

Indiana PFAS Network

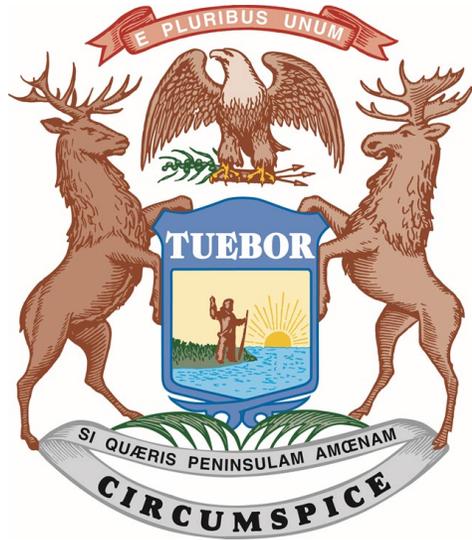
The Power of PFAS Collaboration: Michigan's Model

Michigan PFAS Action Response Team
(MPART)
November 21, 2025

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Michigan PFAS Action Response Team (MPART)

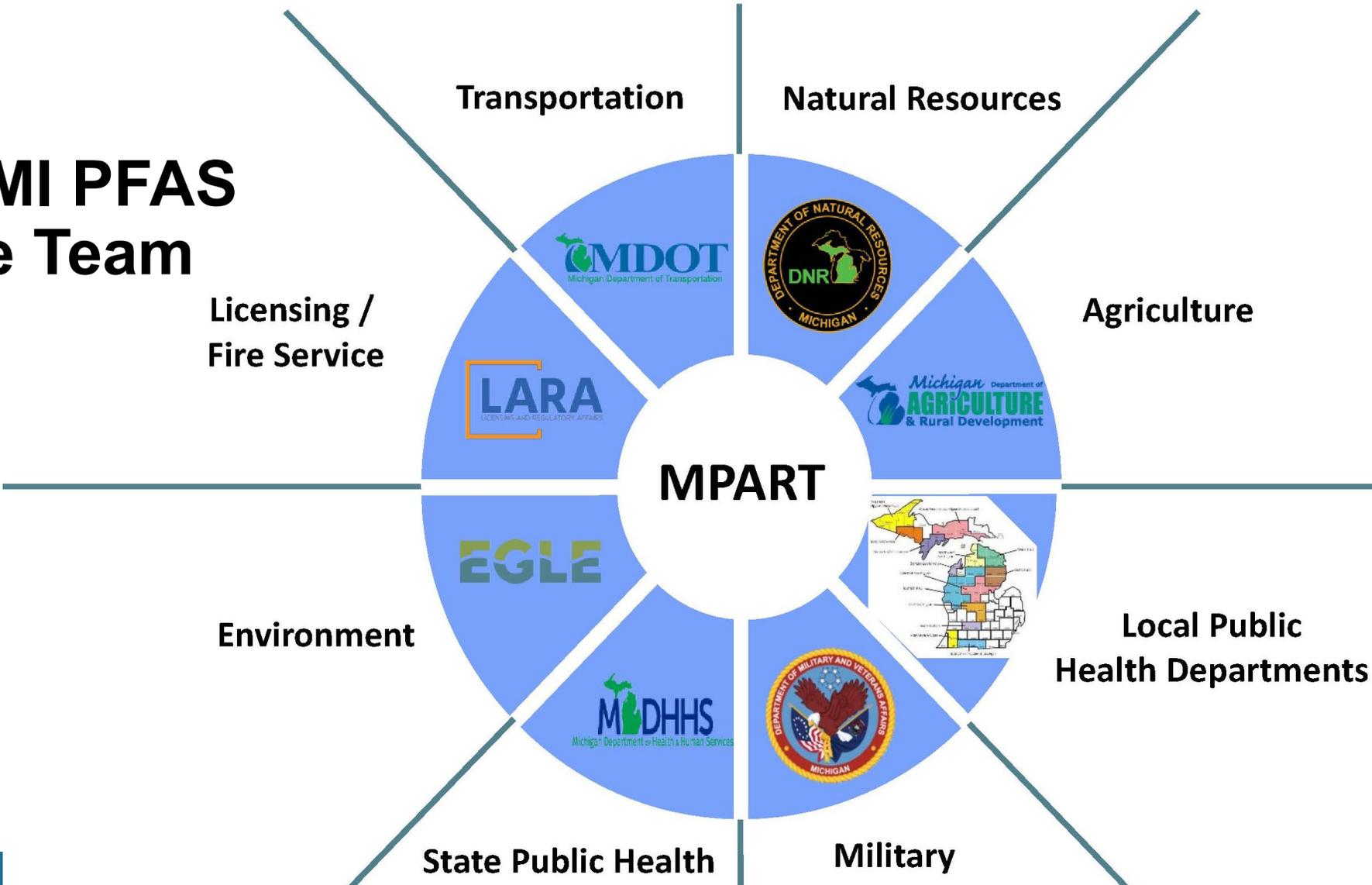


- Executive Order 2019-03
- Unique Multi-Agency Approach
- Leads Coordination and Cooperation Among All Levels of Government
- Directs Implementation of State's Action Strategy

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Establishment of MI PFAS Action Response Team



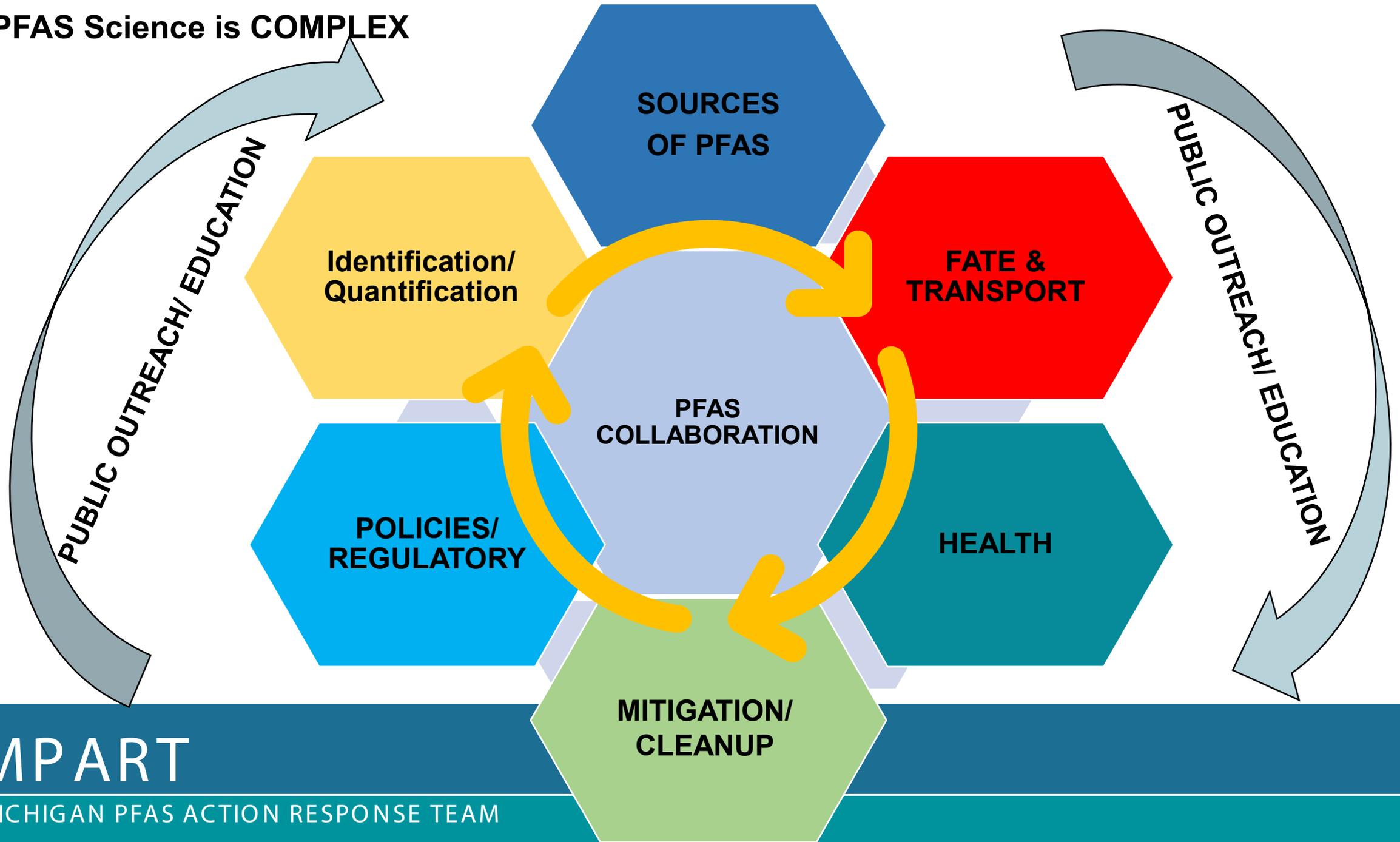
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Keys to Successful Collaboration

- Establish the structure of your team – need to communicate, coordinate and collaborate
- Set up a communication structure and cadence for communicating amongst various players
- Get organized; central location for files, information
- Processes, flow charts, defined expectations
- Secured funding from the legislature
 - Set up a statewide contract that allows fast, nimble response when we need to sample residential wells
 - Asked for funding early on - [MPART - FY2022 Fast Facts](#)
- *Other keys:*
 - Regular meetings = consistent messaging
 - W/o regular meetings (and sometimes even if) “drift” happens
 - Let science guide next steps
 - Determine how residential wells will be approached: radius or downgradient, how far?

PFAS Science is COMPLEX



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PFAS Geographic Information System

MPART PFAS Sites and Areas of Interest

Number of Features in Current Map View (zoom in or out to adjust number)

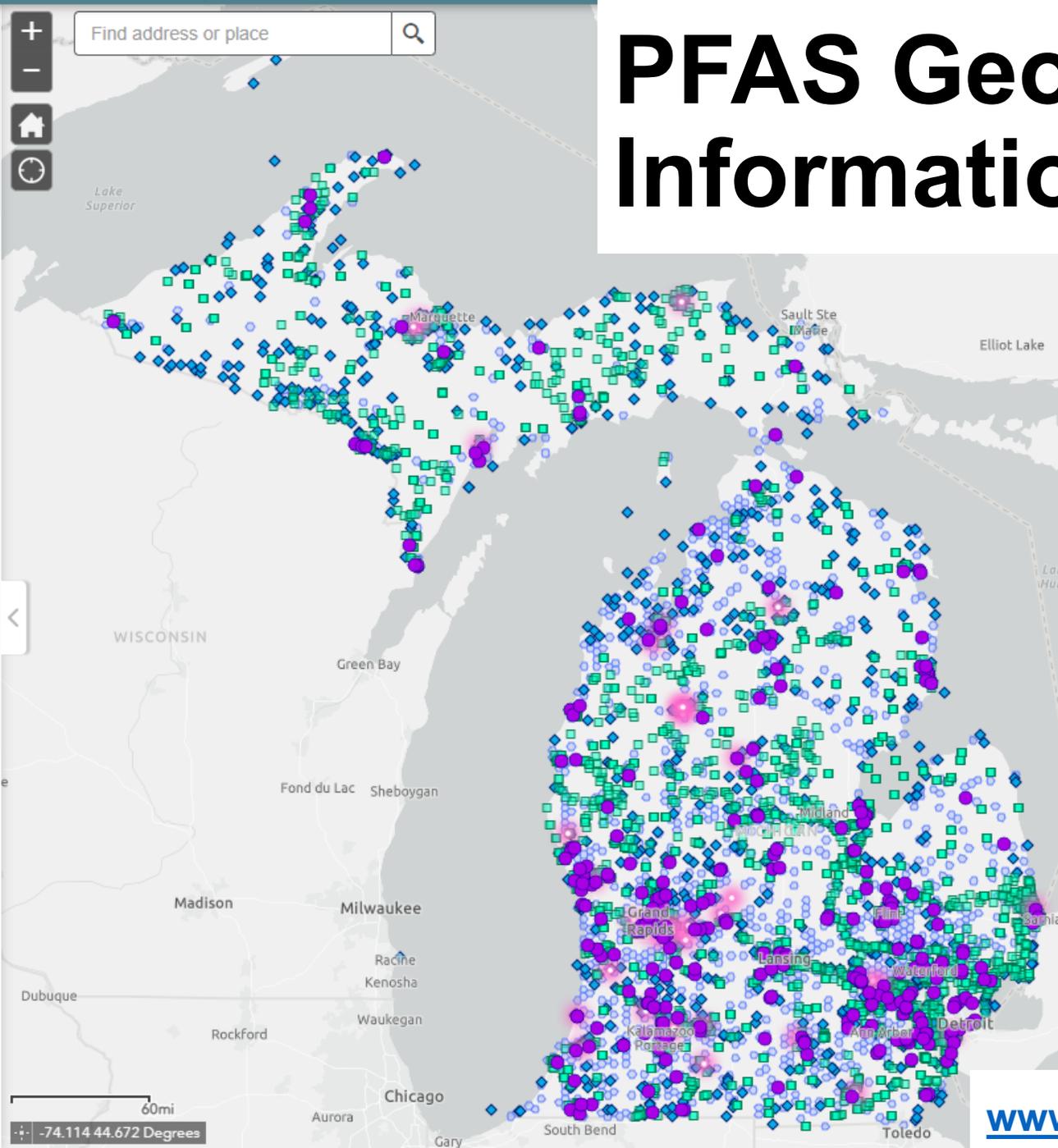
Number of PFAS Sites in View 328

Number of PFAS Areas of Interest in View 38

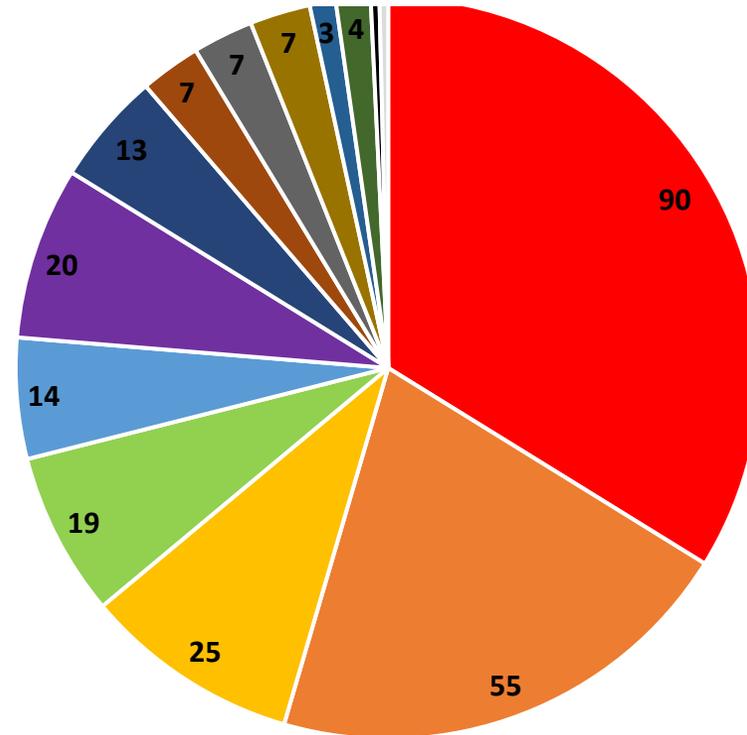
Number of PFAS Surface Water Samples in View 3,698

