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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 4
ATLANTA FEDERAL CENTER
61 FORSYTH STREET
ATLANTA, GEORGIA 30303-8960

OCT 13 2009

MEMORANDUM

SUBJECT: Summary Subset of Analytical Results from the August 5, 2009, Dalton Utilities Submittal to EPA Report Titled Test America Laboratories, Inc. Analytical Report on Perfluorocarbon (PFC) Analyses Lot #D9E280210; Report Dated June 30, 2009; 416 pages

FROM: Connie L. Roberts *CLR*
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TO: Note to File

Attached is a summary of a subset of the analytical results from the August 5, 2009, Dalton Utilities submittal to EPA titled: "Test America Laboratories, Inc. Analytical Report on Perfluorocarbon (PFC) Analyses Lot #D9E280210." The full report is dated June 30, 2009 and contains 416 pages.

The attached document provides a summary report for each of 4 samples identified as 1, 2, 3, and 4. The samples are described as follows:

- #1: Fresh, dried biosolids cake before the addition of wood waste
- #2: Finished compost aged approximately 6 months
- #3: Finished compost aged approximately 12 months
- #4: Finished compost aged approximately 18 months

Dalton Utilities

Client Sample ID: #1

HPLC

Lot-Sample #...: D9E280210-001 Work Order #...: LDV5Q1AA Matrix.....: SOLID
 Date Sampled...: 05/26/09 13:15 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09
 Prep Batch #...: 9155502 Analysis Time...: 18:04
 Dilution Factor: 1
 % Moisture.....: 78 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (PFTeA)	17 J	23	ug/kg	6.7
Perfluorododecanoic acid (PFDoA)	230	23	ug/kg	3.8
Perfluorotridecanoic acid (PFTria)	410	23	ug/kg	5.3
Perfluorobutanoic acid (PFBA)	38	9.3	ug/kg	1.6
Perfluoropentanoic acid (PFPA)	30	9.3	ug/kg	4.1
Perfluorohexanoic acid (PFHxA)	55	9.3	ug/kg	0.93
Perfluoroheptanoic acid (PFHpA)	11	9.3	ug/kg	3.3
Perfluorononanoic acid (PFNA)	94	9.3	ug/kg	2.3
Perfluorodecanoic acid (PFDA)	480	9.3	ug/kg	3.5
Perfluorobutane sulfonate (PFBS)	190	9.3	ug/kg	3.9
Perfluorohexane sulfonate (PFHxS)	ND	9.3	ug/kg	3.6
Perfluorodecane sulfonate (PFDS)	1.4 J	9.3	ug/kg	1.3
Perfluorooctanesulfonate	210	9.3	ug/kg	1.7
Perfluorooctanoic Acid	91	23	ug/kg	4.7

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
13C4 PFOA	80	(50 - 200)
13C4 PFOS	70	(50 - 200)
13C4 PFBA	66	(50 - 200)
13C2 PFHxA	78	(50 - 200)
18O2 PFHxS	78	(50 - 200)
13C5 PFNA	74	(50 - 200)
13C2 PFDA	70	(50 - 200)
13C2 PFUnA	64	(50 - 200)
13C2 PFDoA	59	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #1

HPLC

Lot-Sample #....: D9E280210-001 Work Order #....: LDV5Q1AH Matrix.....: SOLID
Date Sampled....: 05/26/09 13:15 Date Received...: 05/28/09
Prep Date.....: 06/16/09 Analysis Date...: 06/25/09
Prep Batch #....: 9167471 Analysis Time...: 19:06
Dilution Factor: 1
% Moisture.....: 78 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctane sulfonamide (F OSA)	86	23	ug/kg	5.7

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
MeFOSA	59	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #1

HPLC

Lot-Sample #....: D9E280210-001 Work Order #....: LDV5Q2AA Matrix.....: SOLID
Date Sampled....: 05/26/09 13:15 Date Received...: 05/28/09
Prep Date.....: 06/04/09 Analysis Date...: 06/14/09
Prep Batch #....: 9155502 Analysis Time...: 20:19
Dilution Factor: 20
* Moisture.....: 78 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluoroundecanoic acid (PFUnA)	750	460	ug/kg	170

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
13C2 PFUnA	92	(50 - 200)

