

From: [Ken Shimko](#)
To: [Saari, Christopher A - DNR](#); [Hunt, John T - DNR](#)
Subject: RE: 02-34-577387 Wagner Oil
Date: Tuesday, July 11, 2023 1:34:30 PM
Attachments: [image003.jpg](#)
[PFAS Table 1-23-2023.pdf](#)
[DNR letter March 10, 2022.pdf](#)

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Chris and John.

Thanks for talking with me today re: the Wagner Oil truck accident spill in Langlade County (BRRTS 02-34-577387). Here is a brief summary of the conversation for our files.

We discussed the PFAS sampling completed to date (see attached DRAFT Table). Based on our conversation, my understanding is the DNR Closure Committee is looking for ground water sampling data to demonstrate stable concentrations. This is consistent with the DNR letter of March 10, 2022 (attached).

Although current ground water quality standards (i.e., NR140) are not in place, there are some proposed standards for reference (see email below). Based on the proposed standards, the Wagner Oil site does not appear to have alarming concentrations although they may exceed recommended ground water standards. The DNR is treating this site like any other site (e.g., petroleum site). That is, collect ground water data and demonstrate a stable plume. If that can be demonstrated, the site should close.

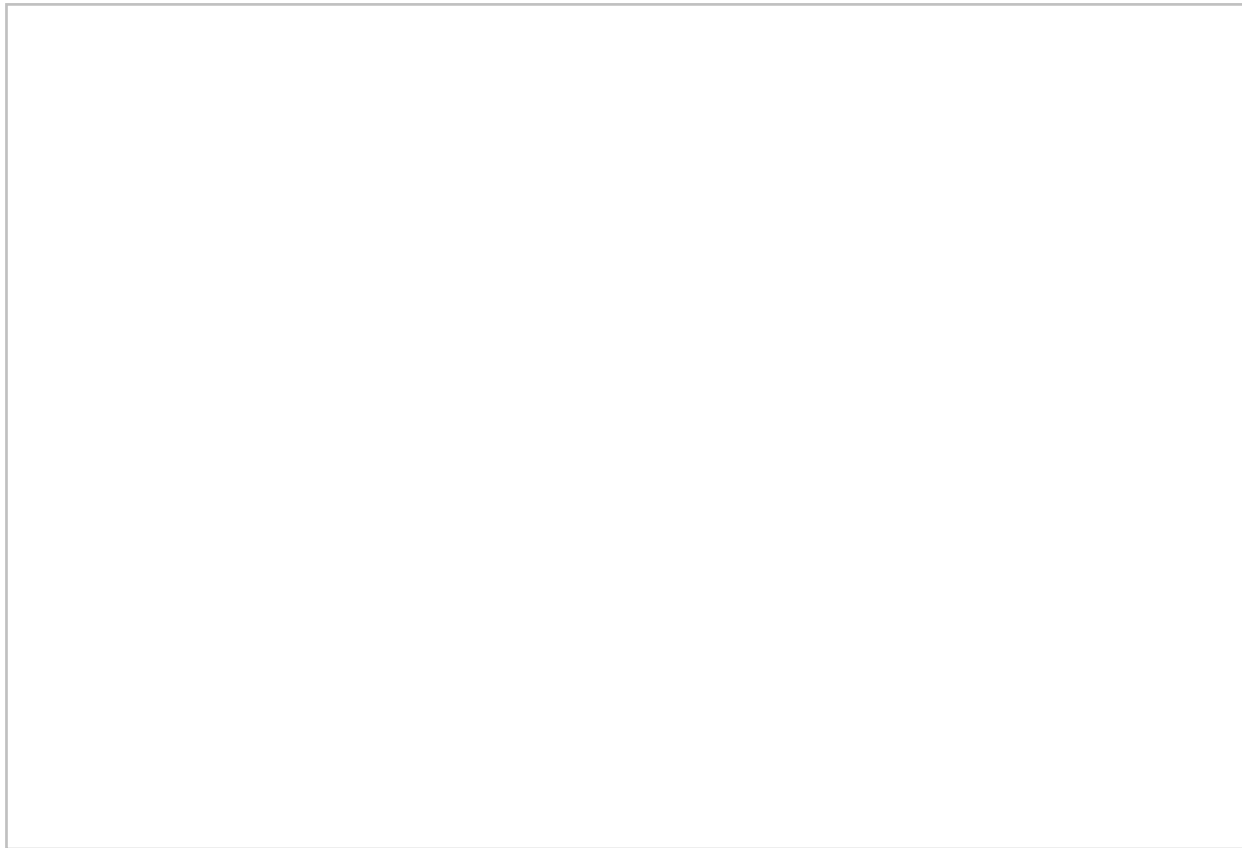
We also discussed the extent of impacted ground water and agreed that the current monitoring well network appears to be satisfactory.

