

Pender County

605 E Fremont St
Burgaw, NC 28425-5115

Surface Water Treatment Plant

Client Project# Pre GAC Exchange
Samples Received: 11/14/2024

Analytical Report 1124-786

PFAS by Isotope Dilution (non-potable water)

Report Issue Date: 12/19/2024

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 25 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:



Alexandra Mejia, Quality Assurance Associate I



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Enthalpy Analytical

Job No.: 1124-786-1 PFAS by Isotope Dilution (non-potable water)

Pender County Pre GAC Exchange Surface Water Treatment Plant

Details

Sample Name	Raw	Prep Batch	EU18550
Sampling Site		Analyst	ext-magenaef
Enthalpy ID	1124-786-003-1	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	282.24
Sampling Date	2024-11-14 07:25	Extract Vol mL	0.4
Received Date	2024-11-14	Split Factor	N/A
Prep Date	2024-11-18 07:41	Method Code	EU-047-NPW
Analysis Date	2024-11-24 10:22		
Sample Type	Sample		
Bottle ID	A		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags	
Acids	PFBA	375-22-4	P231124053	2.81	0.225	0.567			
	PFPeA	2706-90-3	P231124053	5.48	0.162	0.567			
	PFFxA	307-24-4	P231124053	4.70	0.190	0.567			
	PFFpA	375-85-9	P231124053	2.29	0.198	0.567			
	PFOA	335-67-1	P231124053	4.68	0.130	0.567			
	PFNA	375-96-1	P231124053	0.438	0.128	0.567		J	
	PFDA	335-76-2	P231124053	0.178	0.162	0.567		J	
	PFluDA	2058-94-8	P231124053	<LOD (0.128)	0.128	0.567		U	
	PFDoDA	307-65-1	P231124053	<LOD (0.230)	0.230	0.567		U	
	PFTeDA	72629-94-8	P231124053	<LOD (0.188)	0.188	0.567		U	
	PFTeDA	375-06-7	P231124053	<LOD (0.216)	0.216	0.567		U	
	PFFxDA	67905-18-5	P231124053	<LOD (0.301)	0.301	0.567		U	
	Sulfonates	PFBS	375-73-5	P231124053	3.39	0.301	0.567		
		PFPeS	2706-91-4	P231124053	0.583	0.116	0.534		
		PFFxS	365-46-4	P231124053	5.43	0.438	0.519		
PFFpS		375-82-8	P231124053	<LOD (0.275)	0.275	0.540		U	
PFOS		1763-23-1	P231124053	9.93	0.299	0.625			
PFNS		68259-12-1	P231124053	<LOD (0.176)	0.176	0.546		U	
PFDS		335-77-3	P231124053	<LOD (0.298)	0.298	0.546		U	
4:2 FTS		767124-72-4	P231124053	<LOD (0.0735)	0.0735	0.531		U	
6:2 FTS		27619-97-2	P231124053	<LOD (0.268)	0.268	0.540		U	
8:2 FTS		39108-34-4	P231124053	<LOD (0.127)	0.127	0.543		U	
10:2 FTS	120226-60-0	P231124053	<LOD (0.434)	0.434	0.567		U		
Sulfonamides	FBSA	30334-69-1	P231124053	0.302	0.269	0.567		J	
	N-EIFOSA	4151-50-2	P231124053	<LOD (0.351)	0.351	0.567		U	
	N-EIFOSAA	2991-50-6	P231124053	<LOD (0.230)	0.230	0.567		U	
	N-EIFOSE	1691-99-2	P231124053	<LOD (0.888)	0.868	2.55		U	
	N-MeFOSA	31506-32-8	P231124053	<LOD (0.234)	0.234	0.567		U	
	N-MeFOSAA	2355-31-9	P231124053	<LOD (0.159)	0.159	0.567		U	
	N-MeFOSE	24448-09-7	P231124053	<LOD (0.539)	0.539	2.55		U	
	PFOSA	754-81-6	P231124053	<LOD (0.0795)	0.0795	0.567		U	
	PFECAs	ADONA	918005-14-4	P231124053	<LOD (0.154)	0.154	0.537		U
		HFPO-DA	13252-13-6	P231124053	5.12	0.0601	0.567		
NFDHA		151772-58-6	P231124053	<LOD (0.119)	0.119	0.567		U	
PEPA		267239-61-2	P231124053	3.80	0.106	0.567			
PFECA-G		601212-59-9	P231124053	<LOD (0.0756)	0.0756	0.567		U	
PFMOAA		674-13-5	P231124053	31.4	0.287	0.567			
PFMOBA		863090-88-5	P231124053	<LOD (0.951)	0.951	1.28		U	
PFMOPrA		377-73-1	P231124053	<LOD (0.202)	0.202	0.567		U	
PFO2HxA		39492-88-1	P231124053	7.29	0.182	0.567			
PFO3CA		39482-89-2	P171224027	1.60	0.260	0.567			
PFO4DA		39492-90-5	P231124053	1.60	0.448	2.83		J	
PFO5DA		39492-91-6	P231124053	<LOD (0.454)	0.454	2.83		U	
PMPA		13140-29-9	P231124053	9.48	0.134	0.567			
PFESAs		11Cl-PF3OUdS	763051-92-9	P231124053	<LOD (0.268)	0.268	0.534		U
		9Cl-PF3ONS	758426-58-1	P231124053	<LOD (0.363)	0.363	0.528		U
	Nafion Byproduct 1 (PS Acid)	293111-67-9	P231124053	<LOD (0.303)	0.303	0.567		U	
	Nafion Byproduct 2 (HydroPS Acid)	749838-20-2	P231124053	0.471	0.469	0.567		J	
PFEEsA	113507-82-7	P231124053	<LOD (0.170)	0.170	0.567		U		
ES	MPFBA		P231124053			20-150%	76.5%		
	M5PFPeA		P231124053			20-150%	163%	Q	
	M3PFBS		P231124053			20-150%	132%		
	M2-4:2 FTS		P231124053			20-150%	111%		
	M5PFFxA		P231124053			20-150%	93.8%		
	M3HFPO-DA		P231124053			20-150%	108%		
	M4PFFpA		P231124053			20-150%	83.4%		
	M3PFFxS		P231124053			20-150%	68.7%		
	M2-6:2 FTS		P231124053			20-150%	40.1%		
	M8PFQA		P231124053			20-150%	79.0%		
	M9PFNA		P231124053			20-150%	84.2%		
	M8PFOS		P231124053			20-150%	81.1%		
	M2-8:2 FTS		P231124053			20-150%	42.1%		
	M8FOSA-I		P231124053			20-150%	67.7%		

