

DRAFT

HEATH LANE AREA GROUNDWATER

Meeting/teleconference with WDNR

Tyco Fire Products LP

Marinette, WI

October 4, 2019

Purpose of Discussion

- Preliminary review of findings from additional subsurface investigation in Heath Lane area
 - New VAP results
 - Geology
 - Groundwater Flow
 - PFAS distribution
 - Interpretation

Major Points

- Extensive investigations (Dec. 2017 to present) are conclusive:
 - Groundwater flow patterns understood
 - No PFAS plume upgradient of Heath Lane Area
 - Shallow detections in Heath Lane Area (all below HAL) support localized minor sources, not a component of groundwater detections further to the north

Supplemental Investigations in Heath Lane Area (Summer 2019)

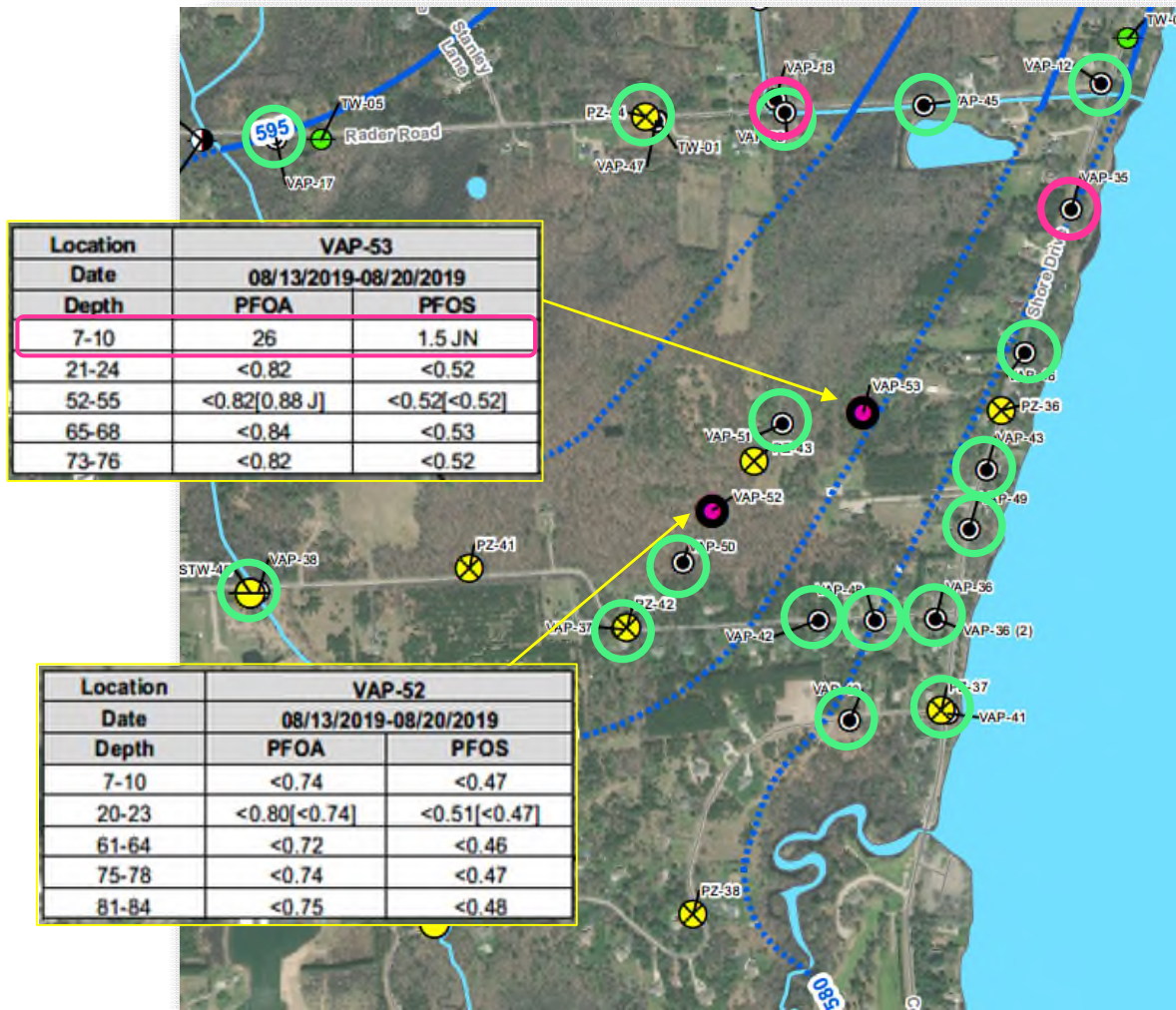


- Two additional VAP borings
- Geology logged to 90+ feet bgs.
- Ten discrete groundwater samples collected across sand unit
- Fourteen piezometers installed from Rader Rd south
- Two new stream gauge stations on Ditch A

2019 work supplements 19 previously completed VAPs with 65 samples intervals from Rader Rd to south.

A Data Driven Program

New VAP Results



August 2019 Sampling Results

- One shallow sample w/ PFOA detected at 26 ppt (VAP-53 7-10 ft bgs)
- All other intervals ND (including all depths at VAP-52)
- Detection inconsistent with detections further to the north or Heath Lane area detections

Prior VAP Boring Results

(Dec. 2017 – Oct. 2018)

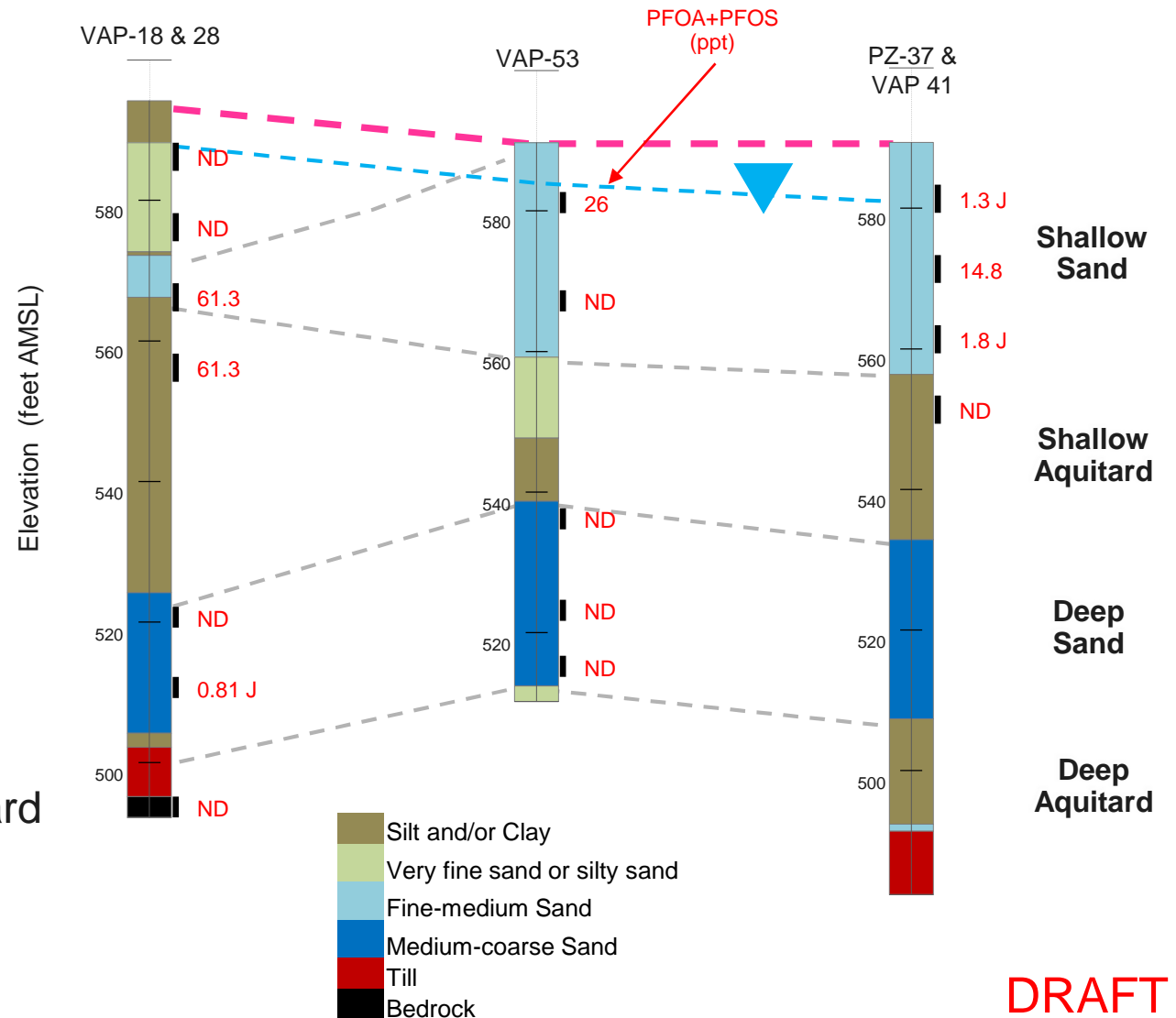
- All VAP sample results below HAL in all depths
- One or more VAP sample result above HAL

Geology of Heath Lane Area



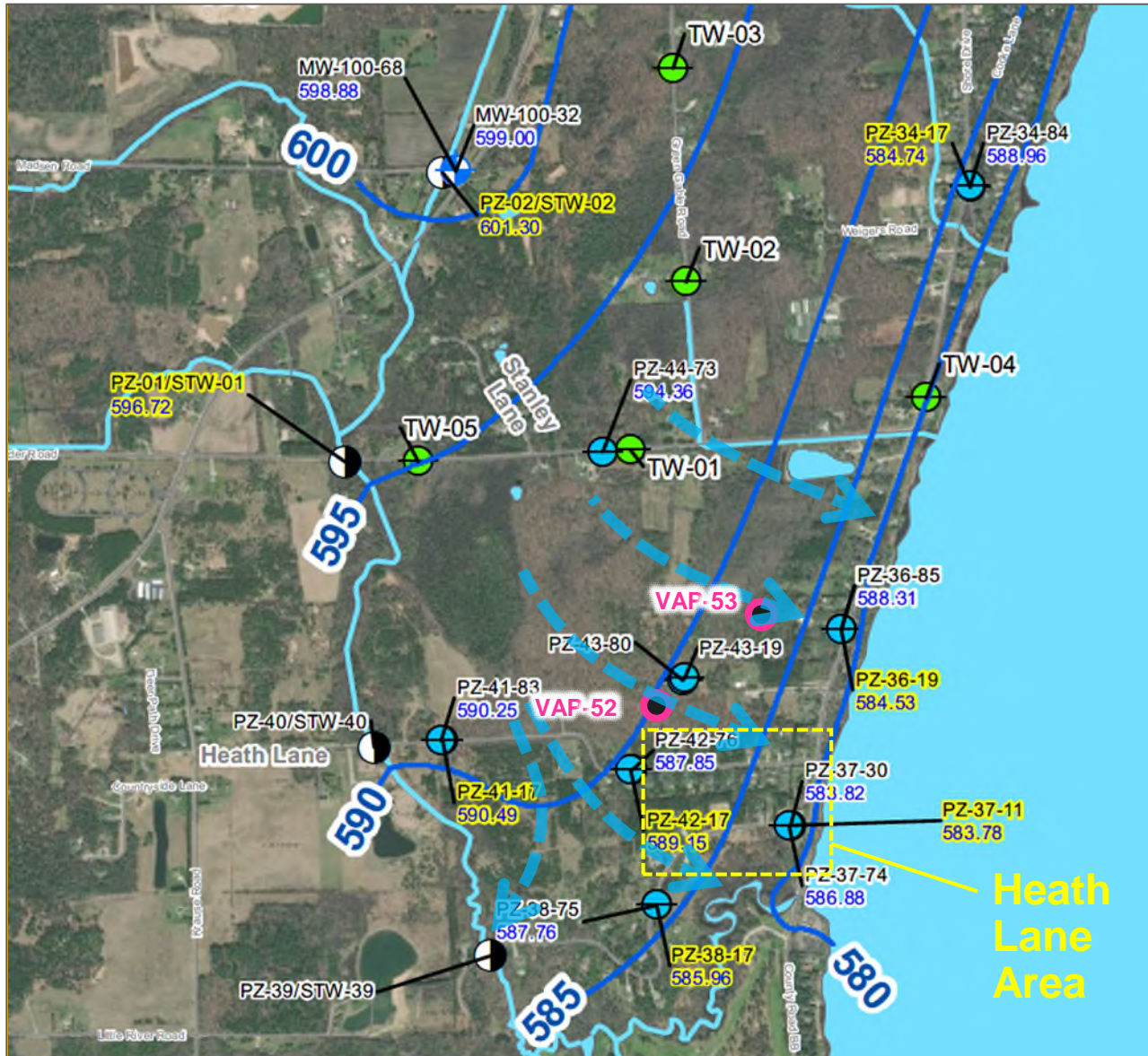
- Layered glacial lake sediments
- Two water-bearing zones separated by an aquitard
- Locations on section are cross-gradient of each other (not on a single flow path)

GENERALIZED GEOLOGY



DRAFT

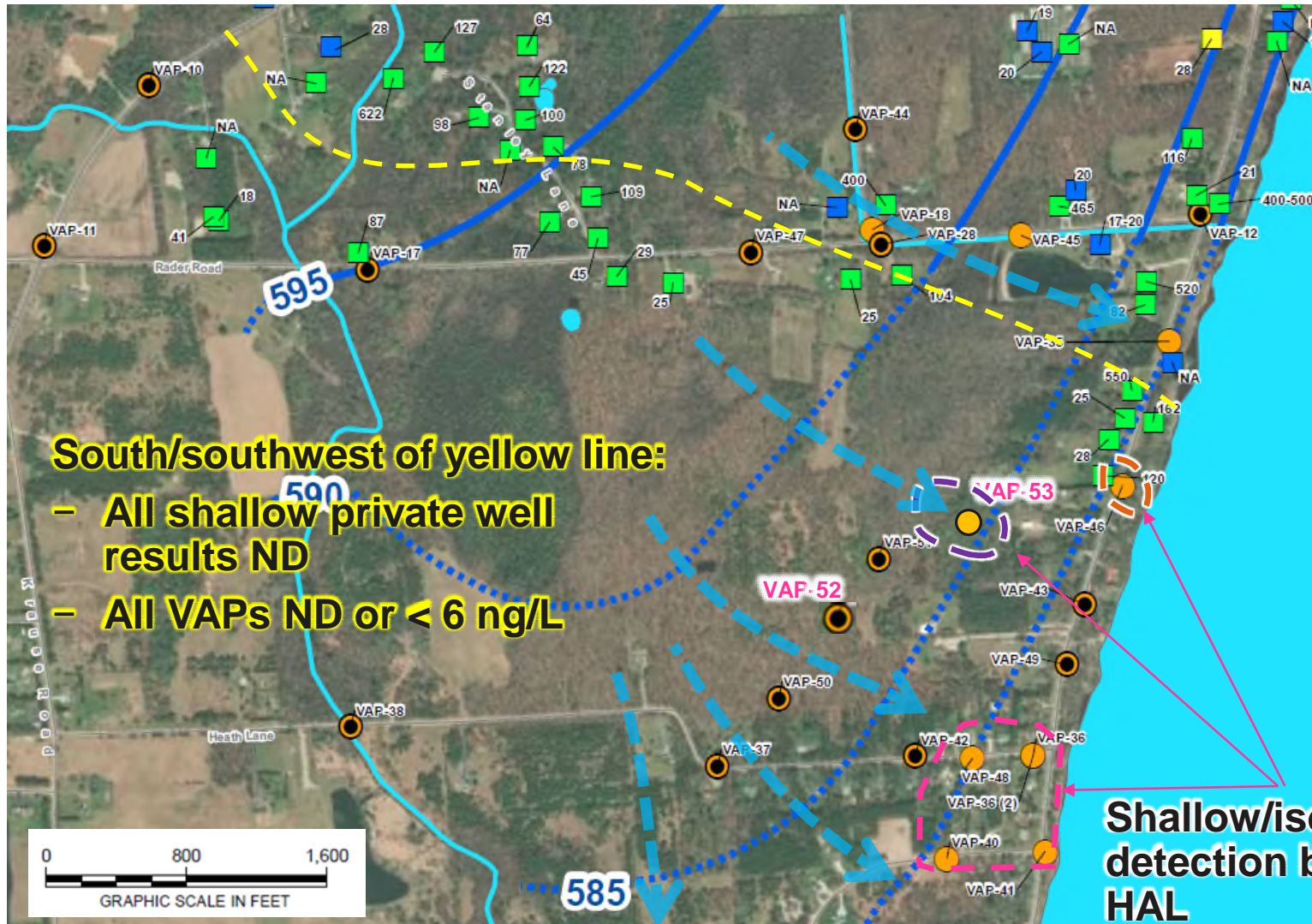
Water Table – August 2019



Flow direction

- New piezometer show dominant gradient from northwest
- Heath Lane area not downgradient of
 - VAP-53
 - Any area where PFAS detected in shallow groundwater
- Infiltration from surface recharges shallowest groundwater

