

# PFAS Briefing - Gull Lake Quality Organization

## What are PFAS?

Per- and polyfluoroalkyl substances (PFAS) are widely used in consumer and industrial products such as:

- Cosmetics
- Clothing and carpet treatments
- Adhesives, sealants, and protective coatings
- Firefighting foam
- Food packaging
- Pesticides

These substances are highly persistent in the environment and are frequently detected in a variety of environmental matrices (e.g., soil, lakes and streams, groundwater). Some PFAS are bioaccumulative and cause adverse human health effects at certain levels of exposure.

## How is surface water monitored for PFAS?

The Surface Water Assessment Section of EGLE’s Water Resources Division monitors surface waters for PFAS on a watershed basis. Watersheds are prioritized based on the following characteristics:

- Are drinking water intakes present within the watershed?
- Are there areas of known and significant PFAS contamination within the watershed?
  - Ex. The former Wurtsmith Air Force Base is within the Au Sable River watershed.
- How many sources of PFAS are known to be within the watershed?
  - PFAS sources can be estimated based on the number of [Michigan PFAS Action Response Team](#) (MPART) sites, locations with exceedances of our groundwater cleanup criteria, and information from our industrial pretreatment program.
- Have elevated PFAS concentrations been observed in fish collected from the watershed?

## Surface Water Monitoring Goals:

The goals of the Surface Water PFAS Monitoring Program are:

- Identify sources of PFAS to Michigan lakes, streams, and wetlands.
- Prioritize areas for additional investigation(s).
  - Source identification and differentiation is conducted by surface water sampling or passive sampler studies.
  - PFAS trends over time are determined using fish tissue, sediment, or passive samplers.
  - Impacts to public health can be examined by surface water sampling and fish tissue monitoring.

## Which PFAS are monitored in Surface Water?

Currently, 31 PFAS analytes are analyzed for in surface water. Additional information regarding PFAS analysis can be found in the [MPART – PFAS Minimum Laboratory Analyte List](#)

**What are the relevant regulatory values for PFAS in surface water?**

Surface water PFAS concentrations are compared to values derived under [Part 4 Rule 57](#) and account for fish consumption and surface water ingestion (as drinking water and as incidental ingestion). Water Quality Value development is prioritized based on the occurrence of the PFAS analyte within surface water and fish tissue as well as the availability of toxicological data. Our current PFAS Rule 57 Water Quality Values are as follows:

PFAS	HNV* (drinking)	HNV* (nondrinking)	FCV*	AMV*	FAV*
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	240,000,000	120,000,000	240,000,000

\*Human Noncancer Value (HNV), Final Chronic Value (FCV), Aquatic Maximum Value (AMV). Final Acute Value (FAV). All values presented in nanograms per liter (ng/L) (parts per trillion [ppt]).

**What surface water PFAS data are available for Gull Lake?**

Three surface water samples were collected from Gull Lake in 2018 and analyzed for PFAS. **No exceedances of our PFAS Water Quality Values were observed.** PFBA was detected above the laboratory reporting limit, at an average concentration of 2.3 ng/L (ppt). PFOS, PFPeA, PFHxA, PFOA, PFDA, PFBS, PFHpA, and PFNA were detected below the reporting limiting but above the method detection limit.



**Michigan’s Fish Contaminant Monitoring Program**

The [Fish Contaminant Monitoring Program](#) (FCMP) tests fish for contaminants that build up to higher levels in fillets compared to the surrounding water column. These include mercury, PCBs, organochlorine pesticides (DDT, toxaphene, and chlordane), dioxins, furans, and select PFAS.



The main goal of the FCMP is to collect data that can be used by the Michigan Department of Health and Human Services’ (MDHHS) [Eat Safe Fish Program](#) to issue fish consumption guidelines. To meet this goal, the FCMP sends the edible portion (e.g., fillets) of the fish to the MDHHS laboratory for contaminant analyses. Typically, the FCMP monitors contaminants in fish from approximately 50 locations each year.

**Which PFAS are monitored by the FCMP?**

Currently, 39 PFAS analytes are analyzed for in fish tissue. Additional information regarding PFAS analysis can be found in the [MPART – PFAS Minimum Laboratory Analyte List](#). PFOS is of most concern due to its high bioaccumulation potential in fish tissue.

**How are edible portion FCMP sites selected each year?**

Edible Portion fish tissue monitoring locations are selected each year and prioritized based on several factors including, but not limited to, the following:

- [EGLE’s 5-year rotating watershed system](#) monitoring strategy
- Locations where contaminants, including PFAS, have been found at elevated concentrations in the surface water and/or sediment
- Requests received through the Targeted Monitoring Request Program
- Locations being monitored by the Michigan Department of Natural Resources’ Status and Trends Program

**Can surface water and fish tissue monitoring be requested by the public?**

Yes! Monitoring can be requested through our [Targeted Monitoring Request Form](#).

**What edible portion fish tissue PFAS data are available for Gull Lake?**

Fish were collected out of Gull Lake for PFAS monitoring in 2018 and in 2021. The table below summarizes the PFOS concentrations in these fish (measured in parts per billion [ppb]).




Species	Sample Type	Collection Date	# Samples	PFOS Range (ppb)	Avg PFOS (ppb)
Bluegill	Fillet	7/26/2018	5	0.56 – 1.97	1.00
Rock Bass	Fillet	7/26/2018	10	0.25 – 2.82	1.21
Largemouth Bass	Fillet	7/26/2018	10	1.69 – 3.64	2.65
Rainbow Smelt	Headless, Guttled	2/2/2021	3*	66.50 – 78.20	72.17

\* 3 composite samples each consisting of 20 individual smelt

**What are the MDHHS Eat Safe Fish guidelines for Gull Lake?**

The 2018 fish sampling data are currently included in the 2022 MDHHS Eat Safe Fish Guide for [southwest Michigan](#). While PFOS was detected in the fish collected in 2018, it was mercury that was found to be of greater concern and the driver of the consumption guidelines.

**Gull Lake**

Type of Fish	Chemicals of Concern	Size of Fish (length in inches)	MI Servings per Month*
 Bluegill	Mercury	Any	8
Largemouth Bass	Mercury	Any	1
Northern Pike	Mercury	Any	1
 Rock Bass	Mercury	Any	8
Smallmouth Bass	Mercury	Any	1
 Sunfish	Mercury	Any	8

The 2021 rainbow smelt data are not currently included in the 2022 Eat Safe Fish Guide. An [update was issued in early 2023](#) advising **no more than 2 MI Servings per month of rainbow smelt from Gull Lake due to PFOS**. This guideline will be included in the 2023 Update to the Eat Safe Fish Guide. PFOS has been found in rainbow smelt at elevated levels in several locations throughout Michigan. It is currently unknown why this species accumulates PFOS at much higher concentrations than other species from the same water body.

If you need additional information regarding the PFAS Surface Water Monitoring Program, contact Geoff Rhodes at [RhodesG2@Michigan.gov](mailto:RhodesG2@Michigan.gov).

If you need additional information regarding the Fish Contaminant Monitoring Program, contact Brandon Armstrong at [ArmstrongB5@Michigan.gov](mailto:ArmstrongB5@Michigan.gov).

For questions related to the MDHHS Eat Safe Fish advisories, please contact Brandon Reid at MDHHS at [ReidB1@Michigan.gov](mailto:ReidB1@Michigan.gov).