Subject: Re: GenX

Amy,

Thanks for the update. Please add Mitchell.ken@epa.gov to your list of reviewers.

Happy to provide any support we can.
Carol

Sent from my iPhone

On Jun 29, 2017, at 6:18 PM, Risen, Amy J <Amy.Risen@dhhs.nc.gov> wrote:

Absolutely. Maria and the information she shared was very helpful.

We are getting down to a crunch time as we need to provide a revised health statement for the public within the next 2 weeks at the latest. Our investigation has raised several questions that will not be fully resolved in the next couple weeks. Therefore, we are considering how we will address uncertainty boundaries when crafting a statement and choosing a numerical value for our next health guidance for drinking water.

I believe you are aware that we're wrapping up our current risk assessment working document, so we can share it and request feedback. The precise time that that document will be available is expected to be Wednesday or Thursday next week. We'd like to introduce the document in a conference call with EPA and ATSDR on Thursday 7/06, and then we'll ask everyone to provide rapid feedback.

Maria shared a list of people who could help review our risk assessment, which I'm copying and pasting below. Could you add any other reviewers that you'd like for us to include?
Behl.betsy@epa.gov
Strong.jamie@epa.gov
Henry.tala@epa.gov
Behrsing.tracy@epa.gov
Benson.amy@epa.gov
Aubee.catherine@epa.gov
Kemker.carol@epa.gov
Allenbach.becky@epa.gov

Thanks so much for the support!!
Amy

From: Kemker, Carol [mailto:Kemker.Carol@epa.gov]
Sent: Thursday, June 29, 2017 5:43 PM
To: Risen, Amy J <Amy.Risen@dhhs.nc.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Brower, Connie <connie.brower@ncdenr.gov>; Shehee, Mina <mina.shehee@dhhs.nc.gov>
Subject: RE: GenX

Amy,

Thanks, Maria let me know she was working with you. Were you able to get the information you needed?

Carol

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Thursday, June 29, 2017 7:00 AM
To: Kemker, Carol <Kemker.Carol@epa.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; connie.brower@ncdenr.gov; Shehee, Mina <mina.shehee@dhhs.nc.gov>
Subject: Re: GenX

Hi Carol,

I'm in touch with Maria Doa and she is helping me with this.

Best,

Amy

From: Risen, Amy J
Sent: Wednesday, June 28, 2017 12:29:36 PM
To: Kemker, Carol
Cc: Culpepper, Linda; Brower, Connie; Shehee, Mina
Subject: RE: GenX

Hi Carol,

I'm looking for a document that was referenced in one of our calls in which the EPA/TSCA evaluated GenX manufacturing and used a point of departure of 0.1 mg/kg/day in the risk assessment. I believe it was a permit. Could you help me find the right person to send that to me?

We're almost finished with our second round of evaluation of health risk associated with GenX in the Cape Fear River. We're comparing other risk assessments that have been performed for GenX and would like to include the one EPA/TSCA did for GenX manufacturing. We're interested in seeing things like points of departure and uncertainty factors, and how these values were relevant to the situations that were being assessed by different parties. I'm almost done with our most recent round of evaluation and this comparison will help me to wrap it up.

I would also like to share our evaluation with EPA, ATSDR, and the NC DEQ. I have a document to share and would like to present our approach in a phone call on Friday this week. I'll send another email to coordinate a time for the call.

Thanks so much for all of your continued help!

Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

(919) 707-5911 office
(919) 870-4807 fax
Amy.Risen@dhhs.nc.gov

5505 Six Forks Road
1912 Mail Service Center
Raleigh, NC 27699-1912

<image001.png>

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From: Kemker, Carol [mailto:Kemker.Carol@epa.gov]
Sent: Friday, June 23, 2017 11:40 AM
To: Holman, Sheila <sheila.holman@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Risen, Amy J <Amy.Risen@dhhs.nc.gov>; Brower, Connie <connie.brower@ncdenr.gov>; Shehee, Mina <mina.shehee@dhhs.nc.gov>
Subject: FW: GenX

Sheila, Linda, Amy, Connie and Mina,

We are working to get you all the information that is publicly available while we work on the CBI access. Do you have the CAS numbers or names of the chemicals you are interested in data? Are these the correct CAS that you are interested in:

- 13252-13-6
- 62037-80-3

I think you can access additional TSCA 8(e) filings and other data by searching for the CAS number(s) in ChemView. (https://java.epa.gov/chemview)

Carol

To: Shehee, Mina[mina.shehee@dhhs.nc.gov]
Cc: Risen, Amy J[Amy.Risen@dhhs.nc.gov]; Kemker, Carol[Kemker.Carol@epa.gov]; Moore, Zack[zack.moore@dhhs.nc.gov]
From: Doa, Maria
Sent: Thur 6/22/2017 1:46:02 AM
Subject: Re: follow-up on GenX call

Hi Mina,
Thanks for sending. We will get back to you tomorrow.

Maria

Sent from my iPhone

On Jun 21, 2017, at 7:47 PM, Shehee, Mina <mina.shehee@dhhs.nc.gov> wrote:

Maria,

Here is a copy of our FAQs. Please see question 3 and 4 where we reference EPA. If you could get this back to us asap we would be grateful.

Thanks so much for your help with this issue. We really appreciate it.

Mina

From: Shehee, Mina <mina.shehee@dhhs.nc.gov>
Sent: Wednesday, June 21, 2017 6:18:35 PM
To: Doa, Maria; Risen, Amy J
Cc: Kemker, Carol; Moore, Zack
Subject: Re: follow-up on GenX call

Thanks Maria! We will be in contact.

Get Outlook for iOS

From: Doa, Maria <doa.maria@epa.gov>
Sent: Wednesday, June 21, 2017 6:15 PM
Subject: RE: follow-up on GenX call
To: Risen, Amy J <amy.risen@dhhs.nc.gov>, Shehee, Mina <mina.shehee@dhhs.nc.gov>
Cc: Kemker, Carol <kemker.carol@epa.gov>

Hi Amy,

Yes. If you send it to me I will coordinate with folks within EPA.

Thanks,
Maria

Maria J. Doa, Ph.D.
Director
Chemical Control Division
Office of Chemical Safety and Pollution Prevention
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20016

Tel. 202.566.0718

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Wednesday, June 21, 2017 6:05 PM
To: Doa, Maria <Doa.Maria@epa.gov>; Shehee, Mina <mina.shehee@dhhs.nc.gov>
Cc: Kemker, Carol <Kemker.Carol@epa.gov>
Subject: Re: follow-up on GenX call

Thank you Maria.

I also have a question for you. On our call yesterday, someone from the EPA brought up the question of how we would make sure our messages were in alignment as we go forward. Was that you? We'll soon be releasing our next GenX risk assessment outreach statement and wondered who would be a good EPA contact to coordinate with.

Thanks again,
Amy

From: Doa, Maria <Doa.Maria@epa.gov>
Sent: Wednesday, June 21, 2017 2:56:33 PM
To: Shehee, Mina; Risen, Amy J
Cc: Kemker, Carol
Subject: follow-up on GenX call

Hi Mina and Amy,

I mentioned yesterday that I would let you know when we would get you a statement on the POD we are using. We should have something to you tomorrow.

Thanks,

Maria J. Doa, Ph.D.
Director
Chemical Control Division
Office of Chemical Safety and Pollution Prevention
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20016

Tel. 202.566.0718

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<Draft GenX DHHS FAQ 062117.docx>

To: mina.shehee@dhhs.nc.gov[mina.shehee@dhhs.nc.gov]; Amy.Risen@dhhs.nc.gov[Amy.Risen@dhhs.nc.gov]
Cc: Kemker, Carol[Kemker.Carol@epa.gov]
From: Doa, Maria
Sent: Wed 6/21/2017 6:56:33 PM
Subject: follow-up on GenX call

Hi Mina and Amy,

I mentioned yesterday that I would let you know when we would get you a statement on the POD we are using. We should have something to you tomorrow.

Thanks,

Maria J. Doa, Ph.D.
Director
Chemical Control Division
Office of Chemical Safety and Pollution Prevention
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20016

Tel. 202.566.0718

To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
Cc: Henry, Tala[Henry.Tala@epa.gov]; Mitchell, Ken[Mitchell.Ken@epa.gov]; Elizabeth Dittman[Beth.Dittman@dhhs.nc.gov]; Shehee, Mina[mina.shehee@dhhs.nc.gov]
From: Doa, Maria
Sent: Fri 6/16/2017 8:06:59 PM
Subject: Re: GenX risk assessment

Amy,
On the Carolina aquifer monitoring- we are trying to get a hold of the study authors to confirm, but from the study it looks like neither GenX or other perfluoros were tested. Thus, it seems like no conclusion can be reached on the presence of these chems in the aquifer. We will get back to you after we confirm.

Maria

Maria J. Doa, Ph.D.
Director
Chemical Control Division
Office of Chemical Safety and Pollution Prevention
U.S. Environmental Protection Agency

On Jun 16, 2017, at 11:02 AM, Risen, Amy J <Amy.Risen@dhhs.nc.gov> wrote:

Thank you for the call today!

As a follow up, I'd like to request rapid assistance in acquiring a few pieces of information that would be very helpful for us in conducting our risk assessment:

-Studies you are considering as part of your risk assessment (summaries are fine if that is all you can share at this time).
-Which do you consider to be the most sensitive endpoint for oral exposure?
-Cancer studies.

We have also heard claims that the Carolina Beach aquifer was tested by the EPA, and GenX was not detected. What can you tell us about that? As we continue our discussions we would like to hear more about any ongoing studies.

Thanks so much for your help and I hope you all have a great weekend.

Best,
-Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

(919) 707-5911 office
(919) 870-4807 fax
Amy.Risen@dhhs.nc.gov

5505 Six Forks Road
1912 Mail Service Center
Raleigh, NC 27699-1912

<image001.png>

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To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
From: Doa, Maria
Sent: Sat 7/1/2017 10:31:16 PM
Subject: Re: GenX Consent Order and related issues

Hi Amy,
Yes. Either time works for me

Maria J. Doa, Ph.D.
Director
Chemical Control Division
Office of Chemical Safety and Pollution Prevention

On Jun 30, 2017, at 4:17 PM, Risen, Amy J <Amy.Risen@dhhs.nc.gov> wrote:

Hi Maria,

I have a couple follow up questions. Are you free Monday 7/03 around 4 or 5pm for a phone call?

Thanks!
Amy

From: Doa, Maria [mailto:Doa.Maria@epa.gov]
Sent: Wednesday, June 28, 2017 7:12 PM
To: Risen, Amy J <Amy.Risen@dhhs.nc.gov>
Cc: Kemker, Carol <Kemker.Carol@epa.gov>
Subject: GenX Consent Order and related issues

Hi Amy,

Following up on our discussion, attached is the sanitized consent order. There is a discussion of the information we have on the substances on p. vii. The NOAEL from the 28-day mouse study on p. viii is the POD used to set the occupational exposure level (called the New Chemical Exposure Limit (NCEL)). The discussion on the NCEL starts on page 14. The NCEL value of 0.01mg/m3 is on p. 16. The derivation is given in the risk assessment but not in the consent order. Note that the risk assessment at the time did not look at gen pop exposure because we did not believe we had releases. Thus, only the NCEL was set.

Also, on who should be on the call next week:
Behl.betsy@epa.gov
Strong.jamie@epa.gov
Henry.tala@epa.gov
Behrsing.tracy@epa.gov
Benson.amy@epa.gov
Aubee.catherine@epa.gov
Kemker.carol@epa.gov
Allenbach.becky@epa.gov

(Carol, please add any other Region 4 folks)

Finally, from our risk assessment folks. This is info on how we intend to move forward.

Consistent with the point of departure (POD) used in EPA's 2008 Standard Review Risk Assessment and based on similar effects observed in longer term studies, EPA intends to use a NOAEL of 0.1 mg/kg/day in its re-assessment of GenX. This NOAEL (0.1 mg/kg/day) was determined in two separate mouse studies: repeated dose 28-day oral toxicity study in mice and oral reproduction/developmental toxicity screening study in mice. While the lowest NOAEL determined in the oral chronic toxicity/oncogenicity study in rats (1 mg/kg/day) is from a study which employed a longer dosing duration, this NOAEL is higher than the NOAEL of 0.1 mg/kg/day from studies in mice.

In the 2008 assessment of GenX and its associated acid, EPA applied a 10-fold uncertainty factor for intra-species variability and a 10-fold uncertainty factor for inter-species extrapolation resulting in a total uncertainty factor of 100. EPA intends to use this same approach in conducting the re-assessment of GenX and its associated acid.

For reference, there is a 2016 RIVM Letter report which evaluated substances used in the GenX technology by Chemours, Dordrecht. In this report, a NOAEL of 0.1 mg/kg/day from the oral chronic study in rats was selected as the point of departure (POD) for derivation of a chronic inhalation exposure limit. (Source: Evaluation of substances used in the GenX technology by Chemours, Dordrecht, RIVM letter report 2016-0174, M. Beekman et al. http://www.rivm.nl/dsresource?objectid=4dbc9941-4a77-44b7-9ff0-0cce0d7aac72&type=pdf&disposition=inline)

Also for reference, please find attached a table which summarizes the repeated dose oral studies of ≥28 days in duration, as reported by the submitter in the registration dossier.

Thanks,
Maria

Maria J. Doa, Ph.D.
Director
Chemical Control Division
Office of Chemical Safety and Pollution Prevention
United States Environmental Protection Agency
1200 Pennsylvania Ave, NW
Washington, DC 20016

Tel. 202.566.0718

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Organizer: Behl, Betsy[Behl.Betsy@epa.gov]
From: Behl, Betsy
Location: DCRoomWest5231M/DC-CCW-OST call in: Conference Line / Ex. 6 conf id: 1 Personal Phone / Ex. 6
Importance: Normal
Subject: FW: coordination with NC
Start Time: Thur 5/10/2018 7:00:00 PM
End Time: Thur 5/10/2018 7:45:00 PM
Required Attendees: Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Beth.Dittman@dhhs.nc.gov; mina.shehee@dhhs.nc.gov
Optional Attendees: Pritchett, Jamie R; Flaherty, Colleen; Mort, Sandra L; Moore, Zack
ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.PDF

-----Original Appointment-----
From: Behl, Betsy
Sent: Tuesday, May 01, 2018 4:23 PM
To: Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Elizabeth Dittman; mina.shehee@dhhs.nc.gov
Cc: Pritchett, Jamie R; Flaherty, Colleen; Mort, Sandra L; Moore, Zack
Subject: coordination with NC
When: Thursday, May 10, 2018 3:00 PM-3:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231M/DC-CCW-OST call in: Conference Line / Ex. 6 conf id: Personal Phone / Ex. 6

Provided are links to chemical-specific pages for the studies cited:
GenX: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2627
PFBS: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2610

The above presentation covers both GenX and PFBS. We will only go over the GenX slides.

Please forward to others in NC as appropriate

Organizer: Behl, Betsy[Behl.Betsy@epa.gov]
From: Behl, Betsy
Location: DCRoomWest5231M/DC-CCW-OST call in: Conference Line / Ex. 6 conf id: Personal Phone / Ex. 6
Importance: Normal
Subject: FW: coordination with NC
Start Time: Thur 5/10/2018 1:00:00 PM
End Time: Thur 5/10/2018 1:30:00 PM
Required Attendees: Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Beth.Dittman@dhhs.nc.gov; mina.shehee@dhhs.nc.gov
Optional Attendees: Pritchett, Jamie R; Flaherty, Colleen; Mort, Sandra L; Moore, Zack
ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.PDF

-----Original Appointment-----
From: Behl, Betsy
Sent: Tuesday, May 01, 2018 4:23 PM
To: Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Miller, Gregory; Elizabeth Dittman; mina.shehee@dhhs.nc.gov
Cc: Pritchett, Jamie R; Flaherty, Colleen; Mort, Sandra L; Moore, Zack
Subject: coordination with NC
When: Thursday, May 10, 2018 3:00 PM-3:45 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomWest5231M/DC-CCW-OST call in: Conference Line / Ex. 6 conf id: Personal Phone / Ex. 6

Provided are links to chemical-specific pages for the studies cited:
GenX: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2627
PFBS: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2610

The above presentation covers both GenX and PFBS. We will only go over the GenX slides.

Please forward to others in NC as appropriate

To: Elizabeth Dittman[Beth.Dittman@dhhs.nc.gov]; mina.shehee@dhhs.nc.gov[mina.shehee@dhhs.nc.gov]
Cc: Snowden, Belinda[snowden.belinda@epa.gov]; Strong, Jamie[Strong.Jamie@epa.gov]; Flaherty, Colleen[Flaherty.Colleen@epa.gov]
From: Behl, Betsy
Sent: Thur 4/26/2018 2:51:09 PM
Subject: continuing conversation on GenX

Greetings Beth and Mina,

We are planning to send you all a copy of the presentation we are developing on GenX tomorrow. This presentation describes the studies we reviewed and outlines our approach for developing the toxicity values. We plan to send the draft document to external peer review the second week in May and will share peer reviewer comments with you, other states, and federal stakeholder groups when we get the peer review report in June. I would like to set up our next discussion with you on or after May 8th.Please let me know when you would like to arrange a call. My scheduler Belinda Snowden will be happy to set up the meeting. I will be out of the office at that time but my Deputy Division Director, Colleen Flaherty, and Jamie Strong will be able to have a conversation with you to address questions you have on the presentation.

Best,
Betsy

Elizabeth (Betsy) Behl, Director
Health and Ecological Criteria Division, 4304-T
Office of Science and Technology, Office of Water
United States Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington DC 20460

phone: 202.566.0788
room 5233H

To: Elizabeth Dittman[Beth.Dittman@dhhs.nc.gov]
Cc: Gray, Earl[Gray.Earl@epa.gov]; Wilson, Vickie[Wilson.Vickie@epa.gov]
From: Conley, Justin
Sent: Fri 4/20/2018 5:52:54 PM
Subject: RE: 2018 SOT poster
Conley.J.2018.MBURD.DOCX

Hi Beth,

Attached is a copy of a recent abstract of our work on GenX that has undergone EPA clearance. Please be advised that the results of the extended dosing study (GD8-PND3) were rather remarkable and not expected by us going into the study. Our opinion is that these results should be interpreted with caution until we have an opportunity to replicate the effects we have observed.

If you need any clarification or additional detail, please let me know.

Cheers,

Justin Conley
Postdoctoral Toxicologist
U.S. Environmental Protection Agency
ORD/NHEERL/TAD
Reproductive Toxicology Branch
Research Triangle Park, NC
(919) 541-3326

From: Conley, Justin
Sent: Thursday, April 19, 2018 2:00 PM
To: Elizabeth Dittman <beth.dittman@dhhs.nc.gov>
Cc: Earl Gray (Gray.Earl@epa.gov) <Gray.Earl@epa.gov>; Vickie Wilson (Wilson.Vickie@epa.gov) <Wilson.Vickie@epa.gov>
Subject: 2018 SOT poster

Hi Beth,

Attached is a copy of our poster on GenX effects in the Sprague Dawley rat from SOT 2018. This work covers the majority of the work we have done with limited gestational dosing (GD14-18) as well as the in vitro work we have done (ER, AR, GR agonism/antagonism). If you have any questions or need any clarification on the methods or data presented, please let me know.

We are currently conducting a study with extended dosing (GD8-PND3) and will share those results when we are cleared to do so.

Cheers,

Justin Conley
Postdoctoral Toxicologist
U.S. Environmental Protection Agency
ORD/NHEERL/TAD
Reproductive Toxicology Branch
Research Triangle Park, NC
(919) 541-3326

Phthalate Induced Urogenital Abnormalities: Is PPARα Activation the Mechanism of Action, or not?

Conley, Justin M.[*]; Lambright, Christy S.[*]; Evans, Nicola[*]; Medlock-Kakaley, Elizabeth[*]; Cardon, Mary[*]; Wilson, Vickie S.[*]; Gray, L. Earl[*]

[*]USEPA/ORD/NHEERL/Toxicity Assessment Division, Research Triangle Park, NC

Introduction: *In utero* exposure to certain phthalate esters (PE) during the critical window of male sex differentiation reduces both fetal testis testosterone production (T prod) and expression of genes critical to steroidogenesis (among others), resulting in demasculinization of male rat offspring. While the molecular initiating event (MIE) leading to PE-induced male reproductive toxicity is unknown, it has been proposed to be mediated by peroxisome proliferator activated receptor alpha (PPARα). To evaluate this hypothesis, we conducted multiple studies comparing effects of the PPARα agonist, ammonium 2,3,3,3-tetrafluoro-2-(heptafluorpropoxy)propanoate (GenX; CAS 62037-80-3), to the typical fetal and postnatal male reproductive tract alterations observed following *in utero* PE exposure.

Methods: Sprague Dawley rat dams were dosed from gestation day (GD) 14-18 with corn oil vehicle or GenX ranging from 1-500 mg/kg/d. On GD18 *ex vivo* fetal T prod and gene expression in fetal testes and livers were assessed using a custom gene set containing genes known to be down-regulated by *in utero* PE exposure (e.g., Insl3, Star, Scarb1, Hsd3b, Hsd17b3) and a PPAR pathway specific gene set, respectively. In separate experiments, dams were dosed either from GD14-18 (125 mg/kg/d) or GD 8 to postnatal day (PND) 3 (10-250 mg/kg/d) allowed to give birth and the reproductive development of male offspring was evaluated at perinatal, pubertal, and adult time points.

Results: In fetal livers, GenX displayed pronounced effects on PPAR pathway gene expression (e.g., Ehhadh, Fabp1, Angptl4), but neither the PE responsive genes nor T prod were affected in the fetal testis. Further, at birth, GenX exposed males did not display any characteristic PE-like reproductive alterations (e.g., hypospadias, undescended testes, epididymal malformations, reduced ano-genital distance, female-like nipple retention). However, following dosing from GD8-PND3 GenX did produce significant pup mortality (<24 hrs post-birth; ≥62.5 mg/kg/d) and reduced birth weight among survivors (≥10 mg/kg/d).

Conclusions: In summary, although *in utero* exposure to the PPAR agonist GenX did not demasculinize the male rat reproductive tract like a PE, it did induce adverse effects including extensive neonatal mortality similar to other common environmental PFAS, such as PFOS and PFOA. It appears that PPAR activation is likely not a significant mechanism by which PE produce reproductive tract effects in laboratory rats.

Funding: This research was supported by USEPA Chemical Safety for Sustainability Strategic Research Action Plan.

Disclaimer: The views presented here do not necessarily reflect the views or policy of the USEPA.

To: Elizabeth Dittman[Beth.Dittman@dhhs.nc.gov]
Cc: Gray, Earl[Gray.Earl@epa.gov]; Wilson, Vickie[Wilson.Vickie@epa.gov]
From: Conley, Justin
Sent: Thur 4/19/2018 5:59:52 PM
Subject: 2018 SOT poster
Gray_2018_SOT_GenX_poster.pdf

Hi Beth,

Attached is a copy of our poster on GenX effects in the Sprague Dawley rat from SOT 2018. This work covers the majority of the work we have done with limited gestational dosing (GD14-18) as well as the in vitro work we have done (ER, AR, GR agonism/antagonism). If you have any questions or need any clarification on the methods or data presented, please let me know.

We are currently conducting a study with extended dosing (GD8-PND3) and will share those results when we are cleared to do so.

Cheers,

Justin Conley
Postdoctoral Toxicologist
U.S. Environmental Protection Agency
ORD/NHEERL/TAD
Reproductive Toxicology Branch
Research Triangle Park, NC
(919) 541-3326

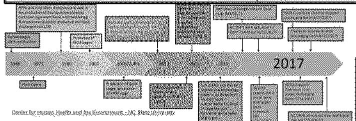
Genx (FRD-902, ammonium (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate) Does Not Display Estrogenic, (anti)androgenic Or Glucocorticoid-like Activity In Vitro Whereas In Utero Exposure Induces Dose-related Maternal And Fetal Rat Liver PPAR Pathway Gene Expression Without Affecting Fetal Testis Testosterone Production.

EPA United States Environmental Protection Agency

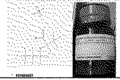
P. Hartig[1], J. Conley[1], C. Lambright[1], N. Evans[1], M. Cardon[1], V. Wilson[1], M. Strynar[1], J. McCord[1], B. McIntyre[2], G. Travlos[2], and L. E. Gray[1]. [1] USEPA, RALEIGH, NC and [2] NIEHS, NTP, RTP, NC.

Gray.earl@epa.gov (presenter)

Timeline of GenX contamination in the NC Cape Fear River Basin



Center for Human Health and the Environment – NC State University



Abstract

GenX (**FRD-902**, ammonium (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate, CAS 62037-80-3) is an unregulated, persistent contaminant that has been found in both the Cape Fear River and in Wilmington NC drinking water, among other sites. Concerns exist about the potential health effects of GenX exposure because it is not removed using traditional water treatment methods and little is known about the toxicity of it or other associated per/polyfluoroalkyl substances. Our objective was to evaluate the in vitro hormone receptor activity of GenX and the potential to disrupt growth, viability and reproductive development in rats exposed in utero during sexual differentiation. In vitro, GenX did not display estrogenic, antiestrogenic, androgenic, antiandrogenic or glucocorticoid-like activity at any concentration (100pM to 10uM). When administered from gestational days (GD)14 to 18 of pregnancy by oral gavage at dosage levels of 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d, GenX reduced maternal weight gain (from 32g in controls to 21g at 250 mg and 11g at 500 mg), increased maternal liver weight (60 mg and above) and induced maternal mRNAs for PPAR-specific genes in the liver (NOEL to be determined (N-TBD). Maternal serum was collected on GD18 for determination of GenX levels and T4 levels and a lipid profile (TBD). Fetal viability and body weight at GD18 were not reduced, whereas liver mRNAs for PPAR-specific genes were increased in a dose related manner from 3 to 500 mg/kg/d. In addition to the fetal study, we are examining the effects of in utero GenX on the development of the offspring using a one-generation screening protocol which uses a single dose level (125 mg) and small sample sizes. Thus far there have been no adverse effects from birth to 50 days of age on growth, viability, or reproductive indices (neonatal anogenital distance, nipple retention, age at puberty) in the pilot study. This prenatal-postnatal study will be repeated with multiple dosage levels administered throughout gestation. When completed, these studies will enable us to link the internal GenX exposure levels to effects in the dam, fetus and offspring which will enhance the utility of the data for human health-hazard assessment. This abstract does not reflect Agency policy.

GenX Studies (FRD 902)

- **Study on the Effects of GenX in the Fetal and Pregnant CRSD Rat**
- **Pilot Study on the Effects of *in utero* GenX in the F1 male and female rat offspring using a one generation screening protocol**
- **In vitro studies of potential agonist and antagonist interactions with the following steroid receptors**
  - Androgen receptor (Chimpanzee)
  - Estrogen receptor (ER α)
  - Glucocorticoid receptor (hGR)

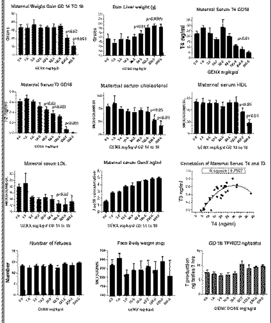
Study on the Effects of GenX in the Fetal and Pregnant CRSD Rat

J Conley, C Lambright, N Evans, LE Gray, Mark Strynar (NERL), Barry McIntyre (NTP) and Greg Travlos (NTP)

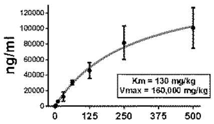
Pregnant rats dosed by oral gavage with GenX at 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d from gestational day (GD) 14 to 18. Animals necropsied on GD18.

- Endpoints Measured
- Maternal
  - Body weight gain (↓ in high dose groups)
  - Liver weight (↑ at 60 and above) and PPAR pathway gene expression
  - Serum thyroid hormone, cholesterol, HLDs, LDLs and Triglycerides (↓ in high dose groups)
- Fetal
  - Fetal weight (no effect)
  - Fetal viability (no effect)
  - Testicular testosterone production ex vivo (not reduced)
  - Fetal liver PPAR pathway gene expression (↑ at 3 and above)
- Endpoints Ongoing or Planned
  - Maternal serum and fetal plasma GenX levels (NERL)
  - Fetal plasma lipid profiles (NTP)
  - Possible assessment of other pathways in fetal tissues
  - Possible assessment of PPAR pathway in other fetal tissues

Maternal and Fetal Effects of GenX exposure



Maternal GD 18 GenX serum concentration



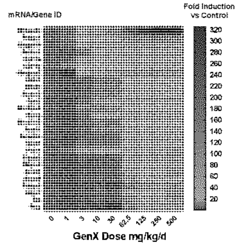
Comparing maternal serum GenX concentrations in the rat to levels detected in ongoing human studies will facilitate extrapolation of the effects seen in our studies to potential effects in humans. *(Drs. M Strynar and J McCord)*

Gomis et al (2018) reported that converting orally administered doses into serum concentrations for PFBA, PFHxA, PFOA and GenX changed the toxicity ranking using modeled serum (GenX > PFOA > PFHxA > PFBA) concentrations, indicating that some fluorinated alternatives have similar or higher toxic potency than their predecessors when correcting for differences in toxicokinetics.

GenX induces PPAR pathway mRNA expression in the fetal liver on GD18

Question 1: Is a change in fetal liver PPAR gene expression an adverse effect?

Question 2: Do these fetal liver changes produce organizational effects in utero that result in permanent changes in adult F1 liver function of gene expression



QPCR array in the Fetal Rat Liver

F value significant and > 8, dose-related increases

Number of genes significantly increased = 26

Dose mg GenX/kg GD 14 to 18

Dose	# affected
1	0
3	6
10	13
30	13
62.5	25
125	26
250	26
500	26

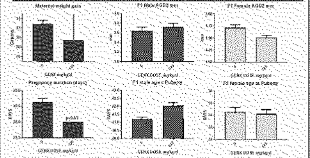
Pilot Study on the Effects of *in utero* GenX in the F1 male and female rat offspring using a one generation screening protocol

J Conley, C Lambright, N Evans, LE Gray

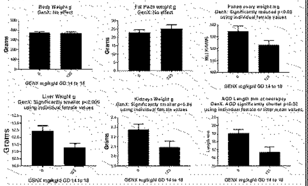
Pregnant rats dosed by oral gavage with GenX at 0 or 125 mg/kg/d from gestational day (GD) 14 to 18. F1 Animals will be necropsied on at full maturity.

- Endpoints Measured – no reduction in F1 pup growth or viability. Males not demasculinized. No delays in age at puberty in male and female offspring.
  - Maternal body weight and weight gain (no effect)
  - Onset of parturition slightly accelerated
  - Neonatal body weight and anogenital distance (no effect)
  - Infant body weight and nipple retention (no effect)
  - Body Weight at weaning and maternal implantation site numbers
  - F1 female and male age and body weight at puberty (vaginal opening and preputial separation, respectively)
- Endpoints Ongoing or Planned
  - F1 body and organ weights and gross anatomy (focused on reproductive system)
  - F1 male testis and epididymal histopathology
  - F1 male epididymal sperm counts
  - Possible assessment of F1 male serum hormone levels
  - Possible assessment of PPAR pathway in F1 male and female livers
- Follow-up dose response study with GenX
  - GenX will be administered throughout gestation to include the period of major organogenesis, gonadal differentiation in addition to the period of sexual differentiation at several dose levels below the current pilot study.

Maternal weight, pregnancy duration, male and female anogenital distance (AGD) and age at puberty (PPS and VO)

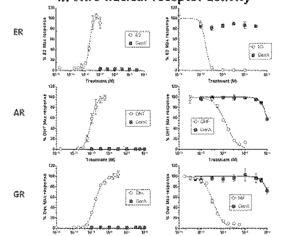


F1 female necropsy data at 125 days of age



- **In vitro studies of potential endocrine agonist and antagonist interactions with the following steroid receptors**
  - ***No agonist or antagonistic effects were detected***

In vitro nuclear receptor activity



Conclusions

- **In vitro, GenX did not display estrogenic, antiestrogenic, androgenic, antiandrogenic or glucocorticoid-like activity at any concentration (100pM to 10uM).**
- **When administered from gestational days (GD)14 to 18 of pregnancy by oral gavage at dosage levels of 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d,**
  - **GenX reduced maternal weight gain at 250 and 500 mg/kg, increased maternal liver weight (62.5 mg/kg and above) altered the lipid profile, reduced serum T4 (125 and above) and T3 (30 mg/kg and above) levels and induced maternal mRNAs for PPAR-specific genes in the liver.**
  - **Fetal viability and body weight at GD18 were not reduced, whereas liver mRNAs for PPAR-specific genes were increased in a dose related manner from 3 to 500 mg/kg.**
- **In addition to the fetal study, we are examining the effects of in utero GenX on the development of the offspring using a one-generation screening protocol which uses a single dose level (125 mg) and small sample sizes. GenX treatment did appeared to accelerate the onset of parturition, an effect noted in a Dupont study (2010) and some effects were noted in female offspring. These should be considered preliminary and require confirmation in a more definitive study**

ED_002003J_00067040-00001

To: Gray, Earl[Gray.Earl@epa.gov]
Cc: Conley, Justin[Conley.Justin@epa.gov]; Hartig, Philip[Hartig.Phillip@epa.gov]; Hines, Ronald[Hines.Ronald@epa.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Rogers, John M.[Rogers.John@epa.gov]; Wilson, Vickie[Wilson.Vickie@epa.gov]
From: Culpepper, Linda
Sent: Tue 2/27/2018 3:39:43 AM
Subject: RE: [External] GenX meeting at NIEHS on fri and our SOT abstract on GenX

Thank you for sharing the abstract, Dr. Gray. We look forward to continued collaboration among the agencies.
We appreciate the work you and your colleagues are doing.

linda

Linda Culpepper
Interim Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

Email correspondence to and from this address is subject to the
North Carolina Public Records Law and may be disclosed to third parties.

-----Original Message-----
From: Gray, Earl [mailto:Gray.Earl@epa.gov]
Sent: Monday, February 26, 2018 11:09 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Conley, Justin <Conley.Justin@epa.gov>; Hartig, Philip <Hartig.Phillip@epa.gov>; Hines, Ronald <Hines.Ronald@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Rogers, John M. <Rogers.John@epa.gov>; Wilson, Vickie <Wilson.Vickie@epa.gov>
Subject: [External] GenX meeting at NIEHS on fri and our SOT abstract on GenX

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.<mailto:report.spam@nc.gov>

Linda, it was a pleasure to talk to you about GenX and NCs efforts after the panel discussion on Friday.

I think it was a very good panel discussion and quite informative for the toxicologists in the room to hear what NC was doing on this highly visible issue

As requested, I am sending you my abstract describing the progress of our GenX research (as of Oct 2017, when submitted). This is now online at the SOT meeting website and will be presented on March 13, 2018 at the Annual Society of Toxicology in San Antonio. TX. Our work will be presented as a poster.

If you have any questions about it, let me know

Sincerely

L Earl Gray Jr
EPA, ORD, NHEERL, TAD, Reproductive Toxicology Branch, RTP, NC
919-541-7750

Organizer: Grevatt, Peter[Grevatt.Peter@epa.gov]

From: Mason, Paula

Location: 2123 EPA East - Peter Grevatt's conference line - Conference Line / Ex. 6 Conference ID: Personal Phone / Ex. 6

Importance: Normal

Subject: PFAS Toxicity Discussion - State Briefing #2

Start Time: Wed 5/2/2018 5:00:00 PM

End Time: Wed 5/2/2018 6:30:00 PM

Required Attendees: chanson@ecos.org; slongsworth@ecos.org; lpiper@ecos.org; aroberson@asdwa.org; dmason@asdwa.org; ron.falco@state.co.us; benzier@michigan.gov; ruchs@michigan.gov; sandeep.burman@state.mn.us; randy.ellingboe@state.mn.us; clark.freise@des.nh.gov; brandon.kernen@des.nh.gov; sarah.pillsbury@des.nh.gov; amy.klei@epa.ohio.gov; Bonnie.Buthker@epa.ohio.gov; Michael.Allen@epa.ohio.gov; Matthews, Lisa; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paulkristy.richardson@state.co.us

Optional Attendees: Bud.mccarty@ncdenr.gov; Soares, Barbara; Speth, ThomasAlbert, Ryan; Cassidy, Meghan; Maddaloni, Mark; rogers, rick; Allenbach, Becky; Harris, Kimberly; Morton, Michael; Shields, Amy; Bahrman, Sarah; Small, Matthew; Anderson-Carnahan, Linda; Reinhart, Roger; McClain-Vanderpool, Lisa; Miller, Amy; Dunbar, Bill; Benson, Bob; Cantor, Tiffany; Clement, Robert; Faulk, Libby; Fronczak, David; Guerra, Valeria; Ketellapper, Victor; Merritt, Steven; Morrison, Kendra; OBrien, Wendy; Ostendorf, Jody; Palomares, Art; Smith, Patricia; Stites, Rob; Wall, Dan; Braverman, Carole; Davison, Jenny; Kleinmaier, Danielle; Mankowski, Matthew; Manville, Jennifer; Maurice, Charles; Mendez, Thomas; Moore, Tammy; Newman, Erin; Poleck, Thomas; Prendiville, Timothy; Seely, David; Shoven, Heather; Valberg, Amelia; Zintek, Lawrence; Johnson, Mark; Mangino, Mario; Rachel R Worley; Wheeler, John; Rowsey, Kevin; ORD-OSP-RSL; ORD-OSP-STL; Lynch, Kira; Carpenter, Angela; Metz, Chloe; Kasparek, Lauren; Blank, Valerie; slivers@michigan.gov; Kelly, James (MDH)

ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.pdf

Provided are links to chemical-specific pages for the studies cited:

GenX: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2627

PFBS: https://hero.epa.gov/hero/index.cfm/project/page/project_id/2610

Location: Audio using Peter's conference line and the Adobe Connect Link: **Personal Privacy/ Ex.6**

From: Grevatt, Peter

Location: 2123 EPA East - Peter Grevatt's conference line Conference Line / Ex. 6 Conference ID: Personal Phone / Ex. 6

Importance: Normal

Subject: PFAS Toxicity Discussion - State Briefing #2

Start Time: Wed 5/2/2018 5:00:00 PM

End Time: Wed 5/2/2018 6:30:00 PM

Required Attendees: chanson@ecos.org; slongsworth@ecos.org; lpiper@ecos.org; aroberson@asdwa.org; dmason@asdwa.org; ron.falco@state.co.us; benzier@michigan.gov; ruchs@michigan.gov; sandeep.burman@state.mn.us; randy.ellingboe@state.mn.us; clark.freise@des.nh.gov; brandon.kernen@des.nh.gov; sarah.pillsbury@des.nh.gov; amy.klei@epa.ohio.gov; Bonnie.Buthker@epa.ohio.gov; Michael.Allen@epa.ohio.gov; Matthews, Lisa; Grevatt, Peter; Mclain, Jennifer; Holsinger, Hannah; Wadlington, Christina; Tiago, Joseph; Burneson, Eric; Behl, Betsy; Strong, Jamie; Jacobs, Brittany; Donohue, Joyce; Miller, Gregory; Harper, Ashley; Drinkard, Andrea; Behrsing, Tracy; Babcock, Amy; Aubee, Catherine; Henry, Tala; Orme-Zavaleta, Jennifer; Gillespie, Andrew; Bahadori, Tina; Jones, Samantha; Lambert, Jason; Lavoie, Emma; Owens, Beth; Moore, Alexa; Champlin, Anna; Rodan, Bruce; Mattas-Curry, Lahne; Raffaele, Kathleen; Gervais, Gregory; Leonard, Paul

Optional Attendees: Bud.mccarty@ncdenr.gov; Soares, Barbara; Speth, Thomas

ECOS FED PART GENX PFBS PRESENTATION 4.27.18A.pdf

Please note that meeting materials will be provided prior to the meeting.

To: Holman, Sheila[sheila.holman@ncdenr.gov]
From: Grevatt, Peter
Sent: Fri 3/23/2018 11:24:03 AM
Subject: Re: [External] 5:30 PM call on GenX today: teleconference line Conference Line / Ex. 6 conference code Personal Phone / Ex. 6

You're very welcome Sheila. Don't hesitate to reach out if you see additional things I can do to assist in our coordination on GenX or other PFAS issues!

Sent from my iPhone

On Mar 22, 2018, at 7:54 PM, Holman, Sheila <sheila.holman@ncdenr.gov> wrote:

Peter,

Just a quick note of thanks for the call today. I appreciate you and your team's efforts to coordinate with NC as you all develop your GenX toxicological evaluation. I look forward to working with you and your team.

Sheila

Sheila Holman
Assistant Secretary for Environment
NCDEQ
1601 Mail Service Center
Raleigh, NC 27699-1601
Phone: (919) 707-8619
Fax: (919) 707-8619
deq.nc.gov

sheila.holman@ncdenr.gov

****
Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties unless the content is exempt by statue or other regulation.
****

From: Grevatt, Peter <Grevatt.Peter@epa.gov>
Sent: Thursday, March 22, 2018 2:14 PM
To: Holman, Sheila
Cc: Culpepper, Linda; Mclain, Jennifer; Holsinger, Hannah; Walker, Mary; Behl, Betsy
Subject: [External] 5:30 PM call on GenX today: teleconference line Conference Line / Ex. 6 conference code Conference Line / Ex. 6

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Thanks for the clarification Sheila. Let's go for 5:30 today. I think this can be fairly brief, as our folks have already connected with your team and R4 on the key issues around the tox value development for GenX.

We can use my teleconference line Conference Line / Ex. 6 conference code Personal Phone / Ex. 6

From: Holman, Sheila [mailto:sheila.holman@ncdenr.gov]
Sent: Thursday, March 22, 2018 1:44 PM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>; Walker, Mary <walker.mary@epa.gov>
Subject: Re: [External] Re: GenX Health Reference Value

Peter,

My apologies. I am open tomorrow at 5 pm. I am open today at 5:30. Let me know which might work for you and your team.

Sheila

Sent from my iPhone

On Mar 22, 2018, at 1:05 PM, Grevatt, Peter <Grevatt.Peter@epa.gov> wrote:

> External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.
>
> Sheila, let's connect at 5 today. I was on the phone with Mary earlier and I think it would be great if we could plug her in as well. I'm glad to set up a conference call line if that would be helpful.
>
> Thanks, P. Grevatt
>
> **From:** Holman, Sheila [mailto:sheila.holman@ncdenr.gov]
> **Sent:** Thursday, March 22, 2018 7:55 AM
> **To:** Grevatt, Peter <Grevatt.Peter@epa.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
> **Cc:** Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>
> **Subject:** RE: [External] Re: GenX Health Reference Value
>
> Peter,

I am booked much of today. I have a window of time tomorrow at 8:45 and at 5 pm. Let me know if either of those times work for you.

Sheila

Sheila Holman

Assistant Secretary for the Environment

NCDEQ

1601 Mail Service Center

Raleigh, NC 27699-1601

Phone/Fax: 919-707-8619

deq.nc.gov

Sheila.holman@ncdenr.gov

From: Grevatt, Peter [mailto:Grevatt.Peter@epa.gov]
Sent: Wednesday, March 21, 2018 6:46 PM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Holman, Sheila <sheila.holman@ncdenr.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>
Subject: [External] Re: GenX Health Reference Value

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Thanks Linda and Sheila, I'm boarding my return flight to DC shortly, but I'll be happy to connect by phone tomorrow or Friday. Please let me know what is best for you.

Thanks, P. Grevatt

Sent from my iPhone

On Mar 21, 2018, at 4:32 PM, Culpepper, Linda <linda.culpepper@ncdenr.gov> wrote:

> Peter – thank you for your time this afternoon. Connecting you via email with Sheila Holman, DEQ Assistant Secretary. I know she would enjoy a conversation, and can also be reached at 919-707-8619.

Linda

Linda Culpepper

Interim Director Division of Water Resources

NC Department of Environmental Quality

Phone/fax: 919-707-9014

Sent from Mail for Windows 10

To: Holman, Sheila[sheila.holman@ncdenr.gov]; Culpepper, Linda[linda.culpepper@ncdenr.gov]
Cc: Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Holsinger, Hannah[Holsinger.Hannah@epa.gov]; Walker, Mary[walker.mary@epa.gov]
From: Grevatt, Peter
Sent: Thur 3/22/2018 5:05:48 PM
Subject: RE: [External] Re: GenX Health Reference Value

Sheila, let's connect at 5 today. I was on the phone with Mary earlier and I think it would be great if we could plug her in as well. I'm glad to set up a conference call line if that would be helpful.

