



MEMORANDUM

To: Jens Sapin, NAVFAC SE
From: AH Environmental Consultants, Inc.
Subject: NAS Whiting Field, FL., Per- and Polyfluoroalkyl Substances [PFAS] Sampling Support Analytical Results
Date: 30 November 2020

On 09 November 2020, AH Environmental Consultants Sr. Engineer Steven Harper, Ph.D., visited NAS Whiting Field following logistics coordination with Brooke Boyd, PWD Environmental, to collect samples from the NAS Whiting Field potable water system that were subsequently analyzed for the presence of PFAS constituents (USEPA Method 537.1).

Finished water samples were collected from the Water Treatment Plant Laboratory sink in Bldg. 1429. All PFAS sampling protocols were followed during sample collection and there were no anomalies. Samples were iced and prepared for shipping in accordance with the sample collection protocols for PFAS sample collection and shipped overnight via UPS to Pace Analytical Services located in Ormond Beach Florida on that same day. Samples were received in the laboratory on 10 October 2020 in satisfactory condition.

Analytical results show that 7 PFAS constituents were detected above the Practical Quantification Level (PQL, AKA Method Report Limit [MRL]). The remaining 11 constituents were “U” qualified (the compound was analyzed for but not detected). Note that the total of PFOS/PFOA was 0.71 µg/L, exceeding the USEPA Health Advisory value of 0.07 µg/L. All QA/QC samples (Field Blank, Matrix Spike/Matrix Spike Duplicate) were satisfactory (Refer to the table below for a summary of the analytical results).

Parameter	Results (µg/L)	Practical Quantification Limit (PQL) AKA Method Report Limit (MRL (µg/L))	Method Detection Limit (MDL) (µg/L)
11Cl-PF3OUdS	0.0015U	0.0018	0.0015
9Cl-PF3ONS	0.0010U	0.0018	0.0010
ADONA	0.00066U	0.0018	0.00066
HFPO-DA	0.0015U	0.0018	0.0015
NEtFOSAA	0.00085U	0.0018	0.00085
NMeFOSAA	0.0014U	0.0018	0.0014
Perfluorobutanesulfonic acid	0.054	0.0018	0.00061
Perfluorodecanoic acid	0.0018U	0.0018	0.0018
Perfluorohexanoic acid	0.24	0.0090	0.0058
Perfluorododecanoic acid	0.0013U	0.0018	0.0013
Perfluoroheptanoic acid	0.15	0.0018	0.00092
Perfluorohexanesulfonic acid	0.34	0.0090	0.0034
Perfluorononanoic acid	0.0025	0.0018	0.0018
Perfluorooctanesulfonic acid (PFOS)	0.074	0.0018	0.0011
Perfluorooctanoic acid (PFOA)	0.64	0.0090	0.0040
Perfluorotetradecanoic acid	0.0017U	0.0018	0.0017
Perfluorotridecanoic acid	0.0016U	0.0018	0.0016
Perfluoroundecanoic acid	0.0018U	0.0018	0.0018
Sample PFOS/PFOA Total = 0.71 µg/L, exceeding the USEPA HA = 0.07 µg/L			
Notes: J – Estimated concentration above the adjusted method detection limit and below the adjusted method reporting limit U – Indicates the compound was analyzed for, but not detected. HA - USEPA drinking water health advisories value			

Attachment 1 provides the subject Pace Analytical Report, with the respective chain of custody form.

Should you have any questions please let us know.

Attachment 1
Analytical Results Report

November 30, 2020

Anthony Gruber
AH Environmental

RE: Project: PFOS/PFOA
Pace Project No.: 35590735

Dear Anthony Gruber:

Enclosed are the analytical results for sample(s) received by the laboratory on November 10, 2020. The results relate only to the samples included in this report. Results reported herein conform to the applicable TNI/NELAC Standards and the laboratory's Quality Manual, where applicable, unless otherwise noted in the body of the report.

The test results provided in this final report were generated by each of the following laboratories within the Pace Network:

- Pace Analytical Services - Ormond Beach

If you have any questions concerning this report, please feel free to contact me.

Sincerely,



Bo Garcia
bo.garcia@pacelabs.com
(386)672-5668
Project Manager

Enclosures

cc: Faysal Bekdash, AH Environmental Consultants, Inc.



