Contaminants of Emerging Concern: DWEHD Update

Ian O. Smith, Ph.D.
EGLE Drinking Water and Environmental Health Division
517-256-2474 | smithi@michigan.gov

Emerging Contaminants at EGLE

- PFAS – DWEHD works alongside MPART's mission to continue to address these
- HABs – DWEHD and WRD monitoring efforts
- Others
  - Emerging Contaminants Unit in DWEHD has eyes on UCMR 5 data
  - Team is also looking at Michigan for issues inherent to our own state

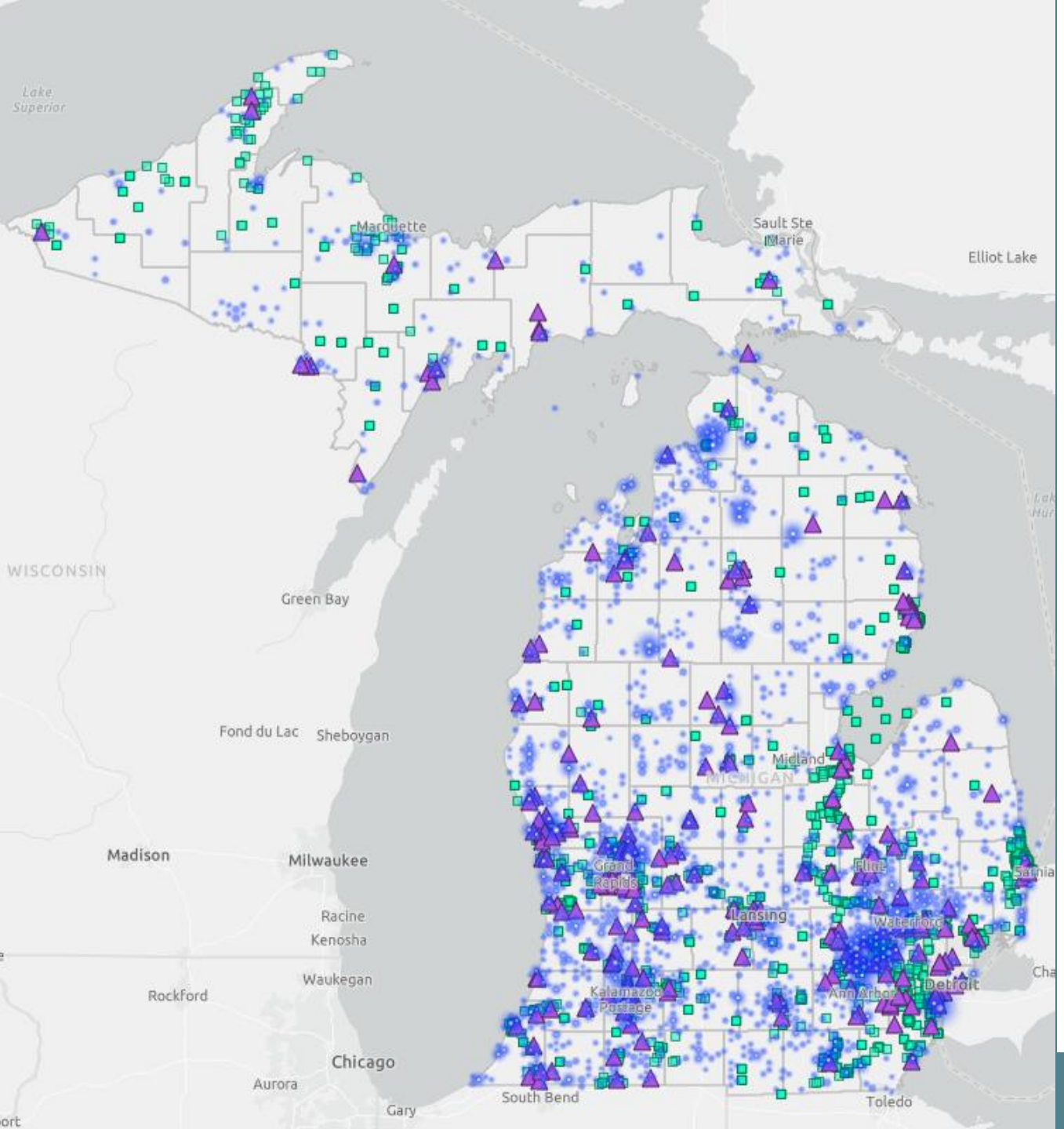
Statewide Emerging Environmental Contaminant Survey (SEECS)

SEECS, a work in progress

5-year plan:

- Incorporation of current sampling efforts into wider SEECS plan
  - PFAS monitoring
  - HAB season/offseason monitoring
  - Manganese monitoring in susceptible regions of MI
- New sampling efforts in consideration, among others
  - 1,4-dioxane
  - 6-PPD quinone
  - Additional cyanotoxins related to HAB
  - Microplastics in SW
  - Pharmaceuticals
  - Endocrine disruptors

PFAS Sampling



PFAS Sampling: Michigan PFAS Action Response Team (MPART)

MPART is a team of seven state agencies established to ensure coordination in implementing a response to PFAS contamination.

The goal of MPART is to protect public health by identifying sources of PFAS, addressing PFAS contamination at sources, and working with local health departments to protect people in areas where groundwater is impacted by PFAS.

MPART PFAS Geographic Information System Web App (9/13/2023)

egle.maps.arcgis.com/apps/webappviewer/index.html?id=bdec7880220d4ccf943aea13eba102db

