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Tom, as requested.

Thank you,

Chris

*Chris Kenyon*  
Utilities Director  
City of Ionia  
616-523-0165



ATTACHMENT NAME:

J145387-1 UDS Level 2 Report Final Report.pdf

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## ANALYTICAL REPORT

Eurofins TestAmerica, Canton  
4101 Shuffel Street NW  
North Canton, OH 44720  
Tel: (330)497-9396

Laboratory Job ID: 240-145387-1

Client Project/Site: Ionia Regional Utilities Authority

**For:**

Fishbeck Thompson Carr & Huber Inc  
1515 Arboretum Drive SE  
Grand Rapids, Michigan 49546

Attn: Corrine Haybarker



*Authorized for release by:*  
3/15/2021 7:54:51 PM

Kris Brooks, Project Manager II  
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*This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.*

*Results relate only to the items tested and the sample(s) as received by the laboratory.*

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# Definitions/Glossary

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## Qualifiers

### LCMS

Qualifier	Qualifier Description
*+	LCS and/or LCSD is outside acceptance limits, high biased.
*5-	Isotope dilution analyte is outside acceptance limits, low biased.
B	Compound was found in the blank and sample.
G	The reported quantitation limit has been raised due to an exhibited elevated noise or matrix interference
I	Value is EMPC (estimated maximum possible concentration).
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

## Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
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: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## Job ID: 240-145387-1

### Laboratory: Eurofins TestAmerica, Canton

#### Narrative

#### Job Narrative 240-145387-1

#### Comments

The Perfluorinated Hydrocarbons and the ASTM Method D2216-80 Percent Solids analysis were performed at the Eurofins TestAmerica Sacramento laboratory.

#### Receipt

The samples were received on 3/4/2021 10:40 AM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 0.9° C.

#### Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: #1 (240-145387-1), #2 (240-145387-2), #3 (240-145387-3) and TANK (240-145387-4). Cooler was received with ice was completely melted. FedEx tag indicates 03/05 delivery..

#### LCMS

Method 537 (modified): The laboratory control sample (LCS) for preparation batch 320-469032 recovered outside control limits for the following analytes: Perfluorotridecanoic acid (PFTrIA). This analyte was biased high in the LCS and was not detected at a level greater than the reporting limit in the associated samples; therefore, the data have been reported.

Method 537 (modified): 13C2 PFTeDA Isotope Dilution Analyte (IDA) recovery associated with the following samples is below the method recommended limit: #1 (240-145387-1), #2 (240-145387-2), #3 (240-145387-3) and TANK (240-145387-4). Generally, data quality is not considered affected if the IDA signal-to-noise ratio is greater than 10:1, which is achieved for all IDA in the samples.

Method 537 (modified): The following samples exhibited elevated noise or matrix interferences for Perfluorooctanoic acid (PFOA) causing elevation of the reporting limit (RL): #2 (240-145387-2) and TANK (240-145387-4). The reporting limit (RL) for the affected analytes has been raised to be equal to the matrix, and a "G" qualifier applied.

Method 537 (modified): The following samples exhibited elevated noise or matrix interferences for Perfluorooctanesulfonic acid (PFOS) causing elevation of the reporting limit (RL): #1 (240-145387-1), #2 (240-145387-2) and #3 (240-145387-3). The reporting limit (RL) for the affected analytes has been raised to be equal to the matrix, and a "G" qualifier applied.

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

Method SHAKE: The following samples were light yellow after extraction/final volume: #2 (240-145387-2), #3 (240-145387-3) and TANK (240-145387-4).

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

## Method Summary

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

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: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
240-145387-1	#1	Solid	03/02/21 13:00	03/04/21 10:40	
240-145387-2	#2	Solid	03/02/21 13:05	03/04/21 10:40	
240-145387-3	#3	Solid	03/02/21 13:00	03/04/21 10:40	
240-145387-4	TANK	Solid	03/02/21 13:10	03/04/21 10:40	



# Detection Summary

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## Client Sample ID: #1

## Lab Sample ID: 240-145387-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.0	J	6.9	0.97	ug/Kg	1	✱	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	9.7		6.9	1.5	ug/Kg	1	✱	537 (modified)	Total/NA

## Client Sample ID: #2

## Lab Sample ID: 240-145387-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.5	J	7.6	1.1	ug/Kg	1	✱	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	9.3		7.6	1.6	ug/Kg	1	✱	537 (modified)	Total/NA
6:2 FTS	6.4	J	76	5.7	ug/Kg	1	✱	537 (modified)	Total/NA

