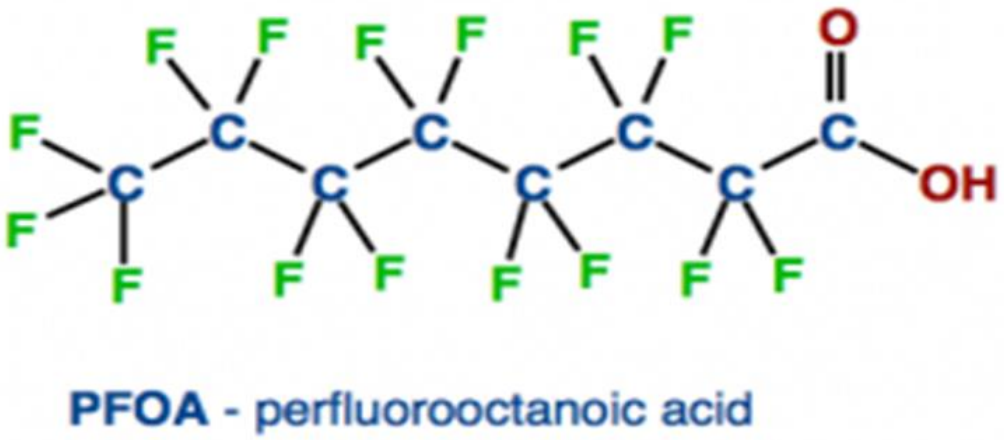
MI Taking Action on PFAS

Michigan Municipal Executives

2019 Winter Institute

February 6, 2019

Per-and polyfluoroalkyl substances (PFAS)



PFOA - perfluorooctanoic acid

- **Strong carbon-fluorine bonds**
- Surfactants
- Hydrophobic(repels water) and oleophobic (repels oil, fat, grease)
- 5,000+ compounds

