

Pender County

605 E Fremont St
Burgaw, NC 28425-5115

Surface Water Treatment Plant

Client Project# Pre-GAC exchange
Samples Received: 10/26/2023

Analytical Report 1023-1221

PFAS by Isotope Dilution (non-potable water) PFAS 49 List

Report Issue Date: 11/21/2023

I certify that to the best of my knowledge all analytical data presented in this report have been checked for completeness, accuracy, errors and legibility in addition to having been conducted in accordance with approved protocol, and that all deviations and analytical problems are summarized in the appropriate narrative(s). This analytical report was prepared in Portable Document Format (.PDF) and contains 26 pages. This report shall not be reproduced except in full without approval of the laboratory. This will provide assurance that parts of the report are not taken out of context.

Amendment(s):

Signature:



Laura Boivin, QA Associate II



Enthalpy Analytical, LLC – Ultratrace
Mark Hager, Project Manager
mahager@montrose-env.com / www.enthalpy.com
O: 910-876-6894
2714 Exchange Drive, Wilmington, NC 28405

Enthalpy Analytical

Job No.: 1023-1221-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre-GAC exchange Surface water treatment plant

Enthalpy ID	1023-1221-003-1	Prep Batch	EU16301	Sample Vol (mL)	287.5
Sample Name	Raw	Prep Date	2023-10-31 06:10	Extract Vol (mL)	0.4
Matrix	aqueous	Analysis Date	2023-11-01 13:30	Split Factor	N/A
Sampling Date	2023-10-26 10:12	Analyst	rappelle	Method Code	WM-026
Received Date	2023-10-27	Instrument	Smeagol	Sample Type	Sample
		Bottle ID	A		

	Compound	CAS	Formatted Result ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFBA	375-22-4	4.45	0.221	0.557			
	PFPeA	2706-90-3	12.1	0.159	0.557			
	PFHxA	307-24-4	12.6	0.186	0.557			
	PFHpA	375-85-9	3.75	0.195	0.557			
	PFOA	335-67-1	6.45	0.127	0.557			
	PFNA	375-95-1	0.604	0.126	0.557			
	PFDA	335-76-2	0.312	0.159	0.557			J
	PFUnDA	2058-94-8	<LOD	0.126	0.557			U
	PFDaDA	307-55-1	<LOD	0.226	0.557			U
	PFTTrDA	72629-94-8	<LOD	0.184	0.557			U
	PFTeDA	376-06-7	<LOD	0.212	0.557			U
	PFHxDA	67905-19-5	<LOD	0.296	0.557			U
Sulfonates	PFBS	375-73-5	5.96	0.296	0.557			
	PFPeS	2706-91-4	0.776	0.114	0.524			
	PFHxS	355-46-4	4.62	0.430	0.510			
	PFHpS	375-92-8	<LOD	0.270	0.530			U
	PFOS	1763-23-1	9.13	0.294	0.516			
	PFNS	68259-12-1	<LOD	0.173	0.536			U
	PFDS	335-77-3	<LOD	0.292	0.536			U
	4:2 FTS	757124-72-4	<LOD	0.0722	0.521			U
	6:2 FTS	27619-97-2	<LOD	0.263	0.530			U
	8:2 FTS	39108-34-4	<LOD	0.125	0.533			U
10:2 FTS	120226-60-0	<LOD	0.426	0.557			U	
Other	Nafion Byproduct 1 (PS Acid)	29311-67-9	<LOD	0.297	0.557			U
	Nafion Byproduct 2 (Hydro-PS Acid)	749836-20-2	<LOD	0.461	0.557			U
Sulfonamidos	FBSA	30334-69-1	0.899	0.264	0.557			
	N-EtFOSA	4151-50-2	<LOD	0.344	0.557			U
	N-EtFOSAA	2991-50-6	<LOD	0.226	0.557			U
	N-EtFOSE	1691-99-2	<LOD	0.852	2.50			U
	N-MeFOSA	31506-32-8	<LOD	0.230	0.557			U
	N-MeFOSAA	2355-31-9	<LOD	0.156	0.557			U
	N-MeFOSE	24448-09-7	<LOD	0.529	2.50			U
PFECAs	PFOSA	754-91-6	<LOD	0.0781	0.557			U
	ADONA	919005-14-4	<LOD	0.151	0.527			U
	HFPO-DA	13252-13-6	6.16	0.0590	0.557			
	NFDHA	151772-58-6	<LOD	0.117	0.557			U
	PEPA	267239-61-2	2.45	0.104	0.557			
	PFECA-G	801212-59-9	<LOD	0.0743	0.557			U