Upgradient Sampling Results



South/southwest of yellow line:

- All shallow private well results ND
- All VAPs ND or < 6 ng/L

Shallow/isolated detection below HAL

- Extensive sampling shows no plume upgradient of isolated detections south of Rader Rd.
- VAP-53 and 46 and Heath Lane Areas are localized and disconnected

SAND UNIT VAP BORING LOCATION

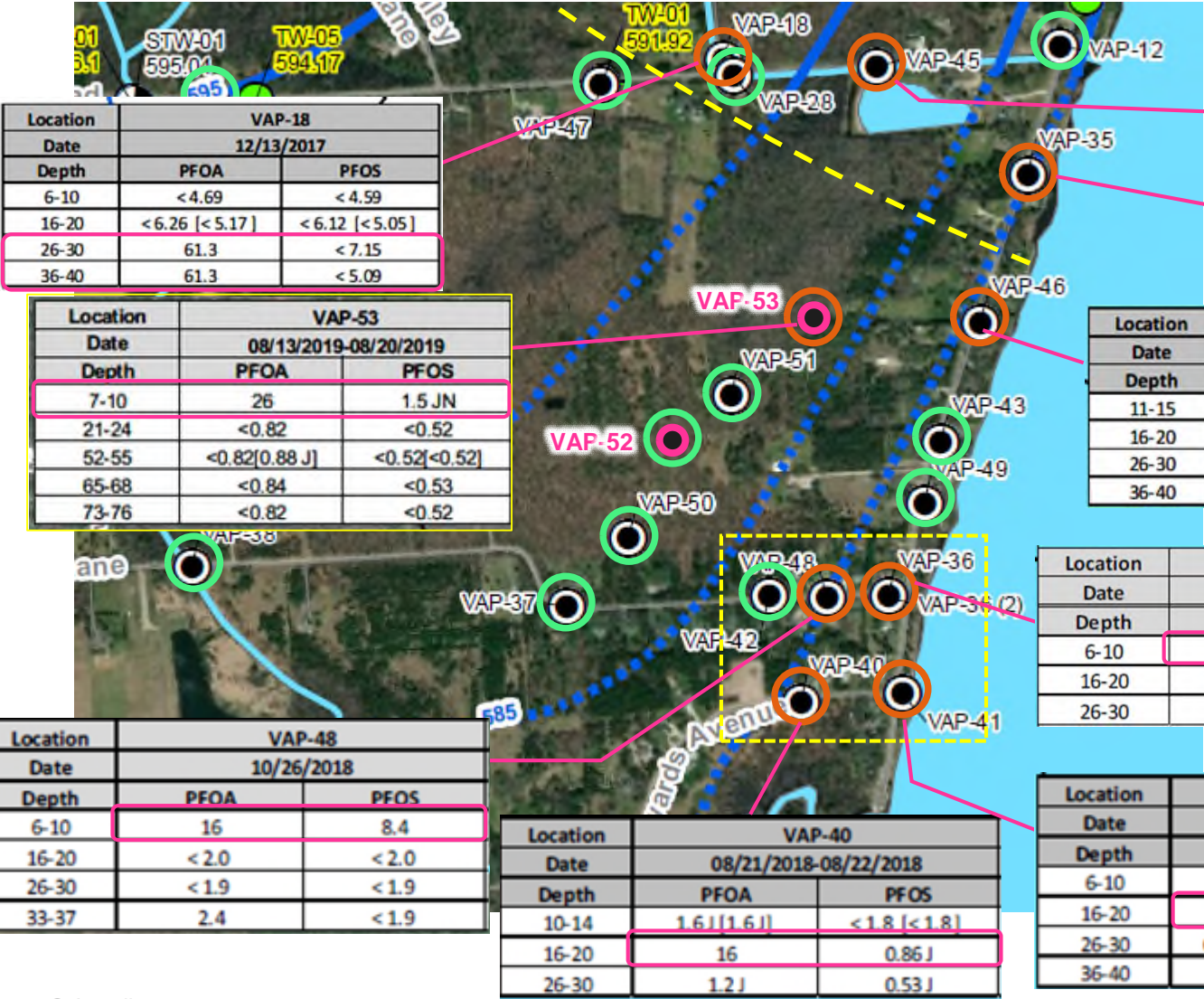
- PFOA + PFOS < 6 NG/L IN ALL SAMPLE INTERVALS
- PFOA + PFOS > 6 NG/L IN ONE OR MORE SAMPLE INTERVALS

DRINKING WATER WELL LOCATION

- PFOA AND PFOS NOT DETECTED
- PFOA AND/OR PFOS DETECTED ABOVE HAL
- PFOA AND/OR PFOS DETECTED BELOW HAL

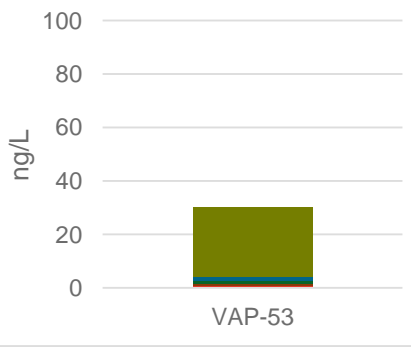
1. Posted number is well depth (feet), if known.
2. Yellow line based on shallow groundwater results (defined as < ~45 feet).

VAP Sampling Results (vs. 6 ng/L)

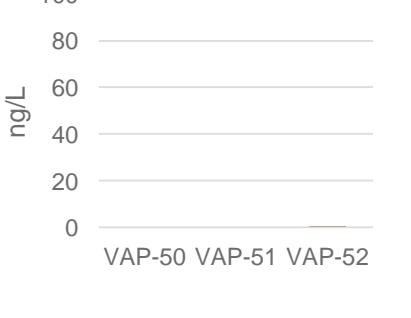


- All VAP sample results ND or < 6 ng/L (PFOA+PFOS)
- One or more VAP sample result > 6 ng/L (PFOA+PFOS)

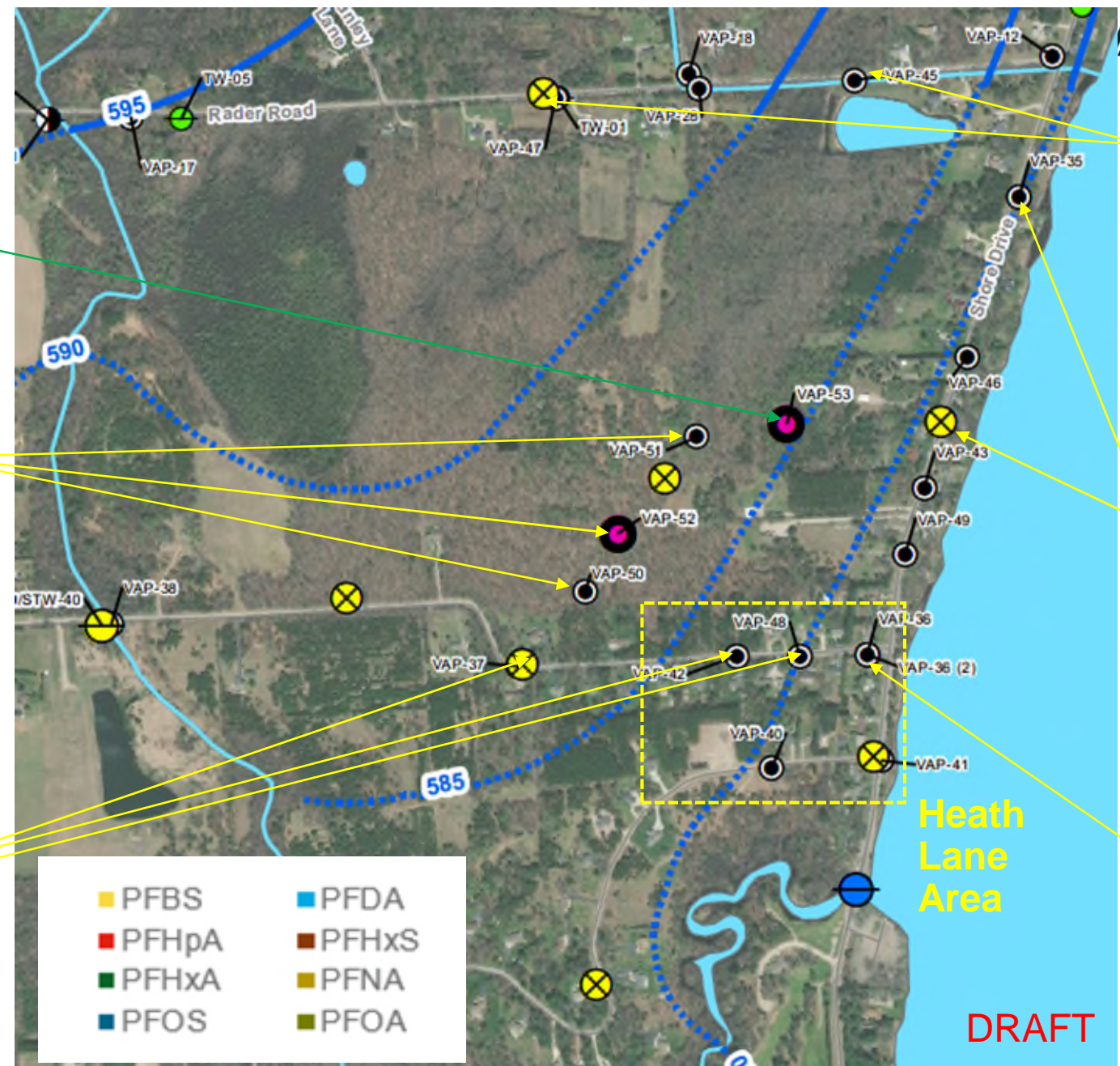
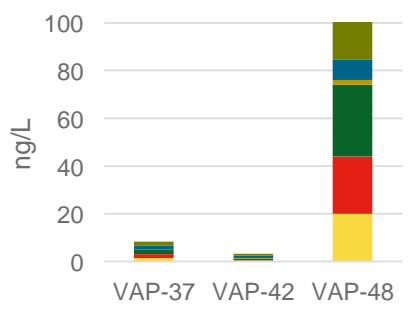
VAP-53 (7-10 ft)



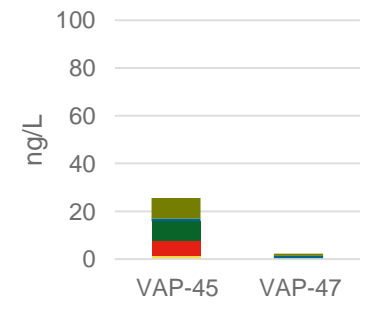
VAP-50, 51, 52



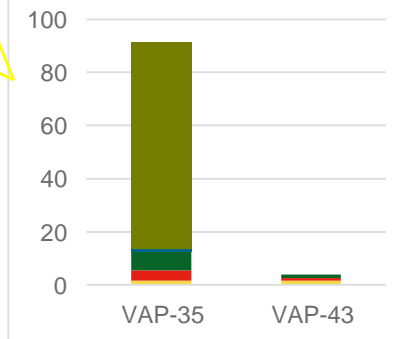
VAP-37, 42, 48



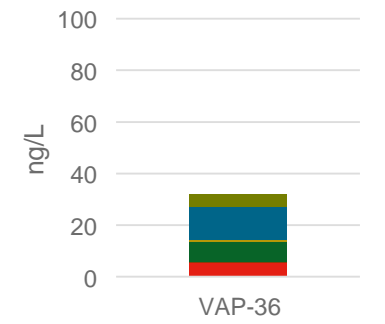
VAP-45, VAP-47



VAP-35, 43

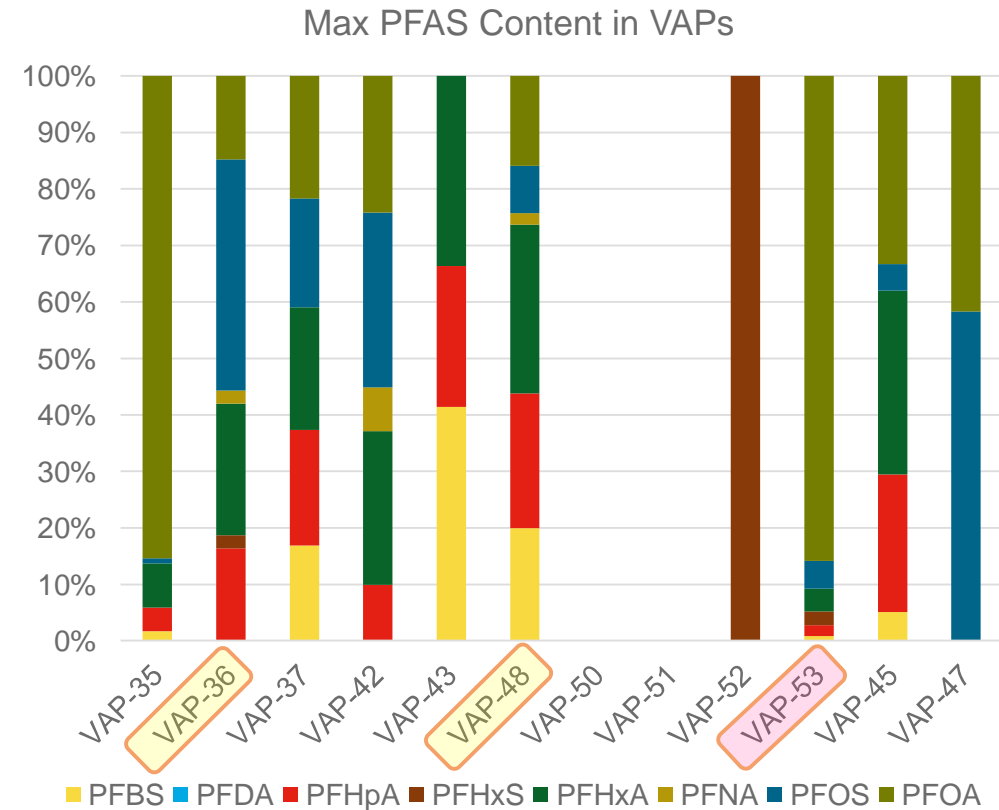


VAP-36 (2)