PFAS Uses

Aerospace

Apparel

Building and Construction

Chemicals and Pharmaceuticals

Electronics

Oil & Gas

Energy

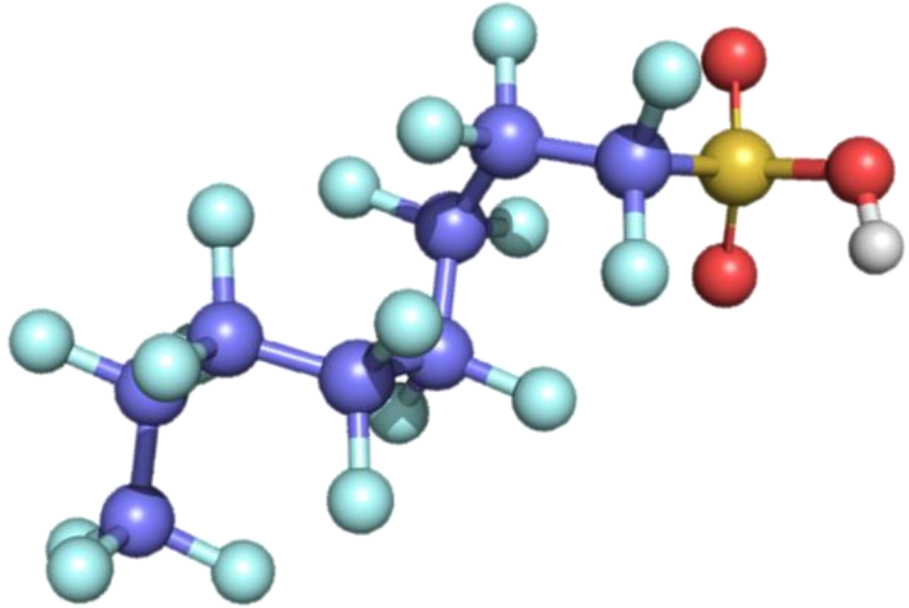
Healthcare and Hospitals

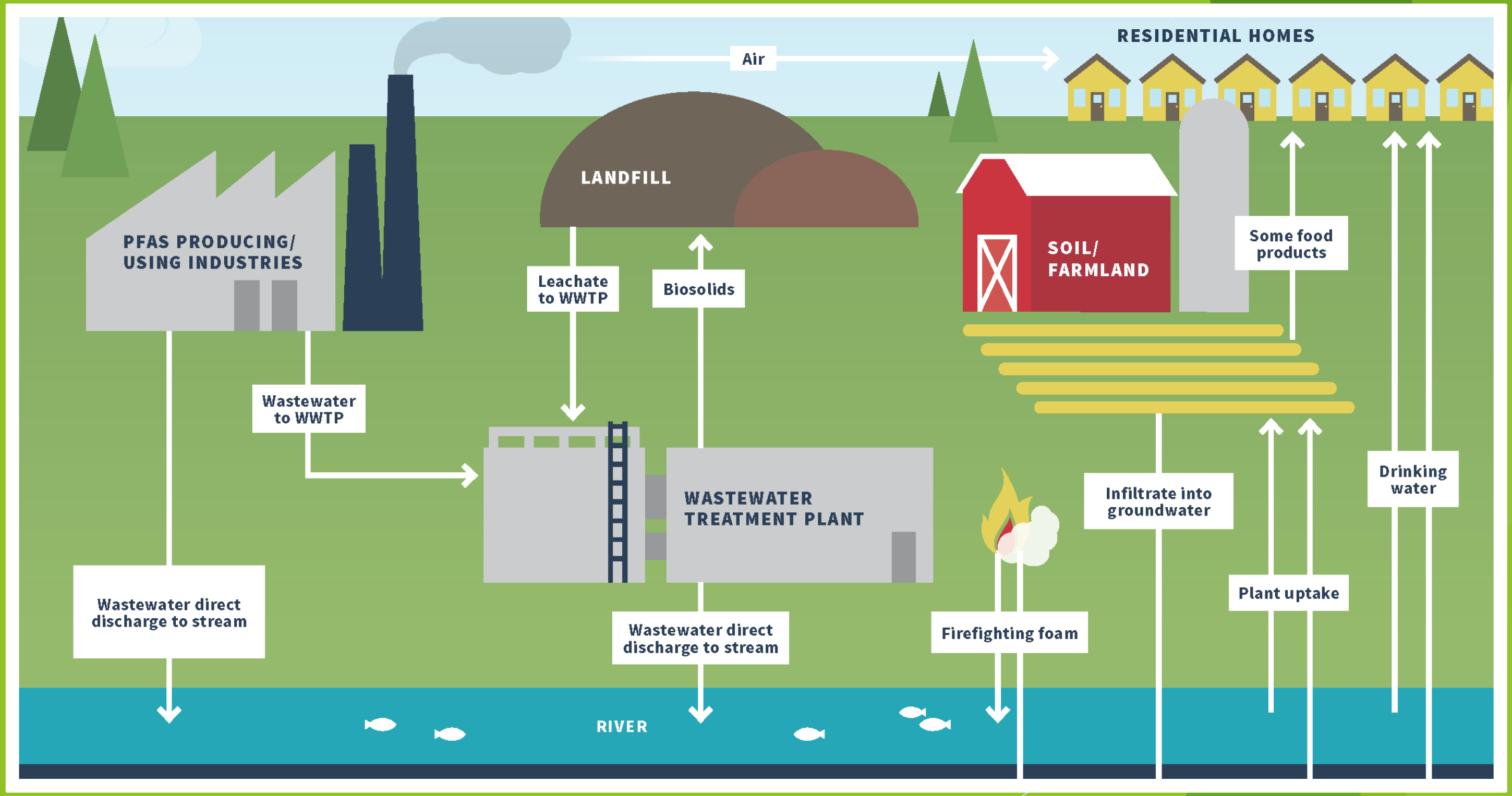
Aqueous Film Forming Foam

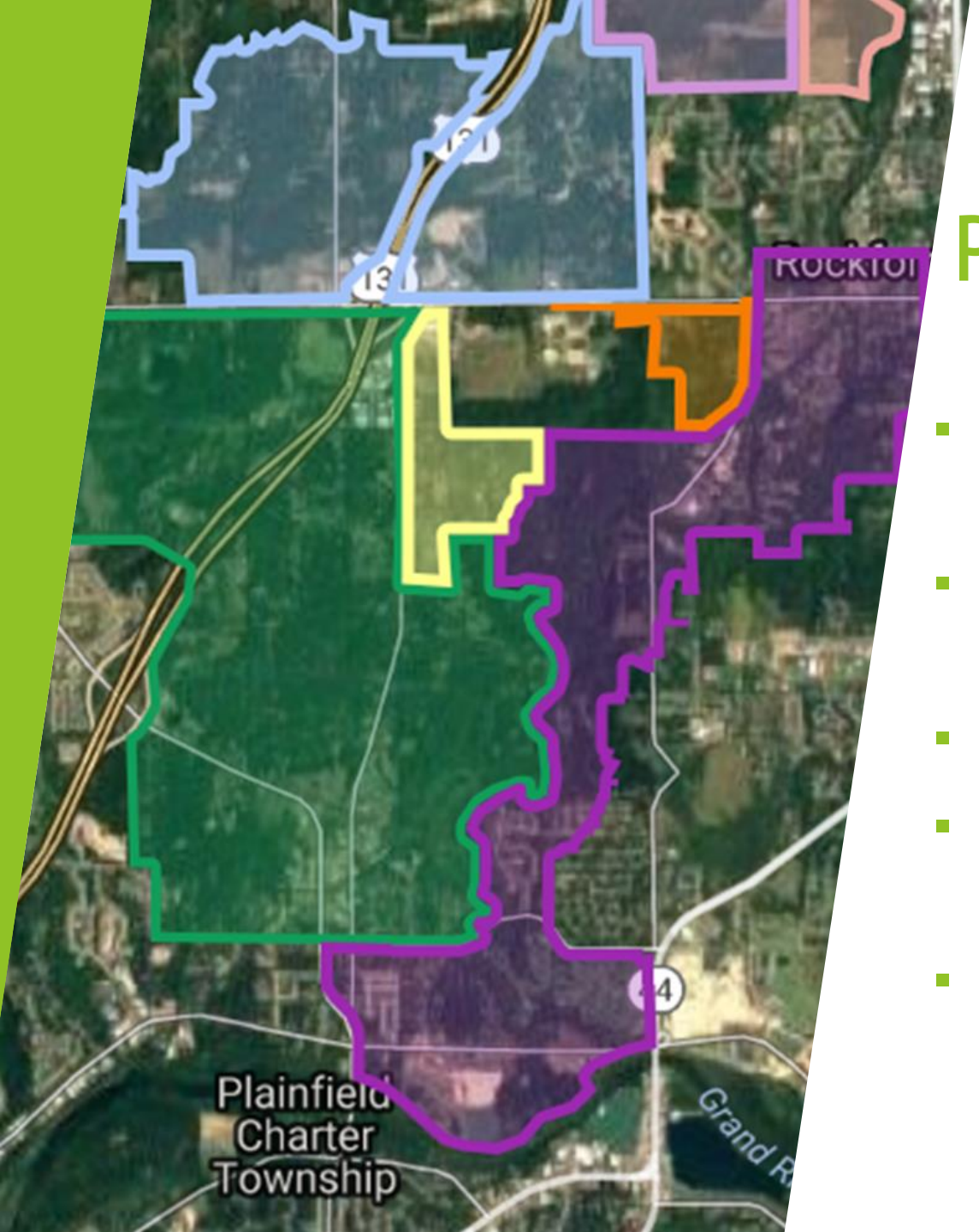
Semiconductors

Why the Concern?

- Pervasive
- Persistent
- Bio accumulative
- Associated with adverse health effects
- Scarcity of information in scientific literature
- Lack of sufficient standards




RESIDENTIAL HOMES
Air
LANDFILL
PFAS PRODUCING/
USING INDUSTRIES
SOIL/
FARMLAND
Some food
products
Leachate
to WWTP
Biosolids
Wastewater
to WWTP
WASTEWATER
TREATMENT PLANT
Drinking
water
Infiltrate into
groundwater
Plant uptake
Wastewater direct
discharge to stream
Wastewater direct
discharge to stream
Firefighting foam
RIVER

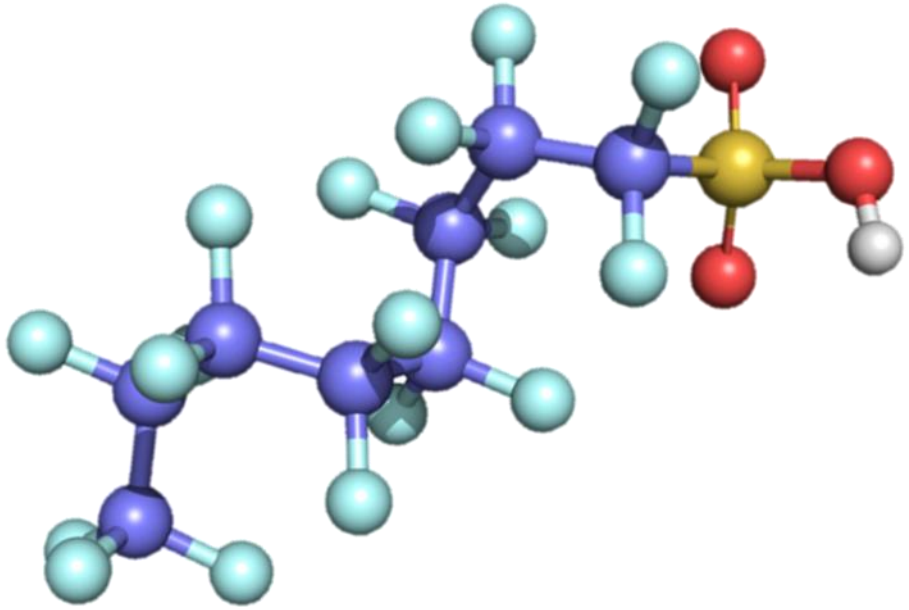


PFAS Emerge in MI

- 2012 Wurtsmith “Do Not Eat” fish advisory
- 2013 surface water recon sampling
- 2017 connecting channels data
- 2017 Camp Grayling sample data
- 2017 North Kent sample data

