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ANALYTICAL REPORT

Eurofins TestAmerica, Canton
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North Canton, OH 44720
Tel: (330)497-9396

Laboratory Job ID: 240-149555-1
Client Project/Site: City of Richmond WWTP

For:
City of Richmond
36725 Division Rd
PO Box 457
Richmond, Michigan 48062

Attn: Jim Goetzinger

Kris Brooks

Authorized for release by:
5/28/2021 7:40:24 PM

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Definitions/Glossary

Client: City of Richmond
Project/Site: City of Richmond WWTP

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Qualifiers

LCMS

Qualifier	Qualifier Description
*5+	Isotope dilution analyte is outside acceptance limits, high biased.
F1	MS and/or MSD recovery exceeds control limits.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.

Glossary

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

Case Narrative

Client: City of Richmond
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Job ID: 240-149555-1

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Laboratory: Eurofins TestAmerica, Canton

Narrative

Job Narrative
240-149555-1

Comments
The TestAmerica SOP Perfluorinated Hydrocarbons and Moisture analyses were performed at the Eurofins TestAmerica Sacramento laboratory.

Receipt
The sample was received on 5/18/2021 9:30 AM. Unless otherwise noted below, the sample arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 4.2º C.

LCMS
Method 537 (modified): Isotope Dilution Analyte (IDA) recovery is above the method recommended limit for M2-8:2 FTS in the following sample: BIOSOLIDS FROM HOLDING TANK (240-149555-1). Quantitation by isotope dilution generally precludes any adverse effect on data quality due to elevated IDA recoveries.

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

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

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

Method Summary

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
D 2216	Percent Moisture	ASTM	TAL SAC
SHAKE	Shake Extraction with Ultrasonic Bath Extraction	SW846	TAL SAC

Protocol References:

ASTM = ASTM International

EPA = US Environmental Protection Agency

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

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Sample Summary

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-149555-1	BIOSOLIDS FROM HOLDING TANK	Solid	05/10/21 03:11	05/18/21 09:30	

Detection Summary

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Client Sample ID: BIOSOLIDS FROM HOLDING TANK — Lab Sample ID: 240-149555-1

Analyte	Result	Qualifier	RL		Unit	Dil Fac	D	Method	Prep Type
Perfluoropentanoic acid (PFPeA)	4.6		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	11		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	27		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorononanoic acid (PFNA)	5.6		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorodecanoic acid (PFDA)	120	F1	3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluoroundecanoic acid (PFUnA)	13	F1	3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorododecanoic acid (PFDoA)	43		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorotridecanoic acid (PFTriA)	4.1		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorotetradecanoic acid (PFTeA)	11		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	27		8.5		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorodecanesulfonic acid (PFDS)	4.3		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
Perfluorooctanesulfonamide (FOSA)	9.4		3.4		ug/Kg	1	☼	537 (modified)	Total/NA
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	41		34		ug/Kg	1	☼	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Client Sample ID: BIOSOLIDS FROM HOLDING TANK

Date Collected: 05/10/21 03:11
Date Received: 05/18/21 09:30

Lab Sample ID: 240-149555-1

Matrix: Solid
Percent Solids: 5.8

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluoropentanoic acid (PFPeA)	**4.6**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorohexanoic acid (PFHxA)	**11**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluoroheptanoic acid (PFHpA)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorooctanoic acid (PFOA)	**27**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorononanoic acid (PFNA)	**5.6**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorodecanoic acid (PFDA)	**120**	**F1**	3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluoroundecanoic acid (PFUnA)	**13**	**F1**	3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorododecanoic acid (PFDoA)	**43**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorotridecanoic acid (PFTriA)	**4.1**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorotetradecanoic acid (PFTeA)	**11**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorobutanesulfonic acid (PFBS)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluoropentanesulfonic acid (PFPeS)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorohexanesulfonic acid (PFHxS)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluoroheptanesulfonic Acid (PFHpS)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorooctanesulfonic acid (PFOS)	**27**		8.5		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorononanesulfonic acid (PFNS)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorodecanesulfonic acid (PFDS)	**4.3**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
Perfluorooctanesulfonamide (FOSA)	**9.4**		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	**41**		34		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<34		34		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
4:2 FTS	<34		34		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
6:2 FTS	<34		34		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
8:2 FTS	<34		34		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.4		3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
HFPO-DA (GenX)	<4.2		4.2		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
F-53B Major	<3.4	F1	3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1
F-53B Minor	<3.4	F1	3.4		ug/Kg	☼	05/24/21 12:32	05/25/21 12:40	1