## Client Sample ID: #3

## Lab Sample ID: 240-145387-3

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	0.76	J	3.1	0.44	ug/Kg	1	✱	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	5.2		3.1	0.65	ug/Kg	1	✱	537 (modified)	Total/NA
Perfluorooctanoic acid (PFOA)	2.6	J I	3.1	1.3	ug/Kg	1	✱	537 (modified)	Total/NA
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	6.8	J	31	5.8	ug/Kg	1	✱	537 (modified)	Total/NA
6:2 FTS	9.0	J	31	2.3	ug/Kg	1	✱	537 (modified)	Total/NA

## Client Sample ID: TANK

## Lab Sample ID: 240-145387-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Perfluorobutanoic acid (PFBA)	2.2	J	7.8	1.1	ug/Kg	1	✱	537 (modified)	Total/NA
Perfluorohexanoic acid (PFHxA)	14		7.8	1.6	ug/Kg	1	✱	537 (modified)	Total/NA
Perfluorooctanesulfonic acid (PFOS)	140	B	20	7.8	ug/Kg	1	✱	537 (modified)	Total/NA
6:2 FTS	220		78	5.9	ug/Kg	1	✱	537 (modified)	Total/NA
8:2 FTS	17	J	78	9.8	ug/Kg	1	✱	537 (modified)	Total/NA

This Detection Summary does not include radiochemical test results.

Eurofins TestAmerica, Canton

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

Client Sample ID: #1

Lab Sample ID: 240-145387-1

Date Collected: 03/02/21 13:00

Matrix: Solid

Date Received: 03/04/21 10:40

Percent Solids: 2.8

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.0	J	6.9	0.97	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluoropentanoic acid (PFPeA)	2.7	U	6.9	2.7	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorohexanoic acid (PFHxA)	9.7		6.9	1.5	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluoroheptanoic acid (PFHpA)	1.0	U	6.9	1.0	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorooctanoic acid (PFOA)	3.0	U	6.9	3.0	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorononanoic acid (PFNA)	1.2	U	6.9	1.2	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorodecanoic acid (PFDA)	0.76	U	6.9	0.76	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluoroundecanoic acid (PFUnA)	1.2	U	6.9	1.2	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorododecanoic acid (PFDoA)	2.3	U	6.9	2.3	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorotridecanoic acid (PFTriA)	1.8	U *	6.9	1.8	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorotetradecanoic acid (PFTeA)	1.9	U	6.9	1.9	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorobutanesulfonic acid (PFBS)	0.87	U	6.9	0.87	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluoropentanesulfonic acid (PFPeS)	0.69	U	6.9	0.69	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorohexanesulfonic acid (PFHxS)	1.1	U	6.9	1.1	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.2	U	6.9	1.2	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorooctanesulfonic acid (PFOS)	33	U G	33	33	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorononanesulfonic acid (PFNS)	0.69	U	6.9	0.69	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorodecanesulfonic acid (PFDS)	1.4	U	6.9	1.4	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
Perfluorooctanesulfonamide (FOSA)	2.8	U	6.9	2.8	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	14	U	69	14	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	13	U	69	13	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
4:2 FTS	13	U	69	13	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
6:2 FTS	5.2	U	69	5.2	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1
8:2 FTS	8.7	U	69	8.7	ug/Kg	☆	03/10/21 11:47	03/13/21 04:01	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	46		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C5-PFPeA DNU	60		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C2 PFHxA	68		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C4 PFHpA	82		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C4 PFOA	102		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C5 PFNA	104		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C2 PFDA	107		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C2 PFUnA	80		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C2 PFDoA	38		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C2 PFTeDA	14	*5-	25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C3 PFBS	71		25 - 150	03/10/21 11:47	03/13/21 04:01	1
18O2 PFHxS	70		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C4 PFOS	71		25 - 150	03/10/21 11:47	03/13/21 04:01	1
13C8 FOSA	57		25 - 150	03/10/21 11:47	03/13/21 04:01	1
d3-NMeFOSAA	57		25 - 150	03/10/21 11:47	03/13/21 04:01	1
d5-NEtFOSAA	46		25 - 150	03/10/21 11:47	03/13/21 04:01	1
M2-6:2 FTS	148		25 - 150	03/10/21 11:47	03/13/21 04:01	1
M2-8:2 FTS	145		25 - 150	03/10/21 11:47	03/13/21 04:01	1
M2-4:2 FTS	124		25 - 150	03/10/21 11:47	03/13/21 04:01	1

Eurofins TestAmerica, Canton

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

**Client Sample ID: #1**

**Date Collected: 03/02/21 13:00**

**Date Received: 03/04/21 10:40**

**Lab Sample ID: 240-145387-1**

**Matrix: Solid**

**Percent Solids: 2.8**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	97.2		0.1	0.1	%			03/09/21 12:29	1
Percent Solids	2.8		0.1	0.1	%			03/09/21 12:29	1

