

# RESEARCH BRIEF

Clean Wisconsin Environmental Health Initiative

## Fish and Sediment Contamination: Consumption Advisories in Wisconsin

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**SUMMARY** – Contaminated sediment is a long-standing environmental concern in Wisconsin’s lakes, rivers, and Great Lakes Areas of Concern (AOCs). Sediment consists of fine particles of soil, minerals, and organic matter that settle at the bottom of waterbodies. Pollutants from industrial activity, wastewater, agriculture, urban runoff, and atmospheric deposition can bind to these sediments, where they may remain for decades. Certain contaminants, such as PCBs, PFAS, PAHs, and heavy metals like mercury, are especially prone to accumulating in sediment due to their chemical properties, affinity for binding to sediment particles, and resistance to degradation.

While direct contact and accidental ingestion are possible exposure routes, the main way people are exposed to harmful pollutants in contaminated sediments is through consumption of contaminated fish. Once contaminants are present in sediment, they can enter aquatic food webs and build up in the tissue of fish, exposing people who eat those fish to the contaminants. Thus, fish consumption represents an important health concern in Wisconsin, where fishing is culturally, recreationally, and economically important.

Fish contaminants are linked to a range of health impacts. Mercury can harm the nervous system and interfere with brain development, particularly in children and fetuses. Polychlorinated biphenyls (PCBs) are associated with immune suppression, developmental effects, and cancer risk. PFAS exposure has been linked to developmental delays, hormone disruption, organ damage, reduced vaccine effectiveness, pregnancy complications, and certain cancers. Pregnant women and children are especially vulnerable to these contaminants, making targeted consumption guidance critical.

Fish contamination also raises important environmental justice concerns. Subsistence anglers, tribal nations, and certain immigrant communities, including Hmong and Burmese populations, often consume larger quantities of locally caught fish and may face higher exposure risks.

In this brief, we examine sediment contamination and fish consumption advisories in Wisconsin illustrating what is known about the scope of the problem in the state, how it impacts health, and what can be done to minimize exposure to these harmful pollutants.

**Key takeaways from this exploration include:**

- Contaminated sediment is a persistent source of pollution in Wisconsin waterbodies and an important contributor to fish contamination.
  - Statewide, 26 lakes, impoundments, and reservoirs—totaling nearly 60,000 acres—and 78 stretches of rivers and streams—totaling 930 miles— are impaired due to contaminated sediment.
  - Wisconsin has five designated Great Lakes Areas of Concern, which are Great Lakes rivers and harbors that have been particularly affected by pollution and contaminated sediment
- The primary human health risk from contaminated sediment occurs through consumption of contaminated fish.
  - Contaminants from sediment can enter the food chain, affecting a variety of wild game including fish, ducks, deer, and other wildlife. When these animals are consumed by humans, the contaminants are directly introduced into the body.
- Wisconsin maintains statewide and waterbody-specific fish consumption advisories, supported by ongoing fish sampling and monitoring efforts. Those consuming fish caught in Wisconsin waterbodies should be aware of these consumption advisories.
  - 44 lakes or stretches of rivers have advisories related to PCBs, 28 have advisories related to PFOS, and 106 have advisories related to mercury
- Mercury, PCBs, and PFAS are the most significant contaminants affecting fish consumption safety in Wisconsin.
  - Higher consumption of fish caught by anglers in Wisconsin has been found to lead to higher levels of contaminants in the body.
  - Practices such as removing and discarding fatty tissue and avoiding fat drippings minimize exposure to some contaminants when eating fish.
- Pregnant women, children, subsistence anglers, and certain marginalized communities face disproportionately higher exposure risks.
  - Studies in Wisconsin have found higher amounts of PFAS, PCBs, and mercury in the bodies of urban and subsistence anglers compared to the general population, highlighting gaps in advisory awareness and the need for culturally appropriate outreach and education.
- Continued sediment remediation, expanded monitoring, clear advisories, and targeted outreach are essential for protecting public health while allowing residents to safely benefit from fishing.

## Definitions

**Anglers:** A person who fishes with a rod and line.

**Biomagnification:** The process by which a compound (such as a pollutant) increases its concentration in the tissues of organisms as it travels up the food chain.

**Dichlorodiphenyltrichloroethane (DDT):** A pesticide linked to cancer, reproductive harm, developmental delays, nervous system harm, and endocrine disruption in both wildlife and people.