Isotope Dilution	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*81*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C5 PFPeA	*55*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C2 PFHxA	*89*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C4 PFHpA	*77*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C4 PFOA	*89*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C5 PFNA	*80*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C2 PFDA	*92*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C2 PFUnA	*79*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C2 PFDoA	*71*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C2 PFTeDA	*58*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
18O2 PFHxS	*92*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*
13C4 PFOS	*83*		*25 - 150*	*05/24/21 12:32*	*05/25/21 12:40*	*1*

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Date Collected: 05/10/21 03:11
Date Received: 05/18/21 09:30

Lab Sample ID: 240-149555-1
Matrix: Solid
Percent Solids: 5.8

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C8 FOSA	80		25 - 150	05/24/21 12:32	05/25/21 12:40	1
d3-NMeFOSAA	63		25 - 150	05/24/21 12:32	05/25/21 12:40	1
d5-NEtFOSAA	57		25 - 150	05/24/21 12:32	05/25/21 12:40	1
M2-6:2 FTS	150		25 - 150	05/24/21 12:32	05/25/21 12:40	1
M2-8:2 FTS	152	*5+	25 - 150	05/24/21 12:32	05/25/21 12:40	1
M2-4:2 FTS	113		25 - 150	05/24/21 12:32	05/25/21 12:40	1
13C3 HFPO-DA	82		25 - 150	05/24/21 12:32	05/25/21 12:40	1
13C3 PFBS	78		25 - 150	05/24/21 12:32	05/25/21 12:40	1

General Chemistry

Analyte	Result	Qualifier	RL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	94.2		0.1	%			05/24/21 12:26	1
Percent Solids	5.8		0.1	%			05/24/21 12:26	1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-492130/1-A
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 492130

Analyte	MB Result	MB Qualifier	RL		Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluoropentanoic acid (PFPeA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorohexanoic acid (PFHxA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluoroheptanoic acid (PFHpA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorooctanoic acid (PFOA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorononanoic acid (PFNA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorodecanoic acid (PFDA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluoroundecanoic acid (PFUnA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorododecanoic acid (PFDoA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorotridecanoic acid (PFTriA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorotetradecanoic acid (PFTeA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluoropentanesulfonic acid (PFPeS)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorohexanesulfonic acid (PFHxS)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluoroheptanesulfonic Acid (PFHpS)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		0.50		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorononanesulfonic acid (PFNS)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorodecanesulfonic acid (PFDS)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
Perfluorooctanesulfonamide (FOSA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.0		2.0		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<2.0		2.0		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
4:2 FTS	<2.0		2.0		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
6:2 FTS	<2.0		2.0		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
8:2 FTS	<2.0		2.0		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
HFPO-DA (GenX)	<0.25		0.25		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
F-53B Major	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1
F-53B Minor	<0.20		0.20		ug/Kg		05/24/21 12:31	05/25/21 07:11	1

Isotope Dilution	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
13C4 PFBA	*91*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C5 PFPeA	*94*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C2 PFHxA	*92*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C4 PFHpA	*95*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C4 PFOA	*89*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C5 PFNA	*94*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C2 PFDA	*90*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C2 PFUnA	*81*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C2 PFDoA	*84*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C2 PFTeDA	*85*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
18O2 PFHxS	*89*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C4 PFOS	*82*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
13C8 FOSA	*99*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
d3-NMeFOSAA	*89*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*
d5-NEtFOSAA	*87*		*25 - 150*	*05/24/21 12:31*	*05/25/21 07:11*	*1*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: MB 320-492130/1-A
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 492130

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
M2-6:2 FTS	92		25 - 150	05/24/21 12:31	05/25/21 07:11	1
M2-8:2 FTS	116		25 - 150	05/24/21 12:31	05/25/21 07:11	1
M2-4:2 FTS	91		25 - 150	05/24/21 12:31	05/25/21 07:11	1
13C3 HFPO-DA	88		25 - 150	05/24/21 12:31	05/25/21 07:11	1
13C3 PFBS	85		25 - 150	05/24/21 12:31	05/25/21 07:11	1