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

Client Sample ID: #2

Lab Sample ID: 240-145387-2

Date Collected: 03/02/21 13:05

Matrix: Solid

Date Received: 03/04/21 10:40

Percent Solids: 2.5

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	2.5	J	7.6	1.1	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluoropentanoic acid (PFPeA)	2.9	U	7.6	2.9	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorohexanoic acid (PFHxA)	9.3		7.6	1.6	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluoroheptanoic acid (PFHpA)	1.1	U	7.6	1.1	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorooctanoic acid (PFOA)	3.5	U G	3.5	3.5	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorononanoic acid (PFNA)	1.4	U	7.6	1.4	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorodecanoic acid (PFDA)	0.83	U	7.6	0.83	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluoroundecanoic acid (PFUnA)	1.4	U	7.6	1.4	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorododecanoic acid (PFDoA)	2.5	U	7.6	2.5	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorotridecanoic acid (PFTriA)	1.9	U *+	7.6	1.9	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorotetradecanoic acid (PFTeA)	2.0	U	7.6	2.0	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorobutanesulfonic acid (PFBS)	0.95	U	7.6	0.95	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluoropentanesulfonic acid (PFPeS)	0.76	U	7.6	0.76	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	U	7.6	1.2	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.3	U	7.6	1.3	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorooctanesulfonic acid (PFOS)	43	U G	43	43	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorononanesulfonic acid (PFNS)	0.76	U	7.6	0.76	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	7.6	1.5	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
Perfluorooctanesulfonamide (FOSA)	3.1	U	7.6	3.1	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	15	U	76	15	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	14	U	76	14	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
4:2 FTS	14	U	76	14	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
6:2 FTS	6.4	J	76	5.7	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1
8:2 FTS	9.5	U	76	9.5	ug/Kg	☆	03/10/21 11:47	03/13/21 04:10	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	38		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C5-PFPeA DNU	52		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C2 PFHxA	64		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C4 PFHpA	77		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C4 PFOA	96		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C5 PFNA	94		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C2 PFDA	92		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C2 PFUnA	68		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C2 PFDoA	31		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C2 PFTeDA	14	*5-	25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C3 PFBS	66		25 - 150	03/10/21 11:47	03/13/21 04:10	1
18O2 PFHxS	68		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C4 PFOS	65		25 - 150	03/10/21 11:47	03/13/21 04:10	1
13C8 FOSA	44		25 - 150	03/10/21 11:47	03/13/21 04:10	1
d3-NMeFOSAA	49		25 - 150	03/10/21 11:47	03/13/21 04:10	1
d5-NEtFOSAA	38		25 - 150	03/10/21 11:47	03/13/21 04:10	1
M2-6:2 FTS	133		25 - 150	03/10/21 11:47	03/13/21 04:10	1
M2-8:2 FTS	120		25 - 150	03/10/21 11:47	03/13/21 04:10	1
M2-4:2 FTS	94		25 - 150	03/10/21 11:47	03/13/21 04:10	1

Eurofins TestAmerica, Canton

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

Client Sample ID: #2

Lab Sample ID: 240-145387-2

Date Collected: 03/02/21 13:05

Matrix: Solid

Date Received: 03/04/21 10:40

Percent Solids: 2.5

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	97.5		0.1	0.1	%			03/09/21 12:29	1
Percent Solids	2.5		0.1	0.1	%			03/09/21 12:29	1