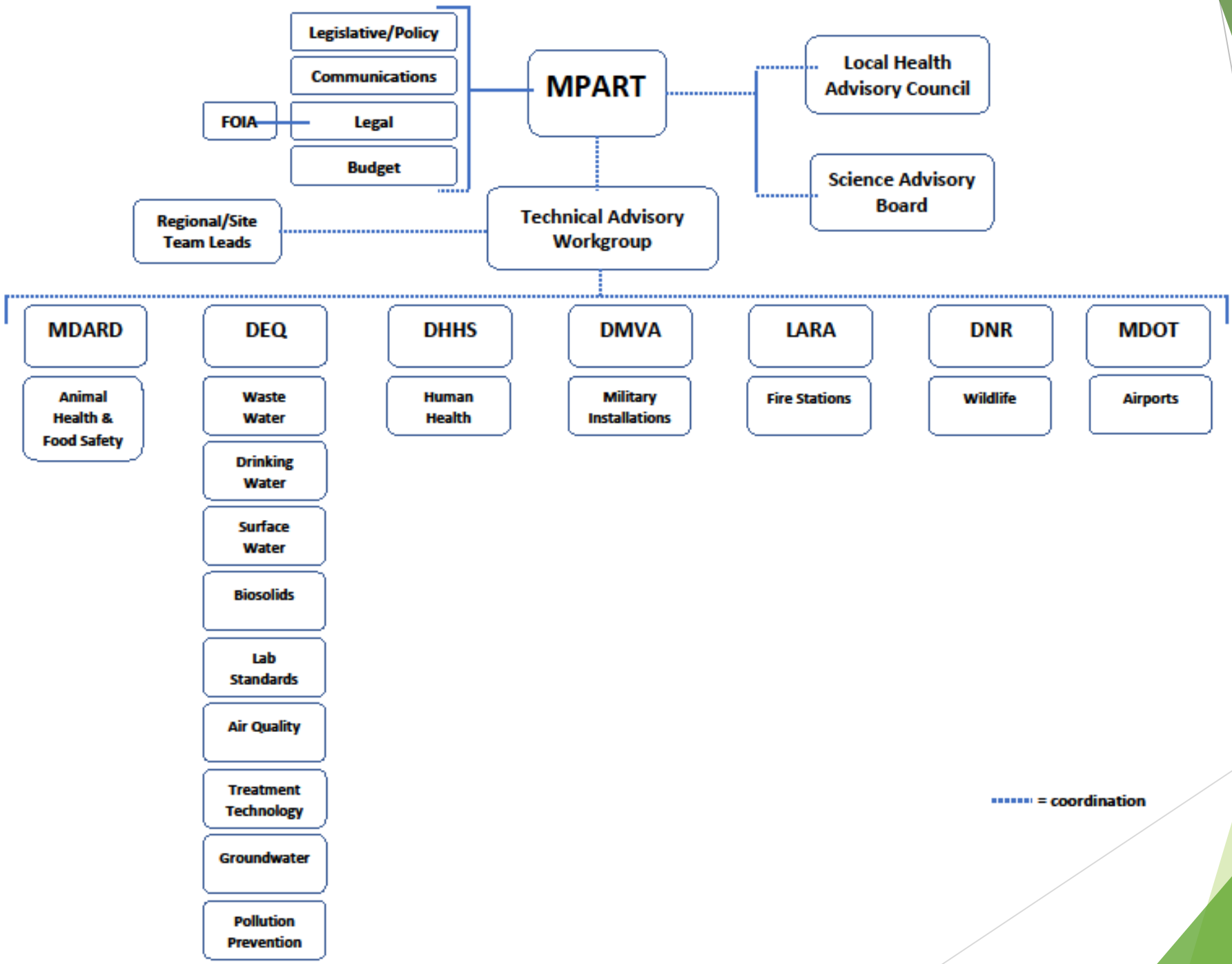
Response

- Protect Public Health
- Standardize sampling and analytical
- Study occurrence
- Identify sources and source pathways
- Study environmental transport and fate
- Study ecological effects
- Develop standards



Michigan PFAS Action Response Team (MPART)

- Led cooperation and coordination among all levels of government
- Directed implementation of state's action strategy


Legislative/Policy
Communications
FOIA
Legal
Budget
MPART
Local Health Advisory Council
Science Advisory Board
Regional/Site Team Leads
Technical Advisory Workgroup
MDARD
DEQ
DHHS
DMVA
LARA
DNR
MDOT
Animal Health & Food Safety
Waste Water
Drinking Water
Surface Water
Biosolids
Lab Standards
Air Quality
Treatment Technology
Groundwater
Pollution Prevention
Human Health
Military Installations
Fire Stations
Wildlife
Airports
= coordination

Sampling and Analytical

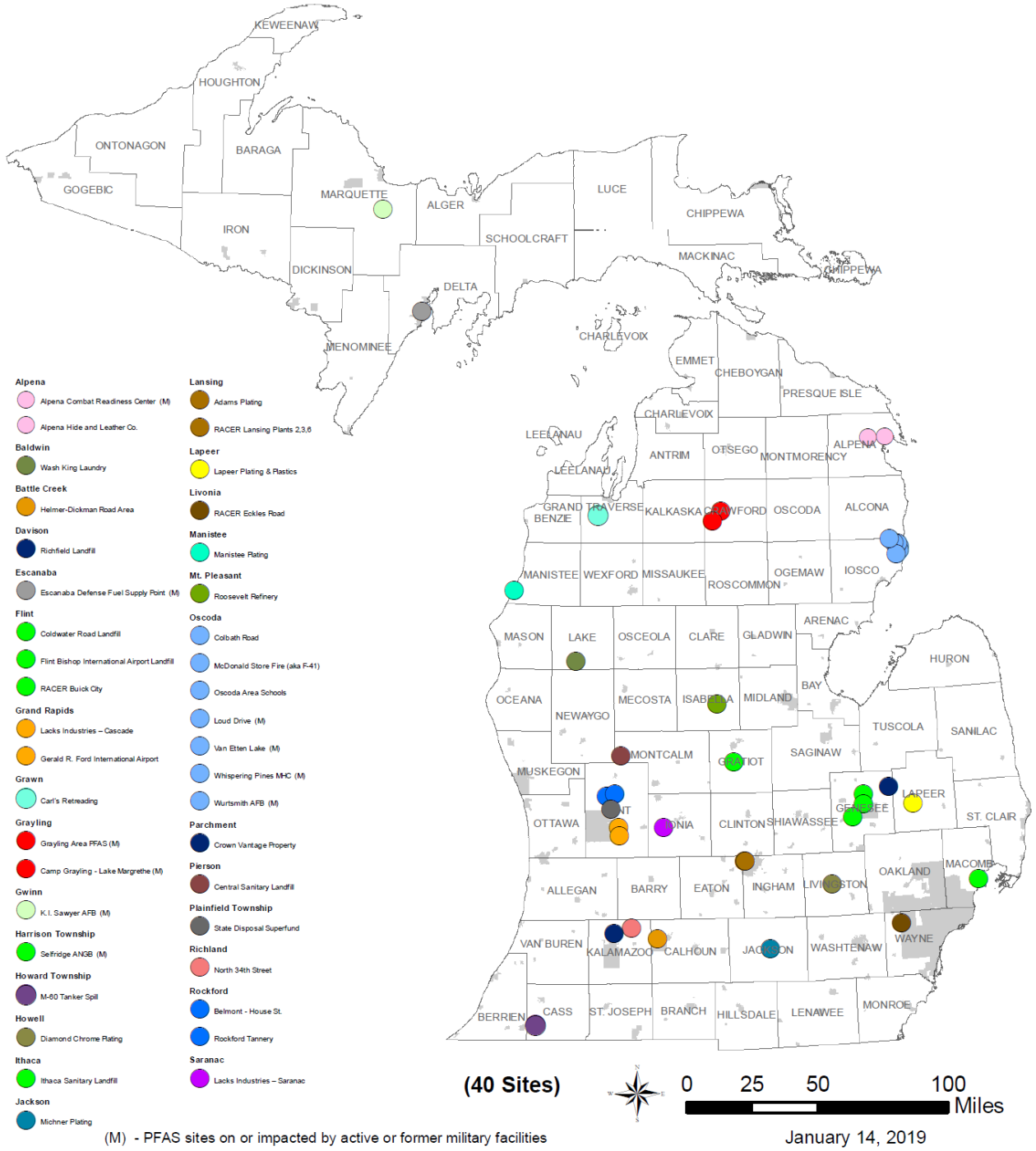
- Sampling guidance
- Analytical methods
- Compounds analyzed