Lab Sample ID: LCS 320-492130/2-A
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 492130

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	2.00	2.14		ug/Kg		107	76 - 136
Perfluoropentanoic acid (PFPeA)	2.00	2.18		ug/Kg		109	69 - 129
Perfluorohexanoic acid (PFHxA)	2.00	2.38		ug/Kg		119	71 - 131
Perfluoroheptanoic acid (PFHpA)	2.00	2.23		ug/Kg		111	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	1.98		ug/Kg		99	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.10		ug/Kg		105	73 - 133
Perfluorodecanoic acid (PFDA)	2.00	2.13		ug/Kg		106	72 - 132
Perfluoroundecanoic acid (PFUnA)	2.00	2.31		ug/Kg		115	66 - 126
Perfluorododecanoic acid (PFDoA)	2.00	2.26		ug/Kg		113	71 - 131
Perfluorotridecanoic acid (PFTriA)	2.00	2.28		ug/Kg		114	71 - 131
Perfluorotetradecanoic acid (PFTeA)	2.00	2.17		ug/Kg		109	67 - 127
Perfluorobutanesulfonic acid (PFBS)	1.77	1.73		ug/Kg		98	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.04		ug/Kg		109	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	1.82	1.89		ug/Kg		104	62 - 122
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	2.18		ug/Kg		115	76 - 136
Perfluorooctanesulfonic acid (PFOS)	1.86	2.03		ug/Kg		109	68 - 141
Perfluorononanesulfonic acid (PFNS)	1.92	2.00		ug/Kg		104	72 - 132
Perfluorodecanesulfonic acid (PFDS)	1.93	1.94		ug/Kg		101	71 - 131
Perfluorooctanesulfonamide (FOSA)	2.00	2.03		ug/Kg		102	77 - 137
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.33		ug/Kg		116	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.17		ug/Kg		109	72 - 132
4:2 FTS	1.87	2.09		ug/Kg		112	68 - 143
6:2 FTS	1.90	1.87	J	ug/Kg		99	73 - 139
8:2 FTS	1.92	1.89	J	ug/Kg		99	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	1.88	2.08		ug/Kg		110	79 - 139
HFPO-DA (GenX)	2.00	2.02		ug/Kg		101	53 - 158
F-53B Major	1.86	2.15		ug/Kg		115	74 - 134

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: LCS 320-492130/2-A
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 492130

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
F-53B Minor			1.88	2.00		ug/Kg		106	66 - 136		

Isotope Dilution	*LCS %Recovery*	*LCS Qualifier*	*Limits*
13C4 PFBA	*80*		*25 - 150*
13C5 PFPeA	*89*		*25 - 150*
13C2 PFHxA	*91*		*25 - 150*
13C4 PFHpA	*91*		*25 - 150*
13C4 PFOA	*91*		*25 - 150*
13C5 PFNA	*89*		*25 - 150*
13C2 PFDA	*86*		*25 - 150*
13C2 PFUnA	*82*		*25 - 150*
13C2 PFDoA	*74*		*25 - 150*
13C2 PFTeDA	*85*		*25 - 150*
18O2 PFHxS	*93*		*25 - 150*
13C4 PFOS	*88*		*25 - 150*
13C8 FOSA	*90*		*25 - 150*
d3-NMeFOSAA	*79*		*25 - 150*
d5-NEtFOSAA	*73*		*25 - 150*
M2-6:2 FTS	*95*		*25 - 150*
M2-8:2 FTS	*128*		*25 - 150*
M2-4:2 FTS	*83*		*25 - 150*
13C3 HFPO-DA	*88*		*25 - 150*
13C3 PFBS	*93*		*25 - 150*

Lab Sample ID: 240-149555-1 MS
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Prep Type: Total/NA
Prep Batch: 492130

