



# Statewide PFAS Sampling of Public Water Supplies in Michigan & Lessons Learned

John Cuthbertson

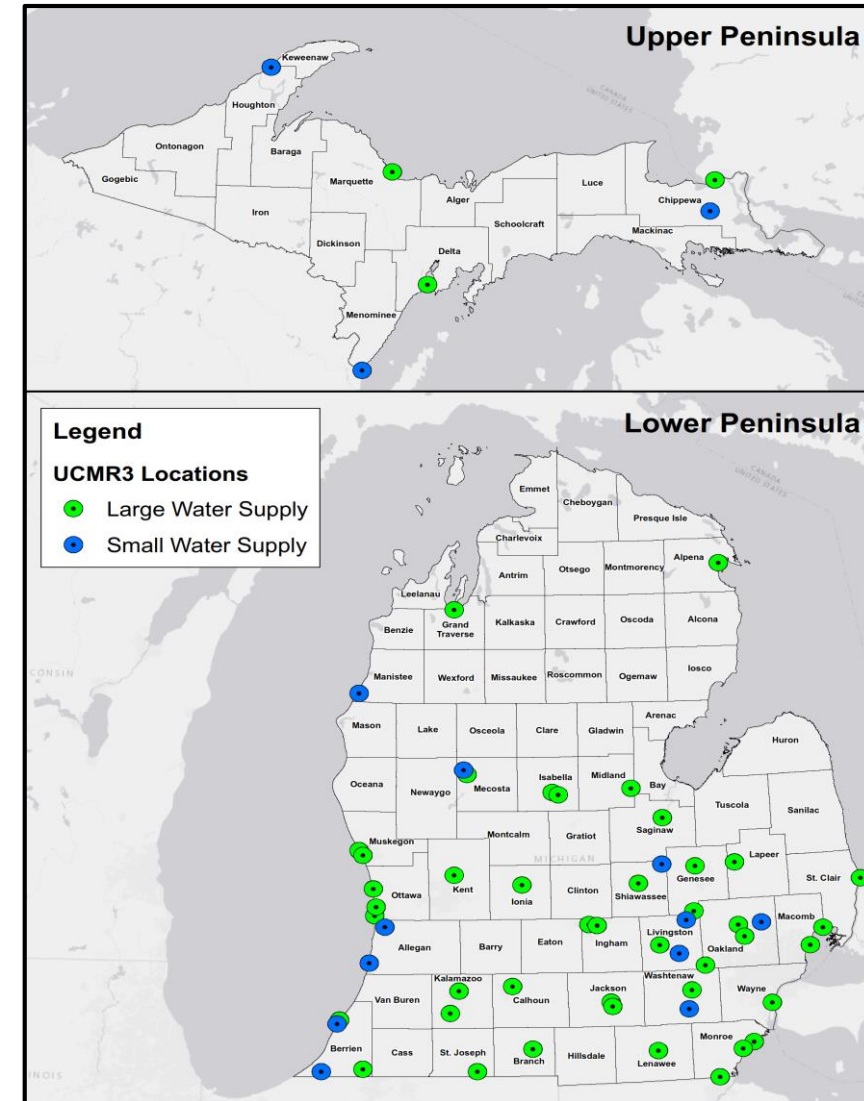
North America Industrial PFAS Lead

WDNR Stakeholders Meeting – Drinking Water PFAS MCLs - September 23, 2020

# Unregulated Contaminant Monitoring Rule (UCMR3) 2013 - 2015

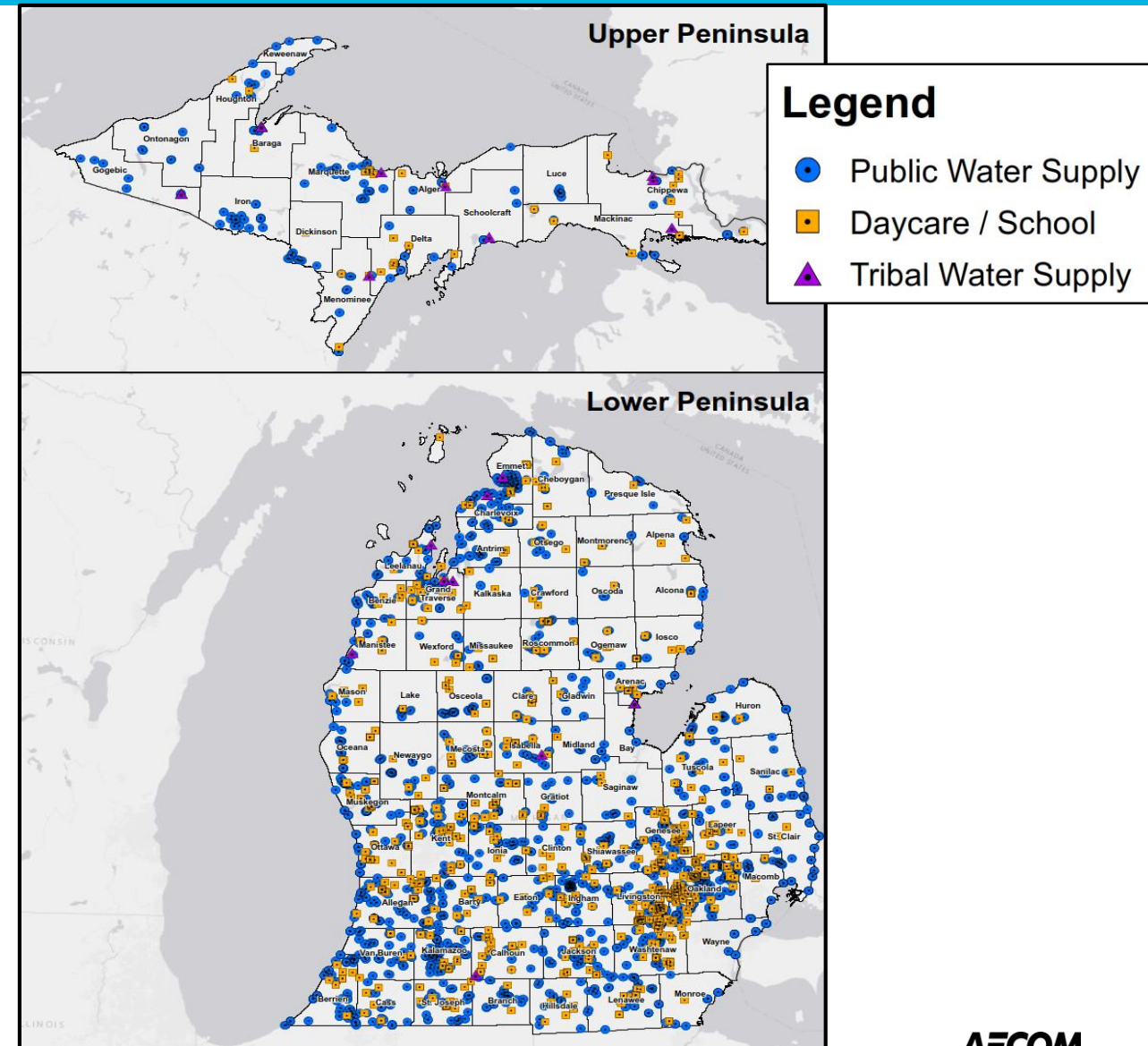
- USEPA UCMR3 Study - Michigan:
  - 136 Large Public Water Supplies
  - 26 Small Public Water Supplies
- PFAS Detected in 2 Supplies
  - **Plainfield Township** – PFOS 60 ppt
  - **Ann Arbor** – PFOS 43 ppt

PFAS	Minimum Reporting Limit (MRL) (ng/L)	Total Locations	PWS ≥ MRL
PFOS	40	<b>162</b> <b>(~103 Buyers)</b>	2
PFOA	20		0
PFNA	20		0
PFHxS	30		0
PFHpA	10		0
PFBS	90		0