PFAS Fingerprint Analysis

- VAP-53 has a different PFAS fingerprint than Heath Lane Samples (e.g., VAP-36, VAP-48)
- Differences suggest multiple unique localized sources



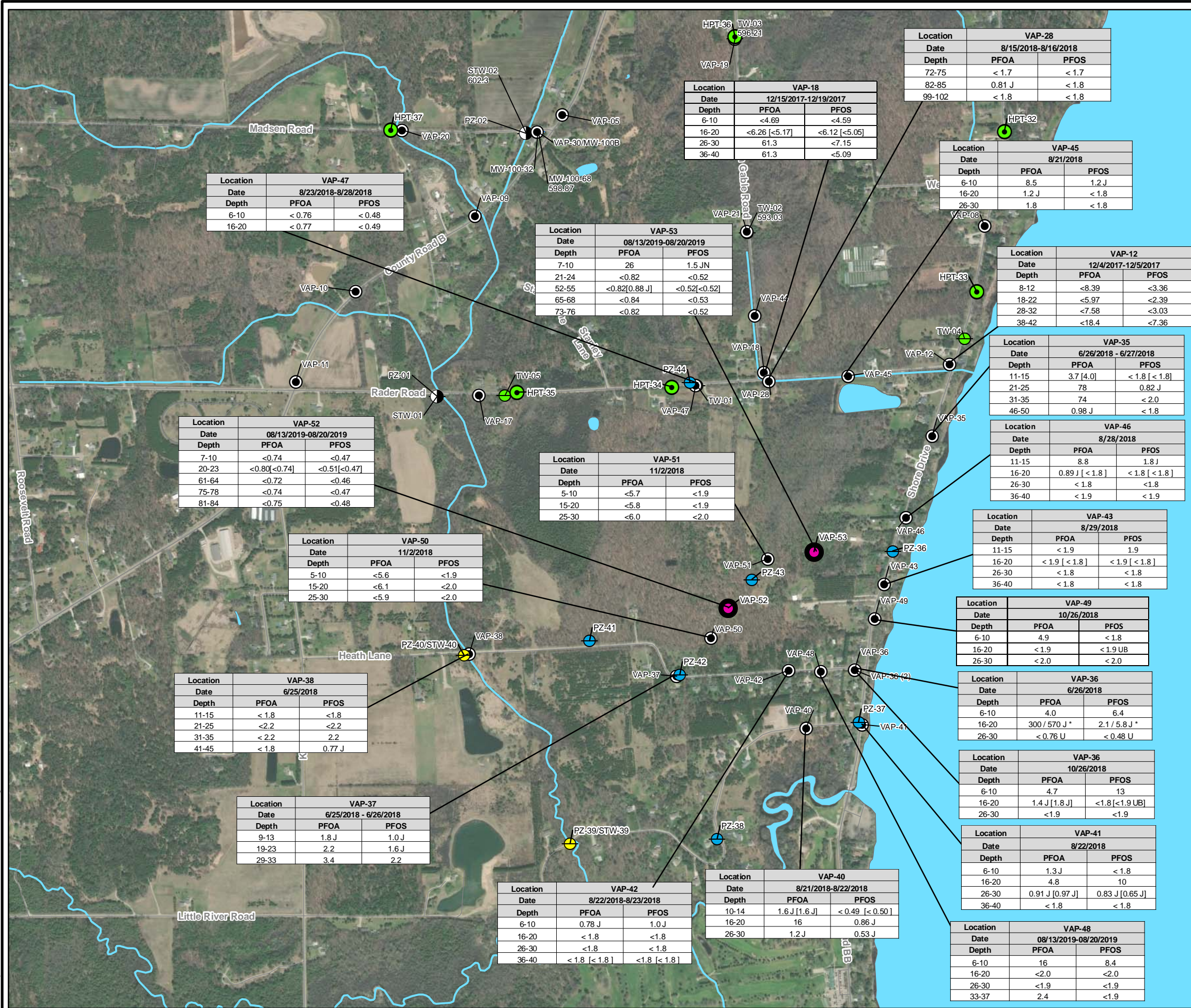
VAP-53
 Heath Lane Location

Conclusions

- New piezometers support prior understanding of flow patterns
- VAP-53 not upgradient of Heath Lane Area
- Shallow depth of detections and distinct chemistry show small localized sources
- Extensive sampling at VAPs and water wells shows no upgradient plume
- No deep sand detections south of Rader Rd (below aquitard)

Heath Lane Area detections unrelated to PFAS found closer to Site.

Questions?



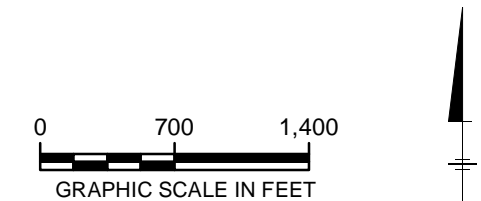
LEGEND:

- 2019 HPT BORING LOCATION
- DITCH PIEZOMETER/STILLING WELL PAIR
- PIEZOMETER
- VAP LOCATION
- + MONITORING WELL
- TEMPORARY PIEZOMETER
- PREVIOUS VAP LOCATION
- ROAD
- DITCH/STREAM
- WATERBODY

DRAFT - 10/4/2019

NOTES:

1. PFOA = PERFLUOROOCANOIC ACID
2. PFOS = PERFLUOROOCANE SULFONIC ACID
3. VAP = VERTICAL AQUIFER PROFILING
4. ALL CONCENTRATIONS REPORTED IN UNITS OF NANOGRAMS PER LITER (ng/L)
5. HIGHLIGHTED VAP LOCATIONS WERE COMPLETED IN OCTOBER AND NOVEMBER 2018.
6. SAMPLE DEPTH RANGES ARE IN UNITS OF FEET BELOW GROUND SURFACE.
7. FIELD DUPLICATE RESULTS ARE INCLUDED IN BRACKETS. RESULTS FROM REANALYSIS OF A SAMPLE ARE SEPARATED FROM THE INITIAL RESULTS WITH A SLASH AND FOLLOWED BY AN ASTERISK.
8. THE VAP-36 SAMPLE FROM DEPTH 16-20 FT, COLLECTED ON 6/26/18, WAS REANALYZED ON 8/6/18.
9. QUALIFIERS ARE DEFINED AS:
 < = COMPOUND NOT DETECTED AT THE REPORTING LIMIT.
 J = THE COMPOUND WAS POSITIVELY IDENTIFIED; HOWEVER, THE ASSOCIATED NUMERICAL VALUE IS AN ESTIMATED CONCENTRATION ONLY.
 UB = COMPOUND CONSIDERED NON-DETECT AT THE LISTED VALUE DUE TO ASSOCIATED BLANK CONTAMINATION.
10. CITY BOUNDARY DATA SOURCE: WISCONSIN LEGISLATIVE TECHNOLOGY SERVICES BUREAU, WISCONSIN COUNTY CLERKS AND LAND INFORMATION OFFICES, ACCESSED FALL 2017.
11. DITCH/STREAM AND WATERBODY DATA SOURCE: U.S. GEOLOGICAL SURVEY NATIONAL HYDROGRAPHY DATASET, ACCESSED FALL 2017.
12. ROAD DATA SOURCE: OPEN STREET MAP, ACCESSED FALL 2017.



TYCO FIRE PRODUCTS, LP
MARINETTE, WISCONSIN

PIEZOMETER AND VAP LOCATIONS

FIGURE
1

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VERTICAL AQUIFER PROFILE SAMPLE RESULTS - AUGUST 13-20, 2019

Location	Sample Date	Sample ID	EtFOSAA	MeFOSAA	PFBS	PFDA	PFDoA	PFHpA	PFHxA	PFHxS	PFNA	PFOA	PFOS	PFTeA	PFTriA	PFUnA
VAP-52	8/13/2019	VAP-52 (7-10)	< 1.7 U	< 2.7 U	< 0.17 U	< 0.27 U	< 0.48 U	< 0.22 U	< 0.50 U	< 1.7 UB	< 0.23 U	< 0.74 U	< 0.47 U	< 0.25 U	< 1.1 U	< 0.96 U
VAP-52	8/14/2019	VAP-52 (20-23)	< 1.8 U	< 2.9 U	< 0.19 U	< 0.29 U	< 0.52 U	< 0.23 U	< 0.54 U	< 1.9 UB	< 0.25 U	< 0.80 U	< 0.51 U	< 0.27 U	< 1.2 U	< 1.0 U
VAP-52	8/14/2019	VAP-52 (61-64)	< 1.6 U	< 2.6 U	< 0.17 U	< 0.26 U	< 0.47 U	< 0.21 U	< 0.49 U	< 1.7 UB	< 0.23 U	< 0.72 U	< 0.46 U	< 0.25 U	< 1.1 U	< 0.93 U
VAP-52	8/14/2019	DUP-01 / VAP-52 (20-23)	< 1.7 U	< 2.7 U	< 0.17 U	< 0.27 U	< 0.48 U	< 0.22 U	< 0.50 U	< 1.7 UB	< 0.23 U	< 0.74 U	< 0.47 U	< 0.25 U	< 1.1 U	< 0.96 U
VAP-52	8/15/2019	VAP-52 (75-78)	< 1.6 U	< 2.7 U	< 0.17 U	< 0.27 U	< 0.48 U	< 0.22 U	< 0.50 U	< 1.7 UB	< 0.23 U	< 0.74 U	< 0.47 U	< 0.25 U	< 1.1 U	< 0.95 U
VAP-52	8/15/2019	VAP-52 (81-84)	< 1.7 U	< 2.7 U	< 0.18 U	< 0.27 U	< 0.49 U	< 0.22 U	< 0.51 U	< 1.8 UB	< 0.24 U	< 0.75 U	< 0.48 U	< 0.26 U	< 1.1 U	< 0.97 U
VAP-53	8/16/2019	VAP-53 (21-24)	< 1.8 U	< 3.0 U	< 0.19 U	< 0.30 U	< 0.53 U	< 0.24 U	< 0.56 U	< 1.9 UB	< 0.26 U	< 0.82 U	< 0.52 U	< 0.28 U	< 1.3 U	< 1.1 U
VAP-53	8/16/2019	VAP-53 (7-10)	< 1.7 U	< 2.7 U	0.25 J	< 0.27 U	< 0.48 U	0.57 J	1.2 J	< 1.7 UB	< 0.24 U	26	1.5 JN	< 0.25 U	< 1.1 U	< 0.96 U
VAP-53	8/19/2019	VAP-53 (52-55)	1.8 J	< 3.0 U	< 0.19 U	< 0.30 U	< 0.53 U	< 0.24 U	< 0.56 U	< 1.9 UB	< 0.26 U	< 0.82 U	< 0.52 U	< 0.28 U	< 1.3 U	< 1.1 U
VAP-53	8/19/2019	VAP-53 (65-68)	< 1.9 U	< 3.1 U	< 0.20 U	< 0.31 U	< 0.54 U	< 0.25 U	< 0.57 U	< 2.0 UB	< 0.27 U	< 0.84 U	< 0.53 U	< 0.29 U	< 1.3 U	< 1.1 U
VAP-53	8/19/2019	DUP-02 / VAP-53 (52-55)	< 1.8 U	< 3.0 U	< 0.19 U	< 0.30 U	< 0.53 U	< 0.24 U	< 0.56 U	< 1.9 UB	< 0.26 U	0.88 J	< 0.52 U	< 0.28 U	< 1.2 U	< 1.1 U
VAP-53	8/20/2019	VAP-53 (73-76)	< 1.8 U	< 3.0 U	< 0.19 U	< 0.30 U	< 0.53 U	< 0.24 U	< 0.56 U	< 1.9 UB	< 0.26 U	< 0.82 U	< 0.52 U	< 0.28 U	< 1.3 U	< 1.1 U

Notes:

Detections are boldfaced

Sample result units are in ng/L (nanogram per liter)

< = Compound not detected at method detection limit

D = Dilution required for sample analysis

DUP = Field Duplicate

J = The compound was positively identified; however, the associated numerical value is an estimated concentration only.

JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

UB = Compound considered non-detect at the listed value due to associated blank contamination.

EtFOSAA = Ethylperfluorooctane sulfonamido acetate

MeFOSAA = Methylperfluorooctane sulfonamido acetate

PFBS = Perfluorobutanesulfonic acid (C4)

PFDA = Perfluorodecanoic acid (C10)

PFDoA = Perfluorododecanoic acid (C12)

PFHpA = Perfluoroheptanoic acid (C7)

PFHxA = Perfluorohexanoic acid (C6)

PFHxS = Perfluorohexanesulfonic acid (C6)

PFNA = Perfluorononanoic acid (C9)

PFOA = Perfluorooctanoic acid (C8)

PFOS = Perfluorooctanesulfonic acid (C8)

PFTeA = Perfluorotetradecanoic acid (C14)

PFTriA = Perfluorotridecanoic acid (C13)

PFUnA = Perfluoroundecanoic acid (C11)

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-53401-1

Client Project/Site: Marinette WI001605.0009 30015294

For:

ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Lisa Rutkowski



*Authorized for release by:
9/5/2019 8:59:39 PM*

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

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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: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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.

Glossary

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

Data Validation Qualifiers

UB = Compound is considered non-detect at the listed value due to associated blank contamination.

JN = The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Job ID: 320-53401-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-53401-1

Comments

No additional comments.

Receipt

The samples were received on 8/17/2019 9:20 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.8° C.