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Perfluorobutanoic acid (PFBA)	<3.4		32.1	30.9		ug/Kg	☼	92	76 - 136		
Perfluoropentanoic acid (PFPeA)	4.6		32.1	37.2		ug/Kg	☼	101	69 - 129		
Perfluorohexanoic acid (PFHxA)	11		32.1	50.0		ug/Kg	☼	122	71 - 131		
Perfluoroheptanoic acid (PFHpA)	<3.4		32.1	37.8		ug/Kg	☼	112	71 - 131		
Perfluorooctanoic acid (PFOA)	27		32.1	56.2		ug/Kg	☼	92	72 - 132		
Perfluorononanoic acid (PFNA)	5.6		32.1	41.4		ug/Kg	☼	111	73 - 133		
Perfluorodecanoic acid (PFDA)	120	F1	32.1	142	F1	ug/Kg	☼	55	72 - 132		
Perfluoroundecanoic acid (PFUnA)	13	F1	32.1	59.2	F1	ug/Kg	☼	143	66 - 126		
Perfluorododecanoic acid (PFDoA)	43		32.1	73.1		ug/Kg	☼	95	71 - 131		
Perfluorotridecanoic acid (PFTriA)	4.1		32.1	37.8		ug/Kg	☼	105	71 - 131		
Perfluorotetradecanoic acid (PFTeA)	11		32.1	48.5		ug/Kg	☼	117	67 - 127		
Perfluorobutanesulfonic acid (PFBS)	<3.4		28.4	29.0		ug/Kg	☼	99	69 - 129		
Perfluoropentanesulfonic acid (PFPeS)	<3.4		30.1	35.7		ug/Kg	☼	119	66 - 126		
Perfluorohexanesulfonic acid (PFHxS)	<3.4		29.2	30.1		ug/Kg	☼	100	62 - 122		

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 240-149555-1 MS
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Prep Type: Total/NA
Prep Batch: 492130

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluoroheptanesulfonic Acid (PFHpS)	<3.4		30.6	30.4		ug/Kg	☼	100	76 - 136
Perfluorooctanesulfonic acid (PFOS)	27		29.8	63.6		ug/Kg	☼	123	68 - 141
Perfluorononanesulfonic acid (PFNS)	<3.4		30.8	36.8		ug/Kg	☼	120	72 - 132
Perfluorodecanesulfonic acid (PFDS)	4.3		30.9	39.1		ug/Kg	☼	113	71 - 131
Perfluorooctanesulfonamide (FOSA)	9.4		32.1	39.4		ug/Kg	☼	94	77 - 137
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	41		32.1	77.4		ug/Kg	☼	114	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<34		32.1	52.4		ug/Kg	☼	126	72 - 132
4:2 FTS	<34		30.0	<32		ug/Kg	☼	106	68 - 143
6:2 FTS	<34		30.4	32.5		ug/Kg	☼	107	73 - 139
8:2 FTS	<34		30.8	35.4		ug/Kg	☼	115	75 - 135
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.4		30.2	29.9		ug/Kg	☼	99	79 - 139
HFPO-DA (GenX)	<4.2		32.1	36.8		ug/Kg	☼	115	53 - 158
F-53B Major	<3.4	F1	29.9	49.4	F1	ug/Kg	☼	165	74 - 134
F-53B Minor	<3.4	F1	30.2	45.4	F1	ug/Kg	☼	150	66 - 136

Isotope Dilution	*MS %Recovery*	*MS Qualifier*	*Limits*
13C4 PFBA	*69*		*25 - 150*
13C5 PFPeA	*41*		*25 - 150*
13C2 PFHxA	*79*		*25 - 150*
13C4 PFHpA	*66*		*25 - 150*
13C4 PFOA	*87*		*25 - 150*
13C5 PFNA	*71*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*73*		*25 - 150*
13C2 PFDoA	*60*		*25 - 150*
13C2 PFTeDA	*56*		*25 - 150*
18O2 PFHxS	*84*		*25 - 150*
13C4 PFOS	*78*		*25 - 150*
13C8 FOSA	*81*		*25 - 150*
d3-NMeFOSAA	*57*		*25 - 150*
d5-NEtFOSAA	*51*		*25 - 150*
M2-6:2 FTS	*120*		*25 - 150*
M2-8:2 FTS	*140*		*25 - 150*
M2-4:2 FTS	*104*		*25 - 150*
13C3 HFPO-DA	*73*		*25 - 150*
13C3 PFBS	*76*		*25 - 150*