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

Client Sample ID: #3

Lab Sample ID: 240-145387-3

Date Collected: 03/02/21 13:00

Matrix: Solid

Date Received: 03/04/21 10:40

Percent Solids: 6.1

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.76	J	3.1	0.44	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluoropentanoic acid (PFPeA)	1.2	U	3.1	1.2	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorohexanoic acid (PFHxA)	5.2		3.1	0.65	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluoroheptanoic acid (PFHpA)	0.45	U	3.1	0.45	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorooctanoic acid (PFOA)	2.6	J I	3.1	1.3	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorononanoic acid (PFNA)	0.56	U	3.1	0.56	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorodecanoic acid (PFDA)	0.34	U	3.1	0.34	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluoroundecanoic acid (PFUnA)	0.56	U	3.1	0.56	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorododecanoic acid (PFDoA)	1.0	U	3.1	1.0	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorotridecanoic acid (PFTriA)	0.80	U *+	3.1	0.80	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorotetradecanoic acid (PFTeA)	0.84	U	3.1	0.84	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorobutanesulfonic acid (PFBS)	0.39	U	3.1	0.39	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluoropentanesulfonic acid (PFPeS)	0.31	U	3.1	0.31	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorohexanesulfonic acid (PFHxS)	0.48	U	3.1	0.48	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.55	U	3.1	0.55	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorooctanesulfonic acid (PFOS)	27	U G	27	27	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorononanesulfonic acid (PFNS)	0.31	U	3.1	0.31	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorodecanesulfonic acid (PFDS)	0.61	U	3.1	0.61	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
Perfluorooctanesulfonamide (FOSA)	1.3	U	3.1	1.3	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	6.1	U	31	6.1	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	6.8	J	31	5.8	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
4:2 FTS	5.8	U	31	5.8	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
6:2 FTS	9.0	J	31	2.3	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1
8:2 FTS	3.9	U	31	3.9	ug/Kg	☆	03/10/21 11:47	03/13/21 04:38	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	37		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C5-PFPeA DNU	52		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C2 PFHxA	67		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C4 PFHpA	78		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C4 PFOA	97		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C5 PFNA	99		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C2 PFDA	101		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C2 PFUnA	67		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C2 PFDoA	27		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C2 PFTeDA	11	*5-	25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C3 PFBS	69		25 - 150	03/10/21 11:47	03/13/21 04:38	1
18O2 PFHxS	75		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C4 PFOS	68		25 - 150	03/10/21 11:47	03/13/21 04:38	1
13C8 FOSA	46		25 - 150	03/10/21 11:47	03/13/21 04:38	1
d3-NMeFOSAA	45		25 - 150	03/10/21 11:47	03/13/21 04:38	1
d5-NEtFOSAA	34		25 - 150	03/10/21 11:47	03/13/21 04:38	1
M2-6:2 FTS	129		25 - 150	03/10/21 11:47	03/13/21 04:38	1
M2-8:2 FTS	139		25 - 150	03/10/21 11:47	03/13/21 04:38	1
M2-4:2 FTS	101		25 - 150	03/10/21 11:47	03/13/21 04:38	1

Eurofins TestAmerica, Canton

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

**Client Sample ID: #3**

**Lab Sample ID: 240-145387-3**

**Date Collected: 03/02/21 13:00**

**Matrix: Solid**

**Date Received: 03/04/21 10:40**

**Percent Solids: 6.1**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	93.9		0.1	0.1	%			03/09/21 12:29	1
Percent Solids	6.1		0.1	0.1	%			03/09/21 12:29	1

# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

**Client Sample ID: TANK**

**Lab Sample ID: 240-145387-4**

**Date Collected: 03/02/21 13:10**

**Matrix: Solid**

**Date Received: 03/04/21 10:40**

**Percent Solids: 2.5**

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
<b>Perfluorobutanoic acid (PFBA)</b>	<b>2.2</b>	<b>J</b>	7.8	1.1	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluoropentanoic acid (PFPeA)	3.0	U	7.8	3.0	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
<b>Perfluorohexanoic acid (PFHxA)</b>	<b>14</b>		7.8	1.6	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluoroheptanoic acid (PFHpA)	1.1	U	7.8	1.1	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorooctanoic acid (PFOA)	6.4	U G	6.4	6.4	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorononanoic acid (PFNA)	1.4	U	7.8	1.4	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorodecanoic acid (PFDA)	0.86	U	7.8	0.86	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluoroundecanoic acid (PFUnA)	1.4	U	7.8	1.4	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorododecanoic acid (PFDoA)	2.6	U	7.8	2.6	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorotridecanoic acid (PFTriA)	2.0	U *+	7.8	2.0	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorotetradecanoic acid (PFTeA)	2.1	U	7.8	2.1	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorobutanesulfonic acid (PFBS)	0.98	U	7.8	0.98	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluoropentanesulfonic acid (PFPeS)	0.78	U	7.8	0.78	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorohexanesulfonic acid (PFHxS)	1.2	U	7.8	1.2	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluoroheptanesulfonic Acid (PFHpS)	1.4	U	7.8	1.4	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
<b>Perfluorooctanesulfonic acid (PFOS)</b>	<b>140</b>	<b>B</b>	20	7.8	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorononanesulfonic acid (PFNS)	0.78	U	7.8	0.78	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorodecanesulfonic acid (PFDS)	1.5	U	7.8	1.5	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
Perfluorooctanesulfonamide (FOSA)	3.2	U	7.8	3.2	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	15	U	78	15	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	14	U	78	14	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
4:2 FTS	14	U	78	14	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
<b>6:2 FTS</b>	<b>220</b>		78	5.9	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1
<b>8:2 FTS</b>	<b>17</b>	<b>J</b>	78	9.8	ug/Kg	✱	03/10/21 11:47	03/13/21 04:47	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C4 PFBA	41		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C5-PFPeA DNU	56		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C2 PFHxA	65		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C4 PFHpA	78		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C4 PFOA	97		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C5 PFNA	94		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C2 PFDA	102		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C2 PFUnA	81		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C2 PFDoA	34		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C2 PFTeDA	17	*5-	25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C3 PFBS	67		25 - 150	03/10/21 11:47	03/13/21 04:47	1
18O2 PFHxS	68		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C4 PFOS	68		25 - 150	03/10/21 11:47	03/13/21 04:47	1
13C8 FOSA	58		25 - 150	03/10/21 11:47	03/13/21 04:47	1
d3-NMeFOSAA	53		25 - 150	03/10/21 11:47	03/13/21 04:47	1
d5-NEtFOSAA	45		25 - 150	03/10/21 11:47	03/13/21 04:47	1
M2-6:2 FTS	137		25 - 150	03/10/21 11:47	03/13/21 04:47	1
M2-8:2 FTS	123		25 - 150	03/10/21 11:47	03/13/21 04:47	1
M2-4:2 FTS	110		25 - 150	03/10/21 11:47	03/13/21 04:47	1

