



**Off-base Drinking Water Sample Results,
Level 2 Laboratory Report, Level 4 Laboratory Report,
Electronic Data Deliverable, Data Validation Report,
and the Sample Location Figure, SDG 1804038**

*Naval Air Station Whiting Field
Milton, Florida*

February 2019



January 11, 2019

Vista Work Order No. 1804038

Ms. Tiffany Hill
CH2M Hill
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the amended results for the sample set received at Vista Analytical Laboratory on December 12, 2018 under your Project Name 'NAS Whiting Field, FL (CTO-08)'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,

A handwritten signature in black ink that reads "Martha Maier". The signature is written in a cursive, flowing style.

Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1804038

Case Narrative

Sample Condition on Receipt:

Three drinking water and two aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. This report was amended on January 11, 2019 to update the "Quality Control" section of the case narrative, per client request.

Analytical Notes:

EPA Method 537, Rev. 1.1

The samples were extracted and analyzed for a selected list of 3 PFAS using EPA Method 537, Rev. 1.1.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Laboratory Fortified Blank (LFB) and a Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank. The LFB recoveries were within the method acceptance criteria.

The extract of sample "WF-RW06-1218" was re-injected because it followed an extract with an analyte with a concentration greater than the highest point in the calibration curve. The results from the re-injection have been reported.

As requested, an LFSM/LFSMD was performed on sample "WF-RW10-1218". The LFSM/LFSMD recoveries and RPDs were within acceptance criteria.

As the original sample containers were initially prepped for PFAS Isotope Dilution Method, the backup containers were used for EPA Method 537 - as a result, there was no volume available to perform a re-extraction on sample 1804038-03.

The surrogate recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1804038-03	WF-RW10PP-1218	EPA Method 537	13C2-PFHxA	H	64.5

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Case Narrative.....	1
Table of Contents.....	3
Sample Inventory.....	4
Analytical Results.....	5
Qualifiers.....	14
Certifications.....	15
Sample Receipt.....	18

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1804038-01	WF-RW10-1218	MS/MSD11-Dec-18 13:13	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL
1804038-02	WF-FB10-1218	11-Dec-18 13:14	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL
1804038-03	WF-RW10PP-1218	11-Dec-18 13:15	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL
1804038-04	WF-RW06-1218	11-Dec-18 13:50	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL
1804038-05	WF-FB06-1218	11-Dec-18 13:51	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL

ANALYTICAL RESULTS

Sample ID: LRB	EPA Method 537
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Client Data	Laboratory Data
Name: CH2M Hill Project: NAS Whiting Field, FL (CTO-08)	Matrix: Aqueous Lab Sample: B8L0115-BLK1 Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.04	5.00	10.0		B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1
PFOA	335-67-1	ND	3.04	5.00	10.0		B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1
PFOS	1763-23-1	ND	3.04	5.00	10.0		B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	88.8	70 - 130			B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1	
13C2-PFDA	SURR	89.2	70 - 130			B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LFB

EPA Method 537

Client Data					Laboratory Data				
Name:	CH2M Hill	Matrix:	Aqueous	Lab Sample:	B8L0115-BS1	Column:	BEH C18		
Project:	NAS Whiting Field, FL (CTO-08)								

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	70.8	70.8	100	70 - 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
PFOA	335-67-1	89.5	80.0	112	70 - 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
PFOS	1763-23-1	80.1	74.0	108	70 - 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA		SURR		101	70- 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
13C2-PFDA		SURR		101	70- 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1

Sample ID: WF-RW10-1218	EPA Method 537
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Client Data	Laboratory Data
Name: CH2M Hill	Lab Sample: 1804038-01
Project: NAS Whiting Field, FL (CTO-08)	Column: BEH C18
Matrix: Drinking Water	Date Received: 12-Dec-18 10:14
Date Collected: 11-Dec-18 13:13	

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
PFOA	335-67-1	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
PFOS	1763-23-1	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	91.2	70 - 130			B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1	
13C2-PFDA	SURR	91.7	70 - 130			B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1	

DL - Detection Limit

LOD - Limit of Detection

LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: WF-RW10-1218 **EPA Method 537**

Name: CH2M Hill	Lab Sample: B8L0115-MS1/B8L0115-MSD1	Source Lab Sample: 1804038-01
Project: NAS Whiting Field, FL (CTO-08)	QC Batch: B8L0115	Date Extracted: 14-Dec-18
Matrix: Aqueous	Samp Size: 0.241/0.238 L	Column: BEH C18

Analyte	CAS Number	Sample (ng/L)	LFSM (ng/L)	LFSM Spike Amt	LFSM % Rec	LFSM Quals	LFSMD (ng/L)	LFSMD Spike Amt	LFSMD % Rec	RPD	LFSMD Quals	%Rec Limits	RPD Limits	LFSM Analyzed	LFSM Dil	LFSMD Analyzed	LFS MD
PFBS	375-73-5	ND	74.9	73.5	102		70.0	74.3	93.8	8.38		70-130	30	17-Dec-18 18:00	1	17-Dec-18 18:11	1
PFOA	335-67-1	ND	85.3	83.1	101		86.0	83.9	101	0		70-130	30	17-Dec-18 18:00	1	17-Dec-18 18:11	1
PFOS	1763-23-1	ND	82.0	76.8	104		81.8	77.6	102	1.94		70-130	30	17-Dec-18 18:00	1	17-Dec-18 18:11	1

Labeled Standards	Type	LFSM % Rec	LFSM Quals	LFSMD % Rec	LFSMD Quals	Limits	LFSM Analyzed	LFSM Dil	LFSMD Analyzed	LFS MD
13C2-PFHxA	SURR	94.0		93.5		70-130	17-Dec-18 18:00	1	17-Dec-18 18:11	1
13C2-PFDA	SURR	91.8		97.7		70-130	17-Dec-18 18:00	1	17-Dec-18 18:11	1

Sample ID: WF-FR10-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Aqueous	Lab Sample:	1804038-02	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:14	Date Received:	12-Dec-18 10:14		

Analyte	CAS number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
PFOA	335-67-1	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
PFOS	1763-23-1	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
Labeled Standards	Type	N %recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	96.6	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1	
13C2-PFDA	SURR	92.0	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: WF-RW1022-181L **P2A Methrd 537**

Client Data				baoryatryEData			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-03	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:1R	Date v ecei. ed:	12-Dec-18 10:14		