Michigan Standards

Media	Standard	Compound	Concentration	Statute	Enforceable or Recommended	Effective or Proposed	Established Date	Process for Establishing
Drinking Water	Lifetime Health Advisory	PFOA + PFOS	70 PPT		R	E	May 2016	EPA published
Surface Water	Water Quality Standards	PFOA (DW Source)	420 PPT	Part 31	E	E	May 2011	Rule 57, calculate and publish
		PFOA	12,000 PPT	Part 31	E	E	May 2011	Rule 57, calculate and publish
		PFOS (DW Source)	11 PPT	Part 31	E	E	March 2014	Rule 57, calculate and publish
		PFOS	12 PPT	Part 31	E	E	March 2014	Rule 57, calculate and publish
Groundwater	Drinking water cleanup criteria	PFOA + PFOS	70 PPT	Part 201	E	E	January 2018	Adopted by rule
	GSI	PFOA (DW Source)	420 PPT	Part 201	E	E	May 2011	Adopted by statute
		PFOA	12,000 PPT	Part 201	E	E	May 2011	Adopted by statute
		PFOS (DW Source)	11 PPT	Part 201	E	E	March 2014	Adopted by statute
		PFOS	12 PPT	Part 201	E	E	March 2014	Adopted by statute
Soil	Soil criteria protective of GSI	PFOA	10,000 µg/kg	Part 201	E	E	June 2018	Calculated and published
		PFOA (DW source)	350 µg/kg	Part 201	E	E	June 2018	Calculated and published
		PFOS	0.24 µg/kg	Part 201	E	E	June 2018	Calculated and published
		PFOS (DW source)	.22 µg/kg	Part 201	E	E	June 2018	Calculated and published
	Soil criteria protective of drinking water	PFOA	59 µg/kg	Part 201	E	P		Calculate and publish
		PFOS	1.4 µg/kg	Part 201	E	P		Calculate and publish
	Soil direct contact criteria	PFOA	2,100 µg/kg	Part 201	E	P		Calculate and publish
		PFOS	2,100 µg/kg	Part 201	E	P		Calculate and publish
Air	Initial Threshold Screening Levels	PFOA	0.07 µg/m3	Part 55	E	E	February 2018	Calculate, 60 day comment, publish
		PFOS	0.07 µg/m3	Part 55	E	E	February 2018	Calculate, 60 day comment, publish

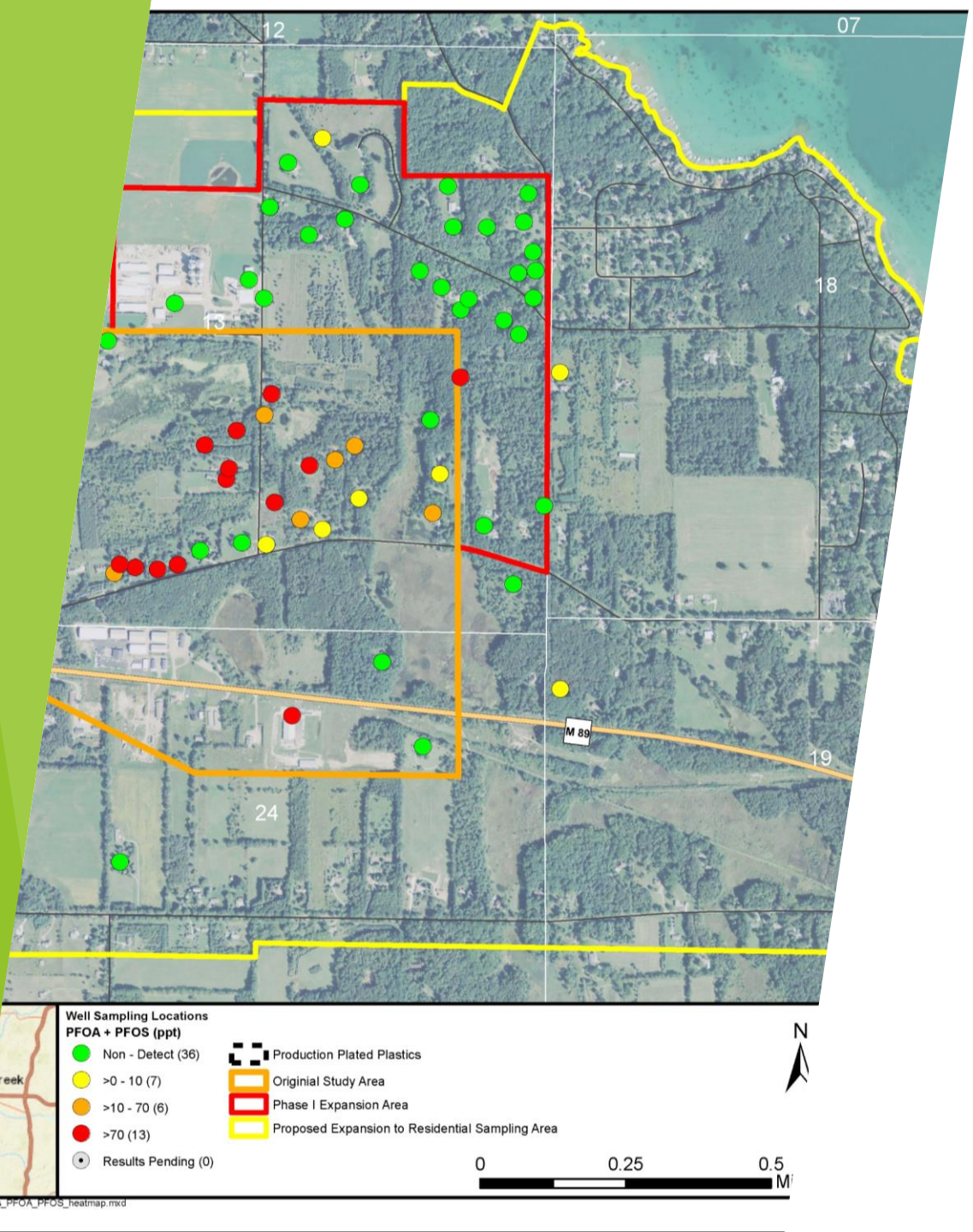
Sites Being Investigated

- Map represents sources of groundwater contamination over 70 ppt PFOS+PFOA
- Once a source is identified, it becomes an official site
- Multiple other investigations with no known source yet