LCMS

Method(s) 537 (modified), EPA 537(Mod): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-316980/10) and (ICV 320-316980/11)

Method(s) 537 (modified): The "I" qualifier means the transition mass ratio for the indicated analyte(s) was outside of the established ratio limits. The qualitative identification of the analyte(s) has/have some degree of uncertainty. However, analyst judgement was used to positively identify the analyte(s). VAP-53 (7-10) (320-53401-11)

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

Organic Prep

Method(s) 3535: The following samples were observed to be of a semi-fluorescent green/yellow color after solid-phase extraction: VAP-52 (7-10) (320-53401-1), VAP-52 (20-23) (320-53401-3), VAP-52 (61-64) (320-53401-4), DUP-01 (320-53401-5), VAP-52 (75-78) (320-53401-7), VAP-52 (81-84) (320-53401-8), VAP-53 (7-10) (320-53401-11), VAP-53 (21-24) (320-53401-12), VAP-53 (21-24) (320-53401-12[MS]) and VAP-53 (21-24) (320-53401-12[MSD]) preparation batch 320-316857 Method: PFC_IDA Matrix: Aqueous

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (7-10)

Lab Sample ID: 320-53401-1

Date Collected: 08/13/19 15:45

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		17	1.7	ng/L		08/21/19 05:00	08/25/19 08:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.7		17	2.7	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.7	0.22	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorohexanesulfonic acid (PFHxS)	1.7	0.22 J-B UB	1.7	0.15	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.7	0.47	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorooctanoic acid (PFOA)	<0.74		1.7	0.74	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		08/21/19 05:00	08/25/19 08:09	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.7	0.96	ng/L		08/21/19 05:00	08/25/19 08:09	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	95		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C2 PFDoA	88		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C4 PFHpA	103		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C2 PFHxA	92		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C5 PFNA	98		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C4 PFOA	98		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C4 PFOS	105		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C2 PFTeDA	83		25 - 150	08/21/19 05:00	08/25/19 08:09	1
18O2 PFHxS	116		25 - 150	08/21/19 05:00	08/25/19 08:09	1
13C2 PFUnA	90		25 - 150	08/21/19 05:00	08/25/19 08:09	1
d3-NMeFOSAA	91		25 - 150	08/21/19 05:00	08/25/19 08:09	1
d5-NEtFOSAA	93		25 - 150	08/21/19 05:00	08/25/19 08:09	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: FIELD BLANK-081319

Lab Sample ID: 320-53401-2

Date Collected: 08/13/19 16:00

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		18	1.7	ng/L		08/21/19 05:00	08/25/19 08:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		18	2.9	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorodecanoic acid (PFDA)	<0.29		1.8	0.29	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorododecanoic acid (PFDoA)	<0.51		1.8	0.51	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorohexanesulfonic acid (PFHxS)	0.27	J B	1.8	0.16	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorohexanoic acid (PFHxA)	<0.53		1.8	0.53	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorononanoic acid (PFNA)	<0.25		1.8	0.25	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorooctanesulfonic acid (PFOS)	<0.50		1.8	0.50	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorooctanoic acid (PFOA)	<0.78		1.8	0.78	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.8	0.27	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluorotridecanoic acid (PFTrIA)	<1.2		1.8	1.2	ng/L		08/21/19 05:00	08/25/19 08:17	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.8	1.0	ng/L		08/21/19 05:00	08/25/19 08:17	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	91		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C2 PFDoA	87		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C4 PFHpA	101		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C2 PFHxA	90		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C5 PFNA	98		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C4 PFOA	92		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C4 PFOS	109		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C2 PFTeDA	81		25 - 150				08/21/19 05:00	08/25/19 08:17	1
18O2 PFHxS	115		25 - 150				08/21/19 05:00	08/25/19 08:17	1
13C2 PFUnA	91		25 - 150				08/21/19 05:00	08/25/19 08:17	1
d3-NMeFOSAA	95		25 - 150				08/21/19 05:00	08/25/19 08:17	1
d5-NEtFOSAA	88		25 - 150				08/21/19 05:00	08/25/19 08:17	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (20-23)

Lab Sample ID: 320-53401-3

Date Collected: 08/14/19 09:10

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		08/21/19 05:00	08/25/19 08:25	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.9	0.23	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.33 JB UB	1.9	0.16	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorohexanoic acid (PFHxA)	<0.54		1.9	0.54	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorononanoic acid (PFNA)	<0.25		1.9	0.25	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorooctanesulfonic acid (PFOS)	<0.51		1.9	0.51	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorooctanoic acid (PFOA)	<0.80		1.9	0.80	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.9	0.27	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluorotridecanoic acid (PFTrIA)	<1.2		1.9	1.2	ng/L		08/21/19 05:00	08/25/19 08:25	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		08/21/19 05:00	08/25/19 08:25	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	84		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C2 PFDoA	75		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C4 PFHpA	87		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C2 PFHxA	75		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C5 PFNA	88		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C4 PFOA	86		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C4 PFOS	97		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C2 PFTeDA	69		25 - 150				08/21/19 05:00	08/25/19 08:25	1
18O2 PFHxS	107		25 - 150				08/21/19 05:00	08/25/19 08:25	1
13C2 PFUnA	77		25 - 150				08/21/19 05:00	08/25/19 08:25	1
d3-NMeFOSAA	80		25 - 150				08/21/19 05:00	08/25/19 08:25	1
d5-NEtFOSAA	78		25 - 150				08/21/19 05:00	08/25/19 08:25	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (61-64)

Lab Sample ID: 320-53401-4

Date Collected: 08/14/19 16:30

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.6		17	1.6	ng/L		08/21/19 05:00	08/25/19 08:33	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.6		17	2.6	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorodecanoic acid (PFDA)	<0.26		1.7	0.26	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorododecanoic acid (PFDoA)	<0.47		1.7	0.47	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluoroheptanoic acid (PFHpA)	<0.21		1.7	0.21	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorohexanesulfonic acid (PFHxS)	1.7	0.29 J B UB	1.7	0.14	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorohexanoic acid (PFHxA)	<0.49		1.7	0.49	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorooctanesulfonic acid (PFOS)	<0.46		1.7	0.46	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorooctanoic acid (PFOA)	<0.72		1.7	0.72	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		08/21/19 05:00	08/25/19 08:33	1
Perfluoroundecanoic acid (PFUnA)	<0.93		1.7	0.93	ng/L		08/21/19 05:00	08/25/19 08:33	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	96		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C2 PFDoA	89		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C4 PFHpA	103		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C2 PFHxA	93		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C5 PFNA	101		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C4 PFOA	100		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C4 PFOS	111		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C2 PFTeDA	88		25 - 150	08/21/19 05:00	08/25/19 08:33	1
18O2 PFHxS	120		25 - 150	08/21/19 05:00	08/25/19 08:33	1
13C2 PFUnA	94		25 - 150	08/21/19 05:00	08/25/19 08:33	1
d3-NMeFOSAA	92		25 - 150	08/21/19 05:00	08/25/19 08:33	1
d5-NEtFOSAA	91		25 - 150	08/21/19 05:00	08/25/19 08:33	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: DUP-01

Lab Sample ID: 320-53401-5

Date Collected: 08/14/19 00:00

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		17	1.7	ng/L		08/21/19 05:00	08/25/19 08:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.7		17	2.7	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.7	0.22	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorohexanesulfonic acid (PFHxS)	1.7	0.34 JB UB	1.7	0.15	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.7	0.47	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorooctanoic acid (PFOA)	<0.74		1.7	0.74	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		08/21/19 05:00	08/25/19 08:41	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.7	0.96	ng/L		08/21/19 05:00	08/25/19 08:41	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	109		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C2 PFDoA	97		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C4 PFHpA	119		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C2 PFHxA	102		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C5 PFNA	117		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C4 PFOA	115		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C4 PFOS	117		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C2 PFTeDA	79		25 - 150	08/21/19 05:00	08/25/19 08:41	1
18O2 PFHxS	129		25 - 150	08/21/19 05:00	08/25/19 08:41	1
13C2 PFUnA	104		25 - 150	08/21/19 05:00	08/25/19 08:41	1
d3-NMeFOSAA	105		25 - 150	08/21/19 05:00	08/25/19 08:41	1
d5-NEtFOSAA	97		25 - 150	08/21/19 05:00	08/25/19 08:41	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: FIELD BLANK-081419

Lab Sample ID: 320-53401-6

Date Collected: 08/14/19 11:00

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		18	1.7	ng/L		08/21/19 05:00	08/25/19 08:49	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.8		18	2.8	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorododecanoic acid (PFDoA)	<0.50		1.8	0.50	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluoroheptanoic acid (PFHpA)	<0.23		1.8	0.23	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorohexanesulfonic acid (PFHxS)	0.23	J B	1.8	0.15	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorooctanesulfonic acid (PFOS)	<0.49		1.8	0.49	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorooctanoic acid (PFOA)	<0.77		1.8	0.77	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluorotridecanoic acid (PFTrIA)	<1.2		1.8	1.2	ng/L		08/21/19 05:00	08/25/19 08:49	1
Perfluoroundecanoic acid (PFUnA)	<0.99		1.8	0.99	ng/L		08/21/19 05:00	08/25/19 08:49	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	93		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C2 PFDoA	95		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C4 PFHpA	107		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C2 PFHxA	98		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C5 PFNA	100		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C4 PFOA	100		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C4 PFOS	112		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C2 PFTeDA	82		25 - 150				08/21/19 05:00	08/25/19 08:49	1
18O2 PFHxS	120		25 - 150				08/21/19 05:00	08/25/19 08:49	1
13C2 PFUnA	97		25 - 150				08/21/19 05:00	08/25/19 08:49	1
d3-NMeFOSAA	95		25 - 150				08/21/19 05:00	08/25/19 08:49	1
d5-NEtFOSAA	83		25 - 150				08/21/19 05:00	08/25/19 08:49	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (75-78)

Lab Sample ID: 320-53401-7

Date Collected: 08/15/19 09:10

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.6		17	1.6	ng/L		08/21/19 05:00	08/25/19 08:57	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.7		17	2.7	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorobutanesulfonic acid (PFBS)	<0.17		1.7	0.17	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.7	0.22	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorohexanesulfonic acid (PFHxS)	1.7	0.26 JB UB	1.7	0.15	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorohexanoic acid (PFHxA)	<0.50		1.7	0.50	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorononanoic acid (PFNA)	<0.23		1.7	0.23	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorooctanesulfonic acid (PFOS)	<0.47		1.7	0.47	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorooctanoic acid (PFOA)	<0.74		1.7	0.74	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		08/21/19 05:00	08/25/19 08:57	1
Perfluoroundecanoic acid (PFUnA)	<0.95		1.7	0.95	ng/L		08/21/19 05:00	08/25/19 08:57	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	102		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C2 PFDoA	95		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C4 PFHpA	105		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C2 PFHxA	95		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C5 PFNA	105		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C4 PFOA	106		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C4 PFOS	115		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C2 PFTeDA	77		25 - 150	08/21/19 05:00	08/25/19 08:57	1
18O2 PFHxS	125		25 - 150	08/21/19 05:00	08/25/19 08:57	1
13C2 PFUnA	93		25 - 150	08/21/19 05:00	08/25/19 08:57	1
d3-NMeFOSAA	96		25 - 150	08/21/19 05:00	08/25/19 08:57	1
d5-NEtFOSAA	95		25 - 150	08/21/19 05:00	08/25/19 08:57	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (81-84)

Lab Sample ID: 320-53401-8

Date Collected: 08/15/19 12:40

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		18	1.7	ng/L		08/21/19 05:00	08/25/19 09:05	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.7		18	2.7	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorodecanoic acid (PFDA)	<0.27		1.8	0.27	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorohexanesulfonic acid (PFHxS)	1.8	0.24 JB UB	1.8	0.15	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorohexanoic acid (PFHxA)	<0.51		1.8	0.51	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorooctanoic acid (PFOA)	<0.75		1.8	0.75	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.8	1.1	ng/L		08/21/19 05:00	08/25/19 09:05	1
Perfluoroundecanoic acid (PFUnA)	<0.97		1.8	0.97	ng/L		08/21/19 05:00	08/25/19 09:05	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	98		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C2 PFDoA	89		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C4 PFHpA	107		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C2 PFHxA	94		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C5 PFNA	104		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C4 PFOA	104		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C4 PFOS	115		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C2 PFTeDA	79		25 - 150	08/21/19 05:00	08/25/19 09:05	1
18O2 PFHxS	126		25 - 150	08/21/19 05:00	08/25/19 09:05	1
13C2 PFUnA	95		25 - 150	08/21/19 05:00	08/25/19 09:05	1
d3-NMeFOSAA	96		25 - 150	08/21/19 05:00	08/25/19 09:05	1
d5-NEtFOSAA	90		25 - 150	08/21/19 05:00	08/25/19 09:05	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: EB-01 (081519)

Lab Sample ID: 320-53401-9

Date Collected: 08/15/19 09:30

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	2.4	J	19	1.8	ng/L		08/21/19 05:00	08/25/19 09:29	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.27	J B	1.9	0.16	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorohexanoic acid (PFHxA)	<0.55		1.9	0.55	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorooctanesulfonic acid (PFOS)	0.63	J	1.9	0.51	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorooctanoic acid (PFOA)	<0.81		1.9	0.81	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		08/21/19 05:00	08/25/19 09:29	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		08/21/19 05:00	08/25/19 09:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	101		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C2 PFDoA	96		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C4 PFHpA	107		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C2 PFHxA	98		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C5 PFNA	105		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C4 PFOA	101		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C4 PFOS	114		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C2 PFTeDA	88		25 - 150				08/21/19 05:00	08/25/19 09:29	1
18O2 PFHxS	123		25 - 150				08/21/19 05:00	08/25/19 09:29	1
13C2 PFUnA	102		25 - 150				08/21/19 05:00	08/25/19 09:29	1
d3-NMeFOSAA	103		25 - 150				08/21/19 05:00	08/25/19 09:29	1
d5-NEtFOSAA	98		25 - 150				08/21/19 05:00	08/25/19 09:29	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: FIELD BLANK-081519

Lab Sample ID: 320-53401-10

Date Collected: 08/15/19 09:15

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		18	1.7	ng/L		08/21/19 05:00	08/25/19 09:37	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.8		18	2.8	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorododecanoic acid (PFDoA)	<0.49		1.8	0.49	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorohexanesulfonic acid (PFHxS)	0.22	J B	1.8	0.15	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorooctanoic acid (PFOA)	<0.76		1.8	0.76	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluorotridecanoic acid (PFTrIA)	<1.2		1.8	1.2	ng/L		08/21/19 05:00	08/25/19 09:37	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		08/21/19 05:00	08/25/19 09:37	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	95		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C2 PFDoA	93		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C4 PFHpA	99		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C2 PFHxA	93		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C5 PFNA	95		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C4 PFOA	93		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C4 PFOS	106		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C2 PFTeDA	78		25 - 150	08/21/19 05:00	08/25/19 09:37	1
18O2 PFHxS	118		25 - 150	08/21/19 05:00	08/25/19 09:37	1
13C2 PFUnA	96		25 - 150	08/21/19 05:00	08/25/19 09:37	1
d3-NMeFOSAA	94		25 - 150	08/21/19 05:00	08/25/19 09:37	1
d5-NEtFOSAA	91		25 - 150	08/21/19 05:00	08/25/19 09:37	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-53 (7-10)

Lab Sample ID: 320-53401-11

Date Collected: 08/16/19 10:00

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		17	1.7	ng/L		08/21/19 05:00	08/25/19 09:45	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.7		17	2.7	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorobutanesulfonic acid (PFBS)	0.25	J	1.7	0.17	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorodecanoic acid (PFDA)	<0.27		1.7	0.27	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorododecanoic acid (PFDoA)	<0.48		1.7	0.48	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluoroheptanoic acid (PFHpA)	0.57	J	1.7	0.22	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorohexanesulfonic acid (PFHxS)	1.7	0.77 J-B UB	1.7	0.15	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorohexanoic acid (PFHxA)	1.2	J	1.7	0.51	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorononanoic acid (PFNA)	<0.24		1.7	0.24	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorooctanesulfonic acid (PFOS)	1.5	J-L JN	1.7	0.47	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorooctanoic acid (PFOA)	26		1.7	0.74	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorotetradecanoic acid (PFTeA)	<0.25		1.7	0.25	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluorotridecanoic acid (PFTrIA)	<1.1		1.7	1.1	ng/L		08/21/19 05:00	08/25/19 09:45	1
Perfluoroundecanoic acid (PFUnA)	<0.96		1.7	0.96	ng/L		08/21/19 05:00	08/25/19 09:45	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	94		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C2 PFDoA	89		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C4 PFHpA	102		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C2 PFHxA	89		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C5 PFNA	99		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C4 PFOA	96		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C4 PFOS	109		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C2 PFTeDA	59		25 - 150	08/21/19 05:00	08/25/19 09:45	1
18O2 PFHxS	114		25 - 150	08/21/19 05:00	08/25/19 09:45	1
13C2 PFUnA	93		25 - 150	08/21/19 05:00	08/25/19 09:45	1
d3-NMeFOSAA	94		25 - 150	08/21/19 05:00	08/25/19 09:45	1
d5-NEtFOSAA	93		25 - 150	08/21/19 05:00	08/25/19 09:45	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-53 (21-24)