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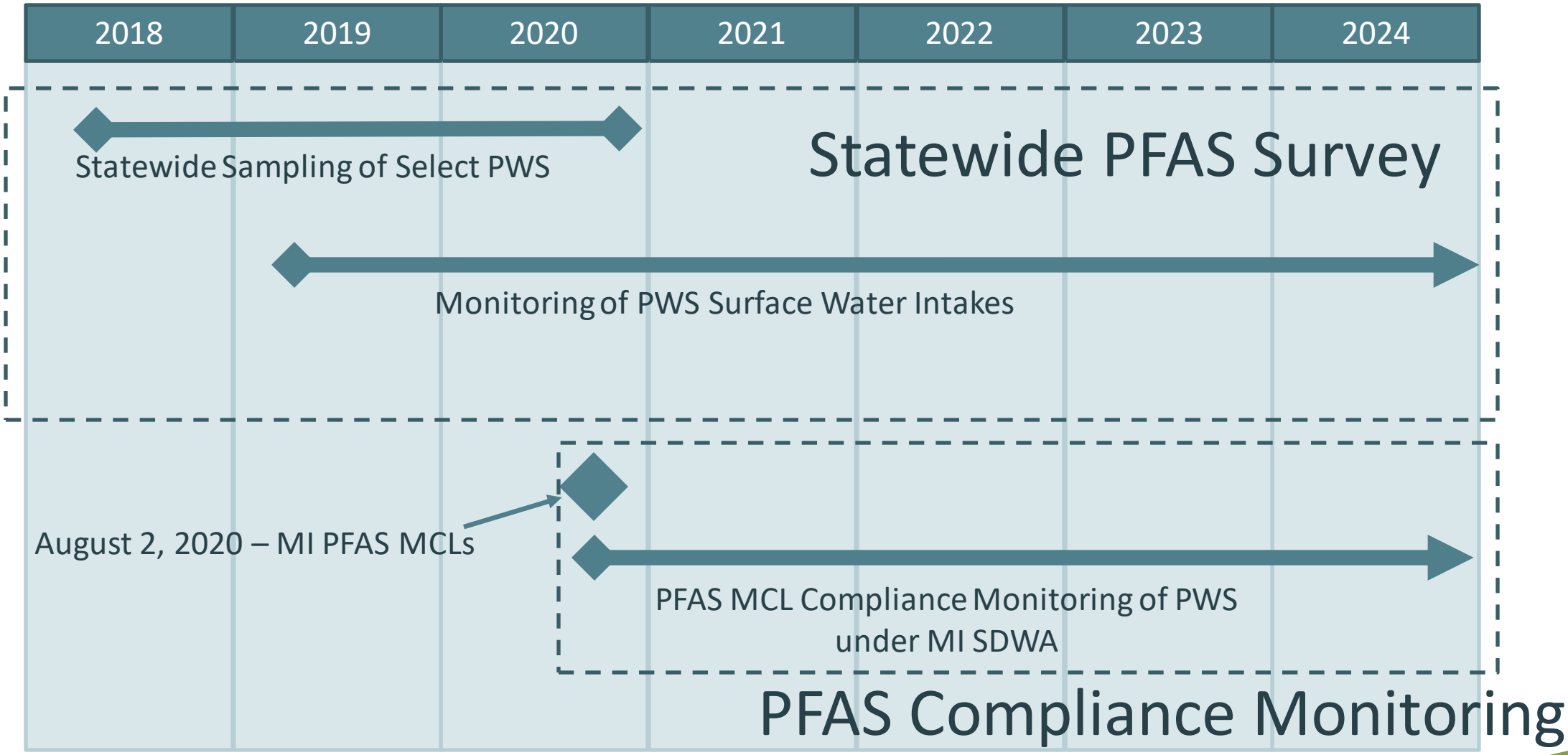
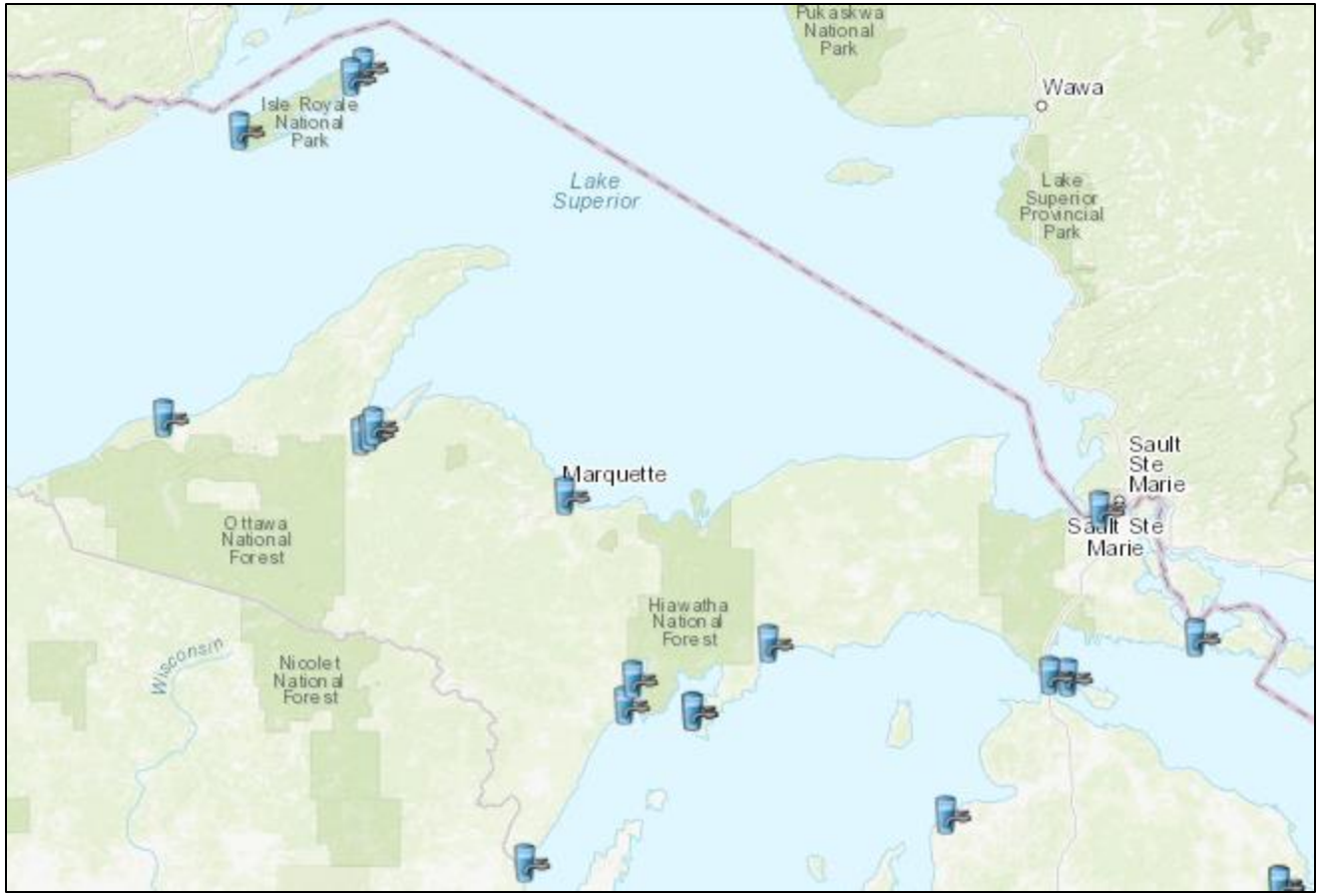
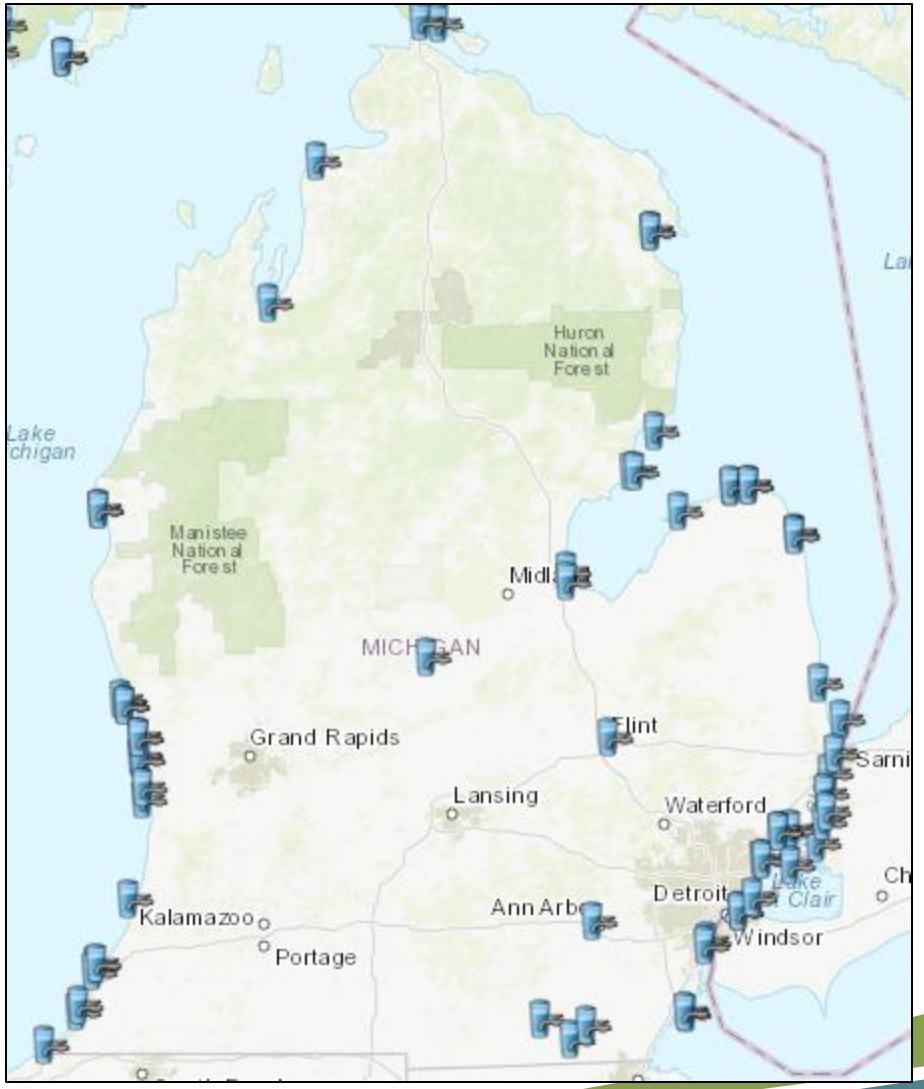
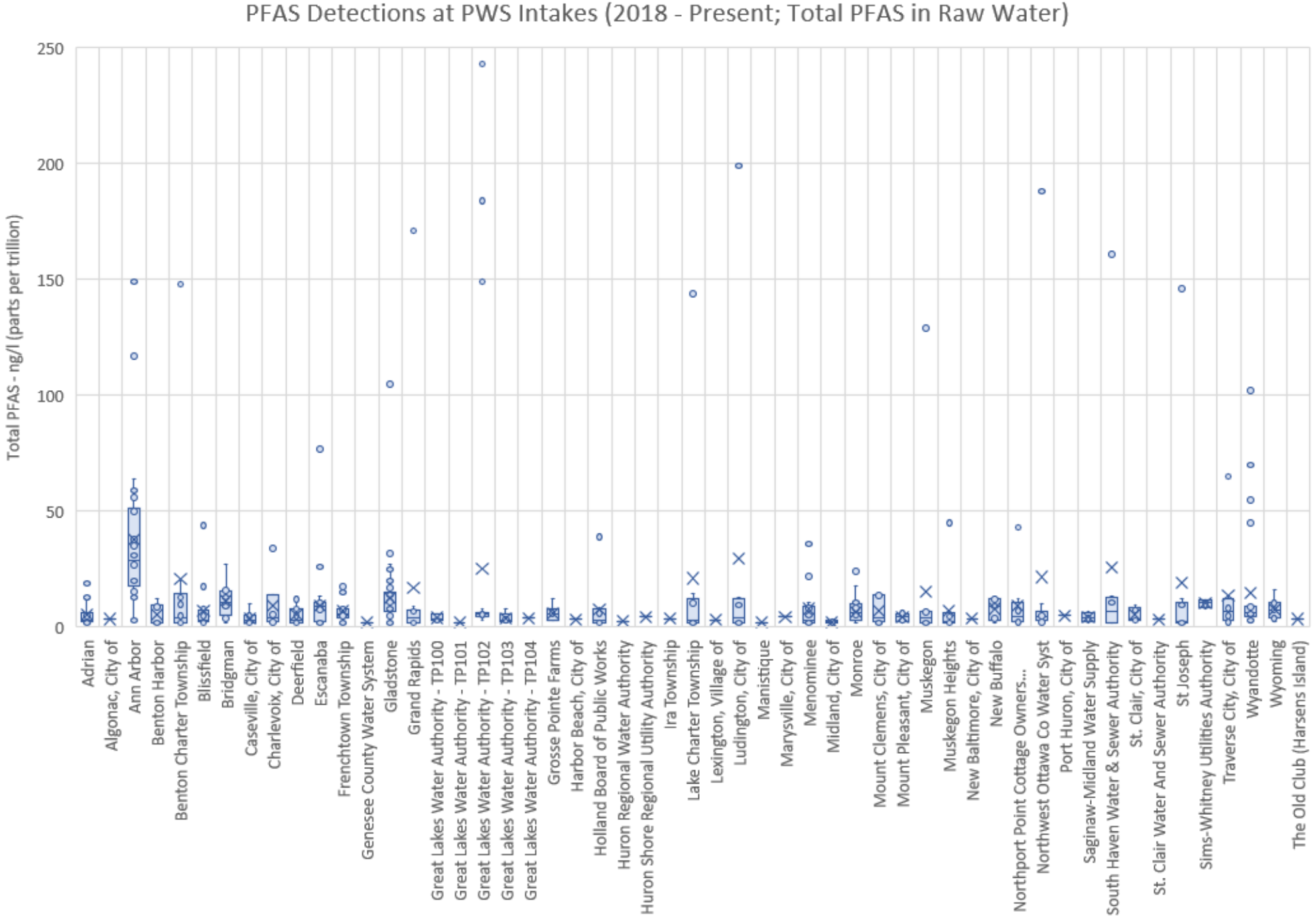
Timeline of PFAS sampling in MI PWS (2018 – present)



Community Public Water Supply Intake Locations







**Statewide PFAS PWS intake data current as of 5/28/2024.*

Michigan PFAS MCL Compliance Monitoring (2020 - present)

Types of Public Water Supplies (PWS)

Classification	Description
Community Public Water Supply (Type I)	Provides year-round service to not less than 25 residents OR not less than 15 living units
Noncommunity Public Water Supply (Type II) • Non-Transient	Serves not less than 25 of the SAME people for at least six months per year
• Transient	Serves not less than 25 people OR not less than 15 connections for at least 60 DAYS per year
Type III Public Water Supply	Anything not considered a Type I or Type II water supply; serves less than 25 people AND 15 connections; or operates for less than 60 days per year
Private Water Supply	Serves a single living unit