Eurofins TestAmerica, Canton



# Client Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

**Client Sample ID: TANK**

**Date Collected: 03/02/21 13:10**

**Date Received: 03/04/21 10:40**

**Lab Sample ID: 240-145387-4**

**Matrix: Solid**

**Percent Solids: 2.5**

## General Chemistry

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Percent Moisture	97.5		0.1	0.1	%			03/09/21 12:29	1
Percent Solids	2.5		0.1	0.1	%			03/09/21 12:29	1

# QC Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

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

Lab Sample ID: MB 320-469032/1-A

Matrix: Solid

Analysis Batch: 469911

Client Sample ID: Method Blank

Prep Type: Total/NA

Prep Batch: 469032

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Perfluorobutanoic acid (PFBA)	0.028	U	0.20	0.028	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluoropentanoic acid (PFPeA)	0.077	U	0.20	0.077	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorohexanoic acid (PFHxA)	0.042	U	0.20	0.042	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluoroheptanoic acid (PFHpA)	0.029	U	0.20	0.029	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorooctanoic acid (PFOA)	0.086	U	0.20	0.086	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorononanoic acid (PFNA)	0.036	U	0.20	0.036	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorodecanoic acid (PFDA)	0.022	U	0.20	0.022	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluoroundecanoic acid (PFUnA)	0.036	U	0.20	0.036	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorododecanoic acid (PFDoA)	0.067	U	0.20	0.067	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorotridecanoic acid (PFTriA)	0.051	U	0.20	0.051	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorotetradecanoic acid (PFTeA)	0.054	U	0.20	0.054	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorobutanesulfonic acid (PFBS)	0.025	U	0.20	0.025	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluoropentanesulfonic acid (PFPeS)	0.020	U	0.20	0.020	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorohexanesulfonic acid (PFHxS)	0.031	U	0.20	0.031	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluoroheptanesulfonic Acid (PFHpS)	0.035	U	0.20	0.035	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorooctanesulfonic acid (PFOS)	0.222	J	0.50	0.20	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorononanesulfonic acid (PFNS)	0.020	U	0.20	0.020	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorodecanesulfonic acid (PFDS)	0.039	U	0.20	0.039	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Perfluorooctanesulfonamide (FOSA)	0.082	U	0.20	0.082	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	0.39	U	2.0	0.39	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	0.37	U	2.0	0.37	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
4:2 FTS	0.37	U	2.0	0.37	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
6:2 FTS	0.15	U	2.0	0.15	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
8:2 FTS	0.25	U	2.0	0.25	ug/Kg		03/10/21 11:47	03/13/21 02:48	1
Isotope Dilution	MB %Recovery	MB Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C4 PFBA	47		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C5-PFPeA DNU	53		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C2 PFHxA	52		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C4 PFHpA	62		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C4 PFOA	74		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C5 PFNA	79		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C2 PFDA	85		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C2 PFUnA	86		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C2 PFDoA	91		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C2 PFTeDA	94		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C3 PFBS	53		25 - 150				03/10/21 11:47	03/13/21 02:48	1
18O2 PFHxS	53		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C4 PFOS	55		25 - 150				03/10/21 11:47	03/13/21 02:48	1
13C8 FOSA	51		25 - 150				03/10/21 11:47	03/13/21 02:48	1
d3-NMeFOSAA	67		25 - 150				03/10/21 11:47	03/13/21 02:48	1
d5-NEtFOSAA	67		25 - 150				03/10/21 11:47	03/13/21 02:48	1
M2-6:2 FTS	78		25 - 150				03/10/21 11:47	03/13/21 02:48	1
M2-8:2 FTS	79		25 - 150				03/10/21 11:47	03/13/21 02:48	1
M2-4:2 FTS	70		25 - 150				03/10/21 11:47	03/13/21 02:48	1

