



MPART Citizens

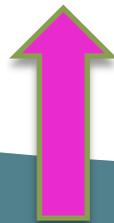
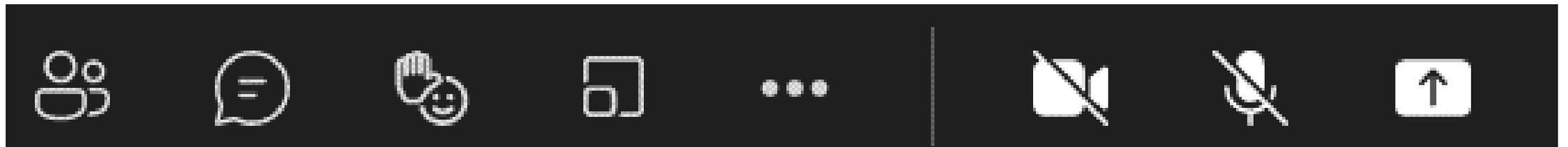
Advisory Workgroup

October 10, 2023

MPART

Housekeeping

- Please keep your mic/phone muted unless speaking
- Only use the “raise hand” and/or “chat” function for questions or to request to speak
- Cameras are optional
- This meeting is being recorded



Agenda

- Roll Call – Community Updates
 - New Member – Angela Yuan
- Welcome – Phil Roos, EGLE Director
- Pace Lab Presentation
- Subcommittee Updates
- Discussion/Concerns
 - Who and How Communities are Warned
- MPART Updates
- Future Meeting / Topics



Roll Call and local updates/events/ sharing from communities



Welcome – Phil Roos, EGLE Director



PEOPLE ADVANCING SCIENCE

PFAS Test Methods Update

Paul R. Jackson
Program Manager, Environmental Compliance &
Emerging Contaminants



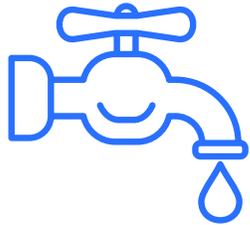
THE PFAS PUZZLE

- Lack of federal regulation
- Non-uniformity of state regulations or test methods
- Lack of environmental test methods
- Variety of compound lists
- Thousands of PFAS compounds
- Low DLs vs. contaminated matrices
- Ultra restrictive field sampling guidance