Number of Fish Contaminant Monitoring Program Sampling Sites in View (note this is not total sampling results) in View 999

Number of Publicly Owned Treatment Works with PFAS Data Sites in View



Types of PFAS Sites Identified



- Landfill
- Industrial (transportation-related, chemical and other manufacturing)
- Plating
- Airport
- Military
- Wastewater (wastewater treatment plants, a car wash, and a school)
- Fire Related
- Laundromat/Dry Cleaner
- Unknown
- Paper Manufacturing
- Refinery
- Tannery
- Hazardous Waste
- Power Station

Michigan's Drinking Water and Groundwater Cleanup Standards

Compound	Standards
PFNA	6 ppt
PFOA	8 ppt
PFOS	16 ppt
PFHxS	51 ppt
GenX (HFPO-DA)	370 ppt
PFBS	420 ppt
PFHxA	400,000 ppt

Michigan Surface Water Quality Values

Compound	Water Quality Value
PFNA	30 ppt
<i>If Drinking Water Source</i>	<i>19 ppt</i>
PFOA	170 ppt
<i>If Drinking Water Source</i>	<i>66 ppt</i>
PFOS	12 ppt
<i>If Drinking Water Source</i>	<i>11 ppt</i>
PFHxS	210 ppt
<i>If Drinking Water Source</i>	<i>59 ppt</i>
PFBS	670,000 ppt
<i>If Drinking Water Source</i>	<i>8,300 ppt</i>

Michigan's Rule 57 Water Quality Values apply to NPDES discharges

PFAS Water Quality Values

PFAS	HNV* (drinking) (ng/L)	HNV* (nondrinking) (ng/L)	FCV* (ng/L)	AMV* (ng/L)	FAV* (ng/L)
PFOS	11	12	140,000	780,000	1,600,000
PFOA	66	170	880,000	7,700,000	15,000,000
PFBS	8,300	670,000	24,000,000	120,000,000	240,000,000
PFHxS**	59	210	-	-	-
PFNA**	19	30	-	-	-

**Human Noncancer Value (HNV), Final Chronic Value (FCV), Aquatic Maximum Value (AMV), Final Acute Value (FAV)*

*** New Water Quality Values*

(-) Aquatic Life Values for PFHxS and PFNA are currently under development

Source Reduction to the Great Lakes

- Sampling of Wastewater Treatment Plants
- Sampling of Industrial Discharges
- Sampling of Existing Contamination Sites (Landfills, military, industrial, AFFF, etc.)
- Sampling of Biosolids
- Sampling of Storm Water Discharges
- Monitoring of Surface Water and Fish

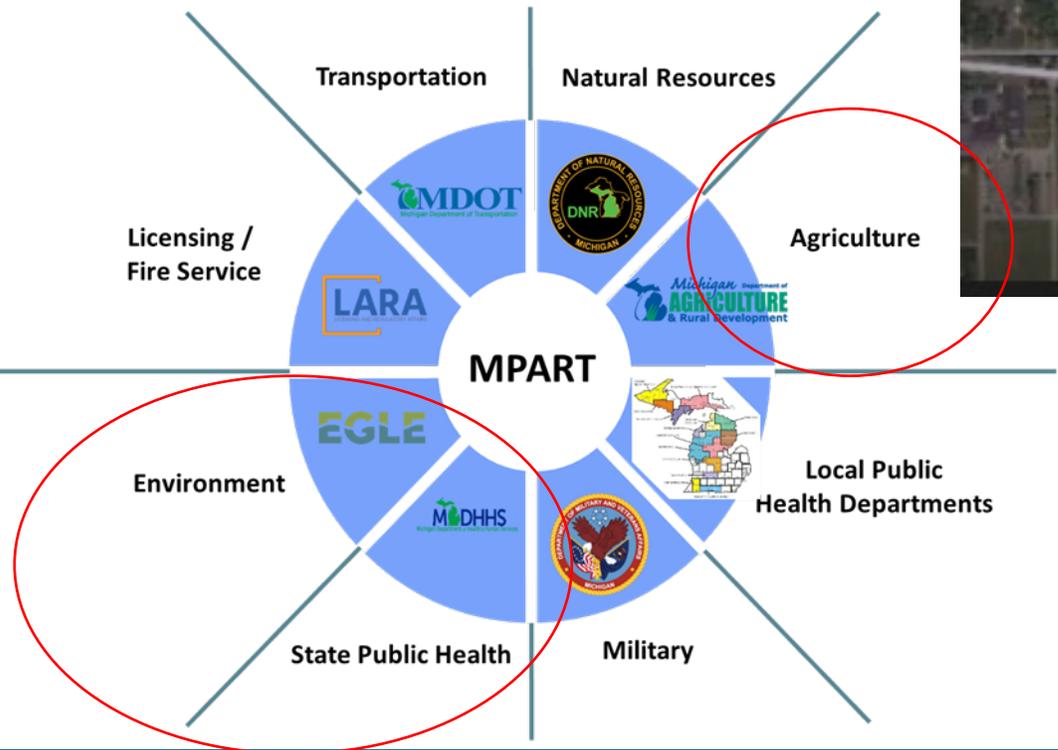


Example of MPART Coordination

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The MPART Process

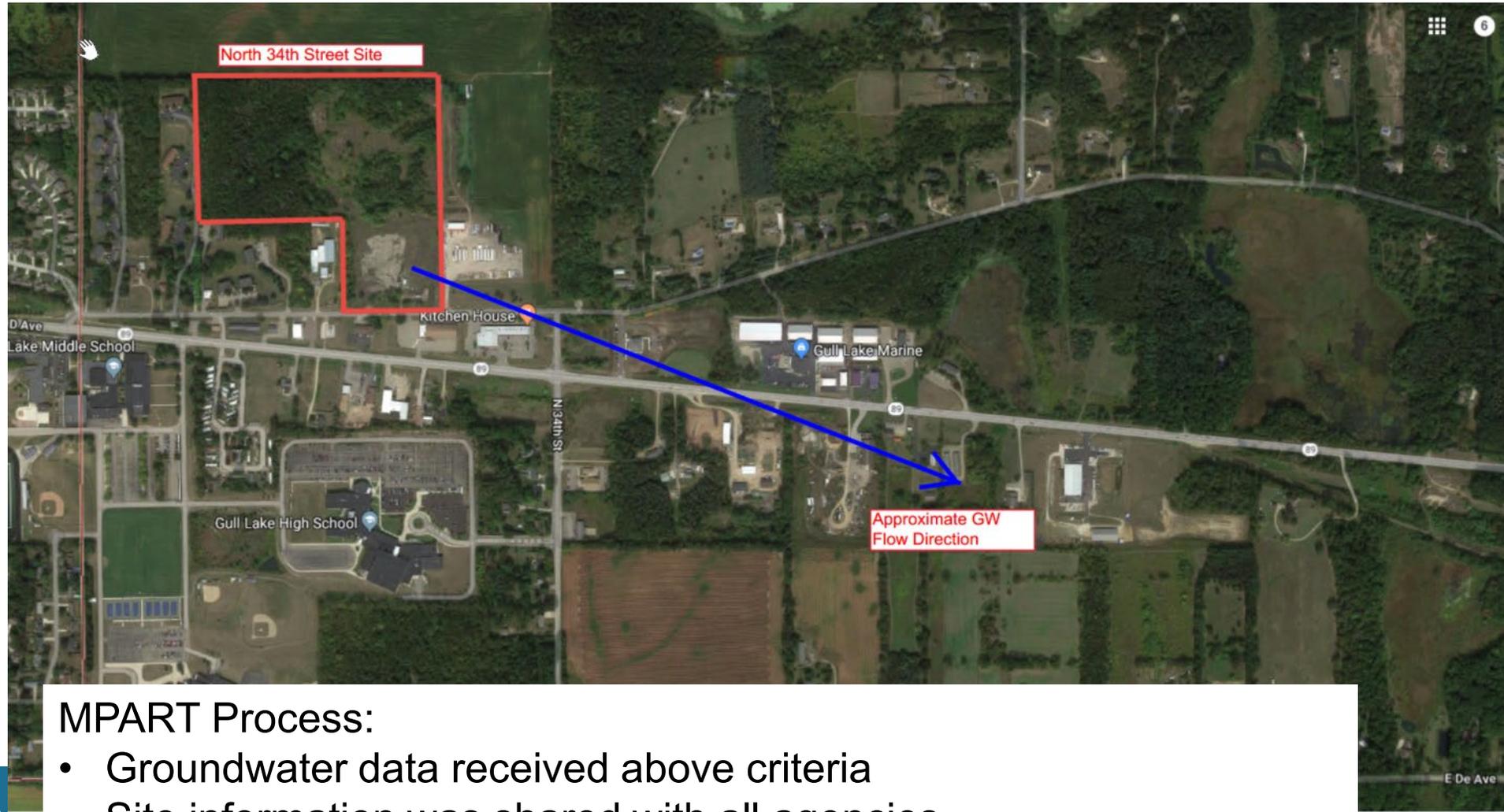


- Site specific example:
- Former Plating facility w/ GW plume – VOC's, Heavy metals
- 1980's Pump & Treat system
- Original project team
- 2018 -PFAS sampled from system 8,000 ppt PFOS

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Former Production Plated Plastics Facility