**Heavy metals:** Metal substances like cadmium, lead, and mercury, that are linked to problems with neurological development, kidney function, and cardiovascular health.

**Polychlorinated biphenyls (PCBs):** A group of manufactured organic chemicals linked to liver damage, reproductive issues, skin issues, and immune system damage. Some PCBs are human carcinogens.

**Polycyclic Aromatic Hydrocarbon (PAHs):** A large group of chemicals formed during the combustion of organic materials that are linked to cancer, reproductive issues, and damage to the lungs, liver, and kidneys.

**Per- and polyfluoroalkyl Substances (PFAS):** A group of manufactured chemicals linked to increased risk of thyroid disease, increased risk of some cancers, increased risk of conditions such as high blood pressure or pre-eclampsia during pregnancy, and lower infant birth weights.

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## Introduction

Sediment refers to the material that settles and forms the beds of waterbodies, that include particles from the erosion of rock, minerals, soil, and biological materials (e.g., plant material) (Wisconsin DNR 2021). Sediments can become contaminated when pollutants from industrial discharges, urban runoff, agricultural activities, wastewater, and atmospheric deposition seep into these materials. Once contaminants enter sediment, they can persist for years, acting as a source of pollution to aquatic ecosystems (USEPA 2023). Chemical properties of pollutants and their interaction with sediment characteristics can allow certain contaminants to be more likely to accumulate in sediment.

Hydrophobic compounds (i.e., those that do not interact with water molecules like fats and oils) such as polychlorinated biphenyls (PCBs) and polycyclic aromatic hydrocarbons (PAHs) bind strongly to organic matter in sediments, making them prone to long-term accumulation (USGS 2023). Many of these chemicals also degrade very slowly, allowing contaminants to remain in the environment for decades (USEPA 2023). Metals and hydrophobic organic pollutants tend to attach to fine particles like clay and silt, leading to more accumulation in silty and clayey sediments than in other conditions like sandy sediments.

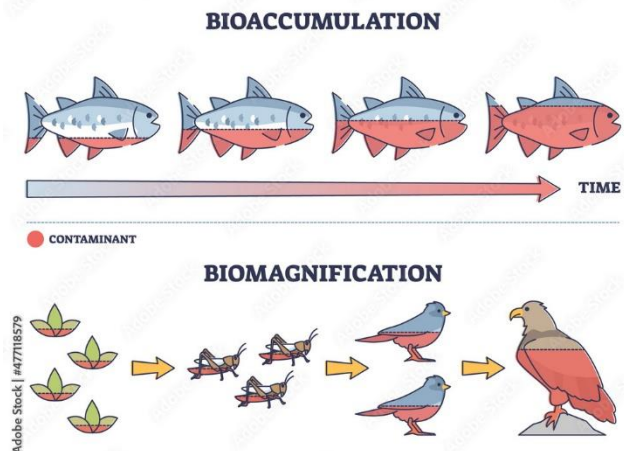
In addition, specific sediment conditions, such as low oxygen or high organic carbon content, can increase contaminant retention and reduce rates of degradation, increasing the likelihood that these substances remain in sediments over time (CLUIN News N.D.). Many sediment contaminants can pose risks to human health. PCBs, for example, can cause developmental harm, suppress the immune system, and are classified as probable human carcinogens (USEPA 2025a). Heavy metals such as mercury, lead, and cadmium can accumulate in sediment and affect

neurological development, kidney function, and cardiovascular health. Pesticides like dichlorodiphenyltrichloroethane (DDT) and chlordane, which persist long after their initial application, have been linked to reproductive harm and endocrine disruption in both wildlife and people (Cheng et al 2020).

## Contaminated Sediment Exposure Pathways and Health Risks

People can be exposed to harmful sediment contamination through direct contact with sediment when swimming, playing, or working in contaminated waterbodies. However, the main pathway for human exposure to harmful sediment contaminants is indirect, through consumption of contaminated fish and game animals (USEPA 2025a).

Small bottom-dwelling organisms such as benthic invertebrates (insect larvae, mussels, clams, snails, leeches, worms, and crayfish) absorb toxins in the contaminated sediment. These bottom-dwellers are important food sources for larger animals like fish, amphibians, and birds. When larger animals eat these smaller animals, the toxins begin to move up in the food chain, accumulating and biomagnifying in the larger animals (USEPA 2025b).



Thus, contaminants from sediment can enter food webs, affecting a variety of species consumed by people including fish, ducks, deer, and other wildlife. This results in direct delivery of these contaminants to our digestive systems when eating contaminated fish or wildlife (Ejiohuo et al. 2025).