PFAS Maximum Contaminant Levels

Rule 325.10604g MCLs for per- and polyfluoroalkyl substances

Contaminant	MCL (ng/l = ppt)	Chemical Abstract Services Registry Number (CASRN)
Perfluorononanoic acid (PFNA)	6	375-95-1
Perfluorooctanoic acid (PFOA)	8	335-67-1
Perfluorooctane sulfonic acid (PFOS)	16	1763-23-1
Perfluorohexane sulfonic acid (PFHxS)	51	355-46-4
Hexafluoropropylene oxide dimer acid (HFPO-DA)	370	13252-13-6
Perfluorobutane sulfonic acid (PFBS)	420	375-73-5
Perfluorohexanoic acid (PFHxA)	400,000	307-24-4

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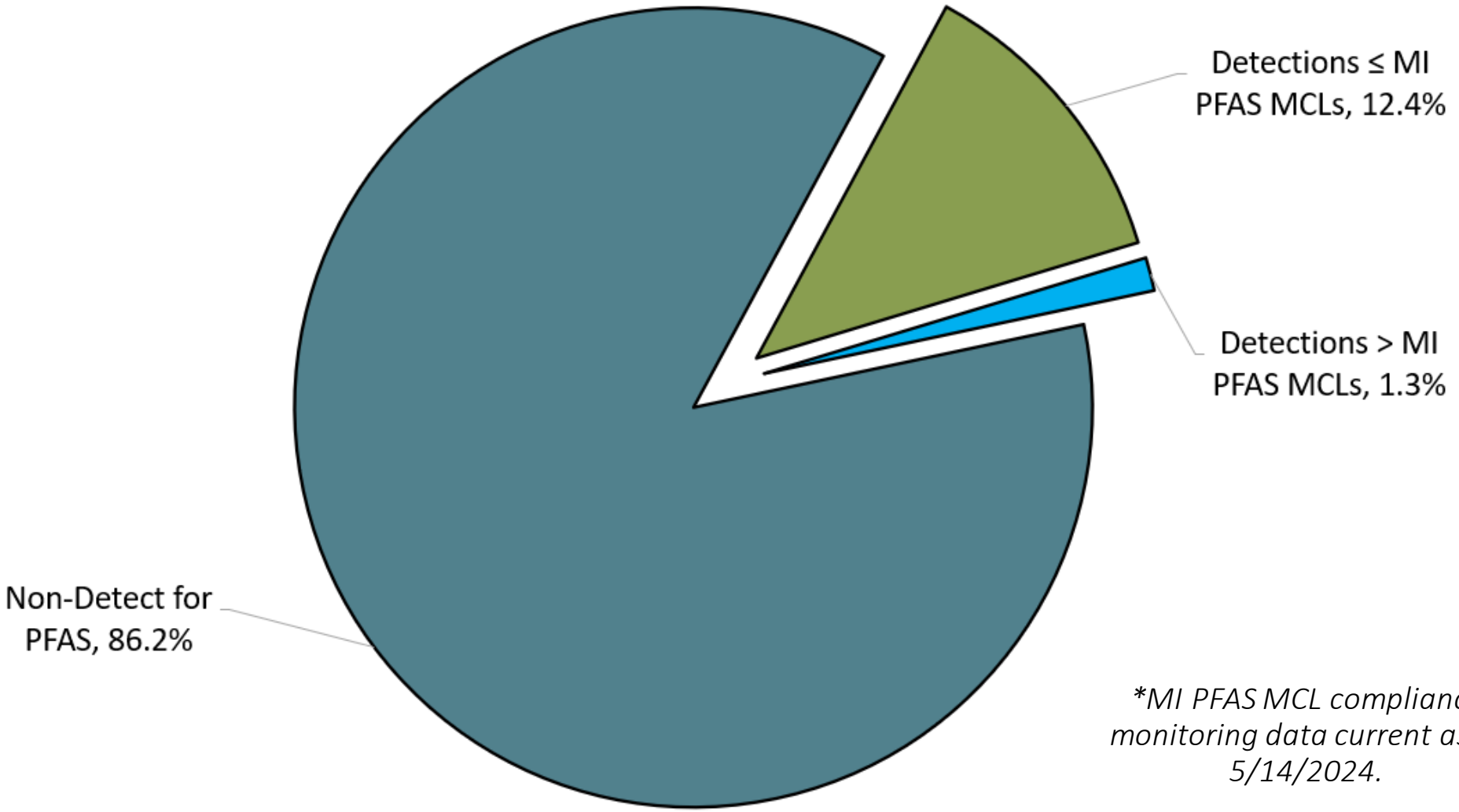
Compliance Calculation

- Compliance based on a running annual average (RAA) at each sampling point

$$RAA = \frac{R1 + R2 + R3 + R4}{4}$$

- Results less than reporting limit, use zero in calculations
- Failed to collect required all required samples, calculate with total number of samples collected

MI PFAS MCL Compliance Monitoring: Supplies Sampled*



**MI PFAS MCL compliance monitoring data current as of 5/14/2024.*

MI PFAS MCL Compliance Monitoring*

	Supplies Sampled	Non-Detect for PFAS	Detections ≤ MI PFAS MCL(s)	Detections > MI PFAS MCL(s)	MCL Exceedances
Community Water Supplies (Type I)	**1,139**	960	167	12	2
Noncommunity Water Supplies (Type II)	**1,389**	1,220	147	22	6
Total	**2,528**	2,180	314	34	8

**MI PFAS MCL compliance monitoring data current as of 5/14/2024.*

Additional Drinking Water PFAS Sampling

- Groundwater sampling associated with official MPART sites and areas of interest
- When appropriate, includes drinking water wells not sampled for PFAS under MI Safe Drinking Water Act
  - Private residential wells
  - Type II transient noncommunity water supplies
  - Type III public water supplies
- Results are shared on the MPART website: Michigan.gov/pfasresponse
- Point of use filters provided when deemed necessary (MDHHS/LHDs)

MPART Drinking Water Sampling Initiatives: Potential Outcomes

- Identify and assist supplies with or approaching MI PFAS MCL exceedances
  - Regulations apply via Michigan's Safe Drinking Water Act
  - Provide proactive guidance for supplies likely to be affected by upcoming federal regulations
- Supplement compliance monitoring data with additional non-regulatory sampling
  - Surface water intake (raw) water monitoring
  - Private well testing nearby MPART site investigations/areas of interest
  - Monitoring private well testing results submitted to EGLE Drinking Water Laboratory
- Inform potential future state-level rules development

HAB/Select Cyanotoxin Sampling

Select Cyanotoxins related to HAB

EGLE partners with MDHHS to offer a voluntary sampling opportunity for all public water systems that use surface water as a source.

In Michigan, surface water sources can include the Great Lakes, smaller lakes, impoundments/reservoirs, and rivers.

Michigan's Harmful Algal Bloom Monitoring Timeline

- Michigan's HAB-related activities began before **2013**, when EGLE's (DEQ at the time) Water Resources Division established an internal HAB work group
  - These efforts have continued (and expanded) since that time
  - Current drinking water intake monitoring efforts grew out of this initial program
- **2017** - Testing during the HAB season began at 12 surface water supply intakes with qualitative analysis for microcystins, using Abraxis colorimetric test strips

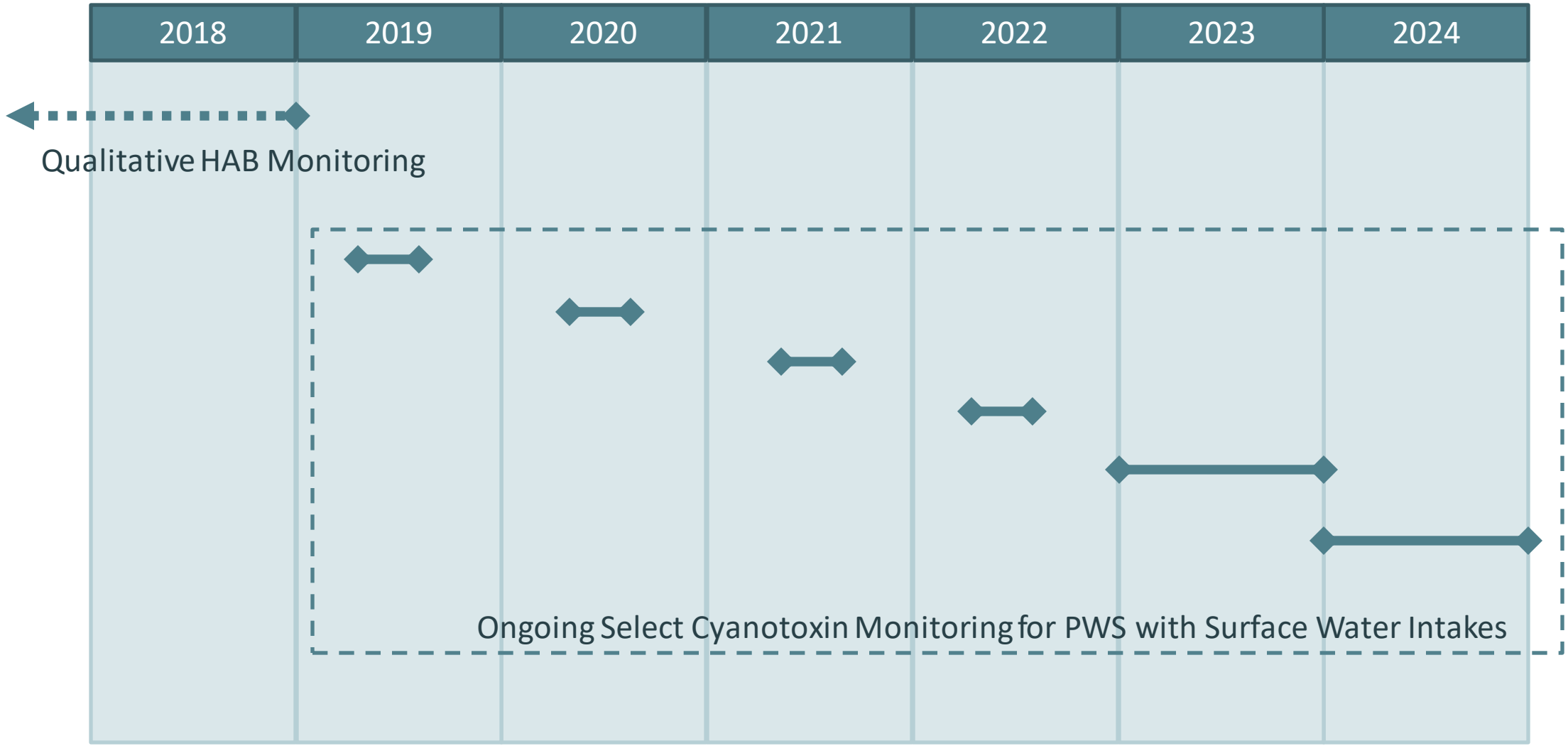
Michigan's Harmful Algal Bloom Monitoring Timeline