Thanks, P. Grevatt

From: Holman, Sheila [mailto:sheila.holman@ncdenr.gov]
Sent: Thursday, March 22, 2018 7:55 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>
Subject: RE: [External] Re: GenX Health Reference Value

Peter,

I am booked much of today. I have a window of time tomorrow at 8:45 and at 5 pm. Let me know if either of those times work for you.

Sheila

Sheila Holman
Assistant Secretary for the Environment
NCDEQ
1601 Mail Service Center
Raleigh, NC 27699-1601
Phone/Fax: 919-707-8619
deq.nc.gov
Sheila.holman@ncdenr.gov

From: Grevatt, Peter [mailto:Grevatt.Peter@epa.gov]
Sent: Wednesday, March 21, 2018 6:46 PM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Holman, Sheila <sheila.holman@ncdenr.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>
Subject: [External] Re: GenX Health Reference Value

External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.

Thanks Linda and Sheila, I'm boarding my return flight to DC shortly, but I'll be happy to connect by phone tomorrow or Friday. Please let me know what is best for you.

Thanks, P. Grevatt

Sent from my iPhone
On Mar 21, 2018, at 4:32 PM, Culpepper, Linda <linda.culpepper@ncdenr.gov> wrote:

> Peter – thank you for your time this afternoon. Connecting you via email with Sheila Holman, DEQ Assistant Secretary. I know she would enjoy a conversation, and can also be reached at 919-707-8619.
>
> Linda
>
> Linda Culpepper
> Interim Director Division of Water Resources
> NC Department of Environmental Quality

Phone/fax: 919-707-9014

Sent from Mail for Windows 10

To: Holman, Sheila[sheila.holman@ncdenr.gov]; Culpepper, Linda[linda.culpepper@ncdenr.gov]
Cc: Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Holsinger, Hannah[Holsinger.Hannah@epa.gov]
From: Grevatt, Peter
Sent: Thur 3/22/2018 12:13:02 PM
Subject: RE: [External] Re: GenX Health Reference Value

Thanks Sheila. Let's go for 8:45. Would you like me to call the number in your signature block below?

From: Holman, Sheila [mailto:sheila.holman@ncdenr.gov]
Sent: Thursday, March 22, 2018 7:55 AM
To: Grevatt, Peter <Grevatt.Peter@epa.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>
Subject: RE: [External] Re: GenX Health Reference Value

Peter,

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Sheila

Sheila Holman
Assistant Secretary for the Environment
NCDEQ
1601 Mail Service Center
Raleigh, NC 27699-1601
Phone/Fax: 919-707-8619
deq.nc.gov
Sheila.holman@ncdenr.gov

From: Grevatt, Peter [mailto:Grevatt.Peter@epa.gov]
Sent: Wednesday, March 21, 2018 6:46 PM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Holman, Sheila <sheila.holman@ncdenr.gov>; Mclain, Jennifer <Mclain.Jennifer@epa.gov>; Holsinger, Hannah <Holsinger.Hannah@epa.gov>
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>
> Linda
>
> Linda Culpepper
> Interim Director Division of Water Resources
> NC Department of Environmental Quality
>
> Phone/fax: 919-707-9014
>
> Sent from Mail for Windows 10

To: Culpepper, Linda[linda.culpepper@ncdenr.gov]
Cc: Holman, Sheila[sheila.holman@ncdenr.gov]; Mclain, Jennifer[Mclain.Jennifer@epa.gov]; Holsinger, Hannah[Holsinger.Hannah@epa.gov]
From: Grevatt, Peter
Sent: Wed 3/21/2018 10:46:01 PM
Subject: Re: GenX Health Reference Value

Thanks Linda and Sheila, I'm boarding my return flight to DC shortly, but I'll be happy to connect by phone tomorrow or Friday. Please let me know what is best for you.
Thanks, P. Grevatt

Sent from my iPhone

On Mar 21, 2018, at 4:32 PM, Culpepper, Linda <linda.culpepper@ncdenr.gov> wrote:

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>
> Linda
>
> Linda Culpepper
> Interim Director Division of Water Resources
> NC Department of Environmental Quality
>
> Phone/fax: 919-707-9014
>
> Sent from Mail for Windows 10

Organizer: Beauvais, Joel[Beauvais.Joel@epa.gov]

From: Bethel, Heidi[/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=D3E2FC8DD1BD4CF39B80EC8272B6D4A3-HBETHEL]

Location: 3233 WjCE

Importance: Normal

Subject: Drinking Water Health Advisories for PFOA and PFOS Call in Personal Phone / Ex. 6

Start Time: Thur 2/11/2016 8:15:00 PM (UTC)

End Time: Thur 2/11/2016 9:00:00 PM (UTC)

Required Attendees: Southerland, Elizabeth; Behl, Betsy; Strong, Jamie; Donohue, Janice; Flaherty, Colleen; Harper, Ashley; Lalley, Cara; Grevatt, Peter; Burneson, Eric; Rodgers-Jenkins, Crystal; Greene, Ashley; Gilinsky, Ellen

Optional Attendees: Wambaugh, John; Thomas, Russell; Conerly, Octavia; Lape, Jeff; Scozzafava, MichaelE; Cooke, Maryt; Henry, Tala; Libelo, Laurence

Drinking Water Health Advisories for PFOA and PFOS Meeting with Joel Bea....pdf

PFOA-PFOS-OW HAs 02 10 16 final.ppt

Drinking Water Health Advisories for PFOA and PFOS Meeting with Joel Bea....pdf PFOA-PFOS-OW HAs 02 10 16 final.ppt

To: Leung, Lam-Wing H[LAM.H.LEUNG-1@chemours.com]
Cc: Strynar, Mark[Strynar.Mark@epa.gov]; Libelo, Laurence[Libelo.Laurence@epa.gov]
From: Lindstrom, Andrew
Sent: Thur 4/5/2018 6:59:58 PM
Subject: RE: FRD905?

Thank you Lam.

I appreciate your clarification of this issue.

Andy

From: Leung, Lam-Wing H [mailto:LAM.H.LEUNG-1@chemours.com]
Sent: Thursday, April 5, 2018 1:42 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: FRD905?

Hi Andy,

Thanks for your question. FRD905 is a mixture of substances. The composition of the substances in the mixture are considered to be confidential business information ("CBI"); however, I understand we have provided information on its composition and use in confidential submissions provided in response to questions which followed-up on plant visits made last year by EPA Region 4 personnel. We've also provided the information to Headquarters personnel too I am told.

If you have been given access to the information we have provided to the regional office and EPA Headquarters in that context, you can learn more about the mixture. You would need to have been "cleared" for access to TSCA CBI from what I understand.

Best Regards,

Lam

Lam Leung, Ph.D.
Technical Fellow

lam.h.leung-1@chemours.com

302 353 5218 o
Personal Phone / Ex. 6 m

The Chemours Company
Experimental Station 402/5323

200 Powder Mill Road
Wilmington, DE 19803

USA

Chemours™

LinkedIn | Twitter | Chemours.com

From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Tuesday, March 27, 2018 8:29 AM
To: Leung, Lam-Wing H <LAM.H.LEUNG-1@chemours.com>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: FRD905?

Thanks Lam,

Andy

From: Leung, Lam-Wing H [mailto:LAM.H.LEUNG-1@chemours.com]
Sent: Monday, March 26, 2018 4:44 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>

Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: FRD905?

Hi Andy,
Thank you for the message and I apologize for the late response as I was at ACS in NOLA all week last week. I'll have to look through our internal documentation about your inquiry and will get back to you the next few days.

Hi Mark,

We are still working on getting all the proper SDS for the different standards and has taken us much longer than anticipated and we are hoping that we'll have them shipped out to you next week.

Best Regards,

Lam

Lam Leung, Ph.D.
Technical Fellow

lam.h.leung-1@chemours.com

302 353 5218 o
Personal Phone / Ex. 6 m

The Chemours Company
Experimental Station 402/5323

200 Powder Mill Road
Wilmington, DE 19803

USA

Chemours™

LinkedIn | Twitter | Chemours.com

From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Monday, March 19, 2018 9:06 AM
To: Leung, Lam-Wing H <LAM.H.LEUNG-1@chemours.com>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: FRD905?

Lam,

Have you ever heard of FRD905?

From what I've read FRD902 is the GenX ammonium salt and FRD903 is the free acid.

Please check out the attached document from the WV DEP where DuPont refers to FRD905 (marked in yellow in two places) as being equivalent to FRD902 and FRD903.

I'm wondering if it may just be another salt such as potassium or sodium.

If you have any knowledge on this I'd be grateful if you would please let me know.

Thank you very much,

Andy

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Francais Italiano Deutsch Portuges Espanol Japanese Chinese Korean

https://www.chemours.com/Chemours_Home/en_US/email_disclaimer.html

Organizer: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]

From: Lindstrom, Andrew

Location: RTP-E201-Max50/RTP-Bldg-E; RTP-Line-[redacted]Phone-Line/RTP-Conf-Bridge

Importance: Normal

Subject: Emerging Contaminant Scientific Team Meeting May 14

Start Time: Mon 5/14/2018 2:30:00 PM

End Time: Mon 5/14/2018 5:30:00 PM

Required Attendees: Mark Strynarlee.ferguson@duke.edu; Buckley, Timothy; Allenbach, Becky; Medina-Vera, Myriammeadr@uncw.edu; msun8@uncc.edu; jeff.warren@unc.edu; jackie.macdonald@unc.edu; DeWitt, Jamie; linda.culpepper@ncdenr.gov; michael.abraczinskas@ncdenr.gov; Mitchell, Ken; cyndi.karoly@ncdenr.gov; Morris, Eric B; julie.grzyb@ncdenr.gov; qais.banihani@ncdenr.gov

Optional Attendees: Jones, Aaryn; Hall, Renea; Shell, Karrie-JoAdams, Glenn; Banister, Beverly; Kemker, Carol; Thomas, Brett; Koporec, Kevin

EPA locations (1).ppt

EC Meeting Agenda May 2018.docx

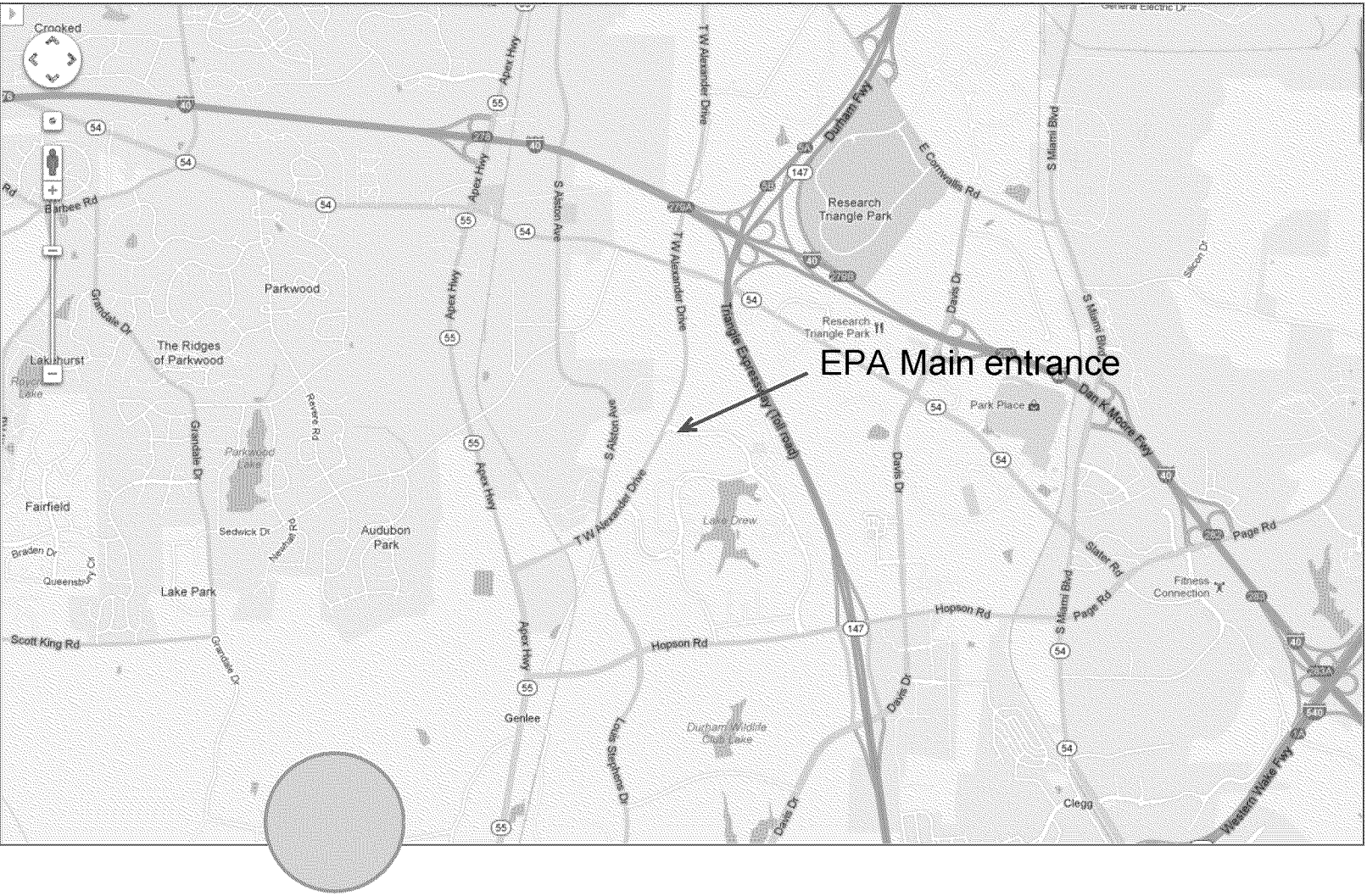
Emerging Contaminant Monitoring Scientific Team Meeting

Monday, May 14, 2018
USEPA NERL
RTP Building E, Room E201
109 TW Alexander Dr, Durham, NC 27709
Conference call-in # Personal Phone / Ex. 6

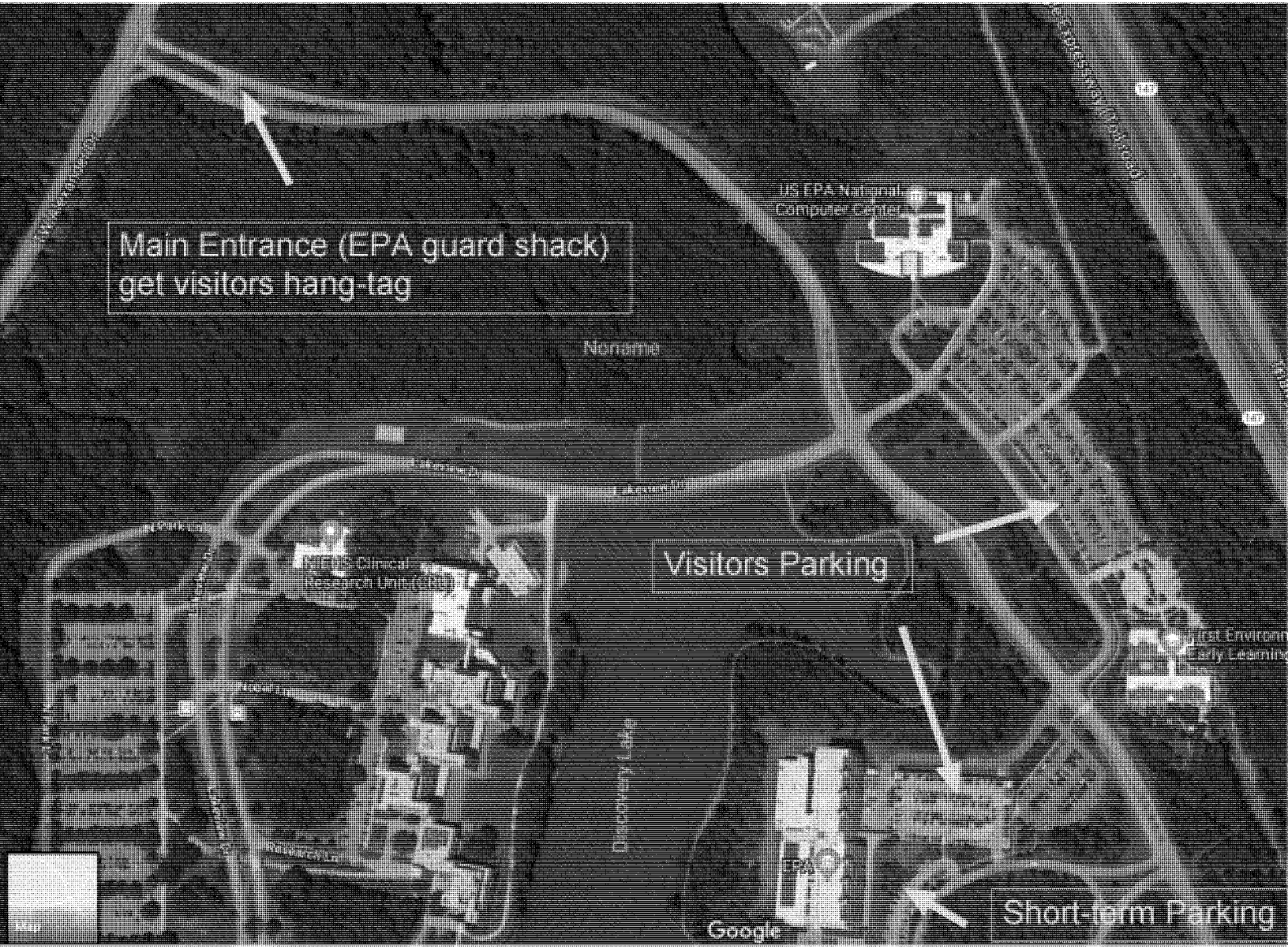
Note: Please plan to arrive at EPA at least 15 minutes early in order to allow time for security screening

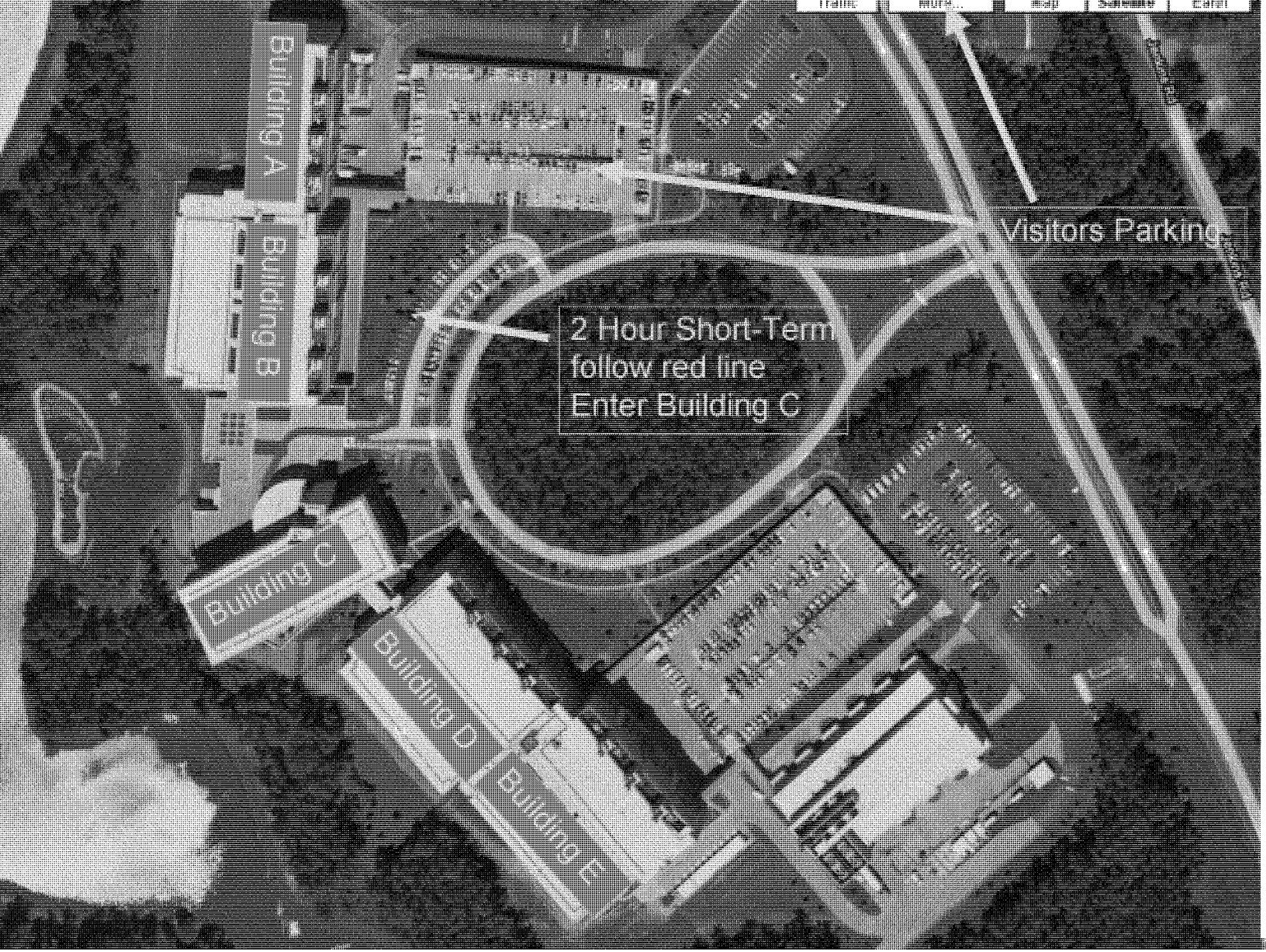
10:00 am	Tour of EPA NERL laboratory	Mark Strynar
10:30 am	Introduction and welcome	Lee Ferguson
10:45 am	Orientation to the scope of emerging contaminants in NC surface water	All
11:15 am	Summary of December 2017 GenX workshop at UNCW	Ralph Mead
11:30 am	Discussion of state-wide capabilities for emerging contaminant monitoring	All
12:00 pm	Latest research results on emerging contaminant monitoring in NC waters	Knappe, Ferguson, Strynar, Mead, DEQ, others?
12:45 pm	Discussion of practical, logistical, and financial aspects associated with a state-wide emerging contaminant monitoring program	All
1:30 pm	Adjourn	

Late lunch off site, location TBA (1:30 pm): All participants who are available are invited to join after the meeting for an informal lunch to continue discussions


EPA Main entrance
Crooked
Barbee Rd
Parkwood
The Ridges of Parkwood
Lakehurst
Grandale Dr
Revere Rd
Parkwood Lake
Fairfield
Sedwick Dr
Newlin Rd
Audubon Park
Braden Dr
Queensbury Ct
Lake Park
Scott King Rd
Apex Hwy
S Alston Ave
T W Alexander Drive
Triangle Expressway (Toll road)
Hopson Rd
Genlee
Louis Stephens Dr
Lake Drew
Durham Wildlife Club Lake
Durham Fwy
Research Triangle Park
E Cornwallis Rd
Davis Dr
S Miami Blvd
Silicon Dr
Dan K Moore Fwy
Park Place
Page Rd
Slater Rd
Fitness Connection
Clegg
Western Wake Fwy
General Electric Dr

Main Entrance (EPA guard shack)
get visitors hang-tag
Visitors Parking
Short-term Parking
T.W. Alexander Dr
Lakeview Dr
Lakeview Dr
Lakeview Dr
USA
Environmental
Protection Agency
Research Ln
Nonprime
CICSCo
Construction
Services
Environmental Pkwy
Environmental Pkwy
Jenkins Rd


Main Entrance (EPA guard shack)
get visitors hang-tag
US EPA National
Computer Center
Noname
Visitors Parking
Short-term Parking
Google


Visitors Parking
2 Hour Short-Term
follow red line
Enter Building C
Building A
Building B
Building C
Building D
Building E

To: Dennis Dixon[dennisdixon44@gmail.com]
Cc: Adrien Wilkie[aawilkie@ncsu.edu]; Tarte, Phillip[ptarte@nhcgov.com]; Matney, Katelyn[kmatney@nhcgov.com]; Howard, David G[dhoward@nhcgov.com]; LESHONDA WALLACE[Personal Address / Ex. 6]Khadijia Tribie Reid[Personal Address / Ex. 6] ELIZABETH UZCATEGUI[luzcategui@coastalhorizons.org]; Moore, Zack[zack.moore@dhhs.nc.gov]; Lea, Suzanne[LEAC@ecu.edu]; Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Jane Hoppin[jahoppin@ncsu.edu]
From: Kemp Burdette
Sent: Tue 7/3/2018 4:59:16 PM
Subject: Re: Possible date for next Community Science Advisory Panel meeting (end of July)

Works for me too.

Kemp Burdette
Cape Fear Riverkeeper

Please excuse message brevity and typos; sent from my smartphone.

On Tue, Jul 3, 2018, 12:32 PM Dennis Dixon < Personal Address / Ex. 6 > wrote:

That date works for me.

On Tue, Jul 3, 2018, 12:29 PM Adrien Wilkie <aawilkie@ncsu.edu> wrote:

Good afternoon!

As promised, we would like to have another Community Science Advisory Panel meeting at the end of July. We are working now to identify a date that works best.

How does Monday, July 30 at 6PM work for you?

Best,
Adrien

Adrien Wilkie, MSPH
Research Assistant
GenX Exposure Study

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; McCord, James[mccord.james@epa.gov]
From: Bowyer, Jim
Sent: Thur 6/21/2018 11:35:36 AM
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
Ok thanks. I'll work it out with Andy or James.

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 21, 2018 7:33 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; McCord, James <mccord.james@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.

Jim,

I am working from home today, however Andy should be there. I am out of the office tomorrow.

My post doc James McCord should be there all day to receive samples however.

Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 7:18 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
I am over in Raleigh so I can just bring them over. Would today or tomorrow be ok?

Jim Bowyer, Ph.D.

Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 21, 2018 7:16 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

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Jim,

Ship at your convenience. I am away all next week at the Gordon Conference.

Our address is:
Attn: Mark Strynar or Andy Lindstrom
US EPA
109 TW Alexander Dr.
Chemical Services Loading Dock E
Durham, NC 27711

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 6:13 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
I do have the samples and I believe we have at least 500 mL of the two. I can arrange to get those to you this week or early next week, whichever is most convenient.

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 20, 2018 9:05 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: [External] RE: Assistance request Rainwater sample

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Jim,

Glad to do so. DO you have the sample and if so what volume?

Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Friday, June 15, 2018 1:44 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Assistance request Rainwater sample

Dr. Strynar,
I would like to request assistance with determining whether a rain water sample that NC DAQ has collected in our Rainwater Collection Network from a site outside of the Fayetteville area actually has what was reported by our contract lab as being GenX is actually GenX or some other compound. The sample was collected as a thrufall sample under a red cedar thru a rainfall event. I was wondering if you might be able to differentiate between GenX and another biological compound from that evergreen?

Thanks for any assistance you may be able to offer to clarify this for us.

Jim Bowyer, Ph.D.
Environmental Program Supervisor II
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

Nothing Compares

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To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]
From: Bowyer, Jim
Sent: Thur 6/21/2018 11:17:57 AM
Subject: RE: [External] RE: Assistance request Rainwater sample

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Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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1622 Mail Service Center
Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 21, 2018 7:16 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

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Attn: Mark Strynar or Andy Lindstrom
US EPA
109 TW Alexander Dr.
Chemical Services Loading Dock E
Durham, NC 27711

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 6:13 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

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Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
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919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 20, 2018 9:05 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: [External] RE: Assistance request Rainwater sample

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Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Friday, June 15, 2018 1:44 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Assistance request Rainwater sample

Dr. Strynar,
I would like to request assistance with determining whether a rain water sample that NC DAQ has collected in our Rainwater Collection Network from a site outside of the Fayetteville area actually has what was reported by our contract lab as being GenX is actually GenX or some other compound. The sample was collected as a thrufall sample under a red cedar thru a rainfall event. I was wondering if you might be able to differentiate between GenX and another biological compound from that evergreen?

Thanks for any assistance you may be able to offer to clarify this for us.

Jim Bowyer, Ph.D.
Environmental Program Supervisor II
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

Nothing Compares

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To: Risen, Amy J[Amy.Risen@ncdenr.gov]
Cc: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]
From: Strynar, Mark
Sent: Thur 6/14/2018 5:58:08 PM
Subject: RE: [External] RE: using PFECA and PFESA standards

Detlef Knappe and his Ph.D. student Zack Hopkins are best.

Mark

From: Risen, Amy J [mailto:Amy.Risen@ncdenr.gov]
Sent: Thursday, June 14, 2018 9:44 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: using PFECA and PFESA standards

Can you or Andy suggest anyone at NC State or R4 who would be a good contact to speak with?

I will follow up with Detlef too.

Thank you!

Amy Risen, PhD
Toxicologist
Division of Waste Management
NC Department of Environmental Quality

(919) 707-8223
amy.risen@ncdenr.gov

1646 Mail Service Center
Raleigh, NC 27699-1646

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 14, 2018 7:57 AM
To: Risen, Amy J <Amy.Risen@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: [External] RE: using PFECA and PFESA standards

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.

Hi Amy,

Glad you are back among the NC State employee fold.

I have been out of the loop with respect to samples and the measurement of the PFECAs in the Cape Fear river since late fall. They are all being sent to the R4 lab now.

However, my opinion would be for the 3/28 and 4/11 sampling dates the estimated values seem awful low as PFMOAA was always in every sample for us the largest peak. The only real way to see the PFMOAA estimation versus GenX and true analytical comparison is to do so on the same samples.

I will need to dig up some local data NC State is developing to see how the estimation of PFMOAA versus hard quantitation with authentic standards compare.

Mark

From: Risen, Amy J [mailto:Amy.Risen@ncdenr.gov]
Sent: Wednesday, June 13, 2018 4:18 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: using PFECA and PFESA standards

Hi Mark,

You and I spoke at the WRRI conference a few months back. I recently started working with the state of NC again and I have some analytical chemistry questions for you.

We're using GEL labs to analyze water for the extended list of PFAS chemicals. Earlier on they were estimating concentrations of the PFECAs and PFESAs based on GenX. Recently GEL received non-certified standards to generate their standard curves and are analyzing samples this way.

I'm seeing that the values generated from the standards for PFECAs and PFESAs are mostly within 1 order of magnitude from the previous estimates, as predicted. However, I'm seeing that PFMOAA is actually 3 orders of magnitude higher than previously estimated. I'm including a partial table of unofficial data below so you can see what I'm talking about. Are you finding the same thing? We're going to be posting some results online next week that look something like below, and I'm checking in so our team can be informed about this. Feel free to give me a call to discuss.

Collection date	Analysis date	PFAS:	Perfluoro- 2-methoxyacetic acid (PFMOAA)	Perfluoro-(3,5-dioxahexanoic) acid (PFO2HxA)	Perfluoro- 3-methoxy-propanoic acid (PFMOPrA)	Perfluoro-(3,5,7-trioxaoctanoic) acid (PFO3OA)	Perfluoro-4-methoxy-butanic acid (PFMOBA)	Nafion Byproduct 1	Nafion Byproduct 2	Perfluoro-(3,5,7,9-tetraoxadecanoic) acid (PFO4DA)
		CAS N:	674-13-5	39492-88-1	377-73-1	39492-89-2	863090-89-5	29311-67-9	749836-20-2	39492-90-5
3/28/2018	4/5/2018	ng/L	0.43	198	858	31	146	ND	89.20	8.26
4/11/2018	4/24/2018	ng/L	0.52	194	843	33	148	3.31	82.20	8.88
05/03/18	05/09/18	ng/L	306	345	2940	ND	791	ND	59.9	29.7
05/16/18	05/22/18	ng/L	246	323	2260	79.5	698	ND	42.8	23.1

Values estimated based on GenX for 4/05/18 & 4/24/18 analysis

Values estimated based on non-certified standards for 5/09/18 & 5/22/18 analysis

Thank you and I hope all is well with you!
Amy

Amy Risen, PhD
Toxicologist
Division of Waste Management
NC Department of Environmental Quality

(919) 707-8223
amy.risen@ncdenr.gov

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Raleigh, NC 27699-1646

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To: Risen, Amy J[Amy.Risen@ncdenr.gov]
Cc: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]
From: Strynar, Mark
Sent: Thur 6/14/2018 11:57:25 AM
Subject: RE: using PFECA and PFESA standards

Hi Amy,

Glad you are back among the NC State employee fold.

I have been out of the loop with respect to samples and the measurement of the PFECAs in the Cape Fear river since late fall. They are all being sent to the R4 lab now.

However, my opinion would be for the 3/28 and 4/11 sampling dates the estimated values seem awful low as PFMOAA was always in every sample for us the largest peak. The only real way to see the PFMOAA estimation versus GenX and true analytical comparison is to do so on the same samples.

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From: Risen, Amy J [mailto:Amy.Risen@ncdenr.gov]
Sent: Wednesday, June 13, 2018 4:18 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: using PFECA and PFESA standards

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		CAS N:	674-13-5	39492-88-1	377-73-1	39492-89-2	863090-89-5	29311-67-9	749836-20-2	39492-90-5
3/28/20	4/5/201	ng/L	0.43	198	858	31	146	ND	89.20	8.26

18	8									
4/11/2018	4/24/2018	ng/L	0.52	194	843	33	148	3.31	82.20	8.88
05/03/18	05/09/18	ng/L	306	345	2940	ND	791	ND	59.9	29.7
05/16/18	05/22/18	ng/L	246	323	2260	79.5	698	ND	42.8	23.1

Values estimated based on GenX for 4/05/18 & 4/24/18 analysis

Values estimated based on non-certified standards for 5/09/18 & 5/22/18 analysis

Thank you and I hope all is well with you!
Amy

Amy Risen, PhD
Toxicologist
Division of Waste Management
NC Department of Environmental Quality

(919) 707-8223
amy.risen@ncdenr.gov

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Raleigh, NC 27699-1646

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To: Michael Pjetraj[michael.pjetraj@ncdenr.gov]
Cc: michael.abraczinskas@ncdenr.gov[michael.abraczinskas@ncdenr.gov]; Offenberg, John[Offenberg.John@epa.gov]; Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Ryan, Jeff[Ryan.Jeff@epa.gov]; Gullett, Brian[Gullett.Brian@epa.gov]; Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Pye, Havala[Pye.Havala@epa.gov]; Murphy, Benjamin[Murphy.Benjamin@epa.gov]
From: Buckley, Timothy
Sent: Tue 6/12/2018 3:12:20 PM
Subject: RE: NC DAQ / EPA ORD - Chemours & GenX action items

Thanks Michael.

I am informing EPA/ORD POCs by copy.

Tim

Timothy J. Buckley, PhD
Director of the Exposure Methods & Measurements Division
National Exposure Research Laboratory
109 TW Alexander Drive
Research Triangle Park, NC 27711

Email: buckley.timothy@epa.gov
URL: http://www.epa.gov/heasd/staff/buckley.html
Phone: (919) 541-2454 (O); FAX: -0239
Personal Phone / Ex. 6

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Friday, June 08, 2018 7:41 PM
To: Buckley, Timothy <Buckley.Timothy@epa.gov>
Cc: michael.abraczinskas@ncdenr.gov
Subject: NC DAQ / EPA ORD - Chemours & GenX action items

Hello,
Thanks again for our call on Tuesday 5/29/18. I recorded a few action items that I would like to share with you to ensure that connections are made.

At the end of the call, for each area of interest, I provided the name of a DAQ staff person & recorded names of EPA staff members that were volunteered. I am aware of John Offenberg contacting Jim Bowyer regarding the rainwater analysis. I have provided the contact information for the remaining DAQ staff members in the list below. Please have your leads contact our staff on each of the areas of interest below.

Please let me know if you have any questions or concerns.

Thanks
Michael

1. Sampling – Technical review & advice for stack sampling

- EPA – NERML Jeff Ryan
- DAQ – Gary Saunders
    - 919 707 8413 office
    - gary.saunders@ncdenr.gov

2. Split samples – SESD lab

SOP for lab samples

- ORD lab – Jeff Ryan
- DAQ – Gary Saunders

    - 919 707 8413 office
    - gary.saunders@ncdenr.gov

3. Rainwater sampling

- EPA ORD – John Offenberg
- DAQ – Jim Bowyer

    - 919 715 7484 office
    - Jim.Bowyer@ncdenr.gov

Note – John contacted Jim bowyer on 6/1/18 via email – Thanks!

4. Andy Lindstrom – Emission points of all the sources

5. Modelers

- EPA – Havala Pye & Ben Murphy
- DAQ – Tom Anderson

    - Phone 919.707.8723
    - tom.anderson@ncdenr.gov
- & Nancy Jones

    - 919 707 8444
    - Nancy.jones@ncdenr.gov

6. Ambient Monitoring

- DAQ – Patrick Butler (Patrick.Butler@ncdenr.gov)

    - 919 707 8719 office
    - Patrick.Butler@ncdenr.gov

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Lindstrom, Andrew

Location: RTP-E201-Max50/RTP-Bldg-E; RTP-Line-Personal Matters / Ex. 6 hone-Line/RTP-Conf-Bridge

Importance: Normal

Subject: Emerging Contaminant Scientific Team Meeting May 14

Start Time: Mon 5/14/2018 2:30:00 PM

End Time: Mon 5/14/2018 5:30:00 PM

Required Attendees: qais.banihani@ncdenr.gov

EPA locations (1).ppt

EC Meeting Agenda May 2018.docx

To: Bowyer, Jim[jim.bowyer@ncdenr.gov]
Cc: McCord, James[mccord.james@epa.gov]; Mark Strynar[Strynar.Mark@epa.gov]
From: Lindstrom, Andrew
Sent: Mon 7/9/2018 3:59:57 PM

Jim,

This has become very interesting.

I just talked with Mark about his analysis of the rainwater samples and things have become less clear. He looked at those samples using a triple quad system and he did find evidence of "GenX" at what might be significant concentrations (100 - 200 ng/L). He didn't have time to do a calibration curve, but they were significant peaks that suggest potentially troubling concentrations.

He found "GenX" at the correct retention time and he monitored the two transitions (329 → 285 *m/z* and 329 → 169 *m/z*) which had the same parent/daughter ratios as a native GenX standard. So on a triple qad, the preponderance of evidence says GenX is there.

But James found no evidence of GenX using the high-resolution instrument (Orbitrap).

So what's going on?

Our best instrument says there is no GenX so that's the conclusion I'd support.

This is complicated and there is obviously something for everyone to learn here.

It may be that because the samples were so highly contaminated with humic acids and other materials washing off the cedar tree that it is only by chance that a well resolved peak at the correct retention time with the same two transitions and with the same parent/daughter ratios occurs in these samples. Some as yet unidentified compound that looks like GenX to a triple quad. This is entirely possible as the universe of compounds under 500 *m/z* in these types of complex biological samples is very large and anything is possible.

This is exactly why we need the much greater specificity that a high-resolution MS will give. There are probably millions of compounds in the fall-through in these samples. One really looks like GenX until you look at the exact mass – down to the 3rd and 4th decimal point in the *m/z* determination.

In any case, here are some questions I'd ask to the contract lab to answer so we can learn more about how this is happening.

First off, it would be important to get all the relevant details of the method that they use for GenX determination. Please specify the following:

The type instrument used (LC/MS/MS, UPLC/MS/MS, other).

The type of chromatographic column, mobile phases used (A and B), and mixing ramp program.

Type of internal standard used, where it is labeled, and when it is added in the sample preparation process. The isotope dilution method (gold standard) puts the labeled IS into the sample at the beginning (before extraction) and gets around the need for recovery corrections. The other way to do it is to add the mass labeled IS after extraction is completed but then you do have to make a recovery correction.

Please specify the solid phase extraction process with a complete list of reagents and consumable materials.

Please list the retention time windows and the diagnostic ions monitored for identification. Confirm that this is eluting at that same time as native standard of GenX in the chromatographic system.

Please specify the parent/daughter transitions (e.g., 329 → 285 *m/z*) used to confirm the presence of GenX and confirm that the parent/daughter ion ratios are consistent between a native GenX standard and the putative GenX observed in the sample.

Ask if they have done any standard addition (for example, adding 50, 100, 200 ng/L of native GenX to the unknown sample) to confirm that the GenX peak increases in size and the calibration curve reports the correct added increment.

There are going to be a lot of questions about what is going on with this problem and I suggest that we convene some kind of "best practices" conference call or workshop with all participating parties.

Please let us know how we can continue to help.

Thank you very much,

Andy

To: Johnson, Chris[chris.johnson@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Thur 7/20/2017 12:50:08 PM
Subject: RE: EPA PFAS contact

Chris,

Here's Dr. Orme-Zavaleta's contact information:

Jennifer Orme-Zavaleta, PhD
Director, National Exposure Research Laboratory
USEPA Office of Research and Development
109 TW Alexander Dr MC 305-01
RTP, NC 27711
Orme-Zavaleta.Jennifer@epa.gov

Please let me know if I can be of any further assistance.

Thank you,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, July 20, 2017 8:28 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: EPA PFAS contact

Andy, can you pass along contact information for Dr. Orme-Zavaleta? Thanks.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Wednesday, July 19, 2017 3:08 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Cc: Mort, Sandra L <sandy.mort@ncdenr.gov>; Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: EPA PFAS contact

Chris and Dana,

I spoke with Sandy this morning about her interest in obtaining assistance with the analysis of groundwater samples for GenX.

I asked that she make this request directly to our Laboratory Director, Dr. Jennifer Orme-Zavaleta.

Please let me know if I can help in any way.

Thank you,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, July 19, 2017 3:02 PM
To: Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Cc: Mort, Sandra L <sandy.mort@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: EPA PFAS contact

My contact person at the ORD lab is Mark Strynar. I've copied him on this email, but he is out of the office right now. The other contact I have there is Andy Lindstrom, who is also copied on the email.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Satterwhite, Dana
Sent: Wednesday, July 19, 2017 2:44 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Mort, Sandra L <sandy.mort@ncdenr.gov>
Subject: EPA PFAS contact

Hi Chris,
Sandy Mort (copied on this email) has requested a contact person with EPA ORD for PFAS testing. Will you share that information with her?
Thank you,
Dana

Dana Satterwhite
Environmental Program Supervisor III
WW/GW Laboratory Certification Branch
North Carolina Department of Environmental Quality/Division of Water Resources

919 733 3908 ext. 202 office
dana.satterwhite@ncdenr.gov

Water Sciences Section
1623 Mail Service Center
Raleigh, NC 27699-1623

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Have you signed up to receive automatic email notices of changes to policies, regulations and resources pertaining to the NC Wastewater/Groundwater Laboratory Certification program that could have an impact on your day-to-day operations? If not, send a blank email to the following address:
DENR.DWQ.Lab_Cert-join@lists.ncmail.net

To: Johnson, Chris[chris.johnson@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Fri 7/14/2017 6:07:32 PM
Subject: RE: Bullet points for the sampling SOP

Chris,

It was very nice to meet you.

Please keep up the excellent work!

Thank you,
Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Friday, July 14, 2017 8:01 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Bullet points for the sampling SOP

I will head your way as soon as the Wilmington cooler arrives. Usually that is around 9:00 or so.

I'll bring a cooler for the QC samples. See you in a little while.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Friday, July 14, 2017 6:47 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Subject: RE: Bullet points for the sampling SOP

Chris,

Thanks very much.

I'm at 919-541-0551. Any idea when you might stop by today?

The QC spike samples and blanks are ready for the next round.

Thank you,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, July 13, 2017 5:00 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Bullet points for the sampling SOP

Thank you, Andy.

Sounds like you will be the point of contact for sample delivery tomorrow. Have you been included in the text group that was set up a week or two back? If not, please let me have a contact number so that I can get up with you when I get ready to go over.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Thursday, July 13, 2017 12:57 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Subject: RE: Bullet points for the sampling SOP

Thanks for all your efforts Chris,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, July 13, 2017 12:52 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Huffman, David J <david.huffman@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Jones, Nick <nick.jones@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Bullet points for the sampling SOP

Mark, attached is a document that highlights the modifications that were made to your previously submitted field sampling SOP during the GenX sampling events. These points are either deviations from procedure or describe events not specifically discussed in the documentation. Please let me know if you need more detailed information. Thanks.

Chris Johnson
Environmental Program Supervisor
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road
Raleigh, NC 27607

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

To: Johnson, Chris[chris.johnson@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Fri 7/14/2017 12:02:37 PM
Subject: RE: Bullet points for the sampling SOP

Chris,

Thank you very much!

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Friday, July 14, 2017 8:01 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Bullet points for the sampling SOP

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NC DEQ-DWR
Water Sciences Section

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Chris Johnson
NC DEQ-DWR
Water Sciences Section

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Sent: Thursday, July 13, 2017 12:57 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Subject: RE: Bullet points for the sampling SOP

Thanks for all your efforts Chris,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, July 13, 2017 12:52 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Huffman, David J <david.huffman@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Jones, Nick <nick.jones@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Bullet points for the sampling SOP

Mark, attached is a document that highlights the modifications that were made to your previously submitted field sampling SOP during the GenX sampling events. These points are either deviations from procedure or describe events not specifically discussed in the documentation. Please let me know if you need more detailed information. Thanks.