Given the importance of fishing for recreational, subsistence, and cultural practices in Wisconsin, this brief focuses on fish consumption, the primary exposure pathway through which contaminated sediments threaten public health.

Fish at the top of the food chain, such as lake trout and salmon, can accumulate the highest concentrations of contaminants and can be unsafe to eat in some areas because of the levels of toxic substances in their tissues.

### *Common Fish Tissue Contaminants*

The Wisconsin Department of Natural Resources (WDNR) has monitored fish for contaminants, including PFAS, mercury, and PCBs in waterbodies across the state. Many fish in Wisconsin contain at least small amounts of these contaminants (Wisconsin DNR 2025a).

PCBs, PFAS, and mercury differ in their sources, how they accumulate in fish, and their effects on human health. PCBs are most commonly associated with industrialized rivers and the Great Lakes as they accumulate in sediments at the bottom of lakes and streams.

PCBs are toxic, synthetic chemicals with properties such as stability, resistance to high heat, and electrical insulation. They are used for a variety of industrial and commercial applications, including hydraulic fluids, carbonless papers, electrical transformers, and as paint additives to increase durability and flexibility. Although they were banned in the United States in 1979, PCBs are a persistent chemical that remains in

our environment today due to their slow breakdown. PCBs often have higher concentrations in older and fattier fish, making species like carp, Great Lakes trout, and salmon at higher risk for PCB contamination.

There are well-documented health risks associated with PCB exposure with studies showing that exposure increases the risk of cancer and harm to the reproductive and immune systems. For pregnant individuals or those who are nursing, eating fish high in PCBs can cause low birth weights or developmental delays in infants (Wisconsin DNR 2024).

Mercury is a contaminant that is present in many Wisconsin waterbodies. Mercury in waterbodies can come from the breakdown of rocks as well as through atmospheric deposition from industrial sources like coal-burning power plants and disposal of mercury-containing items in landfills. Once it has entered the environment, mercury can last for years building up in the sediment (Wisconsin DNR 2025b). Mercury accumulates in all parts of fish, and can affect the nervous system of humans, potentially harming brain development and behavior in children and impacting coordination, vision, hearing, speech, and heart health in adults. Mercury can be gradually eliminated from the body, and spacing fish meals over time helps reduce exposure (USEPA 2025c). While all fish have some level of mercury, larger and older predatory fish, such as Walleye, will have higher mercury levels (Wisconsin DNR 2024).

Per- and polyfluoroalkyl substances, or PFAS, are a group of harmful manufactured chemicals. They are found in many products that we use every day, from non-stick cooking pans and food packaging to waterproof rain jackets. Similar to PCBs, PFAS are difficult to break down. They persist in the environment and our bodies, earning them the nickname “forever chemicals”. High levels of PFAS can cause developmental problems in children, increase

the risk of certain cancers (including breast, kidney, and testicular cancer), damage organs such as the thyroid and liver, and lead to high cholesterol, pregnancy complications, and reduced vaccine response. Panfish like white bass, bluegill, and crappie tend to have the highest PFAS levels.

Pregnant women and children are especially at risk from contaminated fish because their fetus and young children's bodies—particularly their brains and nervous systems—are still developing. Toxins like mercury can interfere with this development, affecting the brain, immune system, and overall growth. In addition, mercury stored in a mother's body can cross the placenta, meaning a fetus may be exposed to concentrations even higher than those found in the mother's bloodstream (USEPA 2026).

### *Environmental Justice Implications*

Fish contamination in Wisconsin also presents a significant environmental justice concern, as subsistence anglers, certain immigrant communities (such as Hmong and Burmese populations) and tribal nations face disproportionately higher risks due to their cultural practices and reliance on locally caught fish for food (Wisconsin Department of Health Services 2025). These groups often consume larger quantities of fish, increasing their potential exposure to contaminants.

For example, a study of urban anglers in the Milwaukee Area of Concern (AOC) measured contaminant concentrations in people who regularly eat fish from lakes and rivers near Milwaukee. Portions of the Milwaukee Estuary are designated as an AOC due to historical industrial, urban, and agricultural pollution, which has contaminated the Milwaukee River, connected waterways, and Lake Michigan with PCBs, PAHs, and heavy metals. The study also assessed dietary habits, fishing practices, and general health among anglers and Burmese refugees, who often consume large amounts of fish and may therefore have higher body concentrations of environmental contaminants. Results indicated that urban anglers had higher concentrations of PFOS, PCBs, and mercury than the general U.S. adult population. These findings highlight the need for education and outreach to inform these higher-risk communities about the harmful impacts of contaminated fish and promote more sustainable fishing practices (Wisconsin DHS 2025).