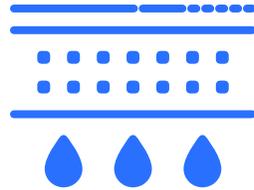


MATRICES

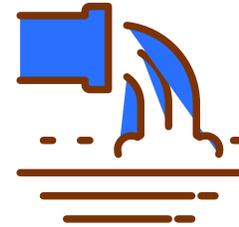
CHOOSING THE RIGHT TEST METHODS



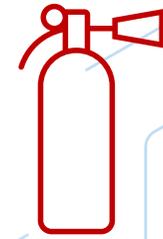
Drinking water



Groundwater, surface water, & leachate



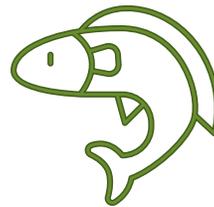
Wastewater, sludge & biosolids



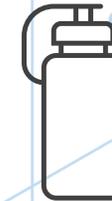
AFFF - concentrate & diluted



Soil, sediment, solid waste & other solids



Biota - plant & animal tissue

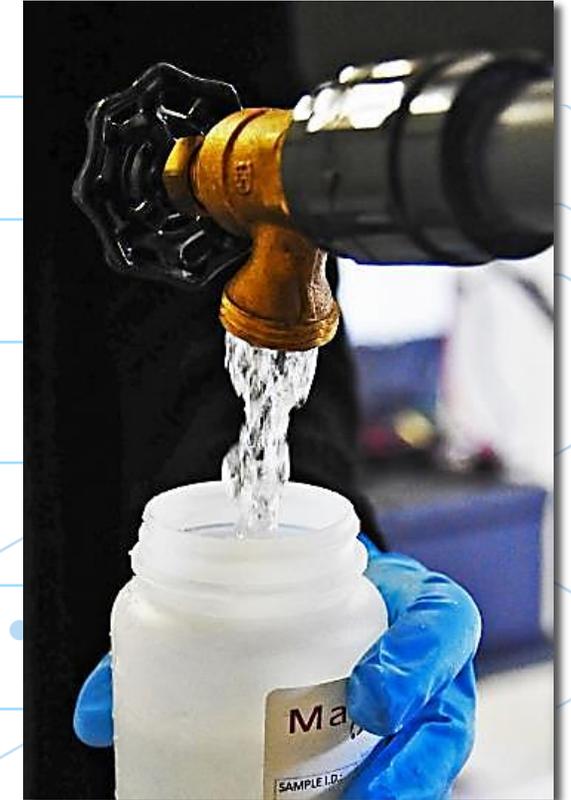


Consumer & Industrial Products

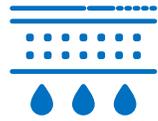
TEST METHODS



METHOD	EPA 537.1	EPA 533
MATRIX	Drinking Water	Drinking Water
COMPOUNDS	18	25
HOLDING TIMES, DAYS	14/28	28/28
EXTRACTION	Solid Phase (SPE)	Solid Phase (SPE)
QUANTIFICATION	Internal Standard (IS)	Isotope Dilution (ID)
NOTES		Developed for UCMR 5 and additional PFAS. Does not replace 537.1.



TEST METHODS



NON-POTABLE
WATER &
LEACHATE

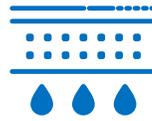


SOIL & OTHER
SOLIDS



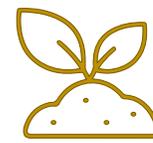
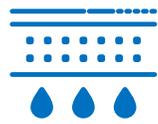
BIOTA – PLANT &
ANIMAL TISSUE

METHOD	PFAS by Isotope Dilution/"537M"/ DOD QSM B-15	EPA Draft Method 1633/ DOD QSM B-24
MATRICES	Non-potable water, leachate, solids, biota	Non-potable water, leachate, solids, biota
COMPOUNDS	40	40
HOLDING TIMES, DAYS	28/28	28/28 or 90
EXTRACTION	Solid Phase (SPE)	Solid Phase (SPE)
QUANTIFICATION	Isotope Dilution (ID)	Isotope Dilution (ID)
NOTES	Labs required to modify 537 or other methods as 537/533 are prescriptive DW methods	Currently in process to become final method



EPA Draft Method 1633

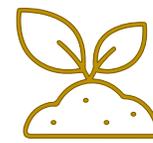
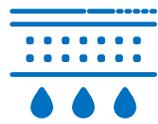
- Valid for 8 matrices - wastewater, surface water, groundwater, soils, biosolids, landfill leachate, biota, and sediment
- Joint EPA/DOD development
- Method in process to become final by end of 2023
- EPA has been actively encouraging use of method in its draft form, currently Revision 4
- Final method expected “end of year”
- This method will eventually eliminate the use of “modified” method
- There are several important differences between the “modified” method and 1633



EPA Draft Method 1633 Features

- More sample volume required for water – 2 x 500 mL containers and 1 x 125 mL container
- Additional QA/QC (Bile salt resolution, new branched isomers, duplicate LCS)
- More aggressive solid sample extraction than “modified” method SOPs - three-fold solvent extraction (Methanolic NH₄OH) – shake/centrifuge/decant; dGCB cleanup
- More costly than “modified” method
- Prep restrictions:
 - Water TSS >100 mg/L requires extra measures
 - Extract dilutions >10X require re-extraction