- **2019 -** EGLE partnered with MDHHS to utilize EPA method 544 for microcystins and nodularin by LC/MS/MS and EPA 545 for cylindrospermopsin and anatoxin-a by LC/ESI-MS/MS laboratory analysis

- **2020 -** Monitoring expanded to all surface water supplies willing to participate

- **2023 -** Monitoring expanded to include off-season sampling for select supplies willing to participate

Timeline of HAB season monitoring in MI PWS intakes (2018 – present)



Statewide Cyanotoxin Monitoring during HAB Season

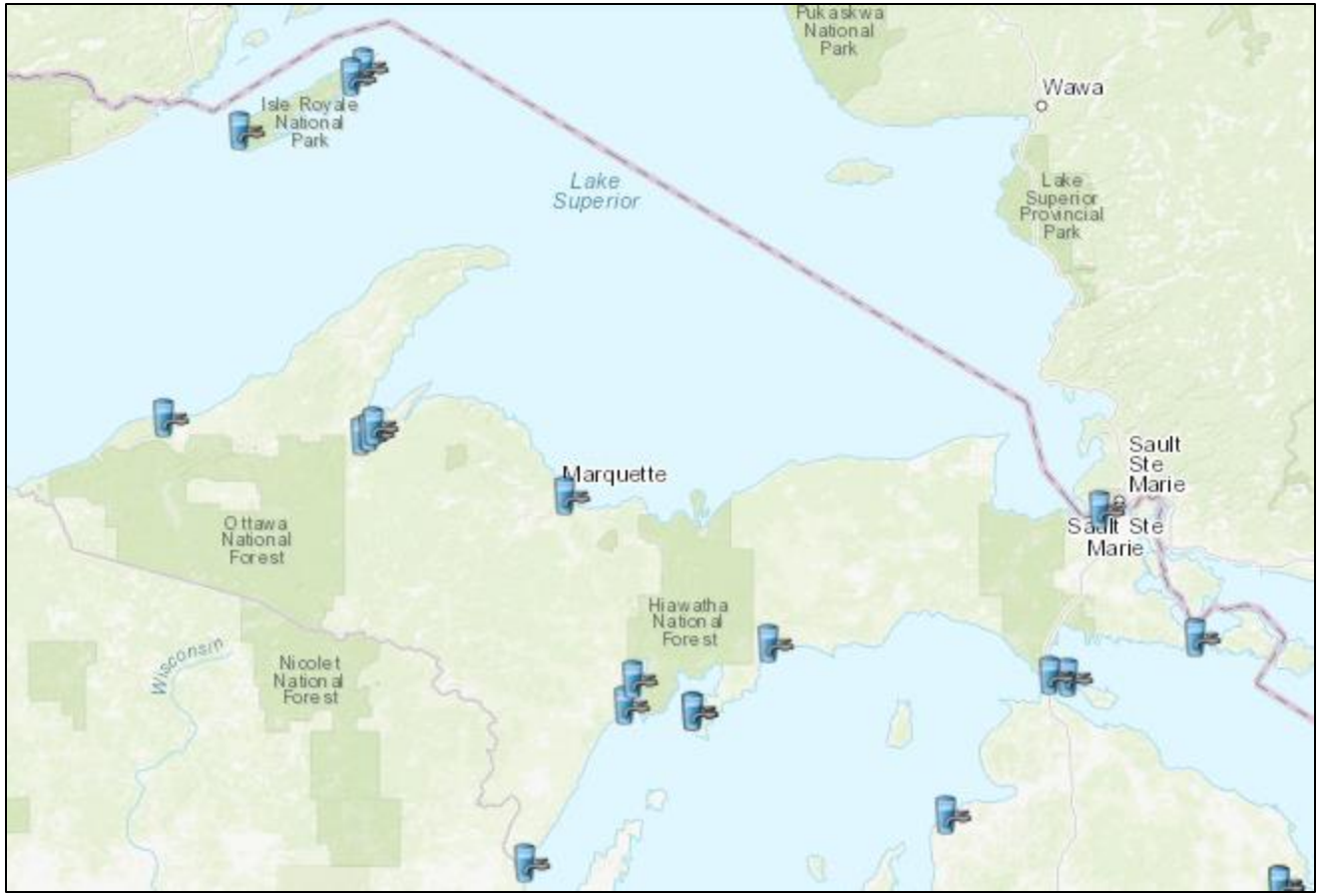
- Joint effort with MDHHS Division of Environmental Health
- Sample supplies utilizing surface water as a source.
  - Community Water Supplies and one Noncommunity Water Supply
  - Voluntary participation
  - Sampling between July and October (extended to December moving forward)
- Sample analysis utilizes/includes:
  - EPA methods 544 and 545: quantitative analysis for specific cyanotoxins, 2019 – present
  - Select cyanotoxins analyzed include microcystins, nodularin, cylindrospermopsin, and anatoxin-a

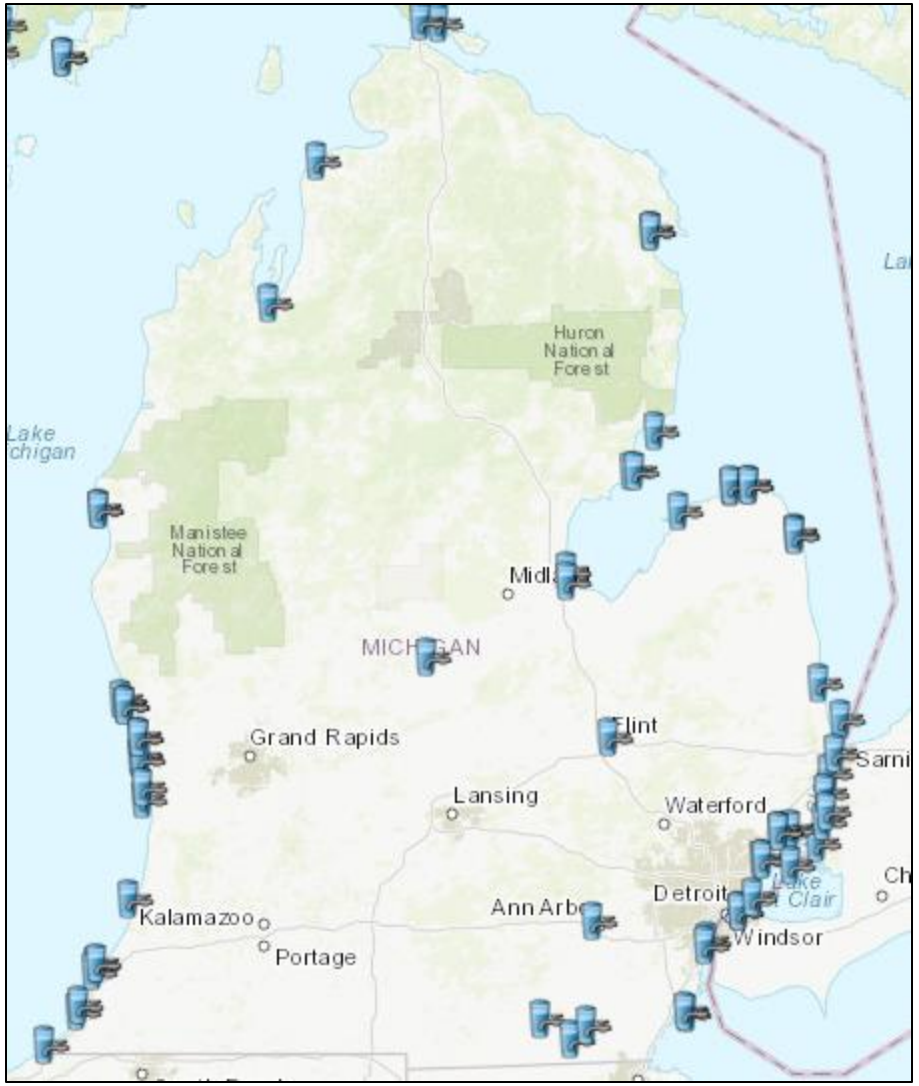
Intake (Raw Water) Sample Results

Raw water detections (including low level) are communicated to stakeholders and assessed for potential risk/need for treatment