Lab Sample ID: 240-149555-1 MSD
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Prep Type: Total/NA
Prep Batch: 492130

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluorobutanoic acid (PFBA)	<3.4		32.8	31.5		ug/Kg	☼	91	76 - 136	2	30

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 240-149555-1 MSD
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Prep Type: Total/NA
Prep Batch: 492130

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Perfluoropentanoic acid (PFPeA)	4.6		32.8	41.3		ug/Kg	☼	112	69 - 129	10	30
Perfluorohexanoic acid (PFHxA)	11		32.8	48.2		ug/Kg	☼	114	71 - 131	4	30
Perfluoroheptanoic acid (PFHpA)	<3.4		32.8	40.0		ug/Kg	☼	116	71 - 131	6	30
Perfluorooctanoic acid (PFOA)	27		32.8	59.9		ug/Kg	☼	101	72 - 132	6	30
Perfluorononanoic acid (PFNA)	5.6		32.8	39.2		ug/Kg	☼	102	73 - 133	5	30
Perfluorodecanoic acid (PFDA)	120	F1	32.8	146	F1	ug/Kg	☼	68	72 - 132	3	30
Perfluoroundecanoic acid (PFUnA)	13	F1	32.8	57.9	F1	ug/Kg	☼	136	66 - 126	2	30
Perfluorododecanoic acid (PFDoA)	43		32.8	73.1		ug/Kg	☼	93	71 - 131	0	30
Perfluorotridecanoic acid (PFTriA)	4.1		32.8	41.4		ug/Kg	☼	114	71 - 131	9	30
Perfluorotetradecanoic acid (PFTeA)	11		32.8	49.0		ug/Kg	☼	116	67 - 127	1	30
Perfluorobutanesulfonic acid (PFBS)	<3.4		29.0	32.9		ug/Kg	☼	111	69 - 129	13	30
Perfluoropentanesulfonic acid (PFPeS)	<3.4		30.8	38.9		ug/Kg	☼	126	66 - 126	8	30
Perfluorohexanesulfonic acid (PFHxS)	<3.4		29.9	32.3		ug/Kg	☼	106	62 - 122	7	30
Perfluoroheptanesulfonic Acid (PFHpS)	<3.4		31.3	32.7		ug/Kg	☼	105	76 - 136	7	30
Perfluorooctanesulfonic acid (PFOS)	27		30.5	61.7		ug/Kg	☼	113	68 - 141	3	30
Perfluorononanesulfonic acid (PFNS)	<3.4		31.5	39.4		ug/Kg	☼	125	72 - 132	7	30
Perfluorodecanesulfonic acid (PFDS)	4.3		31.7	41.3		ug/Kg	☼	117	71 - 131	5	30
Perfluorooctanesulfonamide (FOSA)	9.4		32.8	47.9		ug/Kg	☼	117	77 - 137	19	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	41		32.8	79.1		ug/Kg	☼	117	72 - 132	2	30
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<34		32.8	53.2		ug/Kg	☼	126	72 - 132	2	30
4:2 FTS	<34		30.7	36.0		ug/Kg	☼	117	68 - 143	12	30
6:2 FTS	<34		31.1	34.2		ug/Kg	☼	110	73 - 139	5	30
8:2 FTS	<34		31.5	38.4		ug/Kg	☼	122	75 - 135	8	30
4,8-Dioxa-3H-perfluorononanoic acid (ADONA)	<3.4		30.9	29.3		ug/Kg	☼	95	79 - 139	2	30
HFPO-DA (GenX)	<4.2		32.8	38.2		ug/Kg	☼	116	53 - 158	4	30
F-53B Major	<3.4	F1	30.6	48.5	F1	ug/Kg	☼	159	74 - 134	2	30
F-53B Minor	<3.4	F1	30.9	44.9	F1	ug/Kg	☼	145	66 - 136	1	30

Isotope Dilution	*MSD %Recovery*	*MSD Qualifier*	*Limits*
13C4 PFBA	*76*		*25 - 150*
13C5 PFPeA	*45*		*25 - 150*
13C2 PFHxA	*84*		*25 - 150*
13C4 PFHpA	*66*		*25 - 150*
13C4 PFOA	*84*		*25 - 150*
13C5 PFNA	*73*		*25 - 150*
13C2 PFDA	*93*		*25 - 150*
13C2 PFUnA	*77*		*25 - 150*