Chris Johnson
Environmental Program Supervisor
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road
Raleigh, NC 27607

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To: LAM.H.LEUNG-1@chemours.com[LAM.H.LEUNG-1@chemours.com]
Cc: Mark Strynar[Strynar.Mark@epa.gov]
From: Lindstrom, Andrew
Sent: Mon 3/19/2018 1:05:33 PM
Subject: FRD905?
WV DEP GenX 2010 DuPont 2of14 FS.PDF

Lam,

Have you ever heard of FRD905?

From what I've read FRD902 is the GenX ammonium salt and FRD903 is the free acid.

Please check out the attached document from the WV DEP where DuPont refers to FRD905 (marked in yellow in two places) as being equivalent to FRD902 and FRD903.

I'm wondering if it may just be another salt such as potassium or sodium.

If you have any knowledge on this I'd be grateful if you would please let me know.

Thank you very much,

Andy

To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
From: Lindstrom, Andrew
Sent: Thur 8/24/2017 12:15:47 PM
Subject: FW: FW: Non-Targeted Lab Results Briefing to NC DEQ
Strynar et al. 2015.pdf

Amy,

I'm hoping you will be coming to the briefing we are having next Monday where we will be talking about the results of the non-targeted PFAS analysis of the Cape Fear and Wilmington water samples.

One of the biggest ongoing concerns is the continuing presence of the Nafion-related compounds described in Figure 3 of the attached publication.

I've asked Chris Lau to attend this meeting and to reach out to you as well.

If you will be attending next week's briefing maybe we can get together after the formal presentations to talk about PFAS issues in North Carolina.

Thank you very much,

Andy

-----Original Appointment-----
From: Lau, Chris
Sent: Wednesday, August 23, 2017 1:44 PM
To: Buckley, Timothy
Cc: Lindstrom, Andrew
Subject: Accepted: FW: Non-Targeted Lab Results Briefing to NC DEQ
When: Monday, August 28, 2017 9:00 AM-10:00 AM (UTC-05:00) Eastern Time (US & Canada).
Where: EPA RTP C111A-B

Tim/Andy:

Thanks for letting me know. I'll be there for sure. Let me know if there is anything you need from me.

Chris

To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
From: Lindstrom, Andrew
Sent: Mon 7/24/2017 6:11:09 PM
Subject: RE: PFAS presentation from Northeastern Conference

Amy,

It was very nice to talk with you a bit this morning.

I had a brief conversation with Gloria Post and she says that she's interested in speaking with you about PFAS risk assessment.

I suggest that you email her and try to set up a time to talk soon.

Thank you very much,

Andy

Gloria Post
Research Scientist
NJ Dept. of Environmental Protection
PO Box 420
Trenton, NJ 08625
609-292-8497
gloria.post@dep.state.nj.us

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Friday, July 21, 2017 10:35 AM
To: galloway.18@osu.edu
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: FW: PFAS presentation from Northeastern Conference

Hello,

I was recently sent your presentation on GenX. In your presentation, you referenced the work by Sun et al 2016. I work for Public Health in North Carolina and our group is reviewing potential human health impacts related to the GenX in NC reported in that paper, as well as conducting risk assessments for drinking water.

I'm interested in hearing more about the GenX monitoring in Ohio and wondering if we can collaborate on any efforts. Please see my contact info below and feel free to give me a call.

Best,
Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

(919) 707-5911 office
(919) 870-4807 fax
Amy.Risen@dhhs.nc.gov

5505 Six Forks Road
1912 Mail Service Center
Raleigh, NC 27699-1912

North Carolina Public Health

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From: Wheeler, John [mailto:Wheeler.John@epa.gov]
Sent: Thursday, July 20, 2017 9:52 AM
To: Risen, Amy J <Amy.Risen@dhhs.nc.gov>
Subject: FW: PFAS presentation from Northeastern Conference

fyi

From: Escobar, Leah
Sent: Thursday, July 20, 2017 7:25 AM
To: Jones, Steve <Jones.Steve@epa.gov>; Werner, Lora <Werner.Lora@epa.gov>; Somers, Tarah <Somers.Tarah@epa.gov>; Wheeler, John <Wheeler.John@epa.gov>; Johnson, Mark <johnson.mark@epa.gov>; Williams, Spencer <Williams.Spencer@epa.gov>; Pettigrew, George <pettigrew.george@epa.gov>; Elgethun, Kai <Elgethun.Kai@epa.gov>; Kaetzel, Rhonda <Kaetzel.Rhonda@epa.gov>; Vianu, Libby <Vianu.Libby@epa.gov>
Subject: PFAS presentation from Northeastern Conference

FYSA- this might be of interest. I received this from Mark Maddaloni, EPA, R2.

Thanks

To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]; Detlef Knappe[knappe@ncsu.edu]
Cc: Mark Strynar[Strynar.Mark@epa.gov]; Biales, Adam[Biales.Adam@epa.gov]
From: Lindstrom, Andrew
Sent: Tue 8/8/2017 1:10:50 PM
Subject: RE: Request for historic data on concentrations of GenX
Sun et al. 2016.pdf

Amy,

Please recall that the Sun et al. paper documented that the combined PFOS and PFOA health advisory of 70 ng/L was exceeded at the drinking water intake for the City of Pittsboro 47% of the time in 2013. Our unpublished data suggests that this exposure probably continued for many years.

I think Detlef mentioned GAC filtration has been installed at the Pittsboro water plant (right?), but I don't know how it is being maintained or how it might perform for the shorter chain materials or any alternative chemistries.

I'm hoping that this community will also be evaluated at some point.

Thank you very much

Andy

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Monday, August 07, 2017 3:11 PM
To: Detlef Knappe <knappe@ncsu.edu>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Request for historic data on concentrations of GenX

Thanks Detlef, that is very helpful!

We are squaring away a few items necessary to move forward on this project. In the next week or two, I'll be able to forward this information to a colleague at ATSDR to begin the modeling.

Best,
Amy

From: Detlef Knappe [mailto:knappe@ncsu.edu]
Sent: Saturday, August 05, 2017 6:59 PM
To: Risen, Amy J <Amy.Risen@dhhs.nc.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Re: Request for historic data on concentrations of GenX

Hi Amy,

Attached are the 2013 and 2014 data together with streamflow data. The 2013 data include GenX and the legacy PFASs. The 2014 data set includes the same plus the other PFECAs. I do not know when Chemours processes were running when they were discharging what. All of the 2013 data represent 24-hour composites of Sweeney (CFPUA) raw water, reflecting PFAS levels at the Kings Bluff intake.

We have additional data for the Sweeney plant for May 16-19, 2017 and then for the Pender County plant (same intake location) for 3 weeks starting June 21, 2017. I will share those with you along with stream flow data soon. Some of the Pender samples are still awaiting analysis.

Please let me know if I can answer questions.

Best,

Detlef

On 8/2/17 8:40 AM, Risen, Amy J wrote:

Andy & Detlef,

We are collecting data for a larger long-term health assessment of the PFASs reported in Sun et al 2016, and I am hoping that you will be able to fill in some data gaps. We are collaborating with other institutions to collect data on 1) potential health impacts and 2) potential exposure concentrations. The data availability will help shape the scope of the project.

At this time, we are assessing the feasibility of modeling concentrations of GenX over time for the past several decades. We'll begin by describing the available data points with concentrations, locations, and dates. We would also welcome accompanying data on river water flow, whether or not Chemours was discharging at the time, and any other relevant information.

Would you please take a quick scan of the information you have and let me know what date ranges you have data for? I understand you may not have a cleaned up list to provide at this time, but I suspect that your teams would have data collected that was not published. If you can provide a summary of available data, we can consider it as a resource.

Other PFECAs were detected as well. I don't want to ignore those, as it would certainly be ideal to characterize their concentrations too. At this time, we are looking at the feasibility of modeling GenX concentrations, and perhaps we can talk about the other PFECAs at a later date.

Thank you so much for any information you can provide!

Best regards,

Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

(919) 707-5911 office
(919) 870-4807 fax
Amy.Risen@dhhs.nc.gov

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--

Detlef Knappe

Professor

319-E Mann Hall

Department of Civil, Construction, and Environmental Engineering

North Carolina State University

Campus Box 7908

Raleigh, NC 27695-7908

Phone: 919-515-8791

Fax: 919-515-7908

E-mail: knappe@ncsu.edu

Web page: http://knappelab.wordpress.ncsu.edu/

To: Bowyer, Jim[jim.bowyer@ncdenr.gov]; Kangkolo, George[george.kangkolo@ncdenr.gov]
Cc: McCord, James[mccord.james@epa.gov]
From: Lindstrom, Andrew
Sent: Thur 6/21/2018 3:01:47 PM
Subject: RE: [External] RE: Assistance request Rainwater sample

Jim and George,

I will be expecting you a little later today.

Thank you very much,

Andy

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 10:08 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Kangkolo, George <george.kangkolo@ncdenr.gov>
Cc: McCord, James <mccord.james@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Andy,
George Kangkolo (DAQ lab staff) will be delivering two 500mL samples to you today (6/21/18) around 1:30pm

Thanks for the assistance.

George,
Andy Lindstrom (919-541-0551) will meet you in the Building C lobby at the security desk to get the samples. Make sure you have your State ID with you.

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

4403 Reedy Creek Road
1622 Mail Service Center
Raleigh, NC 27699-1622

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Thursday, June 21, 2018 7:35 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: McCord, James <mccord.james@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

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Jim,

We've got a meeting from 10 -11 but other than that I'll be here all day.

Please let me know when you'd like to bring them by.

Thank you,

Andy

From: Strynar, Mark
Sent: Thursday, June 21, 2018 7:33 AM
To: James Bowyer <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; McCord, James <mccord.james@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Jim,

I am working from home today, however Andy should be there. I am out of the office tomorrow.

My post doc James McCord should be there all day to receive samples however.

Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 7:18 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
I am over in Raleigh so I can just bring them over. Would today or tomorrow be ok?

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 21, 2018 7:16 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

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Jim,

Ship at your convenience. I am away all next week at the Gordon Conference.

Our address is:
Attn: Mark Strynar or Andy Lindstrom
US EPA
109 TW Alexander Dr.
Chemical Services Loading Dock E
Durham, NC 27711

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 6:13 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
I do have the samples and I believe we have at least 500 mL of the two. I can arrange to get those to you this week or early next week, whichever is most convenient.

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 20, 2018 9:05 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: [External] RE: Assistance request Rainwater sample

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Jim,

Glad to do so. DO you have the sample and if so what volume?

Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Friday, June 15, 2018 1:44 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Assistance request Rainwater sample

Dr. Strynar,
I would like to request assistance with determining whether a rain water sample that NC DAQ has collected in our Rainwater Collection Network from a site outside of the Fayetteville area actually has what was reported by our contract lab as being GenX is actually GenX or some other compound. The sample was collected as a thrufall sample under a red cedar thru a rainfall event. I was wondering if you might be able to differentiate between GenX and another biological compound from that evergreen?

Thanks for any assistance you may be able to offer to clarify this for us.

Jim Bowyer, Ph.D.
Environmental Program Supervisor II
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

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Jim.Bowyer@ncdenr.gov

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To: Mort, Sandra L[sandy.mort@ncdenr.gov]
Cc: Mark Strynar[Strynar.Mark@epa.gov]
From: Lindstrom, Andrew
Sent: Mon 8/7/2017 3:48:30 PM
Subject: RE: PFAS method target list
Sun et al. 2016.pdf
Wellington PFAC-24.pdf
Strynar et al. 2015.pdf

Sandra,

It's kind of an open ended question. We'll be looking for everything that can be seen and it will probably take a long time to finish with this full assessment.

That said, the first tier of target compounds will be all of the compounds appearing in the Sun et al. 2016 paper. Please see Table S5 in the attached PDF.

In addition, we'll probably be using the Wellington PFAC-24PAR standard (attached above), so we'll have standards for those specific compounds as well. Many of these aren't likely to show up but we will be looking.

And finally, to make matters more ambiguous, Mark will be doing a non-targeted assessment for any observable fluorine-containing compounds, so we don't really know what might show up. We currently have great interest in the Nafion-related compounds which are presented in Figure 3 of the Strynar et al., 2015 manuscript attached above. I wouldn't be surprise to find these, and many others, once the analysis is completed.

Please let me know if you have any questions.

Thank you,

Andy

From: Mort, Sandra L [mailto:sandy.mort@ncdenr.gov]
Sent: Monday, August 07, 2017 11:21 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: PFAS method target list

Andy-
I am looking for the list of PFAS target analytes that the NERL-RTP will be running on the Chemours-Fayetteville facility groundwater sample splits sent to you by NCDEQ DWM.
Can you provide that list?
Thanks, Best –
Sandy

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax
sandy.mort@ncdenr.gov

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Raleigh, NC 27699-1646

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To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
Cc: Detlef knappe[knappe@ncsu.edu]; Mark Strynar[Strynar.Mark@epa.gov]; Biales, Adam[Biales.Adam@epa.gov]
From: Lindstrom, Andrew
Sent: Mon 8/7/2017 11:43:35 AM
Subject: RE: Request for historic data on concentrations of GenX

Amy,

Yes, I think you've captured our conversation very well.

Thank you,

Andy

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Thursday, August 03, 2017 1:10 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Request for historic data on concentrations of GenX

Hi Andy,

Thank you for taking the time to discuss the data that might be available to us for our project. Here are some notes as a follow up to our call. Please feel free to clarify any points.

DHHS will be collecting data on chemicals reported in Sun et al 2016 to determine what sort of site-specific health evaluation can be performed for communities along the Cape Fear River. These data include: environmental concentrations of chemicals, health effects from laboratory testing on non-human biota, and biomonitoring and epidemiological observations in humans.

EPA is receiving many requests for data and would like an itemized request for the specific data we are looking for before compiling that data. In the meantime, conversations will elucidate the types of water quality data EPA has on chemicals reported in Sun et al 2016.

EPA has additional data on PFASs in the Cape Fear River and they can be generally described as follows:
-2007 and forward: General data on legacy PFASs.
-2012/2013: Some data on PFECAs from the development of the analytical method for these chemicals. Review would be required to determine what additional data is available for this time frame, and the expectation should be that quantitative analysis will be limited.
-2013/2014: Data published in Sun et al in 2016 on legacy PFASs, GenX, and additional PFECAs covers 2013/2014 timeframe. Additional work would be required to itemize specific information on date, water flow, analyte concentration, location, and other possible parameters.
-2015 and forward: Analytical method for PFECAs is improving and additional data exists. Additional work would be required to itemize specific information requested.

Some collaboration planning has been initiated between EPA and NIEHS to test the health effects of the mixture of chemicals. Environmental samples will be extracted/concentrated for health effects testing. Future conversations will elaborate on that to determine if this research will be helpful in filling health effects knowledge gaps for DHHS/ATSDR project.

Thanks and best regards,
Amy

From: Risen, Amy J
Sent: Wednesday, August 02, 2017 8:41 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; knappe@ncsu.edu
Subject: Request for historic data on concentrations of GenX

Andy & Detlef,

We are collecting data for a larger long-term health assessment of the PFASs reported in Sun et al 2016, and I am hoping that you will be able to fill in some data gaps. We are collaborating with other institutions to collect data on 1) potential health impacts and 2) potential exposure concentrations. The data availability will help shape the scope of the project.

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Other PFECAs were detected as well. I don't want to ignore those, as it would certainly be ideal to characterize their concentrations too. At this time, we are looking at the feasibility of modeling GenX concentrations, and perhaps we can talk about the other PFECAs at a later date.

Thank you so much for any information you can provide!

Best regards,

Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

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(919) 870-4807 fax
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To: Strynar, Mark[strynar.mark@epa.gov]; James Bowyer[jim.bowyer@ncdenr.gov]
Cc: McCord, James[mccord.james@epa.gov]
From: Lindstrom, Andrew
Sent: Thur 6/21/2018 11:35:18 AM
Subject: RE: [External] RE: Assistance request Rainwater sample

Jim,

We've got a meeting from 10 -11 but other than that I'll be here all day.

Please let me know when you'd like to bring them by.

Thank you,

Andy

From: Strynar, Mark
Sent: Thursday, June 21, 2018 7:33 AM
To: James Bowyer <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; McCord, James <mccord.james@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Jim,

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My post doc James McCord should be there all day to receive samples however.

Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 7:18 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
I am over in Raleigh so I can just bring them over. Would today or tomorrow be ok?

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
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Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 21, 2018 7:16 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

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Jim,

Ship at your convenience. I am away all next week at the Gordon Conference.

Our address is:
Attn: Mark Strynar or Andy Lindstrom
US EPA
109 TW Alexander Dr.
Chemical Services Loading Dock E
Durham, NC 27711

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Thursday, June 21, 2018 6:13 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: [External] RE: Assistance request Rainwater sample

Mark,
I do have the samples and I believe we have at least 500 mL of the two. I can arrange to get those to you this week or early next week, whichever is most convenient.

Jim Bowyer, Ph.D.
Environmental Program Supervisor I
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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Raleigh, NC 27699-1622

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 20, 2018 9:05 AM
To: Bowyer, Jim <jim.bowyer@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: [External] RE: Assistance request Rainwater sample

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Jim,

Glad to do so. DO you have the sample and if so what volume?

Mark

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Friday, June 15, 2018 1:44 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Assistance request Rainwater sample

Dr. Strynar,
I would like to request assistance with determining whether a rain water sample that NC DAQ has collected in our Rainwater Collection Network from a site outside of the Fayetteville area actually has what was reported by our contract lab as being GenX is actually GenX or some other compound. The sample was collected as a thrufall sample under a red cedar thru a rainfall event. I was wondering if you might be able to differentiate between GenX and another biological compound from that evergreen?

Thanks for any assistance you may be able to offer to clarify this for us.

Jim Bowyer, Ph.D.
Environmental Program Supervisor II
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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Raleigh, NC 27699-1622

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To: Bowyer, Jim[jim.bowyer@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Tue 12/19/2017 6:29:02 PM
Subject: RE: Rainwater collectors from NCON

Jim,

We've used polypropylene and HDPE for water collection and storage for years and have had no problems. I know that many people use both and I've never heard of contamination from new materials.

I also recently reviewed an EPA SOP on the collection of groundwater samples and it specified that PVC bailers and well casings were OK because they have not been found to be contaminated.

So I'd guess that these materials would be OK to use but I'd check them out before using them and I'd scrub them down with MEOH after each use.

So you all are going to go after rain water?

Thank you,

Andy

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Tuesday, December 19, 2017 12:29 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Rainwater collectors from NCON

Andy,
I had contacted NCON (rain water collector for MDN sites manufacturer) to ask about using their sampler for GenX and/or PFOA sampling. They sent the attached info back to me and I was wondering if you concur with the use of polypropylene (caps) on the HDPE not being an issue for contamination. I seem to think it would be ok too.
Also the PVC on the rain collector cap, issue with contamination? Might be able to retrofit an HDPE sheet on the underside?

Thanks for your input.

Jim Bowyer, Ph.D.
Environmental Program Supervisor II
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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1622 Mail Service Center
Raleigh, NC 27699-1622

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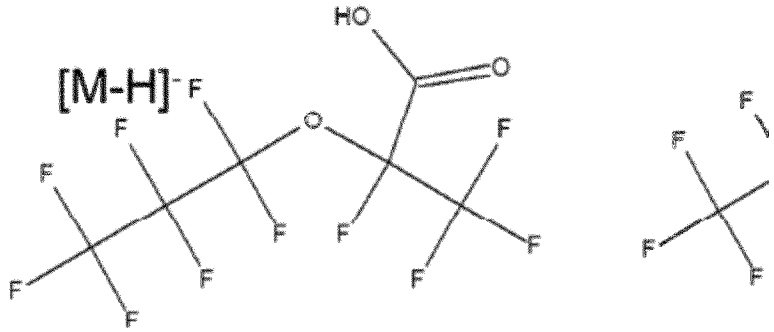
To: Mort, Sandra L[sandy.mort@ncdenr.gov]
Cc: Mark Strynar[Strynar.Mark@epa.gov]
From: Lindstrom, Andrew
Sent: Thur 7/20/2017 8:06:53 PM
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater
HFPO DuPont.pdf
hfpoda_m3hfpoda_20feb2013_wellington_reporter.pdf
Strynar et al. 2015.pdf

Sandra,

Please check out the attachments. The Wellington specification sheet correctly identifies the issue and the native and mass labeled standards needed for the analysis.

Target Compound CAS # 13252-13-6



2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate

Molecular Formula: $C_6HF_{11}O_3$
Formula Weight: 330.0528
Composition: C(21.83%) H(0.31%) F(63.32%) O(14.54%)
Monoisotopic Mass: 329.9750 Da
[M-H]-: 328.9677 Da

number	formula	CAS no.	name	$[M]^{\alpha}$	$[M-H]^-$ m/z	$[2M-2H+Na]^-$ m/z	[2
Monoether PFECAs							
1	$C_3HF_5O_3$			179.9846	178.9773	380.9438	3
2	$C_4HF_7O_3$			229.9813	228.9740	480.9372	4
3	$C_5HF_9O_3$	863090-89-5		279.9782	278.9709	580.9310	5
4	$C_6HF_{11}O_3$	13252-13-6	undecafluoro-2-methyl-3-oxahexanoic acid	329.9750	328.9677	680.9247	6

Thank you,

Andy

From: Mort, Sandra L [mailto:sandy.mort@ncdenr.gov]
Sent: Thursday, July 20, 2017 12:10 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Andrew –

A question has come up in our pursuit of obtaining comprehensive PFAS in groundwater scans from the Chemours-Fayetteville facility that I hope you can provide some clarity on.

Through various sources I have identified "GenX" as CASN 13252-13-6, 2,3,3,3-tetrafluoro-2(heptafluoroprpoxy)propanoic acid. In a work plan submitted by Chemours for their GW sampling, they are identifying GenX as "hexafluoropropylene oxide dimer acid (HFPO-DA)".

Can you confirm the CASN for the compound that your lab reports as GenX?
And, are you familiar with the HFPO-DA compound, & did your lab see this compound in the river samples?

I am gathering the GW data that we have for the Fayetteville facility & will be sending them to you within the next couple of days.
Thanks
Sandy

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax
sandy.mort@ncdenr.gov

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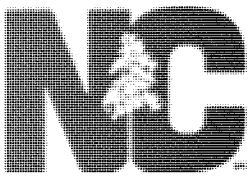

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Wednesday, July 19, 2017 7:47 AM
To: Mort, Sandra L <sandy.mort@ncdenr.gov>
Cc: Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>; Buckley, Timothy <Buckley.Timothy@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>; Biales, Adam <Biales.Adam@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Analytical Assistance for GenX and PFAS in Groundwater

Sandy,

It was a pleasure speaking with you this morning regarding your request for analytical assistance for GenX and other PFAS in groundwater samples from the Fayetteville site.

Please direct this request to the Director of our laboratory, Dr. Jennifer Orme-Zavaleta (Orme-Zavaleta.Jennifer@epa.gov) and close copy Dr. Timothy Buckley (Buckley.Timothy@epa.gov), Dr. Myriam Medina-Vera (Medina-Vera.Myriam@epa.gov), Dr. Adam Biales (Biales.Adam@epa.gov), and Dr. Mark Strynar (Strynar.Mark@epa.gov).

Thank you very much,

Andy

To: Bowyer, Jim[jim.bowyer@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Fri 6/15/2018 5:47:09 PM
Subject: RE: Assistance request Rainwater sample

Jim,

This looks great.

I'll talk with Mark next week about it too.

Thank you,

Andy

From: Bowyer, Jim [mailto:jim.bowyer@ncdenr.gov]
Sent: Friday, June 15, 2018 1:44 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Assistance request Rainwater sample

Dr. Strynar,
I would like to request assistance with determining whether a rain water sample that NC DAQ has collected in our Rainwater Collection Network from a site outside of the Fayetteville area actually has what was reported by our contract lab as being GenX is actually GenX or some other compound. The sample was collected as a thrufall sample under a red cedar thru a rainfall event. I was wondering if you might be able to differentiate between GenX and another biological compound from that evergreen?

Thanks for any assistance you may be able to offer to clarify this for us.

Jim Bowyer, Ph.D.
Environmental Program Supervisor II
Division of Air Quality, Ambient Monitoring Section
Department of Environmental Quality

919 715 7484 office
919 715 0890 fax
Jim.Bowyer@ncdenr.gov

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1622 Mail Service Center
Raleigh, NC 27699-1622

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To: Johnson, Chris[chris.johnson@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Thur 7/20/2017 7:42:45 PM
Subject: RE: Question about other PFAS EPA is analyzing. Info for EPA PFAS statement

Thank you Chris!

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, July 20, 2017 11:46 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Smith, Emily J. <Smith.Emily@epa.gov>
Subject: RE: Question about other PFAS EPA is analyzing. Info for EPA PFAS statement

My understanding is that we will be given a semi-quantitative reporting of other perfluorinated compounds in the Cape Fear Rive samples after all testing is complete. There will be a total of six rounds of sampling – once per week for six weeks. Originally, there were going to be four weeks, but two more weeks were requested and agreed to by your laboratory. If I didn't completely address your question, please let me know.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Thursday, July 20, 2017 11:38 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Smith, Emily J. <Smith.Emily@epa.gov>
Subject: FW: Question about other PFAS EPA is analyzing. Info for EPA PFAS statement
Importance: High

Chris,

Can you please confirm Emily's question about 6 rounds of sampling?

Thank you very much,

Andy

From: Smith, Emily J.
Sent: Thursday, July 20, 2017 11:24 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Buckley, Timothy <Buckley.Timothy@epa.gov>
Cc: Autrey, Brad <Autrey.Brad@epa.gov>
Subject: RE: Question about other PFAS EPA is analyzing. Info for EPA PFAS statement
Importance: High

Andy,

Thanks again for your edits to this paragraph. I've revised the paragraph pasted below per your suggestions. Are you analyzing for these three PFAS in all six rounds of the samples? Just want to confirm that. Thanks!

Addition for EPA Desk Statement:

Deliberative Process / Ex. 5

Deliberative Process / Ex. 5

Emily J. Smith
Communications Director
EPA National Exposure Research Laboratory
109 T.W. Alexander Drive
MD-305-01
Research Triangle Park, NC, 27711
Phone: 919-541-5556
E-mail: smith.emily@epa.gov

From: Lindstrom, Andrew
Sent: Friday, July 14, 2017 1:39 PM
To: Smith, Emily J. <Smith.Emily@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Buckley, Timothy <Buckley.Timothy@epa.gov>
Cc: Autrey, Brad <Autrey.Brad@epa.gov>
Subject: RE: Other PFAS EPA is analyzing. Info for EPA PFAS statement

Emily and Brad,

Here's a suggestion for the two sentences marked in yellow below:

Deliberative Process / Ex. 5

Please let me know if you have any questions.

Thank you,

Andy

From: Smith, Emily J.
Sent: Thursday, July 13, 2017 6:00 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Buckley, Timothy <Buckley.Timothy@epa.gov>
Cc: Autrey, Brad <Autrey.Brad@epa.gov>
Subject: RE: Other PFAS EPA is analyzing. Info for EPA PFAS statement

All – Please copy Brad Autrey when you respond.

Thanks!

-Emily

Emily J. Smith
Communications Director
EPA National Exposure Research Laboratory
109 T.W. Alexander Drive
MD-305-01
Research Triangle Park, NC, 27711
Phone: 919-541-5556
E-mail: smith.emily@epa.gov

From: Smith, Emily J.
Sent: Thursday, July 13, 2017 5:51 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Strynar, Mark <strynar.mark@epa.gov>; Buckley, Timothy <buckley.timothy@epa.gov>
Subject: FW: Other PFAS EPA is analyzing. Info for EPA PFAS statement
Importance: High

All- The EPA Press Office is trying to update the Cape Fear PFAS Desk Statement today, since it's possible that NCDEQ will be publically announcing results tomorrow or Monday. Below is a statement about the other forms of short-chain PFAS we're analyzing in the samples Deliberative Process / Ex. 5 Deliberative Process / Ex. 5 I'd appreciate if one of you could take a crack at this, and then I will try to further simplify the language as needed.

Thanks!

-Emily

Emily J. Smith
Communications Director
EPA National Exposure Research Laboratory
109 T.W. Alexander Drive
MD-305-01
Research Triangle Park, NC, 27711
Office: 919-541-5556
Personal Phone / Ex. 6
E-mail: smith.emily@epa.gov

From: Maguire, Megan
Sent: Thursday, July 13, 2017 5:09 PM
To: Smith, Emily J. <Smith.Emily@epa.gov>
Cc: Buckley, Timothy <Buckley.Timothy@epa.gov>; Hubbard, Carolyn <Hubbard.Carolyn@epa.gov>; Sauerhage, Maggie <Sauerhage.Maggie@epa.gov>
Subject: RE: Other PFAS EPA is analyzing. Info for EPA PFAS statement

I know this is really technical and hard to accurately simplify, but would this be correct? I edited the parts in yellow below. Also we are going to need a sentence or two of background on what mass spectral data is and what using surrogate standards means, I googled mass spectrometry and pulled this, but I'm sure our folks in NERL can explain it better!

Mass spectrometry is a scientific technique for measuring the mass to charge ratio of ions that is used to identify and characterize small molecules and proteins.

Addition for EPA Desk Statement:

Deliberative Process / Ex. 5

Thank you!!
Megan

Megan Maguire
US EPA, Office of Research and Development

RRB 41261
O: (202)564-6636
Personal Phone / Ex. 6

To: Risen, Amy J[Amy.Risen@dhhs.nc.gov]
From: Lindstrom, Andrew
Sent: Wed 8/2/2017 3:13:02 PM
Subject: RE: Request for historic data on concentrations of GenX
Biological Sampling of Substances in Alabama__EI -Report (final)__11-....pdf

Amy,

Have you seen this?

Is this the intention?

Andy

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Wednesday, August 02, 2017 8:41 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; knappe@ncsu.edu
Subject: Request for historic data on concentrations of GenX

Andy & Detlef,

We are collecting data for a larger long-term health assessment of the PFASs reported in Sun et al 2016, and I am hoping that you will be able to fill in some data gaps. We are collaborating with other institutions to collect data on 1) potential health impacts and 2) potential exposure concentrations. The data availability will help shape the scope of the project.

At this time, we are assessing the feasibility of modeling concentrations of GenX over time for the past several decades. We'll begin by describing the available data points with concentrations, locations, and dates. We would also welcome accompanying data on river water flow, whether or not Chemours was discharging at the time, and any other relevant information.

Would you please take a quick scan of the information you have and let me know what date ranges you have data for? I understand you may not have a cleaned up list to provide at this time, but I suspect that your teams would have data collected that was not published. If you can provide a summary of available data, we can consider it as a resource.

Other PFECAs were detected as well. I don't want to ignore those, as it would certainly be ideal to characterize their concentrations too. At this time, we are looking at the feasibility of modeling GenX concentrations, and perhaps we can talk about the other PFECAs at a later date.

Thank you so much for any information you can provide!

Best regards,
Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

(919) 707-5911 office
(919) 870-4807 fax
Amy.Risen@dhhs.nc.gov

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To: Leung, Lam-Wing H[LAM.H.LEUNG-1@chemours.com]
Cc: Strynar, Mark[strynar.mark@epa.gov]
From: Lindstrom, Andrew
Sent: Tue 3/27/2018 12:29:10 PM
Subject: RE: FRD905?

Thanks Lam,

Andy

From: Leung, Lam-Wing H [mailto:LAM.H.LEUNG-1@chemours.com]
Sent: Monday, March 26, 2018 4:44 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: FRD905?

Hi Andy,
Thank you for the message and I apologize for the late response as I was at ACS in NOLA all week last week. I'll have to look through our internal documentation about your inquiry and will get back to you the next few days.

Hi Mark,

We are still working on getting all the proper SDS for the different standards and has taken us much longer than anticipated and we are hoping that we'll have them shipped out to you next week.

Best Regards,

Lam

Lam Leung, Ph.D.
Technical Fellow

lam.h.leung-1@chemours.com

302.353.5218 o

Personal Phone / Ex. 6

The Chemours Company
Experimental Station 402/5323

200 Powder Mill Road
Wilmington, DE 19803

USA

Chemours™

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Monday, March 19, 2018 9:06 AM
To: Leung, Lam-Wing H <LAM.H.LEUNG-1@chemours.com>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: FRD905?

Lam,

Have you ever heard of FRD905?

From what I've read FRD902 is the GenX ammonium salt and FRD903 is the free acid.

Please check out the attached document from the WV DEP where DuPont refers to FRD905 (marked in yellow in two places) as being equivalent to FRD902 and FRD903.

I'm wondering if it may just be another salt such as potassium or sodium.

If you have any knowledge on this I'd be grateful if you would please let me know.

Thank you very much,

Andy

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https://www.chemours.com/Chemours_Home/en_US/email_disclaimer.html

To: Mort, Sandra L[sandy.mort@ncdenr.gov]
From: Lindstrom, Andrew
Sent: Wed 7/26/2017 1:39:00 PM
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Sandy,

Great – I appreciate your help with this.

Thank you,

Andy

From: Mort, Sandra L [mailto:sandy.mort@ncdenr.gov]
Sent: Wednesday, July 26, 2017 9:23 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Andrew-
Yes, you are correct. Chemours has only been historically reporting to DWM the PFOA/PFOS groundwater analytical data, and the only hits in that data have been PFOA. We have requested whatever historical GW data may be available. I will send along all GW data that we are provided.
Best wishes,
Sandy

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax
sandy.mort@ncdenr.gov

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Raleigh, NC 27699-1646

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Wednesday, July 26, 2017 7:08 AM
To: Mort, Sandra L <sandy.mort@ncdenr.gov>
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Sandy,

If I'm reading these reports correctly, it seems like they are only disclosing data for PFOA and it is only showing up in two wells very close to the production point.

I think I saw at one time a few reports (probably through Region 4) with much greater detail.

If you ever come across anything more in this regard please let me know.

Thank you very much,

Andy

From: Mort, Sandra L [mailto:sandy.mort@ncdenr.gov]
Sent: Tuesday, July 25, 2017 9:33 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Hey Andrew-
Yes, things continue to be "lively" here. Dr. Orme-Zavaleta has referred us to Tim Watkins and Tim Buckley to follow-up on our request for analytical support. It sounds promising.

I have gotten clearance to send you the GW data that we have, see the attached documents. Also, following is a Parsons' consulting link to access files too large to email.

Please use the following link to download the 2015 sampling laboratory analytical data from the Chemours Fayetteville Works site:
https://parsons.sharefile.com/d-s77c11aa2457487f8

In addition, we have requested any additional GW data the facility has, & will send it you as I get it.
Also, both NCDEQ Division of Waste Management & Division of Water Resources have document access portals that are accessible by outside entities, & are searchable by facility. These may be helpful.
DWM: http://edocs.deq.nc.gov/WasteManagement/Welcome.aspx?cr=1\
DWR: https://edocs.deq.nc.gov/WaterResources/Welcome.aspx
DWR also has a "GenX Investigation" page: http://deq.nc.gov/news/hot-topics/genx-investigation

Sandy

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax
sandy.mort@ncdenr.gov

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Tuesday, July 25, 2017 9:09 AM
To: Mort, Sandra L <sandy.mort@ncdenr.gov>
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Sandy,

I hope things are not too busy for you all – but I am sure they are.

I haven't heard anything from my management about your request for additional assistance regarding analysis of groundwater from the site. They may have discussed this request with Region 4 officials.

Have you found out if you can send me the reports on groundwater contamination at the site? Mark and I are scheduled to have a meeting with Regions 4 folks on Thursday to discuss the history of emissions at the plant. We've only been able to monitor for a

few of the most common PFAS so we really don't have a good idea of what may still be out there. Having access to the groundwater data will help us develop an better understanding of what we should be looking for in future investigations.

Thank you very much,

Andy

From: Mort, Sandra L [mailto:sandy.mort@ncdenr.gov]
Sent: Thursday, July 20, 2017 12:10 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Analytical Assistance for GenX and PFAS in Groundwater

Andrew –

A question has come up in our pursuit of obtaining comprehensive PFAS in groundwater scans from the Chemours-Fayetteville facility that I hope you can provide some clarity on.

Through various sources I have identified "GenX" as CASN 13252-13-6, 2,3,3,3-tetrafluoro-2(heptafluoroprpoxy)propanoic acid. In a work plan submitted by Chemours for their GW sampling, they are identifying GenX as "hexafluoropropylene oxide dimer acid (HFPO-DA)".

Can you confirm the CASN for the compound that your lab reports as GenX?
And, are you familiar with the HFPO-DA compound, & did your lab see this compound in the river samples?

I am gathering the GW data that we have for the Fayetteville facility & will be sending them to you within the next couple of days.
Thanks
Sandy

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax
sandy.mort@ncdenr.gov

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Wednesday, July 19, 2017 7:47 AM
To: Mort, Sandra L <sandy.mort@ncdenr.gov>
Cc: Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>; Buckley, Timothy <Buckley.Timothy@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>; Biales, Adam <Biales.Adam@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Analytical Assistance for GenX and PFAS in Groundwater

Sandy,

It was a pleasure speaking with you this morning regarding your request for analytical assistance for GenX and other PFAS in groundwater samples from the Fayetteville site.

Please direct this request to the Director of our laboratory, Dr. Jennifer Orme-Zavaleta (Orme-Zavaleta.Jennifer@epa.gov) and close copy Dr. Timothy Buckley (Buckley.Timothy@epa.gov), Dr. Myriam Medina-Vera (Medina-Vera.Myriam@epa.gov), Dr. Adam Biales (Biales.Adam@epa.gov), and Dr. Mark Strynar (Strynar.Mark@epa.gov).

Thank you very much,

Andy

Organizer: Bowles, Jack[Bowles.Jack@epa.gov]
From: Bowles, Jack
Location: DCRoomARN3428/OCIR
Importance: High
Subject: FW: Check-in for Tuesday's Local Government GenX/Emerging Contaminant Call
Start Time: Mon 9/18/2017 8:00:00 PM
End Time: Mon 9/18/2017 8:30:00 PM
Required Attendees: Wise, Allison; Hannon, Arnita; Hanson, Andrew; Klasen, Matthew; Schmit, Ryan; Pierce, Alison; Henry, Tala; Doa, Maria; Tiago, Joseph; Emmerson, Caroline; Folkemer, Nathaniel; Ingram, Amir; Linkins, Samantha; Buckley, Timothy; Cory, Preston (Katherine); Kavlock, Robert; Orme-Zavaleta, Jennifer; Kaiser, Sven-Erik; Collins, Charlie; Speir, Jeffrey; LaPointe, Kevin; Lewis, Jennifer; Miles, James; Garvey, Mark; Saenz, Diana; Fitzpatrick, Kacey; Matthews, Demond; Grevatt, Peter; Burneson, Eric; Mclain, Jennifer; Tricas, Marisa; Lape, Jeff; Behl, Betsy; Flaherty, Colleen; Sawyers, Andrew; Zobrist, Marcus
Optional Attendees: Walker, Mary; Allenbach, Becky; Culpepper, Linda; Kemker, Carol; Holman, Sheila; Moyer, Adam; Mitchell, Ken

Good Morning Adam,

This meeting is being forwarded to you per Maria's request. She would like for you to attend and take notes via call-in to the above subject meeting. Her schedule is quite congested and she is unable to attend due to a meeting conflict. All call in information is listed below. Any questions or concerns please give Maria a call.

Thanking you in advance,
Pam

-----Original Appointment-----
From: Bowles, Jack
Sent: Friday, September 15, 2017 3:49 PM
To: Bowles, Jack; Wise, Allison; Hannon, Arnita; Hanson, Andrew; Klasen, Matthew; Schmit, Ryan; Pierce, Alison; Henry, Tala; Doa, Maria; Tiago, Joseph; Emmerson, Caroline; Folkemer, Nathaniel; Ingram, Amir; Linkins, Samantha; Buckley, Timothy; Cory, Preston (Katherine); Kavlock, Robert; Orme-Zavaleta, Jennifer; Kaiser, Sven-Erik; Collins, Charlie; Speir, Jeffrey; LaPointe, Kevin; Lewis, Jennifer; Miles, James; Garvey, Mark; Saenz, Diana; Fitzpatrick, Kacey; Matthews, Demond; Grevatt, Peter; Burneson, Eric; Mclain, Jennifer; Tricas, Marisa; Lape, Jeff; Behl, Betsy; Flaherty, Colleen; Sawyers, Andrew; Zobrist, Marcus
Cc: Walker, Mary; Allenbach, Becky; Culpepper, Linda; Kemker, Carol; Holman, Sheila
Subject: Check-in for Tuesday's Local Government GenX/Emerging Contaminant Call
When: Monday, September 18, 2017 4:00 PM-4:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DCRoomARN3428/OCIR

Call-in number: Personal Phone / Ex. 6 *access code:* Personal Phone / Ex. 6

This check-in is for EPA and NCDEQ staff only
No local officials or members of the public will be on the line.

Local Officials Scheduled to Participate

Wilmington Mayor Bill Saffo and Tony Mcewen, Director or Legislative Affairs
Pender Co. Commission Chair George Brown
New Hanover Co. Commission Chair Woody White
Brunswick Co. Commission Chair Pat Sykes
Brunswick County Manager Ann Hardy and possible additional staff.

Agenda:

Purpose of Call: Local officials are interested in an update on key issues, with an opportunity for Q & A.

1. Introductions

2. Opening Statements from NC Local Officials
3. State of NC and EPA Updates
4. Questions and Answers
5. Next Steps / Next Call
6. Closing Remarks

To: Clark, Dawn S[DAWN.S.CLARK@chemours.com]
Cc: Moyer, Adam[moyer.adam@epa.gov]
From: Sherlock, Scott
Sent: Mon 2/26/2018 9:34:49 PM
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

And thank you.

From: Clark, Dawn S [mailto:DAWN.S.CLARK@chemours.com]
Sent: Monday, February 26, 2018 4:07 PM
To: Sherlock, Scott <Sherlock.Scott@epa.gov>
Cc: Moyer, Adam <moyer.adam@epa.gov>
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

Thanks. I will let you know when it goes out.
Thanks again,
Dawn

From: Sherlock, Scott [mailto:Sherlock.Scott@epa.gov]
Sent: Monday, February 26, 2018 3:38 PM
To: Clark, Dawn S <DAWN.S.CLARK@chemours.com>
Cc: Moyer, Adam <moyer.adam@epa.gov>
Subject: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

You sure can!

Thanks Dawn.

Scott M. Sherlock, Attorney Advisor
Environmental Assistance Division
Office of Pollution Prevention and Toxics
United States Environmental Protection Agency
202-564-8257
TSCA CBI: https://www.epa.gov/tsca-cbi/what-include-cbi-substantiations

---

From: Clark, Dawn S [mailto:DAWN.S.CLARK@chemours.com]
Sent: Monday, February 26, 2018 3:17 PM
To: Sherlock, Scott <Sherlock.Scott@epa.gov>
Cc: Moyer, Adam <moyer.adam@epa.gov>
Subject: Federal Express Package (Contains No TSCA CBI)
Importance: High

Hi Scott,
I should be able to finish your latest request by tomorrow. Can I still send the package to Adam?
Thanks in advance,
Dawn (302-757-4487)

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parties.

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To: Clark, Dawn S[DAWN.S.CLARK@chemours.com]
Cc: Moyer, Adam[moyer.adam@epa.gov]
From: Sherlock, Scott
Sent: Mon 2/26/2018 8:38:04 PM
Subject: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

You sure can!

Thanks Dawn.

Scott M. Sherlock, Attorney Advisor
Environmental Assistance Division
Office of Pollution Prevention and Toxics
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To: Moyer, Adam[moyer.adam@epa.gov]; Sherlock, Scott[Sherlock.Scott@epa.gov]
From: Clark, Dawn S
Sent: Wed 2/28/2018 6:37:41 PM
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

Many thanks for letting me know.
Take care,
Dawn

From: Moyer, Adam [mailto:moyer.adam@epa.gov]
Sent: Wednesday, February 28, 2018 1:17 PM
To: Sherlock, Scott <Sherlock.Scott@epa.gov>; Clark, Dawn S <DAWN.S.CLARK@chemours.com>
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

Hi Dawn,

I wanted to let you know we received the package.