Enthalpy Analytical

Job No.: 1124-786-1 PFAS by Isotope Dilution (non-potable water)
 Pender County Pre GAC Exchange Surface Water Treatment Plant

Details

Sample Name	Raw	Prep Batch	EU18550
Sampling Site		Analyst	ext-magennaef
Enthalpy ID	1124-786-003-1	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	282.24
Sampling Date	2024-11-14 07:25	Extract Vol mL	0.4
Received Date	2024-11-14	Split Factor	N/A
Prep Date	2024-11-19 07:41	Method Code	EU-047-NPW
Analysis Date	2024-11-24 10:22		
Sample Type	Sample		
Bottle ID	A		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
M6PFDA		P231124053				20-150%	76.0%	
d3-N-MeFOSAA		P231124053				20-150%	103%	
d5-N-EiFOSAA		P231124053				20-150%	101%	
M7PFUdA		P231124053				20-150%	59.7%	
MPPDoA		P231124053				20-150%	42.5%	
M2PFTaDA		P231124053				20-150%	9.91%	Q
d3-N-MeFOSA		P231124053				10-200%	3.06%	Q
d5-N-EiFOSA		P231124053				10-200%	1.97%	Q
d7-N-MeFOSE		P231124053				10-200%	26.9%	
d9-N-EiFOSE		P231124053				10-200%	17.1%	