REPORT OF LABORATORY ANALYSIS

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CERTIFICATIONS

Project: PFOS/PFOA

Pace Project No.: 35590735

Pace Analytical Services Ormond Beach

8 East Tower Circle, Ormond Beach, FL 32174

Alaska DEC- CS/UST/LUST

Alabama Certification #: 41320

Arizona Certification# AZ0819

Colorado Certification: FL NELAC Reciprocity

Connecticut Certification #: PH-0216

Delaware Certification: FL NELAC Reciprocity

Florida Certification #: E83079

Georgia Certification #: 955

Guam Certification: FL NELAC Reciprocity

Hawaii Certification: FL NELAC Reciprocity

Illinois Certification #: 200068

Indiana Certification: FL NELAC Reciprocity

Kansas Certification #: E-10383

Kentucky Certification #: 90050

Louisiana Certification #: FL NELAC Reciprocity

Louisiana Environmental Certificate #: 05007

Maryland Certification: #346

Michigan Certification #: 9911

Mississippi Certification: FL NELAC Reciprocity

Missouri Certification #: 236

Montana Certification #: Cert 0074

Nebraska Certification: NE-OS-28-14

New Hampshire Certification #: 2958

New Jersey Certification #: FL022

New York Certification #: 11608

North Carolina Environmental Certificate #: 667

North Carolina Certification #: 12710

North Dakota Certification #: R-216

Ohio DEP 87780

Oklahoma Certification #: D9947

Pennsylvania Certification #: 68-00547

Puerto Rico Certification #: FL01264

South Carolina Certification: #96042001

Tennessee Certification #: TN02974

Texas Certification: FL NELAC Reciprocity

US Virgin Islands Certification: FL NELAC Reciprocity

Virginia Environmental Certification #: 460165

West Virginia Certification #: 9962C

Wisconsin Certification #: 399079670

Wyoming (EPA Region 8): FL NELAC Reciprocity

REPORT OF LABORATORY ANALYSIS

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SAMPLE SUMMARY

Project: PFOS/PFOA
Pace Project No.: 35590735

Lab ID	Sample ID	Matrix	Date Collected	Date Received
35590735001	FIELD BLANK EMPTY FB	Drinking Water	11/09/20 08:48	11/10/20 10:26
35590735002	NAS Whiting	Drinking Water	11/09/20 08:48	11/10/20 10:26

REPORT OF LABORATORY ANALYSIS

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SAMPLE ANALYTE COUNT

Project: PFOS/PFOA

Pace Project No.: 35590735

Lab ID	Sample ID	Method	Analysts	Analytes Reported	Laboratory
35590735001	FIELD BLANK EMPTY FB	EPA 537.1	SWR	22	PASI-O
35590735002	NAS Whiting	EPA 537.1	SWR	22	PASI-O

PASI-O = Pace Analytical Services - Ormond Beach

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PFOS/PFOA
Pace Project No.: 35590735

Sample: FIELD BLANK EMPTY FB **Lab ID: 35590735001** Collected: 11/09/20 08:48 Received: 11/10/20 10:26 Matrix: Drinking Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
537.1 PFAS Compounds, Water									
Analytical Method: EPA 537.1 Preparation Method: EPA 537.1 Pace Analytical Services - Ormond Beach									
11CI-PF3OUdS	0.0015U	ug/L	0.0018	0.0015	1	11/11/20 09:07	11/17/20 20:33	763051-92-9	
9CI-PF3ONS	0.0011U	ug/L	0.0018	0.0011	1	11/11/20 09:07	11/17/20 20:33	756426-58-1	
ADONA	0.00067U	ug/L	0.0018	0.00067	1	11/11/20 09:07	11/17/20 20:33	919005-14-4	
HFPO-DA	0.0015U	ug/L	0.0018	0.0015	1	11/11/20 09:07	11/17/20 20:33	13252-13-6	
NEtFOSAA	0.00086U	ug/L	0.0018	0.00086	1	11/11/20 09:07	11/17/20 20:33	2991-50-6	
NMeFOSAA	0.0015U	ug/L	0.0018	0.0015	1	11/11/20 09:07	11/17/20 20:33	2355-31-9	
Perfluorobutanesulfonic acid	0.00062U	ug/L	0.0018	0.00062	1	11/11/20 09:07	11/17/20 20:33	375-73-5	
Perfluorodecanoic acid	0.0018U	ug/L	0.0018	0.0018	1	11/11/20 09:07	11/17/20 20:33	335-76-2	
Perfluorohexanoic acid	0.0012U	ug/L	0.0018	0.0012	1	11/11/20 09:07	11/17/20 20:33	307-24-4	
Perfluorododecanoic acid	0.0014U	ug/L	0.0018	0.0014	1	11/11/20 09:07	11/17/20 20:33	307-55-1	
Perfluoroheptanoic acid	0.00094U	ug/L	0.0018	0.00094	1	11/11/20 09:07	11/17/20 20:33	375-85-9	
Perfluorohexanesulfonic acid	0.00068U	ug/L	0.0018	0.00068	1	11/11/20 09:07	11/17/20 20:33	355-46-4	
Perfluorononanoic acid	0.0018U	ug/L	0.0018	0.0018	1	11/11/20 09:07	11/17/20 20:33	375-95-1	
Perfluorooctanesulfonic acid	0.0011U	ug/L	0.0018	0.0011	1	11/11/20 09:07	11/17/20 20:33	1763-23-1	
Perfluorooctanoic acid	0.00081U	ug/L	0.0018	0.00081	1	11/11/20 09:07	11/17/20 20:33	335-67-1	
Perfluorotetradecanoic acid	0.0017U	ug/L	0.0018	0.0017	1	11/11/20 09:07	11/17/20 20:33	376-06-7	
Perfluorotridecanoic acid	0.0016U	ug/L	0.0018	0.0016	1	11/11/20 09:07	11/17/20 20:33	72629-94-8	
Perfluoroundecanoic acid	0.0018U	ug/L	0.0018	0.0018	1	11/11/20 09:07	11/17/20 20:33	2058-94-8	
Surrogates									
13C2-PFDA (S)	124	%	70-130		1	11/11/20 09:07	11/17/20 20:33		
13C2-PFHxA (S)	108	%	70-130		1	11/11/20 09:07	11/17/20 20:33		
NEtFOSAA-d5 (S)	94	%	70-130		1	11/11/20 09:07	11/17/20 20:33		
HFPO-DAS (S)	92	%	70-130		1	11/11/20 09:07	11/17/20 20:33		