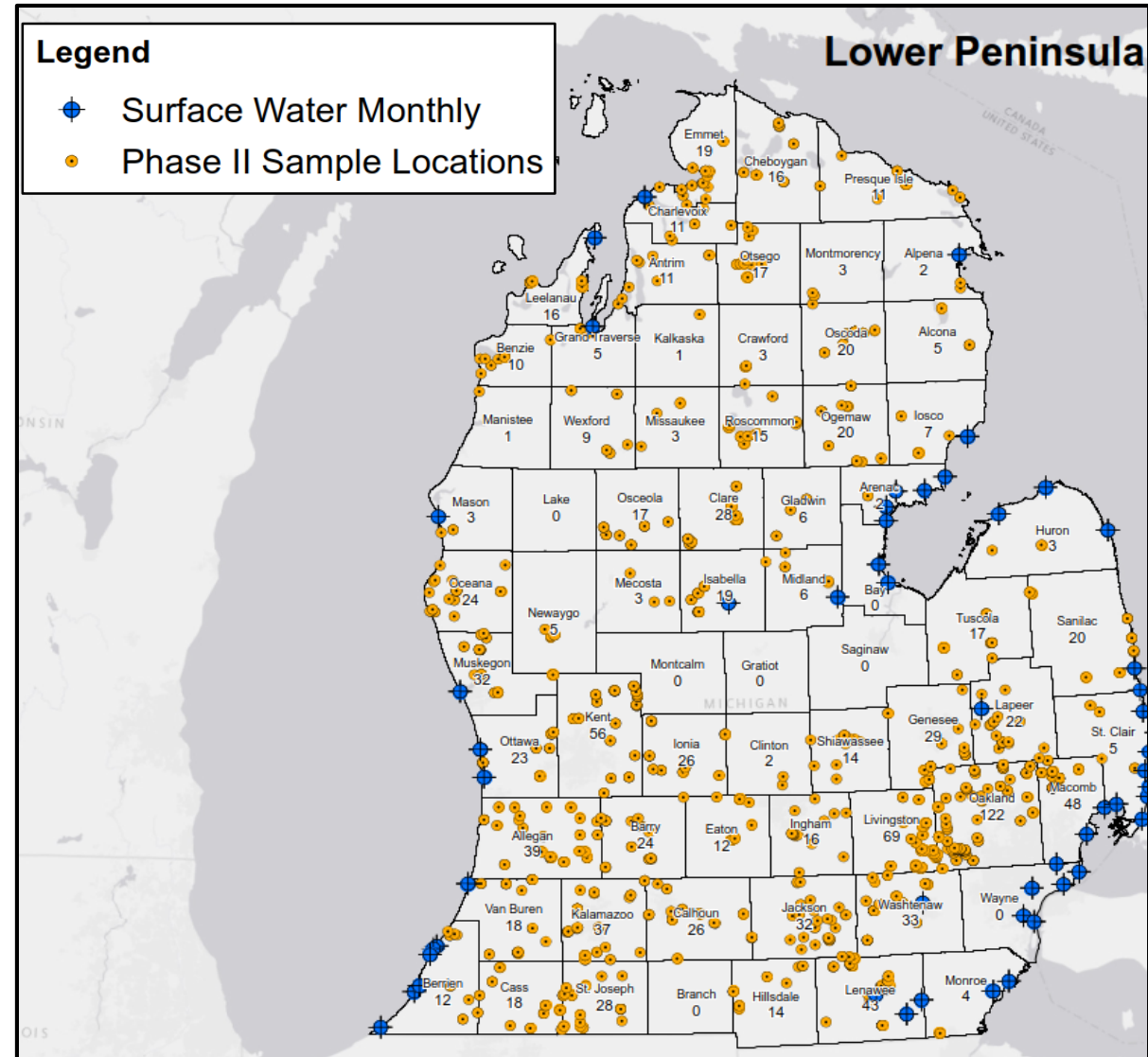
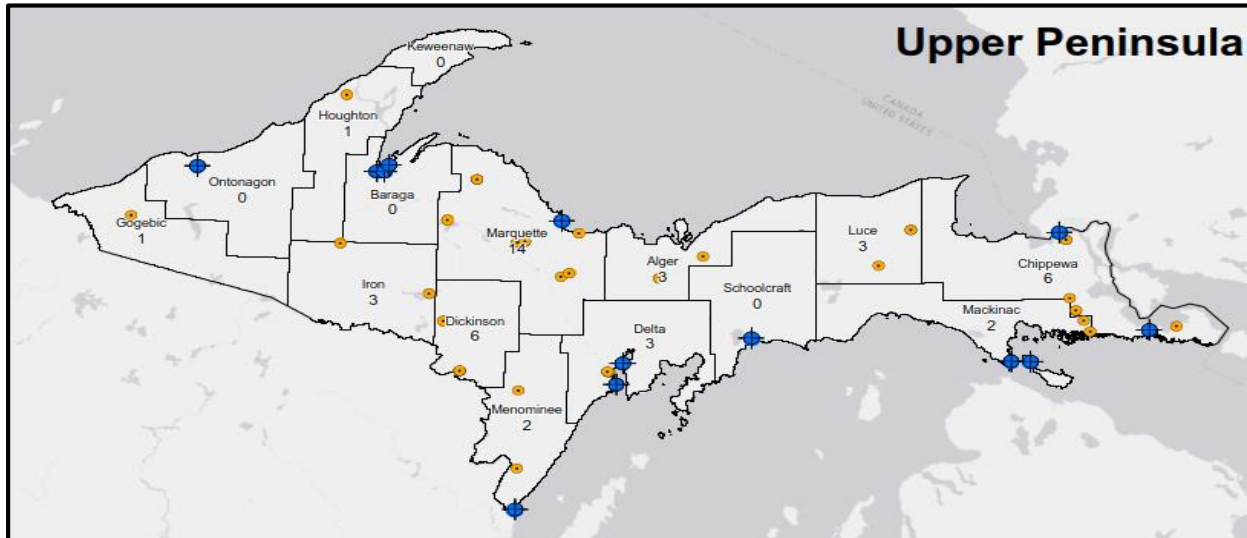
# Phase 1 - 2018 Statewide PFAS PWS Sampling Scope

- 1,740 Locations (2,283 Samples)
  - 1,112 Community Water Supplies
    - Municipalities
    - Apartment Complexes
    - Subdivisions
    - Condominiums, etc.
  - 460 Schools
  - 152 Child Care Providers (Daycares)
  - 17 Tribal Entities
- ~75% of all Michigan Residents
- ~ 7.9 Million Residents