Thanks again for discussing this with me.

Kenneth Shimko, PG
Meridian Environmental Consulting, LLC
2711 North Elco Road
Fall Creek, Wisconsin 54742
(715)579-0723 (cell)
Email: kshimko.meridianenv@gmail.com

From: Saari, Christopher A - DNR <Christopher.Saari@wisconsin.gov>
Sent: Tuesday, July 11, 2023 12:51 PM
To: Ken Shimko <kshimko.meridianenv@gmail.com>; Hunt, John T - DNR <JohnT.Hunt@wisconsin.gov>
Subject: RE: 02-34-577387 Wagner Oil

[Chemicals: Perfluoroalkyl and Polyfluoroalkyl \(PFAS\) Substances | Wisconsin Department of Health Services](#)



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Chris Saari

Phone: (715) 208-4004

Please note that my contact number has changed. You should use this phone number to reach me going forward.

Christopher.Saari@Wisconsin.gov

From: Ken Shimko <kshimko.meridianenv@gmail.com>

Sent: Tuesday, July 11, 2023 11:43 AM

To: Saari, Christopher A - DNR <Christopher.Saari@wisconsin.gov>; Hunt, John T - DNR <JohnT.Hunt@wisconsin.gov>

Subject: 02-34-577387 Wagner Oil

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John and Chris.

Here are a bunch of figures for reference (from Closure Packet). See also PFAS Table (DRAFT) and DNR letter of March 10, 2022.

Talk with you at 12:30.

Thanks!

Kenneth Shimko, PG
Meridian Environmental Consulting, LLC
2711 North Elco Road
Fall Creek, Wisconsin 54742
(715)579-0723 (cell)
Email: kshimko.meridianenv@gmail.com

From: Ken Shimko <kshimko.meridianenv@gmail.com>

Sent: Friday, June 23, 2023 12:01 PM
To: christopher.saari@wisconsin.gov
Cc: Hunt, John T - DNR <JohnT.Hunt@wisconsin.gov>
Subject: 02-34-577387 Wagner Oil

Hi Chris.

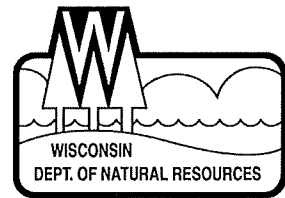
C: John Hunt

I would like to call you to discuss this project. Please see attachments for reference.

Can we make a phone appointment?

Thanks!

Kenneth Shimko, PG
Meridian Environmental Consulting, LLC
2711 North Elco Road
Fall Creek, Wisconsin 54742
(715)579-0723 (cell)
Email: kshimko.meridianenv@gmail.com



March 10, 2022

MR JOHN WAGNER
WAGNER OIL CO
709 S SUPERIOR AVE
ANTIGO WI 54409

SUBJECT: Case Closure under Wis. Admin. Code ch. NR 726 Not Recommended
Wagner Oil Spill STH 45
Highway 45, Aniwa, Wisconsin
DNR BRRTS Activity #02-34-577387

Dear Mr. Wagner:

On March 3, 2022, the Department of Natural Resources (DNR) reviewed the closure request for the case identified above. The DNR reviews environmental remediation cases for compliance with applicable laws, including Wis. Stat. ch. 292 and Wis. Admin. Code chs. NR 700-754, and whether any further threat to public health, safety or welfare or the environment exists at the site or facility, per Wis. Admin. Code § NR 726.13 (2) (b). As discussed with your consultant, Ken Shimko of Meridian Environmental Consulting, LLC, on March 4, 2022, case closure is not recommended because additional legal requirements must be met. The purpose of this letter is to inform you of the remaining requirements for obtaining closure. We request that within 60 days of this letter, you provide us with the information requested or your written response regarding the necessary work and a schedule for completion of this work.

Additional Requirements Needed for Case Closure Under Wis. Admin. Code ch. NR 726

As noted above, additional work is necessary to meet the requirements for case closure because insufficient groundwater monitoring data has been collected from the site to determine long-term concentration trends. This comment is specific to per- and polyfluoroalkyl compounds, commonly referred to as PFAS.

Need to Conduct Additional Groundwater Monitoring

Additional groundwater monitoring is needed to establish compliance with the closure criteria of Wis. Admin. Code § NR 726.05 (6). The DNR is requesting a minimum of six (6) additional quarterly rounds of groundwater monitoring for PFAS compounds only. Your consultant should then evaluate concentration trends based on this additional data.