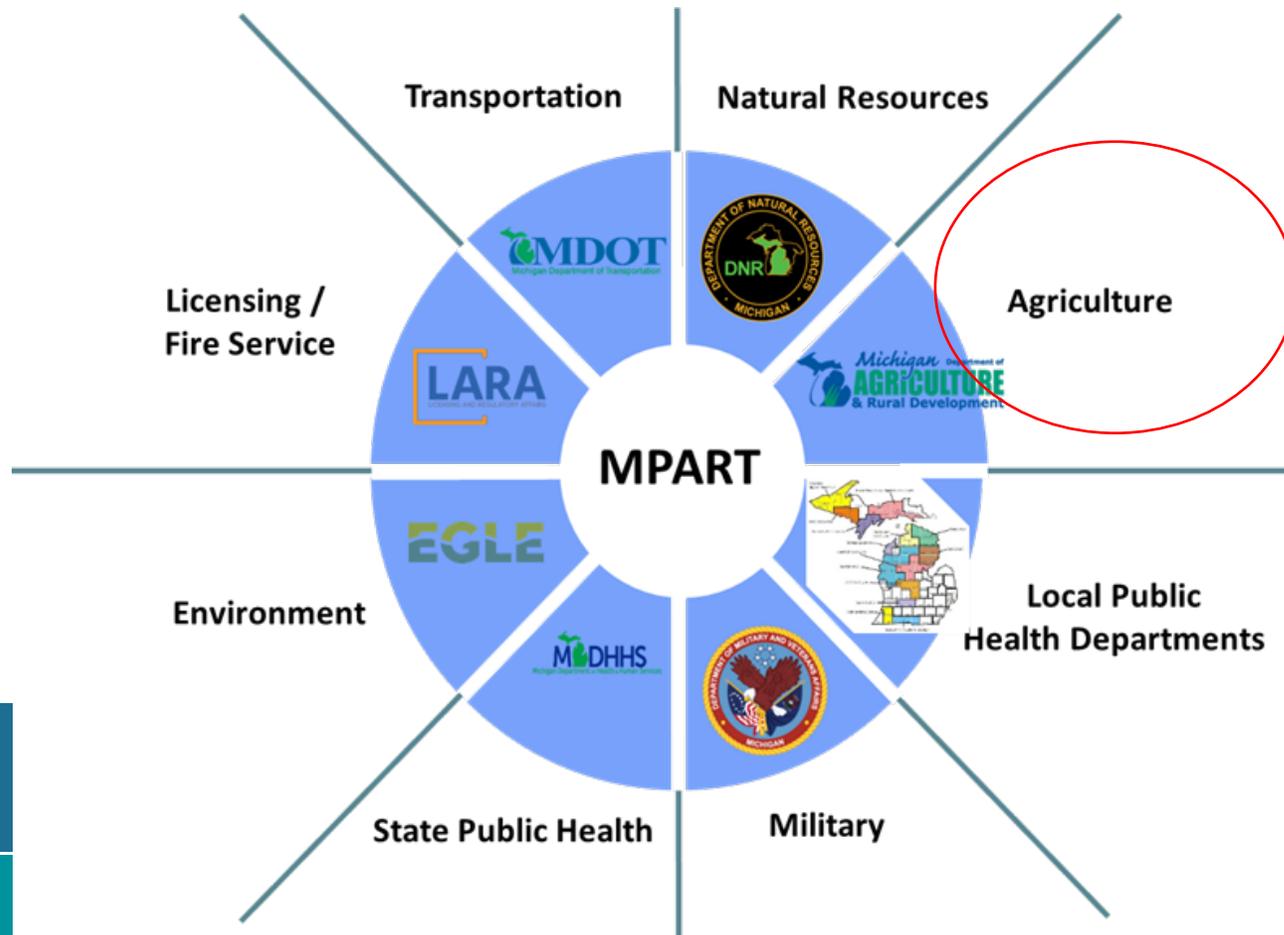


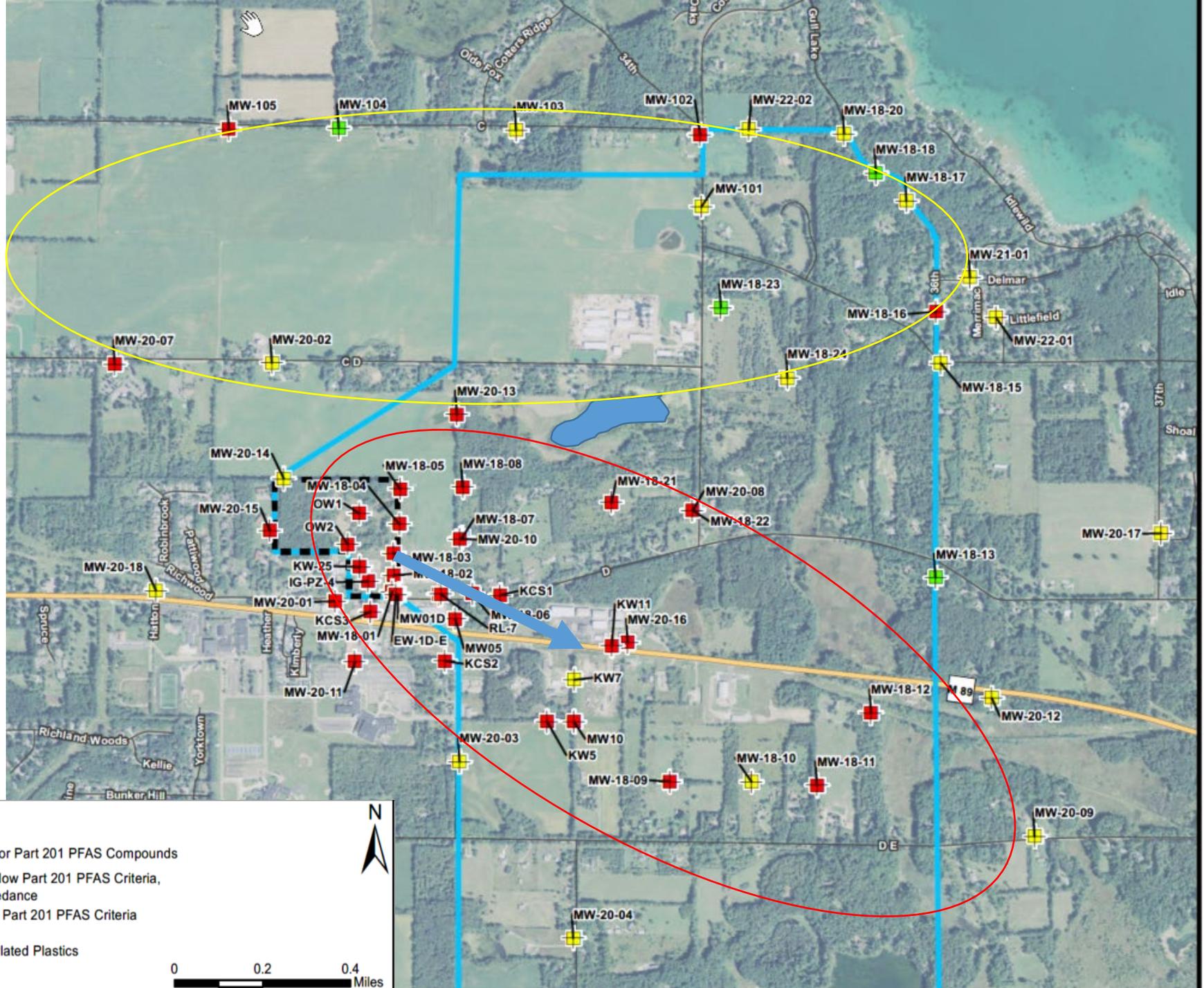
MPART Process:

- Groundwater data received above criteria
- Site information was shared with all agencies
- Evaluation of Public health concerns – residential wells
- Communication information to local officials and legislators

Coordination for PFAS Sites & Agriculture

- New PFAS sites are reviewed by Michigan Department of Agriculture and Rural Development for possible impacts to farms, agricultural fields, animals, migrant labor housing, high-capacity irrigation wells, and other farm operations within a one-mile radius.





Legend

Monitoring Well

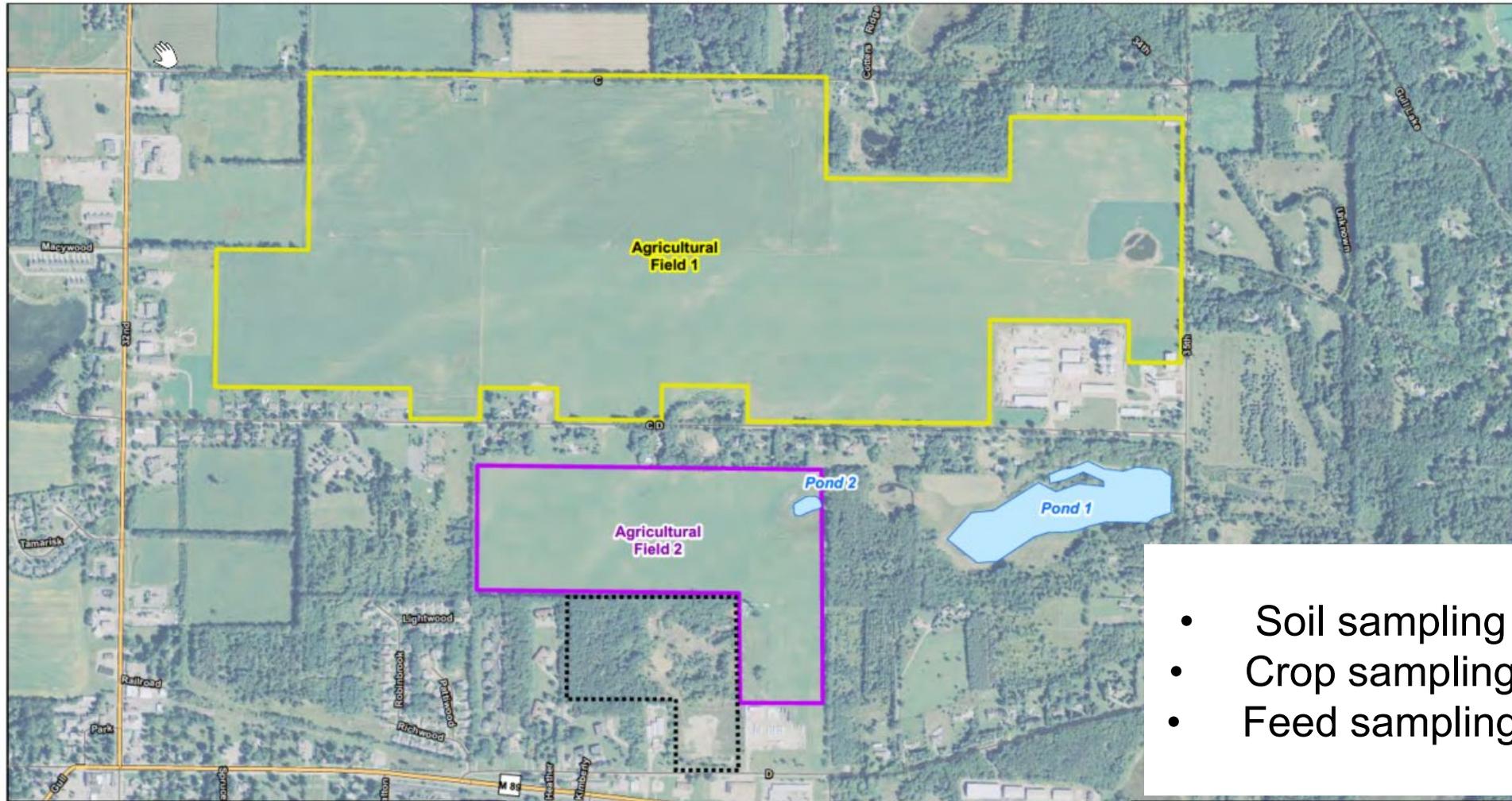
- Non-Detect for Part 201 PFAS Compounds
- Detection below Part 201 PFAS Criteria, but no Exceedance
- One or more Part 201 PFAS Criteria Exceeded
- Production Plated Plastics
- Study Area

N

0 0.2 0.4
Miles

MPA
MICHIGAN P

Agricultural Evaluations



- Soil sampling
- Crop sampling
- Feed sampling

AECOM
Drawn: DP Date: 5/10/2022
Approved: JB Date: 5/10/2022
Project #: 60627149

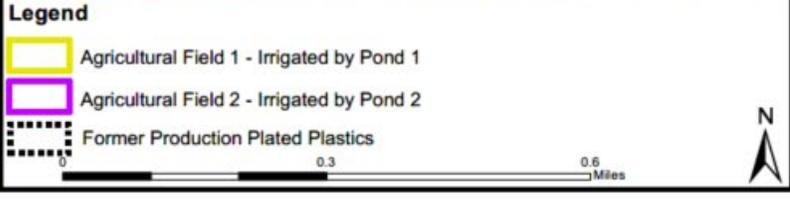
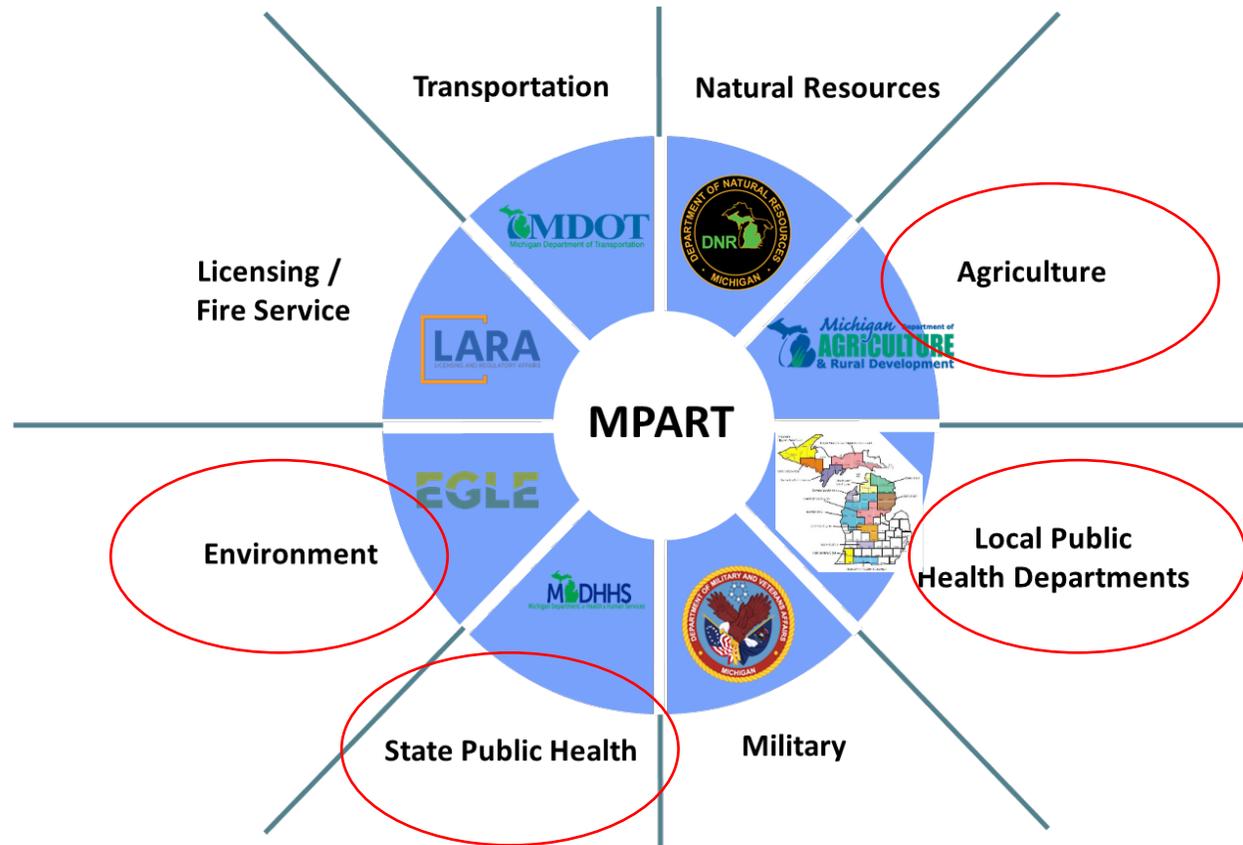


FIGURE 1
ISM STUDY AREAS

RICHLAND, MI



Collaboration included:

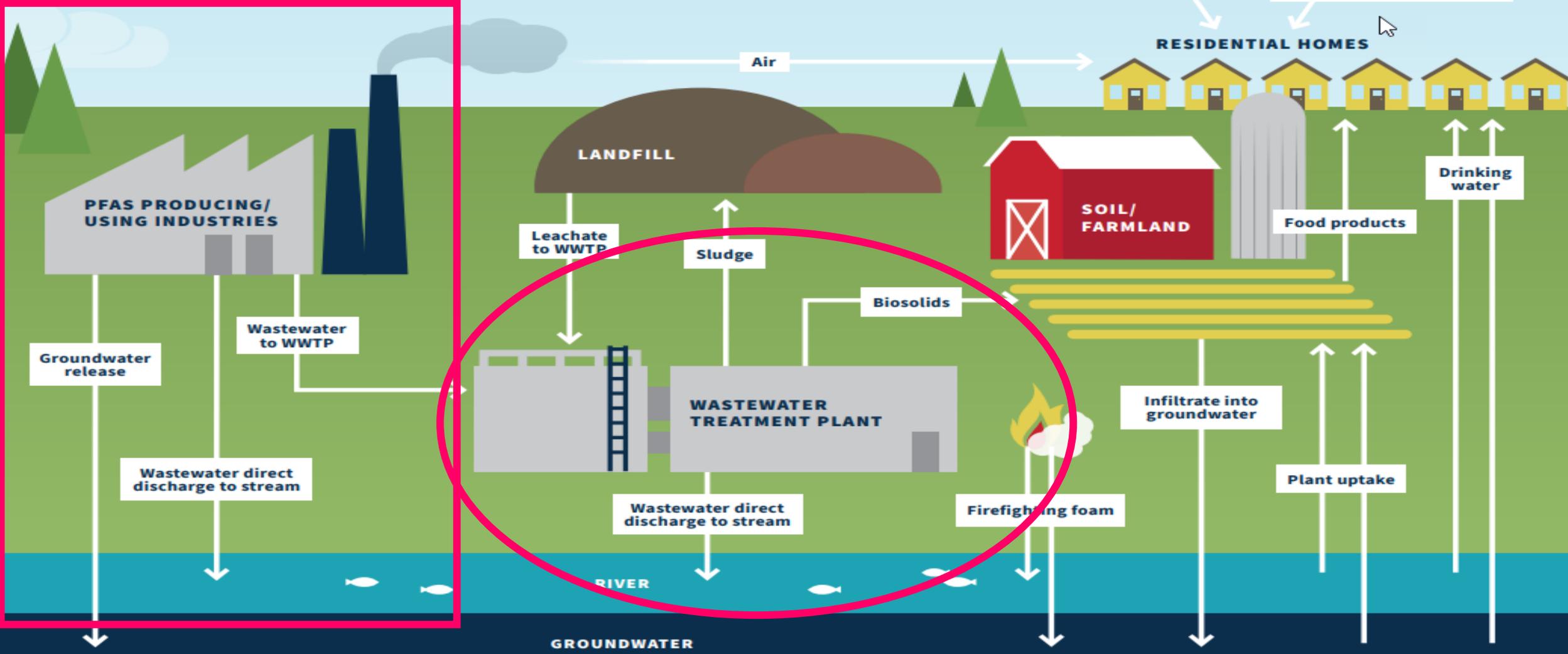
- Project Team meetings- weekly for 3 years; monthly for 2 years (Local officials, Legislators, EGLE, DHHS, Local health, Gov. Office)
- Townhall meetings
- Sampling 168 residential wells
- Intensive soil and crop sampling at the farm
- Risk assessment modeling
- Public health evaluations

Industrial Pretreatment Program (IPP) PFAS Initiative

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PFAS Cycle



Water Resources Division: PFAS Compliance Strategies

Public and Private Municipal Groundwater Discharges

Compliance Strategy: Outlines how EGLE will prioritize, evaluate, and address PFAS from municipal groundwater discharges.

Industrial Stormwater and Industrial Direct Discharge Strategy: Requires PFAS characterization and mitigation of discharges to surface water and groundwater.



Land Application of Biosolids Containing PFAS Interim Strategy: Requires all WWTPs to sample for PFAS prior to land application.

Industrial Pretreatment Program PFAS Initiative: Requires all IPP WWTPs to conduct PFAS source investigation.

Municipal NPDES Permitting Strategy: Includes PFAS monitoring, limits, and compliance schedules, as applicable.

Industrial Pretreatment Program (IPP) PFAS Initiative

- February 2018 – IPP WWTPs required to screen Industrial Users
 - Evaluate Industrial Users for potential sources of PFAS
 - Follow-up sampling of sources
 - Sample WWTP effluent if sources > screening criteria (12 ppt PFOS)
 - Sample biosolids if WWTP effluent \geq 50 ppt PFOS
 - Reduce/Control/Eliminate PFAS discharge at source
 - Ongoing monitoring & reporting for WWTPs with sources

Industrial Type	Total Number Evaluated ¹	Number (%) Sources of PFOS by Type ²	PFOS Effluent Range Exceeding Screening Level of 12 ppt
Landfills	64	54 (84%)	13 - 9,800
Metal Finishing	323	50 (15%)	19 - 240,000
Contaminated Sites	47	23 (49%)	14 - 220,000
AFFF Use	21	16 (76%)	13 - 65,000
Centralized Waste Treaters (CWTs)	16	14 (88%)	13 - 53,000
Chemical Manufacturers	25	8 (32%)	13 - 4,600,000
Paper Manufacturing, Packaging	17	6 (35%)	13 - 810
Commercial Industrial Laundries	23	7 (26%)	13 - 98
Septage	6	5 (83%)	13 - 160
Leather Tanning and Finishing	4	2 (50%)	13 - 83
Transportation Equipment Cleaning	4	1 (25%)	15 - 640
Soap and Detergent Manufacturing	1	1 (100%)	16 - 30
Industrial Waste Management	2	1 (50%)	14 - 27
Mixed Manufacturing	1	1 (100%)	16 - 240
Paint Formulating	1	1 (100%)	25 - 180

¹Estimated based on industries surveyed and sampled from 2018-2024 during the IPP PFAS Initiative. Number of facilities per subcategory may be underestimated for some categories since sewer users that did not meet local screening criteria may not have been sampled. The information presented in this document has been compiled from many sources including, but not limited to, compliance submittals, laboratory reports, voluntary surveys, emails, internet searches and personal communications. These sources contained variable levels of detail. This document represents our best effort to compile, organize, and summarize this information at this point in time.

²*Significant Sources* are those exceeding the screening level of 12 ppt PFOS and are considered a source by the WWTP.

Elevated PFAS concentrations in Municipal Wastewater and Biosolids

Significant Industrial Sources can:

- Cause effluent quality violations of state and federal regulations and permits
- Negatively impact quality of receiving streams
- Drive fish consumption advisories (ex. DO NOT EAT in Huron River, restrictive advisory Flint River)
- Impact soils, surface waters, groundwater and crops at biosolids land application sites

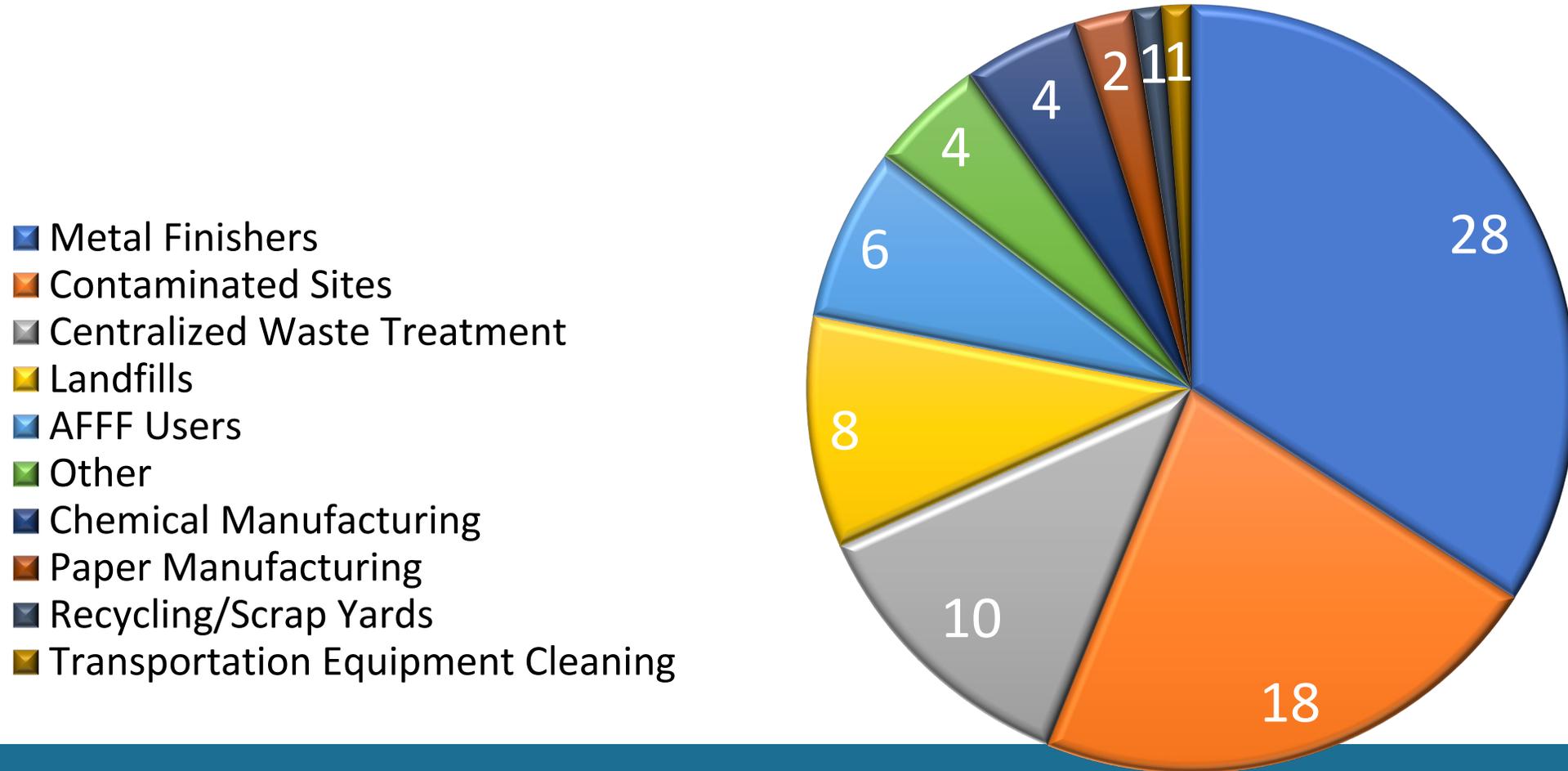


*PFAS Do Not Eat the Fish Sign at Baseline Lake
Photo by Daniel Brown*

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Michigan PFAS Pretreatment / Reduction by Industry Sector Indirect Dischargers Only



**Reductions
in PFOS,
WWTP
Effluent and
Biosolids
(Industrially
Impacted)**

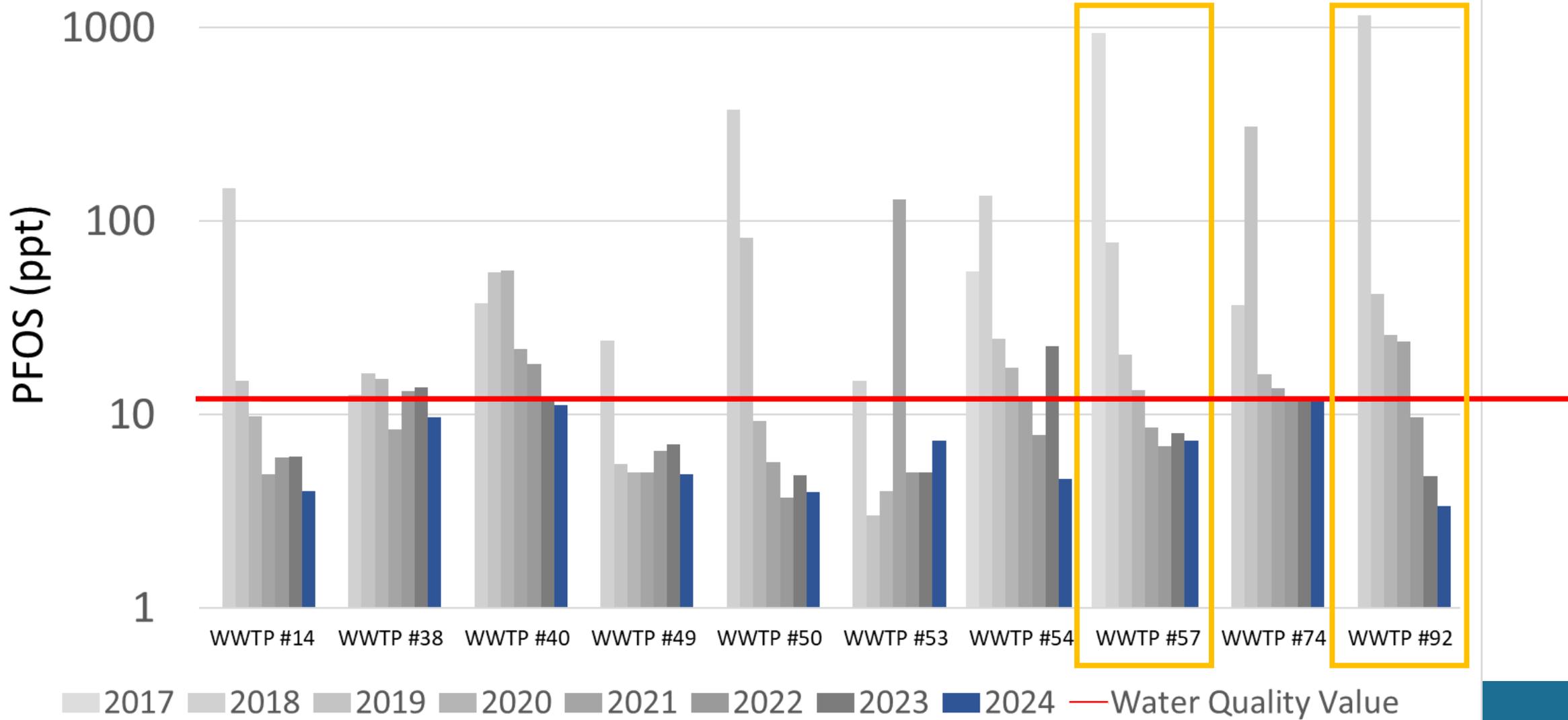
Municipal WWTP	Highest Effluent PFOS (ppt)	Most Recent* Effluent PFOS (ppt)	PFOS Reduction in Effluent	2018 Biosolids PFOS (ppb)	Most Recent* PFOS (ppb)	PFOS Reduction in Biosolids
WWTP #50	540	<4	99%	983	18	98%
WWTP #14	360	6.2	98%	1060	27	97%
WWTP #57	2000	7.9	99%	1680	21	98%
WWTP #54	240	1.9	99%	387	57	85%
WWTP #92	4800	2.3	99%	2150	17	99%