Mobility

- Highly mobile
- Unconventional
- Affected by organic carbon, pH, clay content
- Current models lacking
- More studies needed

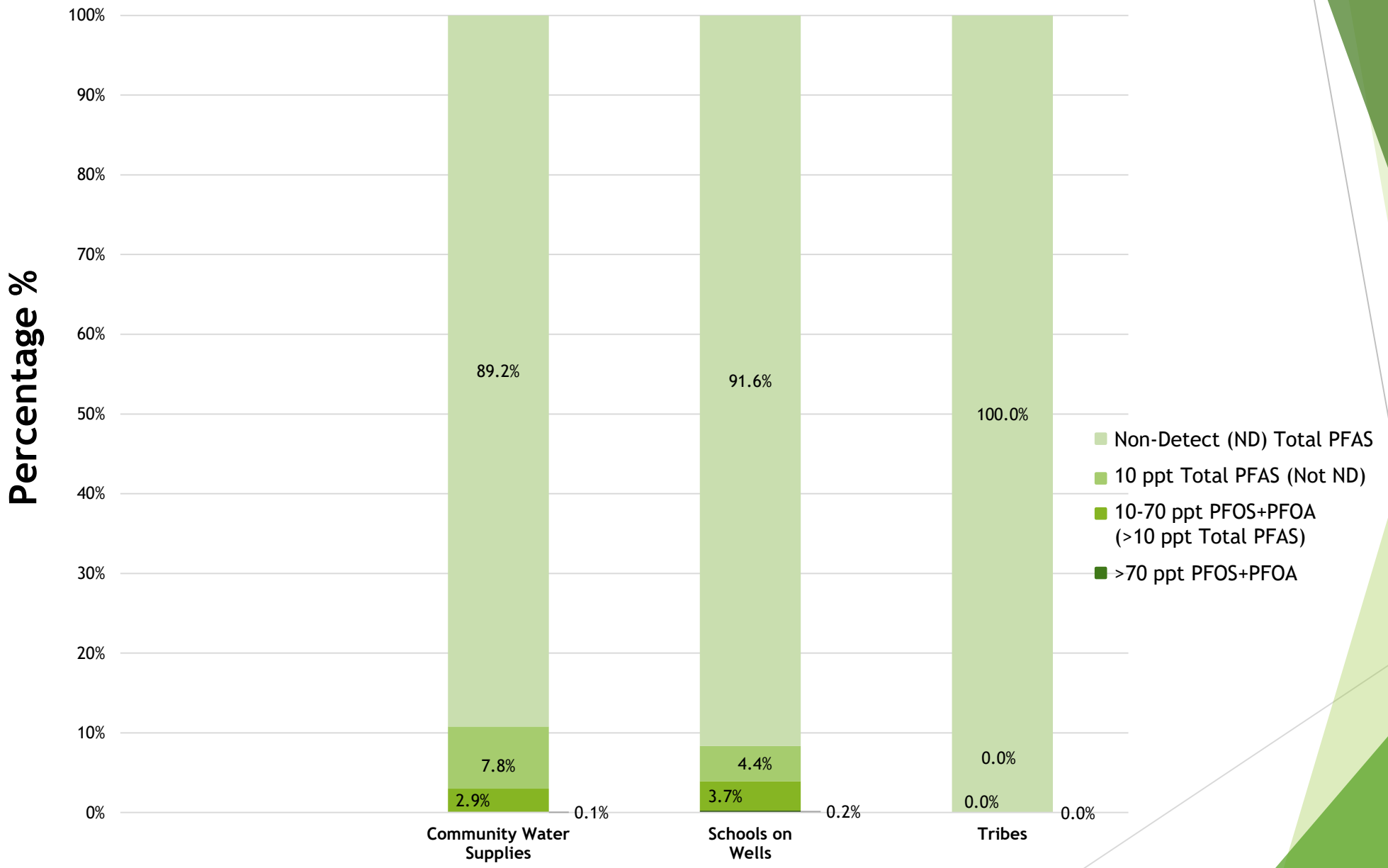


Strategic Investigation and Response

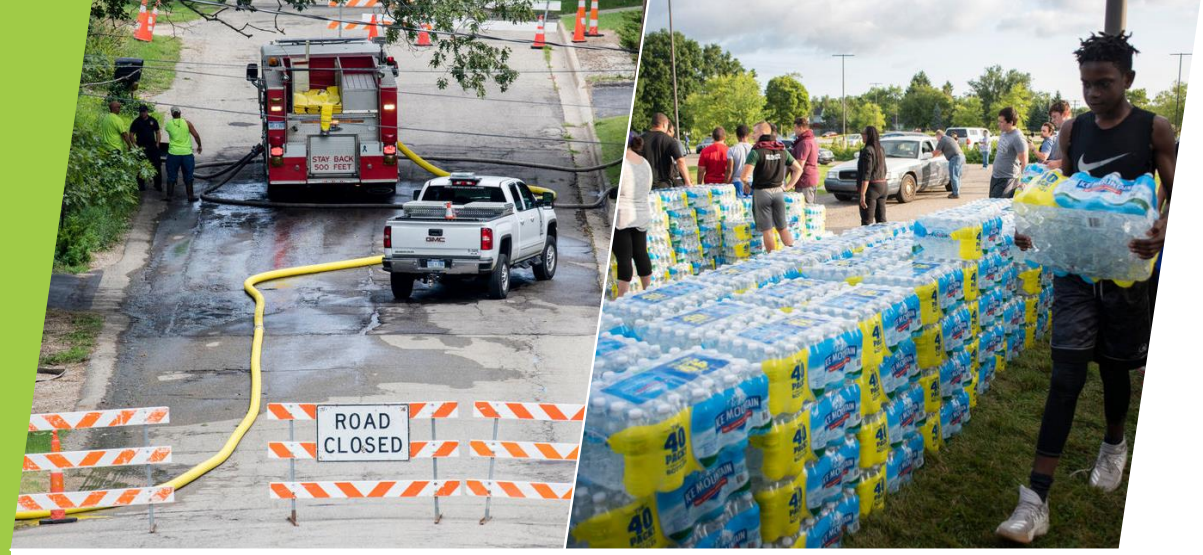
MI Public Water Supply Testing

- All 1,111 community water supplies
- All 626 NTNCWS schools and day cares
- May – December 2018
- 3 “buckets” of recommendations
  - < 10 ppt total PFAS
  - ≥ 10 total PFAS and ≤ 70 ppt PFOA/PFOS
  - > 70 ppt PFOA/PFOS
- Will inform additional testing of other supplies