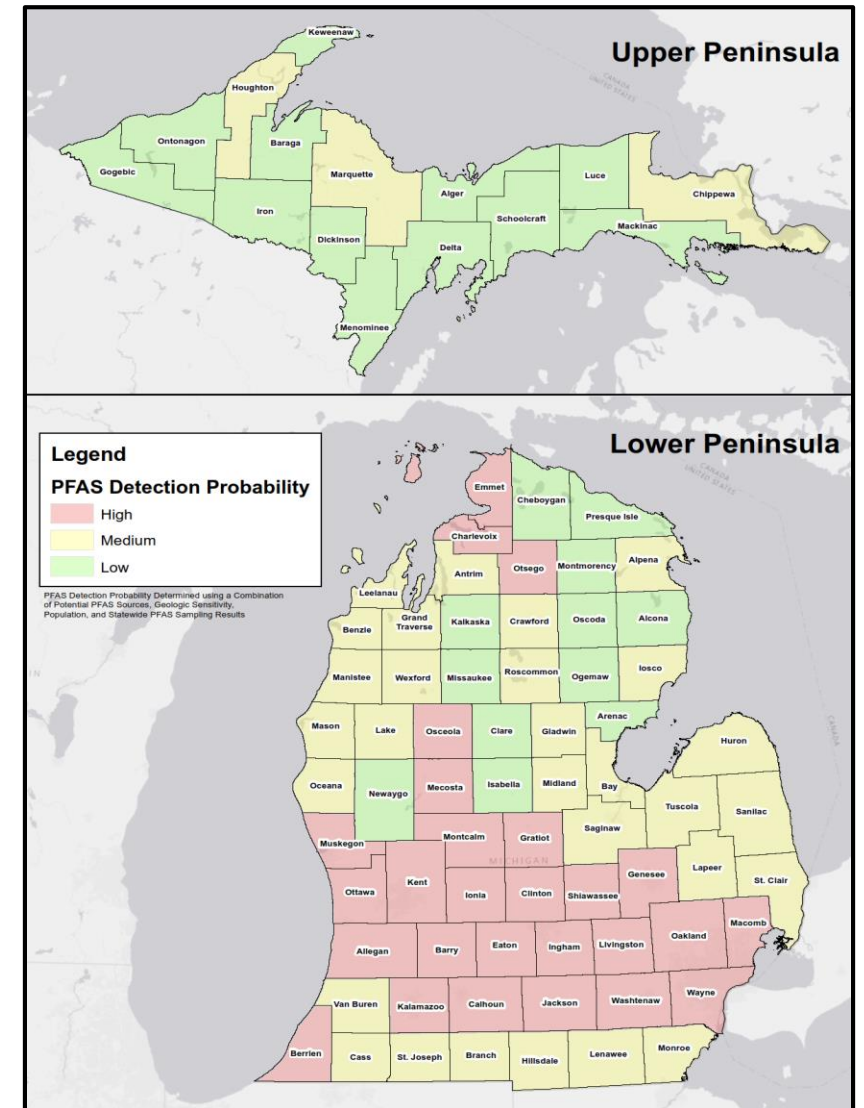
# Phase 2 - 2019 Statewide PFAS PWS Sampling Scope

- 630 Locations (920 Samples)
  - Commercial / Medical Offices
  - Adult Foster Cares
  - Motels
  - Children Camps
  - Parks



# Sampling Implementation / Challenges

- 1,740 Locations
- EPA Method 537 Rev 1.1 – 14 Compounds / 2ppt.
- Prioritization of Sampling
- Scheduling | 3 Sampling Teams | 8 Months
- High Level of Scrutiny
- Shipping
- Response Actions (if necessary)