NOTE(S) :
Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #2

HPLC

Lot-Sample #....: D9E280210-002 Work Order #....: LDV5X1AA Matrix.....: SOLID
 Date Sampled....: 05/26/09 13:45 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09
 Prep Batch #....: 9155502 Analysis Time...: 18:53
 Dilution Factor: 1
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P FTEA)	93	11	ug/kg	3.3
Perfluorobutanoic acid (PFBA)	93	4.6	ug/kg	0.78
Perfluoropentanoic acid (PFPA)	100	4.6	ug/kg	2.0
Perfluorohexanoic acid (PFHxA)	170	4.6	ug/kg	0.46
Perfluoroheptanoic acid (PFHpA)	290	4.6	ug/kg	1.7
Perfluorohexane sulfonate (PFH xS)	13	4.6	ug/kg	1.8
Perfluorodecane sulfonate (PFD S)	ND	4.6	ug/kg	0.66

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	70	(50 - 200)
13C4 PFOS	82	(50 - 200)
13C4 PFBA	75	(50 - 200)
13C2 PFHxA	85	(50 - 200)
18O2 PFHxS	82	(50 - 200)
13C5 PFNA	73	(50 - 200)
13C2 PFDA	73	(50 - 200)
13C2 PFUnA	75	(50 - 200)
13C2 PFDoA	71	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #2

HPLC

Lot-Sample #...: D9E280210-002 Work Order #...: LDV5X1AD Matrix.....: SOLID
Date Sampled...: 05/26/09 13:45 Date Received...: 05/28/09
Prep Date.....: 06/16/09 Analysis Date...: 06/25/09
Prep Batch #...: 9167471 Analysis Time...: 13:22
Dilution Factor: 10
% Moisture.....: 56 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctane sulfonamide (P OSA)	270	110	ug/kg	28

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
MeFOSA	113	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #2

HPLC

Lot-Sample #...: D9E280210-002 Work Order #...: LDV5X2AA Matrix.....: SOLID
 Date Sampled...: 05/26/09 13:45 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/14/09
 Prep Batch #...: 9155502 Analysis Time...: 21:07
 Dilution Factor: 20
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluoroundecanoic acid (PFUnA)	660	230	ug/kg	83
Perfluorododecanoic acid (PFDoA)	450	230	ug/kg	37
Perfluorotridecanoic acid (PFTria)	240	230	ug/kg	53
Perfluorononanoic acid (PFNA)	560	91	ug/kg	23
Perfluorodecanoic acid (PFDA)	2100	91	ug/kg	34
Perfluorobutane sulfonate (PFBs)	500	91	ug/kg	38
Perfluorooctanesulfonate	550	91	ug/kg	17
Perfluorooctanoic Acid	1900	230	ug/kg	46

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	102	(50 - 200)
13C4 PFOS	101	(50 - 200)
13C4 PFBA	97	(50 - 200)
13C2 PFHxA	102	(50 - 200)
18O2 PFHxS	103	(50 - 200)
13C5 PFNA	97	(50 - 200)
13C2 PFDA	100	(50 - 200)
13C2 PFUnA	101	(50 - 200)
13C2 PFDoA	107	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #....: D9E280210-003 Work Order #....: LDV501AD Matrix.....: SOLID
Date Sampled....: 05/26/09 14:10 Date Received...: 05/28/09
Prep Date.....: 06/16/09 Analysis Date...: 06/25/09
Prep Batch #....: 9167471 Analysis Time...: 20:10
Dilution Factor: 1
* Moisture.....: 56 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u>		
		<u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctane sulfonamide (F OSA)	170	11	ug/kg	2.8

<u>SURROGATE</u>	<u>PERCENT</u>	<u>RECOVERY</u>
	<u>RECOVERY</u>	<u>LIMITS</u>
MeFOSA	71	(50 - 200)

NOTE(S) :

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #....: D9E280210-003 Work Order #....: LDV501AA Matrix.....: SOLID
 Date Sampled....: 05/26/09 14:10 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09
 Prep Batch #....: 9155502 Analysis Time...: 19:09
 Dilution Factor: 1
 % Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P FTeA)	77	11	ug/kg	3.3
Perfluorobutanoic acid (PFBA)	100	4.5	ug/kg	0.77
Perfluoropentanoic acid (PFPA)	210	4.5	ug/kg	2.0
Perfluorohexane sulfonate (PFH xS)	9.7	4.5	ug/kg	1.7
Perfluorodecane sulfonate (PFD S)	1.1 J	4.5	ug/kg	0.66