Statewide Public Water Supply Testing Initiative Results*



*As of January 4, 2019



City of Parchment, Michigan

Kalamazoo will extend water system to Parchment in wake of PFAS contamination

By BRYCE HUFFMAN • AUG 6, 2018

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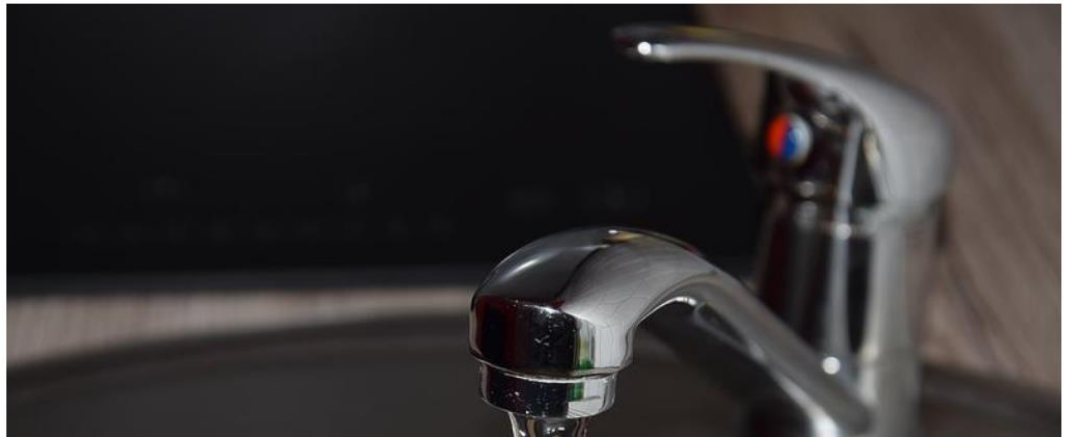


Parchment Response Timeline

7/26/18	• **Results received 3:15 p.m.** • **PFOA = 670 ppt; PFOS = 740 ppt; Total PFAS = 1,600 ppt** **Drinking water advisory issued 8:36 p.m.**
7/27/18	• Bottled water distribution begins 7:30 a.m.
	• Temporary connection to Kalamazoo via hydrants
7/28/18	• Sampling of private residential wells begins
7/29/18	• Distribution system flushing completed
7/30/18	• Post-flushing sampling begins
7/31/18	• Municipal briefing, open house, and town hall meeting
8/1/18	• Monitoring well sampling at one suspected source begins
8/27/18	• Drinking water advisory lifted for municipal supply

Parchment Response

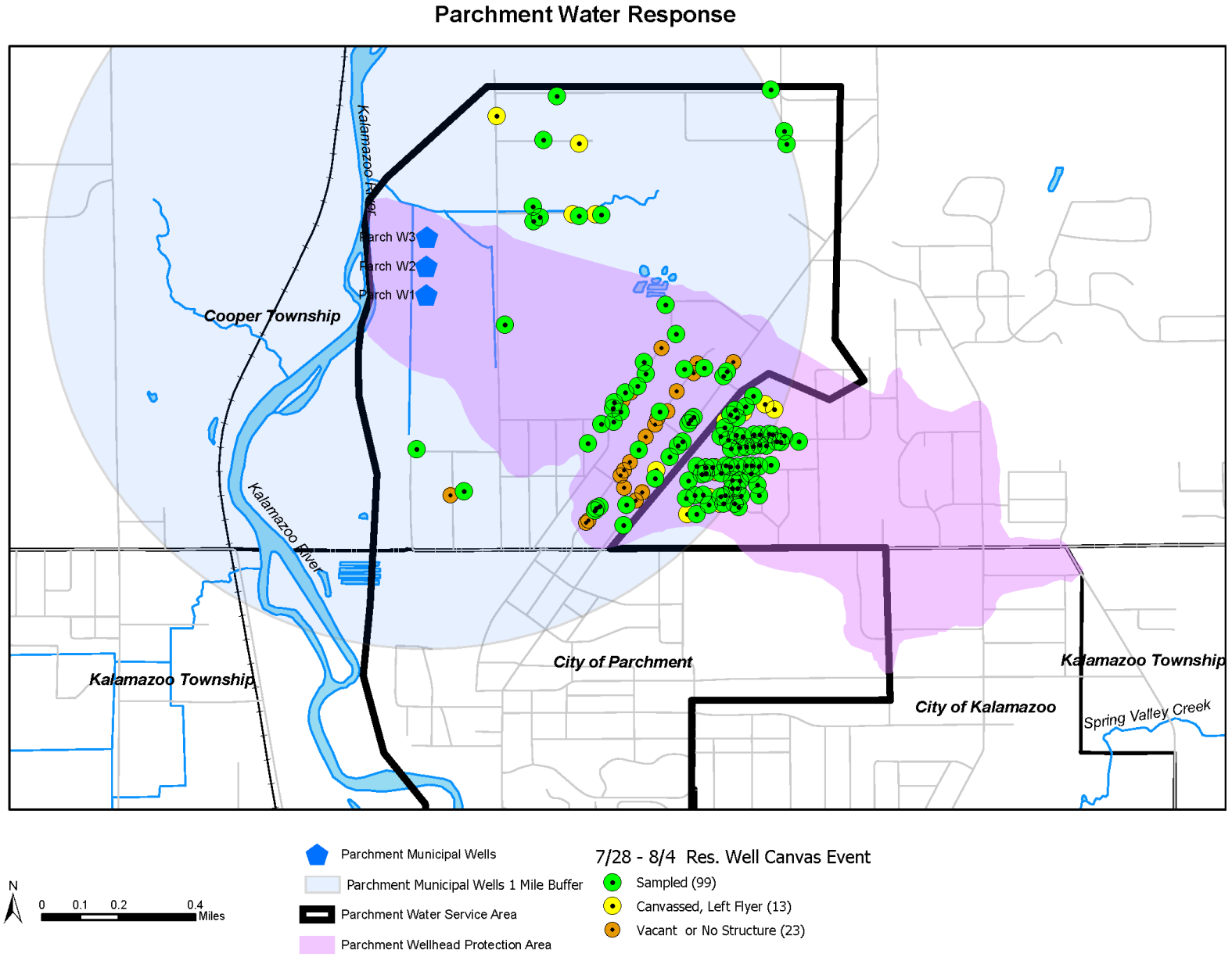
Municipal Supply

- Temporary bottled water/filters
- Connected to adjacent supply
  - Abrupt changes can shock the system
  - Safe Drinking Water Act still applies
  - Compliance testing
- Monitoring