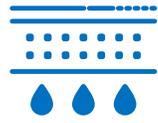


EPA Draft Method 1633 – Lower Detection Limits

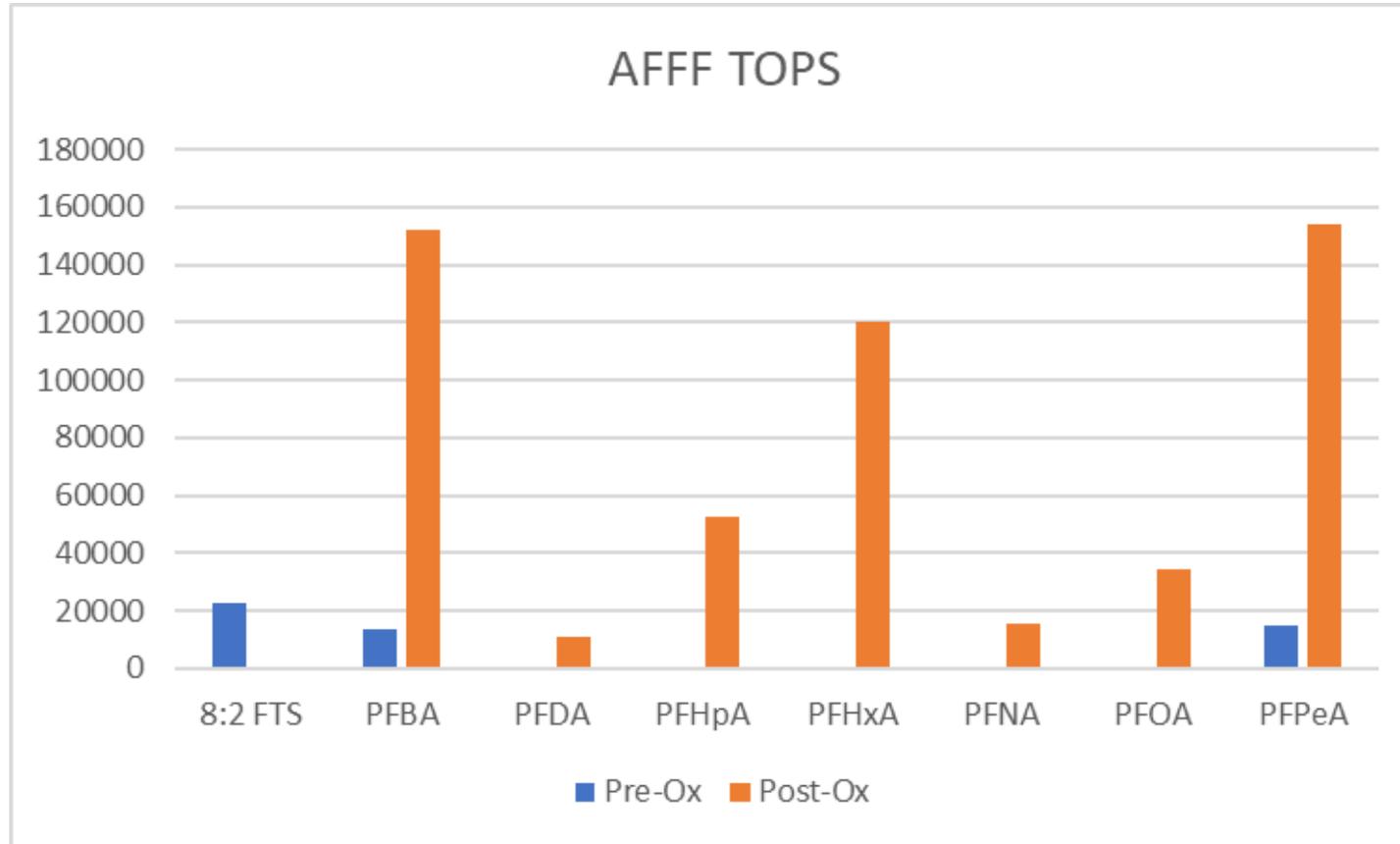
Acronym	Water, ng/L		Solids, µg/kg	
	LOQ	DL	LOQ	DL
PFBA	4	0.55	0.8	0.14
PFPeA	2	0.29	0.4	0.06
PFHxA	1	0.12	0.2	0.08
PFHpA	1	0.16	0.2	0.03
PFOA	1	0.16	0.2	0.04
PFNA	1	0.17	0.2	0.04
PFDA	1	0.18	0.2	0.04
PFUnA	1	0.18	0.2	0.03
PFDoA	1	0.17	0.2	0.04
PFTTrDA	1	0.20	0.2	0.03
PFTeDA	1	0.17	0.2	0.03
PFBS	1	0.10	0.2	0.03
PFPeS	1	0.12	0.2	0.03
PFHxS	1	0.17	0.2	0.03
PFHpS	1	0.11	0.2	0.02
PFOS	1	0.26	0.2	0.05
PFNS	1	0.22	0.2	0.04
PFDS	1	0.15	0.2	0.03
PFDoS	1	0.34	0.2	0.03
PFOSA	1	0.15	0.2	0.05