Method: 537 (modified) - Fluorinated Alkyl Substances (Continued)

Lab Sample ID: 240-149555-1 MSD
Matrix: Solid
Analysis Batch: 492304

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Prep Type: Total/NA
Prep Batch: 492130

Isotope Dilution	MSD %Recovery	MSD Qualifier	Limits
13C2 PFDoA	73		25 - 150
13C2 PFTeDA	58		25 - 150
18O2 PFHxS	92		25 - 150
13C4 PFOS	84		25 - 150
13C8 FOSA	77		25 - 150
d3-NMeFOSAA	65		25 - 150
d5-NEtFOSAA	58		25 - 150
M2-6:2 FTS	129		25 - 150
M2-8:2 FTS	152	*5+	25 - 150
M2-4:2 FTS	112		25 - 150
13C3 HFPO-DA	76		25 - 150
13C3 PFBS	75		25 - 150

QC Association Summary

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

LCMS

Prep Batch: 492130

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-149555-1	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	SHAKE	
MB 320-492130/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-492130/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	
240-149555-1 MS	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	SHAKE	
240-149555-1 MSD	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	SHAKE	

Analysis Batch: 492304

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
MB 320-492130/1-A	Method Blank	Total/NA	Solid	537 (modified)	492130
LCS 320-492130/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	492130
240-149555-1 MS	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	537 (modified)	492130
240-149555-1 MSD	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	537 (modified)	492130

Analysis Batch: 492527

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-149555-1	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	537 (modified)	492130

General Chemistry

Analysis Batch: 492117

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-149555-1	BIOSOLIDS FROM HOLDING TANK	Total/NA	Solid	D 2216	

Lab Chronicle

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Lab Sample ID: 240-149555-1
Date Collected: 05/10/21 03:11
Matrix: Solid
Date Received: 05/18/21 09:30

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	492117	05/24/21 12:26	TCS	TAL SAC

Client Sample ID: BIOSOLIDS FROM HOLDING TANK
Lab Sample ID: 240-149555-1
Date Collected: 05/10/21 03:11
Matrix: Solid
Date Received: 05/18/21 09:30
Percent Solids: 5.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			492130	05/24/21 12:32	EH	TAL SAC
Total/NA	Analysis	537 (modified)		1	492527	05/25/21 12:40	S1M	TAL SAC

Laboratory References:

TAL SAC = Eurofins TestAmerica, Sacramento, 880 Riverside Parkway, West Sacramento, CA 95605, TEL (916)373-5600

Accreditation/Certification Summary

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Laboratory: Eurofins TestAmerica, Sacramento

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Alaska (UST)	State	17-020	02-20-24
ANAB	Dept. of Defense ELAP	L2468	01-20-24
ANAB	Dept. of Energy	L2468.01	01-20-24
ANAB	ISO/IEC 17025	L2468	01-20-24
Arizona	State	AZ0708	08-11-21
Arkansas DEQ	State	88-0691	06-17-21
California	State	2897	01-31-22
Colorado	State	CA0004	08-31-21
Connecticut	State	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-21
Georgia	State	4040	01-29-22
Hawaii	State	<cert No.>	01-29-22
Illinois	NELAP	200060	03-18-22
Kansas	NELAP	E-10375	10-31-21
Louisiana	NELAP	01944	06-30-21
Maine	State	CA00004	04-14-22
Michigan	State	9947	01-29-22
Nevada	State	CA000442021-2	07-31-21
New Hampshire	NELAP	2997	04-18-22
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-22
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-30-23
Texas	NELAP	T104704399-19-13	05-31-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442021-12	03-01-22
Virginia	NELAP	460278	03-14-22
West Virginia (DW)	State	9930C	12-31-21
Wisconsin	State	998204680	08-31-21
Wyoming	State Program	8TMS-L	01-28-19 *

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Eurofins TestAmerica, Canton
4101 Shuffel Street NW
North Canton, OH 44720
Phone: 330-497-9396 Fax: 330-497-0772