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: PFOS/PFOA

Pace Project No.: 35590735

Sample: **NAS Whiting** Lab ID: **35590735002** Collected: 11/09/20 08:48 Received: 11/10/20 10:26 Matrix: Drinking Water

Parameters	Results	Units	PQL	MDL	DF	Prepared	Analyzed	CAS No.	Qual
537.1 PFAS Compounds, Water		Analytical Method: EPA 537.1 Preparation Method: EPA 537.1 Pace Analytical Services - Ormond Beach							
11CI-PF3OUdS	0.0015U	ug/L	0.0018	0.0015	1	11/18/20 17:30	11/23/20 16:55	763051-92-9	
9CI-PF3ONS	0.0010U	ug/L	0.0018	0.0010	1	11/18/20 17:30	11/23/20 16:55	756426-58-1	
ADONA	0.00066U	ug/L	0.0018	0.00066	1	11/18/20 17:30	11/23/20 16:55	919005-14-4	
HFPO-DA	0.0015U	ug/L	0.0018	0.0015	1	11/18/20 17:30	11/23/20 16:55	13252-13-6	
NEtFOSAA	0.00085U	ug/L	0.0018	0.00085	1	11/18/20 17:30	11/23/20 16:55	2991-50-6	L1
NMeFOSAA	0.0014U	ug/L	0.0018	0.0014	1	11/18/20 17:30	11/23/20 16:55	2355-31-9	L1
Perfluorobutanesulfonic acid	0.054	ug/L	0.0018	0.00061	1	11/18/20 17:30	11/23/20 16:55	375-73-5	
Perfluorodecanoic acid	0.0018U	ug/L	0.0018	0.0018	1	11/18/20 17:30	11/23/20 16:55	335-76-2	
Perfluorohexanoic acid	0.24	ug/L	0.0090	0.0058	5	11/18/20 17:30	11/23/20 16:36	307-24-4	M1
Perfluorododecanoic acid	0.0013U	ug/L	0.0018	0.0013	1	11/18/20 17:30	11/23/20 16:55	307-55-1	L1
Perfluoroheptanoic acid	0.15	ug/L	0.0018	0.00092	1	11/18/20 17:30	11/23/20 16:55	375-85-9	
Perfluorohexanesulfonic acid	0.34	ug/L	0.0090	0.0034	5	11/18/20 17:30	11/23/20 16:36	355-46-4	M1
Perfluorononanoic acid	0.0025	ug/L	0.0018	0.0018	1	11/18/20 17:30	11/23/20 16:55	375-95-1	
Perfluorooctanesulfonic acid	0.074	ug/L	0.0018	0.0011	1	11/18/20 17:30	11/23/20 16:55	1763-23-1	M1
Perfluorooctanoic acid	0.64	ug/L	0.0090	0.0040	5	11/18/20 17:30	11/23/20 16:36	335-67-1	M1
Perfluorotetradecanoic acid	0.0017U	ug/L	0.0018	0.0017	1	11/18/20 17:30	11/23/20 16:55	376-06-7	L1
Perfluorotridecanoic acid	0.0016U	ug/L	0.0018	0.0016	1	11/18/20 17:30	11/23/20 16:55	72629-94-8	L1,M1
Perfluoroundecanoic acid	0.0018U	ug/L	0.0018	0.0018	1	11/18/20 17:30	11/23/20 16:55	2058-94-8	L1
Surrogates									
13C2-PFDA (S)	184	%	70-130		1	11/18/20 17:30	11/23/20 16:55		S0
13C2-PFHxA (S)	162	%	70-130		1	11/18/20 17:30	11/23/20 16:55		S0
NEtFOSAA-d5 (S)	118	%	70-130		1	11/18/20 17:30	11/23/20 16:55		
HFPO-DAS (S)	172	%	70-130		1	11/18/20 17:30	11/23/20 16:55		S0