Parchment Response

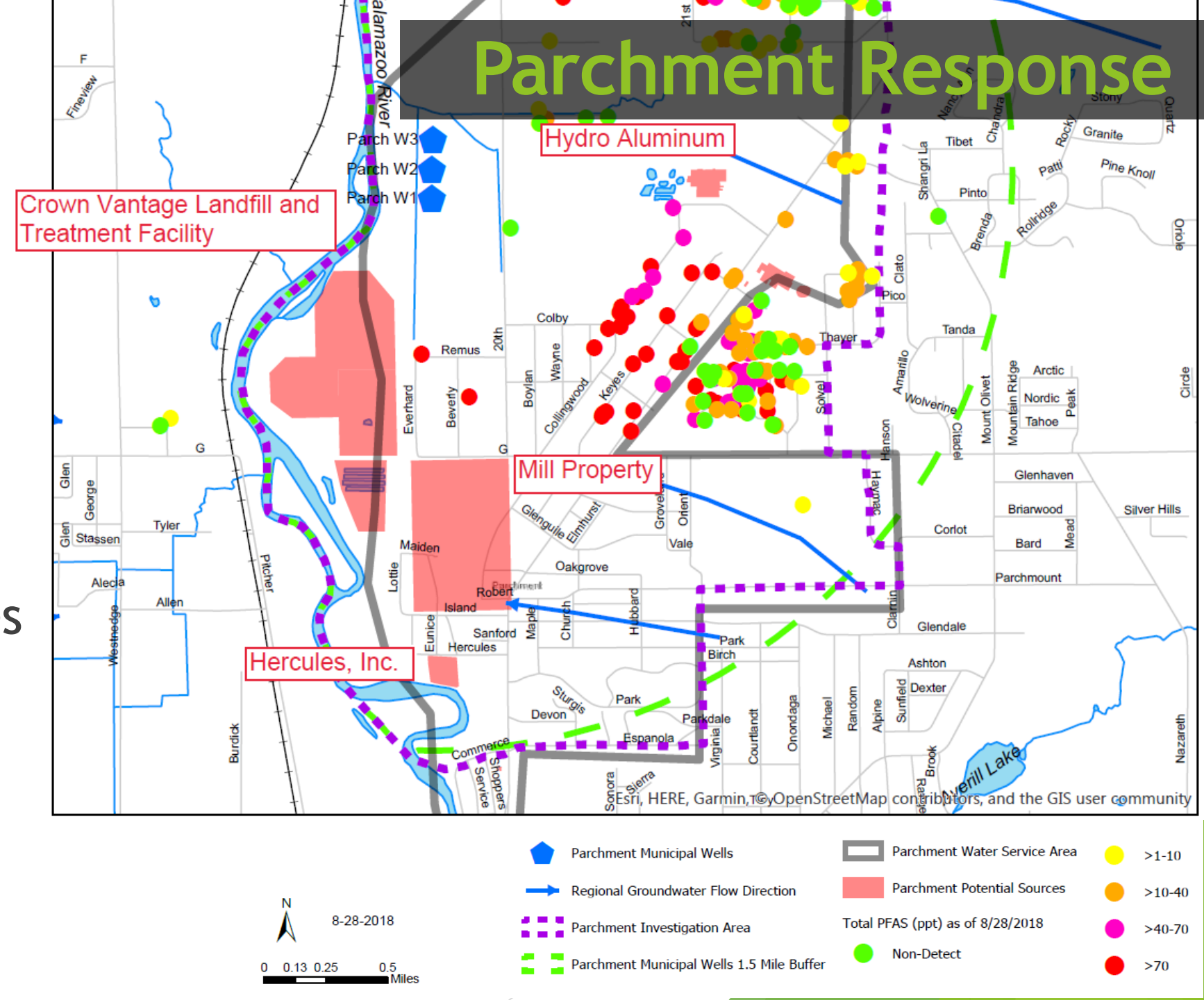
Private Wells

- Sampling Strategy
- Public Health Action Plan



Source Investigation

- File reviews
- Hydrogeological studies
- Monitoring
- Responsible parties



Keys to Success

- Coordination
  - All levels of government
- Communication
  - Prior to testing
  - Results
  - Next steps and why
  - Transparency

PFAS Readiness Plans

- Agency roles
- Local resources
- Communications
- Bottled water distribution
- Water supply recovery options
- Regulatory
- Private wells
- Can be for any contaminant

Surface Water Investigation

- Ambient monitoring
- POTWs
  - Industrial Pretreatment Program (IPP)
  - Biosolids
- Industrial direct dischargers
- Surface water foam

Treatment

- GAC
- RO
- Incineration
- $$$

IPP PFAS Initiative Status

Update 1-10-2019

95 POTWs with IPPs:
- **93** IRs* Submitted
- **1** IRs not yet due
- **1** IR Overdue

*IR = Interim Report

Bin TBD: 22

Interim Report submitted but a bin determination cannot be made as staff have not yet reviewed the report, the report was determined to be incomplete, or sample results (from IUs and/or POTW effluent) are still pending

Bin 1: 30

No sources PFOS/PFOA found

→ IPP PFAS Requirements Complete

Bin 2: 19

Sources found but POTW Effluent ≤WQS[1]

- Source reduction recommended
- Semi-annual PFAS monitoring required
- Local limits and PMP recommended

Bin 3: 22

Sources found and POTW Effluent >WQS[1]

3a: 15

Effluent concentrations of **moderate priority**[2]
- Source reduction required
- **Quarterly** POTW effluent monitoring required
- Local limits recommended
- Pollutant Min Plan SUO provisions recommended

3b: 7

Effluent concentrations at **highest priority**[3]
- Source reduction required
- **Monthly** POTW effluent monitoring required
- **Biosolids** monitoring required
- Local limits recommended
- Pollutant Min Plan SUO provisions recommended

Biosolids Study

- Follow-up environmental testing on Lapeer field
- Influent, effluent, and biosolids from 41 WWTPs
- Develop guidance and field screening protocol
- Beginnings of plant uptake study