Eurofins TestAmerica, Canton

# QC Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

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

Lab Sample ID: LCS 320-469032/2-A

Matrix: Solid

Analysis Batch: 470065

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 469032

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorobutanoic acid (PFBA)	2.00	2.24		ug/Kg		112	76 - 136
Perfluoropentanoic acid (PFPeA)	2.00	2.17		ug/Kg		108	69 - 129
Perfluorohexanoic acid (PFHxA)	2.00	2.24		ug/Kg		112	71 - 131
Perfluoroheptanoic acid (PFHpA)	2.00	2.52		ug/Kg		126	71 - 131
Perfluorooctanoic acid (PFOA)	2.00	2.06		ug/Kg		103	72 - 132
Perfluorononanoic acid (PFNA)	2.00	2.18		ug/Kg		109	73 - 133
Perfluorodecanoic acid (PFDA)	2.00	2.24		ug/Kg		112	72 - 132
Perfluoroundecanoic acid (PFUnA)	2.00	2.41		ug/Kg		121	66 - 126
Perfluorododecanoic acid (PFDoA)	2.00	2.50		ug/Kg		125	71 - 131
Perfluorotridecanoic acid (PFTriA)	2.00	2.67	*+	ug/Kg		133	71 - 131
Perfluorotetradecanoic acid (PFTeA)	2.00	2.25		ug/Kg		112	67 - 127
Perfluorobutanesulfonic acid (PFBS)	1.77	2.03		ug/Kg		115	69 - 129
Perfluoropentanesulfonic acid (PFPeS)	1.88	2.28		ug/Kg		122	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	1.82	2.02		ug/Kg		111	62 - 122
Perfluoroheptanesulfonic Acid (PFHpS)	1.90	2.21		ug/Kg		116	76 - 136
Perfluorooctanesulfonic acid (PFOS)	1.86	2.25		ug/Kg		121	68 - 141
Perfluorononanesulfonic acid (PFNS)	1.92	2.12		ug/Kg		111	72 - 132
Perfluorodecanesulfonic acid (PFDS)	1.93	2.05		ug/Kg		106	71 - 131
Perfluorooctanesulfonamide (FOSA)	2.00	2.38		ug/Kg		119	77 - 137
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	2.00	2.09		ug/Kg		105	72 - 132
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	2.00	2.30		ug/Kg		115	72 - 132
4:2 FTS	1.87	2.03		ug/Kg		109	68 - 143
6:2 FTS	1.90	2.28		ug/Kg		120	73 - 139
8:2 FTS	1.92	2.23		ug/Kg		117	75 - 135

Isotope Dilution	LCS %Recovery	LCS Qualifier	Limits
13C4 PFBA	89		25 - 150
13C5-PFPeA DNU	81		25 - 150
13C2 PFHxA	92		25 - 150
13C4 PFHpA	89		25 - 150
13C4 PFOA	98		25 - 150
13C5 PFNA	94		25 - 150
13C2 PFDA	97		25 - 150
13C2 PFUnA	90		25 - 150
13C2 PFDoA	85		25 - 150
13C2 PFTeDA	87		25 - 150
13C3 PFBS	86		25 - 150
18O2 PFHxS	87		25 - 150

Eurofins TestAmerica, Canton

# QC Sample Results

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

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

Lab Sample ID: LCS 320-469032/2-A

Matrix: Solid

Analysis Batch: 470065

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Prep Batch: 469032

Isotope Dilution	LCS	LCS	Limits
	%Recovery	Qualifier	
13C4 PFOS	86		25 - 150
13C8 FOSA	80		25 - 150
d3-NMeFOSAA	93		25 - 150
d5-NEtFOSAA	85		25 - 150
M2-6:2 FTS	104		25 - 150
M2-8:2 FTS	85		25 - 150
M2-4:2 FTS	97		25 - 150

# QC Association Summary

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## LCMS

### Prep Batch: 469032

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-145387-1	#1	Total/NA	Solid	SHAKE	
240-145387-2	#2	Total/NA	Solid	SHAKE	
240-145387-3	#3	Total/NA	Solid	SHAKE	
240-145387-4	TANK	Total/NA	Solid	SHAKE	
MB 320-469032/1-A	Method Blank	Total/NA	Solid	SHAKE	
LCS 320-469032/2-A	Lab Control Sample	Total/NA	Solid	SHAKE	

### Analysis Batch: 469911

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-145387-1	#1	Total/NA	Solid	537 (modified)	469032
240-145387-2	#2	Total/NA	Solid	537 (modified)	469032
240-145387-3	#3	Total/NA	Solid	537 (modified)	469032
240-145387-4	TANK	Total/NA	Solid	537 (modified)	469032
MB 320-469032/1-A	Method Blank	Total/NA	Solid	537 (modified)	469032

### Analysis Batch: 470065

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
LCS 320-469032/2-A	Lab Control Sample	Total/NA	Solid	537 (modified)	469032