Enthalpy Analytical

Job No.: 1023-1221-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre-GAC exchange Surface water treatment plant

PFECAs	PFMOAA	674-13-5	16.4	0.282	0.557		
	PFMOBA	863090-89-5	<LOD	0.934	1.25		U
	PFMOPrA	377-73-1	<LOD	0.198	0.557		U
	PFO2HxA	39492-88-1	7.99	0.179	0.557		
	PFO3OA	39492-89-2	<LOD	0.256	0.557		U
	PFO4DA	39492-90-5	<LOD	0.440	2.78		U
	PFO5DA	39492-91-6	<LOD	0.445	2.78		U
	PMPA	13140-29-9	8.12	0.131	0.557		
PFESAs	11CI-PF3OUdS	763051-92-9	<LOD	0.263	0.524		U
	9CI-PF3ONS	756426-58-1	<LOD	0.357	0.518		U
	PFEEESA	113507-82-7	<LOD	0.167	0.557		U
ES	MPFBA					20-150%	108.8%
	M5PFPeA					20-150%	124.2%
	M3PFBS					20-150%	105.4%
	M2-4:2 FTS					20-150%	102.7%
	M5PFHxA					20-150%	66.9%
	M3HFPO-DA					20-150%	78.9%
	M4PFHpA					20-150%	87.2%
	M3PFHxS					20-150%	109.9%
	M2-6:2 FTS					20-150%	105.3%
	M8PFOA					20-150%	87.2%
	M9PFNA					20-150%	80.6%
	M8PFOS					20-150%	109.1%
	M2-8:2 FTS					20-150%	100.9%
	M8FOSA-I					20-150%	88.0%
	M6PFDA					20-150%	90.3%
	d3-N-MeFOSAA					20-150%	181.2% Q
	d5-N-EtFOSAA					20-150%	178.9% Q
	M7PFUdA					20-150%	86.4%
	MPFDoA					20-150%	69.4%
	M2PFTeDA					20-150%	32.4%
	d3-N-MeFOSA					10-200%	19.1%
d5-N-EtFOSA					10-200%	15.5%	
d7-N-MeFOSE					10-200%	52.3%	
d9-N-EtFOSE					10-200%	42.9%	

Enthalpy Analytical

Job No.: 1023-1221-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre-GAC exchange Surface water treatment plant

Enthalpy ID	1023-1221-002-1	Prep Batch	EU16301	Sample Vol (mL)	292.1
Sample Name	CFE	Prep Date	2023-10-31 06:10	Extract Vol (mL)	0.4
Matrix	aqueous	Analysis Date	2023-11-01 13:07	Split Factor	N/A
Sampling Date	2023-10-26 10:11	Analyst	rappelle	Method Code	WM-026
Received Date	2023-10-27	Instrument	Smeagol	Sample Type	Sample
		Bottle ID	A		

	Compound	CAS	Formatted Result ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFBA	375-22-4	3.86	0.217	0.548			
	PFPeA	2706-90-3	12.2	0.157	0.548			
	PFHxA	307-24-4	11.9	0.183	0.548			
	PFHpA	375-85-9	3.63	0.192	0.548			
	PFOA	335-67-1	6.26	0.125	0.548			
	PFNA	375-95-1	0.713	0.124	0.548			
	PFDA	335-76-2	<LOD	0.157	0.548			U
	PFUnDA	2058-94-8	<LOD	0.124	0.548			U
	PFDoDA	307-55-1	<LOD	0.223	0.548			U
	PFTrDA	72629-94-8	<LOD	0.181	0.548			U
	PFTeDA	376-06-7	<LOD	0.209	0.548			U
	PFHxDA	67905-19-5	<LOD	0.291	0.548			U
Sulfonates	PFBS	375-73-5	6.27	0.291	0.548			
	PFPeS	2706-91-4	0.731	0.112	0.516			
	PFHxS	355-46-4	5.13	0.423	0.502			
	PFHpS	375-92-8	<LOD	0.265	0.522			U
	PFOS	1763-23-1	8.42	0.289	0.507			
	PFNS	68259-12-1	<LOD	0.170	0.528			U
	PFDS	335-77-3	<LOD	0.288	0.528			U
	4:2 FTS	757124-72-4	<LOD	0.0710	0.513			U
	6:2 FTS	27619-97-2	<LOD	0.258	0.522			U
	8:2 FTS	39108-34-4	<LOD	0.123	0.525			U
10:2 FTS	120226-60-0	<LOD	0.419	0.548			U	
Other	Nafion Byproduct 1 (PS Acid)	29311-67-9	<LOD	0.293	0.548			U
	Nafion Byproduct 2 (Hydro-PS Acid)	749836-20-2	<LOD	0.454	0.548			U
Sulfonamidos	FBSA	30334-69-1	0.702	0.260	0.548			
	N-EtFOSA	4151-50-2	<LOD	0.339	0.548			U
	N-EtFOSAA	2991-50-6	<LOD	0.223	0.548			U
	N-EtFOSE	1691-99-2	<LOD	0.839	2.46			U
	N-MeFOSA	31506-32-8	<LOD	0.226	0.548			U
	N-MeFOSAA	2355-31-9	<LOD	0.154	0.548			U
	N-MeFOSE	24448-09-7	<LOD	0.520	2.46			U
PFECAs	PFOSA	754-91-6	<LOD	0.0769	0.548			U
	ADONA	919005-14-4	<LOD	0.148	0.519			U
	HFPO-DA	13252-13-6	6.18	0.0580	0.548			
	NFDHA	151772-58-6	<LOD	0.115	0.548			U
	PEPA	267239-61-2	1.85	0.103	0.548			
	PFECA-G	801212-59-9	<LOD	0.0731	0.548			U