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	55	(50 - 200)
13C4 PFOS	79	(50 - 200)
13C4 PFBA	74	(50 - 200)
13C2 PFHxA	80	(50 - 200)
18O2 PFHxS	82	(50 - 200)
13C5 PFNA	65	(50 - 200)
13C2 PFDA	70	(50 - 200)
13C2 PFUnA	68	(50 - 200)
13C2 PFDoA	64	(50 - 200)

NOTE (S) :

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #....: D9E280210-003 Work Order #....: LDV502AA Matrix.....: SOLID
 Date Sampled....: 05/26/09 14:10 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/14/09
 Prep Batch #....: 9155502 Analysis Time...: 21:24
 Dilution Factor: 20
 ‡ Moisture.....: 56 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING		
		LIMIT	UNITS	MDL
Perfluorononanoic acid (PFNA)	330	90	ug/kg	23
Perfluoroundecanoic acid (PFUnA)	500	230	ug/kg	82
Perfluorododecanoic acid (PFDoA)	240	230	ug/kg	37
Perfluorohexanoic acid (PFHxA)	140	90	ug/kg	9.1
Perfluoroheptanoic acid (PFHpA)	270	90	ug/kg	33
Perfluorodecanoic acid (PFDA)	2000	90	ug/kg	34
Perfluorobutane sulfonate (PFBS)	550	90	ug/kg	38
Perfluorooctanesulfonate	230	90	ug/kg	17
Perfluorooctanoic Acid	2100	230	ug/kg	46

SURROGATE	PERCENT	RECOVERY
	RECOVERY	LIMITS
13C4 PFOA	84	(50 - 200)
13C4 PFOS	85	(50 - 200)
13C4 PFBA	83	(50 - 200)
13C2 PFHxA	85	(50 - 200)
18O2 PFHxS	86	(50 - 200)
13C5 PFNA	89	(50 - 200)
13C2 PFDA	84	(50 - 200)
13C2 PFUnA	80	(50 - 200)
13C2 PFDoA	81	(50 - 200)

NOTE (S) :
 Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #3

HPLC

Lot-Sample #...: D9E280210-003 Work Order #...: LDV503AA Matrix.....: SOLID
Date Sampled...: 05/26/09 14:10 Date Received...: 05/28/09
Prep Date.....: 06/04/09 Analysis Date...: 06/16/09
Prep Batch #...: 9155502 Analysis Time...: 14:33
Dilution Factor: 10
% Moisture.....: 56 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorotridecanoic acid (PFT rIA)	290	110	ug/kg	26

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
13C2 PFDoA	107	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #...: D9E280210-004 Work Order #...: LDV511AA Matrix.....: SOLID
 Date Sampled...: 05/26/09 14:20 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/13/09
 Prep Batch #...: 9155502 Analysis Time...: 19:25
 Dilution Factor: 1
 ‡ Moisture.....: 42 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluorotetradecanoic acid (P PTEA)	85	8.6	ug/kg	2.5
Perfluorobutanoic acid (PFBA)	77	3.4	ug/kg	0.59
Perfluoropentanoic acid (PFPA)	160	3.4	ug/kg	1.5
Perfluorohexane sulfonate (PFH xS)	19	3.4	ug/kg	1.3
Perfluorodecane sulfonate (PFD S)	0.95 J	3.4	ug/kg	0.50

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	51	(50 - 200)
13C4 PFOS	74	(50 - 200)
13C4 PFBA	69	(50 - 200)
13C2 PFHxA	80	(50 - 200)
18O2 PFHxS	82	(50 - 200)
13C5 PFNA	69	(50 - 200)
13C2 PFDA	66	(50 - 200)
13C2 PFUnA	67	(50 - 200)
13C2 PFDoA	63	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

J Estimated result. Result is less than RL.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004 Work Order #....: LDV511AD Matrix.....: SOLID
Date Sampled....: 05/26/09 14:20 Date Received...: 05/28/09
Prep Date.....: 06/16/09 Analysis Date...: 06/25/09
Prep Batch #....: 9167471 Analysis Time...: 00:00
Dilution Factor: 10
% Moisture.....: 42 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING</u> <u>LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctane sulfonamide (P OSA)	310	86	ug/kg	21