Another study found that Burmese populations in Milwaukee are at higher risk of exposure to environmental contaminants including elevated blood levels of mercury, lead, cadmium, PCBs, and PFAS, compared to the general population. This may be due to frequent consumption of locally caught fish, often exceeding 100 meals per year, combined with low awareness of state consumption advisories (He et al. 2021).

## **Scope of Sediment Contamination in Wisconsin**

### *Great Lakes Areas of Concern*

Wisconsin is home to five designated Great Lakes Areas of Concern (AOCs) (Figure 1). These areas are Great Lakes rivers and harbors that have been

particularly affected by pollution, habitat loss, and degradation. All these areas are affected by contaminated sediments to some extent, with historic industrial and urban activity contributing to pollution. Primary contaminants across Wisconsin's AOCs include PCBs, PAHs, and various heavy metals. For example, the Milwaukee Estuary AOC has 11 recognized beneficial use impairments (BUIs), of which seven are directly attributed to contaminated

sediment: restrictions on dredging activities, fish tumors or other deformities, bird or animal deformities or other reproductive problems, restrictions on fish and wildlife consumption, degradation of benthos (i.e., damage to the community of aquatic life at the bottom of lakes, rivers and streams), loss of fish and wildlife habitat and degradation of fish and wildlife populations.

Wisconsin's management approach includes sediment monitoring, remediation efforts, and public-led advisories on fish consumption to protect human health and ecosystem health. Due to the pollution clean-up efforts, the Lower Menominee River was delisted in 2020 and management actions in Sheboygan were also completed. The Sheboygan River will be officially delisted after final monitoring, as it is still in the monitored recovery stage (Wisconsin DNR N.D.).

### *Impaired Waterbodies*

The Clean Water Act requires the Wisconsin Department of Natural Resources (WDNR) to assess water quality in the state and maintain a list of waterbodies that do not meet water quality standards. These waterbodies that do not meet water quality standards are referred to as impaired waters.

The current list of impaired waters includes 26 lakes, impoundments and reservoirs — totaling nearly 60,000 acres — and 78 stretches of rivers and streams — totaling 930 miles — that are impaired due to contaminated sediment. Another 580 miles of Great

Lakes shoreline are impaired due to contaminated sediment (Figure 2; Wisconsin DNR 2026). See Appendix Table A.1 for additional details on these impaired waterbodies.

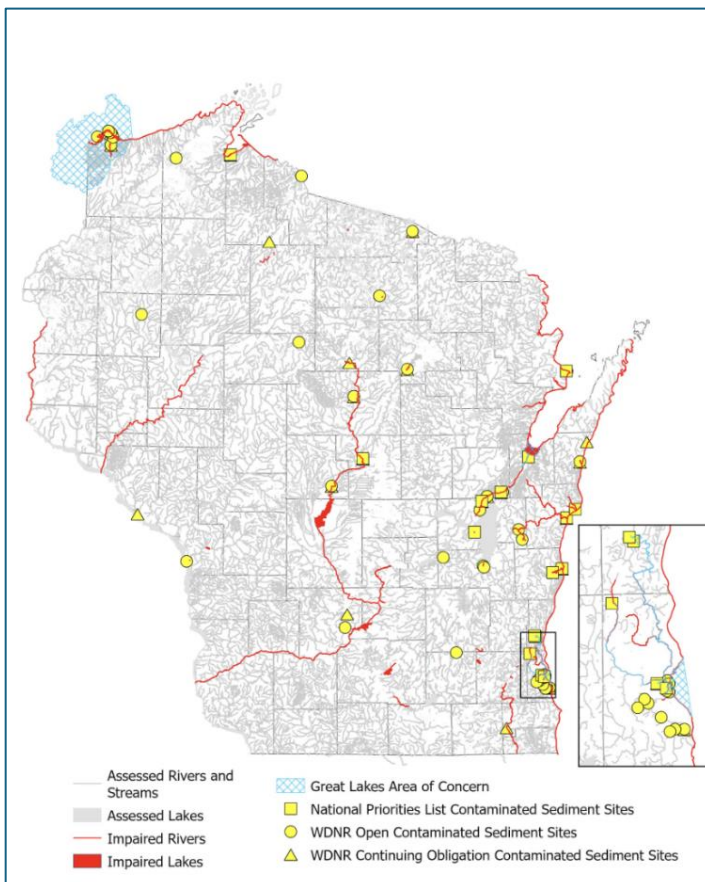
PCBs or mercury are the primary contaminants for the majority of sediment contamination in both lakes (Table 1) and rivers (Table 2). PCB sediment contamination was listed as the cause of all the impaired Great Lakes shorelines.