Enthalpy Analytical

Job No.: 1023-1221-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre-GAC exchange Surface water treatment plant

PFECAs	PFMOAA	674-13-5	19.5	0.277	0.548		
	PFMOBA	863090-89-5	<LOD	0.919	1.23		U
	PFMOPrA	377-73-1	0.317	0.195	0.548		J
	PFO2HxA	39492-88-1	8.13	0.176	0.548		
	PFO3OA	39492-89-2	<LOD	0.252	0.548		U
	PFO4DA	39492-90-5	<LOD	0.433	2.74		U
	PFO5DA	39492-91-6	<LOD	0.438	2.74		U
	PMPA	13140-29-9	10.1	0.129	0.548		
	PFESAs	11Cl-PF3OUdS	763051-92-9	<LOD	0.258	0.516	
9Cl-PF3ONS		756426-58-1	<LOD	0.351	0.510		U
PFEESA		113507-82-7	<LOD	0.165	0.548		U
ES	MPFBA					20-150%	103.3%
	M5PFPeA					20-150%	128.1%
	M3PFBS					20-150%	108.5%
	M2-4:2 FTS					20-150%	103.0%
	M5PFHxA					20-150%	94.6%
	M3HFPO-DA					20-150%	105.9%
	M4PFHpA					20-150%	111.0%
	M3PFHxS					20-150%	105.1%
	M2-6:2 FTS					20-150%	108.9%
	M8PFOA					20-150%	110.2%
	M9PFNA					20-150%	102.9%
	M8PFOS					20-150%	111.1%
	M2-8:2 FTS					20-150%	106.3%
	M8FOSA-I					20-150%	93.5%
	M6PFDA					20-150%	108.4%
	d3-N-MeFOSAA					20-150%	165.2% Q
	d5-N-EtFOSAA					20-150%	167.9% Q
	M7PFUdA					20-150%	92.7%
	MPFDoA					20-150%	79.0%
	M2PFTeDA					20-150%	39.8%
	d3-N-MeFOSA					10-200%	11.9%
d5-N-EtFOSA					10-200%	10.7%	
d7-N-MeFOSE					10-200%	55.4%	
d9-N-EtFOSE					10-200%	43.3%	

Enthalpy Analytical

Job No.: 1023-1221-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre-GAC exchange Surface water treatment plant

Enthalpy ID	1023-1221-001-1	Prep Batch	EU16301	Sample Vol (mL)	291.75
Sample Name	Post CW	Prep Date	2023-10-31 06:10	Extract Vol (mL)	0.4
Matrix	aqueous	Analysis Date	2023-11-01 12:44	Split Factor	N/A
Sampling Date	2023-10-26 10:10	Analyst	rappelle	Method Code	WM-026
Received Date	2023-10-27	Instrument	Smeagol	Sample Type	Sample
		Bottle ID	A		