Schedule

Within 60 days of the date of this letter, respond in writing with a schedule of your plans to meet these requirements.

Until requirements are met, your site will remain “open”, and you are required to submit semi-annual progress reports, per Wis. Admin. Code § NR 700.11. You are also responsible for any operation and maintenance activities required under Wis. Admin. Code § NR 724.13. Once the additional work has been completed, documentation should be submitted to the DNR to demonstrate that the applicable requirements have been met, per the timelines above.

Case closure can be reconsidered by the DNR once documentation of the additional monitoring has been received.

Conclusion

If you have any questions regarding the information in this letter or would like to schedule a meeting to discuss this case, please contact the DNR project manager, John T. Hunt at (715) 701-9383 or by email at Johnt.Hunt@Wisconsin.gov. For more information on the closure reconsideration process, please see DNR publication, RR-102, "Wis. Admin. Code ch. NR 726 Case Closure Reconsideration Process" by visiting dnr.wi.gov, search: RR-102, for more information. You can also contact me at (715) 208-4004 or by email at Christopher.Saari@Wisconsin.gov.

The DNR appreciates your efforts to restore the environment at this site.

Sincerely,



Christopher A. Saari
Northern Region Team Supervisor
Remediation and Redevelopment Program

cc: Ken Shimko – Meridian Environmental Consulting, LLC (via email)
John Hunt – DNR Peshtigo (via email)

Parameter	MW-1				MW-2				MW-3				
	Sample Date	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)		140	68	42	73	42	32	26	28	16	ND	ND	3.8
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)		980	310	160	620	630	910	530 D	770	500	18	8.9	190
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)		4.1	1.8	ND	2.9	2.5	5.6	2.7	4.4	2.0	ND	ND	1.2
Hexafluoropropylene oxide dimer acid (GenX)(aka HFPO-DA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)(aka DONA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)(aka NEtFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)(aka NEtFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)(aka NMeFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-butanefulfonic acid (PFBS)		ND	ND	.7 J	.73	ND	ND	.78 J	.52	ND	0.52	ND	.51
Perfluoro-1-decanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)(aka PFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)(aka PFDoS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)		240	140	120	200	88	120	190	100	65	40	5.3	44
Perfluoro-n-decanoic acid (PFDA)		4.7	5.6	6.2	4.6	0.97	1.1	1.5 J	1.5	ND	0.92	ND	ND
Perfluoro-n-dodecanoic acid (PFDoA)(aka PFDOA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)		680	440	320	590	130	280	260	150	94	68	12	72
Perfluoro-n-hexadecanoic acid (PFHxDA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
Perfluoro-n-hexanoic acid (PFHxA)		790	430	320 D	760	220	460	510 D	300	160	71	14	100
Perfluoro-n-nonanoic acid (PFNA)		110	140	120	95	13	22	31	19	14	7.9	2.5	6.9
Perfluoro-n-octadecanoic acid (PFODA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
Perfluoro-n-octanoic acid (PFOA)		580	370	310 D	430	75	130	120	89	67	32	8.4	43
Perfluoro-n-pentanoic acid (PFPeA)		1100	760	550	980	410	780	780 D	460	240	130	26	160
Perfluoro-n-tetradecanoic acid (PFTeDA)aka PFTDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)(aka PFUnDA)		ND	ND	ND	.56J	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)		5.4	2.6	2.2	4.5	3.8	2.3	1.8	1.9	2.4	ND	ND	1.7

ng/l - nanogram per liter

EB - equipment blank (lab-supplied PFAS-free water poured into bailer, twine, gloves and then poured into sample bottle and analyzed)

FB - field blank (bottle of PFAS-free water supplied by lab left open on truck tailgate during sampling)

TB - Trip Blank (bottle of PFAS-free water supplied by lab - unopened from/to lab)

430 - BOLD - Concentration above Method Detection Limit (see laboratory report for MDL)

ND - Concentration below Method Detection Limit (see laboratory report for MDL)