Acronym	Water, ng/L		Solids, µg/kg	
	LOQ	DL	LOQ	DL
NEtFOSA	1	0.14	0.2	0.06
NMeFOSA	1	0.15	0.2	0.03
NEtFOSE	10	2.36	2.0	0.44
NMeFOSE	10	1.52	2.0	0.40
NEtFOSAA	1	0.28	0.2	0.03
NMeFOSAA	1	0.19	0.2	0.05
4:2 FTS	4	0.63	0.8	0.15
6:2 FTS	4	0.95	0.8	0.14
8:2 FTS	4	0.54	0.8	0.13
PFMPA	2	0.32	0.4	0.04
PFMBA	2	0.30	0.4	0.04
HFPO-DA	4	0.89	0.8	0.10
NFDHA	2	0.49	0.4	0.06
ADONA	4	0.57	0.8	0.10
PFEESA	2	0.48	0.4	0.05
9Cl-PF3ONS	4	0.73	0.8	0.08
11Cl-PF3OUdS	4	0.94	0.8	0.11
3:3FTCA	5	1.48	1.0	0.21
5:3FTCA	25	1.88	5.0	1.11
7:3FTCA	25	2.56	5.0	1.00

Note: Detection limits for Leachate are 5x and Biosolids are 10x

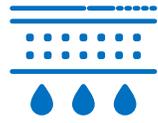


TOP Assay - Pre-Oxidation and Post-Oxidation Comparison

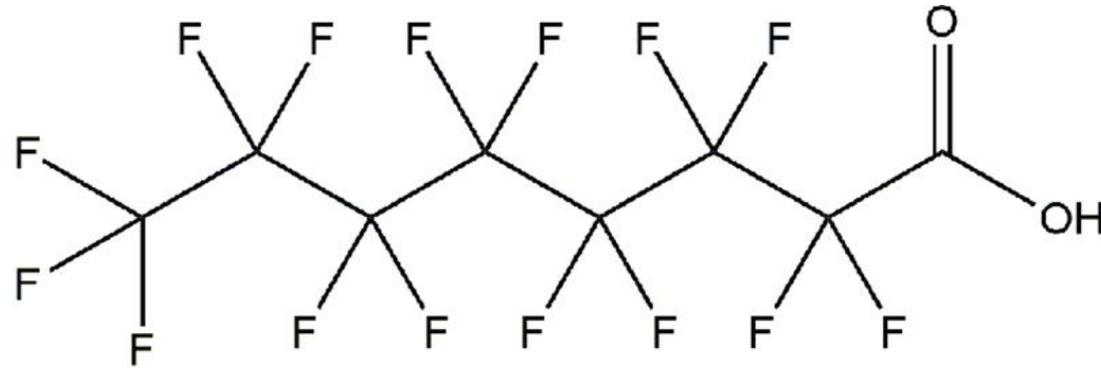


	Pre-Ox	Post-Ox
8:2 FTS	22,300	ND
PFBA	13,700	152,000
PFDA	ND	10,900
PFHpA	ND	52,600
PFHxA	ND	120,000
PFNA	ND	15,500
PFOA	ND	34,500
PFPeA	14,900	154,000
Total	50,900	539,500

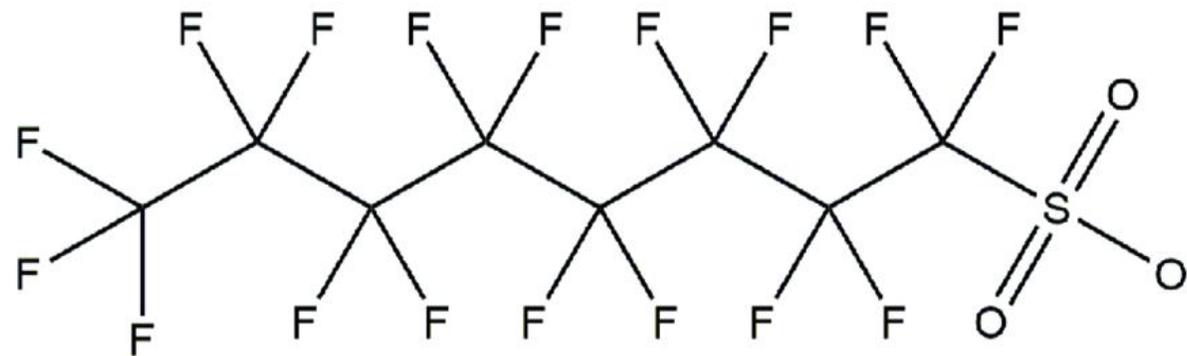
All units of measure are expressed in ppt/ng/L