Lab Sample ID: 320-53401-12

Date Collected: 08/16/19 12:35

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		08/21/19 05:00	08/25/19 09:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	UB	1.9	0.16	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorooctanesulfonic acid (PFOS)	<0.52		1.9	0.52	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorooctanoic acid (PFOA)	<0.82		1.9	0.82	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluorotridecanoic acid (PFTrIA)	<1.3		1.9	1.3	ng/L		08/21/19 05:00	08/25/19 09:53	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		08/21/19 05:00	08/25/19 09:53	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	89		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C2 PFDoA	76		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C4 PFHpA	99		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C2 PFHxA	86		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C5 PFNA	96		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C4 PFOA	93		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C4 PFOS	103		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C2 PFTeDA	43		25 - 150	08/21/19 05:00	08/25/19 09:53	1
18O2 PFHxS	115		25 - 150	08/21/19 05:00	08/25/19 09:53	1
13C2 PFUnA	81		25 - 150	08/21/19 05:00	08/25/19 09:53	1
d3-NMeFOSAA	85		25 - 150	08/21/19 05:00	08/25/19 09:53	1
d5-NEtFOSAA	86		25 - 150	08/21/19 05:00	08/25/19 09:53	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: FIELD BLANK-081619

Lab Sample ID: 320-53401-13

Date Collected: 08/16/19 10:05

Matrix: Water

Date Received: 08/17/19 09:20

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.7		18	1.7	ng/L		08/21/19 05:00	08/25/19 10:17	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.8		18	2.8	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorobutanesulfonic acid (PFBS)	<0.18		1.8	0.18	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorodecanoic acid (PFDA)	<0.28		1.8	0.28	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorododecanoic acid (PFDoA)	1.3	J	1.8	0.49	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluoroheptanoic acid (PFHpA)	<0.22		1.8	0.22	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorohexanesulfonic acid (PFHxS)	0.22	J B	1.8	0.15	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorohexanoic acid (PFHxA)	<0.52		1.8	0.52	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorononanoic acid (PFNA)	<0.24		1.8	0.24	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorooctanesulfonic acid (PFOS)	<0.48		1.8	0.48	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorooctanoic acid (PFOA)	<0.76		1.8	0.76	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorotetradecanoic acid (PFTeA)	<0.26		1.8	0.26	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.8	1.2	ng/L		08/21/19 05:00	08/25/19 10:17	1
Perfluoroundecanoic acid (PFUnA)	<0.98		1.8	0.98	ng/L		08/21/19 05:00	08/25/19 10:17	1

Isotope Dilution	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	97		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C2 PFDoA	88		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C4 PFHpA	107		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C2 PFHxA	102		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C5 PFNA	104		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C4 PFOA	99		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C4 PFOS	114		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C2 PFTeDA	53		25 - 150	08/21/19 05:00	08/25/19 10:17	1
18O2 PFHxS	122		25 - 150	08/21/19 05:00	08/25/19 10:17	1
13C2 PFUnA	91		25 - 150	08/21/19 05:00	08/25/19 10:17	1
d3-NMeFOSAA	89		25 - 150	08/21/19 05:00	08/25/19 10:17	1
d5-NEtFOSAA	84		25 - 150	08/21/19 05:00	08/25/19 10:17	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-53401-1	VAP-52 (7-10)	95	88	103	92	98	98	105	83
320-53401-2	FIELD BLANK-081319	91	87	101	90	98	92	109	81
320-53401-3	VAP-52 (20-23)	84	75	87	75	88	86	97	69
320-53401-4	VAP-52 (61-64)	96	89	103	93	101	100	111	88
320-53401-5	DUP-01	109	97	119	102	117	115	117	79
320-53401-6	FIELD BLANK-081419	93	95	107	98	100	100	112	82
320-53401-7	VAP-52 (75-78)	102	95	105	95	105	106	115	77
320-53401-8	VAP-52 (81-84)	98	89	107	94	104	104	115	79
320-53401-9	EB-01 (081519)	101	96	107	98	105	101	114	88
320-53401-10	FIELD BLANK-081519	95	93	99	93	95	93	106	78
320-53401-11	VAP-53 (7-10)	94	89	102	89	99	96	109	59
320-53401-12	VAP-53 (21-24)	89	76	99	86	96	93	103	43
320-53401-12 MS	VAP-53 (21-24)	106	93	117	107	113	112	125	54
320-53401-12 MSD	VAP-53 (21-24)	84	72	91	79	91	88	99	42
320-53401-13	FIELD BLANK-081619	97	88	107	102	104	99	114	53
LCS 320-316857/2-A	Lab Control Sample	88	90	93	86	88	89	97	81
MB 320-316857/1-A	Method Blank	96	91	103	94	100	98	109	80

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	-NMeFOS ₂ (25-150)	-NEtFOS ₂ (25-150)
320-53401-1	VAP-52 (7-10)	116	90	91	93
320-53401-2	FIELD BLANK-081319	115	91	95	88
320-53401-3	VAP-52 (20-23)	107	77	80	78
320-53401-4	VAP-52 (61-64)	120	94	92	91
320-53401-5	DUP-01	129	104	105	97
320-53401-6	FIELD BLANK-081419	120	97	95	83
320-53401-7	VAP-52 (75-78)	125	93	96	95
320-53401-8	VAP-52 (81-84)	126	95	96	90
320-53401-9	EB-01 (081519)	123	102	103	98
320-53401-10	FIELD BLANK-081519	118	96	94	91
320-53401-11	VAP-53 (7-10)	114	93	94	93
320-53401-12	VAP-53 (21-24)	115	81	85	86
320-53401-12 MS	VAP-53 (21-24)	133	100	97	97
320-53401-12 MSD	VAP-53 (21-24)	104	74	77	73
320-53401-13	FIELD BLANK-081619	122	91	89	84
LCS 320-316857/2-A	Lab Control Sample	105	83	87	85
MB 320-316857/1-A	Method Blank	120	100	92	96

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.

Project/Site: Marinette WI001605.0009 30015294

d5-NEtFOSAA = d5-NEtFOSAA

Job ID: 320-53401-1

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QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-316857/1-A
Matrix: Water
Analysis Batch: 317927

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 316857

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		08/21/19 05:00	08/25/19 07:53	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorohexanesulfonic acid (PFHxS)	0.269	J	2.0	0.17	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/21/19 05:00	08/25/19 07:53	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/21/19 05:00	08/25/19 07:53	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	96		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C2 PFDoA	91		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C4 PFHpA	103		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C2 PFHxA	94		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C5 PFNA	100		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C4 PFOA	98		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C4 PFOS	109		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C2 PFTeDA	80		25 - 150	08/21/19 05:00	08/25/19 07:53	1
18O2 PFHxS	120		25 - 150	08/21/19 05:00	08/25/19 07:53	1
13C2 PFUnA	100		25 - 150	08/21/19 05:00	08/25/19 07:53	1
d3-NMeFOSAA	92		25 - 150	08/21/19 05:00	08/25/19 07:53	1
d5-NEtFOSAA	96		25 - 150	08/21/19 05:00	08/25/19 07:53	1

Lab Sample ID: LCS 320-316857/2-A
Matrix: Water
Analysis Batch: 317927

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 316857

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	44.6		ng/L		111	65 - 125
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	42.5		ng/L		106	67 - 127
Perfluorobutanesulfonic acid (PFBS)	35.4	32.1		ng/L		91	73 - 133
Perfluorodecanoic acid (PFDA)	40.0	40.3		ng/L		101	69 - 129
Perfluorododecanoic acid (PFDoA)	40.0	38.4		ng/L		96	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	38.3		ng/L		96	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.3		ng/L		89	63 - 123
Perfluorohexanoic acid (PFHxA)	40.0	40.5		ng/L		101	66 - 126
Perfluorononanoic acid (PFNA)	40.0	42.2		ng/L		106	68 - 128

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

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

Lab Sample ID: LCS 320-316857/2-A
Matrix: Water
Analysis Batch: 317927

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 316857

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	36.1		ng/L		97	67 - 127
Perfluorooctanoic acid (PFOA)	40.0	38.4		ng/L		96	64 - 124
Perfluorotetradecanoic acid (PFTeA)	40.0	37.7		ng/L		94	68 - 128
Perfluorotridecanoic acid (PFTriA)	40.0	34.8		ng/L		87	72 - 132
Perfluoroundecanoic acid (PFUnA)	40.0	39.4		ng/L		98	60 - 120
LCS LCS							
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	88		25 - 150				
13C2 PFDoA	90		25 - 150				
13C4 PFHpA	93		25 - 150				
13C2 PFHxA	86		25 - 150				
13C5 PFNA	88		25 - 150				
13C4 PFOA	89		25 - 150				
13C4 PFOS	97		25 - 150				
13C2 PFTeDA	81		25 - 150				
18O2 PFHxS	105		25 - 150				
13C2 PFUnA	83		25 - 150				
d3-NMeFOSAA	87		25 - 150				
d5-NEFOSAA	85		25 - 150				

Lab Sample ID: 320-53401-12 MS
Matrix: Water
Analysis Batch: 317927

Client Sample ID: VAP-53 (21-24)
Prep Type: Total/NA
Prep Batch: 316857

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEFOSAA)	<1.8		39.1	41.1		ng/L		105	65 - 125
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		39.1	42.6		ng/L		109	67 - 127
Perfluorobutanesulfonic acid (PFBS)	<0.19		34.6	31.1		ng/L		90	73 - 133
Perfluorodecanoic acid (PFDA)	<0.30		39.1	41.3		ng/L		105	69 - 129
Perfluorododecanoic acid (PFDoA)	<0.53		39.1	39.9		ng/L		102	71 - 131
Perfluoroheptanoic acid (PFHpA)	<0.24		39.1	38.9		ng/L		99	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	0.30	J B	35.6	32.1		ng/L		89	63 - 123
Perfluorohexanoic acid (PFHxA)	<0.56		39.1	39.0		ng/L		100	66 - 126
Perfluorononanoic acid (PFNA)	<0.26		39.1	42.1		ng/L		108	68 - 128
Perfluorooctanesulfonic acid (PFOS)	<0.52		36.3	35.2		ng/L		97	67 - 127
Perfluorooctanoic acid (PFOA)	<0.82		39.1	36.9		ng/L		94	64 - 124
Perfluorotetradecanoic acid (PFTeA)	<0.28		39.1	37.9		ng/L		97	68 - 128
Perfluorotridecanoic acid (PFTriA)	<1.3		39.1	32.8		ng/L		84	72 - 132
Perfluoroundecanoic acid (PFUnA)	<1.1		39.1	35.7		ng/L		91	60 - 120

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

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

<i>Isotope Dilution</i>	<i>MS MS</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C2 PFDA	106		25 - 150
13C2 PFDoA	93		25 - 150
13C4 PFHpA	117		25 - 150
13C2 PFHxA	107		25 - 150
13C5 PFNA	113		25 - 150
13C4 PFOA	112		25 - 150
13C4 PFOS	125		25 - 150
13C2 PFTeDA	54		25 - 150
18O2 PFHxS	133		25 - 150
13C2 PFUnA	100		25 - 150
d3-NMeFOSAA	97		25 - 150
d5-NEtFOSAA	97		25 - 150

Lab Sample ID: 320-53401-12 MSD
Matrix: Water
Analysis Batch: 317927

Client Sample ID: VAP-53 (21-24)
Prep Type: Total/NA
Prep Batch: 316857

<i>Analyte</i>	<i>Sample Result</i>	<i>Sample Qualifier</i>	<i>Spike Added</i>	<i>MSD MSD</i>		<i>Unit</i>	<i>D</i>	<i>%Rec</i>	<i>%Rec. Limits</i>	<i>RPD</i>	<i>RPD Limit</i>
				<i>Result</i>	<i>Qualifier</i>						
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		35.2	40.5		ng/L		115	65 - 125	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		35.2	38.0		ng/L		108	67 - 127	11	30
Perfluorobutanesulfonic acid (PFBS)	<0.19		31.2	28.1		ng/L		90	73 - 133	10	30
Perfluorodecanoic acid (PFDA)	<0.30		35.2	35.4		ng/L		100	69 - 129	15	30
Perfluorododecanoic acid (PFDoA)	<0.53		35.2	33.3		ng/L		94	71 - 131	18	30
Perfluoroheptanoic acid (PFHpA)	<0.24		35.2	35.6		ng/L		101	66 - 126	9	30
Perfluorohexanesulfonic acid (PFHxS)	0.30	J B	32.1	29.1		ng/L		90	63 - 123	10	30
Perfluorohexanoic acid (PFHxA)	<0.56		35.2	35.7		ng/L		101	66 - 126	9	30
Perfluorononanoic acid (PFNA)	<0.26		35.2	35.0		ng/L		99	68 - 128	19	30
Perfluorooctanesulfonic acid (PFOS)	<0.52		32.7	31.6		ng/L		97	67 - 127	11	30
Perfluorooctanoic acid (PFOA)	<0.82		35.2	33.5		ng/L		95	64 - 124	10	30
Perfluorotetradecanoic acid (PFTeA)	<0.28		35.2	34.1		ng/L		97	68 - 128	11	30
Perfluorotridecanoic acid (PFTriA)	<1.3		35.2	28.2		ng/L		80	72 - 132	15	30
Perfluoroundecanoic acid (PFUnA)	<1.1		35.2	32.7		ng/L		93	60 - 120	9	30

<i>Isotope Dilution</i>	<i>MSD MSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C2 PFDA	84		25 - 150
13C2 PFDoA	72		25 - 150
13C4 PFHpA	91		25 - 150
13C2 PFHxA	79		25 - 150
13C5 PFNA	91		25 - 150
13C4 PFOA	88		25 - 150
13C4 PFOS	99		25 - 150
13C2 PFTeDA	42		25 - 150
18O2 PFHxS	104		25 - 150
13C2 PFUnA	74		25 - 150
d3-NMeFOSAA	77		25 - 150

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

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

Lab Sample ID: 320-53401-12 MSD

Matrix: Water

Analysis Batch: 317927

Client Sample ID: VAP-53 (21-24)

Prep Type: Total/NA

Prep Batch: 316857

<i>Isotope Dilution</i>	<i>%Recovery</i>	<i>MSD MSD Qualifier</i>	<i>Limits</i>
<i>d5-NEtFOSAA</i>	73		25 - 150

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QC Association Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

LCMS

Prep Batch: 316857

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53401-1	VAP-52 (7-10)	Total/NA	Water	3535	
320-53401-2	FIELD BLANK-081319	Total/NA	Water	3535	
320-53401-3	VAP-52 (20-23)	Total/NA	Water	3535	
320-53401-4	VAP-52 (61-64)	Total/NA	Water	3535	
320-53401-5	DUP-01	Total/NA	Water	3535	
320-53401-6	FIELD BLANK-081419	Total/NA	Water	3535	
320-53401-7	VAP-52 (75-78)	Total/NA	Water	3535	
320-53401-8	VAP-52 (81-84)	Total/NA	Water	3535	
320-53401-9	EB-01 (081519)	Total/NA	Water	3535	
320-53401-10	FIELD BLANK-081519	Total/NA	Water	3535	
320-53401-11	VAP-53 (7-10)	Total/NA	Water	3535	
320-53401-12	VAP-53 (21-24)	Total/NA	Water	3535	
320-53401-13	FIELD BLANK-081619	Total/NA	Water	3535	
MB 320-316857/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-316857/2-A	Lab Control Sample	Total/NA	Water	3535	
320-53401-12 MS	VAP-53 (21-24)	Total/NA	Water	3535	
320-53401-12 MSD	VAP-53 (21-24)	Total/NA	Water	3535	