AnalEte	CAS Numoey	Crnc. (ng/b)	Db	bOD	bOQ	Qualifieys	Batch	Pxyacted	Samp Size	AnalEzed	Dilutirn
PFBS	37R-73-R	232000	3770	5200	12400	D	B8L011R	14-Dec-18	0Q02 L	18-Dec-18 1R:47	1000
PFOA	33R-57-1	486	367	56U	126		B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1
PFOS	1753-23-1	158	367	56U	126		B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1
b aoeled Standayds	TEpe	% RecrveyE	bimits		Qualifieys	Batch	Pxyacted	Samp Size	AnalEzed	Dilutirn	
13C2-PFHxA	S9 v v	546	70 - 130		H	B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1	
13C2-PFDA	S9 v v	U46	70 - 130			B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

v results reported to the DL6

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers6 Only the linear isomer is reported for all other analytes6

Sample ID: WF-RW06-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-04	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:50	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.22	5.30	10.6		B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
PFOA	335-67-1	26.7	3.22	5.30	10.6		B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
PFOS	1763-23-1	3.23	3.22	5.30	10.6	J	B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	96.9	70 - 130			B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1	
13C2-PFDA	SURR	93.6	70 - 130			B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1	

DL - Detection Limit

LOD - Limit of Detection

LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: WF-FR06-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CHuM Hill	Matrix:	As BeoBR	Lab Sample:	1804038-02	ColBnn:	EqH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:21	Date v ecei. ed:	1u-Dec-18 10:14		

Analyte	CAS x umber	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Ratch	Etracted	Samp Size	Analyzed	Dilution
PFES	362-63-2	ND	35u4	25u	105		E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
PFOA	332-U6-1	ND	35u4	25u	105		E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
PFOS	16UB-u3-1	ND	35u4	25u	105		E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
Labeled Standards	Type	N %covery		Limits		Qualifiers	Ratch	Etracted	Samp Size	Analyzed	Dilution
13Cu-PFHxA	S9 v v	7u8		60 - 130			E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
13Cu-PFDA	S9 v v	712		60 - 130			E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1

DL - Detection Limit

LOD - Limit of Detection

veRtReported to the DL5

LOQ - Limit of sBantitation

When reported, PFHxS, PFOA, PFOS, MeFOSAA and qtFOSAA inclBle both linear and branched iRmer5 Only the linear iRmer iRreported for all other analyte5

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A



CHAIN OF CUSTODY

For Laboratory Use Only
 Work Order #: 1804038 Temp: 0.9 °C
 Storage ID: WR-2 Storage Secured: Yes No

Project ID: (CTO-08) NAS Whitening Field, FL PO#: 100067106051 Sampler: John Towns
 (name)

TAT Standard: 21 days
 (check one): Rush (surcharge may apply)
 14 days 7 days Specify: _____
 State Ph# Fax#
757-831-1113

Invoice to: Name Katie Tippin Company Jacobs Address _____ City _____ State _____ Ph# _____ Fax# _____
 Relinquished by (printed name and signature) John Towns Date 12/11/18 Time 1500 Received by (printed name and signature) Marissa Sparkus W Sparkus Date 12/12/18 Time 1014
 Relinquished by (printed name and signature) _____ Date _____ Time _____ Received by (printed name and signature) _____ Date _____ Time _____

SHIP TO: Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 Ph: (916) 673-1520; Fax: (916) 673-0106				Method of Shipment: <u>Fed Ex</u>		Add Analysis(es) Requested		PFAS Isotope Dilution		USEPA Method 537		Comments			
ATTN: <u>Martha Maier</u>				Tracking No.: <u>7739 3585 3444</u>		Container(s)		PFAS		USEPA					
Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	List of 21	List of 21 w/Isomers	List of 24	List of 24 w/Isomers	List of 28	Other: Please List Below	PFAS List: 14	PFAS List: 14	PFAS List: 14
WF-RW10-1218	12/11/18	1313		2	0	DW							X		
WF-FB10-1218	12/11/18	1314		2	0	AG							X		
WF-RW10PP-1218	12/11/18	1315		2	0	DW							X		
WF-RW10-1218-MS	12/11/18	1316		2	0	DW							X		
WF-RW10-1218-SD	12/11/18	1317		2	0	DW							X		
WF-RW06-1218	12/11/18	1350		2	0	DW							X		
WF-FB06-1218	12/11/18	1351		2	0	AG							X		

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:
 Name: _____
 Company: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____
 Email: _____

Container Types: P= HDPE, PJ= HDPE Jar
 Other polypropylene
 Bottle Preservation Type: T = Thiosulfate,
 Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
 SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: _____

Sample Log-In Checklist

Page # 1 of 1

Vista Work Order #: 1804038

TAT 7

Samples Arrival:	Date/Time 12/12/18 1014	Initials: MWS	Location: WR-2 Shelf/Rack: N/A
Logged In:	Date/Time 12/12/18 1144	Initials: KE	Location: WR-2 Shelf/Rack: A3/E3/E2 <i>Added 12/12/18</i>
Delivered By:	<u>FedEx</u> UPS On Trac GSO DHL Hand Delivered Other		
Preservation:	<u>Ice</u> Blue Ice Dry Ice None		
Temp °C: 1.0 (uncorrected)	Probe used: Y / <u>N</u>		Thermometer ID: <u>IR-4</u>
Temp °C: 0.9 (corrected)			

	YES	NO	NA
Adequate Sample Volume Received?	✓		
Holding Time Acceptable?	✓		
Shipping Container(s) Intact?	✓		
Shipping Custody Seals Intact?	✓		
Shipping Documentation Present?	✓		
Airbill	Trk # <u>7739 3585 3444</u>	✓	
Sample Container Intact?	✓		
Sample Custody Seals Intact?			
Chain of Custody / Sample Documentation Present?	✓		
COC Anomaly/Sample Acceptance Form completed?		✓	
If Chlorinated or Drinking Water Samples, Acceptable-Preservation?	✓		
Preservation Documented:	Na ₂ S ₂ O ₃ <u>Trizma</u> None <u>Yes</u> Other	No	NA
Shipping Container	<u>Vista</u> Client <u>Retain</u> Return Dispose		

Comments:

January 11, 2019

Vista Work Order No. 1804038

Ms. Tiffany Hill
CH2M Hill
1100 NE Circle Blvd. Suite 300
Corvallis, OR 97330

Dear Ms. Hill,

Enclosed are the amended results for the sample set received at Vista Analytical Laboratory on December 12, 2018 under your Project Name 'NAS Whiting Field, FL (CTO-08)'.