Chain of Custody Record

4/4.2

eurofins | Environment Testing America

Client Information	Sampler: Brent Amer	Lab PM: Brooks, Kris M	Carrier Tracking No(s):	COC No: 240-82694-32027.1
Client Contact: Beth Eldridge	Phone: 586-727-2574	E-Mail: Kris.Brooks@Eurofinset.com	State of Origin: MI	Page: Page 1 of 1
Company: Tetra Tech [redacted]	PWSID:			Job #:
Address: 710 Avis Drive	Due Date Requested:			
City: Ann Arbor	TAT Requested (days):			
State, Zip: MI, 48108	Compliance Project: Δ Yes Δ No			
Phone:	PO #: Purchase Order not required			
Email: beth.eldridge@tetratech.com	WO #: 200-12251-20003.099			
Project Name: City of Richmond WWTP	Project #: 24027171			
Site: Richmond WWTP	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	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)	PFC_IDA - PFAS, Standard List (28 Analytes)	Moisture - Local Method	Total Number of containers	Special Instructions/Note:
			Preservation Code:				N	N		
Biosolids From holding tank	5/10/21	3:11 pm	G	Solid	N		X		2	
Biosolids From holding tank	5/10/21	3:11 pm	G	Solid	N			X	1	

240-149555 Chain of Custody

Possible Hazard Identification
☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☒ Unknown ☐ Radiological

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)

Special Instructions/QC Requirements:

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

	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
1	Beth Eldridge	5/17/21 10:30 am	Tetra Tech	Mott	5-18-21 930	ETA
2	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company
3	Relinquished by:	Date/Time:	Company	Received by:	Date/Time:	Company

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

Ver: 11/01/2020

Eurofins TestAmerica Canton Sample Receipt Form/Narrative **Login # : 240-149535**
Canton Facility

Client Tetra Tech Site Name _____ Cooler unpacked by: Maths

Cooler Received on 5-18-21 Opened on 5-19-21

FedEx: 1st Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other _____

Receipt After-hours: Drop-off Date/Time _____ Storage Location _____

TestAmerica Cooler # TA Foam Box Client Cooler Box Other _____

Packing material used: Bubble Wrap Foam Plastic Bag None Other _____

COOLANT: Wet Ice Blue Ice Dry Ice Water None

1. Cooler temperature upon receipt ☐ See Multiple Cooler Form
   IR GUN# IR-11 (CF +0.1 °C) Observed Cooler Temp. 4.1 °C Corrected Cooler Temp. 4.2 °C
   IR GUN #IR-12 (CF +0.2°C) Observed Cooler Temp. _____ °C Corrected Cooler Temp. _____ °C

2. Were tamper/custody seals on the outside of the cooler(s)? If Yes Quantity 1	Yes	No
-Were the seals on the outside of the cooler(s) signed & dated?	Yes	No NA
-Were tamper/custody seals on the bottle(s) or bottle kits (LLHg/MeHg)?	Yes	No
-Were tamper/custody seals intact and uncompromised?	Yes	No NA
3. Shippers' packing slip attached to the cooler(s)?	Yes	No
4. Did custody papers accompany the sample(s)?	Yes	No
5. Were the custody papers relinquished & signed in the appropriate place?	Yes	No
6. Was/were the person(s) who collected the samples clearly identified on the COC?	Yes	No
7. Did all bottles arrive in good condition (Unbroken)?	Yes	No
8. Could all bottle labels (ID/Date/Time) be reconciled with the COC?	Yes	No
9. For each sample, does the COC specify preservatives (Y/N), # of containers (Y/N), and sample type of grab/comp (Y/N)?		
10. Were correct bottle(s) used for the test(s) indicated?	Yes	No
11. Sufficient quantity received to perform indicated analyses?	Yes	No
12. Are these work share samples and all listed on the COC?	Yes	No
If yes, Questions 13-17 have been checked at the originating laboratory.		
13. Were all preserved sample(s) at the correct pH upon receipt?	Yes	No NA pH Strip Lot# HC022887
14. Were VOAs on the COC?	Yes	No
15. Were air bubbles >6 mm in any VOA vials? ● ⬅ Larger than this.	Yes	No NA
16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # _____	Yes	No
17. Was a LL Hg or Me Hg trip blank present? _____	Yes	No

Tests that are not checked for pH by Receiving:
VOAs
Oil and Grease
TOC

Contacted PM _____ Date _____ by _____ via Verbal Voice Mail Other

Concerning _____

18. CHAIN OF CUSTODY & SAMPLE DISCREPANCIES ☐ additional next page | Samples processed by:

Containers have no lds

19. SAMPLE CONDITION

Sample(s) _____ were received after the recommended holding time had expired.