Thanks!
Adam

Adam Moyer, Ph.D.
New Chemicals Management Branch
Chemical Control Division
U.S. EPA Office of Pollution Prevention and Toxics
(202)564-3658; FAX (202)564-9490
moyer.adam@epa.gov

From: Sherlock, Scott
Sent: Wednesday, February 28, 2018 9:00 AM
To: Clark, Dawn S <DAWN.S.CLARK@chemours.com>
Cc: Moyer, Adam <moyer.adam@epa.gov>
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

Thank you!

From: Clark, Dawn S [mailto:DAWN.S.CLARK@chemours.com]
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To: Sherlock, Scott <Sherlock.Scott@epa.gov>
Cc: Moyer, Adam <moyer.adam@epa.gov>
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)
Importance: High

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Take care,
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Scott M. Sherlock, Attorney Advisor
Environmental Assistance Division
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To: Sherlock, Scott[Sherlock.Scott@epa.gov]; Clark, Dawn S[DAWN.S.CLARK@chemours.com]
From: Moyer, Adam
Sent: Wed 2/28/2018 6:16:33 PM
Subject: RE: GenX] study requests-2nd half of request: Federal Express Package (Contains No TSCA CBI)

Hi Dawn,

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Thanks!
Adam

Adam Moyer, Ph.D.
New Chemicals Management Branch
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U.S. EPA Office of Pollution Prevention and Toxics
(202)564-3658; FAX (202)564-9490
moyer.adam@epa.gov

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Scott M. Sherlock, Attorney Advisor
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Organizer: Pjetraj, Michael[michael.pjetraj@ncdenr.gov]
From: Pjetraj, Michael
Location: DENR-DAQ MEET ME 733
Importance: Normal
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
Start Time: Thur 3/1/2018 4:00:00 PM
End Time: Thur 3/1/2018 4:30:00 PM
Required Attendees: Ryan, Jeff
Optional Attendees: Strynar, Mark; Merrill, Raymond

Can DAQ & ORD have a call @ 11am?
Then Jeff & I can call SESD @1
Please call Conference Line / Ex. 6
From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, March 01, 2018 7:27 AM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.
I have a competing call. I cannot be on this call. If you would like to collect additional splits and send them to us for screening for novel PFAS I am glad to do so. However, you should know I am very backlogged on samples and may take some time to get any data on the samples (>1 month).
Mark

From: Pjetraj, Michael
Sent: Wednesday, February 28, 2018 3:54 PM
To: 'Ryan, Jeff' <Ryan.Jeff@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
Jeff,
I do not disagree
I was using you as my primary ORD contact, & trying to align schedules
To align with Mark's schedule, I can be available Thur AM from 8-830, 930-10, & 11-12
Please let me know if we can arrange a call with you & Mark at one of those times & then we can still have the 1pm call with SESD
Thanks
Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality
919-707-8497 office
michael.pjetraj@ncdenr.gov
217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

Nothing Compares

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From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Wednesday, February 28, 2018 3:41 PM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.
Michael – I see this very much as a question that Mark should weigh in on. Not so much regarding the GenX confirmation, but his

willingness to screen for non-target compounds which we are highly interested in as you know. I'll be on the call, but cannot speak for Mark. Perhaps we could have a bried chat with him earlier in the morning?

-----Original Appointment-----

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 28, 2018 3:12 PM
To: Pjetraj, Michael; Wellborn, Floyd; France, Danny; Ryan, Jeff
Cc: Strynar, Mark; James Bowyer
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
When: Thursday, March 01, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DENR-DAQ MEET ME 733

Please dial Conference Line / Ex. 6

Hello,

Thursday 1-2 was the best time to meet as many schedules as possible, including mine & Jim's.

Mark Strynar – Thur 7-12
Danny France – Thur 1-2
Floyd Wellborn – Thur before 10 or Friday before 10
Jeff Ryan – 10-11 & 1-2 Thursday, all morning Friday

I would like to discuss the split samples that NC DAQ has required Chemours, via Test America, to provide to the SESD lab. Chemours is testing again this week – 3 sources, 3 runs at each source. We have required split samples after extraction for each run be sent to the SESD lab.

Does the EPA need/want that volume of material?

We would like some level of validation/audit of the Test America results for GenX. We also wanted to provide the EPA with air samples from the various sources at Chemours for screening purposes.

Thanks
Michael

From: Wellborn, Floyd [mailto:Wellborn.Floyd@epa.gov]
Sent: Wednesday, February 28, 2018 2:45 PM
To: France, Danny <France.Danny@epa.gov>; Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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I can do that.
Floyd

From: France, Danny
Sent: Wednesday, February 28, 2018 2:43 PM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

Tomorrow 1-2 ?

From: Ryan, Jeff
Sent: Wednesday, February 28, 2018 10:50 AM
To: Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available 3-4 today, 10-11, 1-2 Thursday, and pretty much the entire morning Friday

---

From: Wellborn, Floyd
Sent: Wednesday, February 28, 2018 10:05 AM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: Re: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available after 2 today and either morning Thursday or Friday before 10.

For the record, Dr. Stynar is not part of SESD. He may want samples for ORD purposes.

Thanks
Floyd

Sent from my iPhone

On Feb 28, 2018, at 9:34 AM, Pjetraj, Michael <michael.pjetraj@ncdenr.gov> wrote:

Hello,
Please let me know your availability for today & the remainder of the week to discuss the volume of samples that NC DAQ has required Chemours via Test America to send to the EPA SESD lab.
Hopefully less than 30 min needed.
Thanks
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality
919-707-8497 office
michael.pjetraj@ncdenr.gov
217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641
Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

Organizer: Pjetraj, Michael[michael.pjetraj@ncdenr.gov]
From: Pjetraj, Michael
Location: DENR-DAQ MEET ME 733
Importance: Normal
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Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
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Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab
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Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
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Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality
919-707-8497 office
michael.pjetraj@ncdenr.gov
217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641
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To: Ryan, Jeff[Ryan.Jeff@epa.gov]
From: Pjetraj, Michael
Sent: Tue 4/10/2018 12:19:17 PM
Subject: FW: [External] Chemours - Stack Testing Schedule
Chemours Fayetteville Works - Further Stack Testing Plan and Schedule_(US_162278668_1).docx

FYI

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

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Raleigh, NC 27699-1641

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From: Compton, Christel E [mailto:CHRISTEL.E.COMPTON@chemours.com]
Sent: Friday, March 16, 2018 3:03 PM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Santoro, Thomas <Thomas.Santoro@arnoldporter.com>; Fields, Dianne L <DIANNE.L.FIELDS@chemours.com>
Subject: [External] Chemours - Stack Testing Schedule

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Michael –

Here is a future schedule for stack testing.

Thanks –
Christel

Christel Compton
Program Manager
The Chemours Company – Fayetteville Works
(o) 910-678-1213
(m) 910-975-3386

Chemours

The Chemours Company FC, LLC
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

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To: Ryan, Jeff[Ryan.Jeff@epa.gov]
From: Pjetraj, Michael
Sent: Tue 4/10/2018 12:18:48 PM
Subject: FW: [External] FW: HFPO Monomer Test Plans
Final Modified Method 18 Procedure by Midget Impinger for Sampling HFPO at Chemours 03-14-2018.pdf
HFPO Test Program write-up-lw.docx

FYI

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Compton, Christel E [mailto:CHRISTEL.E.COMPTON@chemours.com]
Sent: Tuesday, March 20, 2018 6:11 PM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>; Saunders, Gary <gary.saunders@ncdenr.gov>
Cc: Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Gross, Joel M. <Joel.Gross@apks.com>
Subject: [External] FW: HFPO Monomer Test Plans

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Gary –

Please find attached the draft protocol for testing of the HFPO Monomer. We also provided you with a hard copy of this today as well.

Please let me know if you have any questions.

Thanks –
Christel

Christel Compton
Program Manager
The Chemours Company – Fayetteville Works
(o) 910-678-1213
(m) 910-975-3386

Chemours

The Chemours Company FC, LLC
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

From: Vickery, Richard S
Sent: Monday, March 19, 2018 12:38 PM
To: Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>; Anderson, William (William.Anderson@testamericainc.com) <William.Anderson@testamericainc.com>; Leung, Lam-Wing H <LAM.H.LEUNG-1@chemours.com>; O'Neill, Jeffrey D. <j.ONeill@westonsolutions.com>; Meeter, Paul M. <Paul.Meeter@WestonSolutions.com>; Gross, Joel M. <Joel.Gross@apks.com>; Santoro, Thomas <Thomas.Santoro@arnoldporter.com>
Subject: HFPO Monomer Test Plans

Attached are the test plans provided by Billy and Jeff concerning testing for HFPO monomer. I think they are ready to send into DAQ for their review.

Please respond with any questions or comments asap so we can send this in no later than end of Tuesday.

Regards,
Rick

Richard S. Vickery, P.E.
Sr. Environmental Consultant, Engineering Technology
+1 302 773 0075

The Chemours Company
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Wilmington, DE 19899

LinkedIn | Twitter | Chemours.com

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Modified Method 18 Midget Impinger Method for Determination of HFPO Emissions in Stack Gas

Sampling and Field Procedure for the Evaluation of HFPO in Stack Gas

Sample Name: Modified Method 18 Midget Impinger Sampling Method

Sampler: Stack Sampling Specialists

Sampling Locations: Stack Sampling Platform

Sampling & Health & Safety Equipment: Sampling apparatus and safety equipment recommendations are as follows:

- Method 18 Midget Impinger Sampling Train (See schematic)
- HDPE 60 ml volatile organic analysis (VOA) vials with screw-top caps
- Methanol (Purge & Trap Grade) with 5% NH_4OH for Impinger charge and glassware rinses
- Safety glasses or face shield
- Latex Gloves and other safety equipment as required
- Dry Ice/Methanol Bath

Sampling Strategy and Design: The target analyte for this sampling campaign is HFPO (Hexafluoropropylene Oxide, CAS # 428-59-1). This compound has a low boiling point (-28°C) therefore is not amenable for testing on VOST. The compound can be trapped into methanol at dry ice temperatures, and reacts with methanol at ambient temperatures and above according to the following chemical equation:

$$C_3H_6O + 2CH_3OH \rightarrow C_5H_6F_4O_3 + 2HF$$

or

$$HFPO + 2MeOH \rightarrow 2\text{-}MTP + 2HF$$

Note that 2-MTP stands for Methyl 2-methoxytetrafluoropropionate (CAS # 10186-63-7). The boiling point of the chemical reaction product ($C_5H_6F_4O_3$) is 40°C. Its detection by GC/MS in the methanol solution is a 1:1 stoichiometric ratio to the HFPO monomer captured in the sampling train.

The analytical strategy entails the processing of the methanol impinger samples for 2-MTP, and the Tedlar Bag for HFPO and 2-MTP. No monomer HFPO is expected to remain unreacted or free in the methanol impingers. If residual HFPO were present after the reaction time the final ambient air sweep through the warm impingers will pass remaining HFPO into the Tedlar bag. After the Tedlar bag has been successfully analyzed for the HFPO monomer, a known volume of methanol will be injected into the Tedlar bag to rinse and remove 2-MTP that resides there either by:

- breaks through the sampling train during sampling,
- or is transferred there during the sweep gas treatment,
- or forms in the Tedlar bag by direct reaction of methanol vapors and the HFPO that broke through the sampling train.

Modified Method 18 Midget Impinger Method for Determination of HFPO Emissions in Stack Gas (Continued)

Therefore, the final HFPO concentration determined in this sampling train will be the sum of the following analytical fractions:

[Impingers #1 & #2] + [Impinger #3] + [Impinger #4] + [Tedlar® Bag Contents] + [Tedlar® Bag Rinse]

Sample Collection Rates: Stack gas collections are conducted continuously at a nominal rate of 0.25 Liters/minute during the sampling run for greater than or equal to 60 minutes of sampling time. A greater number of minutes may be required to include specific batch operations or specific process campaigns within the plant operations. The various train components will be collected at the end of the run in individual 60 mL HDPE vials following the removal of the sampling train from the stack area and a reaction warm-up cycle of the train under sealed conditions. Each 60 minute (or greater) complete sampling train collection constitutes a Sampling Run under these conditions. Three (3) complete sampling runs will complete a test condition.

Sampling Procedures: The preparation of Method 18 Train glassware, probes, condensers and connecting glassware should incorporate a thorough cleaning and rinsing of these components with an ultrapure grade of Methanol containing 5% NH_4OH. Glass components should be baked in an oven at 100°C for 2 hours followed by a final MeOH rinse. Any tubing used during the sample collections to connect the sampling probe to the impinger train should be new, and receive an initial methanol rinse before the test commences.

Persons handling the midget impinger train components should don latex gloves. Fresh gloves should be worn during each separate stage of train handling to avoid the transfer of contamination to the train.

A strict approach should be taken toward the quarantine of essential personnel and equipment used during the collection of HFPO samples to avoid contamination of these samples.

Storage and handling of train components and samples are required to be in a clean sampling trailer or lab space. Solvents like toluene, methylene chloride, and acetone have the potential to severely cross contaminate the Method 18 samples unless deliberate care is taken to prevent exposure to these solvents.

The midget impingers and connecting glassware will be protected from contamination by placing them in separate clean coolers during shipping and storage at the sampling locations.

Modified Method 18 Impinger Train Operation -- The sample collection procedure set-up generally follows the standard EPA protocols referenced below. The dry gas meter will be calibrated before arriving at the test site, and the sample train components will be cleaned and assembled before charging the midget impingers with the methanol solution containing 5% NH_4OH. The train will be leak tested at approximately 10 inches of Hg using a system

isolation valve that assists to prevent exposure of the train to possible contamination in the ambient air during the leak check. Leak tests will be conducted before and after the sampling interval for each run.

Before the run is commenced, impinger #1 is charged with approximately 10 mls of the methanol solution containing 5% NH_4OH, and impingers #2, #3, and #4 are charged with approximately 20 mls of the trapping solution. The first midget impinger in the sampling train is equipped with a short stem impinger to prevent condensed moisture from freezing and plugging the impinger nozzle tip. A 20 liter Tedlar® Bag or larger will be attached to the outlet of the sampling train to catch the exhaust gases exiting the impinger train. The Tedlar Bag contents will be analyzed for HFPO monomer and 2-MTP, and results from its analyses serves as a train breakthrough evaluation for the run.

The first four (4) impingers of the train will be set in a dry ice/methanol bath for the duration of sample collection. The methanol solution level in each impinger should be maintained below the dry ice bath external fluid level to maximize cooling efficiency of the methanol solution. The analyte being collected during this stack emissions characterization is Hexafluoropropylene oxide or HFPO (CAS # 428-59-1) whose boiling Point = -27.4°C. Under these operating conditions the HFPO analyte is expected to be efficiently trapped and isolated for analysis in the methanol / NH_4OH solution. Once the analytes are dissolved in the methanol solution, the handling of the samples is expected to be easy to maintain.

The probe of the sampling train will be inserted into an appropriate sampling port and purged with stack gas to fill the dead volume of the train before the actual sampling is started. The HFPO sample collection is a non-isokinetic process so a single point probe location will be set. The probe will be heated to a few degrees above the stack gas temperatures to prevent the condensation of moisture in the probe during the run. The stack gas will be sampled at a rate of 0.25 L/min for ≥ 60 minutes to collect a nominal sample volume of ≥15L for each run.

At the completion of the sampling run on the stack, the sampling train will be disconnected from the probe assembly and the Tedlar Bag and capped at both ends. The assembled train will be secured in a carriage or cooler, and moved to the sampling trailer for the completion of the sample collection process. The probe assembly and connecting glassware will receive a methanol solution rinse and the rinsate will be placed into the labelled sample container used for impinger contents #1 and #2.

The impinger train will be reconnected to the Tedlar Bag before being allowed to warm to room temperature and subsequently placed into a 40°C water bath for approximately 45 minutes. At the completion of the warming cycle the sampling train will be slowly purged with nitrogen (N_2) or ambient air for 2 minutes to sweep residual HFPO monomer into the Tedlar Bag receiver. A charcoal protective adsorbent cartridge will be placed in front of the first impinger during the purge to protect the impinger train from fugitive contamination.

Modified Method 18 Midget Impinger Method for Determination of HFPO Emissions in Stack Gas (Continued)

Midget Impingers #1 & #2 will be composited into a sample container, rinsed with a small aliquot of methanol containing 5% NH_4OH and placed in a 60 mL HDPE vial clearly labeled with the run and fraction number. The probe methanol solvent rinse will also be placed into the Impinger #1 and #2 sample fraction. Using a clean (or new) HDPE squirt bottle the probe and all related connecting glassware are rinsed into the Impinger #1 and #2 sample container. Three (3) small volumes of methanol should be sufficient to efficiently rinse the train components.

Midget Impinger #3 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately for the target analyte.

Midget Impinger #4 will be collected with its associated glassware rinses in a separate 60ml HDPE vial. This fraction will be analyzed separately from the other fractions for the target analyte.

After collecting the samples, the Methanol impinger samples will be placed in Ziploc® bags and stored in coolers on ice. The Tedlar bag will be sealed and held at ambient temperature until analysis at the laboratory.

During a sampling run, a complete field blank train will be set up to simulate the handling of the test samples. The Methanol will remain in an identical train for the approximate length of time required to complete a sampling run. The beginning and end leak checks will be performed on the blank train, and the probe will be heated to the standard operating temperature. Samples will be recovered from the blank train by the same operator and in the same location as those for the standard runs.

For each stack location or sampling campaign, a methanol solution trip blank and reagent blank will be included with the laboratory shipments.

Samples will be placed on ice in clean coolers, which will be stored in an area away from other samples and potential sources of contamination. The Modified Method 18 impinger samples will be stored and shipped in a separate cooler from other samples and preserved by cooling with ice.

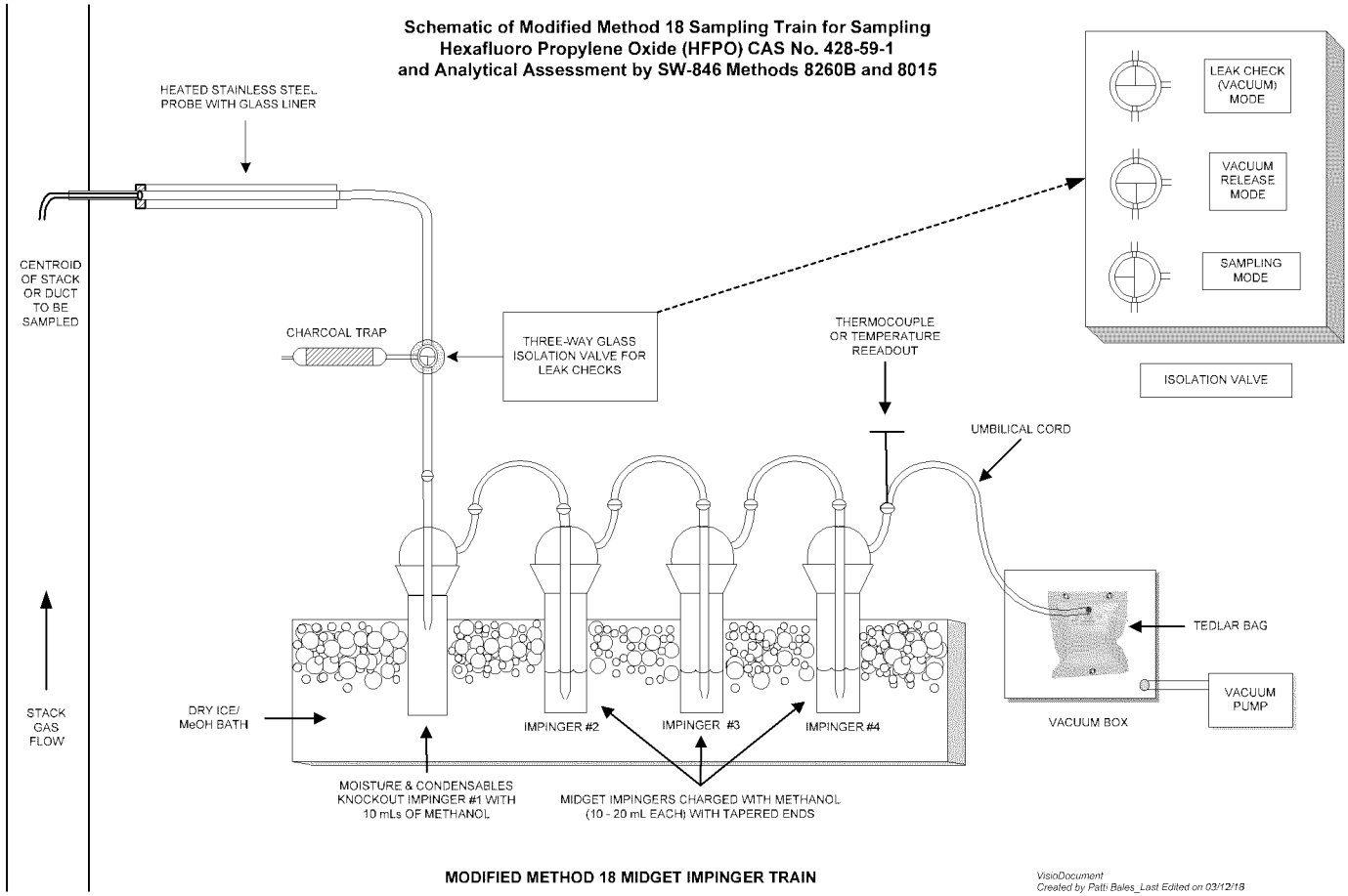
Laboratory Analysis:

The analytical laboratory will conduct screening level analyses followed by analyses of the Modified Method 18 Methanol impinger samples by SW-846 Method 8260B. Generally, a 10ul portion of the impinger sample is placed into the purge and trap device of the instrument. Method 8260 surrogate compounds and internal standards are added to the portions of the samples processed. For low level samples, the portion of the original sample added is increased to a 100µl portion placed onto the purge and trap device. The higher injection portions are considered after screening and if sample loadings are below the calibration range of the instrument. If dilution of samples are required to optimize the method reporting (RLs) and detection limits (MDLs). Dilutions may also be required for highly concentrated impinger samples.

Modified Method 18 Midget Impinger Method for Determination of HFPO Emissions in Stack Gas (Continued)

Quality Control/Quality Assurance Requirements:	A Train Blank set of Method 18 samples will be collected one time during each source location. The Train Blank will be assembled and placed near the stack sampling location for the duration of one sampling run. The blank train will be leak checked at the beginning and end of the sampling period. A methanol trip blank and reagent blanks will be included with all modified Method 18 samples sent to the analytical laboratory. Samples are to be stored on regular wet ice (approximately 4°C) from the time they are collected from the impinger glassware and placed into sampling bottles. There is no refrigeration requirement for the Tedlar bag samples. Holding Times: All samples are to be analyzed within 14 days of collection including the Tedlar bag samples.
Method References:	Modified Method 18 – "Measurement of Gaseous Organic Compound Emissions by Gas Chromatography." EPA 40 CFR Part 60, Appendix A. Method 8260 - "Volatile Organic Compounds by Gas Chromatography/Mass Spectrometry (GC/MS)". Taken from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, September 1986 and its updates. USEPA, OSWER, Washington, D.C. 20460. Method 8015 - "Nonhalogenated Organics by Gas Chromatography". Taken from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, September 1986 and its updates. USEPA, OSWER, Washington, D.C. 20460. Method 0040 – "Sampling of Principal Organic Hazardous Constituents from Combustion Sources Using Tedlar Bags". Taken from Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW-846, Third Edition, September 1986 and its updates. USEPA, OSWER, Washington, D.C. 20460.

Schematic of Modified Method 18 Sampling Train for Sampling Hexafluoro Propylene Oxide (HFPO) CAS No. 428-59-1 and Analytical Assessment by SW-846 Methods 8260B and 8015



MODIFIED METHOD 18 MIDGET IMPINGER TRAIN

VisioDocument
Created by Patti Bales_Last Edited on 03/12/18

HFPO Test Program

In conjunction with each HFPO stack test, an EPA Method 1 and 2 velocity traverse will be performed in order to calculate the stack gas velocity. The stack gas moisture content will be measured using either EPA Method 4 or by wet bulb/dry bulb. Since previous C3 Dimer Acid tests have shown the stack gas composition to be ambient air (20.9% O_2 and 0.0% CO_2) for HFPO testing, the composition will be assumed to be ambient air.

The stack gas velocity, moisture and composition will be used to calculate stack volumetric flow in order to calculate the HFPO mass emissions in pound per hour.

The PPA and VE South stack schematics are provided in Section 3 of the C3 Dimer Acid Test Protocol. For both sources, a total of sixteen traverse points (8 per axis) per EPA Method 1 will be used to determine stack gas velocity and temperature.

To: Ryan, Jeff[Ryan.Jeff@epa.gov]
From: Pjetraj, Michael
Sent: Tue 3/6/2018 2:15:38 PM
Subject: FW: [External] Revised Test Protocol - Fayatteville Stack Testing -Company Confidential and Proprietary
Draft 12-21-17 Emissions Test Protocol-lw.pdf

Jeff,
Please find attached a copy of the test & analytical protocol from Chemours for HFPO Dimer Acid.

The analytical portion of the protocol is stamped "Company Confidential and Proprietary." Please distribute as needed.

Thanks
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

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From: Vickery, Richard S [mailto:RICHARD.S.VICKERY-1@chemours.com]
Sent: Friday, December 22, 2017 7:38 AM
To: Saunders, Gary <gary.saunders@ncdenr.gov>
Cc: Anderson, William <William.Anderson@testamericainc.com>; Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>; Leung, Lam-Wing H <LAM.H.LEUNG-1@chemours.com>; Meeter, Paul M. <Paul.Meeter@WestonSolutions.com>; O'Neill, Jeffrey D. <j.ONeill@westonsolutions.com>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>
Subject: [External] Revised Test Protocol - Fayatteville Stack Testing

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Gary,

Attached is a revised test protocol incorporating the changes we discussed at our last meeting. Please let us know if you have any additional questions or comments.

Regards,
Rick

Richard S. Vickery, P.E.
Sr. Environmental Consultant, Engineering Technology
+1 302 773 0075

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To: Ryan, Jeff[Ryan.Jeff@epa.gov]; Michael Pjetraj[michael.pjetraj@ncdenr.gov]
Cc: Merrill, Raymond[Merrill.Raymond@epa.gov]
From: Strynar, Mark
Sent: Thur 3/1/2018 12:26:31 PM
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I have a competing call. I cannot be on this call. If you would like to collect additional splits and send them to us for screening for novel PFAS I am glad to do so. However, you should know I am very backlogged on samples and may take some time to get any data on the samples (>1 month).

Mark

From: Ryan, Jeff
Sent: Wednesday, February 28, 2018 3:41 PM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

Michael – I see this very much as a question that Mark should weigh in on. Not so much regarding the GenX confirmation, but his willingness to screen for non-target compounds which we are highly interested in as you know. I'll be on the call, but cannot speak for Mark. Perhaps we could have a bried chat with him earlier in the morning?

-----Original Appointment-----
From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 28, 2018 3:12 PM
To: Pjetraj, Michael; Wellborn, Floyd; France, Danny; Ryan, Jeff
Cc: Strynar, Mark; James Bowyer
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
When: Thursday, March 01, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DENR-DAQ MEET ME 733

Please dial Conference Line / Ex. 6

Hello,
Thursday 1-2 was the best time to meet as many schedules as possible, including mine & Jim's.

Mark Strynar – Thur 7-12
Danny France – Thur 1-2
Floyd Wellborn – Thur before 10 or Friday before 10
Jeff Ryan – 10-11 & 1-2 Thursday, all morning Friday

I would like to discuss the split samples that NC DAQ has required Chemours, via Test America, to provide to the SESD lab. Chemours is testing again this week – 3 sources, 3 runs at each source. We have required split samples after extraction for each run be sent to the SESD lab.

Does the EPA need/want that volume of material?

We would like some level of validation/audit of the Test America results for GenX. We also wanted to provide the EPA with air samples from the various sources at Chemours for screening purposes.

Thanks
Michael

From: Wellborn, Floyd [mailto:Wellborn.Floyd@epa.gov]
Sent: Wednesday, February 28, 2018 2:45 PM
To: France, Danny <France.Danny@epa.gov>; Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>

Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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I can do that.

Floyd

From: France, Danny
Sent: Wednesday, February 28, 2018 2:43 PM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

Tomorrow 1-2 ?

From: Ryan, Jeff
Sent: Wednesday, February 28, 2018 10:50 AM
To: Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available 3-4 today, 10-11, 1-2 Thursday, and pretty much the entire morning Friday

---

From: Wellborn, Floyd
Sent: Wednesday, February 28, 2018 10:05 AM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: Re: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available after 2 today and either morning Thursday or Friday before 10.

For the record, Dr. Stynar is not part of SESD. He may want samples for ORD purposes.

Thanks
Floyd

Sent from my iPhone
On Feb 28, 2018, at 9:34 AM, Pjetraj, Michael <michael.pjetraj@ncdenr.gov> wrote:

> Hello,
> Please let me know your availability for today & the remainder of the week to discuss the volume of samples that NC DAQ has required Chemours via Test America to send to the EPA SESD lab.
>
> Hopefully less than 30 min needed.
>
> Thanks
> Michael
>
> **Michael Pjetraj, P.E.**
> Deputy Director
> Division of Air Quality
> North Carolina Department of Environmental Quality
>
> 919-707-8497 office

michael.pjetraj@ncdenr.gov

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Raleigh, NC 27699-1641

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To: Ryan, Jeff[Ryan.Jeff@epa.gov]
From: Pjetraj, Michael
Sent: Thur 2/22/2018 1:12:57 PM
Subject: RE: [External] Today's call

Jeff,
FYI,
We received information from Chemours that they will be testing at 3 locations next week. All testing will be for GenX. We are still requiring split samples after extraction for delivery to the EPA's SESD Athens lab.

Last week we discussed the potential for EPA to get Summa canister samples during the testing. I have a conference call with Chemours this afternoon. Is that still an interest of yours?

Alternately, do you want to coordinate with SESD so that ORD lad can analyze some of the split samples.

Please let me know if you would like to discuss this morning.

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

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Raleigh, NC 27699-1641

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From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Tuesday, February 13, 2018 9:51 AM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Mitchell, Ken <Mitchell.Ken@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Buckley, Timothy <Buckley.Timothy@epa.gov>; Gullett, Brian <Gullett.Brian@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>; Rosati, Jacky <Rosati.Jacky@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Tabor, Dennis <Tabor.Dennis@epa.gov>
Subject: [External] Today's call

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Good morning Michael

I just wanted to give you a brief update prior to this morning's call. Mainly, that since you and I last spoke, the ORD folks have spoken with Ken Mitchell and his folks in Region 4 to discuss how we can support your needs. They provided a bit of background and helped us understand where you're at. Ken and several of his folks will be participating in today's call. Thanks again for helping me get connected with Ken.

As I indicated, the ORD groups, NERL and NRMRL, and OAQPS are working together to better identify and potentially evaluate emissions measurement options for characterizing PFAS emissions. We hope this expertise will be able to support your Chemours emission measurement needs. We're also hoping the Chemours emissions tests will provide EPA additional knowledge on

candidate emissions measurement approaches and performance and maybe even opportunities for collecting additional samples.

We're very interested in learning how EPA can support NCDEQ's needs. We're also interested in learning more about the testing you've done to date, if possible. Several of us here at EPA saw several of the Chemours draft emission test documents.

As far as today's call, here is a proposed general agenda with the overall objective to learn how EPA can support NCDEQ and their interactions with Chemours.

- Introductions – Brief roll call of participants, affiliation and interests/expertise.
- NCDEQ background on Chemours (as appropriate)
- Discussion of NCDEQ EPA support needs
- Brief discussion of EPA direction regarding PFAS emission measurements
- Discussion of upcoming test specifics?
- Discussion of how to proceed and timing
- Other?

This is just a suggested agenda/list of topics to discuss. Feel free to forward to those not included on this distribution.

Looking forward to our call.

Jeff

Jeff Ryan – Senior Scientist
U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Air Pollution Prevention and Control Division
Air Pollution Technology Branch
109 T.W. Alexander Drive
Mail Drop E305-01
Research Triangle Park, NC 27711
(919) 541-1437 (919) 541-0554 FAX
ryan.jeff@epa.gov

"And all this science, I don't understand."
"It's just my job 5 days a week"

Elton John - Rocket Man

To: Ryan, Jeff[Ryan.Jeff@epa.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Oneal, Gregg[gregg.oneal@ncdenr.gov]
Cc: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Offenberg, John[Offenberg.John@epa.gov]; Krebs, Ken[krebs.ken@epa.gov]; Riedel, Theran[Riedel.Theran@epa.gov]; Vandervaart, Donald[donald.vandervaart@ncdenr.gov]; Gary Saunders[gary.saunders@ncdenr.gov]; Hall, Brent W[brent.hall@ncdenr.gov]; Hammond, James[james.hammond@ncdenr.gov]
From: Vogel, Shannon
Sent: Thur 11/2/2017 1:00:52 PM
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

This is to add Jim Hammond to the email list.

From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Thursday, November 02, 2017 8:23 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Oneal, Gregg <gregg.oneal@ncdenr.gov>
Cc: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>; Vandervaart, Donald <donald.vandervaart@ncdenr.gov>; Saunders, Gary <gary.saunders@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>; Hall, Brent W <brent.hall@ncdenr.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

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I'll give it a look later today.

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Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>; Vandervaart, Donald <donald.vandervaart@ncdenr.gov>; Gary Saunders <gary.saunders@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>; Hall, Brent W <brent.hall@ncdenr.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,

I gave it a read. Concerning the sampling protocol I am not the one who can comment. I hope others can on that. My main concern would be the measurement only for the HFPO-DA in the samples. Per the emissions data I saw earlier in the week HFPO-DA is one player in the emissions estimates and NOT one of the major players based on what I can tell. I see many more potential contaminants that have much higher mass outputs:
CAS 16090-14-5 (Nafion Monomer)
10493-49-3 (the C4 vinyl ether compound)
1187-93-5 (the C3 vinyl ether compound)
1623-05-08 (the C5 vinyl ether compound)
3330-14-1 (a C8 perfluoro polyether)
428-59-1 (HFPO)

Just to name a few. These all have way more mass output and are significant contributors.

Mark

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Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>; Vandervaart, Donald <donald.vandervaart@ncdenr.gov>; Gary Saunders <gary.saunders@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>;

Hall, Brent W <brent.hall@ncdenr.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
Yes we would like to talk again. Also we received a test proposal for testing at Chemours late yesterday. We would appreciate your comments if you are available to do so.
Brent Hall would like to discuss the emissions but will be out of the office the next two days in training.
Thanks,
Gregg

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Gregg,

We just had a meeting with Jeff Ryan here at EPA. He says he knows Brent. I don't have Brent's contact info. He would like to have a chat about the PFAS emissions at the Fayetteville Chemours plant if you guys have a chance.

Mark

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To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
We would like to visit with you and the lab form 10 to 11 am tomorrow. I feel an hour should be sufficient time unless you think otherwise. Should we just plan to meet you at the front desk?

Thanks,
Gregg

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Mark,
I would like arrange a visit for some of the NC DAQ Tech Services staff to meet and see your lab sometime this week if possible. Tomorrow would be optimum or early Wednesday.
Thanks,
Gregg

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To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Ok Gregg. FYI I do not run Method 537. That method is an EPA standard method. We run our own internal developed methods for PFAS.

Mark

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To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I think at this time with other issues taking priority over here at DAQ we will have to try to work out another date and time. I will try to get back with you sometime in the coming weeks to arrange this. I still very much want to see the M537 equipment.
Thanks
Gregg

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Gregg,

Thursday from 3-4 PM is booked. I have to leave at 4 PM to attend my daughters volleyball game otherwise I am usually here to 4:30.

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Gregg

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I am here all week. I have very little going on Friday from lunch to 3:30 PM if that works in your time slot. I am very bust Wednesday so it will not work for me. Thursday could work but I have meetings 10-11 am and from 1-3 pm.

Mark

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Sent: Tuesday, September 26, 2017 2:02 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
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What is your arability this week? I have 3-4 of us that would like to visit and see this equipment in operation.
Thanks,
Gregg

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To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,
I have UPLC-MS/MS and HPLC-MS/MS as well as TOFMS, and QTOFMS apparatus we use regularly for PFAS measurements. I am glad to show it to you anytime we are around. I have been working closely with Chris Johnson and Linda Culpepper at NCDEQ since the GenX issue broke in June 2017 for water analysis.

Let me know what you availability is.

Mark

From: Merrill, Raymond
Sent: Tuesday, September 26, 2017 1:08 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>; Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: FW: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark
I'm forwarding an email from Gregg Oneal at NC DENR.
From our phone conversation, I know that you are in contact with folks at NC DENR related to PFOA and/or PFOS analysis by LC/MS/MS.
Greg is in the air program at DENR and as you can read from his email below, he has a general interest in gathering information and some familiarity with the equipment used for these analyses.

With this introduction, I'll leave it in your hands to make the connection with Gregg formally.
Let me know if you need something from me.
Thanks
Ray

Raymond Merrill Ph.D. (Ray)| USEPA/OAQPS/AQAD/Measurement Technology Group
109 TW Alexander Drive (E143-02) | Research Triangle Park, NC 27711
email: merrill.raymond@epa.gov | Phone (919)541-5225 | Fax: (919) 541-0516

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Tuesday, September 26, 2017 10:27 AM
To: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Ray,
Does EPA-RTP have an operational (HPLC/MS/MS) that some of us from NCDEQ-DAQ Technical Services could see? This is the equipment listed in the EPA Drinking Water Method 537 and does the PFOA lab analysis. Do you know a contact? Some of us would like to get a better understanding if possible of this analysis and the equipment operation.
Thanks,
Gregg

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From: Oneal, Gregg
Sent: Wed 11/1/2017 9:05:39 PM
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
Sorry forgot to put Jim on the cc.
Gregg

Thomas Gregg O'Neal, III, P.E.
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Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
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Brent Hall would like to discuss the emissions but will be out of the office the next two days in training.
Thanks,
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Gregg,

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Mark

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Mark,
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Thanks,
Gregg

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Mark

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From our phone conversation, I know that you are in contact with folks at NC DENR related to PFOA and/or PFOS analysis by LC/MS/MS.
Greg is in the air program at DENR and as you can read from his email below, he has a general interest in gathering information and some familiarity with the equipment used for these analyses.

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Let me know if you need something from me.
Thanks
Ray

Raymond Merrill Ph.D. (Ray)| USEPA/OAQPS/AQAD/Measurement Technology Group
109 TW Alexander Drive (E143-02) | Research Triangle Park, NC 27711
email: merrill.raymond@epa.gov | Phone (919)541-5225 | Fax: (919) 541-0516

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Sent: Tuesday, September 26, 2017 10:27 AM
To: Merrill, Raymond <Merrill.Raymond@epa.gov>
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gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Ryan, Jeff[Ryan.Jeff@epa.gov]; Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Offenberg, John[Offenberg.John@epa.gov]; Krebs, Ken[krebs.ken@epa.gov]; Riedel, Theran[Riedel.Theran@epa.gov]; Vandervaart, Donald[donald.vandervaart@ncdenr.gov]; Gary Saunders[gary.saunders@ncdenr.gov]; Vogel, Shannon[shannon.vogel@ncdenr.gov]; Hall, Brent W[brent.hall@ncdenr.gov]
From: Oneal, Gregg
Sent: Wed 11/1/2017 9:02:26 PM
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)
Draft 10-31-17-2 - Emissions Test Protocol.pdf

Mark,
Yes we would like to talk again. Also we received a test proposal for testing at Chemours late yesterday. We would appreciate your comments if you are available to do so.
Brent Hall would like to discuss the emissions but will be out of the office the next two days in training.
Thanks,
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Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

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To: Pjetraj, Michael[michael.pjetraj@ncdenr.gov]
Cc: Saunders, Gary[gary.saunders@ncdenr.gov]; Merrill, Raymond[Merrill.Raymond@epa.gov]
From: Ryan, Jeff
Sent: Tue 3/6/2018 2:46:57 PM
Subject: RE: [External] Revised Test Protocol - Fayatteville Stack Testing -Company Confidential and Proprietary

Thanks Michael.

We'll dig into it. I have my radar on for how they're doing the extractions and analysis. Though I've only skimmed through it, I didn't see if or where they may be using a labelled HFPO that I know is now available.

It will be good for us to go through and come up with a list of things we'd like to see in the report you receive, Hopefully that will be good for you as well.

Thanks again for sharing. Very helpful.

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Tuesday, March 06, 2018 9:16 AM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>
Subject: FW: [External] Revised Test Protocol - Fayatteville Stack Testing -Company Confidential and Proprietary

Jeff,
Please find attached a copy of the test & analytical protocol from Chemours for HFPO Dimer Acid.

The analytical portion of the protocol is stamped "Company Confidential and Proprietary." Please distribute as needed.

Thanks
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
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From: Vickery, Richard S [mailto:RICHARD.S.VICKERY-1@chemours.com]
Sent: Friday, December 22, 2017 7:38 AM
To: Saunders, Gary <gary.saunders@ncdenr.gov>
Cc: Anderson, William <William.Anderson@testamericainc.com>; Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>; Leung, Lam-Wing H <LAM.H.LEUNG-1@chemours.com>; Meeter, Paul M. <Paul.Meeter@WestonSolutions.com>; O'Neill, Jeffrey D. <j.ONeill@westonsolutions.com>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>
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Gary,

Attached is a revised test protocol incorporating the changes we discussed at our last meeting. Please let us know if you have any additional questions or comments.

Regards,
Rick

Richard S. Vickery, P.E.
Sr. Environmental Consultant, Engineering Technology

+1 302 773 0075

The Chemours Company
1007 Market Street
Wilmington, DE 19899

LinkedIn | Twitter | Chemours.com

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https://www.chemours.com/Chemours_Home/en_US/email_disclaimer.html

To: Pjetraj, Michael[michael.pjetraj@ncdenr.gov]
From: Ryan, Jeff
Sent: Wed 2/28/2018 8:56:16 PM
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I'll get up with Mark. I think he's still taking my calls ...

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Jeff,
I do not disagree
I was using you as my primary ORD contact, & trying to align schedules

To align with Mark's schedule, I can be available Thur AM from 8-830, 930-10, & 11-12

Please let me know if we can arrange a call with you & Mark at one of those times & then we can still have the 1pm call with SESD

Thanks

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Raleigh, NC 27699-1641

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From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Wednesday, February 28, 2018 3:41 PM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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Michael – I see this very much as a question that Mark should weigh in on. Not so much regarding the GenX confirmation, but his willingness to screen for non-target compounds which we are highly interested in as you know. I'll be on the call, but cannot speak for Mark. Perhaps we could have a bried chat with him earlier in the morning?

-----Original Appointment-----
From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 28, 2018 3:12 PM
To: Pjetraj, Michael; Wellborn, Floyd; France, Danny; Ryan, Jeff

Cc: Strynar, Mark; James Bowyer
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
When: Thursday, March 01, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DENR-DAQ MEET ME 733

Please dial 919-733-2441

Hello,
Thursday 1-2 was the best time to meet as many schedules as possible, including mine & Jim's.

Mark Strynar – Thur 7-12
Danny France – Thur 1-2
Floyd Wellborn – Thur before 10 or Friday before 10
Jeff Ryan – 10-11 & 1-2 Thursday, all morning Friday

I would like to discuss the split samples that NC DAQ has required Chemours, via Test America, to provide to the SESD lab. Chemours is testing again this week – 3 sources, 3 runs at each source. We have required split samples after extraction for each run be sent to the SESD lab.

Does the EPA need/want that volume of material?

We would like some level of validation/audit of the Test America results for GenX. We also wanted to provide the EPA with air samples from the various sources at Chemours for screening purposes.

Thanks
Michael

From: Wellborn, Floyd [mailto:Wellborn.Floyd@epa.gov]
Sent: Wednesday, February 28, 2018 2:45 PM
To: France, Danny <France.Danny@epa.gov>; Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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I can do that.

Floyd

From: France, Danny
Sent: Wednesday, February 28, 2018 2:43 PM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

Tomorrow 1-2 ?

From: Ryan, Jeff
Sent: Wednesday, February 28, 2018 10:50 AM
To: Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available 3-4 today, 10-11, 1-2 Thursday, and pretty much the entire morning Friday

From: Wellborn, Floyd
Sent: Wednesday, February 28, 2018 10:05 AM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: Re: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available after 2 today and either morning Thursday or Friday before 10.

For the record, Dr. Stynar is not part of SESD. He may want samples for ORD purposes.