Vista Analytical Laboratory is committed to serving you effectively. If you require additional information, please contact me at 916-673-1520 or by email at mmaier@vista-analytical.com.

Thank you for choosing Vista as part of your analytical support team.

Sincerely,



Martha Maier
Laboratory Director



Vista Analytical Laboratory certifies that the report herein meets all the requirements set forth by NELAP for those applicable test methods. Results relate only to the samples as received by the laboratory. This report should not be reproduced except in full without the written approval of Vista.

Vista Work Order No. 1804038

Case Narrative

Sample Condition on Receipt:

Three drinking water and two aqueous samples were received in good condition and within the method temperature requirements. The samples were received and stored securely in accordance with Vista standard operating procedures and EPA methodology. This report was amended on January 11, 2019 to update the "Quality Control" section of the case narrative, per client request.

Analytical Notes:

EPA Method 537, Rev. 1.1

The samples were extracted and analyzed for a selected list of 3 PFAS using EPA Method 537, Rev. 1.1.

Holding Times

The samples were extracted and analyzed within the method hold times.

Quality Control

The Initial Calibration and Continuing Calibration Verifications met the method acceptance criteria.

A Laboratory Fortified Blank (LFB) and a Laboratory Reagent Blank (LRB) were extracted and analyzed with the preparation batch. No analytes were detected in the Laboratory Reagent Blank. The LFB recoveries were within the method acceptance criteria.

The extract of sample "WF-RW06-1218" was re-injected because it followed an extract with an analyte with a concentration greater than the highest point in the calibration curve. The results from the re-injection have been reported.

As requested, an LFSM/LFSMD was performed on sample "WF-RW10-1218". The LFSM/LFSMD recoveries and RPDs were within acceptance criteria.

As the original sample containers were initially prepped for PFAS Isotope Dilution Method, the backup containers were used for EPA Method 537 - as a result, there was no volume available to perform a re-extraction on sample 1804038-03.

The surrogate recoveries outside the acceptance criteria are listed in the table below.

QC Anomalies

LabNumber	SampleName	Analysis	Analyte	Flag	%Rec
1804038-03	WF-RW10PP-1218	EPA Method 537	13C2-PFHxA	H	64.5

H = Recovery was outside laboratory acceptance criteria.

TABLE OF CONTENTS

Case Narrative.....	1
Table of Contents.....	3
Sample Inventory.....	4
Analytical Results.....	5
Qualifiers.....	14
Certifications.....	15
Sample Receipt.....	18
Extraction Information.....	20
Sample Data - EPA Method 537.....	24
IIS Areas and CCVs.....	59
ICAL with ICV.....	110
Standards.....	189

Sample Inventory Report

Vista Sample ID	Client Sample ID	Sampled	Received	Components/Containers
1804038-01	WF-RW10-1218	MS/MSD11-Dec-18 13:13	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL Polypropylene, 250mL
1804038-02	WF-FB10-1218	11-Dec-18 13:14	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL
1804038-03	WF-RW10PP-1218	11-Dec-18 13:15	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL
1804038-04	WF-RW06-1218	11-Dec-18 13:50	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL
1804038-05	WF-FB06-1218	11-Dec-18 13:51	12-Dec-18 10:14	Polypropylene, 250mL Polypropylene, 250mL

ANALYTICAL RESULTS

Sample ID: LRB	EPA Method 537
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Client Data	Laboratory Data
Name: CH2M Hill Project: NAS Whiting Field, FL (CTO-08)	Matrix: Aqueous Lab Sample: B8L0115-BLK1 Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.04	5.00	10.0		B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1
PFOA	335-67-1	ND	3.04	5.00	10.0		B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1
PFOS	1763-23-1	ND	3.04	5.00	10.0		B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	88.8	70 - 130			B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1	
13C2-PFDA	SURR	89.2	70 - 130			B8L0115	14-Dec-18	0.250 L	17-Dec-18 18:22	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: LFB

EPA Method 537

Client Data					Laboratory Data				
Name:	CH2M Hill	Matrix:	Aqueous	Lab Sample:	B8L0115-BS1	Column:	BEH C18		
Project:	NAS Whiting Field, FL (CTO-08)								

Analyte	CAS Number	Amt Found (ng/L)	Spike Amt	% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	70.8	70.8	100	70 - 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
PFOA	335-67-1	89.5	80.0	112	70 - 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
PFOS	1763-23-1	80.1	74.0	108	70 - 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
Labeled Standards		Type		% Rec	Limits	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
13C2-PFHxA		SURR		101	70- 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1
13C2-PFDA		SURR		101	70- 130		B8L0115	14-Dec-18	0.250 L	17-Dec-18 17:49	1

Sample ID: WF-RW10-1218	EPA Method 537
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Client Data	Laboratory Data
Name: CH2M Hill	Matrix: Drinking Water
Project: NAS Whiting Field, FL (CTO-08)	Date Collected: 11-Dec-18 13:13
	Lab Sample: 1804038-01
	Date Received: 12-Dec-18 10:14
	Column: BEH C18

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
PFOA	335-67-1	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
PFOS	1763-23-1	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	91.2	70 - 130			B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1	
13C2-PFDA	SURR	91.7	70 - 130			B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: WF-RW10-1218 **EPA Method 537**

Name: CH2M Hill	Lab Sample: B8L0115-MS1/B8L0115-MSD1	Source Lab Sample: 1804038-01
Project: NAS Whiting Field, FL (CTO-08)	QC Batch: B8L0115	Date Extracted: 14-Dec-18
Matrix: Aqueous	Samp Size: 0.241/0.238 L	Column: BEH C18

Analyte	CAS Number	Sample (ng/L)	LFSM (ng/L)	LFSM Spike Amt	LFSM % Rec	LFSM Quals	LFSMD (ng/L)	LFSMD Spike Amt	LFSMD % Rec	RPD	LFSMD Quals	%Rec Limits	RPD Limits	LFSM Analyzed	LFSM Dil	LFSMD Analyzed	LFS MD
PFBS	375-73-5	ND	74.9	73.5	102		70.0	74.3	93.8	8.38		70-130	30	17-Dec-18 18:00	1	17-Dec-18 18:11	1
PFOA	335-67-1	ND	85.3	83.1	101		86.0	83.9	101	0		70-130	30	17-Dec-18 18:00	1	17-Dec-18 18:11	1
PFOS	1763-23-1	ND	82.0	76.8	104		81.8	77.6	102	1.94		70-130	30	17-Dec-18 18:00	1	17-Dec-18 18:11	1