## General Chemistry

### Analysis Batch: 468696

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
240-145387-1	#1	Total/NA	Solid	D 2216	
240-145387-2	#2	Total/NA	Solid	D 2216	
240-145387-3	#3	Total/NA	Solid	D 2216	
240-145387-4	TANK	Total/NA	Solid	D 2216	

# Lab Chronicle

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## Client Sample ID: #1

Date Collected: 03/02/21 13:00

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-1

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	468696	03/09/21 12:29	TCS	TAL SAC

## Client Sample ID: #1

Date Collected: 03/02/21 13:00

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-1

Matrix: Solid

Percent Solids: 2.8

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			469032	03/10/21 11:47	GWO	TAL SAC
Total/NA	Analysis	537 (modified)		1	469911	03/13/21 04:01	JY1	TAL SAC

## Client Sample ID: #2

Date Collected: 03/02/21 13:05

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-2

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	468696	03/09/21 12:29	TCS	TAL SAC

## Client Sample ID: #2

Date Collected: 03/02/21 13:05

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-2

Matrix: Solid

Percent Solids: 2.5

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			469032	03/10/21 11:47	GWO	TAL SAC
Total/NA	Analysis	537 (modified)		1	469911	03/13/21 04:10	JY1	TAL SAC

## Client Sample ID: #3

Date Collected: 03/02/21 13:00

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-3

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	468696	03/09/21 12:29	TCS	TAL SAC

## Client Sample ID: #3

Date Collected: 03/02/21 13:00

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-3

Matrix: Solid

Percent Solids: 6.1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			469032	03/10/21 11:47	GWO	TAL SAC
Total/NA	Analysis	537 (modified)		1	469911	03/13/21 04:38	JY1	TAL SAC

## Client Sample ID: TANK

Date Collected: 03/02/21 13:10

Date Received: 03/04/21 10:40

## Lab Sample ID: 240-145387-4

Matrix: Solid

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	D 2216		1	468696	03/09/21 12:29	TCS	TAL SAC

Eurofins TestAmerica, Canton

# Lab Chronicle

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

**Client Sample ID: TANK**

**Lab Sample ID: 240-145387-4**

**Date Collected: 03/02/21 13:10**

**Matrix: Solid**

**Date Received: 03/04/21 10:40**

**Percent Solids: 2.5**

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	SHAKE			469032	03/10/21 11:47	GWO	TAL SAC
Total/NA	Analysis	537 (modified)		1	469911	03/13/21 04:47	JY1	TAL SAC

## Laboratory References:

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

# Accreditation/Certification Summary

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## 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	02-01-23
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	03-17-21
Kansas	NELAP	E-10375	02-01-21 *
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	04-18-21
New Jersey	NELAP	CA005	06-30-21
New York	NELAP	11666	04-01-21
Ohio	State	41252	01-29-22
Oregon	NELAP	4040	01-29-22
Pennsylvania	NELAP	68-01272	03-31-21
Texas	NELAP	T104704399-19-13	06-01-21
US Fish & Wildlife	US Federal Programs	58448	07-31-21
USDA	US Federal Programs	P330-18-00239	07-31-21
Utah	NELAP	CA000442019-01	02-28-21 *
Vermont	State	VT-4040	04-16-21
Virginia	NELAP	460278	03-14-21
Washington	State	C581	05-05-21
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



## Chain of Custody Record

50/89

eurotins

Environment Testing  
America

[illegible]

## Eurofins TestAmerica Canton Sample Receipt Form/Narrative

Login # : 145387


## Canton Facility

Client Fishbeck Site Name \_\_\_\_\_ Cooler unpacked by: Motts  
 Cooler Received on 3-4-21 Opened on 3-4-21  
 FedEx: 1<sup>st</sup> Grd Exp UPS FAS Clipper Client Drop Off TestAmerica Courier Other \_\_\_\_\_

## Receipt After-hours: Drop-off Date/Time

## Storage Location

TestAmerica Cooler # 170 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. 0.8 °C Corrected Cooler Temp. 0.9 °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 ☐ NA  
 -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)? ☒ Yes ☐ No  
 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# HC907861  
 14. Were VOAs on the COC? Yes ☒ No ☐ NA  
 15. Were air bubbles >6 mm in any VOA vials? ☒ Yes ☐ No ☒ NA  Larger than this.  
 16. Was a VOA trip blank present in the cooler(s)? Trip Blank Lot # \_\_\_\_\_ Yes ☒ No ☐ NA  
 17. Was a LL Hg or Me Hg trip blank present? \_\_\_\_\_ Yes ☒ No ☐ NA

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 pageSamples processed by: Ryan C