The WDNR's Bureau of Remediation and Redevelopment Tracking System (BRRTS) is a database providing information on contaminated sites in Wisconsin. This database includes 56 locations with sediment contamination that are still being investigated or remediated ("Open" sites in Fig. 2).

There are another 22 sites with sediment contamination where the investigation and remediation activities are complete, but contamination remains and there are legal obligations placed on the site to protect human health and the environment from remaining contamination ("Continuing Obligation" sites in Fig. 2). Of these sites, 16 are Superfund/National Priorities List sites ("NPL" sites in Fig. 2), which are managed by the United States Environmental Protection Agency, and represent some of the most severely contaminated sites. More details on the contaminated sediment sites in the BRRTS database are found in Appendix Tables A.2-4.



**Figure 1.** Locations of the five Areas of Concern (AOCs) in Wisconsin and details of the status of each area, including whether management actions have taken place or if the area has been delisted. As seen in the map, Lower Menominee River has been delisted in 2020, Sheboygan River has management actions completed, and Lower Green Bay and Fox River, Milwaukee Estuary, and St. Louis River have management actions in progress.



**Figure 2.** Impaired (red) and assessed (gray) waterbodies across Wisconsin. It also identifies Great Lakes Areas of Concern, waterbodies listed on the National Priorities List, sites with active contaminated sediment issues, and waterbodies with continuing obligations under the Wisconsin Department of Natural Resources.

**Table 1.** Contaminants responsible for known sediment contamination of impaired lakes, reservoirs, and impoundments in Wisconsin.

| Contaminant                             | Acres         |
|-----------------------------------------|---------------|
| Polychlorinated Biphenyls (PCBs)        | 49,993        |
| Mercury                                 | 31,395        |
| Dioxin                                  | 23,001        |
| Dieldrin                                | 5,902         |
| Dichlorodiphenyltrichloroethane (DDT)   | 5,902         |
| 2,3,7,8-Tetrachlorodibenzo-p-dioxin     | 5,902         |
| Perfluorooctane sulfonate (PFOS)        | 3,359         |
| Total Phosphorus                        | 1,182         |
| Unknown                                 | 284           |
| Lead                                    | 187           |
| Metals                                  | 142           |
| Polycyclic Aromatic Hydrocarbons (PAHs) | 35            |
| Scum/Foam                               | 19            |
| <b>Total Unique Contaminated Acres</b>  | <b>58,831</b> |

**Table 2.** Contaminants responsible for known sediment contamination of impaired river and streams in Wisconsin.

| Contaminant                             | Total Miles of Impaired Rivers |
|-----------------------------------------|--------------------------------|
| Polychlorinated Biphenyls (PCBs)        | 837                            |
| Mercury                                 | 239                            |
| Metals                                  | 38                             |
| Creosote                                | 19                             |
| Dioxin                                  | 15                             |
| Polycyclic Aromatic Hydrocarbons (PAHs) | 15                             |
| Unknown                                 | 7                              |
| Arsenic                                 | 2                              |
| Scum/Foam                               | 2                              |
| <b>Total Unique Contaminated Miles</b>  | <b>930</b>                     |