# City of Parchment – Emergency Response

July 26<sup>th</sup>

July 26<sup>th</sup>

July 27<sup>th</sup>

July 29<sup>th</sup>



**PFOS+PFOA = 1,410 ng/L  
(20 times above criteria)**



**News Conference**



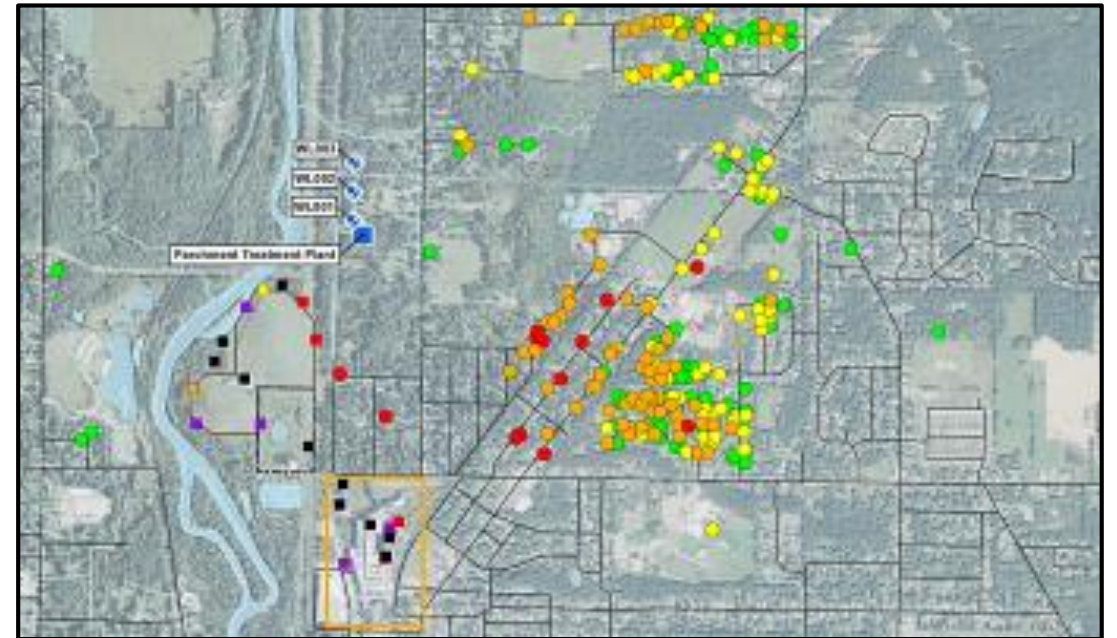
**Bottle Water is Provided**



**State of Emergency**

# City of Parchment - Finding Solutions

September 12<sup>th</sup>



**Water Distribution System flushed  
Connected to the City of Kalamazoo**

**Samples Collected:  
> 60 Municipal  