Enthalpy Analytical

Job No.: 1124-786-1 PFAS by Isotope Dilution (non-potable water)
 Pender County Pre GAC Exchange Surface Water Treatment Plant

Details

Sample Name CFE
 Sampling Site
 Enthalpy ID 1124-786-002-1 Prep Batch EU18550
 Matrix aqueous Analyst ext-magennaef
 Sampling Date 2024-11-14 07:24 Instrument Pippin
 Received Date 2024-11-14 Sample Vol mL 285.76
 Prep Date 2024-11-19 07:41 Extract Vol mL 0.4
 Analysis Date 2024-11-24 09:59 Split Factor N/A
 Sample Type Sample Method Code EU-D47-NPW
 Bottle ID A

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags	
Acids	PFBA	375-22-4	P231124052	3.43	0.222	0.560				
	PFPeA	2706-90-3	P231124052	5.58	0.180	0.560				
	PFHxA	307-24-4	P231124052	4.60	0.187	0.560				
	PFHpA	375-85-9	P231124052	2.40	0.196	0.560				
	PFOA	335-67-1	P231124052	5.00	0.126	0.560				
	PFNA	375-95-1	P231124052	0.458	0.127	0.560			J	
	PFDA	335-76-2	P231124052	0.165	0.160	0.560			J	
	PFUnDA	2858-94-8	P231124052	<LOD (0.127)	0.127	0.560			U	
	PFDoDA	307-55-1	P231124052	<LOD (0.227)	0.227	0.560			U	
	PFTtDA	72829-84-8	P231124052	<LOD (0.185)	0.185	0.560			U	
	PFTeDA	376-06-7	P231124052	<LOD (0.213)	0.213	0.560			U	
	PFHxDA	67905-19-5	P231124052	<LOD (0.297)	0.297	0.560			U	
	Sulfonates	PFBS	375-73-5	P231124052	3.79	0.287	0.560			
		PFPeS	2706-91-4	P231124052	0.702	0.115	0.527			
PFHxS		355-48-4	P231124052	5.42	0.432	0.513				
PFHpS		375-92-8	P231124052	<LOD (0.271)	0.271	0.533			U	
PFOS		1763-23-1	P231124052	10.7	0.296	0.519				
PFNS		68259-12-1	P231124052	<LOD (0.174)	0.174	0.539			U	
PFDS		335-77-3	P231124052	<LOD (0.294)	0.294	0.539			U	
4:2 FTS		757124-72-4	P231124052	<LOD (0.0726)	0.0726	0.525			U	
6:2 FTS		27819-87-2	P231124052	<LOD (0.264)	0.264	0.533			U	
8:2 FTS		39106-34-4	P231124052	<LOD (0.125)	0.125	0.536			U	
10:2 FTS		120226-60-0	P231124052	<LOD (0.429)	0.429	0.560			U	
Sulfonamidos		FBSA	30334-89-1	P231124052	0.367	0.266	0.560			J
		N-EIFOSA	4154-50-2	P231124052	<LOD (0.346)	0.346	0.560			U
		N-EIFOSAA	2991-50-6	P231124052	<LOD (0.227)	0.227	0.560			U
	N-EIFOSE	1891-99-2	P231124052	<LOD (0.857)	0.857	2.52			U	
	N-MeFOSA	31506-32-8	P231124052	<LOD (0.231)	0.231	0.560			U	
	N-MeFOSAA	2355-31-9	P231124052	<LOD (0.157)	0.157	0.560			U	
	N-MeFOSE	24448-09-7	P231124052	<LOD (0.532)	0.532	2.52			U	
	PFOSA	754-81-6	P231124052	0.139	0.0788	0.560			J	
PFECAs	ADONA	919005-14-4	P231124052	<LOD (0.152)	0.152	0.530			U	
	HFPO-DA	13252-13-8	P231124052	5.21	0.583	0.560				
	NFDHA	151772-58-6	P231124052	<LOD (0.118)	0.118	0.560			U	
	PEPA	287239-61-2	P231124052	3.54	0.105	0.560				
	PFECA-G	801212-59-9	P231124052	<LOD (0.0747)	0.0747	0.560			U	
	PFMOAA	874-13-5	P231124052	31.7	0.283	0.560				
	PFMOBA	863080-89-5	P231124052	<LOD (0.940)	0.940	1.26			U	
	PFMOPrA	377-73-1	P231124052	<LOD (0.199)	0.199	0.560			U	
	PFO2HxA	39492-88-1	P231124052	7.60	0.180	0.560				
	PFO3OA	39492-89-2	P171224026	1.64	0.257	0.560				
	PFO4DA	39492-90-5	P231124052	1.88	0.443	2.80			J	
	PFOSDA	39492-91-6	P231124052	<LOD (0.448)	0.448	2.80			U	
	PMPPA	13140-29-9	P231124052	10.9	0.132	0.560				
	PFESAs	11Cl-PF3OUtS	763051-92-9	P231124052	<LOD (0.264)	0.264	0.527			U
9Cl-PF3ONS		766426-58-1	P231124052	<LOD (0.359)	0.359	0.522			U	
Nafion Elyproduct 1 (PS Acid)		29311-67-9	P231124052	<LOD (0.269)	0.269	0.560			U	
Nafion Elyproduct 2 (Hydro-PB Acid)		749836-20-2	P231124052	0.870	0.464	0.560				
ES	PFESA	113507-82-7	P231124052	<LOD (0.188)	0.188	0.560			U	
	MPFSA		P231124052				20-150%	96.0%		
	M5PFPeA		P231124052				20-150%	193%	Q	
	M3PFBS		P231124052				20-150%	152%	Q	
	M2-4:2 FTS		P231124052				20-150%	139%		
	M5PFHxA		P231124052				20-150%	117%		
	M3HFPO-DA		P231124052				20-150%	136%		
	M4PFHpA		P231124052				20-150%	104%		
	M3PFHxS		P231124052				20-150%	88.1%		
	M2-6:2 FTS		P231124052				20-150%	50.8%		
	M8PFOA		P231124052				20-150%	91.4%		
	M9PFNA		P231124052				20-150%	91.8%		
	M8PFOS		P231124052				20-150%	86.2%		
	M2-8:2 FTS		P231124052				20-150%	47.9%		
M8FOSA-I		P231124052				20-150%	73.2%			