## 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: Fishbeck Thompson Carr & Huber Inc

Job Number: 240-145387-1

**Login Number: 145387**

**List Number: 2**

**Creator: Nuval, Mark-Anthony M**

**List Source: Eurofins TestAmerica, Sacramento**

**List Creation: 03/09/21 06:23 AM**

Question	Answer	Comment
Radioactivity wasn't checked or is $\leq$ 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.	False	Water present in cooler; indicates evidence of melted ice.
Cooler Temperature is acceptable.	False	Cooler temperature outside required temperature criteria.
Cooler Temperature is recorded.	True	8.2c
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?	N/A	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 $<6\text{mm}$ (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	





Environment Testing  
TestAmerica

Sacramento  
Sample Receiving Notes



240-145387 Field Sheet

Tracking #: 9184 7503<sup>3080</sup>

Job: \_\_\_\_\_

SO / PO / FO / SAT / 2-Day / Ground / UPS / CDO / Courier  
GSO / OnTrac / Goldstreak / USPS / Other \_\_\_\_\_

Use this form to record Sample Custody Seal, Cooler Custody Seal, Temperature & corrected Temperature & other observations.  
File in the job folder with the COC.

Therm. ID: 6-01 Corr. Factor: (+/-) 0 °C

Ice \_\_\_\_\_ Wet ☒ Gel \_\_\_\_\_ Other \_\_\_\_\_

Cooler Custody Seal: \_\_\_\_\_

Cooler ID: \_\_\_\_\_

Temp Observed: 8.2 °C Corrected: 8.2 °C

From: Temp Blank ☐ Sample ☐

**Opening/Processing The Shipment**

	Yes	No	NA
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cooler Temperature is acceptable?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Frozen samples show signs of thaw?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Initials: MAN Date: 03/08/21

**Unpacking/Labeling The Samples**

	Yes	No	NA
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample custody seal?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Containers are not broken or leaking?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample date/times are provided?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Appropriate containers are used?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample bottles are completely filled?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Zero headspace?*	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Multiphasic samples are not present?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

\*Containers requiring zero headspace have no headspace, or bubble < 6 mm (1/4")

Initials: MAN Date: 03/09/21

Notes: ICE COMPLETELY MELTED. FEDEX

TAG INDICATES 03/05 DELIVERY.

MAN 03/08/21

Trizma Lot #(s): \_\_\_\_\_

**Login Completion**

	Yes	No	NA
Receipt Temperature on COC?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within hold time?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NCM Filed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Log Release checked in TALS?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Initials: MAN Date: 03/09/21

# Isotope Dilution Summary

Client: Fishbeck Thompson Carr & Huber Inc  
Project/Site: Ionia Regional Utilities Authority

Job ID: 240-145387-1

## 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)
240-145387-1	#1	46	60	68	82	102	104	107	80
240-145387-2	#2	38	52	64	77	96	94	92	68
240-145387-3	#3	37	52	67	78	97	99	101	67
240-145387-4	TANK	41	56	65	78	97	94	102	81
LCS 320-469032/2-A	Lab Control Sample	89	81	92	89	98	94	97	90
MB 320-469032/1-A	Method Blank	47	53	52	62	74	79	85	86

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDaA (25-150)	PFTDA (25-150)	C3PFBS (25-150)	PFHxS (25-150)	PFOS (25-150)	PFOSA (25-150)	d3NMFOS (25-150)	d5NEFOS (25-150)
240-145387-1	#1	38	14 *5-	71	70	71	57	57	46
240-145387-2	#2	31	14 *5-	66	68	65	44	49	38
240-145387-3	#3	27	11 *5-	69	75	68	46	45	34
240-145387-4	TANK	34	17 *5-	67	68	68	58	53	45
LCS 320-469032/2-A	Lab Control Sample	85	87	86	87	86	80	93	85
MB 320-469032/1-A	Method Blank	91	94	53	53	55	51	67	67

### Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	M262FTS (25-150)	M282FTS (25-150)	M242FTS (25-150)
240-145387-1	#1	148	145	124
240-145387-2	#2	133	120	94
240-145387-3	#3	129	139	101
240-145387-4	TANK	137	123	110
LCS 320-469032/2-A	Lab Control Sample	104	85	97
MB 320-469032/1-A	Method Blank	78	79	70

### Surrogate Legend

PFBA = 13C4 PFBA  
PFPeA = 13C5-PFPeA DNU  
PFHxA = 13C2 PFHxA  
C4PFHA = 13C4 PFHpA  
PFOA = 13C4 PFOA  
PFNA = 13C5 PFNA  
PFDA = 13C2 PFDA  
PFUnA = 13C2 PFUnA  
PFDaA = 13C2 PFDaA  
PFTDA = 13C2 PFTeDA  
C3PFBS = 13C3 PFBS  
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