> 210 Residential Wells  
> 20 Monitoring Wells**

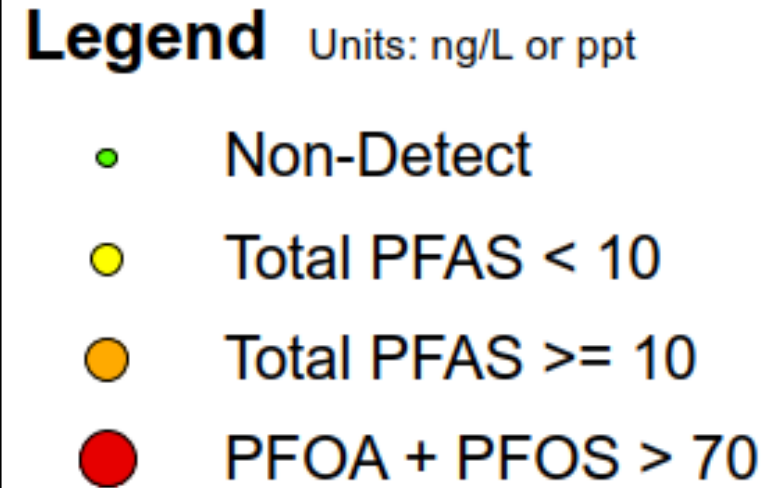
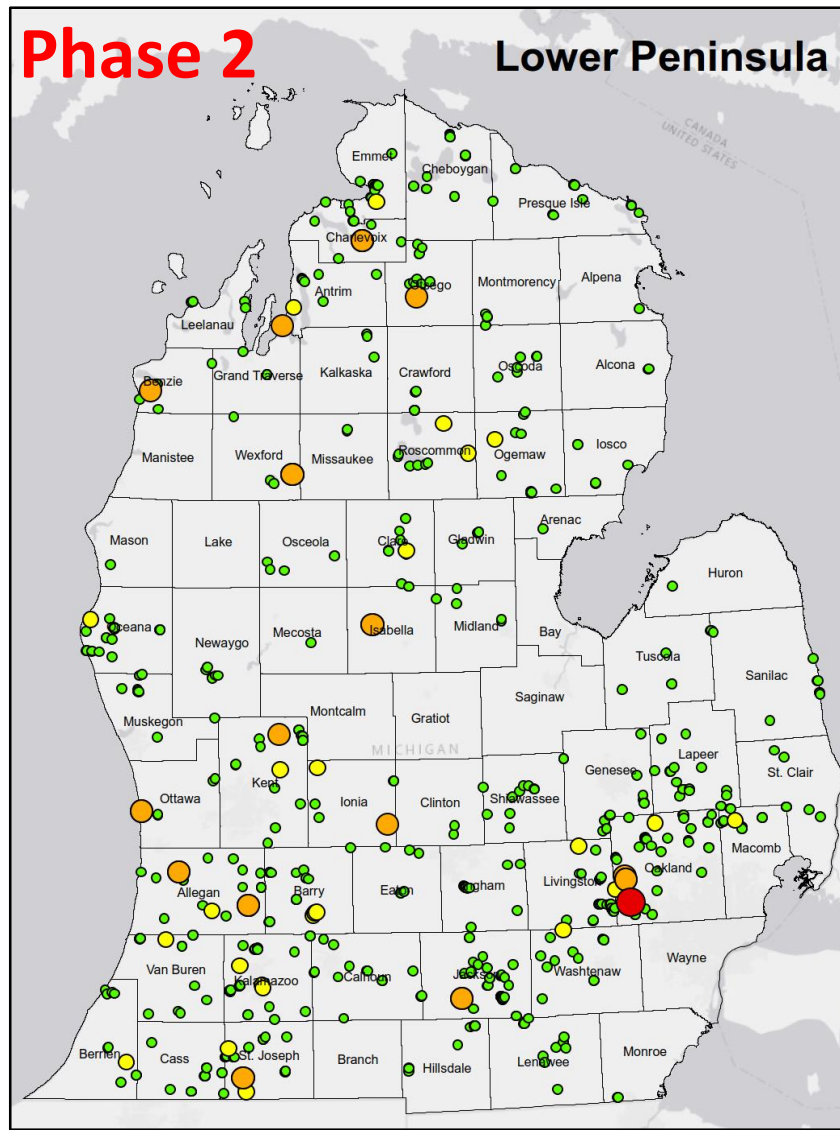
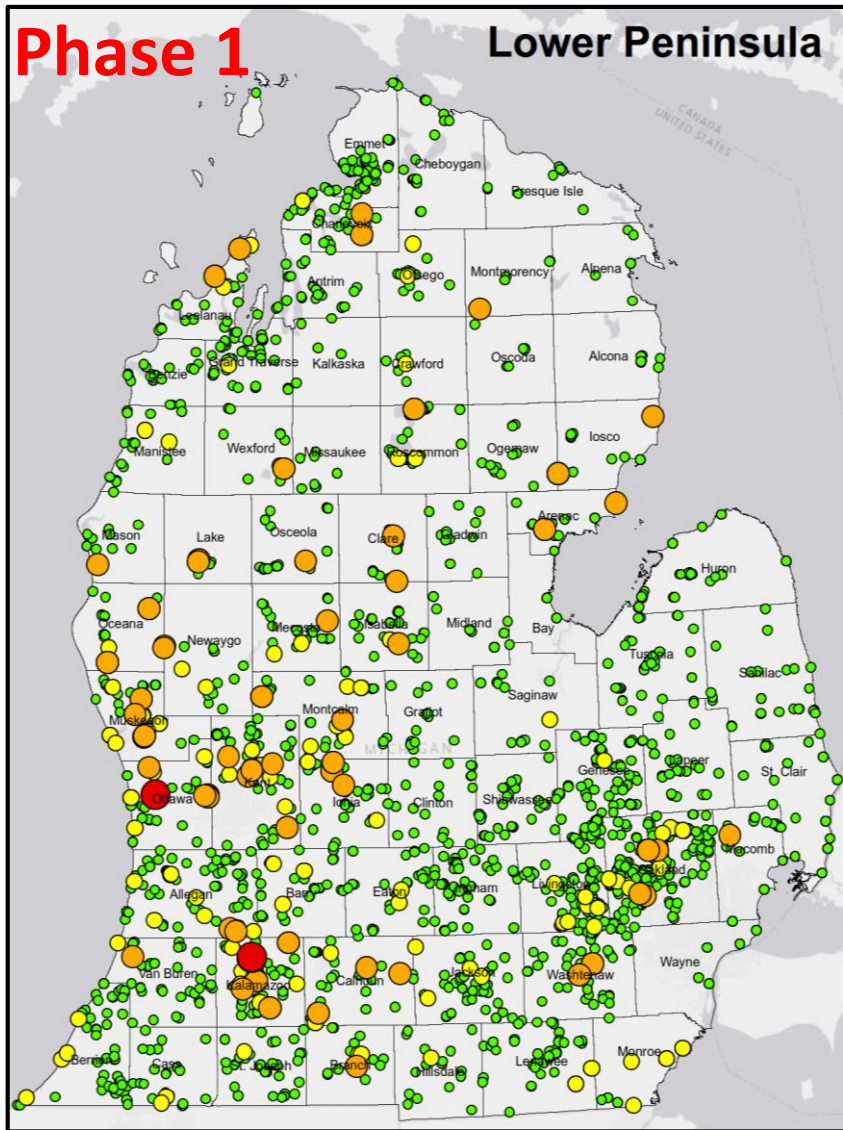
# Data Management – Crucial to Establish Objectives Upfront

- Consistent Nomenclature / Field Documentation
- Database
- QA/QC
  - Data Validation ~ 5%
  - Field Duplicates ~ 5%
  - Field Reagent Blanks ~ 5%
- Live-time Data Processing
  - Weekly Status Updates
  - Result Letters