Labeled Standards	Type	LFSM % Rec	LFSM Quals	LFSMD % Rec	LFSMD Quals	Limits	LFSM Analyzed	LFSM Dil	LFSMD Analyzed	LFS MD
13C2-PFHxA	SURR	94.0		93.5		70-130	17-Dec-18 18:00	1	17-Dec-18 18:11	1
13C2-PFDA	SURR	91.8		97.7		70-130	17-Dec-18 18:00	1	17-Dec-18 18:11	1

Sample ID: WF-FR10-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Aqueous	Lab Sample:	1804038-02	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:14	Date Received:	12-Dec-18 10:14		

Analyte	CAS number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
PFOA	335-67-1	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
PFOS	1763-23-1	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
Labeled Standards	Type	N %recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	96.6	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1	
13C2-PFDA	SURR	92.0	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: WF-RW1022-181L **P2A Methrd 537**

Client Data				baoryatryEData			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-03	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:1R	Date v ecei. ed:	12-Dec-18 10:14		

AnalEte	CAS Numocy	Crnc. (ng/b)	Db	bOD	bOQ	Qualifieys	Batch	Pxyacted	Samp Size	AnalEzed	Dilutirn
PFBS	37R-73-R	232000	3770	5200	12400	D	B8L011R	14-Dec-18	0Q02 L	18-Dec-18 1R:47	1000
PFOA	33R-57-1	486	367	56U	126		B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1
PFOS	1753-23-1	158	367	56U	126		B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1
b aoeled Standayds	TEpe	% RecrveyE		bimits		Qualifieys	Batch	Pxyacted	Samp Size	AnalEzed	Dilutirn
13C2-PFHxA	S9 v v	54R		70 - 130		H	B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1
13C2-PFDA	S9 v v	U46		70 - 130			B8L011R	14-Dec-18	0Q02 L	17-Dec-18 18:R5	1

DL - Detection Limit

LOD - Limit of Detection

LOQ - Limit of quantitation

v results reported to the DL6

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers6 Only the linear isomer is reported for all other analytes6

Sample ID: WF-RW06-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-04	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:50	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.22	5.30	10.6		B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
PFOA	335-67-1	26.7	3.22	5.30	10.6		B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
PFOS	1763-23-1	3.23	3.22	5.30	10.6	J	B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	96.9	70 - 130			B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1	
13C2-PFDA	SURR	93.6	70 - 130			B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1	

DL - Detection Limit

LOD - Limit of Detection

LOQ - Limit of quantitation

Results reported to the DL.

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

Sample ID: WF-FR06-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CHuM Hill	Matrix:	As BeoBR	Lab Sample:	1804038-02	ColBnn:	EqH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:21	Date v ecei. ed:	1u-Dec-18 10:14		

Analyte	CAS x umber	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Ratch	Etracted	Samp Size	Analyzed	Dilution
PFES	362-63-2	ND	35u4	23u	103		E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
PFOA	332-U6-1	ND	35u4	23u	103		E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
PFOS	16UB-u3-1	ND	35u4	23u	103		E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
Labeled Standards	Type	N %covery		Limits		Qualifiers	Ratch	Etracted	Samp Size	Analyzed	Dilution
13Cu-PFHxA	S9 v v	7u8		60 - 130			E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1
13Cu-PFDA	S9 v v	712		60 - 130			E8L0112	14-Dec-18	05u32 L	16-Dec-18 17:18	1

DL - Detection Limit

LOD - Limit of Detection

veRtReported to the DL5

LOQ - Limit of sBantitation

When reported, PFHxS, PFOA, PFOS, MeFOSAA and qtFOSAA inclBle both linear and branched iRmer8 Only the linear iRmer iRreported for all other analyte8

DATA QUALIFIERS & ABBREVIATIONS

B	This compound was also detected in the method blank
Conc.	Concentration
D	Dilution
DL	Detection limit
E	The associated compound concentration exceeded the calibration range of the instrument
H	Recovery and/or RPD was outside laboratory acceptance limits
I	Chemical Interference
J	The amount detected is below the Reporting Limit/LOQ
LOD	Limits of Detection
LOQ	Limits of Quantitation
M	Estimated Maximum Possible Concentration (CA Region 2 projects only)
NA	Not applicable
ND	Not Detected
P	The reported concentration may include contribution from chlorinated diphenyl ether(s).
Q	Ion ratio outside of 70-130% of Standard Ratio. (DOD PFAS projects only)
TEQ	Toxic Equivalency
U	Not Detected (specific projects only)
*	See Cover Letter

Unless otherwise noted, solid sample results are reported in dry weight. Tissue samples are reported in wet weight.

Vista Analytical Laboratory Certifications

Accrediting Authority	Certificate Number
Alaska Department of Environmental Conservation	17-013
Arkansas Department of Environmental Quality	18-008-0
California Department of Health – ELAP	2892
DoD ELAP - A2LA Accredited - ISO/IEC 17025:2005	3091.01
Florida Department of Health	E87777
Hawaii Department of Health	N/A
Louisiana Department of Environmental Quality	01977
Maine Department of Health	2018017
Michigan Department of Environmental Quality	9932
Minnesota Department of Health	1322288
New Hampshire Environmental Accreditation Program	207718
New Jersey Department of Environmental Protection	CA003
New York Department of Health	11411
Oregon Laboratory Accreditation Program	4042-009
Pennsylvania Department of Environmental Protection	015
Texas Commission on Environmental Quality	T104704189-18-9
Virginia Department of General Services	9618
Washington Department of Ecology	C584-18
Wisconsin Department of Natural Resources	998036160

Current certificates and lists of licensed parameters are located in the Quality Assurance office and are available upon request.