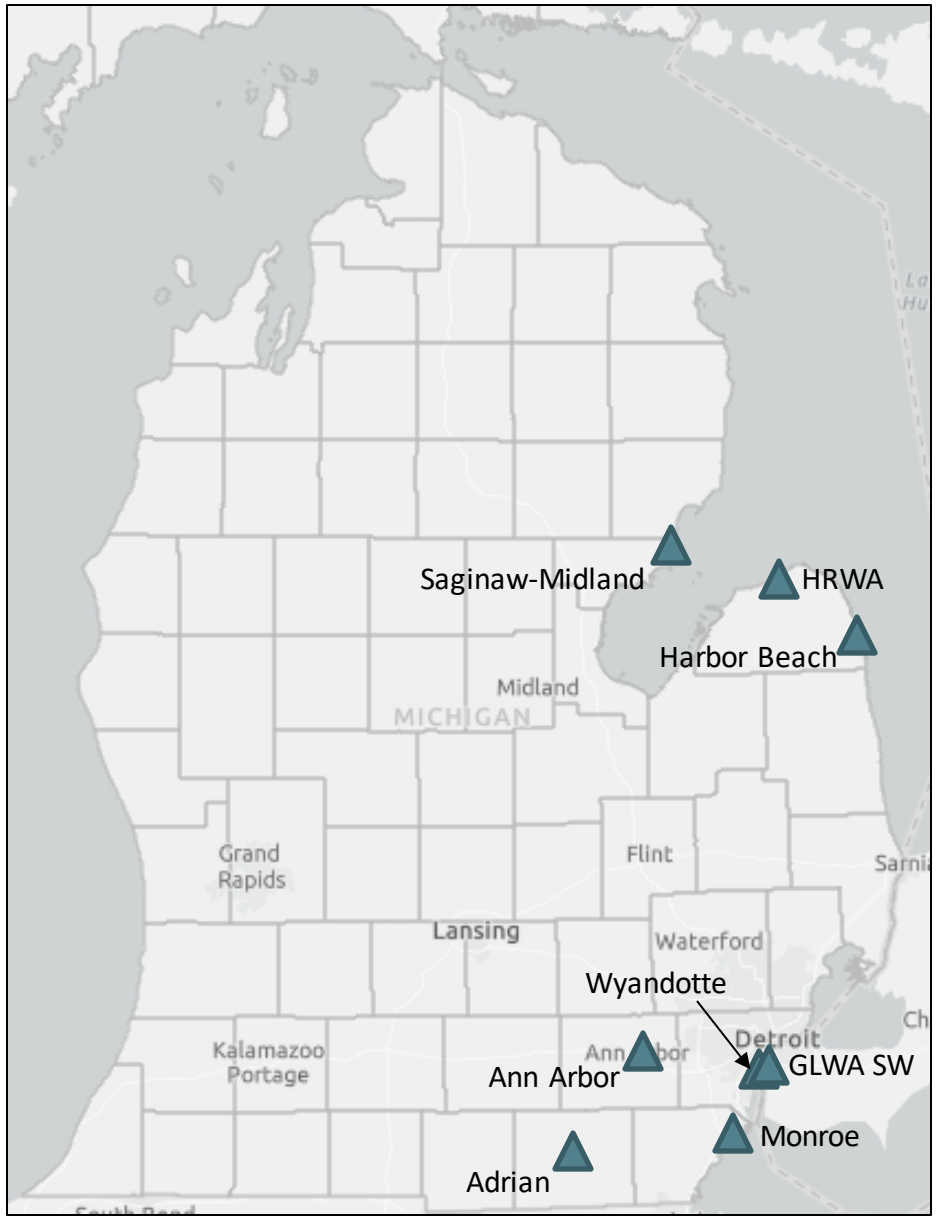
- Ongoing assessment of incidence in source water vs. time, including seasonal variations.
- Late season blooms have led to detections near the end of the HAB season.
- Michigan weather includes variations in temperature, precipitation, and ice coverage long-term.
- Changes in weather patterns may affect the typical bloom season.
- EGLE recommends a continued effort to sample during the off-season to further assess incidence and risk, year-to-year.

Community Public Water Supply Intake Locations





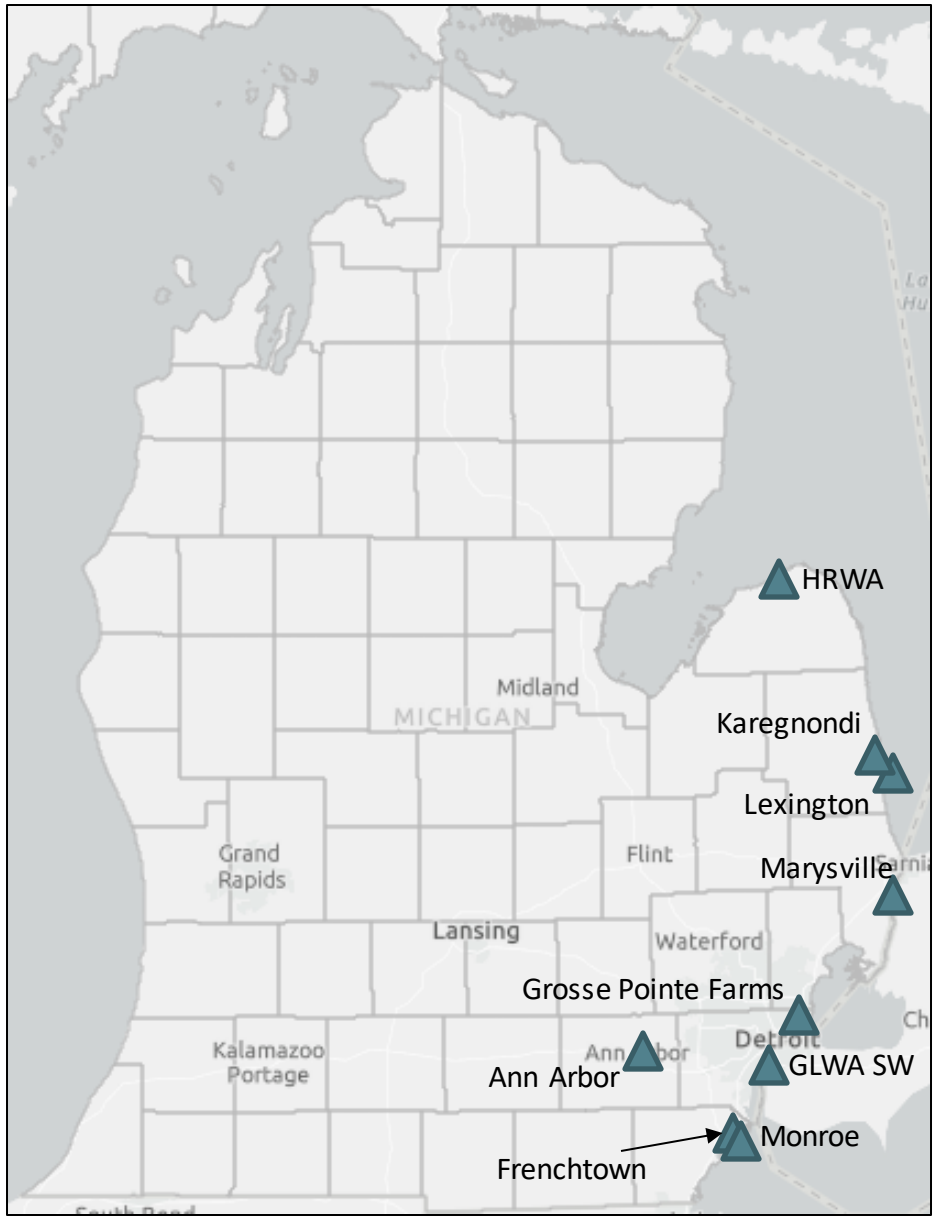
Source: Michigan PFAS Potential Sites Web Map



2019 HAB season microcystins detections

- 33 total supply intakes sampled (47% participation)
- Mixed sampling frequency:
  - Most sampled monthly during part of the season
  - Weekly sampling for Monroe and Adrian

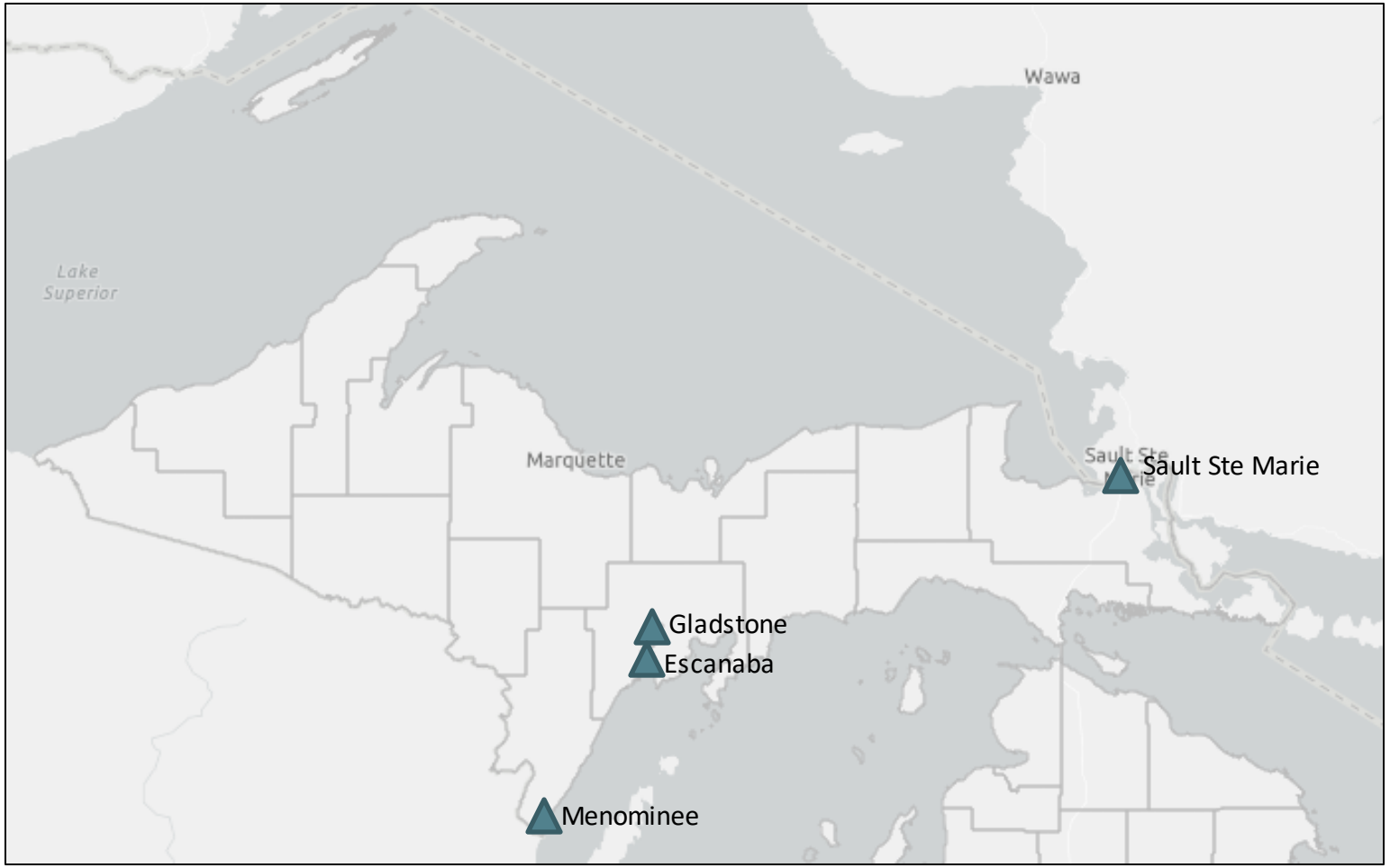
▲ Public water supply intakes with microcystins detections (11)