**Data received by May 31, 2025*

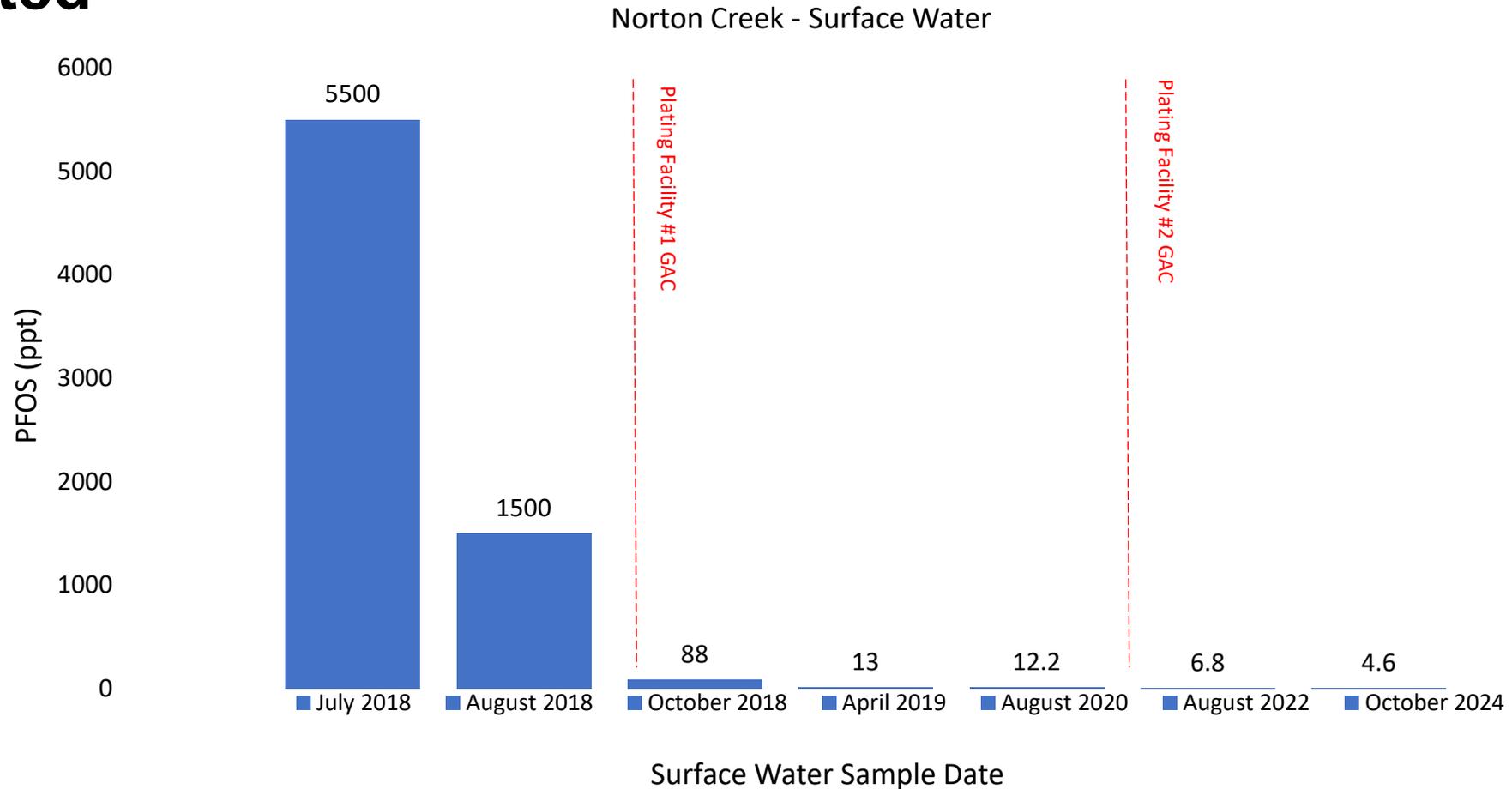
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Effluent Annual Average of 10 IPP WWTPs (log scale)

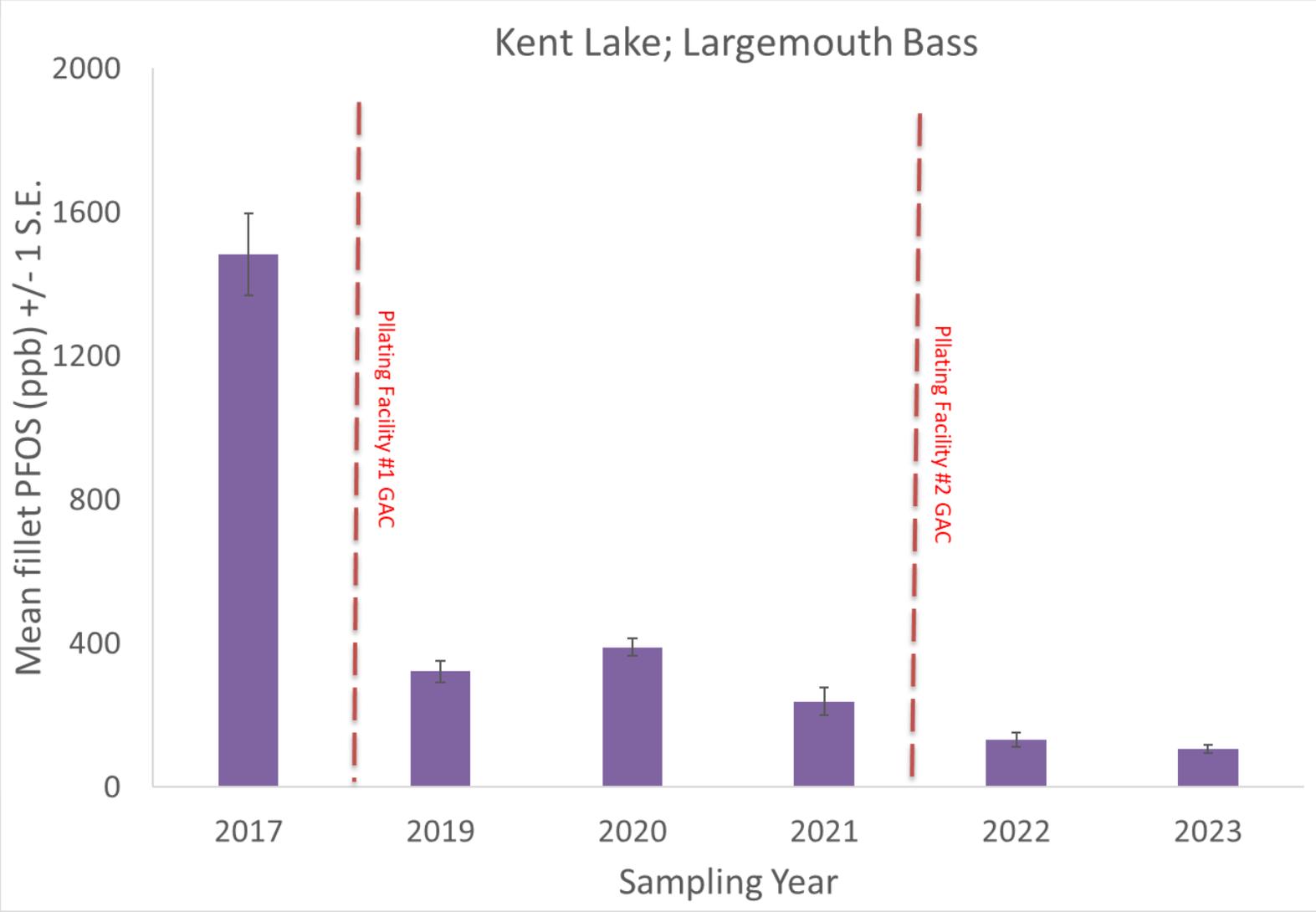


“Quick” response in surface water downstream of industrially impacted discharge from WWTP #92 once source control was implemented

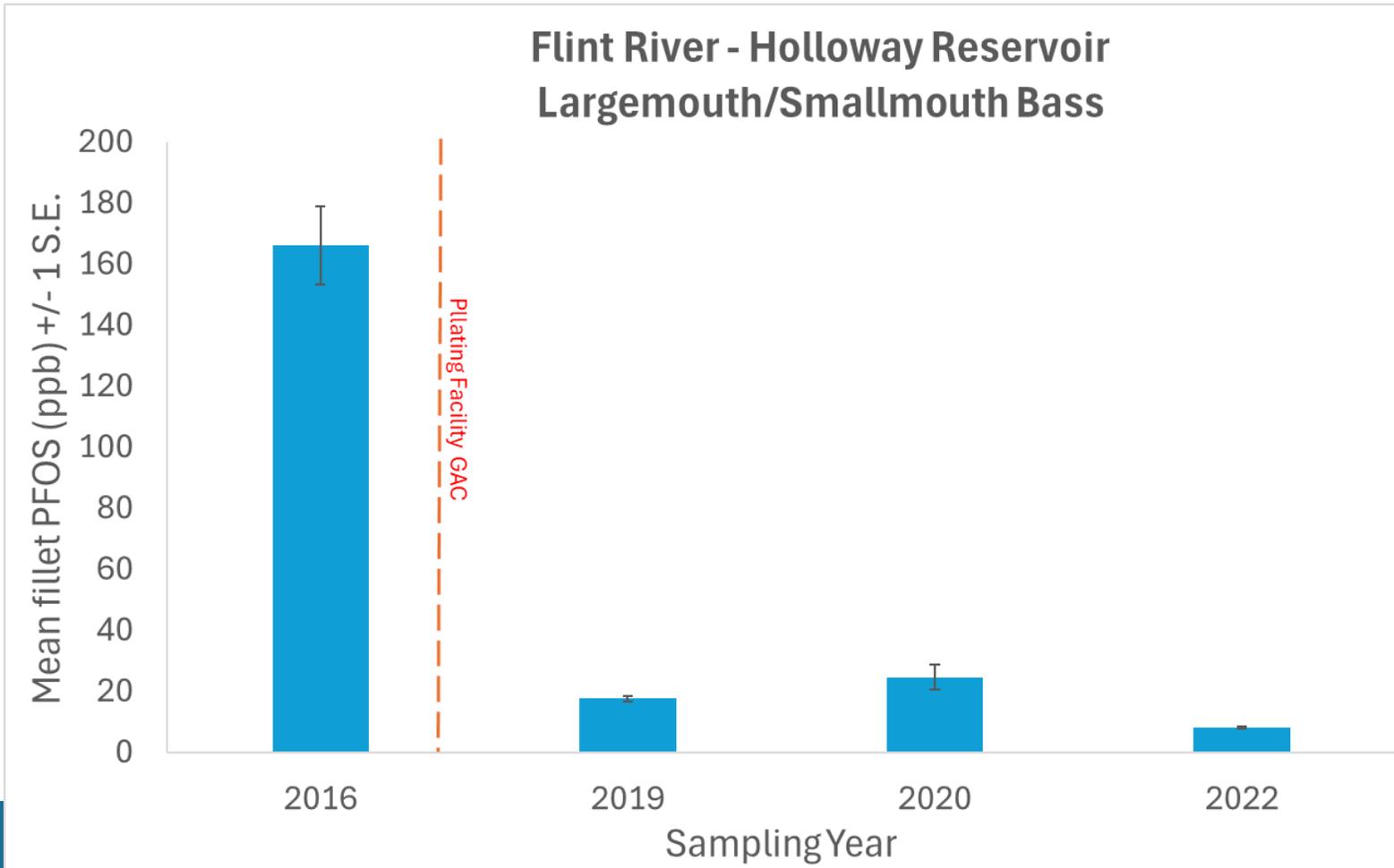


Corresponding reductions observed in fish downstream of industrially impacted discharge from WWTP #92 once source control was implemented

90% reduction in average PFOS concentrations in largemouth bass in Kent Lake (Huron River)



Corresponding reductions observed in fish downstream of industrially impacted discharges from WWTP #57 once source control was implemented