<u>SURROGATE</u>	<u>PERCENT</u> <u>RECOVERY</u>	<u>RECOVERY</u> <u>LIMITS</u>
MeFOSA	100	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004 Work Order #....: LDV512AA Matrix.....: SOLID
 Date Sampled....: 05/26/09 14:20 Date Received...: 05/28/09
 Prep Date.....: 06/04/09 Analysis Date...: 06/14/09
 Prep Batch #....: 9155502 Analysis Time...: 21:40
 Dilution Factor: 20
 * Moisture.....: 42 Method.....: DEN -LC-0012

PARAMETER	RESULT	REPORTING LIMIT	UNITS	MDL
Perfluoroundecanoic acid (PFUn A)	610	170	ug/kg	62
Perfluorododecanoic acid (PFDo A)	320	170	ug/kg	28
Perfluorotridecanoic acid (PFT ria)	230	170	ug/kg	40
Perfluorohexanoic acid (PFHxA)	190	69	ug/kg	6.9
Perfluoroheptanoic acid (PFHpA)	320	69	ug/kg	25
Perfluorononanoic acid (PFNA)	400	69	ug/kg	17
Perfluorodecanoic acid (PFDA)	2000	69	ug/kg	26
Perfluorobutane sulfonate (PFB S)	610	69	ug/kg	29
Perfluorooctanesulfonate	360	69	ug/kg	13

SURROGATE	PERCENT RECOVERY	RECOVERY LIMITS
13C4 PFOA	99	(50 - 200)
13C4 PFOS	98	(50 - 200)
13C4 PFBA	95	(50 - 200)
13C2 PFHxA	99	(50 - 200)
18O2 PFHxS	102	(50 - 200)
13C5 PFNA	103	(50 - 200)
13C2 PFDA	94	(50 - 200)
13C2 PFUnA	99	(50 - 200)
13C2 PFDoA	103	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #4

HPLC

Lot-Sample #....: D9E280210-004 Work Order #....: LDV513AA Matrix.....: SOLID
Date Sampled....: 05/26/09 14:20 Date Received...: 05/28/09
Prep Date.....: 06/04/09 Analysis Date...: 06/16/09
Prep Batch #....: 9155502 Analysis Time...: 16:12
Dilution Factor: 50
% Moisture.....: 42 Method.....: DEN -LC-0012

<u>PARAMETER</u>	<u>RESULT</u>	<u>REPORTING LIMIT</u>	<u>UNITS</u>	<u>MDL</u>
Perfluorooctanoic Acid	4500	430	ug/kg	88

<u>SURROGATE</u>	<u>PERCENT RECOVERY</u>	<u>RECOVERY LIMITS</u>
13C4 PFOA	102	(50 - 200)

NOTE(S):

Results and reporting limits have been adjusted for dry weight.

Dalton Utilities

Client Sample ID: #1

General Chemistry

Lot-Sample #....: D9E280210-001 Work Order #....: LDV5Q Matrix.....: SOLID
Date Sampled....: 05/26/09 13:15 Date Received...: 05/28/09
% Moisture.....: 78

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	78	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	

Dalton Utilities

Client Sample ID: #2

General Chemistry

Lot-Sample #...: D9E280210-002 Work Order #...: LDV5X Matrix.....: SOLID
Date Sampled...: 05/26/09 13:45 Date Received...: 05/28/09
% Moisture.....: 56

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	56	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	

Dalton Utilities

Client Sample ID: #3

General Chemistry

Lot-Sample #...: D9E280210-003 Work Order #...: LDV50 Matrix.....: SOLID
Date Sampled...: 05/26/09 14:10 Date Received...: 05/28/09
% Moisture.....: 56

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	56	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	

Dalton Utilities

Client Sample ID: #4

General Chemistry

Lot-Sample #....: D9E280210-004 Work Order #....: LDV51 Matrix.....: SOLID
Date Sampled...: 05/26/09 14:20 Date Received...: 05/28/09
% Moisture.....: 42

<u>PARAMETER</u>	<u>RESULT</u>	<u>RL</u>	<u>UNITS</u>	<u>METHOD</u>	<u>PREPARATION- ANALYSIS DATE</u>	<u>PREP BATCH #</u>
Percent Moisture	42	0.10	%	ASTM D 2216-90	05/29/09	9149280
		Dilution Factor: 1		Analysis Time...: 13:00	MDL.....: 0.0	