NELAP Accredited Test Methods

MATRIX: Air	
Description of Test	Method
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA 23
Determination of Polychlorinated p-Dioxins & Polychlorinated Dibenzofurans	EPA TO-9A

MATRIX: Biological Tissue	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Drinking Water	
Description of Test	Method
2,3,7,8-Tetrachlorodibenzo- p-dioxin (2,3,7,8-TCDD) GC/HRMS	EPA 1613/1613B
1,4-Dioxane (1,4-Diethyleneoxide) analysis by GC/HRMS	EPA 522
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	ISO 25101 2009

MATRIX: Non-Potable Water	
Description of Test	Method
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Dioxin by GC/HRMS	EPA 613
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A

MATRIX: Solids	
Description of Test	Method
Tetra-Octa Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613
Tetra- through Octa-Chlorinated Dioxins and Furans by Isotope Dilution GC/HRMS	EPA 1613B
Brominated Diphenyl Ethers by HRGC/HRMS	EPA 1614A
Chlorinated Biphenyl Congeners in Water, Soil, Sediment, and Tissue by GC/HRMS	EPA 1668A/C
Pesticides in Water, Soil, Sediment, Biosolids, and Tissue by HRGC/HRMS	EPA 1699
Perfluorinated Alkyl Acids in Drinking Water by SPE and LC/MS/MS	EPA 537
Polychlorinated Dibenzo-p-Dioxins and Polychlorinated Dibenzofurans by GC/HRMS	EPA 8280A/B
Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) by GC/HRMS	EPA 8290/8290A



CHAIN OF CUSTODY

For Laboratory Use Only
 Work Order #: 1804038 Temp: 0.9 °C
 Storage ID: WR-2 Storage Secured: Yes No

Project ID: (CTO-08) NAS Whitling Field, FL PO#: 100067106051 Sampler: John Towns
 (name)

TAT Standard: 21 days
 (check one): Rush (surcharge may apply)
 14 days 7 days Specify: _____
 State Ph# Fax#
757-831-1113

Invoice to: Name Katie Tippin Company Jacobs Address _____ City _____ State _____ Ph# _____ Fax# _____
 Relinquished by (printed name and signature) John Towns Date 12/11/18 Time 1500 Received by (printed name and signature) Marissa Sparks WSparks Date 12/12/18 Time 1014
 Relinquished by (printed name and signature) _____ Date _____ Time _____ Received by (printed name and signature) _____ Date _____ Time _____

SHIP TO: Vista Analytical Laboratory 1104 Windfield Way El Dorado Hills, CA 95762 Ph: (916) 673-1520; Fax: (916) 673-0106				Method of Shipment: <u>Fed Ex</u>		Add Analysis(es) Requested		PFAS Isotope Dilution		USEPA Method 537		Comments			
ATTN: <u>Martha Maier</u>				Tracking No.: <u>7739 3585 3444</u>		Container(s)		PFAS		USEPA					
Sample ID	Date	Time	Location/Sample Description	Quantity	Type	Matrix	List of 21	List of 21 w/Isomers	List of 24	List of 24 w/Isomers	List of 28	Other: Please List Below	PFAS List: 14	PFAS List: 14	PFAS List: 14
WF-RW10-1218	12/11/18	1313		2	0	DW							X		
WF-FB10-1218	12/11/18	1314		2	0	AG							X		
WF-RW10PP-1218	12/11/18	1315		2	0	DW							X		
WF-RW10-1218-MS	12/11/18	1316		2	0	DW							X		
WF-RW10-1218-SD	12/11/18	1317		2	0	DW							X		
WF-RW06-1218	12/11/18	1350		2	0	DW							X		
WF-FB06-1218	12/11/18	1351		2	0	AG							X		

Special Instructions/Comments:

SEND DOCUMENTATION AND RESULTS TO:
 Name: _____
 Company: _____
 Address: _____
 City: _____ State: _____ Zip: _____
 Phone: _____ Fax: _____
 Email: _____

Container Types: P= HDPE, PJ= HDPE Jar
 Other polypropylene
 Bottle Preservation Type: T = Thiosulfate,
 Trizma: _____

Matrix Types: AQ = Aqueous, DW = Drinking Water, EF = Effluent, PP = Pulp/Paper, SD = Sediment,
 SL = Sludge, SO = Soil, WW = Wastewater, B = Blood/Serum, O = Other: _____

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier	GC_Column_Type
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	5.21	5.21	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	5.21	5.21	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	5.21	5.21	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			13C2-PFHxA	13C2-PFHxA	91.2	91.2	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			13C2-PFDA	13C2-PFDA	91.7	91.7	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	5.32	5.32	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	5.32	5.32	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	5.32	5.32	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			13C2-PFHxA	13C2-PFHxA	96.6	96.6	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			13C2-PFDA	13C2-PFDA	92.0	92.0	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181218	15:47:00	1804038-03	1000	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	232000	232000	NG_L	DD	DD	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	48.6	48.6	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	168	168	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			13C2-PFHxA	13C2-PFHxA	64.5	64.5	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			13C2-PFDA	13C2-PFDA	94.4	94.4	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	5.30	5.30	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	26.7	26.7	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	3.23	3.23	NG_L	J	J	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			13C2-PFHxA	13C2-PFHxA	96.9	96.9	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			13C2-PFDA	13C2-PFDA	93.6	93.6	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	5.32	5.32	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	5.32	5.32	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	5.32	5.32	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			13C2-PFHxA	13C2-PFHxA	92.8	92.8	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			13C2-PFDA	13C2-PFDA	91.5	91.5	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	5.00	5.00	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	5.00	5.00	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	5.00	5.00	NG_L	U	U	PR
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			13C2-PFHxA	13C2-PFHxA	88.8	88.8	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			13C2-PFDA	13C2-PFDA	89.2	89.2	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	70.8	70.8	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	89.5	89.5	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	80.1	80.1	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			13C2-PFHxA	13C2-PFHxA	101	101	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			13C2-PFDA	13C2-PFDA	101	101	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	74.9	74.9	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	85.3	85.3	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	82.0	82.0	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			13C2-PFHxA	13C2-PFHxA	94.0	94.0	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			13C2-PFDA	13C2-PFDA	91.8	91.8	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5	70.0	70.0	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1	86.0	86.0	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1	81.8	81.8	NG_L			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			13C2-PFHxA	13C2-PFHxA	93.5	93.5	PCT_REC			PR
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			13C2-PFDA	13C2-PFDA	97.7	97.7	PCT_REC			PR