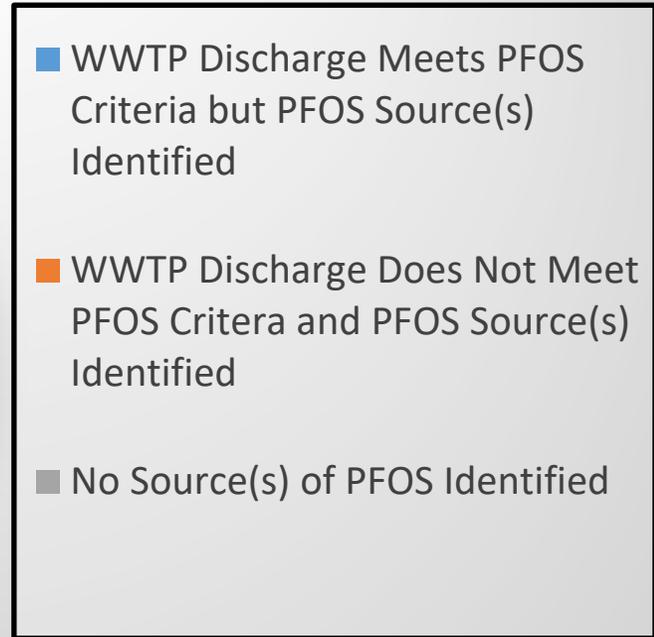
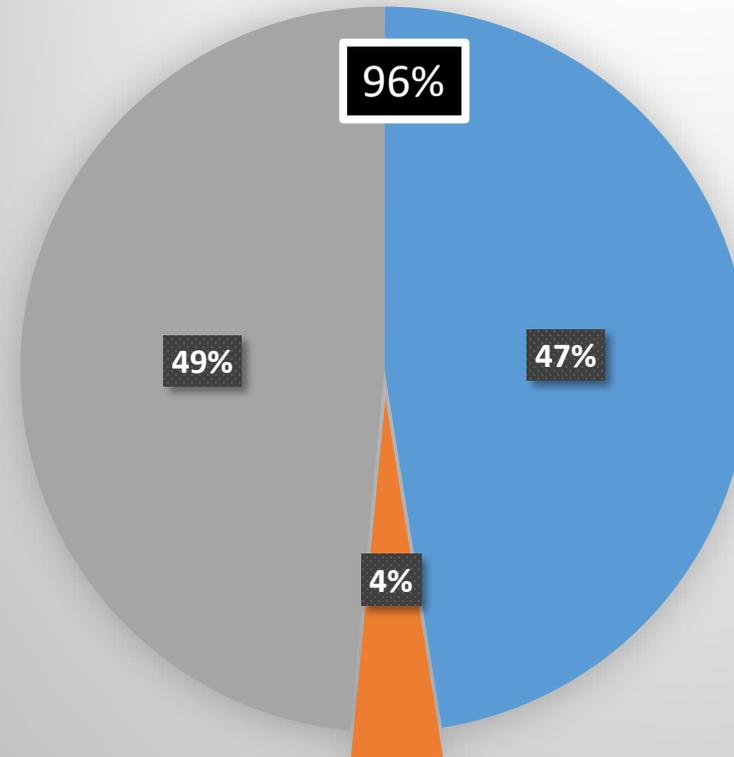
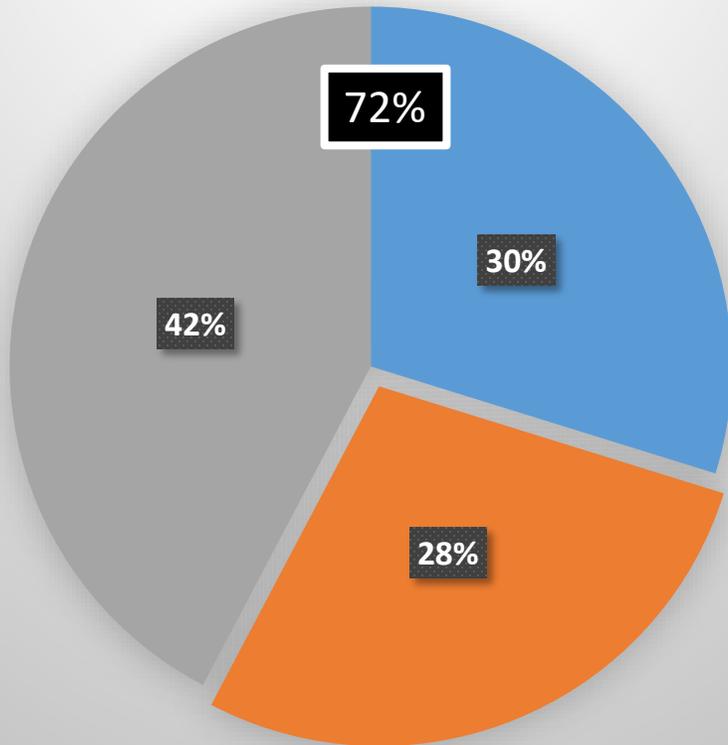
87% reduction in PFOS concentrations in smallmouth bass in the Holloway Reservoir (Flint River)



Effluent Compliance with PFOS Water Quality Value for IPP WWTPs

December 2019

May 2025



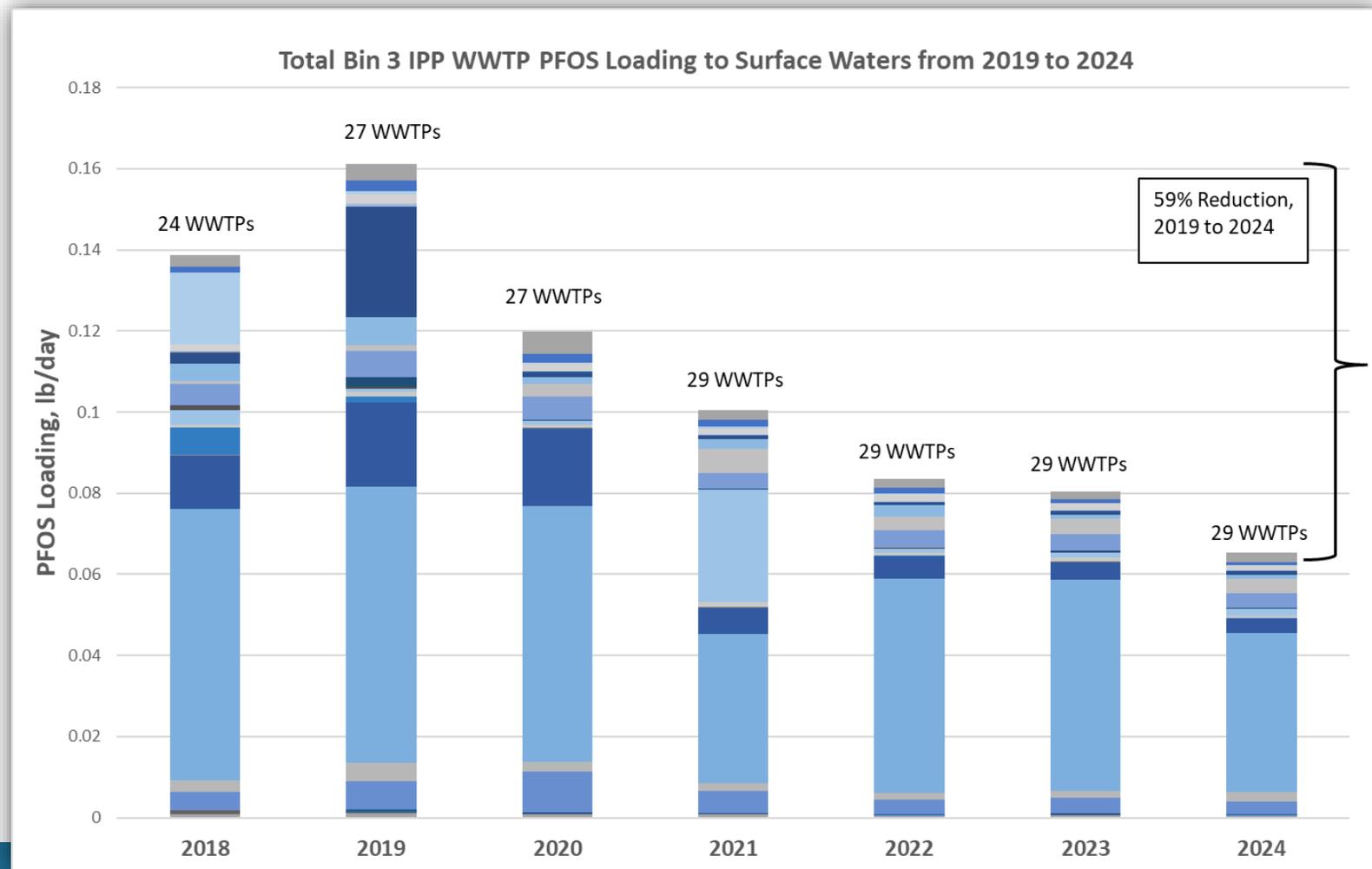
Successes and Moving Forward

Results to date

- **59% reduction of PFOS loadings** in IPP WWTP effluent since 2019
- Up to **99% reductions in PFAS concentrations** at some WWTPs with significant industrial sources

PFAS requirements included in permits

- **139 WWTPs** with PFAS monitoring and/or limits
- **16 WWTPs with approved local limits** for PFOS; 8 pending



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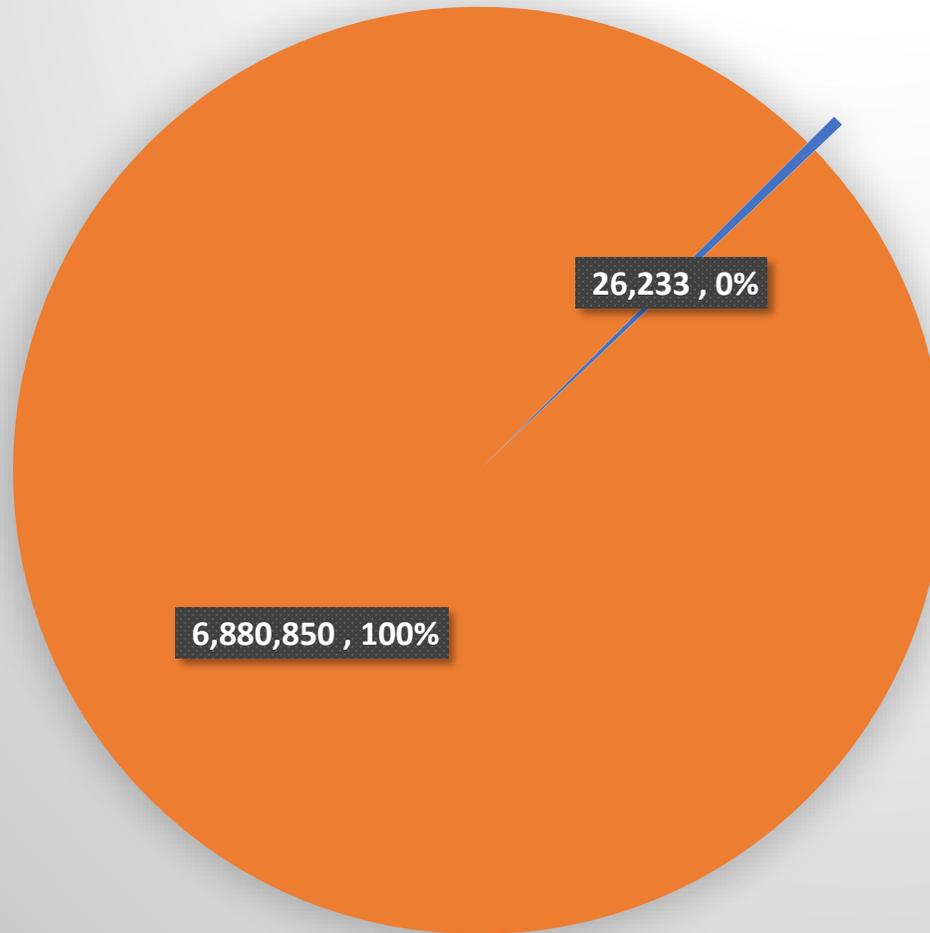
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Land Application of Biosolids Containing PFAS Interim Strategy

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Michigan Farmland Acreage Comparison



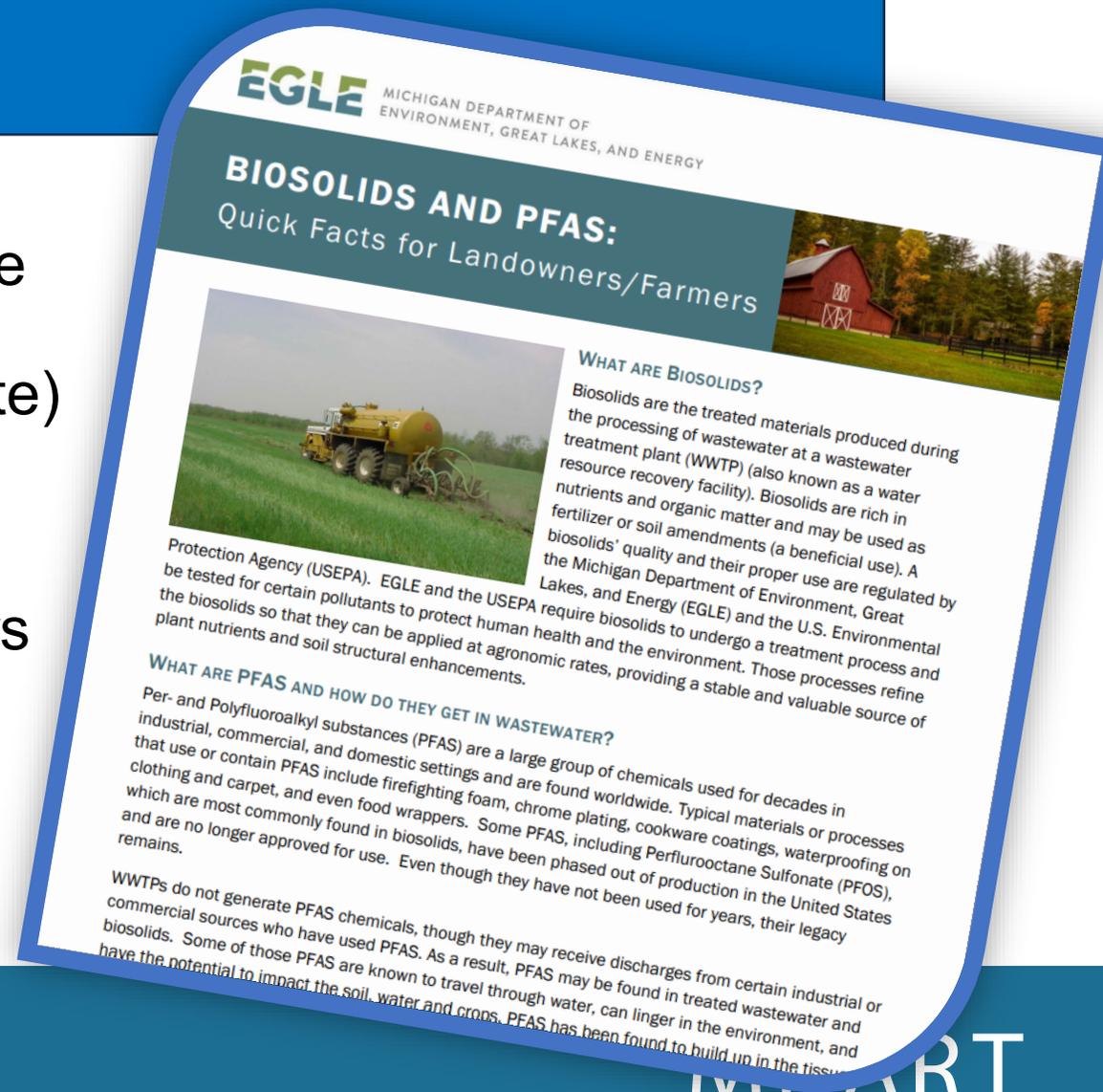
- Michigan Total Acres Utilized for Biosolids (2023-2024)*
- USDA Total Michigan Harvested Cropland Acres (2022)**