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PFOS/PFOA

Pace Project No.: 35590735

QC Batch: 680523

Analysis Method: EPA 537.1

QC Batch Method: EPA 537.1

Analysis Description: 537.1 PFOA Compounds, Water

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35590735001

METHOD BLANK: 3703566

Matrix: Water

Associated Lab Samples: 35590735001, 35590735002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
11CI-PF3OUdS	ug/L	0.0016U	0.0020	0.0016	11/17/20 15:09	
9CI-PF3ONS	ug/L	0.0012U	0.0020	0.0012	11/17/20 15:09	
ADONA	ug/L	0.00074U	0.0020	0.00074	11/17/20 15:09	
HFPO-DA	ug/L	0.0017U	0.0020	0.0017	11/17/20 15:09	
NEtFOSAA	ug/L	0.00095U	0.0020	0.00095	11/17/20 15:09	
NMeFOSAA	ug/L	0.0016U	0.0020	0.0016	11/17/20 15:09	
Perfluorobutanesulfonic acid	ug/L	0.00068U	0.0020	0.00068	11/17/20 15:09	
Perfluorodecanoic acid	ug/L	0.0020U	0.0020	0.0020	11/17/20 15:09	
Perfluorododecanoic acid	ug/L	0.0015U	0.0020	0.0015	11/17/20 15:09	
Perfluoroheptanoic acid	ug/L	0.0010U	0.0020	0.0010	11/17/20 15:09	
Perfluorohexanesulfonic acid	ug/L	0.00075U	0.0020	0.00075	11/17/20 15:09	
Perfluorohexanoic acid	ug/L	0.0013U	0.0020	0.0013	11/17/20 15:09	
Perfluorononanoic acid	ug/L	0.0020U	0.0020	0.0020	11/17/20 15:09	
Perfluorooctanesulfonic acid	ug/L	0.0012U	0.0020	0.0012	11/17/20 15:09	
Perfluorooctanoic acid	ug/L	0.00089U	0.0020	0.00089	11/17/20 15:09	
Perfluorotetradecanoic acid	ug/L	0.0019U	0.0020	0.0019	11/17/20 15:09	
Perfluorotridecanoic acid	ug/L	0.0018U	0.0020	0.0018	11/17/20 15:09	
Perfluoroundecanoic acid	ug/L	0.0020U	0.0020	0.0020	11/17/20 15:09	
13C2-PFDA (S)	%	110	70-130		11/17/20 15:09	
13C2-PFHxA (S)	%	106	70-130		11/17/20 15:09	
HFPO-DAS (S)	%	91	70-130		11/17/20 15:09	
NEtFOSAA-d5 (S)	%	98	70-130		11/17/20 15:09	

LABORATORY CONTROL SAMPLE: 3703567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11CI-PF3OUdS	ug/L	0.16	0.14	89	70-130	
9CI-PF3ONS	ug/L	0.16	0.14	89	70-130	
ADONA	ug/L	0.16	0.15	94	70-130	
HFPO-DA	ug/L	0.16	0.15	94	70-130	
NEtFOSAA	ug/L	0.16	0.14	91	70-130	
NMeFOSAA	ug/L	0.16	0.14	90	70-130	
Perfluorobutanesulfonic acid	ug/L	0.16	0.15	93	70-130	
Perfluorodecanoic acid	ug/L	0.16	0.16	99	70-130	
Perfluorododecanoic acid	ug/L	0.16	0.17	108	70-130	
Perfluoroheptanoic acid	ug/L	0.16	0.16	102	70-130	
Perfluorohexanesulfonic acid	ug/L	0.16	0.15	94	70-130	
Perfluorohexanoic acid	ug/L	0.16	0.15	96	70-130	
Perfluorononanoic acid	ug/L	0.16	0.16	98	70-130	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PFOS/PFOA
Pace Project No.: 35590735

LABORATORY CONTROL SAMPLE: 3703567

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Perfluorooctanesulfonic acid	ug/L	0.16	0.15	94	70-130	
Perfluorooctanoic acid	ug/L	0.16	0.15	92	70-130	
Perfluorotetradecanoic acid	ug/L	0.16	0.16	99	70-130	
Perfluorotridecanoic acid	ug/L	0.16	0.17	105	70-130	
Perfluoroundecanoic acid	ug/L	0.16	0.16	100	70-130	
13C2-PFDA (S)	%			114	70-130	
13C2-PFHxA (S)	%			113	70-130	
HFPO-DAS (S)	%			104	70-130	
NETFOSAA-d5 (S)	%			96	70-130	