Thanks
Floyd

Sent from my iPhone
On Feb 28, 2018, at 9:34 AM, Pjetraj, Michael <michael.pjetraj@ncdenr.gov> wrote:

> Hello,
> Please let me know your availability for today & the remainder of the week to discuss the volume of samples that NC DAQ has required Chemours via Test America to send to the EPA SESD lab.
>
> Hopefully less than 30 min needed.
>
> Thanks
> Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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To: Strynar, Mark[strynar.mark@epa.gov]; Oneal, Gregg[gregg.oneal@ncdenr.gov]
Cc: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Offenberg, John[Offenberg.John@epa.gov]; Krebs, Ken[krebs.ken@epa.gov]; Riedel, Theran[Riedel.Theran@epa.gov]; Vandervaart, Donald[donald.vandervaart@ncdenr.gov]; Gary Saunders[gary.saunders@ncdenr.gov]; Vogel, Shannon[shannon.vogel@ncdenr.gov]; Hall, Brent W[brent.hall@ncdenr.gov]
From: Ryan, Jeff
Sent: Thur 11/2/2017 12:23:06 PM
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

I'll give it a look later today.

From: Strynar, Mark
Sent: Thursday, November 02, 2017 8:02 AM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>; Vandervaart, Donald <donald.vandervaart@ncdenr.gov>; Gary Saunders <gary.saunders@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>; Hall, Brent W <brent.hall@ncdenr.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,

I gave it a read. Concerning the sampling protocol I am not the one who can comment. I hope others can on that. My main concern would be the measurement only for the HFPO-DA in the samples. Per the emissions data I saw earlier in the week HFPO-DA is one player in the emissions estimates and NOT one of the major players based on what I can tell. I see many more potential contaminants that have much higher mass outputs:
CAS 16090-14-5 (Nafion Monomer)
10493-49-3 (the C4 vinyl ether compound)
1187-93-5 (the C3 vinyl ether compound)
1623-05-08 (the C5 vinyl ether compound)
3330-14-1 (a C8 perfluoro polyether)
428-59-1 (HFPO)

Just to name a few. These all have way more mass output and are significant contributors.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Wednesday, November 01, 2017 5:02 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>; Vandervaart, Donald <donald.vandervaart@ncdenr.gov>; Gary Saunders <gary.saunders@ncdenr.gov>; Vogel, Shannon <shannon.vogel@ncdenr.gov>; Hall, Brent W <brent.hall@ncdenr.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
Yes we would like to talk again. Also we received a test proposal for testing at Chemours late yesterday. We would appreciate your comments if you are available to do so.
Brent Hall would like to discuss the emissions but will be out of the office the next two days in training.
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer

Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, November 01, 2017 4:02 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Offenberg, John <Offenberg.John@epa.gov>; Krebs, Ken <krebs.ken@epa.gov>; Riedel, Theran <Riedel.Theran@epa.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

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Gregg,

We just had a meeting with Jeff Ryan here at EPA. He says he knows Brent. I don't have Brent's contact info. He would like to have a chat about the PFAS emissions at the Fayetteville Chemours plant if you guys have a chance.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Monday, October 30, 2017 2:55 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
We would like to visit with you and the lab form 10 to 11 am tomorrow. I feel an hour should be sufficient time unless you think otherwise. Should we just plan to meet you at the front desk?
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

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1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Monday, October 30, 2017 2:02 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

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Tomorrow works fine from me between 7-11 AM. After that I am full. Wednesday is terrible for me. I am pretty much in meetings all day 9:30 am to 4:30 PM.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Monday, October 30, 2017 1:46 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I would like arrange a visit for some of the NC DAQ Tech Services staff to meet and see your lab sometime this week if possible. Tomorrow would be optimum or early Wednesday.
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
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gregg.oneal@ncdenr.gov

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Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, September 28, 2017 7:29 AM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Ok Gregg. FYI I do not run Method 537. That method is an EPA standard method. We run our own internal developed methods for PFAS.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Wednesday, September 27, 2017 3:11 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I think at this time with other issues taking priority over here at DAQ we will have to try to work out another date and time. I will try to get back with you sometime in the coming weeks to arrange this. I still very much want to see the M537 equipment.
Thanks
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
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1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, September 27, 2017 8:12 AM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,

Thursday from 3-4 PM is booked. I have to leave at 4 PM to attend my daughters volleyball game otherwise I am usually here to 4:30.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Tuesday, September 26, 2017 3:45 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I think Thursday at 3:00pm would be nice based on your schedule. Please let me know if you are ok with this.

Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
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gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Tuesday, September 26, 2017 3:23 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

I am here all week. I have very little going on Friday from lunch to 3:30 PM if that works in your time slot. I am very bust Wednesday so it will not work for me. Thursday could work but I have meetings 10-11 am and from 1-3 pm.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Tuesday, September 26, 2017 2:02 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
What is your arability this week? I have 3-4 of us that would like to visit and see this equipment in operation.
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
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gregg.oneal@ncdenr.gov

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1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Tuesday, September 26, 2017 1:14 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,
I have UPLC-MS/MS and HPLC-MS/MS as well as TOFMS, and QTOFMS apparatus we use regularly for PFAS measurements. I am glad to show it to you anytime we are around. I have been working closely with Chris Johnson and Linda Culpepper at NCDEQ since the GenX issue broke in June 2017 for water analysis.

Let me know what you availability is.

Mark

From: Merrill, Raymond
Sent: Tuesday, September 26, 2017 1:08 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>; Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: FW: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark
I'm forwarding an email from Gregg Oneal at NC DENR.
From our phone conversation, I know that you are in contact with folks at NC DENR related to PFOA and/or PFOS analysis by LC/MS/MS.
Greg is in the air program at DENR and as you can read from his email below, he has a general interest in gathering information and some familiarity with the equipment used for these analyses.

With this introduction, I'll leave it in your hands to make the connection with Gregg formally.
Let me know if you need something from me.
Thanks
Ray

Raymond Merrill Ph.D. (Ray)| USEPA/OAQPS/AQAD/Measurement Technology Group
109 TW Alexander Drive (E143-02) | Research Triangle Park, NC 27711
email: merrill.raymond@epa.gov | Phone (919)541-5225 | Fax: (919) 541-0516

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Tuesday, September 26, 2017 10:27 AM
To: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Ray,
Does EPA-RTP have an operational (HPLC/MS/MS) that some of us from NCDEQ-DAQ Technical Services could see? This is the equipment listed in the EPA Drinking Water Method 537 and does the PFOA lab analysis. Do you know a contact? Some of us would like to get a better understanding if possible of this analysis and the equipment operation.
Thanks,

Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
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919 707-8415 office
gregg.oneal@ncdenr.gov

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To: Pjetraj, Michael[michael.pjetraj@ncdenr.gov]
From: Ryan, Jeff
Sent: Thur 2/8/2018 5:32:07 PM
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Thanks Michael

Just got off the phone with Ken Mitchell. Great chat. Pretty sure he'll join us on Tuesday.

He described the cross egancy effort a bit too.

We spoke briefly about the January tests. Any chance we can get a copy of the final Test Plan and analytical at some point? I think what I have is the draft version. I'm particularly interested in learning what, if any surrogates were spiked on the XAD trains before sampling.

Thanks!

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Thursday, February 08, 2018 12:27 PM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Jeff,
Here is a link to the EPA's cross agency effort news release that I spoke with you about.

https://www.epa.gov/newsreleases/epa-launches-cross-agency-effort-address-pfas

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

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Raleigh, NC 27699-1641

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From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Wednesday, February 07, 2018 11:59 AM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

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Michael

Here's my contact info as well

Jeff Ryan – Senior Scientist
U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Air Pollution Prevention and Control Division
Air Pollution Technology Branch
109 T.W. Alexander Drive
Mail Drop E305-01
Research Triangle Park, NC 27711
(919) 541-1437 (919) 541-0554 FAX
ryan.jeff@epa.gov

"And all this science, I don't understand."
"It's just my job 5 days a week"

Elton John - Rocket Man

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 07, 2018 11:58 AM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>
Cc: Mitchell, Ken <Mitchell.Ken@epa.gov>
Subject: FW: [External] Chemours - Stack Testing Schedule Week of Jan 22

From: Pjetraj, Michael
Sent: Friday, January 19, 2018 3:45 PM
To: Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Saunders, Gary (gary.saunders@ncdenr.gov) <gary.saunders@ncdenr.gov>; Benzoni, Francisco <Fbenzoni@ncdoj.gov>; Spiller, Asher (Aspiller@ncdoj.gov) <Aspiller@ncdoj.gov>
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Christel,
During the December 18th meeting with Chemours, DAQ discussed obtaining samples of the GenX air emissions tests. Initially we discussed dual sampling trains and then discussed split samples after extraction of the test media by Test America. The DAQ is reiterating our request for split samples after extraction.

Starting with testing during the week on 1/22/18 on the PPA & Division stacks, please inform your contractor to prepare split samples after extraction of each run at each stack. Please request that Test America converse with the EPA staff listed below to provide any testing or analytical data necessary to assist with the analysis of the samples. Transfer of the samples shall be directly to the EPA lab following instruction provided by EPA.

EPA Staff:
Danny France
EPA/SESD – Athens, GA
France.danny@epa.gov
706-355-8738

Doug Mundrick
EPA/SESD – Athens, GA
Mundrick.doug@epa.gov
706-355-8704

Thank you,

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
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Raleigh, NC 27699-1641

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From: Compton, Christel E [mailto:CHRISTEL.E.COMPTON@chemours.com]
Sent: Tuesday, January 16, 2018 5:06 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>
Subject: [External] Chemours - Stack Testing Schedule Week of Jan 22

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Michael and Greg –

I have confirmed with Weston Solutions that they will be on site next week (week of Jan 22) to perform the official stack testing of the Division and PPA stacks for HFPO Dimer Acid Fluoride. The schedule is as follows:

Mon, Jan 22 – arrive at the site and set up on the Division stack. They may try to get in one 3-hr run Monday afternoon.
Tues, Jan 23 – complete 2, 3-hr runs.
Wed, Jan 24 – complete 3rd, 3-hr run, if not completed on Tues. Mobilize to PPA. If able to get in 1, 3-hr run, then will do this on Wed.
Thurs, Jan 25 – complete either 2 or 3, 3-hr runs.
Fri, Jan 26 - complete remaining runs, if any.

I will be creating a sheet to document what operations are running during each test.

Please let me know what questions you may have.

Thanks –
Christel

Christel Compton
Program Manager
The Chemours Company – Fayetteville Works
(o) 910-678-1213
(m) 910-975-3386

The Chemours Company FC, LLC
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

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From:	Ryan, Jeff
Location:	DENR_GS - Rm 4107 - 6 Seats - Osprey; DENR-DAQ MEET ME 733
Importance:	Normal
Subject:	Accepted: EPA - Chemours/GenX
Start Time:	Tue 2/13/2018 3:30:00 PM
End Time:	Tue 2/13/2018 5:00:00 PM
Required Attendees:	Pjetraj, Michael

Michael - I'll send you an invite with call-in info once I get my folks lined up.

More to come

To: Pjetraj, Michael[michael.pjetraj@ncdenr.gov]
From: Ryan, Jeff
Sent: Wed 2/7/2018 4:59:04 PM
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Michael

Here's my contact info as well

Jeff Ryan – Senior Scientist
U.S. Environmental Protection Agency
Office of Research and Development
National Risk Management Research Laboratory
Air Pollution Prevention and Control Division
Air Pollution Technology Branch
109 T.W. Alexander Drive
Mail Drop E305-01
Research Triangle Park, NC 27711
(919) 541-1437 (919) 541-0554 FAX
ryan.jeff@epa.gov

"And all this science, I don't understand."
"It's just my job 5 days a week"

Elton John - Rocket Man

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 07, 2018 11:58 AM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>
Cc: Mitchell, Ken <Mitchell.Ken@epa.gov>
Subject: FW: [External] Chemours - Stack Testing Schedule Week of Jan 22

From: Pjetraj, Michael
Sent: Friday, January 19, 2018 3:45 PM
To: Compton, Christel E <CHRISTEL.E.COMPTON@chemours.com>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>; Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Saunders, Gary (gary.saunders@ncdenr.gov) <gary.saunders@ncdenr.gov>; Benzoni, Francisco <Fbenzoni@ncdoj.gov>; Spiller, Asher (Aspiller@ncdoj.gov) <Aspiller@ncdoj.gov>
Subject: RE: [External] Chemours - Stack Testing Schedule Week of Jan 22

Christel,
During the December 18th meeting with Chemours, DAQ discussed obtaining samples of the GenX air emissions tests. Initially we discussed dual sampling trains and then discussed split samples after extraction of the test media by Test America. The DAQ is reiterating our request for split samples after extraction.

Starting with testing during the week on 1/22/18 on the PPA & Division stacks, please inform your contractor to prepare split samples after extraction of each run at each stack. Please request that Test America converse with the EPA staff listed below to provide any testing or analytical data necessary to assist with the analysis of the samples. Transfer of the samples shall be directly to the EPA lab following instruction provided by EPA.

EPA Staff:

Danny France
EPA/SESD – Athens, GA
France.danny@epa.gov
706-355-8738

Doug Mundrick
EPA/SESD – Athens, GA
Mundrick.doug@epa.gov
706-355-8704

Thank you,

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Compton, Christel E [mailto:CHRISTEL.E.COMPTON@chemours.com]
Sent: Tuesday, January 16, 2018 5:06 PM
To: Reeves, Gregory W <gregory.reeves@ncdenr.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Gross, Joel M. <Joel.Gross@apks.com>; Vickery, Richard S <RICHARD.S.VICKERY-1@chemours.com>
Subject: [External] Chemours - Stack Testing Schedule Week of Jan 22

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Michael and Greg –

I have confirmed with Weston Solutions that they will be on site next week (week of Jan 22) to perform the official stack testing of the Division and PPA stacks for HFPO Dimer Acid Fluoride. The schedule is as follows:

Mon, Jan 22 – arrive at the site and set up on the Division stack. They may try to get in one 3-hr run Monday afternoon.
Tues, Jan 23 – complete 2, 3-hr runs.
Wed, Jan 24 – complete 3rd, 3-hr run, if not completed on Tues. Mobilize to PPA. If able to get in 1, 3-hr run, then will do this on Wed.
Thurs, Jan 25 – complete either 2 or 3, 3-hr runs.
Fri, Jan 26 - complete remaining runs, if any.

I will be creating a sheet to document what operations are running during each test.

Please let me know what questions you may have.

Thanks –
Christel

Christel Compton
Program Manager
The Chemours Company – Fayetteville Works
(o) 910-678-1213
(m) 910-975-3386

The Chemours Company FC, LLC
22828 NC Highway 87 W
Fayetteville, NC 28306-7332

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To: linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]
Cc: Conley, Justin[Conley.Justin@epa.gov]; Hartig, Philip[Hartig.Phillip@epa.gov]; Hines, Ronald[Hines.Ronald@epa.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Rogers, John M.[Rogers.John@epa.gov]; Wilson, Vickie[Wilson.Vickie@epa.gov]
From: Gray, Earl
Sent: Mon 2/26/2018 4:08:41 PM
Subject: GenX meeting at NIEHS on fri and our SOT abstract on GenX
LEG SOT GenX poster - late breaking abstract presented 3 15 2018.pdf

Linda, it was a pleasure to talk to you about GenX and NCs efforts after the panel discussion on Friday.

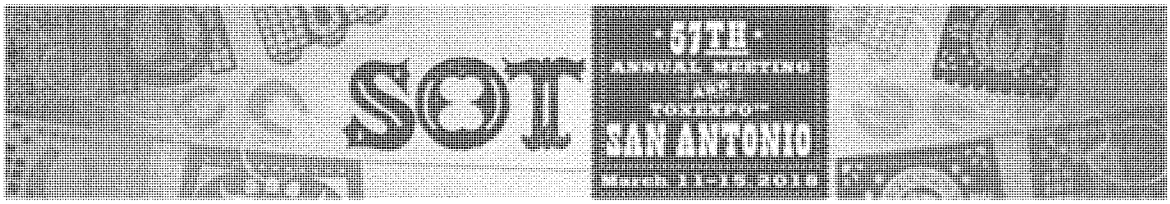
I think it was a very good panel discussion and quite informative for the toxicologists in the room to hear what NC was doing on this highly visible issue

As requested, I am sending you my abstract describing the progress of our GenX research (as of Oct 2017, when submitted). This is now online at the SOT meeting website and will be presented on March 13, 2018 at the Annual Society of Toxicology in San Antonio. TX. Our work will be presented as a poster.

If you have any questions about it, let me know

Sincerely

L Earl Gray Jr
EPA, ORD, NHEERL, TAD, Reproductive Toxicology Branch, RTP, NC
919-541-7750



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Control/Tracking Number: 2018-LB-A-4870-SOT
Activity: Late Breaking Abstract
Current Date/Time: 2/26/2018 10:04:04 AM

GenX (FRD-902, Ammonium (2,3,3,3-Tetrafluoro-2-(Heptafluoropropoxy) Propanoate) Does Not Display Estrogenic (Anti)androgenic or Glucocorticoid-Like Activity *In Vitro,* Whereas *In Utero* Exposure Induces Dose-Related Maternal and Fetal Rat Liver PPAR Pathway Gene Expression without Affecting Fetal Testis Testosterone Production

Author Block: R. Hartig[1], J. Conley[1], C. Lambright[1], N. Evans[1], M. Cardon[1], V. Wilson[1], M. Strynar[1], J. McCord[1], B. McIntyre[2], G. Travlos[2], and L. E. Gray[1]. *[1]US EPA, Raleigh, NC; and [2]NIEHS, Research Triangle Park, NC.*

Abstract:

GenX (FRD-902, ammonium (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy) propanoate, CAS 62037-80-3) is an unregulated, persistent contaminant that has been found in both the Cape Fear River and in Wilmington NC drinking water, among other sites. Concerns exist about the potential health effects of GenX exposure because it is not removed using traditional water treatment methods and little is known about the toxicity of it or other associated per/polyfluoroalkyl substances. Our objective was to evaluate the *in vitro* hormone receptor activity of GenX and the potential to disrupt growth, viability and reproductive development in rats exposed *in utero* during sexual differentiation. *in vitro*, GenX did not display estrogenic, antiestrogenic, androgenic, antiandrogenic or glucocorticoid-like activity at any concentration (100pM to 10uM). When administered from gestational days (GD)14 to 18 of pregnancy by oral gavage at dosage levels of 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d, GenX reduced maternal weight gain (from 32g in controls to 21g at 250 mg and 11g at 500 mg), increased maternal liver weight (30 mg and above) and induced maternal mRNAs for PPAR-specific genes in the liver (NOEL to be determined (N-TBD). Maternal serum was collected on GD18 for determination of GenX levels and T4 levels and a lipid profile (TBD). Fetal viability and body weight at GD18 were not reduced, whereas liver mRNAs for PPAR-specific genes were increased in a dose related manner from 3 to 500 mg/kg/d. In addition to the fetal study, we are examining the effects of *in utero* GenX on the

development of the offspring using a one-generation screening protocol which uses a single dose level (125 mg) and small sample sizes. Thus far there have been no adverse effects from birth to 50 days of age on growth, viability, or reproductive indices (neonatal anogenital distance, nipple retention, age at puberty) in the pilot study. This prenatal-postnatal study will be repeated with multiple dosage levels administered throughout gestation. When completed, these studies will enable us to link the internal GenX exposure levels to effects in the dam, fetus and offspring which will enhance the utility of the data for human health-hazard assessment. *This abstract does not reflect Agency policy.*

:

Category (Complete): Reproductive Toxicology ; Developmental and Juvenile Toxicology ; Endocrine Toxicology

Preceived or Real Conflict ofo Interest Disclosure (Complete):

The authors declare there exist no real or perceived conflict of interest : True

Sponsor (Complete):

Abstract Submission Fee (Complete): Your credit card order has been processed on Thursday 11 January 2018 at 2:01 PM.

Keyword (Complete):

Keyword 1: REPRODUCTIVE AND DEVELOPMENTAL TOXICOLOGY

Keyword 2: ENDOCRINE TOXICOLOGY

Keyword 3: GENE EXPRESSION/REGULATION

Chemical Entity Keyword: : GenX

Keyword Other: : PFAS

Status: Complete

Society of Toxicology
57th Annual Meeting
March 11-15, 2018
San Antonio, TX

Society of Toxicology
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Reston, VA 20190
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To: McIntyre, Barry (NIH/NIEHS) [E][barry.mcintyre@nih.gov]; Gray, Earl[Gray.Earl@epa.gov]; Travlos, Greg (NIH/NIEHS) [E][travlos@niehs.nih.gov]; Evans, Nicola[Evans.Nicola@epa.gov]; Hartig, Philip[Hartig.Phillip@epa.gov]; Lambright, Christy[Lambright.Christy@epa.gov]; Wilson, Vickie[Wilson.Vickie@epa.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; McCord, James[mccord.james@epa.gov]
Cc: Vandenberg, John[Vandenberg.John@epa.gov]; Kenyon, Elaina[Kenyon.Elaina@epa.gov]; linda.culpepper@ncdenr.gov[linda.culpepper@ncdenr.gov]; Hotchkiss, Andrew[Hotchkiss.Andrew@epa.gov]
From: Gray, Earl
Sent: Fri 3/16/2018 4:56:11 PM
Subject: SOT poster that was presented Thurs March 15 2018 at the Annual society of toxicology meeting
genx final_ScientificPoster_for website.pptx

Coauthors and reviewers.

FYI,

I have attached our poster on GenX that was presented at SOT
Dr VS Wilson's poster had some additional data on this chemical

enjoy

Earl Gray

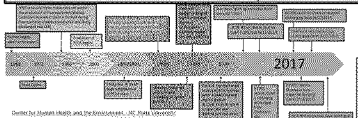
EPA
United States Environmental Protection Agency

Genx (FRD-902, ammonium (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate) Does Not Display Estrogenic, (anti)androgenic Or Glucocorticoid-like Activity In Vitro Whereas In Utero Exposure Induces Dose-related Maternal And Fetal Rat Liver PPAR Pathway Gene Expression Without Affecting Fetal Testis Testosterone Production.

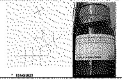
P. Hartig[1], J. Conley[1], C. Lambright[1], N. Evans[1], M. Cardon[1], V. Wilson[1], M. Strynar[1], J. McCord[1], B. McIntyre[2], G. Travlos[2], and L. E. Gray[1]. [1] USEPA, RALEIGH, NC and [2] NIEHS, NTP, RTP, NC.

Gray.earl@epa.gov (presenter)

Timeline of GenX contamination in the NC Cape Fear River Basin



Center for Human Health and the Environment - NC State University



Abstract

GenX (**FRD-902**, ammonium (2,3,3,3-tetrafluoro-2-(heptafluoropropoxy)propanoate, CAS 62037-80-3) is an unregulated, persistent contaminant that has been found in both the Cape Fear River and in Wilmington NC drinking water, among other sites. Concerns exist about the potential health effects of GenX exposure because it is not removed using traditional water treatment methods and little is known about the toxicity of it or other associated per/polyfluoroalkyl substances. Our objective was to evaluate the in vitro hormone receptor activity of GenX and the potential to disrupt growth, viability and reproductive development in rats exposed in utero during sexual differentiation. In vitro, GenX did not display estrogenic, antiestrogenic, androgenic, antiandrogenic or glucocorticoid-like activity at any concentration (100pM to 10uM). When administered from gestational days (GD)14 to 18 of pregnancy by oral gavage at dosage levels of 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d, GenX reduced maternal weight gain (from 32g in controls to 21g at 250 mg and 11g at 500 mg), increased maternal liver weight (60 mg and above) and induced maternal mRNAs for PPAR-specific genes in the liver (NOEL to be determined (N-TBD). Maternal serum was collected on GD18 for determination of GenX levels and T4 levels and a lipid profile (TBD). Fetal viability and body weight at GD18 were not reduced, whereas liver mRNAs for PPAR-specific genes were increased in a dose related manner from 3 to 500 mg/kg/d. In addition to the fetal study, we are examining the effects of in utero GenX on the development of the offspring using a one-generation screening protocol which uses a single dose level (125 mg) and small sample sizes. Thus far there have been no adverse effects from birth to 50 days of age on growth, viability, or reproductive indices (neonatal anogenital distance, nipple retention, age at puberty) in the pilot study. This prenatal-postnatal study will be repeated with multiple dosage levels administered throughout gestation. When completed, these studies will enable us to link the internal GenX exposure levels to effects in the dam, fetus and offspring which will enhance the utility of the data for human health-hazard assessment. This abstract does not reflect Agency policy.

GenX Studies (FRD 902)

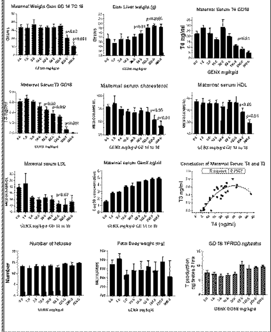
- Study on the Effects of GenX in the Fetal and Pregnant CRSD Rat
- Pilot Study on the Effects of *in utero* GenX in the F1 male and female rat offspring using a one generation screening protocol
- In vitro studies of potential agonist and antagonist interactions with the following steroid receptors
  - Androgen receptor (Chimpanzee)
  - Estrogen receptor (ER α)
  - Glucocorticoid receptor (hGR)

Study on the Effects of GenX in the Fetal and Pregnant CRSD Rat

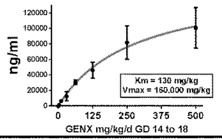
Pregnant rats dosed by oral gavage with GenX at 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d from gestational day (GD) 14 to 18. Animals necropsied on GD18.

- Endpoints Measured
- Maternal
  - Body weight gain (↓ in high dose groups)
  - Liver weight (↑ at 60 and above) and PPAR pathway gene expression
  - Serum thyroid hormone, cholesterol, HDLs, LDLs and Triglycerides (↓ in high dose groups)
- Fetal
  - Fetal weight (no effect)
  - Fetal viability (no effect)
  - Testicular testosterone production ex vivo (not reduced)
  - Fetal liver PPAR pathway gene expression (↑ at 3 and above)
- Endpoints Ongoing or Planned
  - Maternal serum and Fetal plasma GenX levels (NERL)
  - Fetal plasma lipid profiles (NTP)
  - Possible assessment of other pathways in fetal tissues
  - Possible assessment of PPAR pathway in other fetal tissues

Maternal and Fetal Effects of GenX exposure



Maternal GD 18 GenX serum concentration



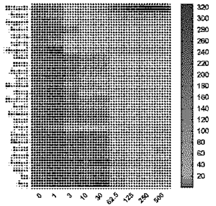
Comparing maternal serum GenX concentrations in the rat to levels detected in ongoing human studies will facilitate extrapolation of the effects seen in our studies to potential effects in humans. *(Drs. M. Strynar and J McCord)*

Gomis et al (2018) reported that converting orally administered doses into serum concentrations for PFBA, PFHxA, PFOA and GenX changed the toxicity ranking using modeled serum (GenX > PFOA > PFHxA > PFBA) concentrations, indicating that some fluorinated alternatives have similar or higher toxic potency than their predecessors when correcting for differences in toxicokinetics.

GenX induces PPAR pathway mRNA expression in the fetal liver on GD18

Question 1: Is a change in fetal liver PPAR gene expression an adverse effect?

Question 2: Do these fetal liver changes produce organizational effects in utero that result in permanent changes in adult F1 liver function of gene expression



QPCR array in the Fetal Rat Liver

F value significant and > 8, dose-related increases

Number of genes significantly increased = 26

Dose mg GenX/kg GD 14 to 18

Dose	# affected
1	0
3	6
10	13
30	13
62.5	25
125	26
250	26
500	26

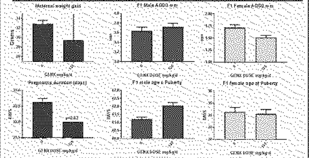
Pilot Study on the Effects of *in utero* GenX in the F1 male and female rat offspring using a one generation screening protocol

J Conley, C Lambright, N Evans, LE Gray

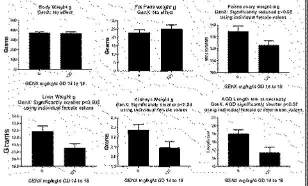
Pregnant rats dosed by oral gavage with GenX at 0 or 125 mg/kg/d from gestational day (GD) 14 to 18. F1 Animals will be necropsied on at full maturity.

- Endpoints Measured – no reduction in F1 pup growth or viability. Males not demasculinized. No delays in age at puberty in male and female offspring.
  - Maternal body weight and weight gain (no effect)
  - Onset of parturition slightly accelerated
  - Neonatal body weight and anogenital distance (no effect)
  - Infant body weight and nipple retention (no effect)
  - Body Weight at weaning and maternal implantation site numbers
  - F1 female and male age and body weight at puberty (vaginal opening and preputial separation, respectively)
- Endpoints Ongoing or Planned
  - F1 body and organ weights and gross anatomy (focused on reproductive system)
  - F1 male testis and epididymal histopathology
  - F1 male epididymal sperm counts
  - Possible assessment of F1 male serum hormone levels
  - Possible assessment of PPAR pathway in F1 male and female livers
- Follow-up dose response study with GenX
  - GenX will be administered throughout gestation to include the period of major organogenesis, gonadal differentiation in addition to the period of sexual differentiation at several dose levels below the current pilot study.

Maternal weight, pregnancy duration, male and female anogenital distance (AGD) and age at puberty (PPS and VO)



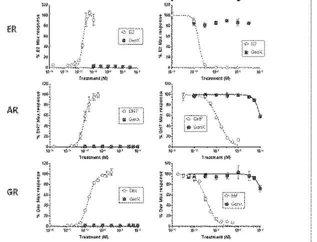
F1 female necropsy data at 125 days of age



In vitro studies of potential endocrine agonist and antagonist interactions with the following steroid receptors

– No agonist or antagonistic effects were detected

In vitro nuclear receptor activity



Conclusions

- In vitro, GenX did not display estrogenic, antiestrogenic, androgenic, antiandrogenic or glucocorticoid-like activity at any concentration (100pM to 10uM).
- When administered from gestational days (GD)14 to 18 of pregnancy by oral gavage at dosage levels of 0, 1, 3, 10, 30, 62.5, 125, 250 and 500 mg/kg/d,
  - GenX reduced maternal weight gain at 250 and 500 mg/kg, increased maternal liver weight (62.5 mg/kg and above) altered the lipid profile, reduced serum T4 (125 and above) and T3 (30 mg/kg and above) levels and induced maternal mRNAs for PPAR-specific genes in the liver.
  - Fetal viability and body weight at GD18 were not reduced, whereas liver mRNAs for PPAR-specific genes were increased in a dose related manner from 3 to 500 mg/kg.
- In addition to the fetal study, we are examining the effects of in utero GenX on the development of the offspring using a one-generation screening protocol which uses a single dose level (125 mg) and small sample sizes. GenX treatment did appeared to accelerate the onset of parturition, an effect noted in a Dupont study (2010) and some effects were noted in female offspring. These should be considered preliminary and require confirmation in a more definitive study

To: Garnett, Kim[Garnett.Kim@epa.gov]
Cc: Merrill, Raymond[Merrill.Raymond@epa.gov]; Gary Saunders[gary.saunders@ncdenr.gov]; Strynar, Mark[Strynar.Mark@epa.gov]
From: Pjetraj, Michael
Sent: Tue 2/6/2018 2:05:06 PM
Subject: RE: [External] FW: EPA assistance for source testing for emerging contaminants

Kim,
Thanks for the note,
I've included Gary Saunders & Mark Strynar on this email.

Apologies if there was a miscommunication. I thought that that I heard there would be a meeting on emerging contaminant (specific to Chemours) test methods this week.

If a meeting is not scheduled then I would like to suggest that we have one very soon. We can share with you the work that Chemours has completed on air sampling & analysis for C3 Dimer Acid (GenX). Chemours is currently working on test methodology for other chemicals. We have been given information on the methodology they are investigating.

At the appropriate time, maybe after EPA & DAQ meet, I would also like to include:

Richard S. Vickery, P.E.
Sr. Environmental Consultant, Engineering Technology

+1 302 773 0075

The Chemours Company
1007 Market Street
Wilmington, DE 19899

who has been our primary contact for source testing issues for Chemours Corporate.

I appreciate any insight or assistance on this important testing issue.

Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

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From: Garnett, Kim [mailto:Garnett.Kim@epa.gov]
Sent: Tuesday, February 06, 2018 8:50 AM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: [External] FW: EPA assistance for source testing for emerging contaminants

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Hi Michael,

Just wanted to let you know that we are not aware of a meeting this week. Ray is looking to see if possibly they are meeting with the folks in ORD.

He will let you know what he finds.

Kim

From: Johnson, Steffan
Sent: Monday, February 05, 2018 10:54 PM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>; Segall, Robin <Segall.Robin@epa.gov>; Garnett, Kim <Garnett.Kim@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Cc: Gary Saunders <gary.saunders@ncdenr.gov>; Wayland, Richard <Wayland.Richard@epa.gov>; Hemby, James <Hemby.James@epa.gov>; Ryan, Jeff <Ryan.Jeff@epa.gov>
Subject: RE: EPA assistance for source testing for emerging contaminants

Michael,

Thank you for reaching out to us on this issue.

I am out of the office this week; Robin Segall and Kim Garnett have command while I am out. Ray Merrill is the MTG expert working this issue, and Jeff Ryan is our Office of Research and Development Lead/Liaison.

I am certain that Ray and Jeff can provide more context for you and Gary, and Ray will catch me up to speed when I am back next week.

Again, thanks much for your request, we're happy to keep you in the loop as appropriate methodology begins to form.

Sincerely,

Stef

From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Monday, February 5, 2018 10:17 PM
To: Johnson, Steffan <johnson.steffan@epa.gov>
Cc: Gary Saunders <gary.saunders@ncdenr.gov>
Subject: RE: EPA assistance for source testing for emerging contaminants

Stef,
Gary Saunders has been working on parts of the GenX testing issues. He was recently speaking with Mark Strynar regarding analysis methods. Mark indicated that he was meeting with the EMC this week – Wednesday? DAQ would like to be involved in discussions on method development for the emerging contaminants. As I indicated to you on the phone, Chemours is working on method development for Nafion byproducts, HFPO, & E1.

Please let us know how we can participate in the meeting.
Thanks

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

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michael.pjetraj@ncdenr.gov

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From: Pjetraj, Michael
Sent: Tuesday, January 23, 2018 6:13 PM
To: Johnson.steffan@Epa.gov
Subject: EPA assistance for source testing for emerging contaminants

Stef,
I hope you are doing well.

I would like to speak with you about EPA assistance on test method development for emerging contaminants. As I'm sure you are aware, we have been working on the Chemours, Fayetteville, GenX issue. Part of that issue has been working with the company to develop source test methodology for air emissions of GenX. We have also required them to test additional pollutants for which there may not be an existing method.

We have been in discussions with EPA Region 4 and with the Athens SESD lab on sample analysis.

Gary Saunders, NC DAQ, may have been in communication with one of your staff on the GenX protocol that Chemours submitted and is currently using while source testing. Testing at 2 sources began on 1/9/18 and is currently going on this week. In addition to GenX, there are other pollutants that we have requested better quantification including HFPO, Nafion Byproducts 1&2 and a compound termed E1.

I would like to speak with you about EPA's ability to assist in method development or review of methodology that Chemours plans to pursue for additional contaminant measurement.

Please contact me at your earliest availability.
On Wednesday 1/24, I will be available before 930am, between 12-1, and after 430.

Thanks
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

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To: Detlef R. U. Knappe[knappe@ncsu.edu]; Strynar, Mark[Strynar.Mark@epa.gov]; Holman, Sheila[sheila.holman@ncdenr.gov]; Culpepper, Linda[linda.culpepper@ncdenr.gov]; Scott, Michael[michael.scott@ncdenr.gov]; Katlyn May[kmay2@ncsu.edu]
From: Abraczinskas, Michael
Sent: Tue 2/13/2018 6:12:10 PM
Subject: RE: [External] Re: WRRI Conference

Dr. Knappe.
Yes, I'm available for the panel discussion and have put a hold in my calendar for the session.
Thanks,
-Mike

Mike Abraczinskas, EIT, CPM
Director, Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8447 office
michael.abraczinskas@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699

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From: Detlef Knappe [mailto:knappe@ncsu.edu]
Sent: Tuesday, February 13, 2018 10:03 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Holman, Sheila <sheila.holman@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Scott, Michael <michael.scott@ncdenr.gov>; Abraczinskas, Michael <michael.abraczinskas@ncdenr.gov>; Katlyn May <kmay2@ncsu.edu>
Subject: [External] Re: WRRI Conference

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Hello everyone,
The PFAS session at the WRRI Annual Conference will take place from 2:45-4:45 pm on March 15, 2018. An outline of the session is here:

2:45-4:45 PARTICIPATORY SESSIONS

Room 3

GEN X AND EMERGING CONTAMINANTS OF CONCERN

Moderator: Detlef Knappe, NC State

SESSION UNDER DEVELOPMENT – ADDITIONAL DETAILS COMING SOON!

2:45-3:05 Emerging Contaminants of Concern in North Carolina Water Supplies, Detlef Knappe, NC State

3:05-3:25 Discovery of emerging per- and polyfluoroalkyl substances, Mark Strynar, EPA

3:25-3:45 GenX in private wells, Michael Scott, NC DEQ

3:45-4:05 DEQ Update, Sheila Holman, NC DEQ

4:05-4:45 Panel Discussion

I have a few requests:
1. Confirm your availability
2. Linda and Michael A., would you be available for the panel discussion?
3. Send me a preferred presentation title (right now I am showing a place holder)

4. Send me a very short abstract for your presentation (~100 words)
5. Katy, could you moderate the panel discussion (or entire session)?
Please send information/responses by Friday.

Thank you,
Detlef

On Fri, Jan 5, 2018 at 4:04 PM, Detlef Knappe <knappe@ncsu.edu> wrote:

Hello everyone,
I recently spoke with Nicole Wilkinson in our Water Resources Research Institute. She is organizing the WRRI Annual Conference, which will take place on March 14 and 15, 2018 at the NCSU McKimmon Center in Raleigh. We thought that many conference attendees would like to hear updates related to emerging contaminants and their effects on drinking water quality in NC. We identified you as potential speakers for such a session. Could you let me know your availability for
1. March 14 - morning
2. March 14 - afternoon
3. March 15 - morning
4. March 15 - afternoon
Thank you,
Detlef

To: Strynar, Mark[Strynar.Mark@epa.gov]
From: Mort, Sandra L
Sent: Wed 1/17/2018 7:42:12 PM
Subject: GW split samples, Chemours facility
GEL+TestAm+EPA_Chemours.GW-Aug.2017_DWM_draft.1.xlsx

Mark-

In case this is not what you found on the DEQ document portal, this is the data summary for the 3-way split samples of groundwater collected on the Chemours-Fayetteville site.

Sandy

Sandy Mort, Ph.D., M.S.

Environmental Toxicologist

Division of Waste Management – Hazardous Waste & Brownfields

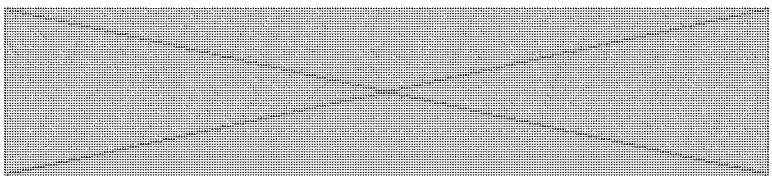
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax

sandy.mort@ncdenr.gov

1646 Mail Service Center

Raleigh, NC 27699-1646



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To: Detlef R. U. Knappe[knappe@ncsu.edu]; michael.abraczinskas@ncdenr.gov[michael.abraczinskas@ncdenr.gov]; Culpepper, Linda[linda.culpepper@ncdenr.gov]; James Bowyer[jim.bowyer@ncdenr.gov]; Gary Saunders[gary.saunders@ncdenr.gov]
Cc: Strynar, Mark[Strynar.Mark@epa.gov]; Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Graham Peaslee[gpeaslee@nd.edu]; Mei Sun[msun8@uncc.edu]
From: Pjetraj, Michael
Sent: Fri 12/1/2017 11:36:16 AM
Subject: RE: [External] Chemours sampling

Dr. Knappe,
Thanks for your message. Please see the information below.

I am interested to learn more about the planned stack sampling. What analytical methods will be employed? Targeted? Non-targeted? Would the sample collection approach for stack sampling lend itself to determining total fluorine? If polyurethane foam plugs are used, we could use them directly for PIGE (as mentioned by Graham, this could be done in a non-destructive manner), and extracts from PUFs could be used for high resolution MS, total oxidizable precursor test, and adsorbable organic fluorine.

Proposed Stack Testing for GENX compound - The test methodology proposed is a modified Method 0010 from the EPA SW-846 series of test methods. Gas is drawn into the sampling train at an isokinetic rate for capture and analysis The method is described in SW-846 as a modified EPA Method 5 particulate test method that includes a resin adsorbent tube for certain organic compounds that pass through the filter as a gas and, upon cooling through a condenser, may be either a gas or liquid when it passes through the resin tube. However, an additional modification is the use of an additional tube (in series) for recovery before the gas passes into and through the impingers. The temperature of the sampling must be controlled within a range to prevent condensation in the probe and filter but also prevent chemical breakdown due to temperature.

Upon completion of sampling, the sample is recovered from the probe, filter, adsorbent tubes and impingers. The analytical methods include extraction from the collected samples and use of LC/MS/MS to determine the presence and concentration levels of GENX captured by the sampling train. We anticipate that only the C3 dimer acid will exist due to the reactivity of any dimer acid fluoride with water. Other polyfluorinated compounds may be recovered and detected by this methodology. However, GenX is the target pollutant for measurement. The facility is not planning on quantifying total fluorine at this time.

I am also interested to learn more about the planned ambient air monitoring. I have never done such monitoring in my group, but Morton Barlaz (my Department Head), Mei Sun, Mark, Andy, and I have a proposal out to begin such efforts to determine PFAS levels in ambient air around landfills.

We have been in conversations with EPA on ambient monitoring, but we have not committed to a plan at this time. We are exploring rain collection sites and associated analysis. We have also spoken with Dr. Mead at UNCW on rainwater analysis.

Please let me know if you would like to discuss any of this information further or have additional questions. I can be available for a call today. Mike Abraczinskas will be at the SAB meeting in Wilmington on Monday & I will be at the conference at UNCW on 12/11.

Sincerely,
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Detlef Knappe [mailto:knappe@ncsu.edu]
Sent: Friday, November 10, 2017 11:40 PM
To: Abraczinskas, Michael <michael.abraczinskas@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>; Saunders, Gary <gary.saunders@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Graham Peaslee <gpeaslee@nd.edu>; Mei Sun <msun8@uncc.edu>
Subject: Re: [External] Chemours sampling

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Somewhat long email - please read all the way.

Mike,

I am interested to learn more about the planned stack sampling. What analytical methods will be employed? Targeted? Non-targeted? Would the sample collection approach for stack sampling lend itself to determining total fluorine? If polyurethane foam plugs are used, we could use them directly for PIGE (as mentioned by Graham, this could be done in a non-destructive manner), and extracts from PUFs could be used for high resolution MS, total oxidizable precursor test, and adsorbable organic fluorine.

I am also interested to learn more about the planned ambient air monitoring. I have never done such monitoring in my group, but Morton Barlaz (my Department Head), Mei Sun, Mark, Andy, and I have a proposal out to begin such efforts to determine PFAS levels in ambient air around landfills.

All,

It sounds like air samples should be done at a later time. How about we first start with water samples as mentioned below? In that case, I am thinking:

1. Mark Strynar - High resolution MS (2 L from each location)

2. Athens lab (2 L from each location)

3. Mei Sun's lab - Adsorbable organic fluorine (2 L from each location)

4. Knappe group - (1) Total oxidizable precursor (TOP) assay, (2) solid phase extraction of original sample, and (3) solid phase extraction of sample following TOP assay. Then send (2) and (3) to Graham Peaslee's lab for PIGE analysis (4 L from each location)

That's 10 L from each location - could all be collected in 1-L HDPE bottles.

Sampling locations: 001, 002, groundwater well on Chemours property, old waste ditch, Huske Dam

That would take 50 bottles in total (5 sampling locations, 10 bottles each).

Linda,

When could such samples be collected?

I also wonder whether we could include one of the private wells and a lake near Chemours in the Marshwood Lake area. I

talked to one resident, whose well has >500 ppt GenX, and her lake has >900 ppt GenX. The latter results would help inform stack sampling and ambient air monitoring programs.

Thank you,

Detlef

On 11/3/17 9:04 AM, Abraczinskas, Michael wrote:

Thanks for looping us in Linda!

DAQ continues to discuss/explore appropriate methods for ambient air quality monitoring... however, in the very near-term, we are more focused on source emissions characteristics, chemistry and stack testing methods.