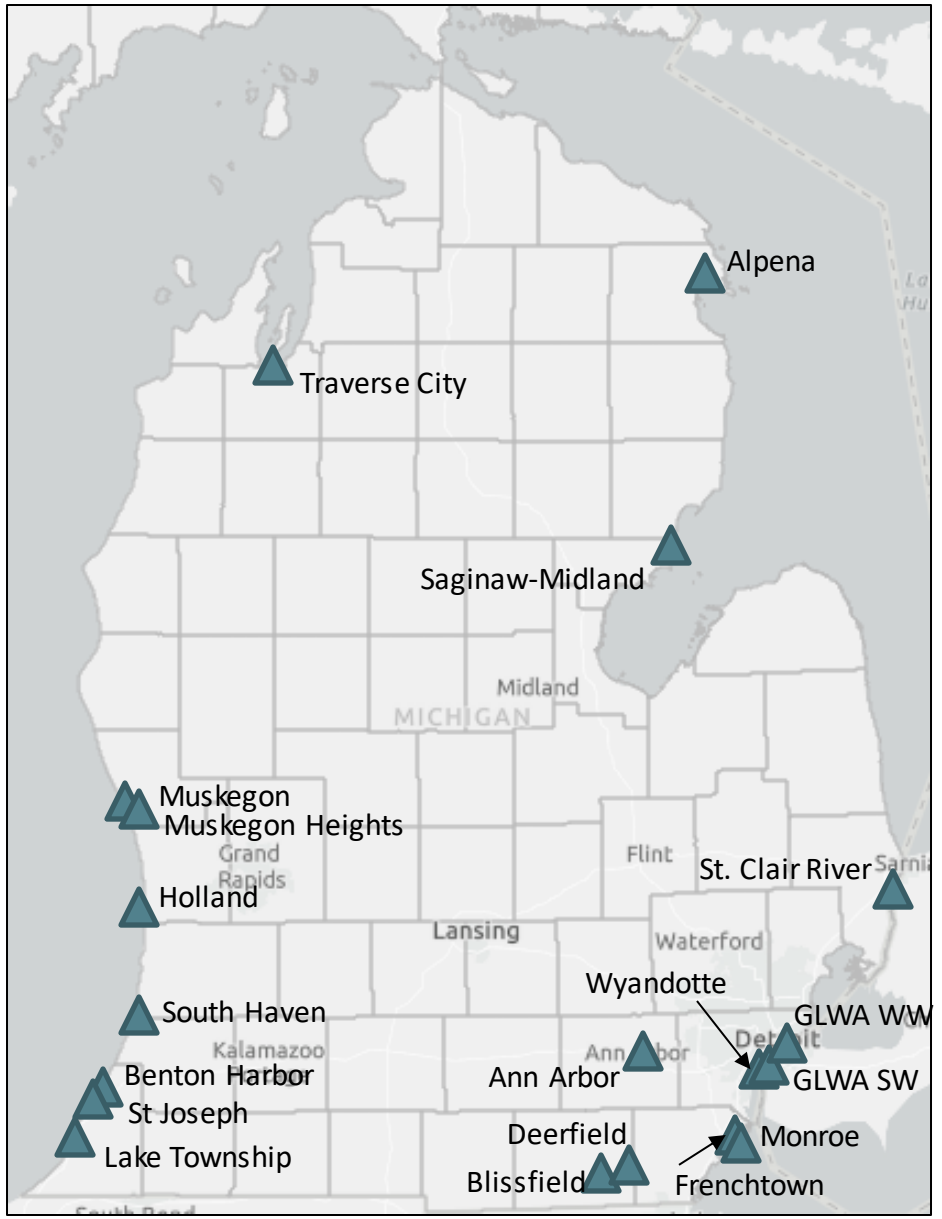


2020 HAB season microcystins detections

- 45 total supply intakes sampled (64% participation)
- Mixed sampling frequency:
  - Group I sampled weekly (with additional select cyanotoxins)
  - Groups II/III sampled every other week

▲ Public water supply intakes with microcystins detections (12)

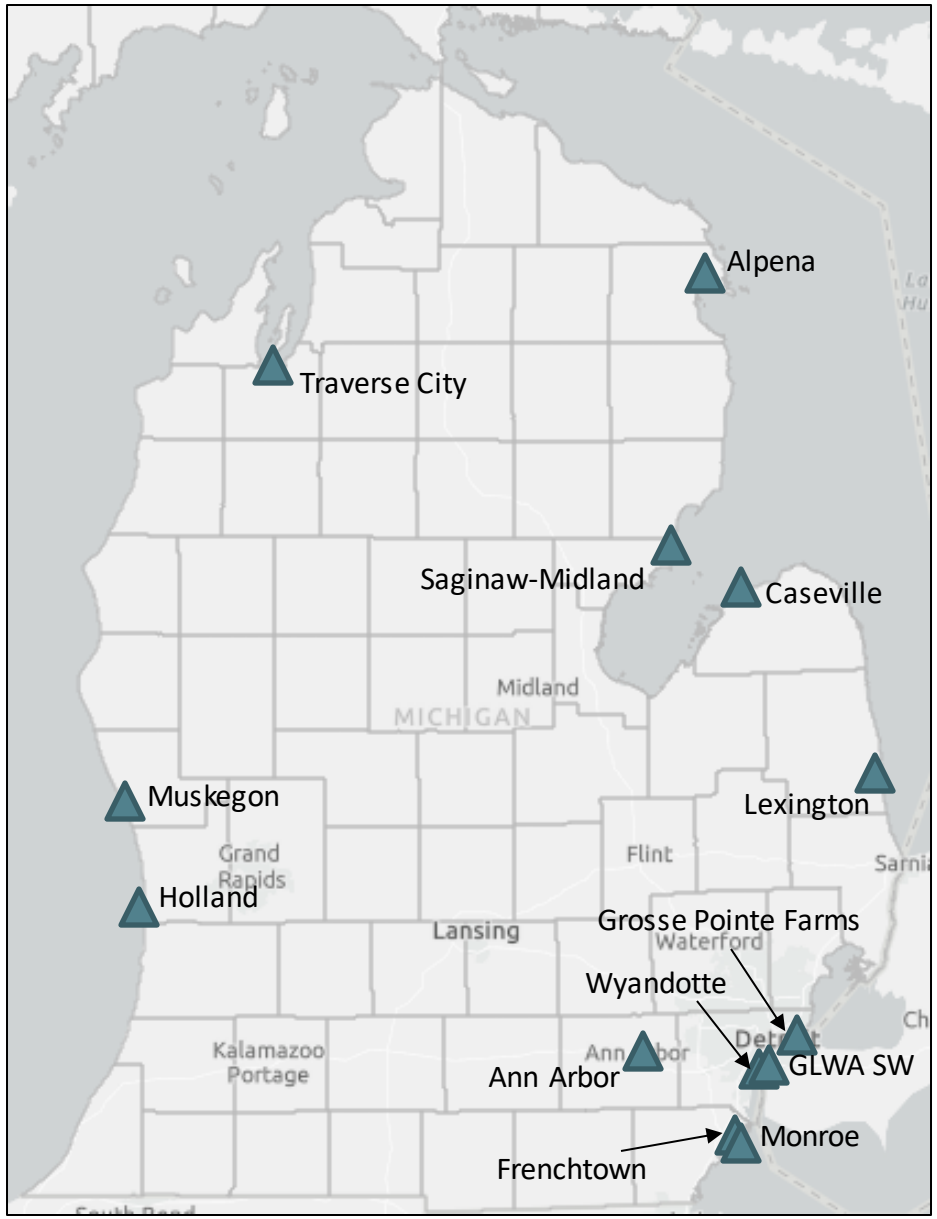




2021 HAB season microcystins detections

- 54 total supply intakes sampled (77% participation)
- Mixed sampling frequency:
  - Group I sampled weekly (with additional select cyanotoxins)
  - Groups II/III sampled every other week

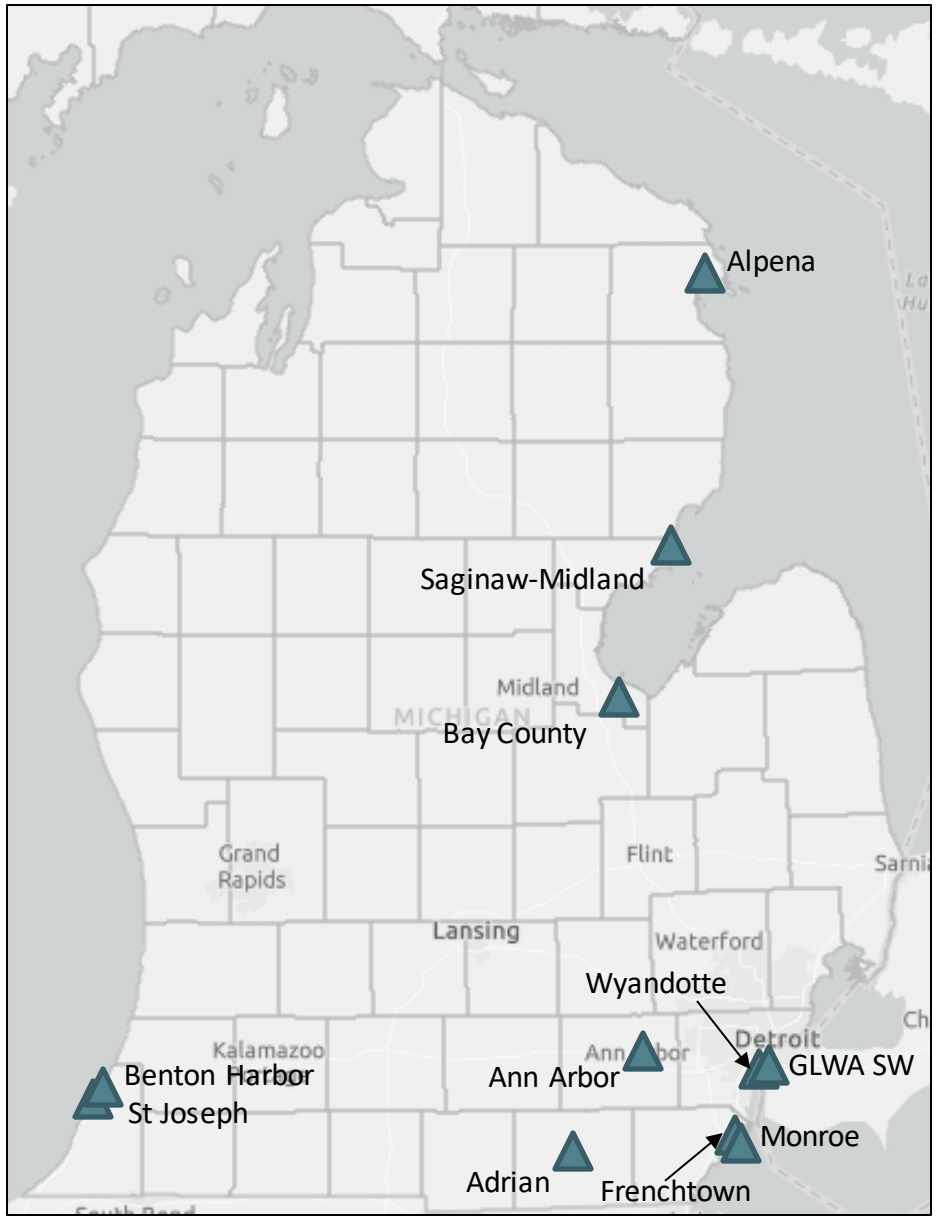
▲ Public water supply intakes with microcystins detections (23)