Enthalpy Analytical

Job No.: 1124-786-1 PFAS by Isotope Dilution (non-potable water)
 Pender County Pre GAC Exchange Surface Water Treatment Plant

Details

Sample Name	CFE	Prep Batch	EU18550
Sampling Site		Analyst	ext-magennaef
Enthalpy ID	1124-786-002-1	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	285.76
Sampling Date	2024-11-14 07:24	Extract Vol mL	0.4
Received Date	2024-11-14	Split Factor	N/A
Prep Date	2024-11-19 07:41	Method Code	EU-047-NPW
Analysis Date	2024-11-24 09:59		
Sample Type	Sample		
Bottle ID	A		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
M6PFDA		P231124052				20-150%	81.5%	
d3-N-MeFOSAA		P231124052				20-150%	122%	
d5-N-EtFOSAA		P231124052				20-150%	121%	
M7PFUdA		P231124052				20-150%	69.2%	
MPFDaA		P231124052				20-150%	54.0%	
M2PFTeDA		P231124052				20-150%	26.4%	
d3-N-MeFOSA		P231124052				10-200%	9.29%	Q
d5-N-EtFOSA		P231124052				10-200%	7.59%	Q
d7-N-MeFOSE		P231124052				10-200%	45.7%	
d9-N-EtFOSE		P231124052				10-200%	37.4%	

Enthalpy Analytical

Job No.: 1124-786-1 PFAS by Isotope Dilution (non-potable water)
 Pender County Pre GAC Exchange Surface Water Treatment Plant