We believe the better we understand the process chemistry and behavior (chemical and physical transformations) of the various compounds when they roll off the lip of the stack into the atmosphere... the better we'll be able to design an exploratory ambient monitoring approach with a defined goal, analytical methods, analytes of interest... and all of the other elements of a scientifically sound sampling plan.

We are meeting with Chemours on Tuesday, 11/7 to further explore the process chemistry and stack testing. In fact, Chemours submitted a stack testing protocol to us on 10/31 and our staff are currently reviewing that. As we understand it now, Chemours wants to conduct the stack tests before the end of the year. My hope is the stack test results will help refine the magnitude and rate of air emissions... which at this point are only estimated by Chemours via a model or engineering estimates.

Back to ambient monitoring... I think we would all benefit from a coordinated approach to any ambient air quality monitoring and welcome all knowledge, information, resource sharing & opportunities for collaboration. I'm looping in our lab supervisor, Jim Bowyer, to this email and ask that he be part of all discussions regarding ambient air quality monitoring.

Thanks everyone!
-Mike

Mike Abraczinskas, EIT, CPM
Director, Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8447 office
michael.abraczinskas@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699

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From: Detlef Knappe [mailto:knappe@ncsu.edu]
Sent: Friday, November 03, 2017 8:15 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Abraczinskas, Michael <michael.abraczinskas@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Graham Peaslee <gpeaslee@nd.edu>; Mei Sun <msun8@uncc.edu>
Subject: Re: [External] Chemours sampling

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report.spam@nc.gov.

Thank you, Linda!

Mike,

What are your plans for air quality monitoring around the Chemours plant. Locations? Schedule?

Best,

Detlef

On 11/3/17 7:40 AM, Culpepper, Linda wrote:

Looping Mike, our Air Quality Director, into our email thread.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Mei Sun [mailto:msun8@uncc.edu]
Sent: Wednesday, November 01, 2017 10:44 AM
To: Detlef Knappe <knappe@ncsu.edu>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>; Graham Peaslee <gpeaslee@nd.edu>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
Subject: Re: Re: [External] Chemours sampling

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I think this plan is great. I surely could do AOF in aqueous samples, not quite sure about air samples, but could try a solvent extract of the air filter (my guess is water extract of the air filter would have too low concentration to be detected but also worth a try).

Mei Sun

Assistant Professor
Department of Civil and Environmental Engineering
University of North Carolina at Charlotte
Energy Production and Infrastructure Center 3163
9201 University City Blvd | Charlotte, NC 28223
Phone: 704-687-1723 | Fax: 704-687-0957
Website: https://coefs.uncc.edu/msun8/

On Wed, Nov 1, 2017 at 9:42 AM, Detlef Knappe <knappe@ncsu.edu> wrote:

Mei, Graham, Mark, and Andy,

Please see my email to Linda Culpepper below about an idea for a small study to assess total organic fluorine in Chemours wastewater and impacted surface water. We could generate a challenge sample in the lab that could serve as a control.

Let me know what you think.

Best,

Detlef

-------- Forwarded Message --------
Subject: Re: [External] Chemours sampling

Date: Wed, 1 Nov 2017 13:16:20 +0000

From: Culpepper, Linda <linda.culpepper@ncdenr.gov>

To: Detlef Knappe <knappe@ncsu.edu>

The below sounds like a good pathway. We could get samples from all of the areas.

Sent from my iPhone
On Nov 1, 2017, at 8:18 AM, Detlef Knappe <knappe@ncsu.edu> wrote:

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Hi Linda,

I reached out to Graham Peaslee and Mei Sun yesterday. If you like, I could organize a small, coordinated study that explores the various analytical approaches for total organic fluorine on (1) a lab-generated standard into which we spike a mixture of PFASs (as a control) and (2) one or more field samples (e.g. 001, 002, old waste ditch, and/or Huske Dam). These samples would be split as follows:

1. Mark Strynar - High resolution MS

2. Athens lab

3. Mei Sun's lab - Adsorbable organic fluorine

4. Knappe group - (1) Total oxidizable precursor (TOP) assay, (2) solid phase extraction of original sample, and (3) solid phase extraction of sample following TOP assay. Then send (2) and (3) to Graham Peaslee's lab for PIGE analysis

What do you think? Which samples would be of interest?

Best,

Detlef

--

Detlef Knappe

Professor

319-E Mann Hall

Department of Civil, Construction, and Environmental Engineering

North Carolina State University

Campus Box 7908

Raleigh, NC 27695-7908

Phone: 919-515-8791

Fax: 919-515-7908

E-mail: knappe@ncsu.edu

Web page: http://knappelab.wordpress.ncsu.edu/

--

Detlef Knappe

Professor

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Department of Civil, Construction, and Environmental Engineering

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Campus Box 7908

Raleigh, NC 27695-7908

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--

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Phone: 919-515-8791

Fax: 919-515-7908

E-mail: knappe@ncsu.edu

Web page: http://knappelab.wordpress.ncsu.edu/

To: Michael Pjetraj[michael.pjetraj@ncdenr.gov]
Cc: Strynar, Mark[Strynar.Mark@epa.gov]; Merrill, Raymond[Merrill.Raymond@epa.gov]
From: Ryan, Jeff
Sent: Thur 3/1/2018 3:46:06 PM
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I can chat any time. Mark can't make it, but I was able to discuss the split samples with him earlier. I think we're in good shape. Ray is ready now

-----Original Appointment-----
From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Thursday, March 01, 2018 8:29 AM
To: Pjetraj, Michael; Ryan, Jeff
Cc: Strynar, Mark; Merrill, Raymond
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
When: Thursday, March 01, 2018 11:00 AM-11:30 AM (UTC-05:00) Eastern Time (US & Canada).
Where: DENR-DAQ MEET ME 733

Can DAQ & ORD have a call @ 11am?
Then Jeff & I can call SESD @1

Please call 919-733-2441

From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, March 01, 2018 7:27 AM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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I have a competing call. I cannot be on this call. If you would like to collect additional splits and send them to us for screening for novel PFAS I am glad to do so. However, you should know I am very backlogged on samples and may take some time to get any data on the samples (>1 month).

Mark

From: Pjetraj, Michael
Sent: Wednesday, February 28, 2018 3:54 PM
To: 'Ryan, Jeff' <Ryan.Jeff@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

Jeff,
I do not disagree
I was using you as my primary ORD contact, & trying to align schedules

To align with Mark's schedule, I can be available Thur AM from 8-830, 930-10, & 11-12

Please let me know if we can arrange a call with you & Mark at one of those times & then we can still have the 1pm call with SESD

Thanks

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality

North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Wednesday, February 28, 2018 3:41 PM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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Michael – I see this very much as a question that Mark should weigh in on. Not so much regarding the GenX confirmation, but his willingness to screen for non-target compounds which we are highly interested in as you know. I'll be on the call, but cannot speak for Mark. Perhaps we could have a bried chat with him earlier in the morning?

-----Original Appointment-----
From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 28, 2018 3:12 PM
To: Pjetraj, Michael; Wellborn, Floyd; France, Danny; Ryan, Jeff
Cc: Strynar, Mark; James Bowyer
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
When: Thursday, March 01, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DENR-DAQ MEET ME 733

Please dial 919-733-2441

Hello,
Thursday 1-2 was the best time to meet as many schedules as possible, including mine & Jim's.

Mark Strynar – Thur 7-12
Danny France – Thur 1-2
Floyd Wellborn – Thur before 10 or Friday before 10
Jeff Ryan – 10-11 & 1-2 Thursday, all morning Friday

I would like to discuss the split samples that NC DAQ has required Chemours, via Test America, to provide to the SESD lab. Chemours is testing again this week – 3 sources, 3 runs at each source. We have required split samples after extraction for each run be sent to the SESD lab.

Does the EPA need/want that volume of material?

We would like some level of validation/audit of the Test America results for GenX. We also wanted to provide the EPA with air samples from the various sources at Chemours for screening purposes.

Thanks
Michael

From: Wellborn, Floyd [mailto:Wellborn.Floyd@epa.gov]
Sent: Wednesday, February 28, 2018 2:45 PM
To: France, Danny <France.Danny@epa.gov>; Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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I can do that.

Floyd

From: France, Danny
Sent: Wednesday, February 28, 2018 2:43 PM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

Tomorrow 1-2 ?

From: Ryan, Jeff
Sent: Wednesday, February 28, 2018 10:50 AM
To: Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available 3-4 today, 10-11, 1-2 Thursday, and pretty much the entire morning Friday

---

From: Wellborn, Floyd
Sent: Wednesday, February 28, 2018 10:05 AM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: Re: NC DAQ source testing split sample volume sent to EPA Athens lab

I'm available after 2 today and either morning Thursday or Friday before 10.

For the record, Dr. Stynar is not part of SESD. He may want samples for ORD purposes.

Thanks
Floyd

Sent from my iPhone
On Feb 28, 2018, at 9:34 AM, Pjetraj, Michael <michael.pjetraj@ncdenr.gov> wrote:

> Hello,
> Please let me know your availability for today & the remainder of the week to discuss the volume of samples that NC DAQ has required Chemours via Test America to send to the EPA SESD lab.
>
> Hopefully less than 30 min needed.
>
> Thanks

Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality

919-707-8497 office
michael.pjetraj@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Pjetraj, Michael
Location: DENR-DAQ MEET ME 733
Importance: Normal
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
Start Time: Thur 3/1/2018 4:00:00 PM
End Time: Thur 3/1/2018 4:30:00 PM
Required Attendees: Ryan, Jeff
Optional Attendees: Strynar, Mark; Merrill, Raymond

Can DAQ & ORD have a call @ 11am?
Then Jeff & I can call SESD @1
Please call 919-733-2441
From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, March 01, 2018 7:27 AM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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I have a competing call. I cannot be on this call. If you would like to collect additional splits and send them to us for screening for novel PFAS I am glad to do so. However, you should know I am very backlogged on samples and may take some time to get any data on the samples (>1 month).
Mark

From: Pjetraj, Michael
Sent: Wednesday, February 28, 2018 3:54 PM
To: 'Ryan, Jeff' <Ryan.Jeff@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
Jeff,
I do not disagree
I was using you as my primary ORD contact, & trying to align schedules
To align with Mark's schedule, I can be available Thur AM from 8-830, 930-10, & 11-12
Please let me know if we can arrange a call with you & Mark at one of those times & then we can still have the 1pm call with SESD
Thanks

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality
919-707-8497 office
michael.pjetraj@ncdenr.gov
217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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From: Ryan, Jeff [mailto:Ryan.Jeff@epa.gov]
Sent: Wednesday, February 28, 2018 3:41 PM
To: Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: RE: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab

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Michael – I see this very much as a question that Mark should weigh in on. Not so much regarding the GenX confirmation, but his willingness to screen for non-target compounds which we are highly interested in as you know. I'll be on the call, but cannot speak

for Mark. Perhaps we could have a bried chat with him earlier in the morning?
-----Original Appointment-----
From: Pjetraj, Michael [mailto:michael.pjetraj@ncdenr.gov]
Sent: Wednesday, February 28, 2018 3:12 PM
To: Pjetraj, Michael; Wellborn, Floyd; France, Danny; Ryan, Jeff
Cc: Strynar, Mark; James Bowyer
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
When: Thursday, March 01, 2018 1:00 PM-1:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: DENR-DAQ MEET ME 733
Please dial 919-733-2441
Hello,
Thursday 1-2 was the best time to meet as many schedules as possible, including mine & Jim's.

Mark Strynar – Thur 7-12
Danny France – Thur 1-2
Floyd Wellborn – Thur before 10 or Friday before 10
Jeff Ryan – 10-11 & 1-2 Thursday, all morning Friday

I would like to discuss the split samples that NC DAQ has required Chemours, via Test America, to provide to the SESD lab.
Chemours is testing again this week – 3 sources, 3 runs at each source. We have required split samples after extraction for each run be sent to the SESD lab.
Does the EPA need/want that volume of material?
We would like some level of validation/audit of the Test America results for GenX. We also wanted to provide the EPA with air samples from the various sources at Chemours for screening purposes.
Thanks
Michael

From: Wellborn, Floyd [mailto:Wellborn.Floyd@epa.gov]
Sent: Wednesday, February 28, 2018 2:45 PM
To: France, Danny <France.Danny@epa.gov>; Ryan, Jeff <Ryan.Jeff@epa.gov>; Pjetraj, Michael <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Bowyer, Jim <jim.bowyer@ncdenr.gov>
Subject: [External] RE: NC DAQ source testing split sample volume sent to EPA Athens lab
External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to Report Spam.
I can do that.
Floyd

From: France, Danny
Sent: Wednesday, February 28, 2018 2:43 PM
To: Ryan, Jeff <Ryan.Jeff@epa.gov>; Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab
Tomorrow 1-2 ?

From: Ryan, Jeff
Sent: Wednesday, February 28, 2018 10:50 AM
To: Wellborn, Floyd <Wellborn.Floyd@epa.gov>; Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: RE: NC DAQ source testing split sample volume sent to EPA Athens lab
I'm available 3-4 today, 10-11, 1-2 Thursday, and pretty much the entire morning Friday

---

From: Wellborn, Floyd
Sent: Wednesday, February 28, 2018 10:05 AM
To: Michael Pjetraj <michael.pjetraj@ncdenr.gov>
Cc: Ryan, Jeff <Ryan.Jeff@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; France, Danny <France.Danny@epa.gov>; James Bowyer <jim.bowyer@ncdenr.gov>
Subject: Re: NC DAQ source testing split sample volume sent to EPA Athens lab
I'm available after 2 today and either morning Thursday or Friday before 10.
For the record, Dr. Stynar is not part of SESD. He may want samples for ORD purposes.
Thanks
Floyd

Sent from my iPhone
On Feb 28, 2018, at 9:34 AM, Pjetraj, Michael <michael.pjetraj@ncdenr.gov> wrote:

Hello,
Please let me know your availability for today & the remainder of the week to discuss the volume of samples that NC DAQ has required Chemours via Test America to send to the EPA SESD lab.
Hopefully less than 30 min needed.
Thanks
Michael

Michael Pjetraj, P.E.
Deputy Director
Division of Air Quality
North Carolina Department of Environmental Quality
919-707-8497 office
michael.pjetraj@ncdenr.gov
217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699-1641

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To: Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]; Detlef Knappe[knappe@ncsu.edu]
Cc: Strynar, Mark[Strynar.Mark@epa.gov]; Biales, Adam[Biales.Adam@epa.gov]
From: Risen, Amy J
Sent: Tue 8/8/2017 2:06:24 PM
Subject: RE: Request for historic data on concentrations of GenX

Andy, that is a very good point. We will be looking at historical and present exposures to this community as well.

Detlef, I have been charged with identifying what steps have been taken to mitigate exposures (such as GAC at the WTP). I'll give you a call to ask more about this.

Best,
Amy

From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Tuesday, August 08, 2017 9:11 AM
To: Risen, Amy J <Amy.Risen@dhhs.nc.gov>; Detlef Knappe <knappe@ncsu.edu>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>; Biales, Adam <Biales.Adam@epa.gov>
Subject: RE: Request for historic data on concentrations of GenX

Amy,

Please recall that the Sun et al. paper documented that the combined PFOS and PFOA health advisory of 70 ng/L was exceeded at the drinking water intake for the City of Pittsboro 47% of the time in 2013. Our unpublished data suggests that this exposure probably continued for many years.

I think Detlef mentioned GAC filtration has been installed at the Pittsboro water plant (right?), but I don't know how it is being maintained or how it might perform for the shorter chain materials or any alternative chemistries.

I'm hoping that this community will also be evaluated at some point.

Thank you very much

Andy

From: Risen, Amy J [mailto:Amy.Risen@dhhs.nc.gov]
Sent: Monday, August 07, 2017 3:11 PM
To: Detlef Knappe <knappe@ncsu.edu>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Request for historic data on concentrations of GenX

Thanks Detlef, that is very helpful!

We are squaring away a few items necessary to move forward on this project. In the next week or two, I'll be able to forward this information to a colleague at ATSDR to begin the modeling.

Best,
Amy

From: Detlef Knappe [mailto:knappe@ncsu.edu]
Sent: Saturday, August 05, 2017 6:59 PM
To: Risen, Amy J <Amy.Risen@dhhs.nc.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: Re: Request for historic data on concentrations of GenX

Hi Amy,

Attached are the 2013 and 2014 data together with streamflow data. The 2013 data include GenX and the legacy PFASs. The 2014 data set includes the same plus the other PFECAs. I do not know when Chemours processes were running when they were discharging what. All of the 2013 data represent 24-hour composites of Sweeney (CFPUA) raw water, reflecting PFAS levels at the Kings Bluff intake.

We have additional data for the Sweeney plant for May 16-19, 2017 and then for the Pender County plant (same intake location) for 3 weeks starting June 21, 2017. I will share those with you along with stream flow data soon. Some of the Pender samples are still awaiting analysis.

Please let me know if I can answer questions.

Best,

Detlef

On 8/2/17 8:40 AM, Risen, Amy J wrote:

Andy & Detlef,

We are collecting data for a larger long-term health assessment of the PFASs reported in Sun et al 2016, and I am hoping that you will be able to fill in some data gaps. We are collaborating with other institutions to collect data on 1) potential health impacts and 2) potential exposure concentrations. The data availability will help shape the scope of the project.

At this time, we are assessing the feasibility of modeling concentrations of GenX over time for the past several decades. We'll begin by describing the available data points with concentrations, locations, and dates. We would also welcome accompanying data on river water flow, whether or not Chemours was discharging at the time, and any other relevant information.

Would you please take a quick scan of the information you have and let me know what date ranges you have data for? I understand you may not have a cleaned up list to provide at this time, but I suspect that your teams would have data collected that was not published. If you can provide a summary of available data, we can consider it as a resource.

Other PFECAs were detected as well. I don't want to ignore those, as it would certainly be ideal to characterize their concentrations too. At this time, we are looking at the feasibility of modeling GenX concentrations, and perhaps we can talk about the other PFECAs at a later date.

Thank you so much for any information you can provide!

Best regards,

Amy

Amy Risen, PhD
Environmental Toxicologist
Division Public Health, Occupational and Environmental Epidemiology
North Carolina Department of Health and Human Services

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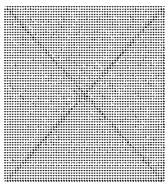

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--

Detlef Knappe

Professor

319-E Mann Hall

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North Carolina State University

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Phone: 919-515-8791

Fax: 919-515-7908

E-mail: knappe@ncsu.edu

Web page: http://knappelab.wordpress.ncsu.edu/

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: McCord, James[mccord.james@epa.gov]
From: Johnson, Chris
Sent: Tue 9/5/2017 5:34:21 PM
Subject: RE: results

I was puzzled by that result as well. Matrix problems with their method perhaps? Do you suggest that I contact them with that info?

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Tuesday, September 05, 2017 10:43 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: McCord, James <mccord.james@epa.gov>
Subject: RE: results

Chris,

My first impressions would be.

For QCA they did well (lab blank)
For QCB (target 150 ng/L) they were spot on for most analytes (~150-160 ng/L) but a bit high on GenX (210 ng/L)
For QCC (target 1000 ng/L) they were within 20% for all analytes including GenX (1100-1200 ng/L)
For QCD I am unsure what is up. That sample was loaded with GenX and they report back 5 ng/L. We were hoping for a contract lab consensus value. Here it seems they missed.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Friday, September 01, 2017 4:46 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: FW: results

Results from Eurofins analyses.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: James Vernon [mailto:JamesVernon@eurofinsUS.com]
Sent: Friday, September 01, 2017 4:23 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Joe Mattheis <JosephMattheis@eurofinsUS.com>; Yongtao Li <YongtaoLi@eurofinsUS.com>
Subject: results

Please note comments for the sample :

SS-PFDA-13C2 @ 100 ng/L had a calculated result of 0%, which failed to pass the Surrogate Percent Recovery Lower Limit (70 to 130) (mccarty). The sample was re-extracted with similar results. Results may be low biased

FS-3760711 SS-PFHxA-13C2 @ 50 ng/L had a calculated result of 0%, which failed to pass the Surrogate Percent Recovery Lower Limit (70 to 130) (mccarty). The sample was re-extracted with similar results. Results may be low biased.

James Vernon
Analytical Services Manager

Eurofins Eaton Analytical, Inc.
110 South Hill Street, South Bend, IN 46617
Phone: +1 574 472 5558
Mobile: +1 574 303 2431

Email: Jamesvernon@eurofinsus.com
Website: www.EurofinsUS.com/Eaton

To: Strynar, Mark[Strynar.Mark@epa.gov]
From: Johnson, Chris
Sent: Fri 9/1/2017 8:46:09 PM
Subject: FW: results
396020.xls

Results from Eurofins analyses.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: James Vernon [mailto:JamesVernon@eurofinsUS.com]
Sent: Friday, September 01, 2017 4:23 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Joe Mattheis <JosephMattheis@eurofinsUS.com>; Yongtao Li <YongtaoLi@eurofinsUS.com>
Subject: results

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James Vernon
Analytical Services Manager

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Phone: +1 574 472 5558
Personal Phone / Ex. 6

Email: Jamesvernon@eurofinsus.com
Website: www.EurofinsUS.com/Eaton

EEA ID#	Client ID	Sample Type	Collected	Received	Extracted
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
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3760708	QCA-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760709	QCB-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760709	QCB-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760709	QCB-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760709	QCB-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
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3760709	QCB-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
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3760709	QCB-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
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3760710	QCC-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
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3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
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3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12
3760711	QCD-1	Field Sample	8/17/17 16:00	8/18/17 10:00	8/28/17 8:12

Analyzed	Method	Analyte	CAS Numbe	Matrix
8/29/17 12:33	537	ADONA	958445-44-	RW
8/29/17 12:33	537	F-53B Major	73606-19-6	RW
8/29/17 12:33	537	F-53B Minor	83329-89-9	RW
8/29/17 12:33	537	GenX	13252-13-6	RW
8/29/17 12:33	537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	RW
8/29/17 12:33	537	Perfluorodecanoic acid (PFDA)	335-76-2	RW
8/29/17 12:33	537	Perfluoroheptanoic acid (PFHpA)	375-85-9	RW
8/29/17 12:33	537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	RW
8/29/17 12:33	537	Perfluorohexanoic acid (PFHxA)	307-24-4	RW
8/29/17 12:33	537	Perfluorolauric acid (PFDoA)	307-55-1	RW
8/29/17 12:33	537	Perfluoromyristic acid (PFTA)	376-06-7	RW
8/29/17 12:33	537	Perfluorononanoic acid (PFNA)	375-95-1	RW
8/29/17 12:33	537	Perfluorooctane sulfonate (PFOS)	1763-23-1	RW
8/29/17 12:33	537	N-ethyl Perfluorooctanesulfonamidoacetic acid (NEtFOS/	2991-50-6	RW
8/29/17 12:33	537	N-methyl Perfluorooctanesulfonamidoacetic acid (NMeF	2355-31-9	RW
8/29/17 12:33	537	Perfluorooctanoic acid (PFOA)	335-67-1	RW
8/29/17 12:33	537	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	RW
8/29/17 12:33	537	Perfluoroundecanoic acid (PFUnA)	2058-94-8	RW
8/29/17 13:25	537	ADONA	958445-44-	RW
8/29/17 13:25	537	F-53B Major	73606-19-6	RW
8/29/17 13:25	537	F-53B Minor	83329-89-9	RW
8/29/17 13:25	537	GenX	13252-13-6	RW
8/29/17 13:25	537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	RW
8/29/17 13:25	537	Perfluorodecanoic acid (PFDA)	335-76-2	RW
8/29/17 13:25	537	Perfluoroheptanoic acid (PFHpA)	375-85-9	RW
8/29/17 13:25	537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	RW
8/29/17 13:25	537	Perfluorohexanoic acid (PFHxA)	307-24-4	RW
8/29/17 13:25	537	Perfluorolauric acid (PFDoA)	307-55-1	RW
8/29/17 13:25	537	Perfluoromyristic acid (PFTA)	376-06-7	RW
8/29/17 13:25	537	Perfluorononanoic acid (PFNA)	375-95-1	RW
8/29/17 13:25	537	Perfluorooctane sulfonate (PFOS)	1763-23-1	RW
8/29/17 13:25	537	N-ethyl Perfluorooctanesulfonamidoacetic acid (NEtFOS/	2991-50-6	RW
8/29/17 13:25	537	N-methyl Perfluorooctanesulfonamidoacetic acid (NMeF	2355-31-9	RW
8/29/17 13:25	537	Perfluorooctanoic acid (PFOA)	335-67-1	RW
8/29/17 13:25	537	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	RW
8/29/17 13:25	537	Perfluoroundecanoic acid (PFUnA)	2058-94-8	RW
8/29/17 13:42	537	ADONA	958445-44-	RW
8/29/17 13:42	537	F-53B Major	73606-19-6	RW
8/29/17 13:42	537	F-53B Minor	83329-89-9	RW
8/29/17 14:32	537	GenX	13252-13-6	RW
8/29/17 14:32	537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	RW
8/29/17 14:32	537	Perfluorodecanoic acid (PFDA)	335-76-2	RW
8/29/17 14:32	537	Perfluoroheptanoic acid (PFHpA)	375-85-9	RW
8/29/17 14:32	537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	RW

8/29/17 14:32	537	Perfluorohexanoic acid (PFHxA)	307-24-4	RW
8/29/17 13:42	537	Perfluorolauric acid (PFDoA)	307-55-1	RW
8/29/17 13:42	537	Perfluoromyristic acid (PFTA)	376-06-7	RW
8/29/17 14:32	537	Perfluorononanoic acid (PFNA)	375-95-1	RW
8/29/17 14:32	537	Perfluorooctane sulfonate (PFOS)	1763-23-1	RW
8/29/17 13:42	537	N-ethyl Perfluorooctanesulfonamidoacetic acid (NEtFOS/	2991-50-6	RW
8/29/17 13:42	537	N-methyl Perfluorooctanesulfonamidoacetic acid (NMeF	2355-31-9	RW
8/29/17 14:32	537	Perfluorooctanoic acid (PFOA)	335-67-1	RW
8/29/17 13:42	537	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	RW
8/29/17 13:42	537	Perfluoroundecanoic acid (PFUnA)	2058-94-8	RW
8/29/17 14:15	537	ADONA	958445-44-	SW
8/29/17 14:15	537	F-53B Major	73606-19-6	SW
8/29/17 14:15	537	F-53B Minor	83329-89-9	SW
8/29/17 14:15	537	GenX	13252-13-6	SW
8/29/17 14:15	537	Perfluorobutanesulfonic acid (PFBS)	375-73-5	SW
8/29/17 14:15	537	Perfluorodecanoic acid (PFDA)	335-76-2	SW
8/29/17 14:15	537	Perfluoroheptanoic acid (PFHpA)	375-85-9	SW
8/29/17 14:15	537	Perfluorohexanesulfonic acid (PFHxS)	355-46-4	SW
8/29/17 14:15	537	Perfluorohexanoic acid (PFHxA)	307-24-4	SW
8/29/17 14:15	537	Perfluorolauric acid (PFDoA)	307-55-1	SW
8/29/17 14:15	537	Perfluoromyristic acid (PFTA)	376-06-7	SW
8/29/17 14:15	537	Perfluorononanoic acid (PFNA)	375-95-1	SW
8/29/17 14:15	537	Perfluorooctane sulfonate (PFOS)	1763-23-1	SW
8/29/17 14:15	537	N-ethyl Perfluorooctanesulfonamidoacetic acid (NEtFOS/	2991-50-6	SW
8/29/17 14:15	537	N-methyl Perfluorooctanesulfonamidoacetic acid (NMeF	2355-31-9	SW
8/29/17 14:15	537	Perfluorooctanoic acid (PFOA)	335-67-1	SW
8/29/17 14:15	537	Perfluorotridecanoic acid (PFTrDA)	72629-94-8	SW
8/29/17 14:15	537	Perfluoroundecanoic acid (PFUnA)	2058-94-8	SW

Result Flag	Result	Units	MRL	Dil Factor
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	5	ng/L	5	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
=	210	ng/L	5	0.99
=	160	ng/L	2	0.99
=	150	ng/L	2	0.99
=	150	ng/L	2	0.99
=	160	ng/L	2	0.99
=	150	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
=	150	ng/L	2	0.99
=	150	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
=	150	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
=	1200	ng/L	5	9.9
=	1100	ng/L	2	9.9
=	1200	ng/L	2	9.9
=	1200	ng/L	2	9.9
=	1200	ng/L	2	9.9

=	1200	ng/L	2	9.9
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
=	1200	ng/L	2	9.9
=	1100	ng/L	2	9.9
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
=	1200	ng/L	2	9.9
<	2	ng/L	2	0.99
<	2	ng/L	2	0.99
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	5	ng/L	5	0.98
=	3.2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
=	6	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
=	13	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98
<	2	ng/L	2	0.98

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Price, Cindy[cindy.price@dhhs.nc.gov]; Good, Norman[norman.good@dhhs.nc.gov]; Pettit, Dee A[Dee.Pettit@dhhs.nc.gov]
From: Zimmerman, Scott J
Sent: Mon 1/22/2018 7:17:44 PM
Subject: Re: [External] RE: DEQ-DHHS Gen-X Conference Call

Mark,
Thank you for your assistance. It will extremely advantageous to have access to you as an SME, should SLPH be asked to develop and implement a method.

Best wishes to you.

Scott

Sent from my iPhone

Scott J. Zimmerman, DrPH, MPH, HCLD (ABB)
Director
Division of Public Health, North Carolina State Laboratory of Public Health
North Carolina Department of Health and Human Services

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Personal Phone / Ex. 6
919 733 8695 fax
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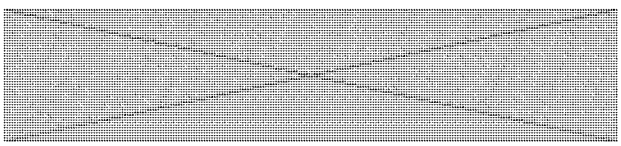
Raleigh, NC 27699-1918



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On Jan 22, 2018, at 2:13 PM, Strynar, Mark <Strynar.Mark@epa.gov> wrote:

> CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.
>
> Scott,
>
> Here is some info you may find helpful as you gear up to perform these kind of analyses for PFAS in water. These two SOPs are used to isolate PFAs from water samples. They include both GenX (HFPO-DA) as well as legacy PFAS (ex. PFOS and PFOA). The methods will isolate all of the PFAS we have looked for in the Cape Fear river all summer for NCDEQ. However, as discussed on the phone call we do not have standards for many analytes found in the river.
>
> The powerpoint presentation shows what chemicals we have looked for and how we process. On our Waters Acquity MS/MS we use a holdup column in front on the injector but after the mixing chamber to scrub the system of PFAs. In the analytical lessons learned slide deck see #12 and #13 it shows our setup.
>
> Last I attached our most recent papers on this topic for reference. Strynar et al., 2015 and Sun et al., 2016.

Mark

-----Original Appointment-----
From: Zimmerman, Scott J [mailto:scott.j.zimmerman@dhhs.nc.gov]
Sent: Monday, January 22, 2018 10:57 AM
To: Zimmerman, Scott J; Strynar, Mark
Subject: FW: DEQ-DHHS Gen-X Conference Call]
When: Monday, January 22, 2018 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Personal Phone / Ex. 6

Thanks, Mark.

-----Original Appointment-----
From: Zimmerman, Scott J
Sent: Monday, January 22, 2018 10:54 AM
To: Zimmerman, Scott J; Price, Cindy; Pettit, Dee A; Karoly, Cyndi; Culpepper, Linda; Good, Norman
Cc: Johnson, Chris
Subject: FW: DEQ-DHHS Gen-X Conference Call
When: Monday, January 22, 2018 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Personal Phone / Ex. 6

-----Original Appointment-----
From: Zimmerman, Scott J
Sent: Monday, January 22, 2018 10:52 AM
To: Zimmerman, Scott J; Price, Cindy; Pettit, Dee A; Karoly, Cyndi; Culpepper, Linda; Good, Norman
Subject: DEQ-DHHS Gen-X Conference Call
When: Monday, January 22, 2018 1:00 PM-2:00 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Personal Phone / Ex. 6

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<PHCB-043-SOP-03_PFASs in water_Final_Signed.pdf>

<PHCB-062_PFECAs_InWaterSOP_FinalSigned.pdf>

<Strynar R4 state labs webinar.pptx>

<PFC Analytical Lessons Learned.pptx>

<Strynar et al., 2015 ES&T.pdf>

<strynar et al., 2015 SI.pdf>

<Sun et al. GenX in the Cape Fear River 2016.pdf>

<Sun et al., 2016 SI.pdf>

To: Culpepper, Linda[linda.culpepper@ncdenr.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Johnson, Chris[chris.johnson@ncdenr.gov]
Cc: Allen, Trent[trent.allen@ncdenr.gov]
From: Cox, Heidi
Sent: Thur 10/12/2017 1:05:22 PM
Subject: RE: [External] RE: PFAS Attachment - FW: Charts

Can we get a few extra just in case anything happens? So maybe 3 extra for a total of 10. Thanks!
Heidi

Heidi Lane Cox
Regional Engineering Supervisor
Wilmington and Fayetteville Regional Offices
Public Water Supply Section
Department of Environmental Quality

(910) 796-7368 office
Personal Phone / Ex. 6
Heidi.cox@ncdenr.gov

127 Cardinal Drive Ext.
Wilmington, NC 28405

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From: Culpepper, Linda
Sent: Thursday, October 12, 2017 8:49 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Allen, Trent <trent.allen@ncdenr.gov>; Cox, Heidi <heidi.cox@ncdenr.gov>
Subject: RE: [External] RE: PFAS Attachment - FW: Charts

Mark – we need seven samples.
Timing – best if we can get the sample containers to Fayetteville for their Monday sampling event.

Chris – if you or someone on your staff can get the sample containers from Mark, I'll find someone to
Get them to Fayetteville.

Thank you all.
linda

7 samples :
Hoffer raw water (upstream)
Chemours Outfall
Bladen Bluff finished water
IP finished water
NW Brunswick finished water
Pender finished
CFPU Sweeney

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center

Phone: 919-707-9014

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, October 12, 2017 8:13 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Johnson, Chris <chris.johnson@ncdenr.gov>
Subject: [External] RE: PFAS Attachment - FW: Charts

CAUTION: This email originated from outside of the organization. Do not click links or open attachments unless you verify that the attachment and content are safe. Send all suspicious email as an attachment to report.spam@nc.gov.

Sorry for the slow response. We have the new site visit sample data we could be sharing soon. Perhaps that may help. I would say go out an collect the samples. How many bottles would you need?

We can fit it in at a later date. I am tied up in the ISES conference all next week.

Mark

From: Culpepper, Linda [mailto:linda.culpepper@ncdenr.gov]
Sent: Wednesday, October 11, 2017 9:24 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Johnson, Chris <chris.johnson@ncdenr.gov>
Subject: FW: PFAS Attachment - FW: Charts

Dr. Strynar – I just heard that Dr. Buckley is out until tomorrow.

We are very interested in getting a Chemours outfall sample and finished drinking water samples taken this week before the plant the plant shut down, and have them analyzed for the Nafion® byproducts. Chemours confirmed that the official start date for the annual maintenance is Oct. 17th.

Could we work something out?

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

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From: Culpepper, Linda
Sent: Friday, October 06, 2017 6:03 PM
To: 'France.danny@Epa.gov' <France.danny@Epa.gov>; 'Sivertsen.scott@Epa.gov' <Sivertsen.scott@Epa.gov>; 'Buckley, Timothy' <Buckley.Timothy@epa.gov>; 'Allenbach, Becky' <Allenbach.Becky@epa.gov>; 'Kemker, Carol' <Kemker.Carol@epa.gov>; 'mitchell.ken@epa.gov' <mitchell.ken@epa.gov>; 'Banister.Beverly@epa.gov' <Banister.Beverly@epa.gov>
Cc: Holman, Sheila <sheila.holman@ncdenr.gov>
Subject: PFAS Attachment - FW: Charts

Sharing info. our health dept. is using with our public meetings. We had almost 200 people in attendance last night to hear info. about private well data, along with other media updates. Our sound system did not work well and added frustration, but we had very good one-on-one discussions after the opening remarks.

We appreciate Danny and Scott's time today coordinating the sample logistics and we'll begin sending our Chemours outfall and finished drinking water samples to the Athens lab the week of Oct. 16th. We are shifting to using a composite sampler at the Chemours outfall – one composite sample for Mon-Thurs and one composite sample for Fri-Sunday.

Tim – if you have time for a discussion on the Nafion® byproduct analysis on Monday, I'll arrange my schedule to fit yours. Our staff indicated the plant is now going into their annual maintenance shut down on Oct. 18th. The plants (Chemours, Kuraray and DuPont) will not have a wastewater discharge during the shutdown. They bring in Mt. Olive pickle wastewater to feed the wastewater system.

We really need an Nafion® byproduct analysis of the current wastewater at Outfall 002 before they shut down for maintenance to compare against the results your lab provided for June-Aug. This will allow us to validate whether they have captured the Nafion® byproducts as they have told us and the public. Thank you for considering the request.

Our staff is assisting the Waste Management division next week in taking samples from lake/ponds in the neighborhoods with high GenX values in private wells. Continuing to get private well data back. The Air Quality division is continuing its work on air emission evaluations.

Again, we appreciate all the help and support for this project.
linda

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

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Phone: 919-707-9014

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From: Shehee, Mina
Sent: Friday, September 22, 2017 12:56 PM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Pritchett, Jamie R <Jamie.Pritchett@dhhs.nc.gov>; Dittman, Elizabeth <Beth.Dittman@dhhs.nc.gov>
Subject: FW: Charts

Attached are the chemical structure charts we made in OEEB. These were designed with drinking water contaminants in mind.
Mina

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Allenbach, Becky[Allenbach.Becky@epa.gov]; Johnson, Chris[chris.johnson@ncdenr.gov]; Allen, Trent[trent.allen@ncdenr.gov]; Cox, Heidi[heidi.cox@ncdenr.gov]
From: Culpepper, Linda
Sent: Tue 10/17/2017 7:56:30 PM
Subject: Chemours samples - follow up

DEQ should deliver the following samples early during the week of Oct. 23rd:

Samples from 10/16 – Hoffer raw water, Chemours outfall 002 composite sample, Bladen Bluff finished drinking water
Samples from 10/19 at drinking water facilities: International Paper, NW Brunswick, Pender County, Sweeney Plant.
Plus any QC samples

Appreciate the support in the analysis for GenX and the non-targeted compounds, including the two Nafion® byproducts as EPA reported to DEQ provided in the June-August 2017 analysis.

Look forward to talking with you tomorrow at 7am.
State cell: **Personal Phone / Ex. 6**

linda

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

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Phone: 919-707-9014

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To: Strynar, Mark[Strynar.Mark@epa.gov]; Lindstrom, Andrew[Lindstrom.Andrew@epa.gov]
Cc: Satterwhite, Dana[dana.satterwhite@ncdenr.gov]
From: Johnson, Chris
Sent: Fri 6/23/2017 8:42:47 PM
Subject: RE: Discussion for sampling and analysis in Wilmington

Mark, I know you're probably gone for the week, but if you could please forward the CAS number you have for the GenX compound(s). Thanks!

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Friday, June 23, 2017 9:01 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

That works for me.

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, June 22, 2017 5:38 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I should be over to your place to pick up sampling materials by 11:00 AM if that works. I told the Fayetteville office that I would meet them in Dunn at 12:00. If that sounds like a problem please let me know in the morning. Thanks!

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Johnson, Chris
Sent: Thursday, June 22, 2017 3:12 PM
To: 'Strynar, Mark' <Strynar.Mark@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Mark, could you have a copy of your analytical SOP handy for my records?

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 22, 2017 9:24 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Brantley, Mark <mark.brantley@ncdenr.gov>; West, Steve <steve.west@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Okay. My cell is Personal Phone / Ex. 6 if you have any issues. I get in at 7 AM. Can we shoot for 9 AM in case I do not get finished prepping today.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, June 22, 2017 9:21 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Brantley, Mark <mark.brantley@ncdenr.gov>; West, Steve <steve.west@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I would like to come as early as possible in order to get the kits to Fayetteville. Perhaps before lunch if possible.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 22, 2017 9:16 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Chris,

I am working to get this done today. Let me know when you will be available to come and get sample container tomorrow.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, June 22, 2017 8:25 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Thanks for the reply, Mark.

I received word from the Wilmington RO and it looks like they will need 16 bottles to finish out their projected sampling. I haven't heard from the Fayetteville office, but based on what we've received from then for the first sampling event, I would think they need approximately 12 bottles to finish up. This is all based on the sampling being done this week.

Given the tight time frame for next week's sampling, we will probably need to drive the sample kits down to Fayetteville tomorrow afternoon if possible. I would also like to deliver the first set to you if we receive Wilmington's set in time. Either way, if there is any way we can have the sample kits ready tomorrow I would have time to get them to the samplers.

Thanks once again for your help on this project.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]

Sent: Thursday, June 22, 2017 6:50 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

One change Chris. I had wishful thinking. I am actually working on Friday and am not off. I will be here.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, June 21, 2017 4:39 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I will find out the number. Let me contact the regional folks. Thank you.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 21, 2017 4:09 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I am off Friday but we could have them prepared for your visit to pick up. How many sample bottles do you need? We typically replicate sample 10% of the samples and have a trip blank and a high and low trip spike as well.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, June 21, 2017 1:53 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

It may be better if you could supply this material. Based on our conversation, the 1L bottles are preferable and we don't carry that size. Can we pick them up when we bring the first delivery? We may be able to get over there on Friday if that works with your schedules.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 21, 2017 1:50 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

We could provide sample bottles if they are needed. In addition we have always included trip blanks and spikes with our assays for QA/QC purposes. We should strongly consider doing so in any future sampling efforts.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, June 21, 2017 11:45 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Good morning. Wondering if you could clarify a question from the conference call yesterday. Will your laboratory be providing sample bottles and preservative for future sampling events? Also, I see from your 2009 SOP that blanks and spikes were mandated for the coolers. If you require those, will they be provided? We aren't able to make the spikes since they can't be confirmed by analysis.

Thanks for your help.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Wednesday, June 21, 2017 8:04 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Chris,

Great.

Please let me know if I can help in any way as we proceed with this project.

We're very grateful for your help with coordinating this effort.

Thank you very much,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Tuesday, June 20, 2017 3:39 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Received. Thank you.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Tuesday, June 20, 2017 2:57 PM
To: Buckley, Timothy <Buckley.Timothy@epa.gov>; Johnson, Chris <chris.johnson@ncdenr.gov>; Allenbach, Becky <Allenbach.Becky@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>; Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Jones, Nick <nick.jones@ncdenr.gov>; Perez, Helen I <helen.perez@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

All,

I've attached a copy of the field collection protocol that we have been using for PFAS compounds including GenX.

The shipping address and storage conditions are specified on page 6.

Please let us know if you have any questions.

Thank you very much,

Andy

-----Original Appointment-----
From: Buckley, Timothy
Sent: Tuesday, June 20, 2017 1:20 PM
To: chris.johnson@ncdenr.gov; Allenbach, Becky; Strynar, Mark; Medina-Vera, Myriam; cyndi.karoly@ncdenr.gov; linda.culpepper@ncdenr.gov
Cc: Lindstrom, Andrew; Jones, Nick; Perez, Helen l; Satterwhite, Dana
Subject: Discussion for sampling and analysis in Wilmington
When: Tuesday, June 20, 2017 2:00 PM-2:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Teleconference: Call in: **Personal Phone / Ex. 6**

Thank you all for making time for this discussion. I know that there is a lot of pressure to move quickly on this project. ORD/NERL is happy to provide analytical support. To guide our involvement/effort, I am hoping that collectively we can provide answers to the following questions.

1. What question are we attempting to address with this sampling effort?
2. What is the sampling design?
3. What is the status and timeline of the QAPP?
4. Given split sample analysis (contract lab and NERL lab), how will differences in reported concentrations be managed?
5. What is the plan for communicating results and who has the lead?
6. What is the project timeline?
7. Do we need on-going coordination meetings?

To: Strynar, Mark[Strynar.Mark@epa.gov]
From: Culpepper, Linda
Sent: Wed 8/2/2017 5:04:21 PM
Subject: Fwd: Request for Continued Help with GenX Analysis

Mark - here is the email I have in the topic of support.

Sent from my iPhone

Begin forwarded message:

From: "Holman, Sheila" <sheila.holman@ncdenr.gov>
Date: July 28, 2017 at 4:27:53 AM EDT
To: "Orme-Zavaleta, Jennifer" <Orme-Zavaleta.Jennifer@epa.gov>
Cc: "Culpepper, Linda" <linda.culpepper@ncdenr.gov>, "Allenbach, Becky" <Allenbach.Becky@epa.gov>, "Buckley, Timothy" <Buckley.Timothy@epa.gov>, "Watkins, Tim" <Watkins.Tim@epa.gov>
Subject: Re: Request for Continued Help with GenX Analysis

Jennifer,

Thank you and your team for the help. I really appreciate the tremendous support we have received over the last few weeks as we address this issue. Your help has been invaluable.