LABORATORY CONTROL SAMPLE: 3703568

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11CI-PF3OUdS	ug/L	0.002	0.0017J	86	50-150	
9CI-PF3ONS	ug/L	0.002	0.0018J	90	50-150	
ADONA	ug/L	0.002	0.0019J	96	50-150	
HFPO-DA	ug/L	0.002	0.0017U	74	50-150	
NETFOSAA	ug/L	0.002	0.0015J	76	50-150	
NMeFOSAA	ug/L	0.002	0.0016U	70	50-150	
Perfluorobutanesulfonic acid	ug/L	0.002	0.0017J	86	50-150	
Perfluorodecanoic acid	ug/L	0.002	0.0020	100	50-150	
Perfluorododecanoic acid	ug/L	0.002	0.0021	106	50-150	
Perfluoroheptanoic acid	ug/L	0.002	0.0022	110	50-150	
Perfluorohexanesulfonic acid	ug/L	0.002	0.0020J	98	50-150	
Perfluorohexanoic acid	ug/L	0.002	0.0019J	94	50-150	
Perfluorononanoic acid	ug/L	0.002	0.0020U	98	50-150	
Perfluorooctanesulfonic acid	ug/L	0.002	0.0016J	80	50-150	
Perfluorooctanoic acid	ug/L	0.002	0.0018J	90	50-150	
Perfluorotetradecanoic acid	ug/L	0.002	0.0021	106	50-150	
Perfluorotridecanoic acid	ug/L	0.002	0.0021	106	50-150	
Perfluoroundecanoic acid	ug/L	0.002	0.0020	100	50-150	
13C2-PFDA (S)	%			116	70-130	
13C2-PFHxA (S)	%			110	70-130	
HFPO-DAS (S)	%			98	70-130	
NETFOSAA-d5 (S)	%			101	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3703734 3703735

Parameter	Units	MS 35590706001		MSD		MS 3703735		MSD		% Rec Limits	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result	% Rec	% Rec				
11CI-PF3OUdS	ug/L	0.0015U	0.0018	0.0019	0.0016J	0.0015U	56	49	70-130	30	M1	
9CI-PF3ONS	ug/L	0.0011U	0.0018	0.0019	0.0014J	0.0016J	60	67	70-130	30	M1	
ADONA	ug/L	0.00068U	0.0018	0.0019	0.0019	0.0019J	100	96	70-130	30		
HFPO-DA	ug/L	0.0015U	0.0018	0.0019	0.0017J	0.0016U	88	70	70-130	30		

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PFOS/PFOA

Pace Project No.: 35590735

Parameter	Units	3703734			3703735			% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		35590706001	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
NEtFOSAA	ug/L	0.0011J	0.0018	0.0019	0.0013J	0.0014J	10	18	70-130			30	M1	
NMeFOSAA	ug/L	0.0015U	0.0018	0.0019	0.0015U	0.0015U	24	34	70-130			30	M1	
Perfluorobutanesulfonic acid	ug/L	0.0011J	0.0018	0.0019	0.0027	0.0029	84	92	70-130	7		30		
Perfluorodecanoic acid	ug/L	0.0018U	0.0018	0.0019	0.0018U	0.0019U	76	75	70-130			30		
Perfluorododecanoic acid	ug/L	0.0014U	0.0018	0.0019	0.0020	0.0020	62	58	70-130	2		30	M1	
Perfluoroheptanoic acid	ug/L	0.00094U	0.0018	0.0019	0.0023	0.0022	124	118	70-130	2		30		
Perfluorohexanesulfonic acid	ug/L	0.0015J	0.0018	0.0019	0.0029	0.0034	74	95	70-130	14		30		
Perfluorohexanoic acid	ug/L	0.0012U	0.0018	0.0019	0.0020	0.0021	98	98	70-130	3		30		
Perfluorononanoic acid	ug/L	0.0018U	0.0018	0.0019	0.0019	0.0019U	88	85	70-130			30		
Perfluorooctanesulfonic acid	ug/L	0.0021	0.0018	0.0019	0.0033	0.0037	65	86	70-130	13		30	M1	
Perfluorooctanoic acid	ug/L	0.00082U	0.0018	0.0019	0.0021	0.0021	90	89	70-130	1		30		
Perfluorotetradecanoic acid	ug/L	0.0018U	0.0018	0.0019	0.0021	0.0021	70	70	70-130	1		30		
Perfluorotridecanoic acid	ug/L	0.0016U	0.0018	0.0019	0.0019	0.0019J	60	56	70-130			30	M1	
Perfluoroundecanoic acid	ug/L	0.0018U	0.0018	0.0019	0.0018U	0.0019U	60	63	70-130			30	M1	
13C2-PFDA (S)	%						122	123	70-130					
13C2-PFHxA (S)	%						120	114	70-130					
HFPO-DAS (S)	%						116	111	70-130					
NEtFOSAA-d5 (S)	%						105	110	70-130					