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	TRG									5.1	3.17	5.21	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	TRG									5.1	3.17	5.21	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	TRG									5.1	3.17	5.21	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	TRG									5.1	3.23	5.32	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	TRG									5.1	3.23	5.32	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	TRG									5.1	3.23	5.32	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	TRG									5.1	3770	6200	12400	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	TRG									5.1	3.77	6.19	12.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	TRG									5.1	3.77	6.19	12.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	TRG									5.1	3.22	5.30	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	TRG									5.1	3.22	5.30	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	TRG									5.1	3.22	5.30	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	TRG									5.1	3.24	5.32	10.7	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	TRG									5.1	3.24	5.32	10.7	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	TRG									5.1	3.24	5.32	10.7	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	TRG									5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	TRG									5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	TRG									5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	SUR		SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	SUR		SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	TRG		LSA	130	70					5.1	3.16	5.19	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	TRG		LSA	130	70					5.1	3.16	5.19	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	TRG		LSA	130	70					5.1	3.16	5.19	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	TRG		LSA	130	70					5.1	3.19	5.25	10.5	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	TRG		LSA	130	70					5.1	3.19	5.25	10.5	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	TRG		LSA	130	70					5.1	3.19	5.25	10.5	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	SUR		LSA	130	70					5.1				1804038	S8L0050		

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	Extraction_Date	Extraction_Time	Analysis_Date	Analysis_Time	Lab_Sample_ID	Dilution	Run_Number	Percent_Moisture	Percent_Lipid	Chem_Name	Analyte_ID	Analyte_Value	Original_Analyte_Value	Result_Units	Lab_Qualifier	Validator_Qualifier
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.21	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.21	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.21	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			13C2-PFHxA	13C2-PFHxA		91.2	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	20181214	11:56:00	20181217	18:34:00	1804038-01	1	-999			13C2-PFDA	13C2-PFDA		91.7	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.32	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.32	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.32	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			13C2-PFHxA	13C2-PFHxA		96.6	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	20181214	11:56:00	20181217	18:45:00	1804038-02	1	-999			13C2-PFDA	13C2-PFDA		92.0	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181218	15:47:00	1804038-03	1000	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		232000	NG_L	DD	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		48.6	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		168	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			13C2-PFHxA	13C2-PFHxA		64.5	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	18:56:00	1804038-03	1	-999			13C2-PFDA	13C2-PFDA		94.4	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.30	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		26.7	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		3.23	NG_L	J	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			13C2-PFHxA	13C2-PFHxA		96.9	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	20181214	11:56:00	20181218	13:16:00	1804038-04	1	-999			13C2-PFDA	13C2-PFDA		93.6	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.32	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.32	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.32	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			13C2-PFHxA	13C2-PFHxA		92.8	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	20181214	11:56:00	20181217	19:18:00	1804038-05	1	-999			13C2-PFDA	13C2-PFDA		91.5	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		5.00	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		5.00	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		5.00	NG_L	U	
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			13C2-PFHxA	13C2-PFHxA		88.8	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	20181214	11:56:00	20181217	18:22:00	B8L0115-BLK1	1	-999			13C2-PFDA	13C2-PFDA		89.2	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		70.8	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		89.5	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		80.1	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			13C2-PFHxA	13C2-PFHxA		101	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	20181214	11:56:00	20181217	17:49:00	B8L0115-BS1	1	-999			13C2-PFDA	13C2-PFDA		101	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		74.9	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		85.3	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		82.0	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			13C2-PFHxA	13C2-PFHxA		94.0	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	20181214	11:56:00	20181217	18:00:00	B8L0115-MS1	1	-999			13C2-PFDA	13C2-PFDA		91.8	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			Perfluorobutanesulfonic acid (PFBS)	375-73-5		70.0	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			Perfluorooctanoic acid (PFOA)	335-67-1		86.0	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			Perfluorooctane Sulfonate (PFOS)	1763-23-1		81.8	NG_L		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			13C2-PFHxA	13C2-PFHxA		93.5	PCT_REC		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	20181214	11:56:00	20181217	18:11:00	B8L0115-MSD1	1	-999			13C2-PFDA	13C2-PFDA		97.7	PCT_REC		

Contract_ID	DO_CTO_Number	Phase	Installation_ID	Sample_Name	GC_Column_Type	Analysis_Result_Type	Result_Narrative	QC_Control_Limit_Code	QC_Accuracy_Upper	QC_Accuracy_Lower	Control_Limit_Date	QC_Narrative	MDL	Detection_Limit	QSM_Version	DL	LOD	LOQ	SDG	Analysis_Batch	Validator_Name	Val_Date
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	PR	TRG									5.1	3.17	5.21	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	PR	TRG									5.1	3.17	5.21	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	PR	TRG									5.1	3.17	5.21	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	PR	TRG									5.1	3.23	5.32	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	PR	TRG									5.1	3.23	5.32	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	PR	TRG									5.1	3.23	5.32	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB10-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	PR	TRG									5.1	3770	6200	12400	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	PR	TRG									5.1	3.77	6.19	12.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	PR	TRG									5.1	3.77	6.19	12.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW10PP-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	PR	TRG									5.1	3.22	5.30	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	PR	TRG									5.1	3.22	5.30	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	PR	TRG									5.1	3.22	5.30	10.6	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-RW06-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	PR	TRG									5.1	3.24	5.32	10.7	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	PR	TRG									5.1	3.24	5.32	10.7	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	PR	TRG									5.1	3.24	5.32	10.7	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	WF-FB06-1218	PR			SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	PR	TRG									5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	PR	TRG									5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	PR	TRG									5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	PR	SUR		SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Blank	PR	SUR		SLSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	PR	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	PR	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	PR	TRG		LSA	130	70					5.1	3.04	5.00	10.0	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	PR	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	LCS	PR	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	PR	TRG		LSA	130	70					5.1	3.16	5.19	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	PR	TRG		LSA	130	70					5.1	3.16	5.19	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	PR	TRG		LSA	130	70					5.1	3.16	5.19	10.4	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	PR	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike	PR	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	PR	TRG		LSA	130	70					5.1	3.19	5.25	10.5	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	PR	TRG		LSA	130	70					5.1	3.19	5.25	10.5	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	PR	TRG		LSA	130	70					5.1	3.19	5.25	10.5	1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	PR	SUR		LSA	130	70					5.1				1804038	S8L0050		
N6247016D9000	0008		WHITING_FIELD_NAS	Matrix Spike Dup	PR	SUR		LSA	130	70					5.1				1804038	S8L0050		

**DATA VALIDATION SUMMARY REPORT
NAS WHITING FIELD, MILTON, FLORIDA**

Client: CH2M HILL, Inc., Corvallis, Oregon
 SDG: 1804038
 Laboratory: Vista Analytical Laboratory, El Dorado Hills, California
 Site: NAS Whiting Field, Milton, Florida
 Date: December 31, 2018

PFCs			
EDS ID	Client Sample ID	Laboratory Sample ID	Matrix
1	WF-RW10-1218	1804038-01	Water
1MS	WF-RW10-1218MS	1804038-01MS	Water
1MSD	WF-RW10-1218MSD	1804038-01MSD	Water
2	WF-FB10-1218	1804038-02	Water
3	WF-RW10PP-1218	1804038-03	Water
4	WF-RW06-1218	1804038-04	Water
5	WF-FB06-1218	1804038-05	Water

A full data validation was performed on the analytical data for three water samples and two aqueous field blank samples collected on December 11, 2018 by CH2M HILL at the NAS Whiting Field site in Milton, Florida. The samples were analyzed under the EPA Method “Determination of Selected Perfluorinated Alkyl Acids in Drinking Water by Solid Phase Extraction and Liquid Chromatography/Tandem Mass Spectrometry (LC/MS/MS)”.