* Facility reported data following the State of Michigan's Fiscal Year (October 2023 – September 2024)

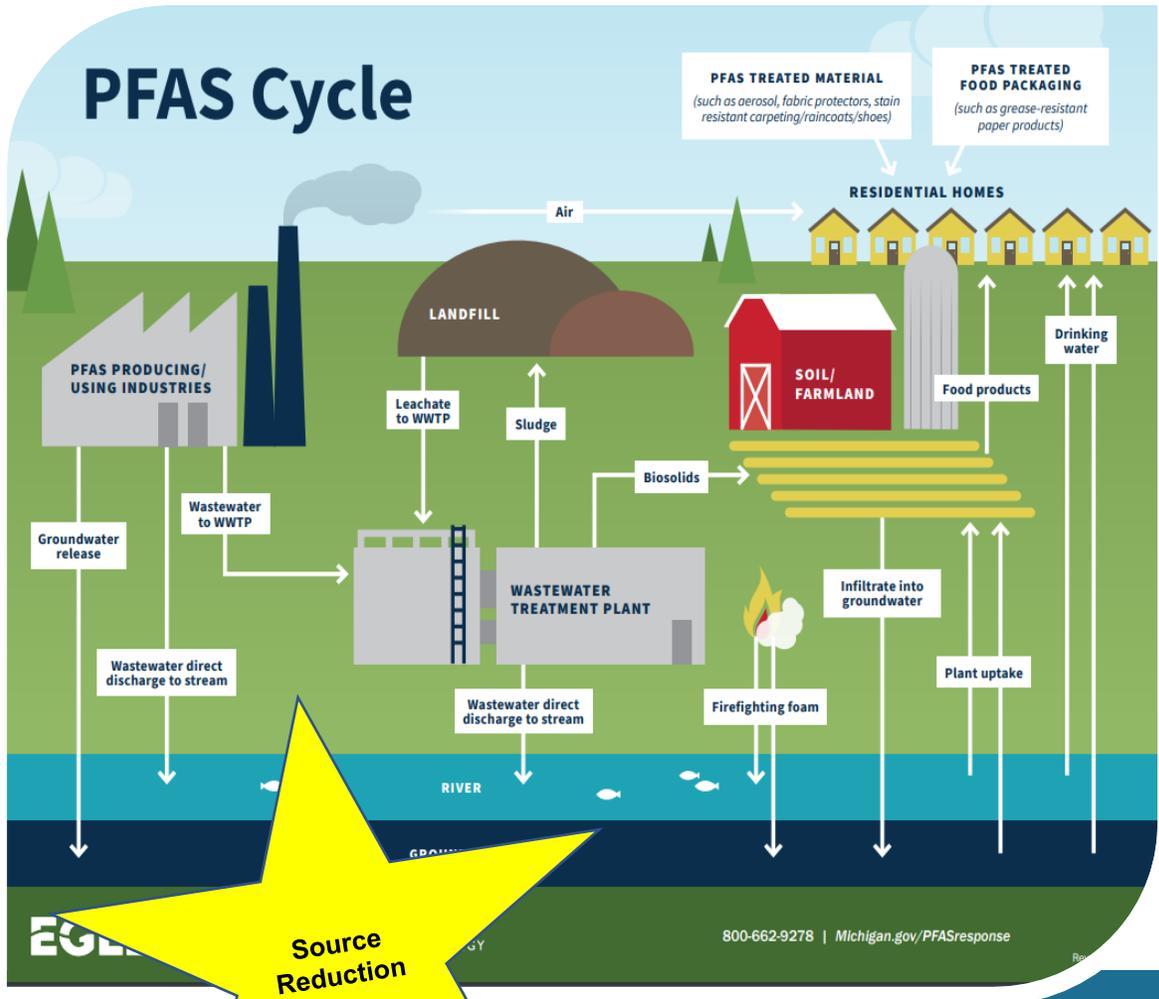
** United States Department of Agriculture (USDA) National Agriculture Statistics Service 2022 Census data for total Michigan Harvested Cropland

Land Application of Biosolids Containing PFAS Interim Strategy

- Required Sampling
 - Class A or Class B: One representative sample per calendar year
 - EQ Designated: Quarterly (2024 Update)
- Prior to land application:
 - Results submitted to EGLE
 - Results provided to landowners/farmers
- PFOS and PFOA – regulated analytes (2024 update)
- Prohibit the application of industrially impacted biosolids

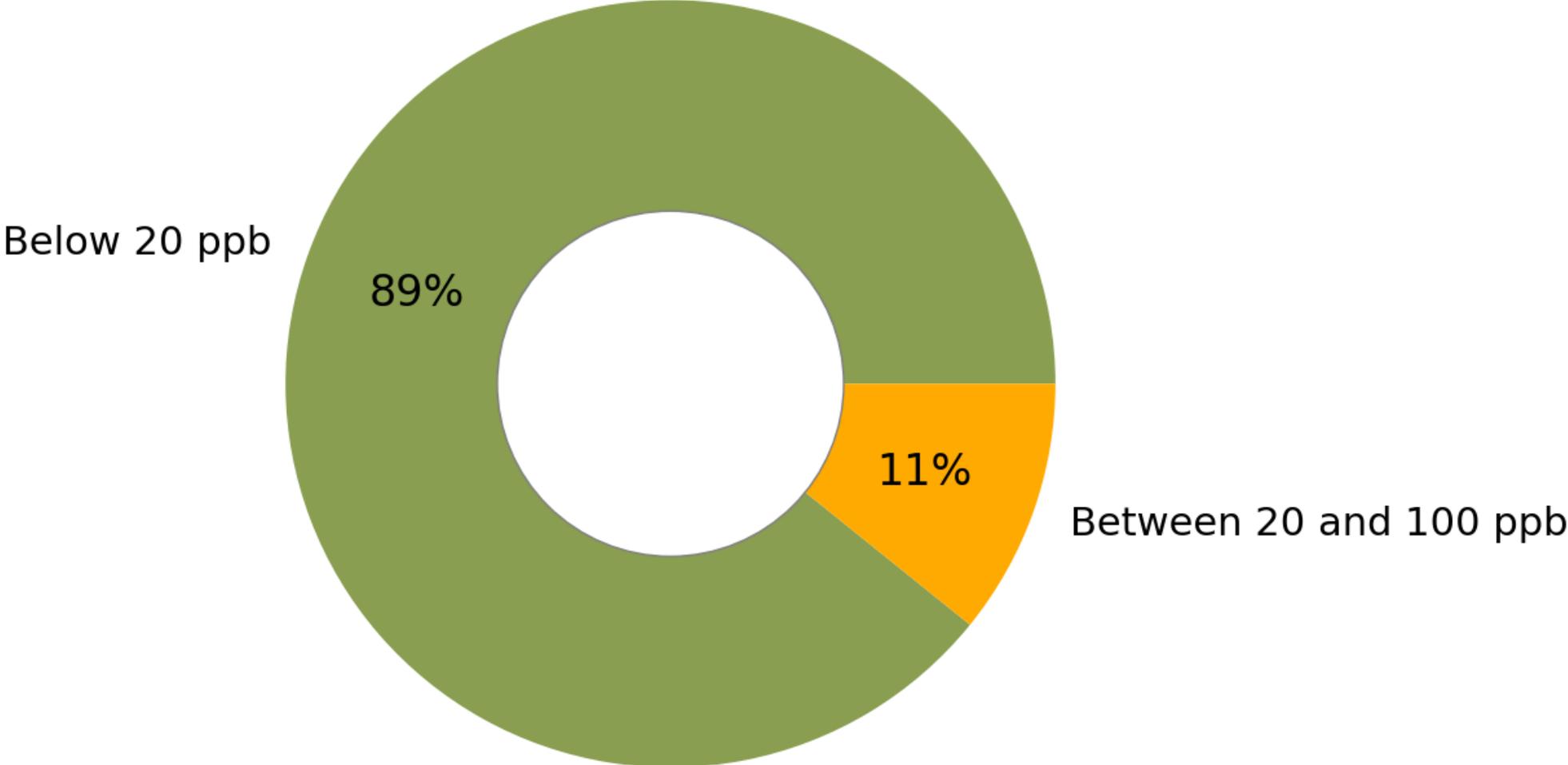


Updates to Interim Strategy in 2024

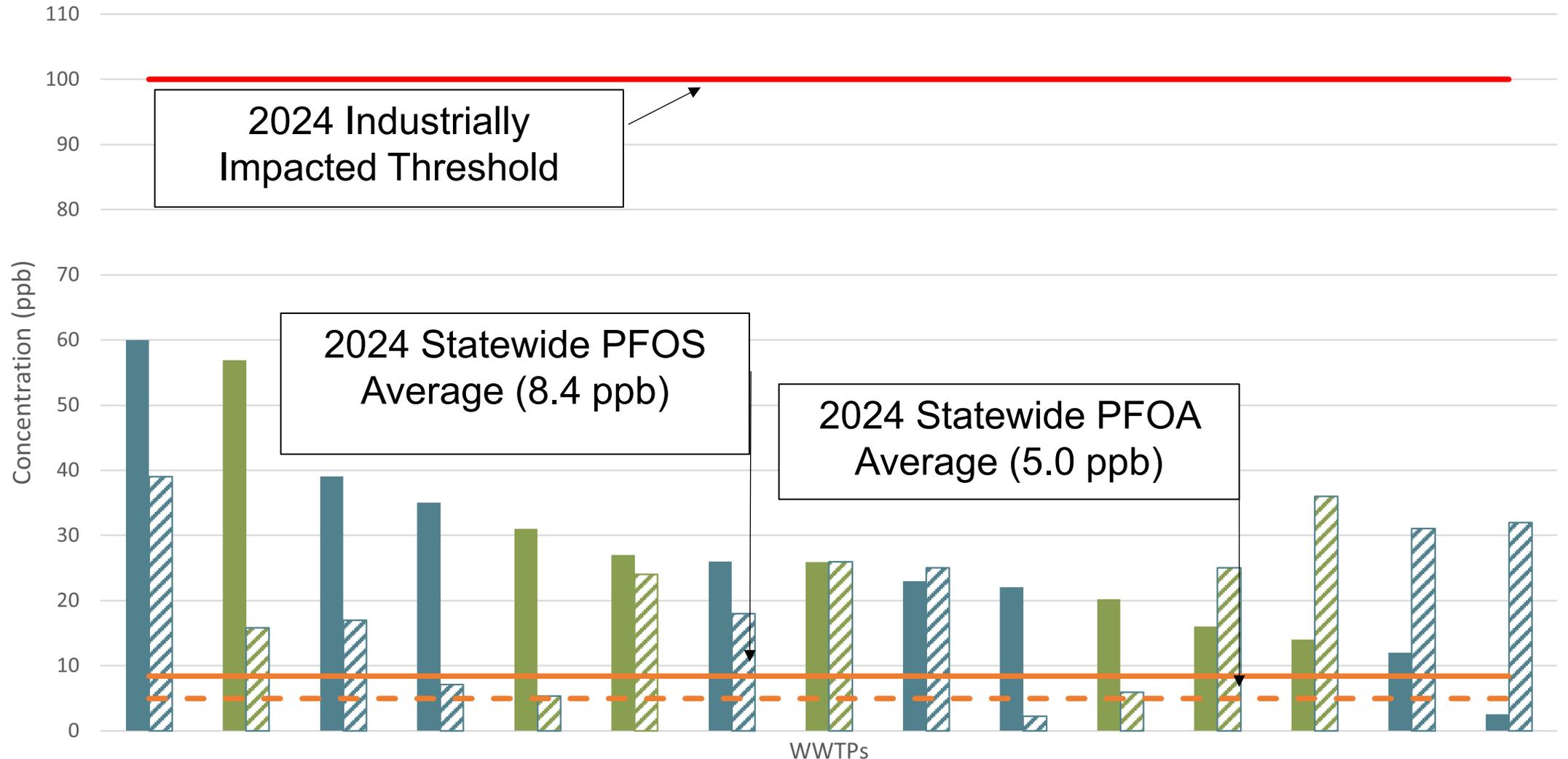


- ❖ PFOA added as a limiting analyte
- ❖ Lowered the industrially-impacted threshold and trigger for mitigation
- ❖ Based on the PFOS or PFOA results:
 - **Below 20 ppb** (updated)
 - *No restrictions*
 - **Equal to or Above 20 ppb – Less than 100 ppb** (updated)
 - **Required** to sample effluent and identify sources
 - **Required** to mitigate during land application
 - Reduce land application rate to 1.5 dry tons per acre or submit alternative strategy
 - **Equal to or Above 100 ppb** (updated)
 - Deemed industrially impacted and **land application prohibited**
 - **Required** to sample effluent and identify sources