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REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA

Project: PFOS/PFOA

Pace Project No.: 35590735

QC Batch: 682907

Analysis Method: EPA 537.1

QC Batch Method: EPA 537.1

Analysis Description: 537.1 PFOA Compounds, Water

Laboratory: Pace Analytical Services - Ormond Beach

Associated Lab Samples: 35590735002

METHOD BLANK: 3717143

Matrix: Water

Associated Lab Samples: 35590735002

Parameter	Units	Blank Result	Reporting Limit	MDL	Analyzed	Qualifiers
11CI-PF3OUdS	ug/L	0.0016U	0.0020	0.0016	11/23/20 15:39	
9CI-PF3ONS	ug/L	0.0012U	0.0020	0.0012	11/23/20 15:39	
ADONA	ug/L	0.00074U	0.0020	0.00074	11/23/20 15:39	
HFPO-DA	ug/L	0.0017U	0.0020	0.0017	11/23/20 15:39	
NEtFOSAA	ug/L	0.00095U	0.0020	0.00095	11/23/20 15:39	
NMeFOSAA	ug/L	0.0016U	0.0020	0.0016	11/23/20 15:39	
Perfluorobutanesulfonic acid	ug/L	0.00068U	0.0020	0.00068	11/23/20 15:39	
Perfluorodecanoic acid	ug/L	0.0020U	0.0020	0.0020	11/23/20 15:39	
Perfluorododecanoic acid	ug/L	0.0015U	0.0020	0.0015	11/23/20 15:39	
Perfluoroheptanoic acid	ug/L	0.0010U	0.0020	0.0010	11/23/20 15:39	
Perfluorohexanesulfonic acid	ug/L	0.00075U	0.0020	0.00075	11/23/20 15:39	
Perfluorohexanoic acid	ug/L	0.0013U	0.0020	0.0013	11/23/20 15:39	
Perfluorononanoic acid	ug/L	0.0020U	0.0020	0.0020	11/23/20 15:39	
Perfluorooctanesulfonic acid	ug/L	0.0012U	0.0020	0.0012	11/23/20 15:39	
Perfluorooctanoic acid	ug/L	0.00089U	0.0020	0.00089	11/23/20 15:39	
Perfluorotetradecanoic acid	ug/L	0.0019U	0.0020	0.0019	11/23/20 15:39	
Perfluorotridecanoic acid	ug/L	0.0018U	0.0020	0.0018	11/23/20 15:39	
Perfluoroundecanoic acid	ug/L	0.0020U	0.0020	0.0020	11/23/20 15:39	
13C2-PFDA (S)	%	114	70-130		11/23/20 15:39	
13C2-PFHxA (S)	%	113	70-130		11/23/20 15:39	
HFPO-DAS (S)	%	102	70-130		11/23/20 15:39	
NEtFOSAA-d5 (S)	%	101	70-130		11/23/20 15:39	

LABORATORY CONTROL SAMPLE: 3717144

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11CI-PF3OUdS	ug/L	0.008	0.0066	83	70-130	
9CI-PF3ONS	ug/L	0.008	0.0064	80	70-130	
ADONA	ug/L	0.008	0.0084	105	70-130	
HFPO-DA	ug/L	0.008	0.0070	87	70-130	
NEtFOSAA	ug/L	0.008	0.0080	100	70-130	
NMeFOSAA	ug/L	0.008	0.0070	88	70-130	
Perfluorobutanesulfonic acid	ug/L	0.008	0.0067	84	70-130	
Perfluorodecanoic acid	ug/L	0.008	0.0081	101	70-130	
Perfluorododecanoic acid	ug/L	0.008	0.0081	102	70-130	
Perfluoroheptanoic acid	ug/L	0.008	0.0096	120	70-130	
Perfluorohexanesulfonic acid	ug/L	0.008	0.0067	84	70-130	
Perfluorohexanoic acid	ug/L	0.008	0.0082	102	70-130	
Perfluorononanoic acid	ug/L	0.008	0.0081	102	70-130	

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QUALITY CONTROL DATA

Project: PFOS/PFOA

Pace Project No.: 35590735

LABORATORY CONTROL SAMPLE: 3717144

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Perfluorooctanesulfonic acid	ug/L	0.008	0.0058	73	70-130	
Perfluorooctanoic acid	ug/L	0.008	0.0077	96	70-130	
Perfluorotetradecanoic acid	ug/L	0.008	0.0078	98	70-130	
Perfluorotridecanoic acid	ug/L	0.008	0.0083	104	70-130	
Perfluoroundecanoic acid	ug/L	0.008	0.0080	100	70-130	
13C2-PFDA (S)	%			126	70-130	
13C2-PFHxA (S)	%			121	70-130	
HFPO-DAS (S)	%			118	70-130	
NETFOSAA-d5 (S)	%			111	70-130	