	Compound	CAS	Formatted Result ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
Acids	PFBA	375-22-4	3.64	0.218	0.548			
	PFPeA	2706-90-3	7.90	0.157	0.548			
	PFHxA	307-24-4	6.04	0.183	0.548			
	PFHpA	375-85-9	2.16	0.192	0.548			
	PFOA	335-67-1	2.83	0.125	0.548			
	PFNA	375-95-1	0.201	0.124	0.548			J
	PFDA	335-76-2	<LOD	0.157	0.548			U
	PFUnDA	2058-94-8	<LOD	0.124	0.548			U
	PFDoDA	307-55-1	<LOD	0.223	0.548			U
	PFTTrDA	72629-94-8	<LOD	0.182	0.548			U
	PFTeDA	376-06-7	<LOD	0.209	0.548			U
	PFHxDA	67905-19-5	<LOD	0.291	0.548			U
Sulfonates	PFBS	375-73-5	3.34	0.291	0.548			
	PFPeS	2706-91-4	0.199	0.113	0.517			J
	PFHxS	355-46-4	2.32	0.423	0.502			
	PFHpS	375-92-8	<LOD	0.266	0.522			U
	PFOS	1763-23-1	1.88	0.290	0.508			
	PFNS	68259-12-1	<LOD	0.170	0.528			U
	PFDS	335-77-3	<LOD	0.288	0.528			U
	4:2 FTS	757124-72-4	<LOD	0.0711	0.514			U
	6:2 FTS	27619-97-2	<LOD	0.259	0.522			U
	8:2 FTS	39108-34-4	<LOD	0.123	0.525			U
10:2 FTS	120226-60-0	<LOD	0.420	0.548			U	
Other	Nafion Byproduct 1 (PS Acid)	29311-67-9	<LOD	0.293	0.548			U
	Nafion Byproduct 2 (Hydro-PS Acid)	749836-20-2	<LOD	0.454	0.548			U
Sulfonamidos	FBSA	30334-69-1	<LOD	0.260	0.548			U
	N-EtFOSA	4151-50-2	<LOD	0.339	0.548			U
	N-EtFOSAA	2991-50-6	<LOD	0.223	0.548			U
	N-EtFOSE	1691-99-2	<LOD	0.840	2.47			U
	N-MeFOSA	31506-32-8	<LOD	0.226	0.548			U
	N-MeFOSAA	2355-31-9	<LOD	0.154	0.548			U
	N-MeFOSE	24448-09-7	<LOD	0.521	2.47			U
	PFOSA	754-91-6	0.169	0.0769	0.548			J
PFECAs	ADONA	919005-14-4	<LOD	0.149	0.520			U
	HFPO-DA	13252-13-6	3.41	0.0581	0.548			
	NFDHA	151772-58-6	<LOD	0.115	0.548			U
	PEPA	267239-61-2	1.40	0.103	0.548			
	PFECA-G	801212-59-9	<LOD	0.0732	0.548			U

Enthalpy Analytical

Job No.: 1023-1221-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre-GAC exchange Surface water treatment plant

PFECAs	PFMOAA	674-13-5	12.1	0.278	0.548		
	PFMOBA	863090-89-5	<LOD	0.920	1.23		U
	PFMOPrA	377-73-1	<LOD	0.195	0.548		U
	PFO2HxA	39492-88-1	5.61	0.177	0.548		
	PFO3OA	39492-89-2	<LOD	0.252	0.548		U
	PFO4DA	39492-90-5	<LOD	0.434	2.74		U
	PFO5DA	39492-91-6	<LOD	0.439	2.74		U
	PMPA	13140-29-9	6.40	0.129	0.548		
PFESAs	11Cl-PF3OUdS	763051-92-9	<LOD	0.259	0.517		U
	9Cl-PF3ONS	756426-58-1	<LOD	0.351	0.511		U
	PFEESA	113507-82-7	<LOD	0.165	0.548		U
ES	MPFBA					20-150%	124.3%
	M5PFPeA					20-150%	117.3%
	M3PFBS					20-150%	99.5%
	M2-4:2 FTS					20-150%	102.2%
	M5PFHxA					20-150%	88.9%
	M3HFPO-DA					20-150%	103.1%
	M4PFHpA					20-150%	99.3%
	M3PFHxS					20-150%	99.3%
	M2-6:2 FTS					20-150%	107.6%
	M8PFOA					20-150%	102.5%
	M9PFNA					20-150%	99.8%
	M8PFOS					20-150%	111.2%
	M2-8:2 FTS					20-150%	106.0%
	M8FOSA-I					20-150%	93.2%
	M6PFDA					20-150%	103.0%
	d3-N-MeFOSAA					20-150%	181.1% Q
	d5-N-EtFOSAA					20-150%	189.1% Q
	M7PFUdA					20-150%	101.1%
	MPFDoA					20-150%	81.9%
	M2PFTeDA					20-150%	51.6%
d3-N-MeFOSA					10-200%	3.6% Q	
d5-N-EtFOSA					10-200%	4.1% Q	
d7-N-MeFOSE					10-200%	68.5%	
d9-N-EtFOSE					10-200%	52.6%	