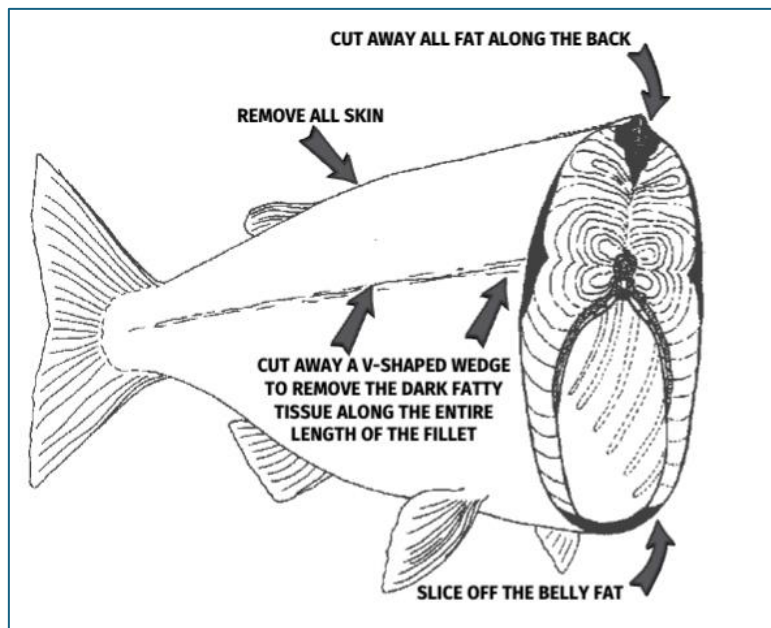
## Fish Consumption Advisories in Wisconsin

To protect public health and balance the negative and positive aspects of fish consumption, the WDNR and the Department of Health Services (DHS) provide guidance and advisories on safe fish consumption. These advisories vary by fish species, fish size, and person eating the fish (more restrictions for children and women who could become pregnant). Following these guidelines helps minimize exposure while still allowing people to enjoy the benefits of fish in their diet.

Despite potential contamination, including fish in your diet can be beneficial to health. Fish and seafood are not only good sources of protein that are lower in saturated fats, but they also contain essential nutrients such as Omega-3 fatty acids.

These nutrients are crucial for heart health, brain function, and inflammation control (Turyk et al. 2012). Different types of fish also contain different vitamins such as vitamin D, A, C, and E (Eat Wisconsin Fish 2023).

In terms of preparing and cooking the fish, because PCBs accumulate in the fat of the fish, consumers can reduce PCB exposure by removing the fatty parts of the fish before cooking (Figure 3). It is also recommended to cook fish through methods such as boiling and grilling which allow fat to drip away. Avoiding the use of drippings to prepare sauces or gravies can also reduce the risk of exposure (Wisconsin DNR 2024). There are currently no preparation or cooking methods that reduce PFAS or mercury exposure.



**Figure 3.** The infographic highlights specific areas where consumers can cut fish to avoid fatty tissue and minimize exposure to PCBs and other contaminants that accumulate in fatty tissue (Wisconsin DNR 2024).

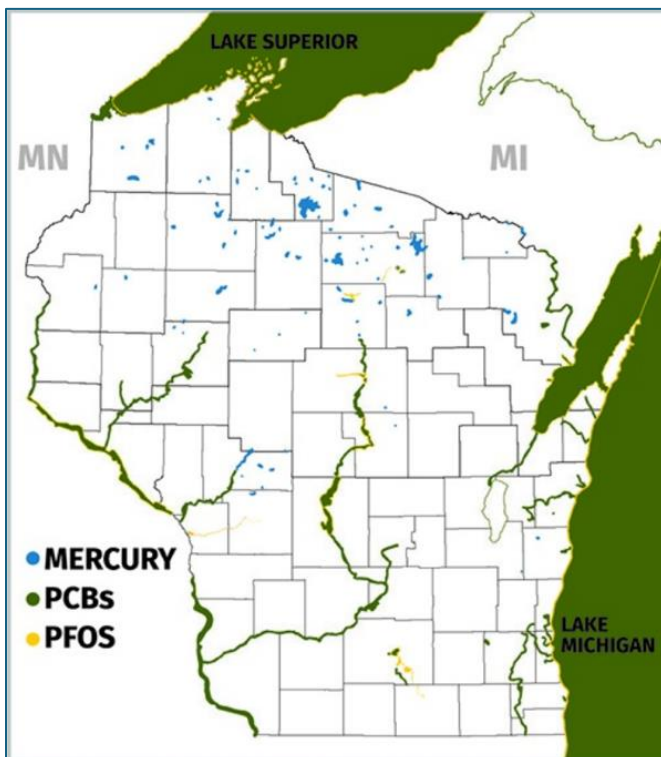
There are some statewide restrictions that apply to all inland waterbodies to minimize exposure to mercury:

- **Women who could become pregnant and children:**
  - One serving per week of bluegill, crappie, yellow perch, sunfish, rock bass, bullhead, and inland trout
  - Do not eat musky
  - One serving per month of walleye, pike, bass, catfish and all other species
- **Women over age 50 and men:**
  - Unrestricted consumption of bluegill, crappie, yellow perch, sunfish, rock bass, bullhead, inland trout.
  - One serving per month of musky
  - One serving per week of walleye, pike, bass, catfish and all other species

Beyond the statewide restrictions, there are waterbody-specific consumption advisories based on elevated levels of fish tissue contamination.