Details

Sample Name	PostCW	Prep Batch	EU18550
Sampling Site		Analyst	ext-magenaef
Enthalpy ID	1124-786-001-1	Instrument	Pippin
Matrix	aqueous	Sample Vol mL	286.93
Sampling Date	2024-11-14 07:22	Extract Vol mL	0.4
Received Date	2024-11-14	Split Factor	N/A
Prep Date	2024-11-19 07:41	Method Code	EU-047-NPW
Analysis Date	2024-11-24 09:37		
Sample Type	Sample		
Bottle ID	A		

	Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags	
Acids	PFBA	375-22-4	P231124051	4.08	0.221	0.558				
	PFPeA	2706-90-3	P231124051	4.00	0.159	0.558				
	PFHxA	307-24-4	P231124051	3.16	0.188	0.558				
	PFHpA	375-85-0	P231124051	1.44	0.195	0.558				
	PFOA	335-67-1	P231124051	2.42	0.128	0.558				
	PFNA	375-85-1	P231124051	<LOD (0.126)	0.126	0.558			U	
	PFDA	335-76-2	P231124051	<LOD (0.159)	0.159	0.558			U	
	PFUnDA	2056-94-8	P231124051	<LOD (0.126)	0.126	0.558			U	
	PFDoDA	307-55-1	P231124051	<LOD (0.227)	0.227	0.558			U	
	PFTeDA	72829-94-8	P231124051	<LOD (0.185)	0.185	0.558			U	
	PFTeDA	376-06-7	P231124051	<LOD (0.213)	0.213	0.558			U	
	PFHxDA	67805-19-5	P231124051	<LOD (0.296)	0.296	0.558			U	
	Sulfonates	PFBS	375-73-5	P231124051	2.44	0.296	0.558			
		PFPeS	2706-91-4	P231124051	0.342	0.114	0.525			J
PFHxS		355-46-4	P231124051	2.13	0.430	0.511				
PFHpS		375-92-8	P231124051	<LOD (0.270)	0.270	0.531			U	
PFOS		1763-23-1	P231124051	2.90	0.294	0.517				
PFNS		88259-12-1	P231124051	<LOD (0.173)	0.173	0.537			U	
PFDS		335-77-3	P231124051	<LOD (0.293)	0.293	0.537			U	
4:2 FTS		757124-72-4	P231124051	<LOD (0.0723)	0.0723	0.522			U	
6:2 FTS		27619-97-2	P231124051	<LOD (0.263)	0.263	0.531			U	
8:2 FTS		38109-34-4	P231124051	<LOD (0.125)	0.125	0.534			U	
10:2 FTS		120228-80-0	P231124051	<LOD (0.427)	0.427	0.558			U	
Sulfonamidos		FBSA	30334-69-1	P231124051	<LOD (0.265)	0.265	0.558			U
		N-EiFOSA	4151-50-2	P231124051	<LOD (0.345)	0.345	0.558			U
		N-EiFOSAA	2991-50-6	P231124051	<LOD (0.227)	0.227	0.558			U
	N-EiFOSE	1691-89-2	P231124051	<LOD (0.854)	0.854	2.51			U	
	N-MeFOSA	31506-32-8	P231124051	<LOD (0.230)	0.230	0.558			U	
	N-MeFOSAA	2355-31-9	P231124051	<LOD (0.157)	0.157	0.558			U	
	N-MeFOSE	24448-09-7	P231124051	<LOD (0.530)	0.530	2.51			U	
	PFOSA	754-81-6	P231124051	<LOD (0.0782)	0.0782	0.558			U	
	PFECAs	ADONA	919005-14-4	P231124051	<LOD (0.151)	0.151	0.528			U
		HFPO-DA	13252-13-6	P231124051	3.81	0.0591	0.558			
NFDHA		161772-58-6	P231124051	<LOD (0.117)	0.117	0.558			U	
PEPA		267239-61-2	P231124051	2.53	0.105	0.558				
PFECA-G		801212-59-9	P231124051	<LOD (0.0744)	0.0744	0.558			U	
PFMOAA		874-13-5	P231124051	23.6	0.282	0.558				
PFMOBA		863090-89-5	P231124051	<LOD (0.936)	0.936	1.25			U	
PFMOPyA		377-73-1	P231124051	<LOD (0.169)	0.169	0.558			U	
PFO2HxA		39492-88-1	P231124051	3.46	0.179	0.558				
PFC3DA		39492-89-2	P231124051	0.475	0.256	0.558			J	
PFO4DA		39492-90-5	P231124051	<LOD (0.441)	0.441	2.79			U	
PFO5DA		39492-91-6	P231124051	<LOD (0.448)	0.448	2.79			U	
PMPA		13140-29-9	P231124051	9.39	0.131	0.558				
PFESAs		11Cl-PF3OUdS	763061-92-9	P231124051	<LOD (0.263)	0.263	0.525			U
	9Cl-PF3ONS	756426-58-1	P231124051	<LOD (0.357)	0.357	0.519			U	
	Nafion Byproduct 1 (PS Acid)	29311-67-9	P231124051	<LOD (0.298)	0.298	0.558			U	
	Nafion Byproduct 2 (Hydro-PB Acid)	749636-20-2	P231124051	<LOD (0.462)	0.462	0.558			U	
ES	PFESA	113507-82-7	P231124051	<LOD (0.168)	0.168	0.558			U	
	MPFBA		P231124051				20-150%	93.0%		
	M5PFPeA		P231124051				20-150%	174%	Q	
	M3PFBS		P231124051				20-150%	137%		
	M2-4:2 FTS		P231124051				20-150%	143%		
	M5PFHxA		P231124051				20-150%	120%		
	M3HFPO-DA		P231124051				20-150%	139%		
	M4PFHpA		P231124051				20-150%	104%		
	M3PFHxS		P231124051				20-150%	89.8%		
	M2-6:2 FTS		P231124051				20-150%	55.0%		
	M8PFOA		P231124051				20-150%	96.0%		
	M9PFNA		P231124051				20-150%	94.9%		
	M8PFOS		P231124051				20-150%	92.3%		
	M2-8:2 FTS		P231124051				20-150%	53.0%		
M8FOSA-I		P231124051				20-150%	75.2%			