LABORATORY CONTROL SAMPLE: 3717145

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
11CI-PF3OUdS	ug/L	0.002	0.0028	140	50-150	
9CI-PF3ONS	ug/L	0.002	0.0023	116	50-150	
ADONA	ug/L	0.002	0.0026	128	50-150	
HFPO-DA	ug/L	0.002	0.0018J	92	50-150	
NETFOSAA	ug/L	0.002	0.0032	160	50-150	L1
NMeFOSAA	ug/L	0.002	0.0036	182	50-150	L1
Perfluorobutanesulfonic acid	ug/L	0.002	0.0016J	82	50-150	
Perfluorodecanoic acid	ug/L	0.002	0.0028	142	50-150	
Perfluorododecanoic acid	ug/L	0.002	0.0032	160	50-150	L1
Perfluoroheptanoic acid	ug/L	0.002	0.0028	142	50-150	
Perfluorohexanesulfonic acid	ug/L	0.002	0.0017J	86	50-150	
Perfluorohexanoic acid	ug/L	0.002	0.0024	122	50-150	
Perfluorononanoic acid	ug/L	0.002	0.0024	118	50-150	
Perfluorooctanesulfonic acid	ug/L	0.002	0.0023	116	50-150	
Perfluorooctanoic acid	ug/L	0.002	0.0023	116	50-150	
Perfluorotetradecanoic acid	ug/L	0.002	0.0031	154	50-150	L1
Perfluorotridecanoic acid	ug/L	0.002	0.0033	166	50-150	L1
Perfluoroundecanoic acid	ug/L	0.002	0.0031	156	50-150	L1
13C2-PFDA (S)	%			122	70-130	
13C2-PFHxA (S)	%			122	70-130	
HFPO-DAS (S)	%			107	70-130	
NETFOSAA-d5 (S)	%			114	70-130	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 3717146 3717147

Parameter	Units	MS 35590735002		MSD 3717146		MSD 3717147		MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
		Result	Spike Conc.	Spike Conc.	Result	Result							
11CI-PF3OUdS	ug/L	0.0015U	0.14	0.14	0.11	0.11	79	75	70-130	6	30		
9CI-PF3ONS	ug/L	0.0010U	0.14	0.14	0.12	0.11	80	77	70-130	4	30		
ADONA	ug/L	0.00066U	0.14	0.14	0.16	0.15	113	107	70-130	6	30		
HFPO-DA	ug/L	0.0015U	0.14	0.14	0.18	0.17	123	118	70-130	5	30		

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QUALITY CONTROL DATA

Project: PFOS/PFOA

Pace Project No.: 35590735

Parameter	Units	35590735002		3717146		3717147		% Rec	% Rec	% Rec	Limits	RPD	Max RPD	Qual
		Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec							
NEtFOSAA	ug/L	0.00085U	0.14	0.14	0.12	0.12	86	85	70-130	2	30			
NMeFOSAA	ug/L	0.0014U	0.14	0.14	0.13	0.12	87	82	70-130	6	30			
Perfluorobutanesulfonic acid	ug/L	0.054	0.14	0.14	0.17	0.16	80	72	70-130	7	30			
Perfluorodecanoic acid	ug/L	0.0018U	0.14	0.14	0.19	0.17	130	119	70-130	9	30			
Perfluorododecanoic acid	ug/L	0.0013U	0.14	0.14	0.19	0.17	128	116	70-130	11	30			
Perfluoroheptanoic acid	ug/L	0.15	0.14	0.14	0.30	0.26	101	73	70-130	15	30			
Perfluorohexanesulfonic acid	ug/L	0.34	0.14	0.14	0.43	0.35	65	5	70-130	22	30	M1		
Perfluorohexanoic acid	ug/L	0.24	0.14	0.14	0.49	0.42	178	130	70-130	15	30	M1		
Perfluorononanoic acid	ug/L	0.0025	0.14	0.14	0.19	0.18	130	120	70-130	8	30			
Perfluorooctanesulfonic acid	ug/L	0.074	0.14	0.14	0.19	0.16	82	63	70-130	16	30	M1		
Perfluorooctanoic acid	ug/L	0.64	0.14	0.14	0.86	0.66	152	14	70-130	26	30	M1		
Perfluorotetradecanoic acid	ug/L	0.0017U	0.14	0.14	0.19	0.16	128	114	70-130	12	30			
Perfluorotridecanoic acid	ug/L	0.0016U	0.14	0.14	0.19	0.17	131	115	70-130	13	30	M1		
Perfluoroundecanoic acid	ug/L	0.0018U	0.14	0.14	0.19	0.17	128	117	70-130	10	30			
13C2-PFDA (S)	%						175	148	70-130					S0
13C2-PFHxA (S)	%						153	138	70-130					S0
HFPO-DAS (S)	%						177	148	70-130					S0
NEtFOSAA-d5 (S)	%						108	98	70-130					