For the Great Lakes and their tributaries, several species have consumption advisories to minimize exposure to PCBs, mercury, or PFOS. Common fish with consumption advisories include carp, catfish, and lake trout.

For inland waterbodies, 44 lakes or stretches of rivers have advisories related to PCBs, 28 have advisories related to PFOS, and 106 have advisories related to mercury (Figure 4).



**Figure 4:** The map shows current fish consumption advisories across Wisconsin (Wisconsin DNR 2024). See Appendix for additional details on PFAS-related consumption advisories.

### Wisconsin-Specific Studies of Health Burden Related to Fish Consumption

Numerous studies have investigated the relationship between fish consumption and contamination exposure in Wisconsin anglers (Table 3). These studies consistently find that higher levels of fish consumption are related to higher levels of mercury in the body, while most also find that higher levels of fish consumption are related to higher levels of PCBs, PFAS and other contaminants in the body. However, few studies have evaluated whether these higher body burdens of contaminants from fish consumption increase the risk of disease. Those studies suggest this is a complicated topic, reporting a tension between the health benefits of beneficial nutrients in fish and harmful contaminants (e.g., Raymond et al. 2016; Christenson et al. 2016c).

| <b>Table 3.</b> Summary of studies examining the relationship between fish consumption and exposure to contaminants in Wisconsin anglers. |                                                  |                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Study</i>                                                                                                                              | <i>Study Population</i>                          | <i>Findings</i>                                                                                                                                                                                                   |
| Fiore et al. 1989                                                                                                                         | Anglers statewide                                | Higher blood PCB and DDT levels are related to higher reported fish consumption levels.                                                                                                                           |
| Dar et al. 1992                                                                                                                           | Women in Green Bay                               | Positive correlation between PCB levels in the woman and number of fish consumed from Lake Michigan.                                                                                                              |
| Flaherty et al. 2003                                                                                                                      | Ice anglers in Madison                           | Only 5% of anglers report eating more fish than recommended to avoid harmful mercury exposure.                                                                                                                    |
| Knobeloch et al. 2007                                                                                                                     | Adults statewide                                 | More reported fish consumption correlates with higher levels of mercury in the body. Men had higher mercury levels than women even at similar fish consumption levels.                                            |
| Christensen et al 2016a                                                                                                                   | Older male anglers statewide                     | Higher fish consumption, particularly fish caught from Areas of Concerns, associated with higher levels of mercury, PFAS, and PCBs in the body. Anglers had higher mercury levels than the general US population. |
| Christenson et al. 2016b                                                                                                                  | Older male anglers statewide                     | Endocrine system impacts depend on the balance of beneficial nutrients and harmful contaminants in the fish.                                                                                                      |
| Raymond et al. 2016                                                                                                                       | Older male anglers statewide                     | Higher mercury and PCB exposure related to increased risk of cardiovascular disease.                                                                                                                              |
| Stevens et al. 2017                                                                                                                       | Madison anglers                                  | White, African American and Hmong American anglers had similar mercury exposure despite African Americans eating more fish overall and Hmong Americans preferring species with higher levels of contaminants.     |
| He et al. 2017, 2022                                                                                                                      | Anglers in the Milwaukee Estuary Area of Concern | Less than half of anglers consumed fewer fish than recommended by Wisconsin consumption advisories                                                                                                                |
| He et al. 2022                                                                                                                            | Milwaukee Estuary Area of Concern                | Urban anglers consuming locally caught fish had higher levels of PFOS, PCB, and mercury than the general population.                                                                                              |

## Recommendations

### *Minimizing Personal Exposures*

Personal exposure to harmful substances in contaminated soils can be minimized by avoiding contaminated areas as much as possible. However, when spending time in areas with contaminated sediment, exposure can be reduced by cleaning soil and sediment from clothing, shoes, any recreational equipment like bikes or watercraft, washing hands before eating, following fish consumption guidelines, and avoiding foraged plants and fungi.