Sheila

Sheila Holman
Assistant Secretary for Environment
NCDEQ
1601 Mail Service Center
Raleigh, NC 27699-1601
Phone: (919) 707-8619
Fax: (919) 707-8619
deq.nc.gov

sheila.holman@ncdenr.gov

****
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****

From: Orme-Zavaleta, Jennifer <Orme-Zavaleta.Jennifer@epa.gov>
Sent: Wednesday, July 26, 2017 3:06 PM
To: Holman, Sheila
Cc: Culpepper, Linda; Allenbach, Becky; Buckley, Timothy; Watkins, Tim
Subject: Re: Request for Continued Help with GenX Analysis

Hi Sheila, yes we will be able to help out. Please coordinate with Tim Buckley

Keep us posted on this!

Jennifer Orme-Zavaleta, PhD
Director, National Exposure Research Laboratory
USEPA
RTP, NC
Personal Matters / Ex. 6

On Jul 26, 2017, at 8:40 AM, Holman, Sheila <sheila.holman@ncdenr.gov> wrote:

Jennifer,

I am writing to ask for ORD's help with continued analysis of water samples from the lower Cape Fear for a few more weeks? I had planned to pause the sampling for a few weeks, but Secretary Regan and Governor Cooper would like us to continue sampling the finished water and the outfall at Chemours for the foreseeable future. We are working on a labe contract, but need a few weeks to get one in place. Thank you for your consideration of this request. I can't say enough about how helpful you and your team have been over the last few weeks. I appreciate all the assistance you have already provided.

Sheila

Sheila Holman

Assistant Secretary for the Environment

NCDEQ

1601 Mail Service Center

Raleigh, NC 27699-1601

Phone/Fax: 919-707-8619

deq.nc.gov

Sheila.holman@ncdenr.gov

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Culpepper, Linda[linda.culpepper@ncdenr.gov]
From: Johnson, Chris
Sent: Fri 9/1/2017 3:11:18 PM
Subject: FW: Peripheral compounds in GenX testing

Hi, Mark. Forwarding an email from Beth Eckert of CFPUA in Wilmington. Looks like the compounds in bold type are the Nafion byproducts or perhaps related in some way. As you said during our earlier discussion, looks like they do not have any standards isolated for the other PF compounds.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

Correspondence with this email address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Beth Eckert [mailto:Beth.Eckert@cfpua.org]
Sent: Friday, September 01, 2017 9:32 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Beth Eckert <Beth.Eckert@cfpua.org>
Subject: RE: Peripheral compounds in GenX testing

Hey Chris,
I'm doing good. I hope you are as well.

Sorry for misinformation, but apparently, when our contact got back to us yesterday he had given us some erroneous information. They have added two compounds to their method but they are something called:

F-53B (major) = 9-chlorohexadecafluoro-3-oxanonane-1-sulfonate and F-53B (minor) = 11-chloroeicosafluoro-3-oxanonane-1-sulfonate

Per their actual Chemist in an email, not the project manager we had spoken to, they were not able to add PFMOPrA and FPMOBA that are not suitable for EPA 537. They are developing a different method for PFMOPrA and FPMOBA. The names and CAS#s they gave us are below. However, at this point they don't seem to have been able to incorporate these into a method yet.

- Perfluoro-3-methoxypropanoic acid (PFMOPrA), CAS# 377-73-1
- Perfluoro-4-methoxybutanoic acid (PFMOBA), CAS# 863090-89-5

Our Eurofins Contact and Project Manager:
Joseph M. Mattheis
Mobile: 919-376-7978
Email: JosephMattheis@EurofinsUS.com

Eurofins Chemist:
Yongtao (Bruce) Li, PhD
Phone: +1 574 472 5562
Personal Phone / Ex. 6
Email: YongtaoLi@EurofinsUS.com

Hope this helps. Sorry for any confusion

Beth Eckert

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, August 30, 2017 11:52 AM
To: Beth Eckert <Beth.Eckert@cfpua.org>

Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Subject: Peripheral compounds in GenX testing

Hi, Beth! Hope everything is going well at the ESD.

Can you send info on the two analytes you discussed on the call this morning; CAS numbers (if known), names and formulae? Organic compounds can have dozens of different names as we know, and I want to make sure I'm discussing the right ones with EPA.

You said that Eurofins is claiming that they have either isolated or purchased analytical standards for these compounds, correct? If they have, please include any info about that.

Give me an email or call if you want to discuss in detail. Say hi to everyone down there for me. Thanks.

Chris Johnson
Environmental Program Supervisor
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality
Division of Water Resources

919-733-3908 ext224 office

4405 Reedy Creek Road
Raleigh, NC 27607

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To: Strynar, Mark[Strynar.Mark@epa.gov]
From: Abraczinskas, Michael
Sent: Mon 5/14/2018 4:07:52 PM
Subject: slides
air_quality_slides_for_HRS_Committee_April26_2018.pptx

Attached.

Mike Abraczinskas, EIT, CPM
Director, Division of Air Quality
North Carolina Department of Environmental Quality

919 707 8447 office
michael.abraczinskas@ncdenr.gov

217 West Jones Street
1641 Mail Service Center
Raleigh, NC 27699

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

To: Munger, Bridget[bridget.munger@ncdenr.gov]
Cc: Satterwhite, Dana[dana.satterwhite@ncdenr.gov]; Karoly, Cyndi[cyndi.karoly@ncdenr.gov]; Culpepper, Linda[linda.culpepper@ncdenr.gov]; Strynar, Mark[Strynar.Mark@epa.gov]
From: Johnson, Chris
Sent: Wed 6/28/2017 1:21:41 PM
Subject: RE: Questions and fact check - Greater Wilmington Business Journal

Bridget, I am asking EPA to confirm the analyte list before sending. The target analyte list that EPA will report may be a subset of the original list that Dr. Knappe had in his presentation and I don't want to give you something inaccurate.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Munger, Bridget
Sent: Tuesday, June 27, 2017 8:57 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Questions and fact check - Greater Wilmington Business Journal

If you could forward the list it would be very helpful. Thank you!

Bridget Munger
Public Information Officer
N.C. Department of Environmental Quality
Division of Energy, Mineral and Land Resources
Division of Water Resources

919-807-6363 office
Personal Phone / Ex. 6
bridget.munger@ncdenr.gov

1612 Mail Service Center
Raleigh, NC 27699-1612

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Johnson, Chris
Sent: Tuesday, June 27, 2017 5:00 PM
To: Munger, Bridget <bridget.munger@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Questions and fact check - Greater Wilmington Business Journal

Our understanding is that EPA will be reporting all analytes discussed in the "Sun, et al" paper. But, the method of quantitation and the exact list would still be in question until we get a definitive answer from them. If you need to see that list I can forward.

Test America is only going to be reporting GenX.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Munger, Bridget
Sent: Tuesday, June 27, 2017 4:41 PM
To: Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Munger, Bridget <bridget.munger@ncdenr.gov>
Subject: FW: Questions and fact check - Greater Wilmington Business Journal

Can you please tell what else we are sampling for besides GenX? I'll be sure to vet my answer to the reporter with Linda, Sheila and other senior management.

Thank you!

Bridget Munger
Public Information Officer
N.C. Department of Environmental Quality
Division of Energy, Mineral and Land Resources
Division of Water Resources

919-807-6363 office
Personal Phone / Ex. 6
bridget.munger@ncdenr.gov

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Raleigh, NC 27699-1612

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From: Christina Haley [mailto:chaley@wilmingtonbiz.com]
Sent: Tuesday, June 27, 2017 11:52 AM
To: Munger, Bridget <bridget.munger@ncdenr.gov>
Cc: Kritzer, Jamie <jamie.kritzer@ncdenr.gov>
Subject: RE: Questions and fact check - Greater Wilmington Business Journal

Hey Bridget,

Thank you for the information.

While I appreciate your help and know you all have a lot of requests to fulfill at the moment, I don't think I was specific enough about my first question.

Last week, I had asked a few questions and Assistant Secretary of Environment Shelia Holman indicated that you all were looking at a few unregulated pollutants now and working with EPA to look at health studies and determine how best to move forward addressing those. I don't see anything on the EPA website that addresses that or how many you all are looking at. I was told that Shelia Holman and I could follow up.

Even though I am past my deadline at this point for print, I would like to see if you all could provide an answer to that question for an update I am working on for a daily story today set to post at 3 p.m.

Also, if you could be specific to the number of industries vs. wastewater industry in the 19 major facilities, that would be great. And I'm assuming the Chemours plant is included in that number?

Thank you for your time.

Best,
Christina

From: Munger, Bridget [mailto:bridget.munger@ncdenr.gov]
Sent: Thursday, June 22, 2017 4:35 PM
To: Christina Haley <chaley@wilmingtonbiz.com>
Cc: Kritzer, Jamie <jamie.kritzer@ncdenr.gov>
Subject: RE: Questions and fact check - Greater Wilmington Business Journal

Christina,
Please see below for answers to your questions as well as corrections to the content from last week (first email below).

Is there ongoing research (other than the current GenX) investigation to find emerging compounds/contaminates, either chemical or microbial in our water system? Have any been found in the past? If so, how many and do they pose a risk to human health?

As a requirement of the Unregulated Contaminant Monitoring Rule, the U.S. Environmental Protection Agency gathers data about select unregulated contaminants to determine their prevalence and levels at drinking water facilities in the nation. When combined with relevant health effect studies, the data is used to help EPA determine if regulation is necessary, and if so, at what levels. The web page for the overall program and monitoring data can be found at: https://www.epa.gov/dwucmr.

How many industries are currently being monitored in our region along the Cape Fear River? (If too many for an estimate, then I could also use any information that could describe the vast amount of industries you all are monitoring or why it's important. Or both.)
There are 19 major facilities located on the mainstem of the Cape Fear River that have a NPDES wastewater discharge permit. Over half of those facilities are municipal wastewater treatment plants. All of these facilities are required to perform monitoring and submit monthly discharge monitoring reports to DEQ. For industrial dischargers, the types of chemicals they are required to monitor for depends on their industrial processes and applicable state and federal regulations.

About GenX:

Is this GenX investigation impacting any other industries along the Cape Fear River?
No. At this time, DEQ believes the source of the GenX compound to be the Chemours' Fayetteville facility.

How would you summarize the GenX investigation and what it is the end mission of the investigation? Could you describe how or in what ways this investigation could have as an end result?
Staff with DEQ are monitoring multiple locations along the Cape Fear to determine current levels of the GenX compound in the water. This monitoring will continue for three weeks, allowing the state to capture new data on conditions in the river. Our objective is to determine the current concentration of GenX in the lower Cape Fear, and in partnership with DHHS, better characterize any potential health risk associated with that concentration. The potential health risk will help guide next steps in the process.

Is this a reapplication after the 5-year timeframe, or simply a permit renewal and is there a difference? And what is the timeline for Chemours new permit? Does the NCDEQ's investigation have any impact on the timeline for permit renewal at this time? In other words, are you all waiting for the completed investigation before issuing a new permit to Chemours?
Yes, this permit is up for renewal as part of the five-year permit cycle. Chemours' wastewater permit renewal is currently on hold pending results of the state's investigation.

Bridget Munger
Public Information Officer
N.C. Department of Environmental Quality
Division of Energy, Mineral and Land Resources
Division of Water Resources

919-807-6363 office
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From: Christina Haley [mailto:chaley@wilmingtonbiz.com]
Sent: Thursday, June 22, 2017 7:42 AM
To: Kritzer, Jamie <jamie.kritzer@ncdenr.gov>
Subject: Questions and fact check - Greater Wilmington Business Journal

Hi Jamie,

I wanted to check to see if you all received my questions yesterday. My absolute deadline for my story on GenX is today.

Also, I am inputing some of the permitting information released during the press conference last Thursday and wanted to send you the what I have written about it to double check it for factual information. As I understand your staff may not have had documentation in front of them at the time, I wanted to give you all the chance to correct anything that needs to be corrected. I have posted the information below.

With that, I would like to ask a few additional questions as it relates to Chemours Company's permitting process.

Is this a reapplication after the 5-year timeframe, or simply a permit renewal and is there a difference? And what is the timeline for Chemours new permit? Does the NCDEQ's investigation have any impact on the timeline for permit renewal at this time? In other words, are you all waiting for the completed investigation before issuing a new permit to Chemours?

From last week; this section has been corrected to eliminate errors:
Chemours, like all manufacturing companies that discharge wastewater as part of their industrial operations, are required to obtain NPDES wastewater discharge permits from NCDEQ. In accordance with the federal Clean Water Act, wastewater discharge permit terms may not exceed five years.
Currently, NCDEQ is evaluating Chemours existing permit, which expired in October 2016. The facility is required to continue operating under the terms of its existing permit until NCDEQ issues a new permit. The state has said issuance of the new permit is on hold until their investigation into GenX is complete.
According to NCDEQ Assistant Secretary Sheila Holman, every five years companies are required to submit a renewal application to NCDEQ, which reports any changes in the facility's wastewater discharge volume and characteristics.~~The agency's rules set a permit shield of six months while the NCDEQ conducts this review process. During that time a company is allowed to operate under the existing permit.~~ *(See info above.)*
In NCDEQ's current evaluation of Chemours' application, and with the new information on GenX, the agency is looking into any additional changes that need to be made with company's existing permit before reissuing its new permit, Holman said.

A hope you all can at least provide a timely response to the questions and factual check on the circumstances of Chemours current stance as it relates to the NCDEQ's permitting process.

Thank you again for your time.

Regards,
Christina Haley O'Neal

Christina Haley O'Neal
Greater Wilmington Business Journal - Reporter
Office: 910-375-7290
Personal Phone / Ex. 6

To: Strynar, Mark[Strynar.Mark@epa.gov]; McCord, James[mccord.james@epa.gov]
Cc: Allen, Trent[trent.allen@ncdenr.gov]
From: Johnson, Chris
Sent: Wed 9/27/2017 5:21:41 PM
Subject: RE: EPA assessment of Chemours outfall challenge samples

Sorry. A compositor is an onsite sampler that pulls an aliquot of sample periodically over the course of several hours or days. The issue is that the sampler we have access to doesn't have electronic cooling and we won't be able to keep ice inside, so it will be sitting out in the sun. The sample could reach well over 100 degrees C. I would think it could be in the 120-140 degree range.

Chris Johnson
NC DEQ-DWR
Water Sciences Section
919-733-3908

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, September 27, 2017 12:54 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; McCord, James <mccord.james@epa.gov>
Cc: Allen, Trent <trent.allen@ncdenr.gov>
Subject: RE: EPA assessment of Chemours outfall challenge samples

Chris,

I do not know what a compositor is so I cannot comment on that. However, from what I have seen high temperature could depending on how high are high temperatures. The thermal breakdown of GenX into a water insoluble hydride is what they use to prevent waste release. It is a thermal decarboxylation of the GenX (and likely HFPO-DA) to a retainable or at least different end product.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, September 27, 2017 12:24 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; McCord, James <mccord.james@epa.gov>
Cc: Allen, Trent <trent.allen@ncdenr.gov>
Subject: RE: EPA assessment of Chemours outfall challenge samples

Thanks for going to that effort, Mark and James. Sounds like SGS hit it pretty close. Haven't heard back from GEL yet.

Mark, what is your opinion about using a compositor for collecting GenX samples? How would high temperatures affect the stability?

Chris Johnson
NC DEQ-DWR
Water Sciences Section
919-733-3908

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, September 27, 2017 11:29 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: McCord, James <mccord.james@epa.gov>
Subject: EPA assessment of Chemours outfall challenge samples

All,

Some time back James and I prepared challenge samples to assess the contract lab capability for you all. A blank, and two spike levels (as I recall 150 and 1000 ng/l but don't quote me on that. In addition we supplied a water samples with 1:2:1 Cape Fear river water at Chemours outfall 002 collected 5-15-17: Cape fear river water upstream: DI water. We prepared bottles for contract labs an our self to analyze. We were hoping for a consensus value from the labs that responded. Based on the data I saw that was not given.

We disposed of the sample for us on accident. I made up a new sample last week 1:3 Cape fear River at Chemours outfall 002 5-15-17: Di water.

See the attached results. We see around 2,500 ng/L GenX in that sample with duplicate injection. Our cal curve was from 50 to 3000 ng/L so it falls in the cal curve.

Mark

Dr. Mark J. Strynar
Physical Scientist
US EPA
National Exposure Research Laboratory
919-541-3706
Strynar.mark@epa.gov

To: Bob Pullano[rlp@gel.com]
Cc: bob.pullano@gel.com[bob.pullano@gel.com]; Culpepper, Linda[linda.culpepper@ncdenr.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Mrkt@gel.com[Mrkt@gel.com]
From: Johnson, Chris
Sent: Fri 9/1/2017 1:05:11 PM
Subject: RE: FW: QC Samples

Appreciate the info, Bob. Please provide shipping information if interested in receiving and testing the initial QC samples.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

Correspondence with this email address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Bob Pullano [mailto:rlp@gel.com]
Sent: Thursday, August 31, 2017 3:20 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: bob.pullano@gel.com; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Mrkt@gel.com
Subject: Re: FW: QC Samples

Hello Chris,

I have passed on this information to our Marketing Group who will provide a quote for your review and approval. They should have it completed tomorrow morning.

We look forward to working with you!

Please don't hesitate to contact me with any questions.

-Bob

On 8/31/2017 12:02 PM, Johnson, Chris wrote:

Good afternoon, Bob. Thanks for talking to me about GEL and the GenX vetting samples. Attached and below, you will find the information that was provided to the other contract laboratories regarding this QC testing. I have the set of samples ready to ship once you confirm GEL's interest and shipping instructions. If you decide to proceed, we would also need details regarding sample pricing and turn-around times. Please let me know if you have additional questions.

Chris Johnson
NC DEQ-DWR
Water Sciences Section
919-733-3908 ext224

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Friday, August 18, 2017 6:24 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Huffman, David J <david.huffman@ncdenr.gov>; Gregson, Jim <jim.gregson@ncdenr.gov>
Subject: RE: QC Samples

Here are the ten PFAS found in the Wellington PFAC MXA standard solution mixture.

Mark

From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, August 17, 2017 3:18 PM
To: Johnson, Chris;
Cc: Culpepper, Linda; Huffman, Gregson, Jim
Subject: RE: QC Samples

Chris,

That is correct. We also spiked into the same samples a mixed PFAS standard from Wellington Labs called PFAC MXA. It is made up of the C4-C10 perfluorocarboxylic acids, PFBS, PFHxS and PFOS (http://www.well-labs.com/docs/nat_and_ml_pfac24_17nov2016_wellington_reporter.pdf)

If they are running method 537 these are very familiar analytes.

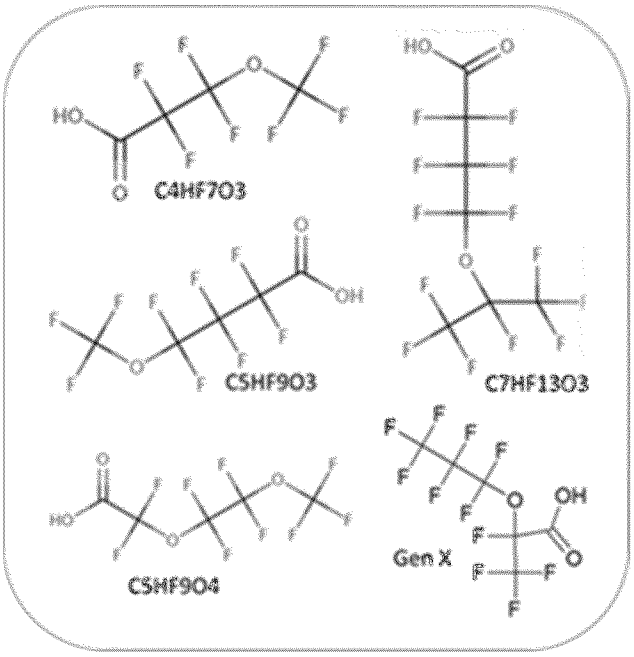
Chris I sent you additional details earlier on concentration and other sample details.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, August 17, 2017 3:01 PM

I provided a list of associated compounds below.

Here is the original list of what was being spiked into our earlier QC samples. The EPA laboratory has been extracting all these compounds by the same technique I believe. If not, Mark can correct me. These new samples should be similar:



Chris Johnson
NC DEQ-DWR
Water Sciences Section

Correspondence with this email address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

--
Bob Pullano
Director, Quality Systems

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417
Office Main: 843.556.8171 Ext. 4429 | Fax: 843.766.1178
E-Mail: rlp@gel.com | Website: www.gel.com
Environmental | Engineering | Surveying | Analytical Testing

Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!
http://www.gellaboratories.com

To: Culpepper, Linda[linda.culpepper@ncdenr.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Satterwhite, Dana[dana.satterwhite@ncdenr.gov]
Cc: Jim Flechtner[jim.flechtner@cfpua.org]; Beth Eckert[Beth.Eckert@cfpua.org]
From: Jill Deaney
Sent: Fri 7/21/2017 10:37:48 PM
Subject: RE: CFPUA Sweeney WTP GenX Laboratory Reports

Let me know if you have any questions or if you need contact information for Eurofins.

Jill

From: Culpepper, Linda [mailto:linda.culpepper@ncdenr.gov]
Sent: Friday, July 21, 2017 6:31 PM
To: Jill Deaney <Jill.Deaney@cfpua.org>; Strynar, Mark <Strynar.Mark@epa.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: FW: CFPUA Sweeney WTP GenX Laboratory Reports

Thank you, Jill. Sharing the reports with Mark and Dana so they see the Eurofins method, data and QA.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Jill Deaney [mailto:Jill.Deaney@cfpua.org]
Sent: Friday, July 21, 2017 6:17 PM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Beth Eckert <Beth.Eckert@cfpua.org>; Jim Flechtner <jim.flechtner@cfpua.org>; Jill Deaney <Jill.Deaney@cfpua.org>
Subject: CFPUA Sweeney WTP GenX Laboratory Reports

Please see the attached lab reports for GenX testing results for samples collected from the CFPUA Sweeney Water Treatment Plant from June 26, 2017 – July 18, 2017.

Jill Deaney
Laboratory Manager
Environmental Management Department
Cape Fear Public Utility Authority

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: McCord, James[mccord.james@epa.gov]
From: Johnson, Chris
Sent: Wed 10/11/2017 9:18:54 PM
Subject: RE: results
Contract Lab Comparison.xlsx

Good afternoon, guys. I finally received the results from the last contract laboratory. I've updated the comparison spreadsheet and am sending in for your information. Hope things are going well over there. Thanks.

Chris Johnson
NC DEQ-DWR
Water Sciences Section
919-733-3908

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Tuesday, September 05, 2017 10:43 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: McCord, James <mccord.james@epa.gov>
Subject: RE: results

Chris,

My first impressions would be.

For QCA they did well (lab blank)
For QCB (target 150 ng/L) they were spot on for most analytes (~150-160 ng/L) but a bit high on GenX (210 ng/L)
For QCC (target 1000 ng/L) they were within 20% for all analytes including GenX (1100-1200 ng/L)
For QCD I am unsure what is up. That sample was loaded with GenX and they report back 5 ng/L. We were hoping for a contract lab consensus value. Here it seems they missed.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Friday, September 01, 2017 4:46 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: FW: results

Results from Eurofins analyses.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: James Vernon [mailto:JamesVernon@eurofinsUS.com]
Sent: Friday, September 01, 2017 4:23 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Joe Mattheis <JosephMattheis@eurofinsUS.com>; Yongtao Li <YongtaoLi@eurofinsUS.com>
Subject: results

Please note comments for the sample :

SS-PFDA-13C2 @ 100 ng/L had a calculated result of 0%, which failed to pass the Surrogate Percent Recovery Lower Limit (70 to 130) (mccarty). The sample was re-extracted with similar results. Results may be low biased

FS-3760711 SS-PFHxA-13C2 @ 50 ng/L had a calculated result of 0%, which failed to pass the Surrogate Percent Recovery Lower Limit (70 to 130) (mccarty). The sample was re-extracted with similar results. Results may be low biased.

James Vernon
Analytical Services Manager

Eurofins Eaton Analytical, Inc.
110 South Hill Street, South Bend, IN 46617
Phone: +1 574 472 5558
Personal Phone / Ex. 6

Email: Jamesvernon@eurofinsus.com
Website: www.EurofinsUS.com/Eaton

		SGS	Q	Eurofins	Q	GEL	Q
QCA	PFBA	<2		NR		ND	U
	PFPeA	<2		NR		ND	U
	PFHxA	<2		<2		3.56	
	PFHpA	<2		<2		7.40	
	PFOA	0.2	J	<2		5.97	
	PFNA	<2		<2		0.826 (*)	J
	PFDA	0.3	J	<2		1.46 (*)	J
	PFBS	<2		<2		ND	U
	PFHxS	<2		<2		ND	U
	PFOS	<2		<2		0.712 (*)	J
	GenX	ND	U	<5		ND	U

		SGS	Q	Eurofins	Q	GEL	Q
QCB	PFBA	134		NR		171	
	PFPeA	139		NR		164	
	PFHxA	138		150		171	
	PFHpA	143		150		178	
	PFOA	142		150		151	
	PFNA	134		150		172	
	PFDA	133		150		143	
	PFBS	152		160		148	
	PFHxS	155		160		163	
	PFOS	144		150		159	
	GenX	238		210		256	

		SGS	Q	Eurofins	Q	GEL	Q
QCC	PFBA	803		NR		1090	
	PFPeA	832		NR		1070	
	PFHxA	889		1200		1190	
	PFHpA	876		1200		1030	
	PFOA	865		1200		1140	
	PFNA	871		1200		1260	
	PFDA	896		1200		1300	
	PFBS	885		1100		917	
	PFHxS	890		1200		951	
	PFOS	982		1100		1140	
	GenX	1220		1200		1500	

		SGS	Q	Eurofins	Q	GEL	Q
QCD	PFBA	20		NR		46.2	
	PFPeA	27.4		NR		41.9	
	PFHxA	12.8		<2		17.2	
	PFHpA	11		<2		13.5	
	PFOA	5.41		<2		9.35	
	PFNA	1.5	J	<2		2.52	
	PFDA	0.96	J	<2		1.39 (*)	J
	PFBS	2.41		3.2		2.61	
	PFHxS	4.49		6.0		5	
	PFOS	9.03		13		13.6	
	GenX	2370		<5		2890	

Note: These samples may have been delivered under different temperature or preservation conditions than usually prescribed by the contract laboratory. They also may have been tested outside the established holding time for the method being utilized. Any qualification assigned due to these conditions is not represented in the tables.

To: Strynar, Mark[Strynar.Mark@epa.gov]
From: Oneal, Gregg
Sent: Mon 10/30/2017 8:37:56 PM
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Thank you! See you tomorrow.
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

Nothing Compares

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Monday, October 30, 2017 4:27 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.

Yes front desk. 109 TW Alexander Dr.

My cell is Personal Phone / Ex. 6 f you have any issues.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Monday, October 30, 2017 2:55 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
We would like to visit with you and the lab form 10 to 11 am tomorrow. I feel an hour should be sufficient time unless you think otherwise. Should we just plan to meet you at the front desk?
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Monday, October 30, 2017 2:02 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: [External] RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

CAUTION: External email. Do not click links or open attachments unless verified. Send all suspicious email as an attachment to report.spam@nc.gov.

Tomorrow works fine from me between 7-11 AM. After that I am full. Wednesday is terrible for me. I am pretty much in meetings all day 9:30 am to 4:30 PM.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Monday, October 30, 2017 1:46 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I would like arrange a visit for some of the NC DAQ Tech Services staff to meet and see your lab sometime this week if possible. Tomorrow would be optimum or early Wednesday.
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

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1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, September 28, 2017 7:29 AM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Ok Gregg. FYI I do not run Method 537. That method is an EPA standard method. We run our own internal developed methods for PFAS.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Wednesday, September 27, 2017 3:11 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I think at this time with other issues taking priority over here at DAQ we will have to try to work out another date and time. I will try to get back with you sometime in the coming weeks to arrange this. I still very much want to see the M537 equipment.
Thanks
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, September 27, 2017 8:12 AM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,

Thursday from 3-4 PM is booked. I have to leave at 4 PM to attend my daughters volleyball game otherwise I am usually here to 4:30.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]

Sent: Tuesday, September 26, 2017 3:45 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
I think Thursday at 3:00pm would be nice based on your schedule. Please let me know if you are ok with this.

Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Tuesday, September 26, 2017 3:23 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

I am here all week. I have very little going on Friday from lunch to 3:30 PM if that works in your time slot. I am very bust Wednesday so it will not work for me. Thursday could work but I have meetings 10-11 am and from 1-3 pm.

Mark

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Tuesday, September 26, 2017 2:02 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark,
What is your arability this week? I have 3-4 of us that would like to visit and see this equipment in operation.
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Tuesday, September 26, 2017 1:14 PM
To: Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: RE: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Gregg,
I have UPLC-MS/MS and HPLC-MS/MS as well as TOFMS, and QTOFMS apparatus we use regularly for PFAS measurements. I am glad to show it to you anytime we are around. I have been working closely with Chris Johnson and Linda Culpepper at NCDEQ since the GenX issue broke in June 2017 for water analysis.

Let me know what you availability is.

Mark

From: Merrill, Raymond
Sent: Tuesday, September 26, 2017 1:08 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Cc: Merrill, Raymond <Merrill.Raymond@epa.gov>; Oneal, Gregg <gregg.oneal@ncdenr.gov>
Subject: FW: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Mark
I'm forwarding an email from Gregg Oneal at NC DENR.
From our phone conversation, I know that you are in contact with folks at NC DENR related to PFOA and/or PFOS analysis by LC/MS/MS.
Greg is in the air program at DENR and as you can read from his email below, he has a general interest in gathering information and some familiarity with the equipment used for these analyses.

With this introduction, I'll leave it in your hands to make the connection with Gregg formally.
Let me know if you need something from me.
Thanks
Ray

Raymond Merrill Ph.D. (Ray)| USEPA/OAQPS/AQAD/Measurement Technology Group
109 TW Alexander Drive (E143-02) | Research Triangle Park, NC 27711
email: merrill.raymond@epa.gov | Phone (919)541-5225 | Fax: (919) 541-0516

From: Oneal, Gregg [mailto:gregg.oneal@ncdenr.gov]
Sent: Tuesday, September 26, 2017 10:27 AM
To: Merrill, Raymond <Merrill.Raymond@epa.gov>
Subject: Would like to see an operational i.e. EPA's (HPLC/MS/MS)

Ray,
Does EPA-RTP have an operational (HPLC/MS/MS) that some of us from NCDEQ-DAQ Technical Services could see? This is the

equipment listed in the EPA Drinking Water Method 537 and does the PFOA lab analysis. Do you know a contact? Some of us would like to get a better understanding if possible of this analysis and the equipment operation.
Thanks,
Gregg

Thomas Gregg O'Neal, III, P.E.
Engineer
Division of Air Quality, Technical Services Section
North Carolina Department of Environmental Quality

919 707-8415 office
gregg.oneal@ncdenr.gov

217 West Jones Street
1601 Mail Service Center
Raleigh, NC 27699

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To: Jill.Deaney@cfpua.org[Jill.Deaney@cfpua.org]; Strynar, Mark[Strynar.Mark@epa.gov]; Satterwhite, Dana[dana.satterwhite@ncdenr.gov]
From: Culpepper, Linda
Sent: Fri 7/21/2017 10:30:30 PM
Subject: FW: CFPUA Sweeney WTP GenX Laboratory Reports
Sweeney Raw & Post GenX Report 7-3-17 and 7-5-17.pdf
Sweeney Raw & Post GenX Report 7-7-17, 7-10-17 & 7-12-17.pdf
Sweeney Raw & Post GenX Report 7-14-17, 7-15-17, 7-16-17 & 7-17-17.pdf
Sweeney Raw & Post GenX Report 7-18-17.pdf
Sweeney Raw & Post GenX Report 6-26-17.pdf
Sweeney Raw & Post GenX Report 6-28-17 & 6-30-17.pdf

Thank you, Jill. Sharing the reports with Mark and Dana so they see the Eurofins method, data and QA.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

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From: Jill Deaney [mailto:Jill.Deaney@cfpua.org]
Sent: Friday, July 21, 2017 6:17 PM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Beth Eckert <Beth.Eckert@cfpua.org>; Jim Flechtner <jim.flechtner@cfpua.org>; Jill Deaney <Jill.Deaney@cfpua.org>
Subject: CFPUA Sweeney WTP GenX Laboratory Reports

Please see the attached lab reports for GenX testing results for samples collected from the CFPUA Sweeney Water Treatment Plant from June 26, 2017 – July 18, 2017.

Jill Deaney
Laboratory Manager
Environmental Management Department
Cape Fear Public Utility Authority

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received 7-11-17 CC

110 S. Hill Street
South Bend, IN 46617
T: 1.800.332.4345
F: 1.574.233.8207

dmw 5/6/19 Order # ~~321759~~ 322232

Batch # 392134

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Page 1 of 1

Shaded area for EEA use only

REPORT TO:
Jill Deaney - Lab Manager
235 Government Center Dr.
Wilmington NC 28403

BILL TO:
CAPEFEARPUA-NC Finance
235 Government Center Dr.
Wilmington NC 28403

SAMPLER (Signature): [signature]

PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
04-65-010	NC	GenX Testing	170004

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
		X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726590	6-26-17	4:50		✓	Sweeney Water Treatment Plant - Post	GenX	Please hold samples until testing can be done even if its out of hold time	X		~~27~~	DW	SW
2	591	6-26-17	5:05		✓	Sweeney Water Treatment Plant - Raw	GenX			X	~~27~~ 33 6-28-17	DW	SW
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

COPY

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
[signature]	6-27-17	1703 AM PM	Crystal Callahan	6-27-17	1703 AM PM
Crystal Callahan	6-27-17	1717 AM PM			AM PM
		AM PM	RECEIVED FOR LABORATORY BY: [signature]	6-28-17	1000 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS: Client provided "B" vial for each site 6-28-17

CONDITIONS UPON RECEIPT (check one): X Iced: Wet/Blue ___ Ambient 4.2 °C Upon Receipt ___ N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

ED_002003J_00095807-00001

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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Arkansas	IN00035	New Hampshire*	2124
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Colorado	IN035	New Mexico	IN00035
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
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Idaho	IN00035	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	17767	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA170006	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

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Revision date: 05/15/2017

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LABORATORY CASE NARRATIVE

Client: Cape Fear Public Utility Authority

Report #: 392134CN

All method QC was within acceptance limits.

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	Account Manager	07/11/2017
Authorized Signature	Title	Date

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Sample Analysis Report

Client: Cape Fear Public Utility Authority
Contact: Jill Deaney
235 Government Center Drive
Wilmington, NC 28403
Voice: (910) 332-6441
jill.deaney@cfpua.org

Order No.: 322232
Receipt Batch No.: 392134

Analytical Method Summary for RD100:

Solid Phase Extraction LC/MS/MS – The client samples were extracted and analyzed for perfluoro-2-propoxypropanoic acid (GenX), CAS# 13252-13-6 and dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), CAS# 958445-44-8 (as ammonium salt). 250 mL of sample was extracted by following EPA method 537. The EPA method 537 surrogate standards (SS1-$^{13}C_2$-PFHxA and SS2-$^{13}C_2$-PFDA) were used. The final extracts were spiked with the internal standard (isotopically labeled $^{13}C_3$-GenX).

The analysis batch included a set of initial calibration standards in a concentration range of 2-250 ng/L, a laboratory reagent blank (LRB), a laboratory fortified blank (LFB) at 100 ng/L, and a continuing calibration check (CCC) at 100 ng/L. A matrix spike (MS) at 100 ng/L and a field duplicate (FD) were also performed. The linear calibration correlation coefficients (r^2) were 0.999 for both GenX and ADONA. The minimum reporting limit (MRL) was set at 2 ng/L for both analytes.

Note: Sample IDs 3726590 and 3726591 were collected in 45 mL vials and did not have 250 mL available for extraction. In order to achieve lower MRLs for these samples, the final extracts were reconstituted using only 200 µL instead of 1 mL.

Sample Results:

All quality control and sample results are reported in the following tables:

Quality Control Results:

Analyte	LRB (ng/L)	LFB Recovery (%)	Closing CCC Recovery (%)
GenX	< 2	90	102
ADONA	< 2	95	92

Sample Lab ID: 3726590 **Sample Site: Sweeney WTP - Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**156**	102	103	124	N/A
ADONA	< 2	102	103	124	N/A

Sample Lab ID: 3726591 **Sample Site: Sweeney WTP - Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**149**	110	112	125	N/A
ADONA	< 2	110	112	125	N/A

Analyst signature 07-11-2017 Date Reviewer signature 07-11-2017 Date

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dmw 7/6/17 Order # ~~321759~~ 322232
Batch # 392134

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	[signature]	04-65-010	NC	GenX Testing	170004

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726590	6-26-17	4:50		✓	Sweeney Water Treatment Plant - Post	GenX	Please hold samples until testing can be done even if its out of hold time	X		~~2~~	DW	SW
2	591	6-26-17	5:05		✓	Sweeney Water Treatment Plant - Raw	GenX			X	~~2~~	DW	SW
3											SS 6-28-17		
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
[signature]	6-27-17	1703 AM PM	Crystal Callahan	6-27-17	1703 AM PM
Crystal Callahan	6-27-17	1717 AM PM			AM PM
		AM PM	RECEIVED FOR LABORATORY BY: [signature]	6-28-17	1000 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS: Client provided "B" vial for each site SS 6-28-17

CONDITIONS UPON RECEIPT (check one): X Iced: Wet/Blue ___ Ambient 4.2 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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~~321759~~

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:
Jill Deaney - Lab Manager
235 Government Center Dr.
Wilmington NC 28403

BILL TO:
CAPEFEARPUA-NC Finance
235 Government Center Dr.
Wilmington NC 28403

SAMPLER (Signature): Crystal Callahan

PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
04-65-010	NC	GenX-SPE Testing	172065

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
		X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726576	6-28-17	0800	✓		Sweeney Water Treatment Plant - Post	GenX		X		2	DW	SW
2	3726577	6-28-17	0816	✓		Sweeney Water Treatment Plant - Raw	GenX			X	2	DW	SW
3													
4	3726578	6-30-17	1514		✓	Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	3726579	6-30-17	1526		✓	Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7													
8													
9													
10													
11													
12													
13													
14													

COPY

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-5-17	1610 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: [signature]	7/6/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

Client Provided Sample Container

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ___ Ambient ___ 3.2 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days) 0%
RV* = Rush Verbal: (5 working days) 50%
RW* = Rush Written: (5 working days) 75%
IV* = Immediate Verbal: (3 working days) 100%
IW* = Immediate Written: (3 working days) 125%
SP* = Weekend, Holiday CALL
STAT* = Less than 48 hours CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

ED_002003J_00095808-00001

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LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	NE-OS-05-04
Arizona	AZ0432	Nevada	IN00035
Arkansas	IN00035	New Hampshire*	2124
California	2920	New Jersey*	IN598
Colorado	IN035	New Mexico	IN00035
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon (Primary AB)*	4074-001
Idaho	IN00035	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	17767	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA170006	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 05/15/2017

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LABORATORY CASE NARRATIVE

Client: Cape Fear Public Utility Authority

Report #: 392131CN

All method QC was within acceptance limits.

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Authorized Signature	Title	Date
	Account Manager	07/11/2017

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Sample Analysis Report

Client: Cape Fear Public Utility Authority
Contact: Jill Deaney
235 Government Center Drive
Wilmington, NC 28403
Voice: (910) 332-6441
jill.deaney@cfpua.org

Order No.: 322232
Receipt Batch No.: 392131

Analytical Method Summary for RD100:

Solid Phase Extraction LC/MS/MS – The client samples were extracted and analyzed for perfluoro-2-propoxypropanoic acid (GenX), CAS# 13252-13-6 and dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), CAS# 958445-44-8 (as ammonium salt). 250 mL of sample was extracted by following EPA method 537. The EPA method 537 surrogate standards (SS1-$^{13}C_2$-PFHxA and SS2-$^{13}C_2$-PFDA) were used. The final extracts were spiked with the internal standard (isotopically labeled $^{13}C_3$-GenX).

The analysis batch included a set of initial calibration standards in a concentration range of 2-250 ng/L, a laboratory reagent blank (LRB), a laboratory fortified blank (LFB) at 100 ng/L, and a continuing calibration check (CCC) at 100 ng/L. A matrix spike (MS) at 100 ng/L and a field duplicate (FD) were also performed. The linear calibration correlation coefficients (r^2) were 0.999 for both GenX and ADONA. The minimum reporting limit (MRL) was set at 2 ng/L for both analytes.

Note: Sample IDs 3726576 and 3726577 were collected in 45 mL vials and did not have 250 mL available for extraction. In order to achieve lower MRLs for these samples, the final extracts were reconstituted using only 200 µL instead of 1 mL.

Sample Results:

All quality control and sample results are reported in the following tables:

Quality Control Results:

Analyte	LRB (ng/L)	LFB Recovery (%)	Closing CCC Recovery (%)
GenX	< 2	90	102
ADONA	< 2	95	92

Sample Lab ID: 3726576 **Sample Site: Sweeney Wtr Trtmnt Plt - Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**120**	119	123	114	N/A
ADONA	< 2	119	123	114	N/A

Sample Lab ID: 3726577 **Sample Site: Sweeney Wtr Trtmnt Plt - Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**87.5**	98	101	132	N/A
ADONA	< 2	98	101	132	N/A

Sample Lab ID: 3726578 **Sample Site: Sweeney Wtr Trtmnt Plt - Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS Recovery (%)
GenX	**89.5**	107	106	99	89
ADONA	< 2	107	106	99	96

Sample Lab ID: 3726579 **Sample Site: Sweeney Wtr Trtmnt Plt - Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**68.6**	96	94	119	N/A
ADONA	< 2	96	94	119	N/A

Analyst signature 07-11-2017 Date Reviewer signature 07-11-2017 Date

322232

~~321759~~

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Order # ~~321867~~

Batch # 392131

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CHAIN OF CUSTODY RECORD

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	Crystal Callahan	04-65-010	NC	GenX-SPE Testing	172056

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726576	6-28-17	0800	✓		Sweeney Water Treatment Plant - Post	GenX		X		2	DW	SW
2	3726577	6-28-17	0816	✓		Sweeney Water Treatment Plant - Raw	GenX			X	2	DW	SW
3													
4	3726578	6-30-17	1514		✓	Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	3726579	6-30-17	1526		✓	Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-5-17	1610 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: [signature]	DATE 7/6/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

Client Provided Sample Container

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ____ Ambient 3.2 °C Upon Receipt ____ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days) 0%
RV* = Rush Verbal: (5 working days) 50%
RW* = Rush Written: (5 working days) 75%
IV* = Immediate Verbal: (3 working days) 100%
IW* = Immediate Written: (3 working days) 125%
SP* = Weekend, Holiday CALL
STAT* = Less than 48 hours CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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received 7-11-17 CC

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Order # ~~321867~~ 322232
Batch # 392132

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:
Jill Deaney - Lab Manager
235 Government Center Dr.
Wilmington NC 28403

BILL TO:
CAPEFEARPUA-NC Finance
235 Government Center Dr.
Wilmington NC 28403

SAMPLER (Signature): Crystal Callahan

PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
04-65-010	NC	GenX-SPE Testing	180087

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
		X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726584	7-3-17	0809	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
2	3726585	7-3-17	0844	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
3													
4	3726586	7-5-17	0920	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	3726587	7-5-17	0837	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7													
8													
9													
10													
11													
12													
13													
14													

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RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-5-17	1610 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: [signature]	DATE 7/6/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS: Client Provided Sample Container

CONDITIONS UPON RECEIPT (check one): ___ Iced Wet/Blue ___ Ambient ___ °C Upon Receipt 3.2 N/A

MATRIX CODES:
DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

ED_002003J_00095809-00001

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Order # ~~321867~~ 322232
Batch # 392132

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	Crystal Callahan	04-65-010	NC	GenX-SPE Testing	180087

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726584	7-3-17	0809	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
2	3726585	7-3-17	0844	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
3													
4	3726586	7-5-17	0920	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	3726587	7-5-17	0837	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-5-17	1610 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: [signature]	DATE 7/6/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

Client Provided Sample Container

CONDITIONS UPON RECEIPT (check one): ___ Iced: Wet/Blue ___ Ambient 3.2 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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LABORATORY REPORT

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	NE-OS-05-04
Arizona	AZ0432	Nevada	IN00035
Arkansas	IN00035	New Hampshire*	2124
California	2920	New Jersey*	IN598
Colorado	IN035	New Mexico	IN00035
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon (Primary AB)*	4074-001
Idaho	IN00035	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	17767	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA170006	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 05/15/2017

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LABORATORY CASE NARRATIVE

Client: Cape Fear Public Utility Authority

Report #: 392132CN

All method QC was within acceptance limits.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature	Title	Date
	Account Manager	07/11/2017

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Sample Analysis Report

Client: Cape Fear Public Utility Authority
Contact: Jill Deaney
235 Government Center Drive
Wilmington, NC 28403
Voice: (910) 332-6441
jill.deaney@cfpua.org

Order No.: 322232
Receipt Batch No.: 392132

Analytical Method Summary for RD100:

Solid Phase Extraction LC/MS/MS – The client samples were extracted and analyzed for perfluoro-2-propoxypropanoic acid (GenX), CAS# 13252-13-6 and dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), CAS# 958445-44-8 (as ammonium salt). 250 mL of sample was extracted by following EPA method 537. The EPA method 537 surrogate standards (SS1-$^{13}C_2$-PFHxA and SS2-$^{13}C_2$-PFDA) were used. The final extracts were spiked with the internal standard (isotopically labeled $^{13}C_3$-GenX).