Sample(s) _____ were received in a broken container.

Sample(s) _____ were received with bubble >6 mm in diameter. (Notify PM)

20. SAMPLE PRESERVATION

Sample(s) _____ were further preserved in the laboratory.

Time preserved: _____ Preservative(s) added/Lot number(s): _____

VOA Sample Preservation - Date/Time VOAs Frozen: _____

Login Sample Receipt Checklist

Client: City of Richmond

Job Number: 240-149555-1

Login Number: 149555
List Number: 2
Creator: Cahill, Nicholas P

List Source: Eurofins TestAmerica, Sacramento
List Creation: 05/21/21 06:05 PM

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	1.5c
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	False	Received project as a subcontract.
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Isotope Dilution Summary

Client: City of Richmond
Project/Site: City of Richmond WWTP

Job ID: 240-149555-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Solid | **Prep Type: Total/NA**

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFBA (25-150)	PFPeA (25-150)	PFHxA (25-150)	C4PFHA (25-150)	PFOA (25-150)	PFNA (25-150)	PFDA (25-150)	PFUnA (25-150)
240-149555-1	BIOSOLIDS FROM HOLDING T	81	55	89	77	89	80	92	79
240-149555-1 MS	BIOSOLIDS FROM HOLDING TANK	69	41	79	66	87	71	93	73
240-149555-1 MSD	BIOSOLIDS FROM HOLDING TANK	76	45	84	66	84	73	93	77
LCS 320-492130/2-A	Lab Control Sample	80	89	91	91	91	89	86	82
MB 320-492130/1-A	Method Blank	91	94	92	95	89	94	90	81

		Percent Isotope Dilution Recovery (Acceptance Limits)							
Lab Sample ID	Client Sample ID	PFDoA (25-150)	PFTDA (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)	M262FTS (25-150)
240-149555-1	BIOSOLIDS FROM HOLDING T	71	58	92	83	80	63	57	150
240-149555-1 MS	BIOSOLIDS FROM HOLDING TANK	60	56	84	78	81	57	51	120
240-149555-1 MSD	BIOSOLIDS FROM HOLDING TANK	73	58	92	84	77	65	58	129
LCS 320-492130/2-A	Lab Control Sample	74	85	93	88	90	79	73	95
MB 320-492130/1-A	Method Blank	84	85	89	82	99	89	87	92

		Percent Isotope Dilution Recovery (Acceptance Limits)			
Lab Sample ID	Client Sample ID	M282FTS (25-150)	M242FTS (25-150)	HFPODA (25-150)	C3PFBS (25-150)
240-149555-1	BIOSOLIDS FROM HOLDING T	152 *5+	113	82	78
240-149555-1 MS	BIOSOLIDS FROM HOLDING TANK	140	104	73	76
240-149555-1 MSD	BIOSOLIDS FROM HOLDING TANK	152 *5+	112	76	75
LCS 320-492130/2-A	Lab Control Sample	128	83	88	93
MB 320-492130/1-A	Method Blank	116	91	88	85

Surrogate Legend

PFBA = 13C4 PFBA
PFPeA = 13C5 PFPeA
PFHxA = 13C2 PFHxA
C4PFHA = 13C4 PFHpA
PFOA = 13C4 PFOA
PFNA = 13C5 PFNA
PFDA = 13C2 PFDA
PFUnA = 13C2 PFUnA
PFDoA = 13C2 PFDoA
PFTDA = 13C2 PFTeDA
PFHxS = 18O2 PFHxS
PFOS = 13C4 PFOS
PFOSA = 13C8 FOSA
d3NMFOS = d3-NMeFOSAA
d5NEFOS = d5-NEtFOSAA
M262FTS = M2-6:2 FTS
M282FTS = M2-8:2 FTS
M242FTS = M2-4:2 FTS
HFPODA = 13C3 HFPO-DA
C3PFBS = 13C3 PFBS