2024 Interim Strategy Results



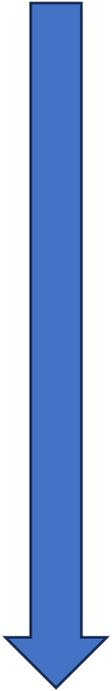
2024 Facilities with PFOS and/or PFOA Concentrations Greater than 20 ppb



IPP WWTPs
Non-IPP WWTPs

PFOS
PFOA

Mean and Median Values of Biosolids/Sludge Concentrations Since 2018



Year	PFOS (ppb)		PFOA (ppb)	
	Mean	Median	Mean	Median
2018*	184	13	25	7
2021	21	9	8	4
2022	16	10	7	3
2023	11	7	6	3
2024	8	5	5	2
2025**	7	6	3	2

*Includes data from industrially impacted facilities as part of a statewide study

**Calculations based on 27 results received as of 2/21/2025

All values listed are in parts per billion (ppb[$\mu\text{g}/\text{kg}$])

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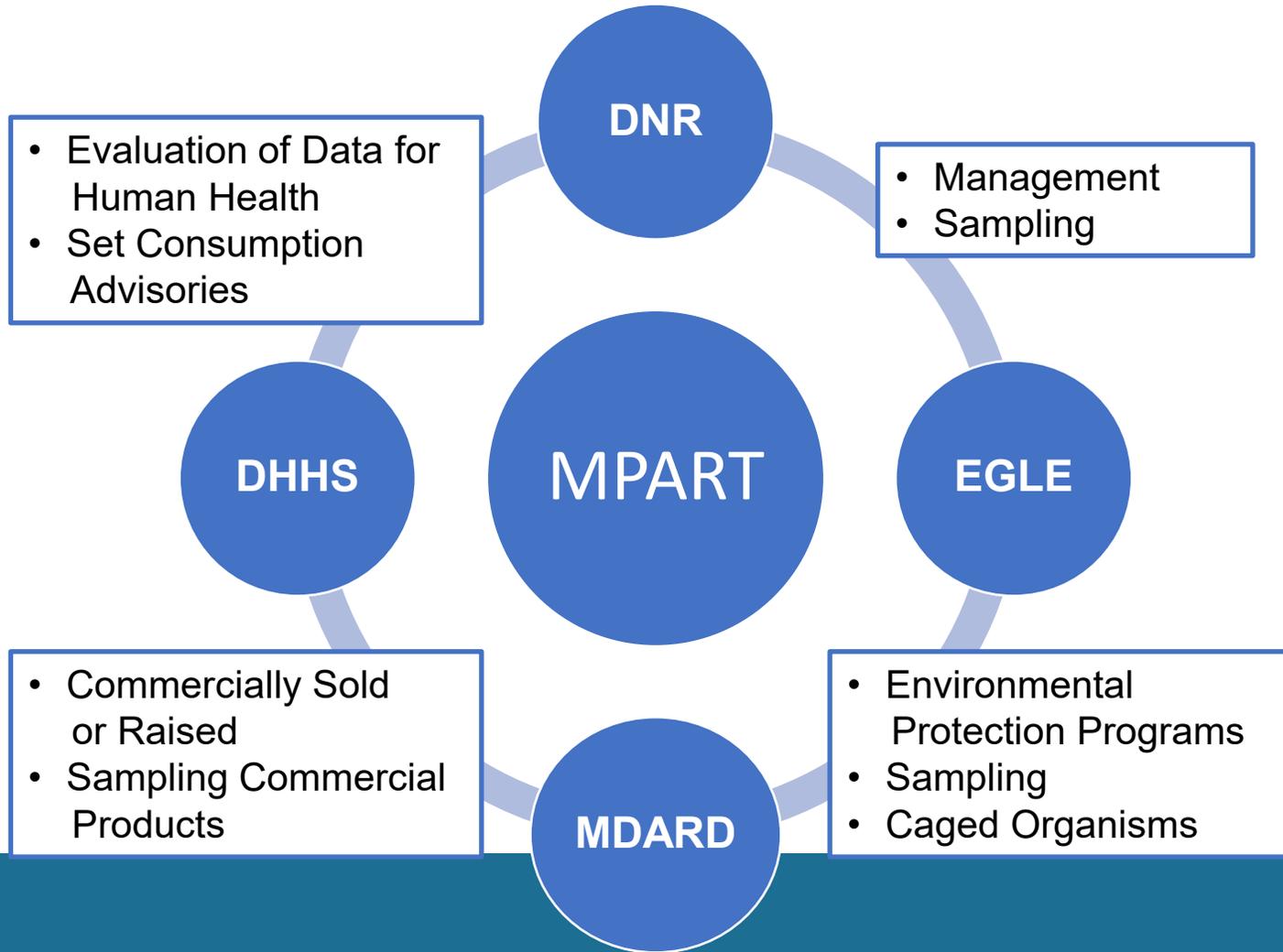
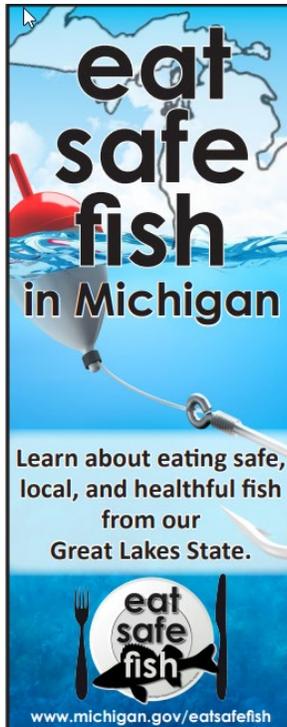
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PFAS & Fish

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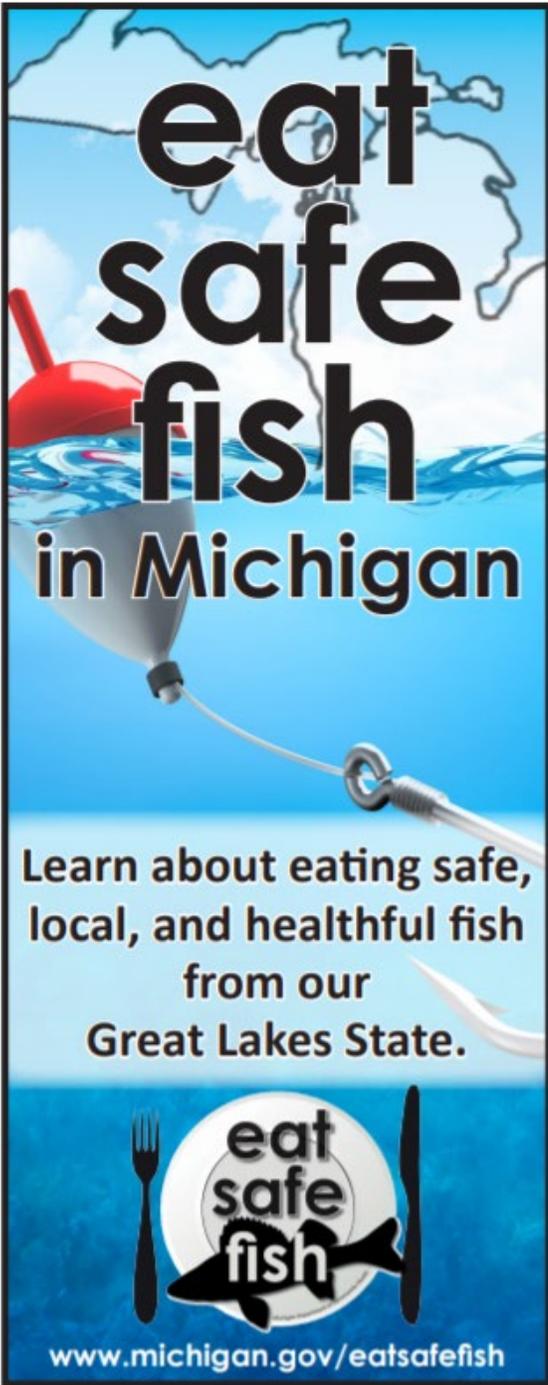
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Fish and Wildlife Coordination



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**eat
safe
fish
in Michigan**

Learn about eating safe,
local, and healthful fish
from our
Great Lakes State.

**eat
safe
fish**

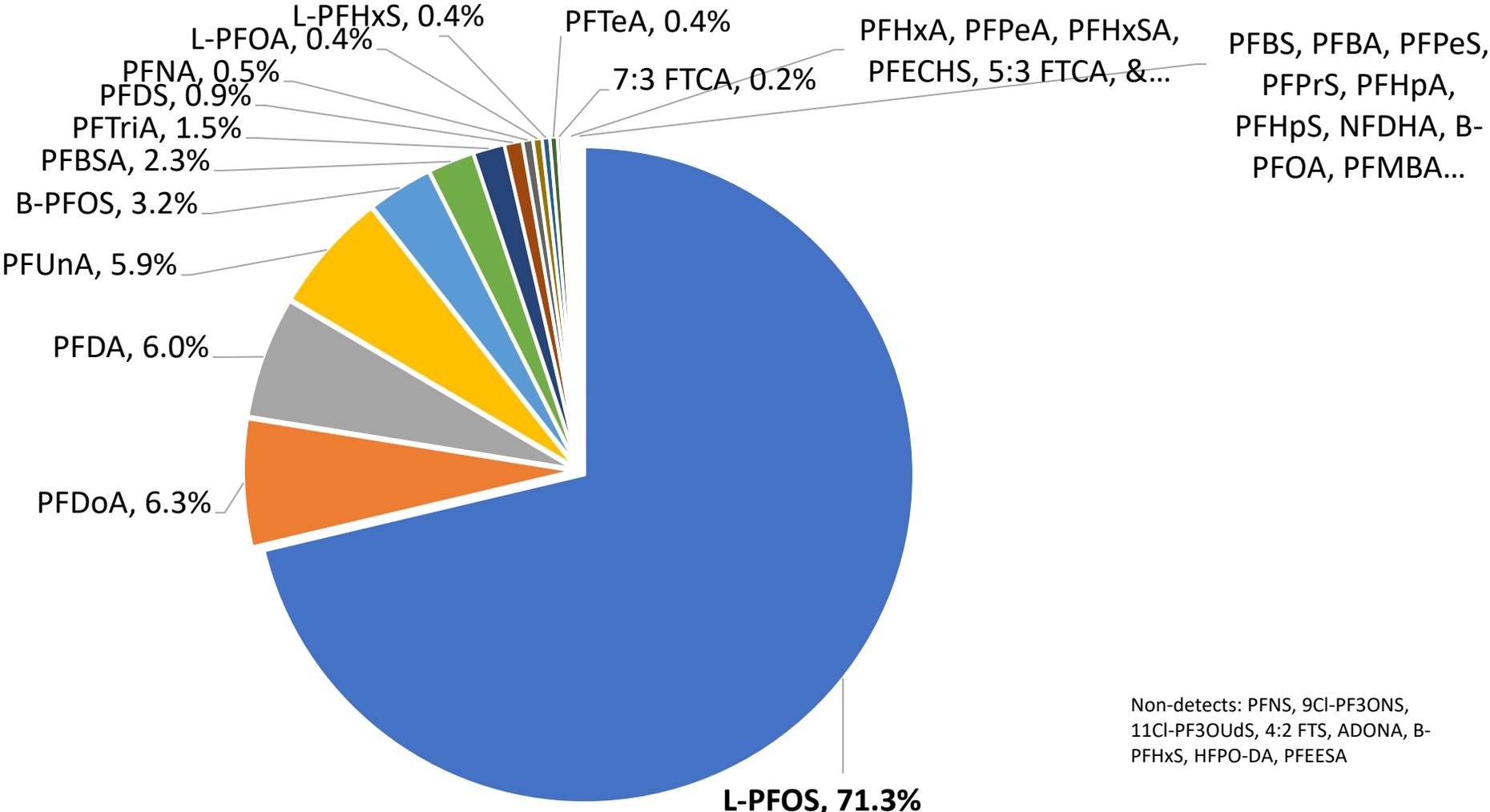
www.michigan.gov/eatsafefish

Fish Sampling

- **1,551 fish from 63 different water bodies to determine the need for fish consumption advisories**



Average % PFAS detected in fillets analyzed by EGLE's Fish Contaminant Monitoring Program in FY23 (1,013 samples)



Monitoring – Addressing Public Health Concerns

PFOS concentrations in redear sunfish above 300 ppb; therefore, MDHHS issued a Do Not Eat advisory for all species in the pond in 2024.



Thank You

MICHIGAN PFAS ACTION RESPONSE TEAM (MPART)

www.Michigan.gov/PfasResponse



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- **Municipal NPDES Permit Strategy:** [Municipal NPDES Permitting Strategy for PFAS](#)
- **IPP PFAS Initiative:** [IPP PFAS Initiative Webpage](#)
- **PFAS Source Doc:** [Industrial Sources of PFOS to Municipal Wastewater Treatment Plants as identified through the Michigan Department of Environment, Great Lakes, and Energy Industrial Pretreatment program Per-and Polyfluoroalkyl Substances Initiative](#)
- **Summary Report:** [Initiatives to Evaluate the Presence of PFAS in Municipal Wastewater and Associated Residuals \(Sludge/Biosolids\) in Michigan](#)
- **Detailed Report:** [Evaluation of PFAS in Influent, Effluent, and Residuals of Wastewater Treatment Plants \(WWTPs\) in Michigan](#)
- **Biosolids PFAS Strategy:** [EGLE Biosolids PFAS Webpage](#)
- **Industrial Direct Discharge/Stormwater Strategy:** [Compliance Strategy for Addressing PFAS From Industrial Direct Dischargers and Industrial Stormwater Discharges](#)
- **Groundwater Discharge Strategy:** [Compliance Strategy for Addressing PFAS from Public and Private Municipal Groundwater Discharges](#)