Specific method references are as follows:

Analysis
PFCs

Method References
USEPA Method 537, Rev 1.1

The data have been validated according to the protocols and quality control (QC) requirements of the analytical method, and the U.S. Department of Defense (DoD) Quality Systems Manual (QSM), Version 5.0 (July 2013) and the USEPA National Functional Guidelines for Organic Data Review as follows:

- The USEPA “Contract Laboratories Program National Functional Guidelines for Organic Superfund Methods Data Review,” January 2017;
- and the reviewer's professional judgment.

The following data quality indicators were reviewed for this report:

Organics

- Date Completeness, Case Narrative & Custody Documentation

- Holding times
- Liquid Chromatography/Mass Spectrometry (LC/MS) Tuning
- Initial and continuing calibration summaries
- Method blank and field QC blank contamination
- Surrogate Spike recoveries
- Matrix Spike/Matrix Spike Duplicate (MS/MSD) recoveries
- Laboratory Control Sample/Laboratory Control Sample Duplicate (LCS/LCSD) recoveries
- Internal standard area and retention time summary forms
- Target Compound Identification
- Compound Quantitation
- Field Duplicate sample precision

A full (Level IV) data validation was performed with this review including a recalculation of 10% of the detected results in the samples.

Data Usability Assessment

There were no rejections of data.

Overall the data are acceptable for the intended purposes as qualified for the deficiencies detailed in this report.

Please note that any results qualified (U) due to blank contamination may be then qualified (J) due to another action. Therefore, the results may be qualified (UJ) due to the culmination of the blank contaminations and actions from other exceedances of QC criteria.

Perfluorinated Compounds (PFCs)

Data Completeness, Case Narrative & Custody Documentation

- The case narrative and chain-of-custody documentation were included in the data package as required. All criteria were met.

Holding Times

- All samples were extracted within 14 days for water samples and analyzed within 28 days.

LC/MS Tuning

- All criteria were met.

Initial Calibration

- All relative standard deviation (%RSD) and/or correlation coefficients criteria were met.

Continuing Calibration

- All percent recovery (%R) and RRF criteria were met.

Method Blank

- The method blanks were free of contamination.

Field QC Blank

- Field QC samples were free of contamination.

Blank ID	Compound	Conc. ng/L	Qualifier	Affected Samples
WF-FB10-1218	None - ND	-	-	-
WF-FB06-1218	None - ND	-	-	-

Surrogate Spike Recoveries

- All samples exhibited acceptable surrogate %R values except for the following.

EDS Sample ID	Surrogate	%R	Qualifier
3	13C2-PFHxA	64.5%	J - Associated Compound

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Recoveries

- The MS/MSD samples exhibited acceptable %R and RPD values.

Laboratory Control Samples

- The LCS samples exhibited acceptable percent recoveries (%R).

Internal Standard (IS) Area Performance

- All internal standards met response and retention time (RT) criteria.

Target Compound Identification

- All mass spectra and quantitation criteria were met.

Compound Quantitation

- EDS Sample ID 3 was analyzed at a 1000X dilution for PFBS due to a high concentration. The reporting limits were adjusted accordingly. No action was required.

Field Duplicate Sample Precision

- Field duplicate samples were not collected.

Please contact the undersigned at (757) 564-0090 if you have any questions or need further information.

Signed: Nancy Weaver
Nancy Weaver
Senior Chemist

Dated: 11/1/19

Data Qualifier	Definition
U	The analyte was analyzed for, but was not detected above the level of the reported sample quantitation limit.
J	The analyte is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.
NJ	The analysis has been "tentatively identified" or "presumptively" as present and the associated numerical value is the estimated concentration in the samples.
UJ	The analyte was analyzed for but was not detected. The reported quantitation limit is approximate and may be inaccurate or imprecise.
R	The data are unusable. The sample results are rejected due to serious deficiencies in meeting QC criteria. The analyte may or may not be present in the samples.

Sample ID: WF-RW10-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-01	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:13	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
PFOA	335-67-1	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
PFOS	1763-23-1	ND	3.17	5.21	10.4		B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	91.2	70 - 130			B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1	
13C2-PFDA	SURR	91.7	70 - 130			B8L0115	14-Dec-18	0.240 L	17-Dec-18 18:34	1	

DL - Detection Limit

LOD - Limit of Detection

LOQ - Limit of quantitation

Results reported to the DL

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

NW1213118

Sample ID: WF-FB10-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Aqueous	Lab Sample:	1804038-02	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:14	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
PFOA	335-67-1	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
PFOS	1763-23-1	ND	3.23	5.32	10.6		B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	96.6	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1	
13C2-PFDA	SURR	92.0	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 18:45	1	

DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation

Results reported to the DL

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

MW1213118

Sample ID: WF-RW10PP-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-03	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:15	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	232000	3770	6200	12400	✓	B8L0115	14-Dec-18	0.202 L	18-Dec-18 15:47	1000
PFOA	335-67-1	48.6 <i>J</i>	3.77	6.19	12.4		B8L0115	14-Dec-18	0.202 L	17-Dec-18 18:56	1
PFOS	1763-23-1	168 <i>J</i>	3.77	6.19	12.4		B8L0115	14-Dec-18	0.202 L	17-Dec-18 18:56	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	64.5	70 - 130		✓	B8L0115	14-Dec-18	0.202 L	17-Dec-18 18:56	1	
13C2-PFDA	SURR	94.4	70 - 130			B8L0115	14-Dec-18	0.202 L	17-Dec-18 18:56	1	