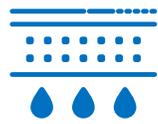
Organic Fluorine...TOF, AOF, and EOF



Perfluorooctanoic acid (PFOA)



Perfluorooctane sulfonate (PFOS)



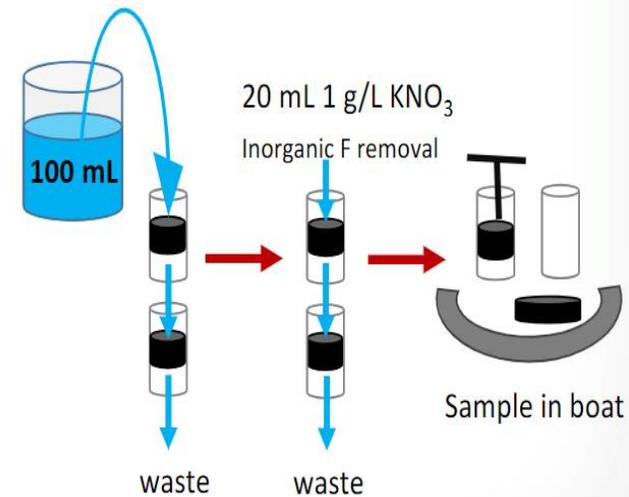
Adsorbable Organic Fluorine (AOF) EPA Draft Method 1621



Approach – AOF/CIC

How:

- Screening method adsorbs contaminants onto granular activated carbon, removal of inorganic fluoride with nitrate solution, followed by combustion of the carbon
- Organofluorine compounds are converted to fluoride in the combustion process and measured by ion chromatography



Method Detection Limit: 1.4 - 2.2 µg/L

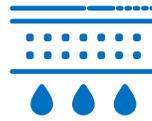


Image: Pittsboro, NC GAC system

EPA 8327/ASTM D8421

- Detection Limits of 10 ng/L for aqueous, 0.1 ug/kg for soil
- Lower cost
- Faster lab turnaround time (TAT)
- 44 compound list
- 3 x 5 mL water, 50 g soil sample volume
- Useful for wide-scale site delineation and remediation, emergency response, pilot studies, remediation and destruction technology studies



PFAS in CONSUMER PRODUCTS – ASTM F15.81

- Numerous regulatory agencies are moving to regulate “intentionally added” PFAS
- BROAD definition of “PFAS”
- Many polymers that are not listed in any current test method are PFAS
- ASTM has developed F15.81 to answer most of the questions
- Going through subcommittee review now, timeline to be published possibly by the end of 2023
- Total Organic Fluorine or Total Fluorine are being used in conjunction with compound specific methods **following cryomill sample preparation**



PEOPLE ADVANCING SCIENCE

QUESTIONS?

THANK YOU

Additional resources:

- PFAS.com
- PACELABS.COM | Search: PFAS

Paul R. Jackson

**Program Manager, Emerging Contaminants
& Environmental Compliance**

- **Paul.Jackson@pacelabs.com**
- **813.731.1595**



CAWG Subcommittee's



Membership Subcommittee



Website Review Subcommittee



Preventative Measures Subcommittee

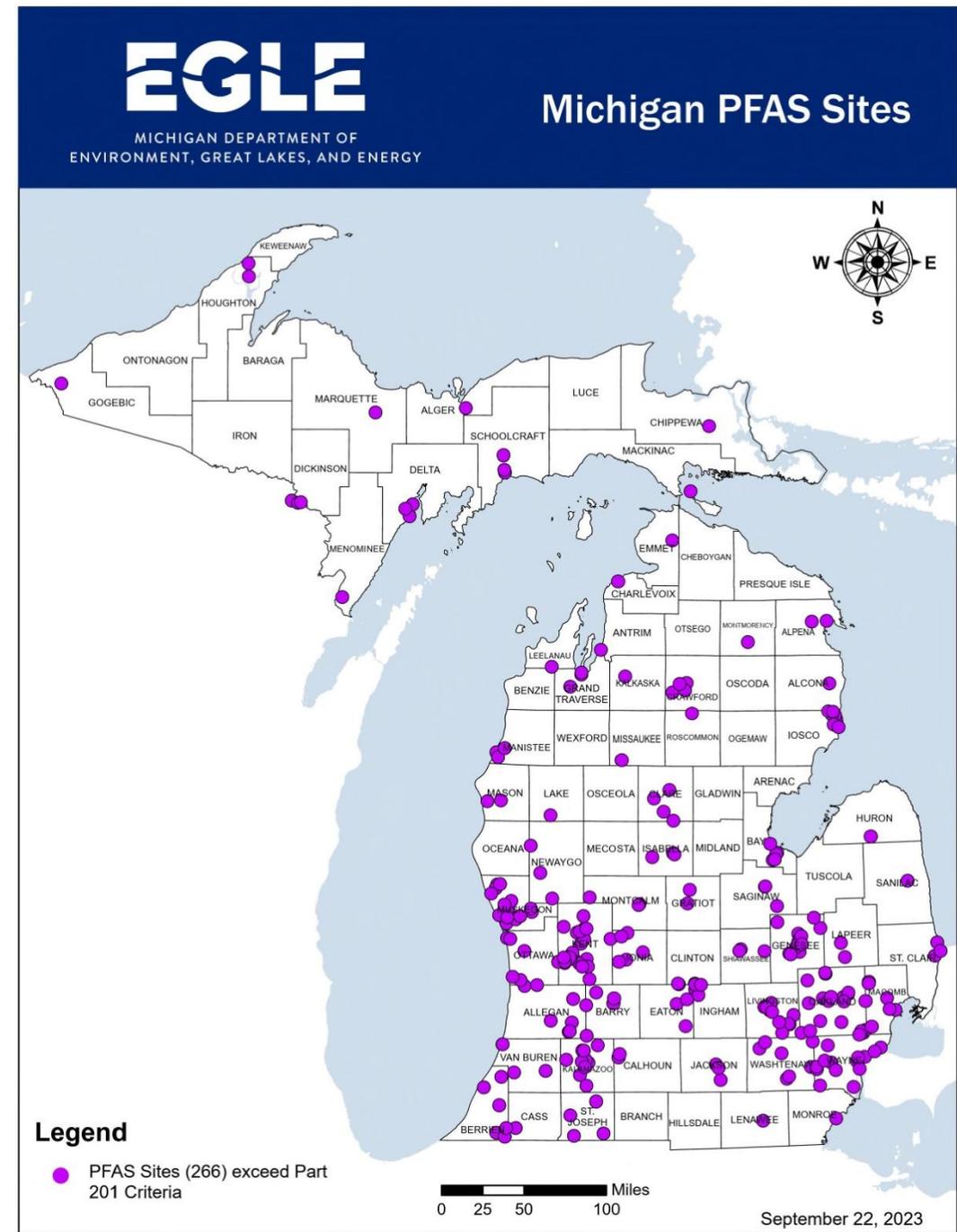


Engaging the Public Subcommittee

MPART Update

New MPART Sites / Areas of Interest

- Former Fruitland Township Landfill
Fruitland Township, Muskegon County



Upcoming Town Halls

- October 11th, 6 - 7:30pm
 - Egelston Township Public Meeting, Muskegon County
- October 30th, 6 - 8pm
 - North 34th Street Public Meeting, Kalamazoo County
- November 2nd, 6 - 7:30pm
 - Pellston Community Open House, Emmet County

Registration Open

Join the Michigan Department of Environment, Great Lakes, and Energy (EGLE) for the annual *virtual* Great Lakes PFAS Summit December 5 – 7, 2023.



Great Lakes

VIRTUAL

PFAS SUMMIT

Future Topics?

Next Meeting:

November 14, 2023



MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

www.Michigan.gov/PfasResponse



MICHIGAN DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