Analysis Batch: 317927

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53401-1	VAP-52 (7-10)	Total/NA	Water	537 (modified)	316857
320-53401-2	FIELD BLANK-081319	Total/NA	Water	537 (modified)	316857
320-53401-3	VAP-52 (20-23)	Total/NA	Water	537 (modified)	316857
320-53401-4	VAP-52 (61-64)	Total/NA	Water	537 (modified)	316857
320-53401-5	DUP-01	Total/NA	Water	537 (modified)	316857
320-53401-6	FIELD BLANK-081419	Total/NA	Water	537 (modified)	316857
320-53401-7	VAP-52 (75-78)	Total/NA	Water	537 (modified)	316857
320-53401-8	VAP-52 (81-84)	Total/NA	Water	537 (modified)	316857
320-53401-9	EB-01 (081519)	Total/NA	Water	537 (modified)	316857
320-53401-10	FIELD BLANK-081519	Total/NA	Water	537 (modified)	316857
320-53401-11	VAP-53 (7-10)	Total/NA	Water	537 (modified)	316857
320-53401-12	VAP-53 (21-24)	Total/NA	Water	537 (modified)	316857
320-53401-13	FIELD BLANK-081619	Total/NA	Water	537 (modified)	316857
MB 320-316857/1-A	Method Blank	Total/NA	Water	537 (modified)	316857
LCS 320-316857/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	316857
320-53401-12 MS	VAP-53 (21-24)	Total/NA	Water	537 (modified)	316857
320-53401-12 MSD	VAP-53 (21-24)	Total/NA	Water	537 (modified)	316857

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (7-10)

Lab Sample ID: 320-53401-1

Date Collected: 08/13/19 15:45

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.8 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:09	GMK	TAL SAC

Client Sample ID: FIELD BLANK-081319

Lab Sample ID: 320-53401-2

Date Collected: 08/13/19 16:00

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			271.9 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:17	GMK	TAL SAC

Client Sample ID: VAP-52 (20-23)

Lab Sample ID: 320-53401-3

Date Collected: 08/14/19 09:10

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			266.8 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:25	GMK	TAL SAC

Client Sample ID: VAP-52 (61-64)

Lab Sample ID: 320-53401-4

Date Collected: 08/14/19 16:30

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			295.5 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:33	GMK	TAL SAC

Client Sample ID: DUP-01

Lab Sample ID: 320-53401-5

Date Collected: 08/14/19 00:00

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			287.6 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:41	GMK	TAL SAC

Client Sample ID: FIELD BLANK-081419

Lab Sample ID: 320-53401-6

Date Collected: 08/14/19 11:00

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			276.5 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:49	GMK	TAL SAC

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: VAP-52 (75-78)

Lab Sample ID: 320-53401-7

Date Collected: 08/15/19 09:10

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			288.5 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 08:57	GMK	TAL SAC

Client Sample ID: VAP-52 (81-84)

Lab Sample ID: 320-53401-8

Date Collected: 08/15/19 12:40

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			283.5 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 09:05	GMK	TAL SAC

Client Sample ID: EB-01 (081519)

Lab Sample ID: 320-53401-9

Date Collected: 08/15/19 09:30

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			263.5 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 09:29	GMK	TAL SAC

Client Sample ID: FIELD BLANK-081519

Lab Sample ID: 320-53401-10

Date Collected: 08/15/19 09:15

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			279.5 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 09:37	GMK	TAL SAC

Client Sample ID: VAP-53 (7-10)

Lab Sample ID: 320-53401-11

Date Collected: 08/16/19 10:00

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			286.3 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 09:45	GMK	TAL SAC

Client Sample ID: VAP-53 (21-24)

Lab Sample ID: 320-53401-12

Date Collected: 08/16/19 12:35

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.1 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 09:53	GMK	TAL SAC

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Client Sample ID: FIELD BLANK-081619

Lab Sample ID: 320-53401-13

Date Collected: 08/16/19 10:05

Matrix: Water

Date Received: 08/17/19 09:20

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			281.2 mL	10.00 mL	316857	08/21/19 05:00	RDR	TAL SAC
Total/NA	Analysis	537 (modified)		1			317927	08/25/19 10:17	GMK	TAL SAC

Laboratory References:

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

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Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

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 Program	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	DoD	L2468	01-20-21
ANAB	DOE	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	08-09-21
Arizona	State	AZ0708	08-11-20
Arizona	State Program	AZ0708	08-11-20
Arkansas DEQ	State Program	88-0691	06-17-20
California	State	2897	01-31-20
California	State Program	2897	01-31-20
Colorado	State Program	CA00044	08-31-19
Connecticut	State	PH-0691	06-30-21
Connecticut	State Program	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20
Hawaii	State Program	N/A	01-29-20
Illinois	NELAP	200060	03-17-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	30612	06-30-20
Maine	State Program	CA0004	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
New Hampshire	NELAP	2997	04-20-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Pennsylvania	NELAP	68-01272	03-31-20
Texas	NELAP	T104704399	05-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	Federal	LE148388-0	07-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	Federal	P330-18-00239	01-17-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA00044	02-29-20
Vermont	State Program	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
Washington	State Program	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
West Virginia (DW)	State Program	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Laboratory: Eurofins TestAmerica, Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

- 1
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Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

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: ARCADIS U.S., Inc.
Project/Site: Marinette WI001605.0009 30015294

Job ID: 320-53401-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-53401-1	VAP-52 (7-10)	Water	08/13/19 15:45	08/17/19 09:20	
320-53401-2	FIELD BLANK-081319	Water	08/13/19 16:00	08/17/19 09:20	
320-53401-3	VAP-52 (20-23)	Water	08/14/19 09:10	08/17/19 09:20	
320-53401-4	VAP-52 (61-64)	Water	08/14/19 16:30	08/17/19 09:20	
320-53401-5	DUP-01	Water	08/14/19 00:00	08/17/19 09:20	
320-53401-6	FIELD BLANK-081419	Water	08/14/19 11:00	08/17/19 09:20	
320-53401-7	VAP-52 (75-78)	Water	08/15/19 09:10	08/17/19 09:20	
320-53401-8	VAP-52 (81-84)	Water	08/15/19 12:40	08/17/19 09:20	
320-53401-9	EB-01 (081519)	Water	08/15/19 09:30	08/17/19 09:20	
320-53401-10	FIELD BLANK-081519	Water	08/15/19 09:15	08/17/19 09:20	
320-53401-11	VAP-53 (7-10)	Water	08/16/19 10:00	08/17/19 09:20	
320-53401-12	VAP-53 (21-24)	Water	08/16/19 12:35	08/17/19 09:20	
320-53401-13	FIELD BLANK-081619	Water	08/16/19 10:05	08/17/19 09:20	



West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Regulatory Program: DW NPDES RCRA Other:

TAL-8210 (0713)

Client Contact		Project Manager: S. JOHNSON		Site Contact: S. L. BURKOWSKI		Date: 8-16-19		COC No: 1 of 12 COCs	
Company Name: ARCADIS		Tel/Fax:		Lab Contact:		Carrier:		Sampler: L. VEON	
Address: 126 N. JEFFERSON ST #400		Analysis Turnaround Time		Filtered Sample (Y/N) Perform MS/MSD (Y/N) Y/N - MOD 537				For Lab Use Only: Walk-in Client: Lab Sampling:	
City/State/Zip: MILWAUKEE, WI 53202		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS							
Phone:		TAT if different from Below _____							
Fax:		<input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							
Project Name: MARINETTE, WI								Job / SDG No.:	
Site: MARINETTE, WI									
PO# 30015294 00004									
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS/MSD (Y/N)	Sample Specific Notes:	
VAP-52 (7-10)	8-13-19	1545	G	W	2	N	N		
FIELD BLANK-081319	8-13-19	1600	G	W	2	N	N		
VAP-52 (20-23)	8-14-19	0910	G	W	2	N	N		
VAP-52 (41-64)	8-14-19	1630	G	W	2	N	N		
DUP-01	8-14-19	—	G	W	2	N	N		
FIELD BLANK-081419	8-14-19	1100	G	W	2	N	N		
VAP-52 (75-78)	8-15-19	0910	G	W	2	N	N		
VAP-52 (81-84)	8-15-19	1240	G	W	2	N	N		
EB-01 (081519)	8-15-19	0930	G	W	2	N	N		
FIELD BLANK-081519	8-15-19	0915	G	W	2	N	N		
VAP-53 (7-10)	8-16-19	1000	G	W	2	N	N		
VAP-53 (21-24)	8-16-19	1235	G	W	2	N	N		
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other						1			
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Special Instructions/QC Requirements & Comments: CALL S. JOHNSON W/QUESTIONS									
Custody Seals Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.: 135 394		Cooler Temp. (°C): Obs'd: 0.8 Corr'd: 0.8		Therm ID No.: A1-20			
Relinquished by: Lundin		Company: ARCADIS		Date/Time: 8-16-19/1400		Received by: Jarmey		Company: ARCADIS	
Relinquished by:		Company:		Date/Time:		Received by:		Date/Time: 8/17/19 920	
Relinquished by:		Company:		Date/Time:		Received in Laboratory by:		Date/Time:	



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9/8/2019

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-53401-1

Login Number: 53401

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Thompson, Sarah W

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.	True	135394
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	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <math><6\text{mm}</math> (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ANALYTICAL REPORT

Eurofins TestAmerica, Sacramento
880 Riverside Parkway
West Sacramento, CA 95605
Tel: (916)373-5600

Laboratory Job ID: 320-53508-1
Client Project/Site: Marinette, WI 30015294.00004

For:
ARCADIS U.S., Inc.
126 North Jefferson Street
Suite 400
Milwaukee, Wisconsin 53202

Attn: Shauna Johnson



Authorized for release by:
9/11/2019 7:18:59 PM

Sandie Fredrick, Project Manager II
(920)261-1660
sandie.fredrick@testamericainc.com

LINKS

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The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Qualifiers

LCMS

Qualifier	Qualifier Description
B	Compound was found in the blank and sample.
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
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Data Validation Qualifiers

UB = Compound is considered non-detect at the listed value due to associated blank contamination.

Case Narrative

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Job ID: 320-53508-1

Laboratory: Eurofins TestAmerica, Sacramento

Narrative

Job Narrative 320-53508-1

Comments

No additional comments.

Receipt

The samples were received on 8/21/2019 9:15 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 0.9° C.

LCMS

Method(s) 537 (modified), EPA 537(Mod): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-316980/11)

Method(s) 537 (modified): Due to a shortage in the marketplace for 13C3-PFBS, the target analyte PFBS and/or Perfluoropentanesulfonic acid (PFPeS) could not be quantitated against 13C3-PFBS (its labeled variant) as listed in the SOP. PFBS and Perfluoropentanesulfonic acid (PFPeS) was quantitated versus 18O2-PFHxS instead. (ICV 320-320699/13)

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

Organic Prep

Method(s) 3535: Insufficient sample volume was available to perform a matrix spike/matrix spike duplicate (MS/MSD) associated with preparation batch 320-317428. Method Code: 3535 PFC preparation batch 320-317428

Method(s) 3535: The following samples were observed to be a light yellow color and contained sediment prior to extraction: VAP-53 (52-55) (320-53508-1), VAP-53 (65-68) (320-53508-2), DUP-02 (320-53508-5) and VAP-53 (73-76) (320-53508-6). Method Code: 3535 PFC preparation batch 320-317428

Method(s) 3535: The following samples were observed to be a light yellow/brown color after final voluming: VAP-53 (52-55) (320-53508-1) and DUP-02 (320-53508-5). Method Code: 3535 PFC preparation batch 320-317428

Method(s) 3535: The following samples were observed to be a light neon green color after final voluming: VAP-53 (65-68) (320-53508-2) Method Code: 3535 PFC preparation batch 320-317428

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

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: VAP-53 (52-55)

Lab Sample ID: 320-53508-1

Date Collected: 08/19/19 12:20

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamide acetic acid (NEtFOSAA)	1.8	J	19	1.8	ng/L		08/23/19 06:13	08/26/19 05:05	1
N-methylperfluorooctanesulfonamide acetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.23 J B UB	1.9	0.16	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorooctanesulfonic acid (PFOS)	<0.52		1.9	0.52	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorooctanoic acid (PFOA)	<0.82		1.9	0.82	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		08/23/19 06:13	08/26/19 05:05	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		08/23/19 06:13	08/26/19 05:05	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	98		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C2 PFDoA	99		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C4 PFHpA	107		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C2 PFHxA	94		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C5 PFNA	105		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C4 PFOA	101		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C4 PFOS	108		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C2 PFTeDA	87		25 - 150				08/23/19 06:13	08/26/19 05:05	1
18O2 PFHxS	124		25 - 150				08/23/19 06:13	08/26/19 05:05	1
13C2 PFUnA	97		25 - 150				08/23/19 06:13	08/26/19 05:05	1
d3-NMeFOSAA	96		25 - 150				08/23/19 06:13	08/26/19 05:05	1
d5-NEtFOSAA	98		25 - 150				08/23/19 06:13	08/26/19 05:05	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: VAP-53 (65-68)

Lab Sample ID: 320-53508-2

Date Collected: 08/19/19 16:05

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		08/23/19 06:13	08/26/19 05:13	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	0.54	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorohexanesulfonic acid (PFHxS)	2.0	9.28 JB UB	2.0	0.17	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorohexanoic acid (PFHxA)	<0.57		2.0	0.57	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorooctanesulfonic acid (PFOS)	<0.53		2.0	0.53	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorooctanoic acid (PFOA)	<0.84		2.0	0.84	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/23/19 06:13	08/26/19 05:13	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/23/19 06:13	08/26/19 05:13	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	99		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C2 PFDoA	95		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C4 PFHpA	109		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C2 PFHxA	93		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C5 PFNA	102		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C4 PFOA	101		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C4 PFOS	110		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C2 PFTeDA	81		25 - 150				08/23/19 06:13	08/26/19 05:13	1
18O2 PFHxS	122		25 - 150				08/23/19 06:13	08/26/19 05:13	1
13C2 PFUnA	95		25 - 150				08/23/19 06:13	08/26/19 05:13	1
d3-NMeFOSAA	97		25 - 150				08/23/19 06:13	08/26/19 05:13	1
d5-NEtFOSAA	96		25 - 150				08/23/19 06:13	08/26/19 05:13	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: FIELD BLANK-081919

Lab Sample ID: 320-53508-3

Date Collected: 08/19/19 14:00

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		08/23/19 06:13	08/26/19 05:21	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		20	3.0	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorodecanoic acid (PFDA)	<0.30		2.0	0.30	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorododecanoic acid (PFDoA)	<0.54		2.0	0.54	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluoroheptanoic acid (PFHpA)	<0.24		2.0	0.24	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorohexanesulfonic acid (PFHxS)	0.26	J B	2.0	0.17	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorohexanoic acid (PFHxA)	<0.57		2.0	0.57	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorononanoic acid (PFNA)	<0.26		2.0	0.26	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorooctanesulfonic acid (PFOS)	<0.53		2.0	0.53	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorooctanoic acid (PFOA)	<0.83		2.0	0.83	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		2.0	0.28	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/23/19 06:13	08/26/19 05:21	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/23/19 06:13	08/26/19 05:21	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	101		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C2 PFDoA	105		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C4 PFHpA	106		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C2 PFHxA	100		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C5 PFNA	106		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C4 PFOA	100		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C4 PFOS	112		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C2 PFTeDA	95		25 - 150				08/23/19 06:13	08/26/19 05:21	1
18O2 PFHxS	122		25 - 150				08/23/19 06:13	08/26/19 05:21	1
13C2 PFUnA	102		25 - 150				08/23/19 06:13	08/26/19 05:21	1
d3-NMeFOSAA	99		25 - 150				08/23/19 06:13	08/26/19 05:21	1
d5-NEtFOSAA	102		25 - 150				08/23/19 06:13	08/26/19 05:21	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: EB-02 (081919)