Enthalpy Analytical

Job No.: 1124-786-1 PFAS by Isotope Dilution (non-potable water)
 Pender County Pre GAC Exchange Surface Water Treatment Plant

Details

Sample Name	Post CW		
Sampling Site			
Enthalpy ID	1124-786-001-1	Prep Batch	EU18550
Matrix	aqueous	Analyst	ext-magermaef
Sampling Date	2024-11-14 07:22	Instrument	Pippin
Received Date	2024-11-14	Sample Vol mL	286.93
Prep Date	2024-11-19 07:41	Extract Vol mL	0.4
Analysis Date	2024-11-24 09:37	Split Factor	N/A
Sample Type	Sample	Method Code	EU-047-NPW
Bottle ID	A		

Compound	CAS	Injection File Name	Sample Concentration ng/L	LOD ng/L	LOQ ng/L	Recovery Limits	Recovery	Flags
M6PFDA		P231124051				20-150%	67.2%	
d3-N-MeFOSAA		P231124051				20-150%	122%	
d5-N-EtFOSAA		P231124051				20-150%	130%	
M7PFUdA		P231124051				20-150%	71.2%	
MPPFDaA		P231124051				20-150%	60.5%	
M2PFTeDA		P231124051				20-150%	26.0%	
d3-N-MeFOSA		P231124051				10-200%	1.09%	Q
d5-N-EtFOSA		P231124051				10-200%	1.07%	Q
d7-N-MeFOSE		P231124051				10-200%	65.8%	
d9-N-EtFOSE		P231124051				10-200%	57.1%	