2022 HAB season microcystins detections

- 50 total supply intakes sampled (70% participation)
- Mixed sampling frequency:
  - Group I sampled weekly (with additional select cyanotoxins)
  - Groups II/III sampled every other week

▲ Public water supply intakes with microcystins detections (16)



2023 HAB season microcystins detections

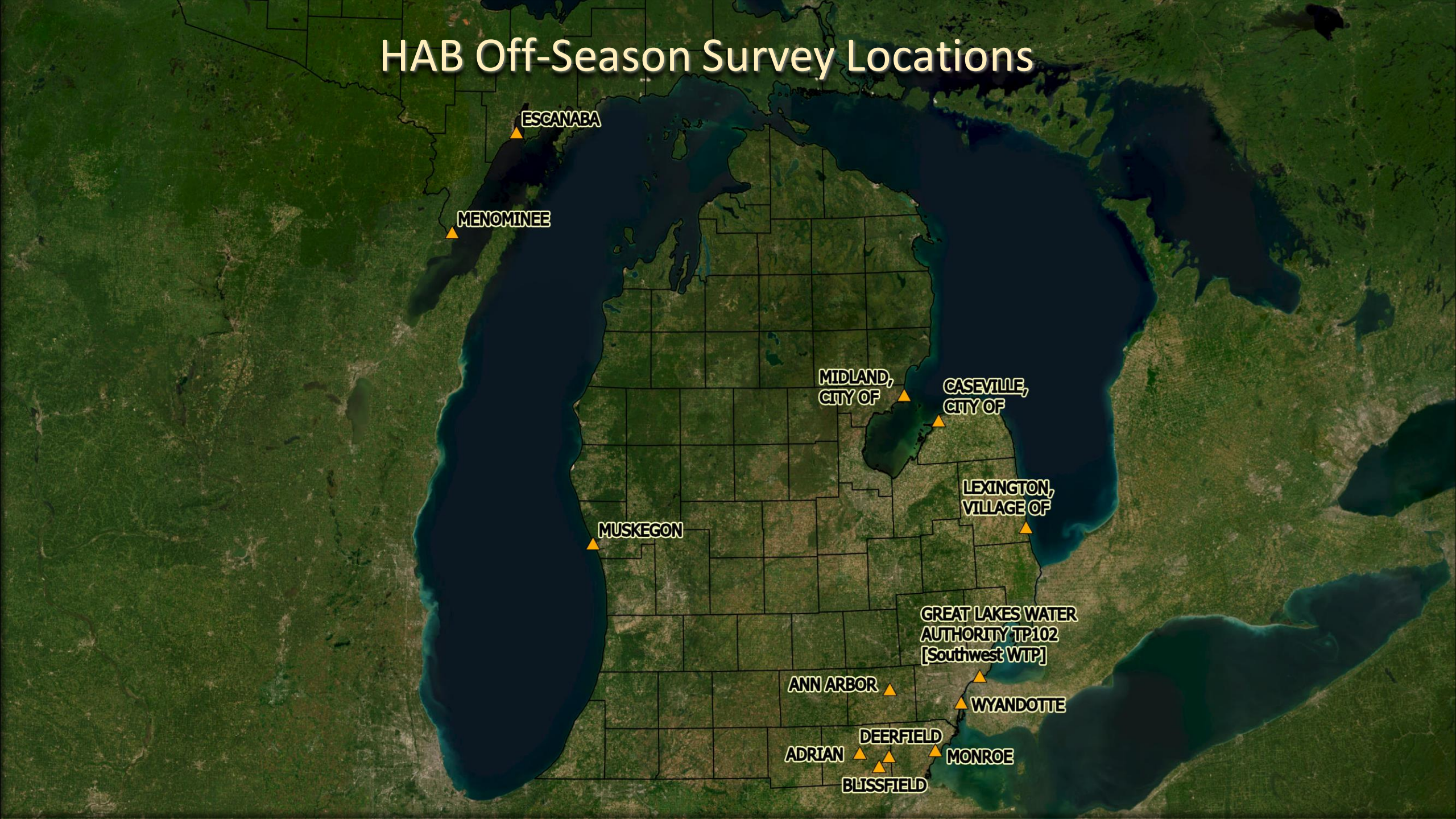
- 45 total supply intakes sampled (63% participation)
- Mixed sampling frequency:
  - Group I sampled weekly (with additional select cyanotoxins)
  - Groups II/III sampled every other week

▲ Public water supply intakes with microcystins detections (13)

New as of 2023: Select Cyanotoxin Monitoring

- Statewide Cyanotoxin Monitoring during HAB Season (June – December 2023)
- Expanded targeted monitoring during cold-weather/pre-season months (January – May, monthly monitoring)
  - Focused on regions with regular detections, especially late-season
  - Designed to assess under-ice occurrence of cyanotoxins