Lab Sample ID: 320-53508-4

Date Collected: 08/19/19 12:30

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		19	1.9	ng/L		08/23/19 06:13	08/26/19 05:29	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorododecanoic acid (PFDoA)	<0.54		1.9	0.54	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorohexanesulfonic acid (PFHxS)	0.27	J B	1.9	0.17	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorohexanoic acid (PFHxA)	<0.57		1.9	0.57	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorooctanesulfonic acid (PFOS)	<0.53		1.9	0.53	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorooctanoic acid (PFOA)	<0.83		1.9	0.83	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorotetradecanoic acid (PFTeA)	0.33	J	1.9	0.28	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		08/23/19 06:13	08/26/19 05:29	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		08/23/19 06:13	08/26/19 05:29	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C2 PFDoA	100		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C4 PFHpA	107		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C2 PFHxA	101		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C5 PFNA	103		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C4 PFOA	104		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C4 PFOS	112		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C2 PFTeDA	95		25 - 150				08/23/19 06:13	08/26/19 05:29	1
18O2 PFHxS	120		25 - 150				08/23/19 06:13	08/26/19 05:29	1
13C2 PFUnA	103		25 - 150				08/23/19 06:13	08/26/19 05:29	1
d3-NMeFOSAA	100		25 - 150				08/23/19 06:13	08/26/19 05:29	1
d5-NEtFOSAA	99		25 - 150				08/23/19 06:13	08/26/19 05:29	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: DUP-02

Lab Sample ID: 320-53508-5

Date Collected: 08/19/19 00:00

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		08/23/19 06:13	09/05/19 17:52	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.32 UB	1.9	0.16	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorooctanesulfonic acid (PFOS)	<0.52		1.9	0.52	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorooctanoic acid (PFOA)	0.88 J		1.9	0.82	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		08/23/19 06:13	09/05/19 17:52	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		08/23/19 06:13	09/05/19 17:52	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	104		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C2 PFDoA	102		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C4 PFHpA	100		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C2 PFHxA	87		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C5 PFNA	107		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C4 PFOA	101		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C4 PFOS	103		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C2 PFTeDA	99		25 - 150				08/23/19 06:13	09/05/19 17:52	1
18O2 PFHxS	110		25 - 150				08/23/19 06:13	09/05/19 17:52	1
13C2 PFUnA	109		25 - 150				08/23/19 06:13	09/05/19 17:52	1
d3-NMeFOSAA	104		25 - 150				08/23/19 06:13	09/05/19 17:52	1
d5-NEtFOSAA	99		25 - 150				08/23/19 06:13	09/05/19 17:52	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: VAP-53 (73-76)

Lab Sample ID: 320-53508-6

Date Collected: 08/20/19 09:55

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		08/23/19 06:13	09/05/19 18:01	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.0		19	3.0	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorodecanoic acid (PFDA)	<0.30		1.9	0.30	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorododecanoic acid (PFDoA)	<0.53		1.9	0.53	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorohexanesulfonic acid (PFHxS)	1.9	0.28 UB	1.9	0.16	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorohexanoic acid (PFHxA)	<0.56		1.9	0.56	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorononanoic acid (PFNA)	<0.26		1.9	0.26	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorooctanesulfonic acid (PFOS)	<0.52		1.9	0.52	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorooctanoic acid (PFOA)	<0.82		1.9	0.82	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorotetradecanoic acid (PFTeA)	<0.28		1.9	0.28	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluorotridecanoic acid (PFTriA)	<1.3		1.9	1.3	ng/L		08/23/19 06:13	09/05/19 18:01	1
Perfluoroundecanoic acid (PFUnA)	<1.1		1.9	1.1	ng/L		08/23/19 06:13	09/05/19 18:01	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	107		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C2 PFDoA	121		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C4 PFHpA	104		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C2 PFHxA	91		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C5 PFNA	107		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C4 PFOA	102		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C4 PFOS	107		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C2 PFTeDA	99		25 - 150				08/23/19 06:13	09/05/19 18:01	1
18O2 PFHxS	111		25 - 150				08/23/19 06:13	09/05/19 18:01	1
13C2 PFUnA	110		25 - 150				08/23/19 06:13	09/05/19 18:01	1
d3-NMeFOSAA	104		25 - 150				08/23/19 06:13	09/05/19 18:01	1
d5-NEtFOSAA	106		25 - 150				08/23/19 06:13	09/05/19 18:01	1

Client Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: FIELD BLANK-082019

Lab Sample ID: 320-53508-7

Date Collected: 08/20/19 08:50

Matrix: Water

Date Received: 08/21/19 09:15

Method: 537 (modified) - Fluorinated Alkyl Substances

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.8		19	1.8	ng/L		08/23/19 06:13	09/05/19 18:09	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<2.9		19	2.9	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorobutanesulfonic acid (PFBS)	<0.19		1.9	0.19	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorodecanoic acid (PFDA)	<0.29		1.9	0.29	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorododecanoic acid (PFDoA)	<0.52		1.9	0.52	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluoroheptanoic acid (PFHpA)	<0.24		1.9	0.24	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorohexanesulfonic acid (PFHxS)	0.28	J B	1.9	0.16	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorohexanoic acid (PFHxA)	<0.55		1.9	0.55	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorononanoic acid (PFNA)	<0.25		1.9	0.25	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorooctanesulfonic acid (PFOS)	<0.51		1.9	0.51	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorooctanoic acid (PFOA)	2.7		1.9	0.80	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorotetradecanoic acid (PFTeA)	<0.27		1.9	0.27	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluorotridecanoic acid (PFTriA)	<1.2		1.9	1.2	ng/L		08/23/19 06:13	09/05/19 18:09	1
Perfluoroundecanoic acid (PFUnA)	<1.0		1.9	1.0	ng/L		08/23/19 06:13	09/05/19 18:09	1
Isotope Dilution	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
13C2 PFDA	103		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C2 PFDoA	114		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C4 PFHpA	107		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C2 PFHxA	101		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C5 PFNA	108		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C4 PFOA	103		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C4 PFOS	106		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C2 PFTeDA	108		25 - 150				08/23/19 06:13	09/05/19 18:09	1
18O2 PFHxS	112		25 - 150				08/23/19 06:13	09/05/19 18:09	1
13C2 PFUnA	102		25 - 150				08/23/19 06:13	09/05/19 18:09	1
d3-NMeFOSAA	104		25 - 150				08/23/19 06:13	09/05/19 18:09	1
d5-NEtFOSAA	106		25 - 150				08/23/19 06:13	09/05/19 18:09	1

Isotope Dilution Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Matrix: Water

Prep Type: Total/NA

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFDA (25-150)	PFDoA (25-150)	PFHpA (25-150)	PFHxA (25-150)	PFNA (25-150)	PFOA (25-150)	PFOS (25-150)	PFTDA (25-150)
320-53508-1	VAP-53 (52-55)	98	99	107	94	105	101	108	87
320-53508-2	VAP-53 (65-68)	99	95	109	93	102	101	110	81
320-53508-3	FIELD BLANK-081919	101	105	106	100	106	100	112	95
320-53508-4	EB-02 (081919)	100	100	107	101	103	104	112	95
320-53508-5	DUP-02	104	102	100	87	107	101	103	99
320-53508-6	VAP-53 (73-76)	107	121	104	91	107	102	107	99
320-53508-7	FIELD BLANK-082019	103	114	107	101	108	103	106	108
LCS 320-317428/2-A	Lab Control Sample	103	101	113	105	107	104	114	99
LCSD 320-317428/3-A	Lab Control Sample Dup	97	104	108	99	100	101	109	94
MB 320-317428/1-A	Method Blank	100	95	106	102	104	102	115	94

Percent Isotope Dilution Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	PFHxS (25-150)	PFUnA (25-150)	-NMeFOS/ (25-150)	-NEtFOS/ (25-150)
320-53508-1	VAP-53 (52-55)	124	97	96	98
320-53508-2	VAP-53 (65-68)	122	95	97	96
320-53508-3	FIELD BLANK-081919	122	102	99	102
320-53508-4	EB-02 (081919)	120	103	100	99
320-53508-5	DUP-02	110	109	104	99
320-53508-6	VAP-53 (73-76)	111	110	104	106
320-53508-7	FIELD BLANK-082019	112	102	104	106
LCS 320-317428/2-A	Lab Control Sample	125	102	108	94
LCSD 320-317428/3-A	Lab Control Sample Dup	125	102	101	96
MB 320-317428/1-A	Method Blank	127	99	100	98

Surrogate Legend

- PFDA = 13C2 PFDA
- PFDoA = 13C2 PFDoA
- PFHpA = 13C4 PFHpA
- PFHxA = 13C2 PFHxA
- PFNA = 13C5 PFNA
- PFOA = 13C4 PFOA
- PFOS = 13C4 PFOS
- PFTDA = 13C2 PFTeDA
- PFHxS = 18O2 PFHxS
- PFUnA = 13C2 PFUnA
- d3-NMeFOSAA = d3-NMeFOSAA
- d5-NEtFOSAA = d5-NEtFOSAA

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Method: 537 (modified) - Fluorinated Alkyl Substances

Lab Sample ID: MB 320-317428/1-A
Matrix: Water
Analysis Batch: 318245

Client Sample ID: Method Blank
Prep Type: Total/NA
Prep Batch: 317428

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	<1.9		20	1.9	ng/L		08/23/19 06:13	08/26/19 04:41	1
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	<3.1		20	3.1	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorobutanesulfonic acid (PFBS)	<0.20		2.0	0.20	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorodecanoic acid (PFDA)	<0.31		2.0	0.31	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorododecanoic acid (PFDoA)	<0.55		2.0	0.55	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluoroheptanoic acid (PFHpA)	<0.25		2.0	0.25	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorohexanesulfonic acid (PFHxS)	0.245	J	2.0	0.17	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorohexanoic acid (PFHxA)	<0.58		2.0	0.58	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorononanoic acid (PFNA)	<0.27		2.0	0.27	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorooctanesulfonic acid (PFOS)	<0.54		2.0	0.54	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorooctanoic acid (PFOA)	<0.85		2.0	0.85	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorotetradecanoic acid (PFTeA)	<0.29		2.0	0.29	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluorotridecanoic acid (PFTriA)	<1.3		2.0	1.3	ng/L		08/23/19 06:13	08/26/19 04:41	1
Perfluoroundecanoic acid (PFUnA)	<1.1		2.0	1.1	ng/L		08/23/19 06:13	08/26/19 04:41	1

Isotope Dilution	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
13C2 PFDA	100		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C2 PFDoA	95		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C4 PFHpA	106		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C2 PFHxA	102		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C5 PFNA	104		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C4 PFOA	102		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C4 PFOS	115		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C2 PFTeDA	94		25 - 150	08/23/19 06:13	08/26/19 04:41	1
18O2 PFHxS	127		25 - 150	08/23/19 06:13	08/26/19 04:41	1
13C2 PFUnA	99		25 - 150	08/23/19 06:13	08/26/19 04:41	1
d3-NMeFOSAA	100		25 - 150	08/23/19 06:13	08/26/19 04:41	1
d5-NEtFOSAA	98		25 - 150	08/23/19 06:13	08/26/19 04:41	1

Lab Sample ID: LCS 320-317428/2-A
Matrix: Water
Analysis Batch: 318245

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317428

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	46.0		ng/L		115	65 - 125
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	41.9		ng/L		105	67 - 127
Perfluorobutanesulfonic acid (PFBS)	35.4	31.5		ng/L		89	73 - 133
Perfluorodecanoic acid (PFDA)	40.0	40.1		ng/L		100	69 - 129
Perfluorododecanoic acid (PFDoA)	40.0	40.1		ng/L		100	71 - 131
Perfluoroheptanoic acid (PFHpA)	40.0	39.2		ng/L		98	66 - 126
Perfluorohexanesulfonic acid (PFHxS)	36.4	32.0		ng/L		88	63 - 123
Perfluorohexanoic acid (PFHxA)	40.0	38.5		ng/L		96	66 - 126
Perfluorononanoic acid (PFNA)	40.0	40.3		ng/L		101	68 - 128

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

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

Lab Sample ID: LCS 320-317428/2-A
Matrix: Water
Analysis Batch: 318245

Client Sample ID: Lab Control Sample
Prep Type: Total/NA
Prep Batch: 317428
%Rec.

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	Limits
Perfluorooctanesulfonic acid (PFOS)	37.1	35.6		ng/L		96	67 - 127
Perfluorooctanoic acid (PFOA)	40.0	38.7		ng/L		97	64 - 124
Perfluorotetradecanoic acid (PFTeA)	40.0	36.1		ng/L		90	68 - 128
Perfluorotridecanoic acid (PFTriA)	40.0	38.0		ng/L		95	72 - 132
Perfluoroundecanoic acid (PFUnA)	40.0	39.3		ng/L		98	60 - 120
		LCS	LCS				
Isotope Dilution	%Recovery	Qualifier	Limits				
13C2 PFDA	103		25 - 150				
13C2 PFDoA	101		25 - 150				
13C4 PFHpA	113		25 - 150				
13C2 PFHxA	105		25 - 150				
13C5 PFNA	107		25 - 150				
13C4 PFOA	104		25 - 150				
13C4 PFOS	114		25 - 150				
13C2 PFTeDA	99		25 - 150				
18O2 PFHxS	125		25 - 150				
13C2 PFUnA	102		25 - 150				
d3-NMeFOSAA	108		25 - 150				
d5-NEtFOSAA	94		25 - 150				

Lab Sample ID: LCSD 320-317428/3-A
Matrix: Water
Analysis Batch: 318245

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA
Prep Batch: 317428
%Rec.

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	Limits	RPD	Limit
N-ethylperfluorooctanesulfonamidoacetic acid (NEtFOSAA)	40.0	46.4		ng/L		116	65 - 125	1	30
N-methylperfluorooctanesulfonamidoacetic acid (NMeFOSAA)	40.0	44.8		ng/L		112	67 - 127	7	30
Perfluorobutanesulfonic acid (PFBS)	35.4	30.9		ng/L		87	73 - 133	2	30
Perfluorodecanoic acid (PFDA)	40.0	39.6		ng/L		99	69 - 129	1	30
Perfluorododecanoic acid (PFDoA)	40.0	37.7		ng/L		94	71 - 131	6	30
Perfluoroheptanoic acid (PFHpA)	40.0	38.7		ng/L		97	66 - 126	1	30
Perfluorohexanesulfonic acid (PFHxS)	36.4	31.3		ng/L		86	63 - 123	2	30
Perfluorohexanoic acid (PFHxA)	40.0	41.2		ng/L		103	66 - 126	7	30
Perfluorononanoic acid (PFNA)	40.0	43.1		ng/L		108	68 - 128	7	30
Perfluorooctanesulfonic acid (PFOS)	37.1	35.9		ng/L		97	67 - 127	1	30
Perfluorooctanoic acid (PFOA)	40.0	37.3		ng/L		93	64 - 124	4	30
Perfluorotetradecanoic acid (PFTeA)	40.0	37.6		ng/L		94	68 - 128	4	30
Perfluorotridecanoic acid (PFTriA)	40.0	36.1		ng/L		90	72 - 132	5	30
Perfluoroundecanoic acid (PFUnA)	40.0	37.4		ng/L		94	60 - 120	5	30

Eurofins TestAmerica, Sacramento

QC Sample Results

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

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

<i>Isotope Dilution</i>	<i>LCSD</i>		<i>Limits</i>
	<i>%Recovery</i>	<i>Qualifier</i>	
13C2 PFDA	97		25 - 150
13C2 PFDoA	104		25 - 150
13C4 PFHpA	108		25 - 150
13C2 PFHxA	99		25 - 150
13C5 PFNA	100		25 - 150
13C4 PFOA	101		25 - 150
13C4 PFOS	109		25 - 150
13C2 PFTeDA	94		25 - 150
18O2 PFHxS	125		25 - 150
13C2 PFUnA	102		25 - 150
d3-NMeFOSAA	101		25 - 150
d5-NEtFOSAA	96		25 - 150