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REPORT OF LABORATORY ANALYSIS

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QUALIFIERS

Project: PFOS/PFOA

Pace Project No.: 35590735

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

ANALYTE QUALIFIERS

- | | |
|----|---|
| L1 | Analyte recovery in the laboratory control sample (LCS) was above QC limits. Results for this analyte in associated samples may be biased high. |
| M1 | Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample (LCS) recovery. |
| S0 | Surrogate recovery outside laboratory control limits. |

REPORT OF LABORATORY ANALYSIS

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QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: PFOS/PFOA

Pace Project No.: 35590735

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
35590735001	FIELD BLANK EMPTY FB	EPA 537.1	680523	EPA 537.1	680945
35590735002	NAS Whiting	EPA 537.1	682907	EPA 537.1	684173

REPORT OF LABORATORY ANALYSIS

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Document Name:
Sample Condition Upon Receipt Form
Document No.:
F-FL-C-007 rev. 13

Document Revised:
May 30, 2018
Issuing Authority:
Pace Florida Quality Office

WO#: 35590735
PM: VEG **Due Date: 11/18/20**
CLIENT: AHENVI

Project #
Project Manager:
Client:

(SECUR)
Date and Initials of person:
Examining contents:
Label: _____
Deliver: _____
pH: _____

Thermometer Used: T-337 Date: 11/10/20 Time: 1028 Initials: KMF

State of Origin: _____ For WV projects, all containers verified to ≤6 °C

- Cooler #1 Temp. °C 5.1 (Visual) +0.0 (Correction Factor) 5.1 (Actual) Samples on ice, cooling process has begun
- Cooler #2 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
- Cooler #3 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
- Cooler #4 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
- Cooler #5 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun
- Cooler #6 Temp. °C _____ (Visual) _____ (Correction Factor) _____ (Actual) Samples on ice, cooling process has begun

Courier: Fed Ex UPS USPS Client Commercial Pace Other _____

Shipping Method: First Overnight Priority Overnight Standard Overnight Ground International Priority
 Other Next Day Air

Billing: Recipient Sender Third Party Credit Card Unknown

Tracking # 1Z 2EU 662 01 9369 8136

Custody Seal on Cooler/Box Present: Yes No Seals intact: Yes No Ice: Wet Blue Dry None

Packing Material: Bubble Wrap Bubble Bags None Other _____

Samples shorted to lab (If Yes, complete) Shorted Date: _____ Shorted Time: _____ Qty: _____

Comments:

Chain of Custody Present	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	<p>Time was not on sample label's</p> <p>Preservation Information: Preservative: _____ Lot #/Trace #: _____ Date: _____ Time: _____ Initials: _____</p>
Chain of Custody Filled Out	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Relinquished Signature & Sampler Name COC	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Samples Arrived within Hold Time	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Rush TAT requested on COC	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
Sufficient Volume	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Correct Containers Used	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Containers Intact	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A	
Sample Labels match COC (sample IDs & date/time of collection)	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A	
All containers needing acid/base preservation have been checked.	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
All Containers needing preservation are found to be in compliance with EPA recommendation: Exceptions: VOA, Coliform, TOC, O&G, Carbamates	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Headspace in VOA Vials? (>6mm):	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	
Trip Blank Present:	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> N/A	

Client Notification/ Resolution:
Person Contacted: _____ Date/Time: _____

Comments/ Resolution (use back for additional comments):

Project Manager Review: _____ Date: _____

PFC Sample Collection Form

Facility:	NAS Whiting Field		
Sample Collection Date/Time:	9-Nov-20		
	830 AM		
Sampled By:	S. Harper and Brooke Boyd		
Sample Location Description - (Well House, WTP, etc.):	WTP Lab Sink In Bldg 1429 (Normal POC)		
Water Supply Source (Check one)	<input checked="" type="radio"/> Well	<input type="radio"/> Surface Water	<input type="radio"/> Consecutive System
Sample Port Type (tap, hose bib, etc.)	Sink Faucet		
Weather Conditions:	Partly Cloudy, 76F		
Field Blank Collected:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Duplicate Collected:	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Shipping Container type:	<input checked="" type="radio"/> Cooler	<input type="radio"/> Box	
Ice Added?	<input checked="" type="radio"/> Yes	<input type="radio"/> No	
Shipper Used?			
Notes & Photos:	<p style="text-align: center;">This is the POC used for routine water sampling The sink was idle and dry upon arrival</p>		
<div style="display: flex; justify-content: space-around;">   </div>			