SSL
SSL

DL - Detection Limit LOD - Limit of Detection Results reported to the DL.
 LOQ - Limit of quantitation When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

rw1213118

Sample ID: WF-RW06-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Drinking Water	Lab Sample:	1804038-04	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:50	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.22	5.30	10.6		B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
PFOA	335-67-1	26.7	3.22	5.30	10.6		B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
PFOS	1763-23-1	3.23	3.22	5.30	10.6	J	B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	96.9	70 - 130			B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1	
13C2-PFDA	SURR	93.6	70 - 130			B8L0115	14-Dec-18	0.236 L	18-Dec-18 13:16	1	

DL - Detection Limit LOD - Limit of Detection Results reported to the DL When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

LOQ - Limit of quantitation

NW123118

Sample ID: WF-FB06-1218 **EPA Method 537**

Client Data				Laboratory Data			
Name:	CH2M Hill	Matrix:	Aqueous	Lab Sample:	1804038-05	Column:	BEH C18
Project:	NAS Whiting Field, FL (CTO-08)	Date Collected:	11-Dec-18 13:51	Date Received:	12-Dec-18 10:14		

Analyte	CAS Number	Conc. (ng/L)	DL	LOD	LOQ	Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution
PFBS	375-73-5	ND	3.24	5.32	10.7		B8L0115	14-Dec-18	0.235 L	17-Dec-18 19:18	1
PFOA	335-67-1	ND	3.24	5.32	10.7		B8L0115	14-Dec-18	0.235 L	17-Dec-18 19:18	1
PFOS	1763-23-1	ND	3.24	5.32	10.7		B8L0115	14-Dec-18	0.235 L	17-Dec-18 19:18	1
Labeled Standards	Type	% Recovery	Limits		Qualifiers	Batch	Extracted	Samp Size	Analyzed	Dilution	
13C2-PFHxA	SURR	92.8	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 19:18	1	
13C2-PFDA	SURR	91.5	70 - 130			B8L0115	14-Dec-18	0.235 L	17-Dec-18 19:18	1	

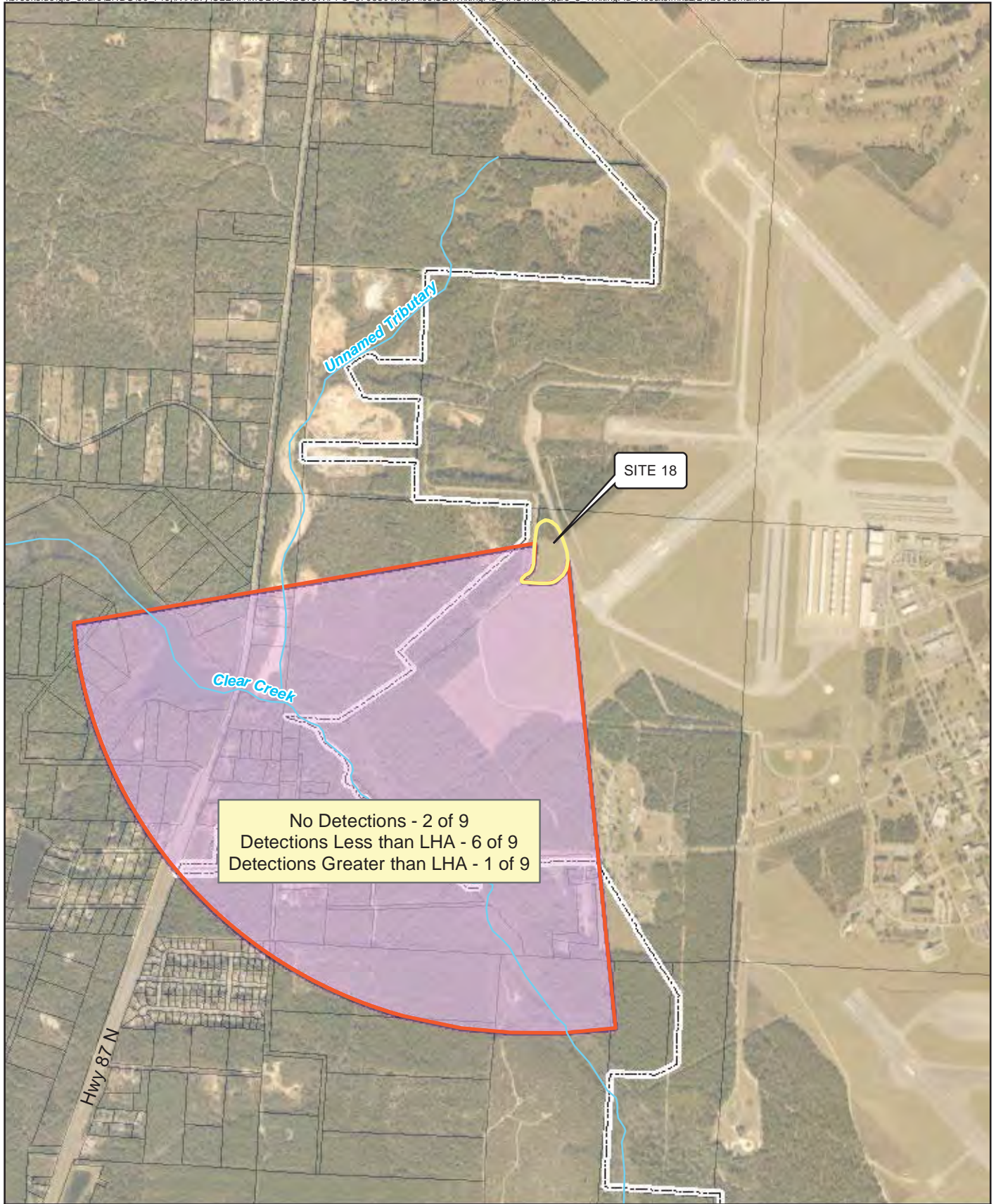
DL - Detection Limit

LOD - Limit of Detection
LOQ - Limit of quantitation







Results reported to the DL

When reported, PFHxS, PFOA, PFOS, MeFOSAA and EtFOSAA include both linear and branched isomers. Only the linear isomer is reported for all other analytes.

NW 12/31/18



Legend

-  Creek
-  Site Boundary (suspected source)
-  Sampling Area
-  Site 18 - 1-mile zone
-  Parcel
-  Base Boundary

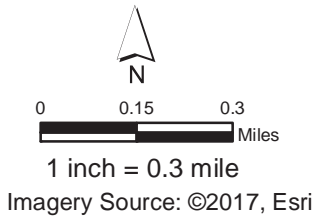


Figure 3
Drinking Water Results
Site 18
Naval Air Station Whiting Field
Milton, Florida