QC Association Summary

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

LCMS

Prep Batch: 317428

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53508-1	VAP-53 (52-55)	Total/NA	Water	3535	
320-53508-2	VAP-53 (65-68)	Total/NA	Water	3535	
320-53508-3	FIELD BLANK-081919	Total/NA	Water	3535	
320-53508-4	EB-02 (081919)	Total/NA	Water	3535	
320-53508-5	DUP-02	Total/NA	Water	3535	
320-53508-6	VAP-53 (73-76)	Total/NA	Water	3535	
320-53508-7	FIELD BLANK-082019	Total/NA	Water	3535	
MB 320-317428/1-A	Method Blank	Total/NA	Water	3535	
LCS 320-317428/2-A	Lab Control Sample	Total/NA	Water	3535	
LCSD 320-317428/3-A	Lab Control Sample Dup	Total/NA	Water	3535	

Analysis Batch: 318245

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53508-1	VAP-53 (52-55)	Total/NA	Water	537 (modified)	317428
320-53508-2	VAP-53 (65-68)	Total/NA	Water	537 (modified)	317428
320-53508-3	FIELD BLANK-081919	Total/NA	Water	537 (modified)	317428
320-53508-4	EB-02 (081919)	Total/NA	Water	537 (modified)	317428
MB 320-317428/1-A	Method Blank	Total/NA	Water	537 (modified)	317428
LCS 320-317428/2-A	Lab Control Sample	Total/NA	Water	537 (modified)	317428
LCSD 320-317428/3-A	Lab Control Sample Dup	Total/NA	Water	537 (modified)	317428

Analysis Batch: 321054

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
320-53508-5	DUP-02	Total/NA	Water	537 (modified)	317428
320-53508-6	VAP-53 (73-76)	Total/NA	Water	537 (modified)	317428
320-53508-7	FIELD BLANK-082019	Total/NA	Water	537 (modified)	317428

Lab Chronicle

Client: ARCADIS U.S., Inc.
 Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: VAP-53 (52-55)

Lab Sample ID: 320-53508-1

Date Collected: 08/19/19 12:20

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			259.9 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			318245	08/26/19 05:05	D1R	TAL SAC

Client Sample ID: VAP-53 (65-68)

Lab Sample ID: 320-53508-2

Date Collected: 08/19/19 16:05

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			253.5 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			318245	08/26/19 05:13	D1R	TAL SAC

Client Sample ID: FIELD BLANK-081919

Lab Sample ID: 320-53508-3

Date Collected: 08/19/19 14:00

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			255.6 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			318245	08/26/19 05:21	D1R	TAL SAC

Client Sample ID: EB-02 (081919)

Lab Sample ID: 320-53508-4

Date Collected: 08/19/19 12:30

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			256.5 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			318245	08/26/19 05:29	D1R	TAL SAC

Client Sample ID: DUP-02

Lab Sample ID: 320-53508-5

Date Collected: 08/19/19 00:00

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			260.6 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			321054	09/05/19 17:52	D1R	TAL SAC

Client Sample ID: VAP-53 (73-76)

Lab Sample ID: 320-53508-6

Date Collected: 08/20/19 09:55

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			258.3 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			321054	09/05/19 18:01	D1R	TAL SAC

Lab Chronicle

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Client Sample ID: FIELD BLANK-082019

Lab Sample ID: 320-53508-7

Date Collected: 08/20/19 08:50

Matrix: Water

Date Received: 08/21/19 09:15

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Prep	3535			265.3 mL	10.00 mL	317428	08/23/19 06:13	MYV	TAL SAC
Total/NA	Analysis	537 (modified)		1			321054	09/05/19 18:09	D1R	TAL SAC

Laboratory References:

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

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.

Job ID: 320-53508-1

Project/Site: Marinette, WI 30015294.00004

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 Program	17-020	01-20-21
ANAB	Dept. of Defense ELAP	L2468	01-20-21
ANAB	DoD	L2468	01-20-21
ANAB	DOE	L2468.01	01-20-21
ANAB	ISO/IEC 17025	L2468	08-09-21
Arizona	State	AZ0708	08-11-20
Arizona	State Program	AZ0708	08-11-20
Arkansas DEQ	State Program	88-0691	06-17-20
California	State	2897	01-31-20
California	State Program	2897	01-31-20
Colorado	State	CA0004	08-31-20
Connecticut	State	PH-0691	06-30-21
Connecticut	State Program	PH-0691	06-30-21
Florida	NELAP	E87570	06-30-20
Florida	NELAP	E87570	06-30-20
Hawaii	State	<cert No.>	01-29-20
Hawaii	State Program	N/A	01-29-20
Illinois	NELAP	200060	03-17-20 *
Illinois	NELAP	200060	03-17-20
Kansas	NELAP	E-10375	10-31-19
Louisiana	NELAP	30612	06-30-20
Maine	State Program	CA0004	04-14-20
Michigan	State	9947	01-29-20
Michigan	State Program	9947	01-31-20
New Hampshire	NELAP	2997	04-20-20
New York	NELAP	11666	04-01-20
Oregon	NELAP	4040	01-29-20
Oregon	NELAP	4040	01-29-20
Pennsylvania	NELAP	68-01272	03-31-20
Pennsylvania	NELAP	68-01272	09-05-19
Texas	NELAP	T104704399	05-31-20
Texas	NELAP	T104704399-19-13	05-31-20
US Fish & Wildlife	Federal	LE148388-0	07-31-20
US Fish & Wildlife	US Federal Programs	58448	07-31-20
USDA	Federal	P330-18-00239	01-17-21
USEPA UCMR	Federal	CA00044	12-31-20
Utah	NELAP	CA00044	02-29-20
Vermont	State Program	VT-4040	04-16-20
Virginia	NELAP	460278	03-14-20
Virginia	NELAP	460278	03-14-20
Washington	State	C581	05-05-20
Washington	State Program	C581	05-05-20
West Virginia (DW)	State	9930C	12-31-19
West Virginia (DW)	State Program	9930C	12-31-19
Wyoming	State Program	8TMS-L	01-28-19 *

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

Eurofins TestAmerica, Sacramento

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Laboratory: Eurofins TestAmerica, Chicago

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Wisconsin	State Program	999580010	08-31-20

- 1
- 2
- 3
- 4
- 5
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- 11
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- 13
- 14
- 15

Method Summary

Client: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Method	Method Description	Protocol	Laboratory
537 (modified)	Fluorinated Alkyl Substances	EPA	TAL SAC
3535	Solid-Phase Extraction (SPE)	SW846	TAL SAC

Protocol References:

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: ARCADIS U.S., Inc.
Project/Site: Marinette, WI 30015294.00004

Job ID: 320-53508-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
320-53508-1	VAP-53 (52-55)	Water	08/19/19 12:20	08/21/19 09:15	
320-53508-2	VAP-53 (65-68)	Water	08/19/19 16:05	08/21/19 09:15	
320-53508-3	FIELD BLANK-081919	Water	08/19/19 14:00	08/21/19 09:15	
320-53508-4	EB-02 (081919)	Water	08/19/19 12:30	08/21/19 09:15	
320-53508-5	DUP-02	Water	08/19/19 00:00	08/21/19 09:15	
320-53508-6	VAP-53 (73-76)	Water	08/20/19 09:55	08/21/19 09:15	
320-53508-7	FIELD BLANK-082019	Water	08/20/19 08:50	08/21/19 09:15	

West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: <u>S. JOHNSON</u>		Site Contact: <u>L. RUTKOWSKI</u>		Date: <u>8-20-19</u>		COC No: <u>1</u> of <u>1</u> COCs	
Company Name: <u>ARCADIS</u>		Tel/Fax:		Lab Contact:		Carrier:		Sampler: <u>K. KEON</u>	
Address: <u>1216 N. JEFFERSON ST #400</u>		Analysis Turnaround Time <input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS		TAT if different from Below <input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day		Filtered Sample (Y/N) Perform MS / MSD (Y/N) <u>PFAS 537 MOD</u>		For Lab Use Only:	
City/State/Zip: <u>MILWAUKEE, WI 53202</u>								Walk-in Client:	
Phone:								Lab Sampling:	
Fax:								Job / SDG No.:	
Project Name: <u>MARINETTE, WI</u>									
Site: <u>MARINETTE, WI</u>									
P O # <u>30015294.00004</u>									
Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)	Sample Specific Notes:	
VAP-53(52-55)	8-19-19	1220	G	W	2	N	N	X	
VAP-53(65-68)	8-19-19	1605	G	W	2	N	N	X	
FIELD BLANK-081919	8-19-19	1400	G	W	2	N	N	X	
EB-02(081919)	8-19-19	1230	G	W	2	N	N	X	
DUP-02	8-19-19	—	G	W	2	N	N	X	
VAP-53(73-76)	8-20-19	0955	G	W	2	N	N	X	
FIELD BLANK-082019	8-20-19	0850	G	W	2	N	N	X	
Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other						1			
Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)			
<input checked="" type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown						<input type="checkbox"/> Return to Client <input checked="" type="checkbox"/> Disposal by Lab <input type="checkbox"/> Archive for _____ Months			
Special Instructions/QC Requirements & Comments: <u>CONTACT S. JOHNSON W/ QUESTIONS</u>									
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:		Cooler Temp. (°C): Obs'd: <u>0.3°C</u> Corr'd: <u>0.9°C</u>		Therm ID No.: <u>AK7</u>			
Relinquished by: <u>[Signature]</u>	Company: <u>ARCADIS</u>	Date/Time: <u>8-20-19/1500</u>	Received by: <u>[Signature]</u>	Company: <u>[Signature]</u>	Date/Time: <u>8/21/19 915</u>				
Relinquished by:	Company:	Date/Time:	Received by:	Company:	Date/Time:				
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:				



320-53508 Chain of Custody

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320-53508 Field Sheet

Tracking #: 7125 4939 6138

SO (PO) / FO / 2-Day / Ground / UPS / CDO / Courier
GSO / OnTrac / Goldstreak / USPS / Other _____

Job: _____

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

Notes: _____

Therm. ID: A47 Corr. Factor: +0.6°C

Ice Wet Gel _____ Other _____

Cooler Custody Seal: 136392

Sample Custody Seal: -

Cooler ID: -

Temp Observed: 0.3°C Corrected: 0.9°C

From: Temp Blank Sample
NCM Filed: Yes No

	Yes	No	NA
Perchlorate has headspace? (Methods 314, 331, 6850)	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Alkalinity has no headspace?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
CoC is complete w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Samples received within holding time?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample preservatives verified?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Cooler compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples compromised/tampered with?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Samples w/o discrepancies?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample containers have legible labels?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input 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"/>
Zero headspace?*	<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"/>
Sample temp OK?	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Sample out of temp?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Initials: SO Date: 8/21/19

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

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Part # 159469-434 RITZ EXP 07

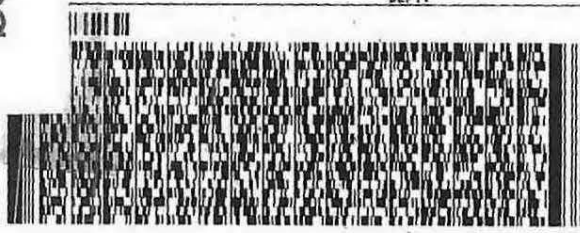
ORIGIN ID: RRLA (262) 202-5955-
RUTKOWSKI
DIS
NORTH JEFFERSON STREET
ALUKEE, WI 53202
ED STATES US

SHIP DATE: 06MAR19
ACTWGT: 25.00 LB MAN
CAD: 525155/CAFE3211

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
136392

ESTAMERICA SACRAMENTO
80 RIVERSIDE PARKWAY

WEST SACRAMENTO CA 95605 - 1500
878-5600 REF: DEPT:



Custody Seal
DATE 8.20.19
SIGNATURE *[Signature]*

FedEx
TRK# 0221 7125 4939 6138

RETURNS MAIL
WED - 21 AUG 10:30
PRIORITY OVERNIGHT

XH BLUA

95605
CA
SM



FID 832374 20AUG19 GRBA 568C2/F551/PCBA

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING
136392

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West Sacramento, CA 95605
Phone: 916.373.5600 Fax:

THE LEADER IN ENVIRONMENTAL TESTING
TestAmerica Laboratories, Inc.
TAL-8210 (0713)

Regulatory Program: DW NPDES RCRA Other:

Client Contact		Project Manager: <u>G JOHNSON</u>		Site Contact: <u>I. RUTKOWSKI</u>		Date: <u>8-26-19</u>		COC No:	
Company Name: <u>ARCADIS</u>		Tel/Fax:		Lab Contact:		Carrier:		<u>1</u> of <u>1</u> COCs	
Address: <u>1216 N. JEFFERSON ST #400</u>		Analysis Turnaround Time							
City/State/Zip: <u>MILWAUKEE, WI 53202</u>		<input checked="" type="checkbox"/> CALENDAR DAYS <input type="checkbox"/> WORKING DAYS TAT if different from Below _____							
Phone:		<input checked="" type="checkbox"/> 2 weeks <input type="checkbox"/> 1 week <input type="checkbox"/> 2 days <input type="checkbox"/> 1 day							
Fax:		Filtered Sample (Y/N) Perform MS / MSD (Y/N) <u>YAS 537 MOD</u>							
Project Name: <u>MARINETTE, WI</u>									
Site: <u>MARINETTE, WI</u>									
P O # <u>30015794 00004</u>									
Sampler: <u>V. VEANI</u>		For Lab Use Only:							
Walk-in Client:		Lab Sampling:							
Job / SDG No.:		Sample Specific Notes:							

Sample Identification	Sample Date	Sample Time	Sample Type (C=Comp, G=Grab)	Matrix	# of Cont.	Filtered Sample (Y/N)	Perform MS / MSD (Y/N)												
VAP-53(52-55)	8-19-19	1220	G	W	2	Y	Y	X											
VAP-53(65-68)	8-19-19	1605	G	W	2	Y	Y	X											
FIELD BLANK-081919	8-19-19	1400	G	W	2	Y	Y	X											
FB-02(081919)	8-19-19	1230	G	W	2	Y	Y	X											
DUP-02	8-19-19		G	W	2	Y	Y	X											
VAP-53(73-76)	8-20-19	0955	G	W	2	Y	Y	X											
FIELD BLANK-082019	8-20-19	0850	G	W	2	Y	Y	X											

Preservation Used: 1= Ice, 2= HCl; 3= H2SO4; 4=HNO3; 5=NaOH; 6= Other 1

Possible Hazard Identification: Are any samples from a listed EPA Hazardous Waste? Please List any EPA Waste Codes for the sample in the Comments Section if the lab is to dispose of the sample.

Non-Hazard Flammable Skin Irritant Poison B Unknown

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return to Client Disposal by Lab Archive for _____ Months

Special Instructions/QC Requirements & Comments:
CONTACT S. JOHNSON W/ QUESTIONS

Custody Seals Intact: Yes No

Custody Seal No.: _____ Cooler Temp. (°C): Obs'd: 0.3 Corr'd: 0.94 Therm ID No.: AK7

Relinquished by: <u>[Signature]</u>	Company: <u>ARCADIS</u>	Date/Time: <u>8-20-19/1500</u>	Received by: <u>[Signature]</u>	Company: <u>[Signature]</u>	Date/Time: <u>8/20/19 915</u>
Relinquished by:	Company:	Date/Time:	Received by: <u>[Signature]</u>	Company:	Date/Time:
Relinquished by:	Company:	Date/Time:	Received in Laboratory by:	Company:	Date/Time:

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9/11/2019



Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc.

Job Number: 320-53508-1

Login Number: 53508

List Source: Eurofins TestAmerica, Sacramento

List Number: 1

Creator: Oropeza, Salvador

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.	True	136392
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	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	