The analysis batch included a set of initial calibration standards in a concentration range of 2-250 ng/L, a laboratory reagent blank (LRB), a laboratory fortified blank (LFB) at 100 ng/L, and a continuing calibration check (CCC) at 100 ng/L. A matrix spike (MS) at 100 ng/L and a field duplicate (FD) were also performed. The linear calibration correlation coefficients (r^2) were 0.999 for both GenX and ADONA. The minimum reporting limit (MRL) was set at 2 ng/L for both analytes.

Sample Results:

All quality control and sample results are reported in the following tables:

Quality Control Results:

Analyte	LRB (ng/L)	LFB Recovery (%)	Closing CCC Recovery (%)
GenX	< 2	90	102
ADONA	< 2	95	92

Sample Lab ID: 3726584 **Sample Site: Sweeney Wtr Trtmnt Plt - Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**55.4**	97	97	107	N/A
ADONA	< 2	97	97	107	N/A

Sample Lab ID: 3726585 **Sample Site: Sweeney Wtr Trtmnt Plt - Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**55.6**	95	93	117	N/A
ADONA	< 2	95	93	117	N/A

Sample Lab ID: 3726586 **Sample Site: Sweeney Wtr Trtmnt Plt - Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	FD RPD Calc. (%)
GenX	**87.4**	108	107	100	1.96
ADONA	< 2	108	107	100	N/A

Sample Lab ID: 3726587 **Sample Site: Sweeney Wtr Trtmnt Plt - Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**93.9**	95	94	115	N/A
ADONA	< 2	95	94	115	N/A

Analyst signature 07-11-2017 Date

Reviewer signature 07-11-2017 Date

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South Bend, IN 46617
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F: 1.574.233.8207

Order # ~~321867~~ 322232
Batch # 392132

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CHAIN OF CUSTODY RECORD

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	Crystal Callahan	04-65-010	NC	GenX-SPE Testing	180087

BILL TO:	COMPLIANCE MONITORING Yes	COMPLIANCE MONITORING No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403		X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3726584	7-3-17	0809	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
2	3726585	7-3-17	0844	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
3													
4	3726586	7-5-17	0920	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	3726587	7-5-17	0837	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7													
8													
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-5-17	1610 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: M G Murac	DATE 7/6/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

Client Provided Sample Container

CONDITIONS UPON RECEIPT (check one): ___ Iced: Wet/Blue ___ Ambient 3.2 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

ED_002003J_00095809-00008

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Rec'd 7-19-17 CC

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Order # 322232
Batch # 3927165

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:
Jill Deaney - Lab Manager
235 Government Center Dr.
Wilmington NC 28403

BILL TO:
CAPEFEARPUA-NC Finance
235 Government Center Dr.
Wilmington NC 28403

SAMPLER (Signature): Crystal Callahan

PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
04-65-010	NC	GenX-SPE Testing	180087

COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
		X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3731244	7-7-17	0817	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
2	245	7-7-17	0802	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
3													
4	246	7-10-17	0806	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	247	7-10-17	0838	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7	248	7-12-17	0818	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	SW
8	249	7-12-17	0849	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	SW
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-12-17	1235 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: dMartin	DATE 7/13/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS: Clients bottles for the first 4 sets on COC. dm

COPY

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ___ Ambient 1.4 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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LABORATORY REPORT

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	NE-OS-05-04
Arizona	AZ0432	Nevada	IN00035
Arkansas	IN00035	New Hampshire*	2124
California	2920	New Jersey*	IN598
Colorado	IN035	New Mexico	IN00035
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon (Primary AB)*	4074-001
Idaho	IN00035	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	17767	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA170006	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 05/15/2017

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LABORATORY CASE NARRATIVE

Client: Cape Fear Public Utility Authority

Report #: 392765CN

All method QC was within acceptance limits.

Note: Sample containers were provided by the client.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature	Title	Date
	Account Manager	07/19/2017

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Sample Analysis Report

Client: Cape Fear Public Utility Authority
Contact: Jill Deaney
235 Government Center Drive
Wilmington, NC 28403
Voice: (910) 332-6441
jill.deaney@cfpua.org

Order No.: 322232
Receipt Batch No.: 392765

Analytical Method Summary for RD100:

Solid Phase Extraction LC/MS/MS – The client samples were extracted and analyzed for perfluoro-2-propoxypropanoic acid (GenX), CAS# 13252-13-6 and dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), CAS# 958445-44-8 (as ammonium salt). 250 mL of sample was extracted by following EPA method 537. The EPA method 537 surrogate standards (SS1-$^{13}C_2$-PFHxA and SS2-$^{13}C_2$-PFDA) were used. The final extracts were spiked with the internal standard (isotopically labeled $^{13}C_3$-GenX).

The analysis batch included a set of initial calibration standards in a concentration range of 2-250 ng/L, a laboratory reagent blank (LRB), a laboratory fortified blank (LFB) at 100 ng/L, and a continuing calibration check (CCC) at 100 ng/L. A matrix spike (MS) at 100 ng/L and a field duplicate (FD) were also performed. The linear calibration correlation coefficients (r^2) were 0.999 for both GenX and ADONA. The minimum reporting limit (MRL) was set at 2 ng/L for both analytes

Sample Results:

All quality control and sample results are reported in the following tables:

Quality Control Results:

Analyte	LRB (ng/L)	LFB Recovery (%)	Closing CCC Recovery (%)
GenX	< 2	96	100
ADONA	< 2	101	95

Sample Lab ID: 3731244 **Sample Site: SweeneyWTP-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**132**	109	107	95	N/A
ADONA	< 2	109	107	95	N/A

Sample Lab ID: 3731246 **Sample Site: SweeneyWTP-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**145**	109	107	97	N/A
ADONA	< 2	109	107	97	N/A

Sample Lab ID: 3731248 **Sample Site: SweeneyWTP-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS Recovery (%)
GenX	**122**	112	112	94	90
ADONA	< 2	112	112	94	100

Sample Lab ID: 3731245 **Sample Site: SweeneyWTP-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**136**	107	105	97	N/A
ADONA	< 2	107	105	97	N/A

Sample Lab ID: 3731247 **Sample Site: SweeneyWTP-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**102**	107	105	101	N/A
ADONA	< 2	107	105	101	N/A

Sample Lab ID: 3731249 **Sample Site: SweeneyWTP-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**93.0**	111	108	93	N/A
ADONA	< 2	111	108	93	N/A

Analyst signature 07-19-2017 Date

Reviewer signature 07/19/2017 Date

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Batch # 3927165

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	Crystal Callahan	04-65-010	NC	GenX-SPE Testing	180087

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3731244	7-7-17	0817	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
2	245	7-7-17	0802	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
3													
4	246	7-10-17	0806	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		3	DW	SW
5	247	7-10-17	0838	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	3	DW	SW
6													
7	248	7-12-17	0818	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	SW
8	249	7-12-17	0849	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	SW
9													
10													
11													
12													
13													
14													

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-12-17	1235 AM (PM)			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: dMartin	DATE 7/13/17	TIME 0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS: Clients bottles for the first 4 sets on COC. dm

CONDITIONS UPON RECEIPT (check one): ✓ Iced: Wet/Blue ___ Ambient 1.4 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) - SURCHARGES

SW = Standard Written: (15 working days) 0%
RV* = Rush Verbal: (5 working days) 50%
RW* = Rush Written: (5 working days) 75%
IV* = Immediate Verbal: (3 working days) 100%
IW* = Immediate Written: (3 working days) 125%
SP* = Weekend, Holiday CALL
STAT* = Less than 48 hours CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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Batch # 393107

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	Crystal Callahan	04-65-010	NC	GenX-SPE Testing	180307

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3734 286	7-14-17	0820	✓		Sweeney Water Treatment Plant - Post	GenX-SPE	Best TAT possible	X		2	DW	IV
2	287	7-14-17	0807	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
3													
4	288	7-15-17	0833	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	IV
5	289	7-15-17	0849	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
6													
7	290	7-16-17	1146	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	IV
8	291	7-16-17	1131	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
9													
10	292	7-17-17	0758	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	IV
11	293	7-17-17	0825	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
12													
13													
14													

Immediate Verbal

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-17-17	1225 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
		AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED FOR LABORATORY BY:	DATE	TIME
		AM PM	[signature]	7/18/17	0945 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

COPY

CONDITIONS UPON RECEIPT (check one): X Iced Wet/Blue ___ Ambient 3 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) SURCHARGES

SW = Standard Written: (15 working days) 0%
RV* = Rush Verbal: (5 working days) 50%
RW* = Rush Written: (5 working days) 75%
IV* = Immediate Verbal: (3 working days) 100%
IW* = Immediate Written: (3 working days) 125%
SP* = Weekend, Holiday CALL
STAT* = Less than 48 hours CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LQ-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

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LABORATORY REPORT

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STATE CERTIFICATION LIST

State	Certification	State	Certification
Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	NE-OS-05-04
Arizona	AZ0432	Nevada	IN00035
Arkansas	IN00035	New Hampshire*	2124
California	2920	New Jersey*	IN598
Colorado	IN035	New Mexico	IN00035
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon (Primary AB)*	4074-001
Idaho	IN00035	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	17767	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA170006	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
Michigan	9926	West Virginia	9927 C
Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 05/15/2017

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LABORATORY CASE NARRATIVE

Client: Cape Fear Public Utility Authority

Report #: 393107CN

All method QC was within acceptance limits.

Note: This report may not be reproduced, except in full, without written approval from EEA.

Authorized Signature	Title	Date
	Account Manager	07/21/2017

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Sample Analysis Report

Client: Cape Fear Public Utility Authority
Contact: Jill Deaney
235 Government Center Drive
Wilmington, NC 28403
Voice: (910) 332-6441
jill.deaney@cfpua.org

Order No.: 322232
Receipt Batch No.: 393107

Analytical Method Summary for RD100:

Solid Phase Extraction LC/MS/MS – The client samples were extracted and analyzed for perfluoro-2-propoxypropanoic acid (GenX), CAS# 13252-13-6 and dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), CAS# 958445-44-8 (as ammonium salt). 250 mL of sample was extracted by following EPA method 537. The EPA method 537 surrogate standards (SS1-$^{13}C_2$-PFHxA and SS2-$^{13}C_2$-PFDA) were used. The final extracts were spiked with the internal standard (isotopically labeled $^{13}C_3$-GenX).

The analysis batch included a set of initial calibration standards in a concentration range of 2-250 ng/L, a laboratory reagent blank (LRB), a laboratory fortified blank (LFB) at 100 ng/L, and a continuing calibration check (CCC) at 100 ng/L. A matrix spike (MS) at 100 ng/L and a field duplicate (FD) were also performed. The linear calibration correlation coefficients (r^2) were 0.999 for both GenX and ADONA. The minimum reporting limit (MRL) was set at 2 ng/L for both analytes.

Sample Results:

* Gen X results for samples 3734291 and 3734292 were reported from 10x dilutions.

All quality control and sample results are reported in the following tables:

Quality Control Results:

Analyte	LRB (ng/L)	LFB Recovery (%)	Closing CCC Recovery (%)	Closing CCC Recovery for Dilutions (%)
GenX	< 2	93	105	104
ADONA	< 2	96	96	N/A

Sample Lab ID: 3734286 **Sample Site: SweeneyWaterTreatmentPlt-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS Recovery (%)
GenX	**113**	111	111	94	116
ADONA	< 2	111	111	94	110

Sample Lab ID: 3734287 **Sample Site: SweeneyWaterTreatmentPlt-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**114**	108	105	103	N/A
ADONA	< 2	108	105	103	N/A

Sample Lab ID: 3734288 **Sample Site: SweeneyWaterTreatmentPlt-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**127**	111	109	96	N/A
ADONA	< 2	111	109	96	N/A

Sample Lab ID: 3734289 **Sample Site: SweeneyWaterTreatmentPlt-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**194**	109	104	107	N/A
ADONA	< 2	109	104	107	N/A

Sample Lab ID: 3734290 **Sample Site: SweeneyWaterTreatmentPlt-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	FD RPD Calc. (%)
GenX	**250**	109	108	98	0.30
ADONA	< 2	109	108	98	N/A

Sample Lab ID: 3734291 **Sample Site: SweeneyWaterTreatmentPlt-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**336 ***	101	98	107	N/A
ADONA	< 2	101	98	107	N/A

Sample Lab ID: 3734292 **Sample Site: SweeneyWaterTreatmentPlt-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**286 ***	110	108	95	N/A
ADONA	< 2	110	108	95	N/A

Sample Lab ID: 3734293 **Sample Site: SweeneyWaterTreatmentPlt-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**166**	111	106	101	N/A
ADONA	< 2	111	106	101	N/A

Christina McCarty 07/21/2017
Analyst signature Date

07/21/2017
Reviewer signature Date

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Batch # 393107

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CHAIN OF CUSTODY RECORD

Page 1 of 1

REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403	Crystal Callahan	04-65-010	NC	GenX-SPE Testing	180307

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3734 286	7-14-17	0820	✓		Sweeney Water Treatment Plant - Post	GenX-SPE	Best TAT possible	X		2	DW	IV
2	287	7-14-17	0807	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
3													
4	288	7-15-17	0833	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	IV
5	289	7-15-17	0849	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
6													
7	290	7-16-17	1146	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	IV
8	291	7-16-17	1131	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
9													
10	292	7-17-17	0758	✓		Sweeney Water Treatment Plant - Post	GenX-SPE		X		2	DW	IV
11	✓ 293	7-17-17	0825	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
12													
13													
14													

Immediate Verbal

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
Crystal Callahan	7-17-17	1225 AM PM			AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY: [signature]	7-18-17	0945 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

CONDITIONS UPON RECEIPT (check one): X Iced Wet/Blue ___ Ambient 3 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) SURCHARGES

SW = Standard Written: (15 working days) 0%
RV* = Rush Verbal: (5 working days) 50%
RW* = Rush Written: (5 working days) 75%
IV* = Immediate Verbal: (3 working days) 100%
IW* = Immediate Written: (3 working days) 125%
SP* = Weekend, Holiday CALL
STAT* = Less than 48 hours CALL

* Please call, expedited service not available for all testing

Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

ED_002003J_00095811-00009

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Page 1 of 1

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REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403		04-65-010	NC	GenX-SPE Testing	180307

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3735383	7-18-17	0811	✓		Sweeney Water Treatment Plant - Post	GenX-SPE	Best TAT possible	X		2	DW	IV
2	3735384	7-18-17	0831	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

Immediate Verbal

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
	7-18-17	1143 AM PM	Crystal Callahan	7-18-17	1143 AM PM
Crystal Callahan	7-18-17	1208 AM PM			AM PM
		AM PM	RECEIVED FOR LABORATORY BY:	7-19-17	0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

COPY

CONDITIONS UPON RECEIPT (check one): X Iced, Wet/Blue ___ Ambient 0.4 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

TURN-AROUND TIME (TAT) SURCHARGES

SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* = Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

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Samples received unannounced with less than 48 hours holding time remaining may be subject to additional charges.

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ED_002003J_00095812-00001

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PAID

LABORATORY REPORT

If you have any questions concerning this report, please do not hesitate to call us at (800) 332-4345 or (574) 233-4777.

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STATE CERTIFICATION LIST

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Alabama	40700	Montana	CERT0026
Alaska	IN00035	Nebraska	NE-OS-05-04
Arizona	AZ0432	Nevada	IN00035
Arkansas	IN00035	New Hampshire*	2124
California	2920	New Jersey*	IN598
Colorado	IN035	New Mexico	IN00035
Colorado Radiochemistry	IN035	New York*	11398
Connecticut	PH-0132	North Carolina	18700
Delaware	IN035	North Dakota	R-035
Florida*	E87775	Ohio	87775
Georgia	929	Oklahoma	D9508
Hawaii	IN035	Oregon (Primary AB)*	4074-001
Idaho	IN00035	Pennsylvania*	68-00466
Illinois*	200001	Puerto Rico	IN00035
Illinois Microbiology	17767	Rhode Island	LAO00343
Indiana Chemistry	C-71-01	South Carolina	95005
Indiana Microbiology	M-76-07	South Dakota	IN00035
Iowa	098	Tennessee	TN02973
Kansas*	E-10233	Texas*	T104704187-15-8
Kentucky	90056	Texas/TCEQ	TX207
Louisiana*	LA170006	Utah*	IN00035
Maine	IN00035	Vermont	VT-8775
Maryland	209	Virginia*	460275
Massachusetts	M-IN035	Washington	C837
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Minnesota*	018-999-338	Wisconsin	999766900
Mississippi	IN035	Wyoming	IN035
Missouri	880		

*NELAP/TNI Recognized Accreditation Bodies

Revision date: 05/15/2017

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LABORATORY CASE NARRATIVE

Client: Cape Fear Public Utility Authority

Report #: 393267CN

All method QC was within acceptance limits.

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Authorized Signature	Title	Date
	Account Manager	07/21/2017

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Sample Analysis Report

Client: Cape Fear Public Utility Authority
Contact: Jill Deaney
235 Government Center Drive
Wilmington, NC 28403
Voice: (910) 332-6441
jill.deaney@cfpua.org

Order No.: 322232
Receipt Batch No.: 393267

Analytical Method Summary for RD100:

Solid Phase Extraction LC/MS/MS – The client samples were extracted and analyzed for perfluoro-2-propoxypropanoic acid (GenX), CAS# 13252-13-6 and dodecafluoro-3H-4,8-dioxanonanoic acid (ADONA), CAS# 958445-44-8 (as ammonium salt). 250 mL of sample was extracted by following EPA method 537. The EPA method 537 surrogate standards (SS1-$^{13}C_2$-PFHxA and SS2-$^{13}C_2$-PFDA) were used. The final extracts were spiked with the internal standard (isotopically labeled $^{13}C_3$-GenX).

The analysis batch included a set of initial calibration standards in a concentration range of 2-250 ng/L, a laboratory reagent blank (LRB), a laboratory fortified blank (LFB) at 100 ng/L, and a continuing calibration check (CCC) at 100 ng/L. A matrix spike (MS) at 100 ng/L and a field duplicate (FD) were also performed. The linear calibration correlation coefficients (r^2) were 0.999 for both GenX and ADONA. The minimum reporting limit (MRL) was set at 2 ng/L for both analytes.

Sample Results:

All quality control and sample results are reported in the following tables:

Quality Control Results:

Analyte	LRB (ng/L)	LFB Recovery (%)	Closing CCC Recovery (%)
GenX	< 2	93	105
ADONA	< 2	96	96

Sample Lab ID: 3735383 **Sample Site: SweeneyWaterTreatmentPlt-Post**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**185**	107	102	96	N/A
ADONA	< 2	107	102	96	N/A

Sample Lab ID: 3735384 **Sample Site: SweeneyWaterTreatmentPlant-Raw**

Analyte	Result (ng/L)	SS1 Recovery (%)	SS2 Recovery (%)	IS Recovery (%)	MS or FD
GenX	**128**	109	102	102	N/A
ADONA	< 2	109	102	102	N/A

Christina LMcCarty 07/21/2017 Longtaoff 07/21/2017

Analyst signature Date Reviewer signature Date

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Order # 322232
Batch # 373267

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REPORT TO:	SAMPLER (Signature)	PWS ID #	STATE (sample origin)	PROJECT NAME	PO#
Jill Deaney - Lab Manager 235 Government Center Dr. Wilmington NC 28403		04-65-010	NC	GenX-SPE Testing	160307

BILL TO:	COMPLIANCE MONITORING	Yes	No	POPULATION SERVED	SOURCE WATER
CAPEFEARPUA-NC Finance 235 Government Center Dr. Wilmington NC 28403			X	135,204	Surface Water

	LAB Number	COLLECTION DATE	TIME	AM	PM	SAMPLING SITE	TEST NAME	SAMPLE REMARKS	CHLORINATED YES	CHLORINATED NO	# OF CONTAINERS	MATRIX CODE	TURNAROUND TIME
1	3735383	7-18-17	0811	✓		Sweeney Water Treatment Plant - Post	GenX-SPE	Best TAT possible	X		2	DW	IV
2	3735384	7-18-17	0831	✓		Sweeney Water Treatment Plant - Raw	GenX-SPE			X	2	DW	IV
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													

Immediate Verbal

RELINQUISHED BY:(Signature)	DATE	TIME	RECEIVED BY:(Signature)	DATE	TIME
	7-18-17	1143 AM PM	Crystal Callahan	7-18-17	1143 AM PM
RELINQUISHED BY:(Signature) Crystal Callahan	7-18-17	1208 AM PM	RECEIVED BY:(Signature)	DATE	TIME AM PM
RELINQUISHED BY:(Signature)	DATE	TIME AM PM	RECEIVED FOR LABORATORY BY:	7-19-17	0930 AM PM

LAB RESERVES THE RIGHT TO RETURN UNUSED PORTIONS OF NON-AQUEOUS SAMPLES TO CLIENT

LAB COMMENTS

CONDITIONS UPON RECEIPT (check one): X Iced Wet/Blue ___ Ambient 0.4 °C Upon Receipt ___ N/A

MATRIX CODES:

DW-DRINKING WATER
RW-REAGENT WATER
GW-GROUND WATER
EW-EXPOSURE WATER
SW-SURFACE WATER
PW-POOL WATER
WW-WASTE WATER

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SW = Standard Written: (15 working days)	0%	IV* = Immediate Verbal: (3 working days)	100%
RV* = Rush Verbal: (5 working days)	50%	IW* =Immediate Written: (3 working days)	125%
RW* = Rush Written: (5 working days)	75%	SP* = Weekend, Holiday	CALL
		STAT* = Less than 48 hours	CALL

* Please call, expedited service not available for all testing

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06-LO-F0435 Issue 4.0 Effective Date: 2014-05-01

Sample analysis will be provided according to the standard EEA/Water Services Terms, which are available upon request. Any other terms proposed by Customer are deemed material alterations and are rejected unless expressly agree to in writing by EEA.

To: Culpepper, Linda[linda.culpepper@ncdenr.gov]
Cc: Strynar, Mark[Strynar.Mark@epa.gov]; Jim Gregson[Jim.gregson@ncdenr.gov]
From: Beth Eckert
Sent: Thur 7/27/2017 1:41:00 PM
Subject: Re: Other standards we discussed

Mark can you send me a phone number and time that may be good for you?

Beth Eckert

On Jul 27, 2017, at 9:23 AM, Culpepper, Linda <linda.culpepper@ncdenr.gov> wrote:

Good morning Beth – connecting you with Dr. Strynar at the EPA lab.
See his email below.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, July 27, 2017 9:19 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Subject: RE: Other standards we discussed

We already have both of these and a handful of others we method validated with what we are doing for GenX in the NCDEQ samples.

However I would be glad to chat with them.

Mark

From: Culpepper, Linda [mailto:linda.culpepper@ncdenr.gov]
Sent: Thursday, July 27, 2017 9:11 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: FW: Other standards we discussed

Mark – I am not sure these are the compounds discussed.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

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From: Gregson, Jim
Sent: Wednesday, July 26, 2017 8:51 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>

Subject: FW: Other standards we discussed

Jim Gregson
Regional Supervisor
Water Quality Regional Operations Section
Division of Water Resources
Department of Environmental Quality

910.796.7215 Reception Desk
910.796.7386 Direct
910.350.2004 Fax
Jim.gregson@ncdenr.gov

Wilmington Regional Office
127 Cardinal Drive Ext
Wilmington, NC 28405

Email correspondence to and from this address is subject to the North Carolina Public Records Law and may be disclosed to third parties.

From: Beth Eckert [mailto:Beth.Eckert@cfpua.org]
Sent: Tuesday, July 25, 2017 7:37 PM
To: Gregson, Jim <jim.gregson@ncdenr.gov>
Cc: Beth Eckert <Beth.Eckert@cfpua.org>
Subject: Other standards we discussed

Jim,
In our discussion you mentioned EPA had not found standards for the other compounds in Dr. Knappe's study. Below are two standards that Eurofins has found, ordered, and received in house as of Monday. They have begun some quality control, method development, type activities and anticipate adding these compounds to their GenX method once they work through their process. Once that happens they will have results for these compounds any time they run the method which they anticipate will begin in 1 – 2 weeks. In case they would like to talk to someone at Eurofins to find out where they obtained the standards, I am also including our contacts information. Any thoughts on EPAs perspective of the analysis or data since they have not obtained these standards yet?

- Perfluoro-3-methoxypropanoic acid (PFMOPrA), CAS# 377-73-1
- Perfluoro-4-methoxybutanoic acid (PFMOBA), CAS# 863090-89-5

Our Eurofins contact:
Joseph M. Mattheis
Mobile: 919-376-7978
Email: JosephMattheis@EurofinsUS.com

Thanks,
Beth Eckert

<New NCSU PFECAs for water work.pptx>

To: Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Satterwhite, Dana[dana.satterwhite@ncdenr.gov]; Jones, Nick[nick.jones@ncdenr.gov]
From: Johnson, Chris
Sent: Fri 6/23/2017 2:12:10 PM
Subject: RE: Discussion for sampling and analysis in Wilmington

Thanks, Mark. I'm getting ready to head over your way. Will see you or your designee in a few minutes.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Friday, June 23, 2017 9:12 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Chris,

Out analytical SOP is currently in the process of being fully lab validated and updated for the inclusion of GenX. I will get that to you asap.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, June 22, 2017 3:12 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Mark, could you have a copy of your analytical SOP handy for my records?

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 22, 2017 9:24 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Brantley, Mark <mark.brantley@ncdenr.gov>; West, Steve <steve.west@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Okay. My cell is Personal Phone / Ex. 6 if you have any issues. I get in at 7 AM. Can we shoot for 9 AM in case I do not get finished prepping today.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, June 22, 2017 9:21 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>; Brantley, Mark <mark.brantley@ncdenr.gov>; West, Steve <steve.west@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I would like to come as early as possible in order to get the kits to Fayetteville. Perhaps before lunch if possible.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 22, 2017 9:16 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Chris,

I am working to get this done today. Let me know when you will be available to come and get sample container tomorrow.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, June 22, 2017 8:25 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Thanks for the reply, Mark.

I received word from the Wilmington RO and it looks like they will need 16 bottles to finish out their projected sampling. I haven't heard from the Fayetteville office, but based on what we've received from then for the first sampling event, I would think they need approximately 12 bottles to finish up. This is all based on the sampling being done this week.

Given the tight time frame for next week's sampling, we will probably need to drive the sample kits down to Fayetteville tomorrow afternoon if possible. I would also like to deliver the first set to you if we receive Wilmington's set in time. Either way, if there is any way we can have the sample kits ready tomorrow I would have time to get them to the samplers.

Thanks once again for your help on this project.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, June 22, 2017 6:50 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

One change Chris. I had wishful thinking. I am actually working on Friday and am not off. I will be here.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, June 21, 2017 4:39 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I will find out the number. Let me contact the regional folks. Thank you.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 21, 2017 4:09 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

I am off Friday but we could have them prepared for your visit to pick up. How many sample bottles do you need? We typically replicate sample 10% of the samples and have a trip blank and a high and low trip spike as well.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, June 21, 2017 1:53 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

It may be better if you could supply this material. Based on our conversation, the 1L bottles are preferable and we don't carry that size. Can we pick them up when we bring the first delivery? We may be able to get over there on Friday if that works with your schedules.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Wednesday, June 21, 2017 1:50 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>; Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

We could provide sample bottles if they are needed. In addition we have always included trip blanks and spikes with our assays for QA/QC purposes. We should strongly consider doing so in any future sampling efforts.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Wednesday, June 21, 2017 11:45 AM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Good morning. Wondering if you could clarify a question from the conference call yesterday. Will your laboratory be providing sample bottles and preservative for future sampling events? Also, I see from your 2009 SOP that blanks and spikes were mandated

for the coolers. If you require those, will they be provided? We aren't able to make the spikes since they can't be confirmed by analysis.

Thanks for your help.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Wednesday, June 21, 2017 8:04 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Chris,

Great.

Please let me know if I can help in any way as we proceed with this project.

We're very grateful for your help with coordinating this effort.

Thank you very much,

Andy

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Tuesday, June 20, 2017 3:39 PM
To: Lindstrom, Andrew <Lindstrom.Andrew@epa.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

Received. Thank you.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Lindstrom, Andrew [mailto:Lindstrom.Andrew@epa.gov]
Sent: Tuesday, June 20, 2017 2:57 PM
To: Buckley, Timothy <Buckley.Timothy@epa.gov>; Johnson, Chris <chris.johnson@ncdenr.gov>; Allenbach, Becky <Allenbach.Becky@epa.gov>; Strynar, Mark <Strynar.Mark@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>; Karoly, Cyndi <cyndi.karoly@ncdenr.gov>; Culpepper, Linda <linda.culpepper@ncdenr.gov>
Cc: Jones, Nick <nick.jones@ncdenr.gov>; Perez, Helen I <helen.perez@ncdenr.gov>; Satterwhite, Dana <dana.satterwhite@ncdenr.gov>
Subject: RE: Discussion for sampling and analysis in Wilmington

All,

I've attached a copy of the field collection protocol that we have been using for PFAS compounds including GenX.

The shipping address and storage conditions are specified on page 6.

Please let us know if you have any questions.

Thank you very much,

Andy

-----Original Appointment-----
From: Buckley, Timothy
Sent: Tuesday, June 20, 2017 1:20 PM
To: chris.johnson@ncdenr.gov; Allenbach, Becky; Strynar, Mark; Medina-Vera, Myriam; cyndi.karoly@ncdenr.gov; linda.culpepper@ncdenr.gov
Cc: Lindstrom, Andrew; Jones, Nick; Perez, Helen l; Satterwhite, Dana
Subject: Discussion for sampling and analysis in Wilmington
When: Tuesday, June 20, 2017 2:00 PM-2:30 PM (UTC-05:00) Eastern Time (US & Canada).
Where: Teleconference: Call in: Personal Phone / Ex. 6

Thank you all for making time for this discussion. I know that there is a lot of pressure to move quickly on this project. ORD/NERL is happy to provide analytical support. To guide our involvement/effort, I am hoping that collectively we can provide answers to the following questions.

1. What question are we attempting to address with this sampling effort?
2. What is the sampling design?
3. What is the status and timeline of the QAPP?
4. Given split sample analysis (contract lab and NERL lab), how will differences in reported concentrations be managed?
5. What is the plan for communicating results and who has the lead?
6. What is the project timeline?
7. Do we need on-going coordination meetings?

To: Culpepper, Linda[linda.culpepper@ncdenr.gov]
Cc: Strynar, Mark[Strynar.Mark@epa.gov]; Jim Gregson[Jim.gregson@ncdenr.gov]
From: Beth Eckert
Sent: Thur 7/27/2017 1:39:57 PM
Subject: Re: Other standards we discussed

Thanks Linda. I'm gonna get with my lab manager and s contact Mark together and discuss.

Beth Eckert

On Jul 27, 2017, at 9:23 AM, Culpepper, Linda <linda.culpepper@ncdenr.gov> wrote:

Good morning Beth – connecting you with Dr. Strynar at the EPA lab.
See his email below.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, July 27, 2017 9:19 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>
Subject: RE: Other standards we discussed

We already have both of these and a handful of others we method validated with what we are doing for GenX in the NCDEQ samples.

However I would be glad to chat with them.

Mark

From: Culpepper, Linda [mailto:linda.culpepper@ncdenr.gov]
Sent: Thursday, July 27, 2017 9:11 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: FW: Other standards we discussed

Mark – I am not sure these are the compounds discussed.

Linda Culpepper
Deputy Director
Division of Water Resources
North Carolina Department of Environmental Quality

1611 Mail Service Center
Phone: 919-707-9014

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From: Gregson, Jim
Sent: Wednesday, July 26, 2017 8:51 AM
To: Culpepper, Linda <linda.culpepper@ncdenr.gov>

Subject: FW: Other standards we discussed

Jim Gregson
Regional Supervisor
Water Quality Regional Operations Section
Division of Water Resources
Department of Environmental Quality

910.796.7215 Reception Desk
910.796.7386 Direct
910.350.2004 Fax
Jim.gregson@ncdenr.gov

Wilmington Regional Office
127 Cardinal Drive Ext
Wilmington, NC 28405

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From: Beth Eckert [mailto:Beth.Eckert@cfpua.org]
Sent: Tuesday, July 25, 2017 7:37 PM
To: Gregson, Jim <jim.gregson@ncdenr.gov>
Cc: Beth Eckert <Beth.Eckert@cfpua.org>
Subject: Other standards we discussed

Jim,
In our discussion you mentioned EPA had not found standards for the other compounds in Dr. Knappe's study. Below are two standards that Eurofins has found, ordered, and received in house as of Monday. They have begun some quality control, method development, type activities and anticipate adding these compounds to their GenX method once they work through their process. Once that happens they will have results for these compounds any time they run the method which they anticipate will begin in 1 – 2 weeks. In case they would like to talk to someone at Eurofins to find out where they obtained the standards, I am also including our contacts information. Any thoughts on EPAs perspective of the analysis or data since they have not obtained these standards yet?

- Perfluoro-3-methoxypropanoic acid (PFMOPrA), CAS# 377-73-1
- Perfluoro-4-methoxybutanoic acid (PFMOBA), CAS# 863090-89-5

Our Eurofins contact:
Joseph M. Mattheis
Mobile: Personal Phone / Ex. 6
Email: JosephMattheis@EurofinsUS.com

Thanks,
Beth Eckert

<New NCSU PFECAs for water work.pptx>

To: Tong-Argao, Sania[Tong-Argao.Sania@epa.gov]; Strynar, Mark[Strynar.Mark@epa.gov]
Cc: Medina-Vera, Myriam[Medina-Vera.Myriam@epa.gov]
From: Johnson, Chris
Sent: Tue 8/22/2017 6:13:22 PM
Subject: RE: QAPP

Thank you very much.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Tong-Argao, Sania [mailto:Tong-Argao.Sania@epa.gov]
Sent: Tuesday, August 22, 2017 2:10 PM
To: Strynar, Mark <Strynar.Mark@epa.gov>; Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>
Subject: RE: QAPP

Hi Mark (and Chris),

The QAPP is attached for reference.

Thanks,
Sania

From: Strynar, Mark
Sent: Tuesday, August 22, 2017 2:08 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Tong-Argao, Sania <Tong-Argao.Sania@epa.gov>; Medina-Vera, Myriam <Medina-Vera.Myriam@epa.gov>
Subject: RE: QAPP

Sania or Myriam,

What is the answer to this question from Chris?

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Tuesday, August 22, 2017 9:45 AM
To: Strynar, Mark <Strynar.Mark@epa.gov>
Subject: QAPP

Mark, has the GenX QAPP been finalized? If so, could we get a copy? Thanks!

Chris Johnson
Environmental Program Supervisor
Water Sciences Section / Organic Chemistry Branch

North Carolina Department of Environmental Quality
Division of Water Resources

919-733-3908 office

4405 Reedy Creek Road
Raleigh, NC 27607

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To: Joanne Harley[Joanne.Harley@gel.com]
Cc: Culpepper, Linda[linda.culpepper@ncdenr.gov]; Strynar, Mark[Strynar.Mark@epa.gov]; Byrd, Roy[roy.byrd@ncdenr.gov]; swift, marlene f[Marlene.Swift@ncdenr.gov]; Ascenzo, Tom[tom.ascenzo@ncdenr.gov]
From: Johnson, Chris
Sent: Thur 9/7/2017 10:33:42 PM
Subject: RE: FW: QC Samples

Very good. Thanks, Joanne.

I will be out of the office starting on Tuesday of next week (assuming the storm doesn't cause a delay in my trip) and will be back on Monday September 18th. I have copied Roy Byrd (inorganic chemistry group) and our receiving area staff (Marlene and Tom). I can have the samples ready to go and they can get them shipped to you as soon as we hear back from you. Please be sure to copy them with any correspondence. I will send them the shipping address you provided earlier.

Our best wishes to you all down in Charleston.

Chris Johnson
NC DEQ-DWR
Water Sciences Section

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From: Joanne Harley [mailto:Joanne.Harley@gel.com]
Sent: Thursday, September 07, 2017 6:12 PM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Strynar, Mark <Strynar.Mark@epa.gov>
Subject: Re: FW: QC Samples

Chris,

Thank you for this information. GEL has made the decision to close due to Hurrican Irma.

The current projection for the path has the storm passing through the Charleston area. GEL will be closed effective 5 PM on Friday, September 8th and remain closed on Monday, September 11th and Tuesday, September 12th. No samples will be received during this time. We plan to be open our standard hours beginning on Wednesday, September 13th.

We are taking precautionary steps to protect our facility, your samples and our work force. The team at GEL remains committed to our clients worldwide. We regret the temporary disruption of service resulting from the Hurricane during the next few days. We will keep you informed of our situation via our website www.gel.com.

I'll be in touch next week about shipping once we are back up to speed.
Joanne
Joanne Harley
Manager of Client and Support Services

GEL Laboratories LLC

2040 Savage Road, Charleston, SC 29407 | PO Box 30712, Charleston, SC 29417
Office Direct: 843.769.7387 | Office Main: 843.556.8171
E-Mail: joanne.harley@gel.com | Website: www.gel.com
Environmental | Engineering | Surveying | Analytical Testing

On 9/7/2017 5:02 PM, Johnson, Chris wrote:

> Good afternoon, Joanne. Following and attached are the notes related to our QC samples. I had previously sent this information to Bob Pullano, but wasn't sure if it was forwarded to you. This information was provided to the other contract laboratories regarding this QC testing. At the very end of the email chain are the structures of the associated GenX PF compounds. I have the set of samples ready to ship once you can confirm a reliable shipping date based on your closure and other activities related to Hurricane Irma. We don't normally ship via common carrier, so any details you can provide to make the process more reliable would be appreciated. Please let me know if you have additional questions.

Chris Johnson
NC DEQ-DWR
Water Sciences Section
919-733-3908 ext224

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From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Friday, August 18, 2017 6:24 AM
To: Johnson, Chris <chris.johnson@ncdenr.gov>
Cc: Culpepper, Linda <linda.culpepper@ncdenr.gov>; Huffman, David J <david.huffman@ncdenr.gov>; Gregson, Jim <jim.gregson@ncdenr.gov>
Subject: RE: QC Samples

Here are the ten PFAS found in the Wellington PFAC MXA standard solution mixture.

Mark

From: Strynar, Mark [mailto:Strynar.Mark@epa.gov]
Sent: Thursday, August 17, 2017 3:18 PM
To: Johnson, Chris;
Cc: Culpepper, Linda; Huffman, Gregson, Jim
Subject: RE: QC Samples

Chris,

That is correct. We also spiked into the same samples a mixed PFAS standard from Wellington Labs called PFAC MXA. It is made up of the C4-C10 perfluorocarboxylic acids, PFBS, PFHxS and PFOS (http://www.well-labs.com/docs/nat_and_ml_pfac24_17nov2016_wellington_reporter.pdf)

If they are running method 537 these are very familiar analytes.

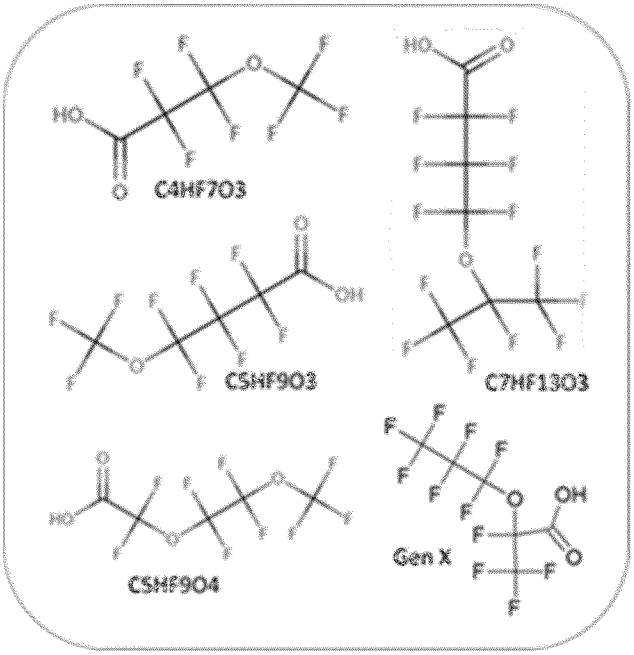
Chris I sent you additional details earlier on concentration and other sample details.

Mark

From: Johnson, Chris [mailto:chris.johnson@ncdenr.gov]
Sent: Thursday, August 17, 2017 3:01 PM

I provided a list of associated compounds below.

Here is the original list of what was being spiked into our earlier QC samples. The EPA laboratory has been extracting all these compounds by the same technique I believe. If not, Mark can correct me. These new samples should be similar:



Chris Johnson
NC DEQ-DWR
Water Sciences Section

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Ask me about GEL's new testing capability for Perfluorinated chemicals (PFCs)!
http://www.gellaboratories.com

To: Strynar, Mark[Strynar.Mark@epa.gov]
From: Mort, Sandra L
Sent: Wed 9/20/2017 7:05:46 PM
Subject: FW: Questions re EPA-NERL PFAS data - Chemours GW
NC DEQ Test Wells Report_09132017.pdf

FYI –
See information request below.
Sandy

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

(919) 707-8217 - Direct Line & Fax
sandy.mort@ncdenr.gov

1646 Mail Service Center
Raleigh, NC 27699-1646

Nothing Compares

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From: Mort, Sandra L
Sent: Wednesday, September 20, 2017 10:41 AM
To: Timothy J. Buckley PhD <buckley.timothy@epa.gov>
Subject: Questions re EPA-NERL PFAS data - Chemours GW

Dr. Buckley –
I am requesting the following clarifications / verification for the PFAS data generated by NERL on the August 2017 groundwater (GW) samples submitted by NC DEQ Division of Waste Management (see the attached report):

1. Please provide the full chemical name for the PFESA Byproduct 2 listed in Table 2. The last portion of the chemical name was cut off in the final report.
2. Please verify the CASN for the PFESA (Nafion) Byproduct 1 listed in table 2. The CASN listed is 29311-67-9. I'm asking if it should be CASN 66796-30-3 based on prior information provided by your lab.
3. The notes on Table 3 indicate the LOD = 10 ng/L. Please verify that this is for all analytes reported.
4. The Table 3 information notes include the sample dilutions. Do these dilutions apply both to the target analytes and the non-target analytes? Should the reporting limits for the target analytes reflect the 10 ng/L LOD times the noted sample dilution? Same question for the non-target analytes? (i.e., LOD x dilution = analyte reporting limit)
5. In the Sun et al, EST (2016) paper the non-target analytes PFMOPrA, PFMOBA and PFO4DA were reported in the drinking water sourced from the Cape Fear River. Neither PFMOPrA, PFMOBA or PFO4DA were reported for the groundwater. Please clarify if this was because these 3 non-target analytes (NTAs) were not detected in the GW, or if the GW analysis did not include these 3 NTAs.
6. The text indicates that there is a conservative order-of-magnitude uncertainty in the NTA concentrations reported. Please verify that the same level of uncertainty is estimated for both the NTA PFECA and PFESA since the NTA concentrations are generated relative to the PFECA GenX instrument response.

Thank you & your staff again for your efforts.
b/r
Sandy Mort

Sandy Mort, Ph.D., M.S.
Environmental Toxicologist / Risk Assessor
Division of Waste Management – Hazardous Waste & Brownfields
NC Department of Environmental Quality

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