# Phase 1 & 2 - PWS Sampling Results



# Phase 1 & 2 - PWS Sampling by the Numbers

Phase 1&2 = 2,222 Supplies

Non-Detect

Total PFAS < 10ppt

Total PFAS > 10ppt

PFOS+PFOA > 70ppt

90% (2,000)

6.3% (139)

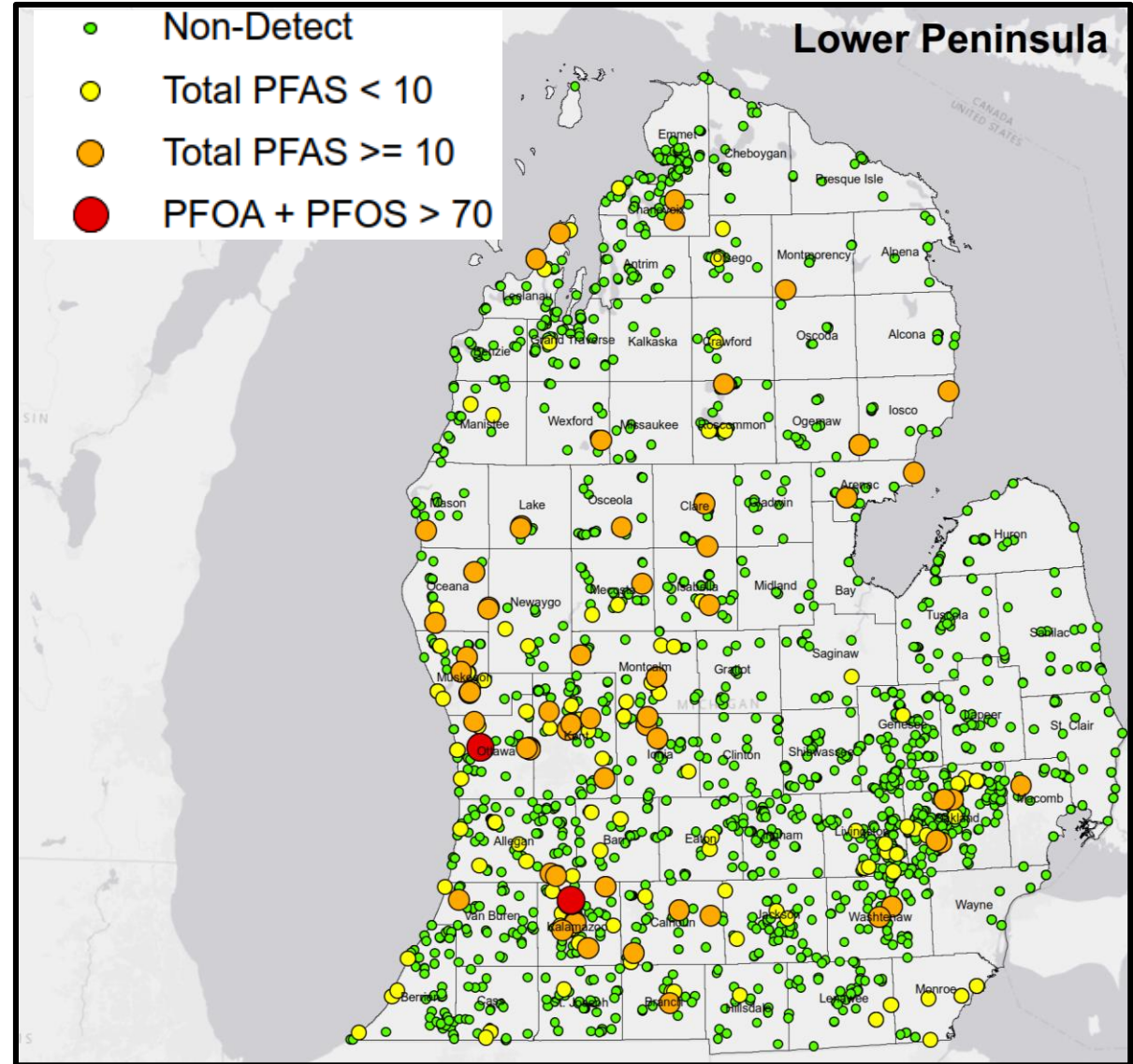
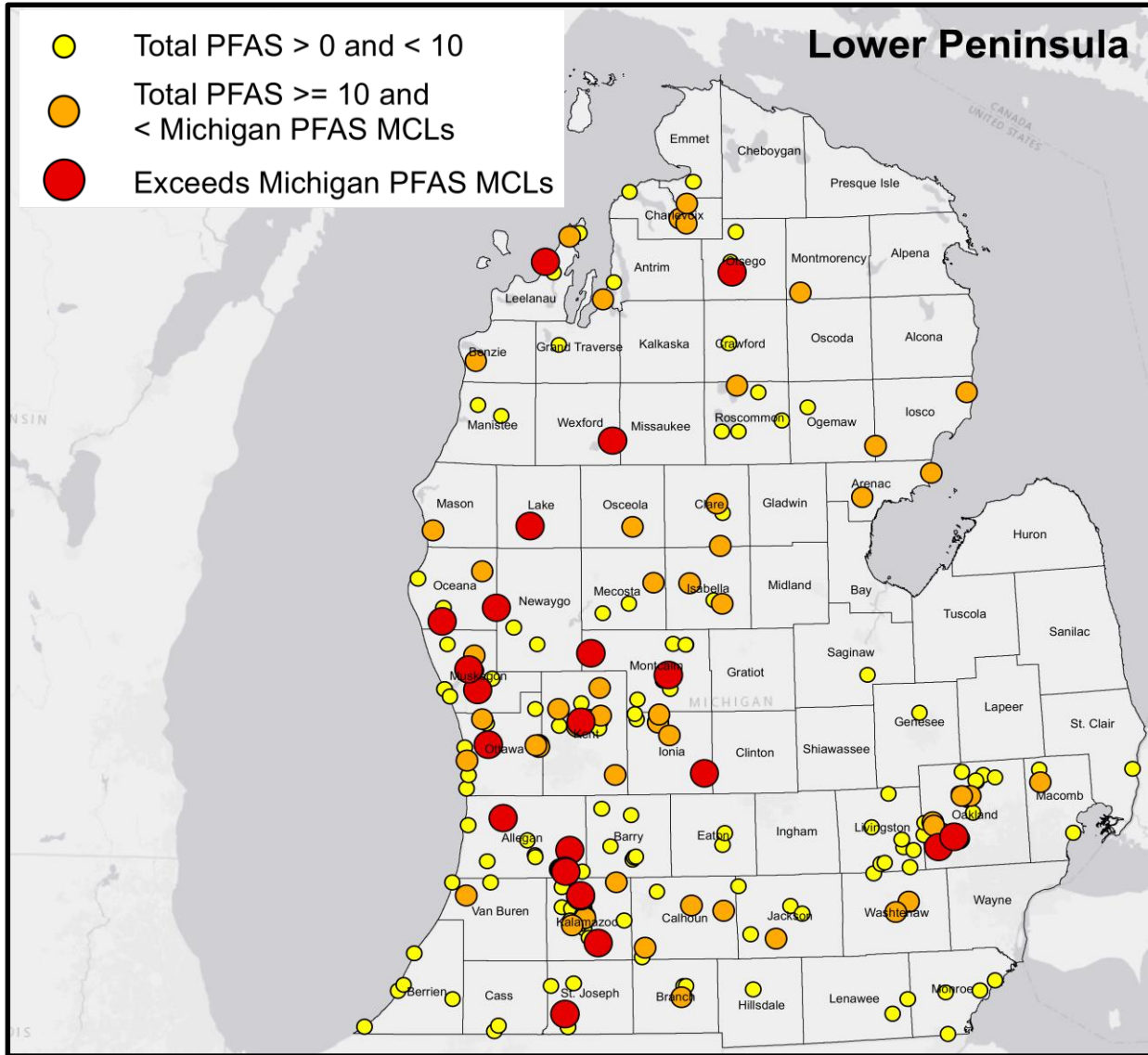
3.6% (80)