D - result obtained from analysis of diluted sample

I - Interference present

J - Estimated Value

* This parameter is no longer part of analytical method

Parameter	MW-4				MW-5				MW-6				
	Sample Date	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND	ND	ND	3.9	ND	1.2 IJ	3.5
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)		ND	ND	1.1 J	4.2	ND	1.7	.99 J	ND	13	ND	3.3	16
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (GenX)(aka HFPO-DA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)(aka DONA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)(aka NEtFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)(aka NEtFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)(aka NMeFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-butanefulfonic acid (PFBS)		ND	ND	ND	ND	ND	0.90	2.4	.69	ND	ND	.68 J	.9
Perfluoro-1-decanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)(aka PFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)(aka PFDoS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)		ND	ND	ND	.57	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)		160	27	30	150	1.9	1.1	2.5	1.4	30	51	120	160
Perfluoro-n-decanoic acid (PFDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-dodecanoic acid (PFDoA)(aka PFDOA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)		120	34	44	120	ND	ND	.55 J	ND	68	230	200	270
Perfluoro-n-hexadecanoic acid (PFHxDA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
Perfluoro-n-hexanoic acid (PFHxA)		360	72	72	300	ND	ND	.81 J	ND	79	220	310 D	320
Perfluoro-n-nonanoic acid (PFNA)		ND	ND	ND	1.5	ND	ND	ND	ND	15	25	19	37
Perfluoro-n-octadecanoic acid (PFODA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
Perfluoro-n-octanoic acid (PFOA)		17	6.9	13	31	ND	ND	ND	ND	55	140	120	150
Perfluoro-n-pentanoic acid (PFPeA)		700	120	110	560	ND	ND	1.5 J	ND	130	220	460 D	600
Perfluoro-n-tetradecanoic acid (PFTeDA)aka PFTDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)(aka PFUnDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)		ND	ND	ND	1.8	ND	ND	ND	ND	1.9	ND	1.7 J	1.8

ng/l - nanogram per liter

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D - result obtained from analysis of diluted sample

I - Interference present

J - Estimated Value

* This parameter is no longer part of analytical method

Parameter	MW-7A				MW-7B				MW-8A				
	Sample Date	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND	ND	.75	1.9	ND	ND	4.4
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)		3.1	ND	ND	1.4	430	660	630 D	52	41	25	14	56
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)		ND	ND	ND	2.3	2.0	3.8	3.4 J	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (GenX)(aka HFPO-DA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)(aka DONA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)(aka NEtFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)(aka NEtFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)(aka NMeFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)		ND	ND	ND	ND	ND	ND	ND	.54	ND	ND	ND	ND
Perfluoro-1-butanefulfonic acid (PFBS)		ND	ND	ND	ND	ND	0.78	ND	.78	ND	0.49	ND	ND
Perfluoro-1-decanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)(aka PFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)(aka PFDoS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)		ND	9.3	2.3	3.5	75	86	99	78	81	120	64	72
Perfluoro-n-decanoic acid (PFDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-dodecanoic acid (PFDoA)(aka PFDOA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)		ND	1.8	.72 J	1.6	90	100	110	82	79	110	69	84
Perfluoro-n-hexadecanoic acid (PFHxDA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
Perfluoro-n-hexanoic acid (PFHxA)		ND	21	3.5	4.6	220	280	250	170	210	300	120	130
Perfluoro-n-nonanoic acid (PFNA)		ND	ND	ND	ND	1.1	2.5	6.2	4.8	1.9	1.3	ND	7.1
Perfluoro-n-octadecanoic acid (PFODA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	ND	NA	NA
Perfluoro-n-octanoic acid (PFOA)		ND	ND	ND	ND	28	51	71	43	34	33	22	50
Perfluoro-n-pentanoic acid (PFPeA)		ND	32	4.9	5.6	350	410	350	300	380	540	230 D	300
Perfluoro-n-tetradecanoic acid (PFTeDA)aka PFTDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)(aka PFUnDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)		ND	ND	ND	ND	ND	ND	2.3 J	1.9	ND	ND	ND	ND