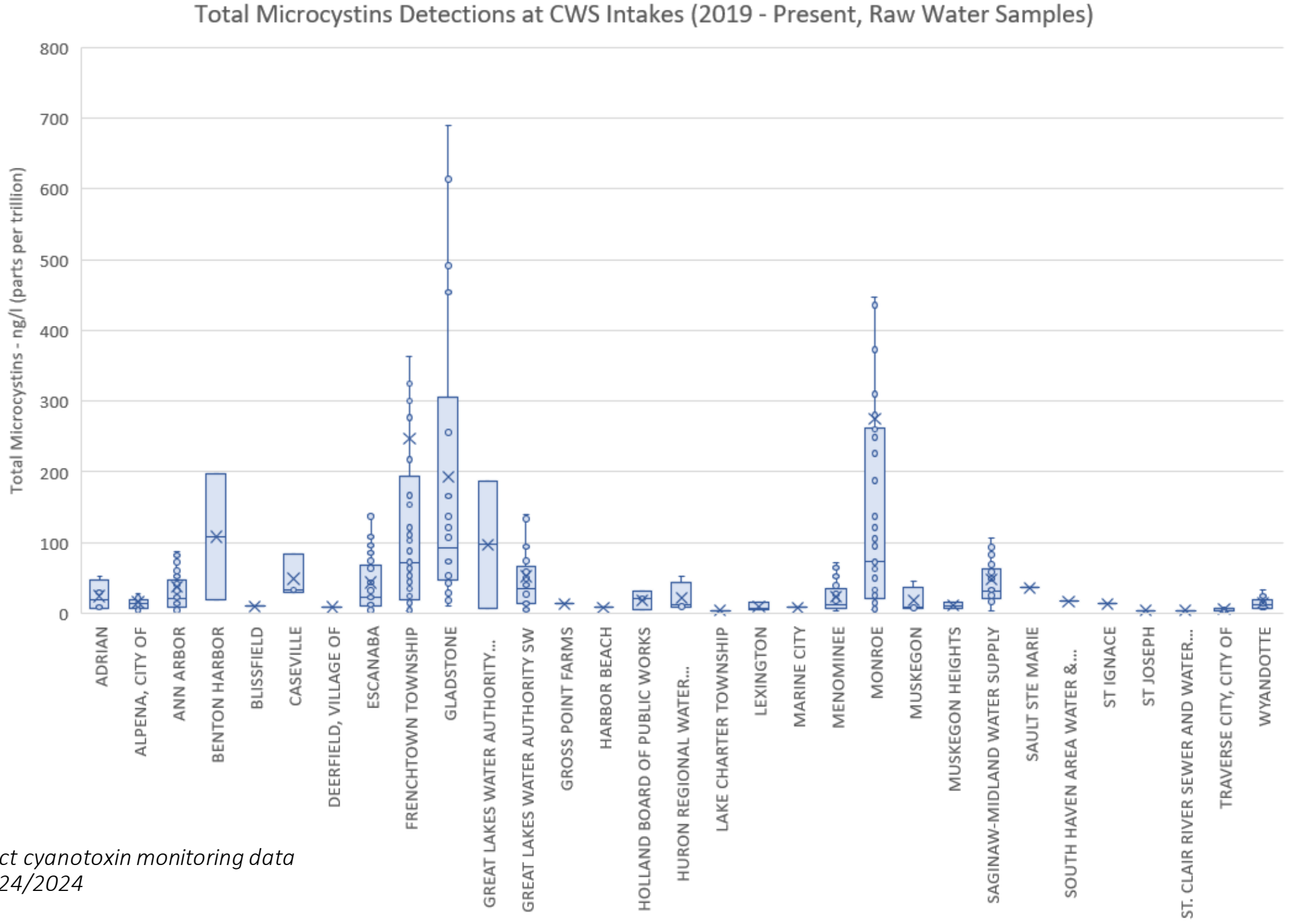
HAB Off-Season Survey Locations



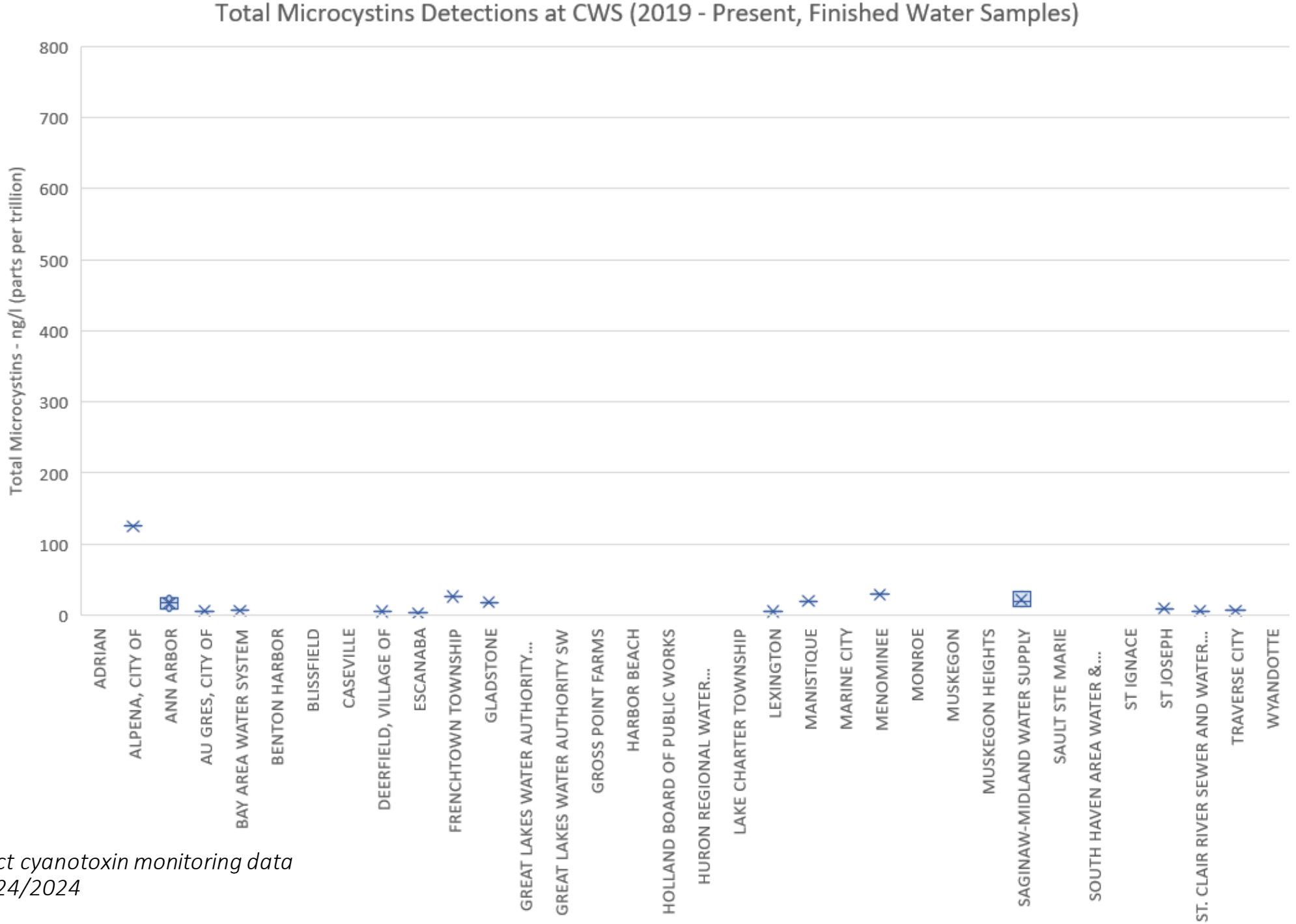
2023 & 2024 HAB Off-Season Sample Survey: Results

- All supplies sampled had point of entry (finished) results that were below the reporting limit (ND) for all tested cyanotoxins
- 10 supplies had intake (raw) results that were below the reporting limit (ND) for all tested cyanotoxins
- *Three facilities* had positive intake (raw) results, ranging from 4.2 to 11.3 ng/l for total microcystins (other tested cyanotoxins ND)

- Adrian
- ***Ann Arbor***
- Blissfield
- Caseville
- Deerfield
- ***Escanaba***
- Great Lakes Water Authority
- Village of Lexington
- ***Menominee***
- Midland
- Monroe
- Muskegon
- Wyandotte



**Statewide select cyanotoxin monitoring data current as of 3/24/2024*

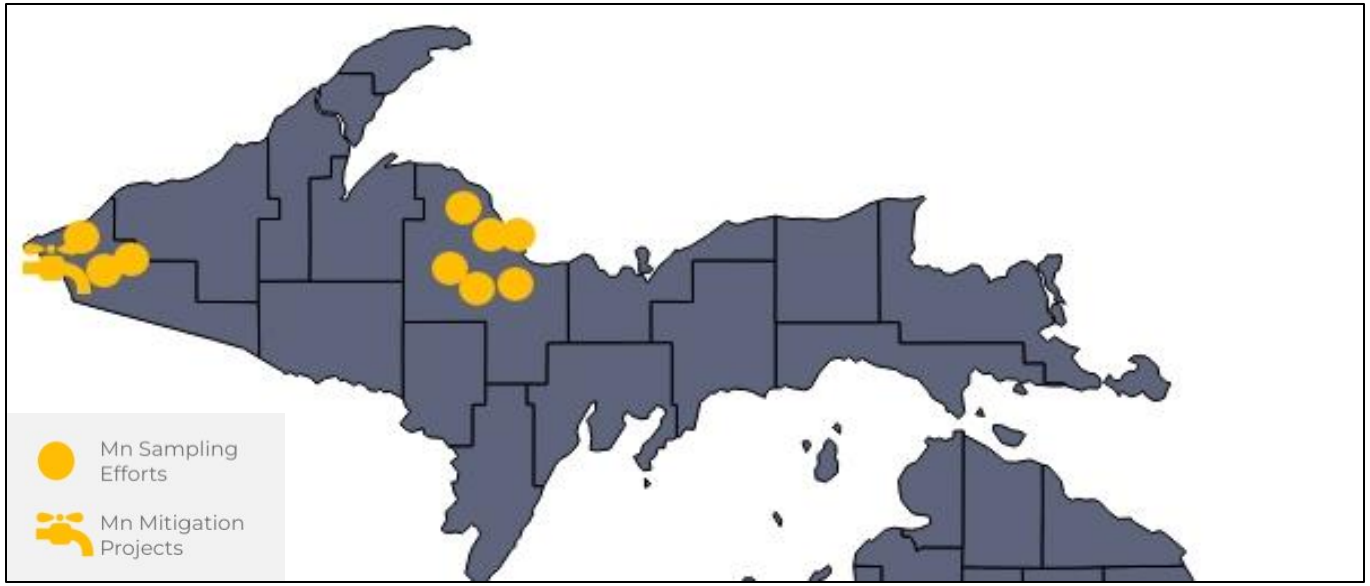


**Statewide select cyanotoxin monitoring data current as of 3/24/2024*

Continued Select Cyanotoxin Monitoring

- Statewide Cyanotoxin Monitoring during HAB Season (June – December 2024) and off-season (January – May 2025)
  - Expanded sampling → more data → better assessment of seasonality
  - Especially important, in light of changing weather patterns year-to-year
  - Year-round sampling is the goal moving forward
- Looking into additional funding sources, to increase sampling frequency and include GUDI supplies in years to come
- Continued coordination within Michigan, as well as with neighbor states within EPA Region 5

Manganese Sampling

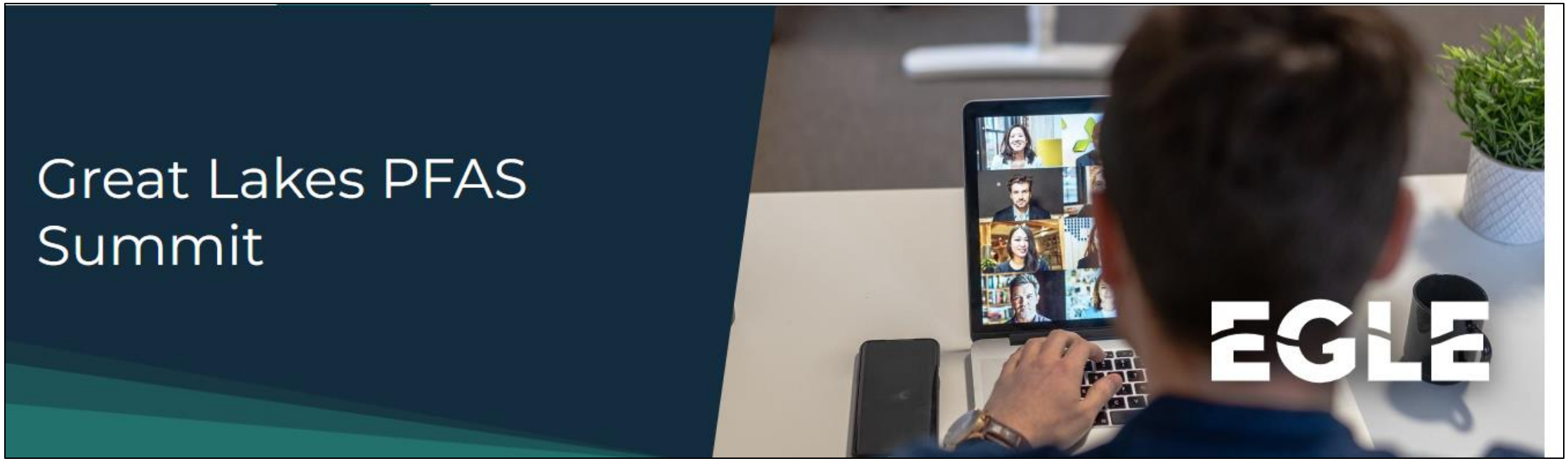


Manganese Sampling

Funded via US EPA Emerging Contaminants in Small and Disadvantaged Communities Grant (BIL)

Communities selected based on preponderance of past manganese detections → data indicates regions where manganese in groundwater is more likely

michigan.gov/egle/outreach/upcoming-events/2024/09/25/great-lakes-drinking-water-conference



michigan.gov/egle/outreach/conferences/pfas-summit

Questions?

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Emerging Contaminants Unit
Drinking Water and Environmental Health Division
Michigan Department of Environment, Great Lakes, and Energy
Email: smithi@michigan.gov
Telephone: 517-256-2474

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