0.1% (3)

# Michigan PFAS Minimum Contaminant Levels (MCLs)

PFAS	MCL (ng/L)	Chemical Abstract Services Registry Number (CASRN)
Perfluorohexanoic acid ( <b>PFHxA</b> )	400,000	307-24-4
Perfluorooctanoic Acid ( <b>PFOA</b> )	8	335-67-1
Perfluorononanoic Acid ( <b>PFNA</b> )	6	375-95-1
Perfluorobutane sulfonic acid ( <b>PFBS</b> )	420	375-73-5
Perfluorohexane sulfonic acid ( <b>PFHxS</b> )	51	355-46-4
Perfluorooctane sulfonic acid ( <b>PFOS</b> )	16	1763-23-1
Hexafluoropropylene Oxide Dimer Acid ( <b>HFPO-DA</b> ) (a GenX compound)	370	13252-13-6

# Phase 1 & 2 - PWS Sampling – New MCL Results Comparison



# Lessons Learned

- Evaluate PWS information prior to initiation
- Extensive staff training needed
  - Data consistency
  - Nomenclature and COCs
  - Dealing with adversity
- Develop sampling approach that is defensible
- Review daily field sampling forms and COCs daily
- Over-communicate with laboratory
- Issues that could cause delays
  - Weather
  - Staffing issues (illness / family emergencies)
  - Cancelations / no-shows (have backup crews ready)
- Establish objects for communication with public, media, PWS, and internally within agency upfront





Image credit: iStock

# Thank You!

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