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J - Estimated Value

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Parameter	MW-8B				MW-9P				Pond			
	Sample Date	1/5/21	4/21/2021	4/26/2022	10/27/2022	1/5/21	4/21/2021	4/26/2022	10/27/2022	4/21/2021	4/26/2022	10/27/2022
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)		ND	ND	.75 IJ	.56	ND	ND	ND	ND	29	26	9
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)		11	17	28	15	ND	2.3	ND	1	140	68	62
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	NA	NA
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	.58 J	ND
Hexafluoropropylene oxide dimer acid (GenX)(aka HFPO-DA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)(aka DONA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)(aka NEtFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)(aka NEtFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)(aka NMeFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-butanefulfonic acid (PFBS)		ND	ND	ND	ND	ND	ND	ND	ND	0.52	.48 J	ND
Perfluoro-1-decanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)(aka PFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDOS)(aka PFDoS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)		7.9	10	17	11	ND	0.68	ND	ND	79	69	200
Perfluoro-n-decanoic acid (PFDA)		ND	ND	ND	ND	ND	ND	ND	ND	1.7	1.9 J	2.2
Perfluoro-n-dodecanoic acid (PFDoA)(aka PFDOA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)		7.1	12	27	16	ND	ND	ND	ND	170	100	420
Perfluoro-n-hexadecanoic acid (PFHxDA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	NA	NA
Perfluoro-n-hexanoic acid (PFHxA)		19	29	46	29	1.3	ND	ND	ND	210	110	600
Perfluoro-n-nonanoic acid (PFNA)		ND	0.44	2.4	1.1	ND	ND	ND	ND	37	28	51
Perfluoro-n-octadecanoic acid (PFODA)*		ND	ND	NA	NA	ND	ND	NA	NA	ND	NA	NA
Perfluoro-n-octanoic acid (PFOA)		3.0	5.4	17	8.5	ND	ND	ND	ND	200	99	330
Perfluoro-n-pentanoic acid (PFPeA)		35	52	75	48	2.2	0.61	ND	ND	360	210 D	890
Perfluoro-n-tetradecanoic acid (PFTeDA)aka PFTDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-tridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUdA)(aka PFUnDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	.8

ng/l - nanogram per liter

EB - equipment blank (lab-supplied PFAS-free water poured into bailer, twine, gloves and then pou

FB - field blank (bottle of PFAS-free water supplied by lab left open on truck tailgate during sampli

TB - Trip Blank (bottle of PFAS-free water supplied by lab - unopened from/to lab)

430 - BOLD - Concentration above Method Detection Limit (see laboratory report for MDL)

ND - Concentration below Method Detection Limit (see laboratory report for MDL)

D - result obtained from analysis of diluted sample

I - Interference present

J - Estimated Value

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Parameter	EB			FB			TB			
	Sample Date	1/5/21	4/21/2021	4/26/2022	1/5/21	4/21/2021	4/26/2022	1/5/21	4/21/2021	4/26/2022
9-chlorohexadecafluoro-3-oxanone-1-sulfonic acid (9Cl-PF3ONS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
11-chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11Cl-PF3OUdS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorodecane sulfonic acid (8:2 FTS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
1H, 1H, 2H, 2H-perfluorooctane sulfonic acid (6:2 FTS)		ND	ND	ND	430	ND	ND	ND	ND	ND
1H,1H,2H,2H-perfluorododecane sulfonic acid (10:2 FTS)*		ND	ND	NA	ND	ND	NA	ND	ND	NA
1H,1H,2H,2H-perfluorohexane sulfonic acid (4:2 FTS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Hexafluoropropylene oxide dimer acid (GenX)(aka HFPO-DA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
4,8-dioxa-3H-perfluorononanoic acid (ADONA)(aka DONA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamide (EtFOSA)(aka NEtFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-ethylperfluoro-1-octanesulfonamidoacetic acid (EtFOSAA)(aka NEtFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-ethylperfluoro-1-octanesulfonamido-ethanol (EtFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamide (MeFOSA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
N-methylperfluoro-1-octanesulfonamidoacetic acid (MeFOSAA)(aka NMeFOSAA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
2-N-methylperfluoro-1-octanesulfonamido-ethanol (MeFOSE)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-butanefulfonic acid (PFBS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-decanesulfonic acid (PFDS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-heptanesulfonic acid (PFHpS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-nonanesulfonic acid (PFNS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-octanesulfonamide (PFOSA)(aka PFOSAm)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-1-pentanesulfonic acid (PFPeS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorododecanesulfonic acid (PFDoS)(aka PFDoS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorohexanesulfonic acid (PFHxS)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-butanoic acid (PFBA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-decanoic acid (PFDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-dodecanoic acid (PFDoA)(aka PFDoA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-heptanoic acid (PFHpA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-hexadecanoic acid (PFHxDA)*		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-hexanoic acid (PFHxA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-nonanoic acid (PFNA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-octadecanoic acid (PFODA)*		ND	ND	NA	ND	ND	NA	ND	ND	NA
Perfluoro-n-octanoic acid (PFOA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-pentanoic acid (PFPeA)		ND	ND	ND	0.99	ND	ND	ND	ND	ND
Perfluoro-n-tetradecanoic acid (PFTeDA)aka PFTDA)		ND	ND	NA	ND	ND	NA	ND	ND	NA
Perfluoro-n-tridecanoic acid (PFTrDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluoro-n-undecanoic acid (PFUnDA)(aka PFUnDA)		ND	ND	ND	ND	ND	ND	ND	ND	ND
Perfluorooctanesulfonic acid (PFOS)		ND	ND	ND	ND	ND	ND	ND	ND	ND

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