Landfills and Materials Management

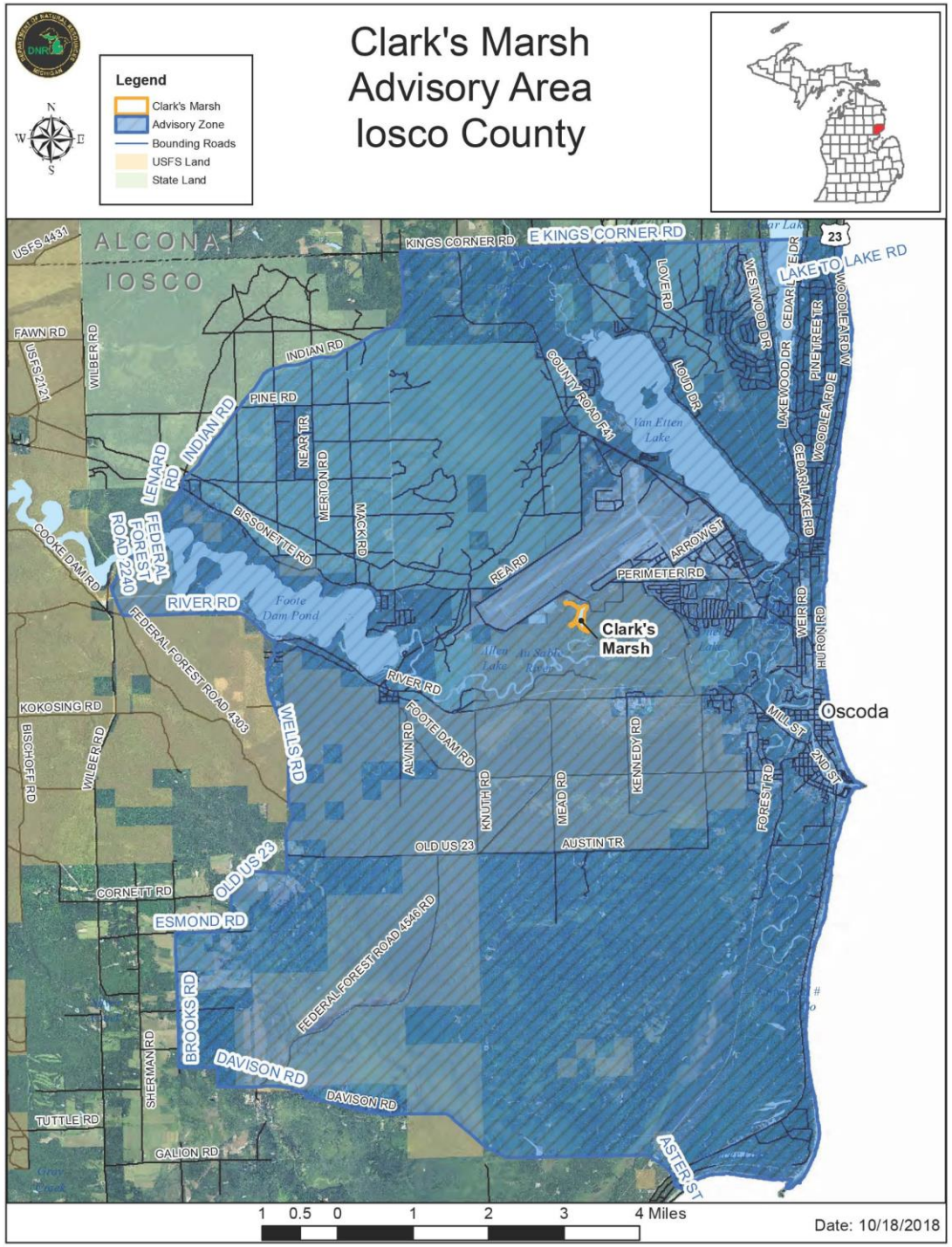
- Leachate management
- Historical groundwater releases
- Waste standards?
- Waste industry initiative
- Other – compost facilities

Fire Fighting Foam

- State Fire Marshal survey of fire departments
- MDOT survey of airports
- Special equipment for required training
- PEAS Hotline for use
- Collection and disposal program?

Fish Consumption Advisories

- Over 600 fish filets have been analyzed at the Michigan Department of Health and Human Services Analytical Chemistry Lab
- PFOS fish consumption screening levels range from 9 ppb (ng/g) to >300 ppb ("Do Not Eat")
- 5 water bodies with "Do Not Eat" for PFOS (this includes the Huron River)
  - Approximately 60 fish consumption guidelines issued due to PFOS fish filet levels



Deer Consumption Advisory

- 128 deer
  - 80 deer from four targeted areas
  - 48 samples from hunter-harvested deer (submitted for disease testing)
- 1 deer with elevated PFOS in muscle
  - “Do Not Eat” advisory issued within 5 mile radius of Clarks Marsh
- Additional testing planned

Exposure and Health Assessments

- North Kent County
- Parchment
- Wurtsmith
- Camp Grayling

Press Release

FOR IMMEDIATE RELEASE: Aug. 14, 2018

CONTACT: Angela Minicuci, 517-241-2112, MinicuciA@michigan.gov

MDHHS and KCHD release PFAS related-cancer incidence report for Kent County

LANSING, Mich. – The Michigan Department of Health and Human Services (MDHHS) and Kent County Health Department (KCHD) today released a review of cancer incidence data in support of

Dr. David Savitz (Chair)
Professor of Epidemiology, Brown University School of Public Health, Associate Dean for Research, joint appointments in Obstetrics and Gynecology and Pediatrics in the Alpert Medical School.

Dr. Jennifer Field
Professor, Department of Environmental and Molecular Toxicology, College of Agriculture Studies at Oregon State University

Dr. Dan Jones
Professor, Department of Biochemistry and Molecular Biology and the Department of Chemistry, Michigan State University

Dr. Christopher Lau
Chief, Developmental Toxicology Branch in Toxicity Assessment Division, National Health and Environmental Effects Research Laboratory in the Office of Research and Development, U.S. Environmental Protection Agency

Dr. Susan Masten
Professor, College of Engineering, Michigan State University

Dr. Scott Bartell
Associate Professor, Public Health, Statistics, and Epidemiology, University of California, Irvine

Michigan PFAS Science Advisory Panel

Science Advisory Panel Questions

1. **Health Advisory Recommendations:** Is 70 ppt for PFOS and PFOA sufficiently protective of health?
2. **Health Outcomes Knowledge and Guidance:** Which health outcomes are of primary concern? Is PFAS carcinogenic? Is dermal contact with PFAS a concern?
3. **Remediation and Mitigation:** What are the best degradation techniques? Are filters adequate to mitigation exposure?
4. **Environmental Pathways for Contamination:** Are there concerns with biosolid application to fields and resulting food products grown?
5. **PFAS Chemicals other than PFOS and PFOA**

Science Advisory Panel Recommendations

1. **Health Advisory Recommendations:** Identify drinking water supplies with high PFAS levels, conduct biomonitoring in those areas, gather information on impact of biosolids on crop plants and groundwater.

2. **Health Outcomes Knowledge and Guidance:** Consider both animal and human data, consider setting advisory limits for other PFAS, re-evaluate criteria as science expands

3. **Remediation and Mitigation:** Water supplies with high PFAS levels should be required to evaluate all remedial approaches, use NSF International certified filters where well water is contaminated, conduct lab/pilot-scale studies of treatment technologies before implementation.

4. **Environmental Pathways for Contamination:** Treat waste streams that contain PFAS prior to discharge.

5. **PFAS Chemicals other than PFOS and PFOA:** Detection should move beyond legacy chemicals, use analytical methods that measure greatest number of PFAs for initial waste/site characterization, use analytical methods on drinking water that measure short-chain PFAs as they are more difficult to remove.

Review of Current Levels

"In response to the State's request to review the current EPA Lifetime Health Advisory Level of 70 parts per trillion (ppt) for PFOA and PFOS combined in drinking water, the Panel found that the current EPA level may not be low enough to guard against health effects."

Questions?

www.michigan.gov/pfasresponse

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