### *Policy Advocacy*

More broadly, addressing existing contaminated sediment needs to be done following risk management principles which weigh the relative harm of different management options, including leaving the contamination in place. For example, an evaluation of contaminated sediment management in New York's Hudson River compared the health risk of leaving sediment in place (measured by exposure to PCBs via fish consumption) to the net benefit of removing contaminated sediment via dredging (Kvasnicka et al. 2019, 2020). The net benefit was calculated by offsetting reduced PCB exposure from fish consumption by increased inhalation risk during dredging as well as air pollution associated with transporting the sediment. This analysis found that the decision to dredge may not have resulted in a net human health benefit, particularly when considering the air pollution from sediment transport.

Affected local communities need to be better informed about, and included in, the decision-making processes at clean-up sites (Wisconsin DNR 2018). This includes being involved in identifying and evaluating management options and priorities, as well as determining when the contamination is sufficiently addressed. The [Milwaukee Estuary Area of Concern Community Advisory Committee](#) is one community engagement model that could be implemented at other contamination sites.

The US EPA has developed a set of 11 principles reflecting many of these concepts that should be followed at contamination sites (USEPA 2025b):

1. Control sources early
2. Involve the community early and often
3. Coordinate with state and local governments, Tribes, and natural resource trustees
4. Develop and refine a conceptual site model that considers sediment stability
5. Use an iterative approach in a risk-based framework
6. Carefully evaluate the assumptions and uncertainties associated with site characterization data and site models
7. Select site-specific, project-specific and sediment-specific risk management approaches that will achieve risk-based goals
8. Ensure that sediment cleanup levels are clearly tied to risk management goals
9. Maximize the effectiveness of institutional controls and recognize their limitations
10. Design remedies to minimize short-term risks while achieving long-term protection
11. Monitor during and after sediment remediation to assess and document remedy effectiveness.

Funding to do this clean-up work, such as the funding from Great Lakes Restoration Initiative which supports clean-up of the Areas of Concern, needs to be maintained in both State and Federal budgets.

Regarding fish consumption advisories, continued assessments of surface waters by the WDNR are needed to ensure all affected waterbodies in Wisconsin are identified.

Furthermore, creation of accessible materials and tools to educate the community on threats from contaminated fish should be a priority. It is crucial for residents and anglers to stay informed about local advisories and limit consumption of affected fish species to mitigate potential health impacts. Numerous studies identified the need for improved outreach and educational efforts to improve this awareness in Wisconsin. (Chistenson et al. 2016c, He et al. 2017, 2021, Stevens et al. 2018, Shaw et al. 2023).

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## Appendix

Table A.1. Waterbodies in Wisconsin listed as impaired due to contaminated sediment in the 2024 Report to Congress.

| Local Waterbody Name                    | Counties                                   | Water Type            | Size (Miles or Acres) | Impairments                                                                                |
|-----------------------------------------|--------------------------------------------|-----------------------|-----------------------|--------------------------------------------------------------------------------------------|
| Badfish Creek                           | Dane, Rock                                 | RIVER                 | 13.17                 | PCB Contaminated Sediments, PCBs Contaminated Fish Tissue                                  |
| Branch River                            | Brown, Manitowoc                           | RIVER                 | 36.79                 | PCBs Contaminated Fish Tissue                                                              |
| Cedarburg Pond                          | Ozaukee                                    | LAKE                  | 5.43                  | Mercury Contaminated Fish Tissue; PCBs Contaminated Fish Tissue                            |
| Chequamegon Bay (Ashland Coal Tar Site) | Douglas                                    | BAY/HARBOR            | 16.62                 | Chronic Aquatic Toxicity from PAHs, PAHs Contaminated Sediments                            |
| Chippewa River                          | Buffalo, Chippewa, Dunn, Eau Claire, Pepin | RIVER                 | 105.75                | Unspecified Metals Contaminated Sediments; PCBs Contaminated Fish Tissue                   |
| Crawfish River - Columbus Mill Pond     | Dodge, Columbia                            | IMPOUNDMENT           | 18.38                 | PCBs Contaminated Fish Tissue                                                              |
| Crawford Creek                          | Douglas                                    | RIVER                 | 9.12                  | Chronic Aquatic Toxicity from Creosote and PAHs                                            |
| Crowley Flowage                         | Price                                      | RESERVOIR             | 353.64                | Chronic Aquatic Toxicity, Mercury Contaminated Fish Tissue, Mercury Contaminated Sediments |
| Davy Creek                              | Dodge                                      | RIVER                 | 5.69                  | Chronic Aquatic Toxicity from metals                                                       |
| East Twin River                         | Manitowoc                                  | RIVER                 | 10.49                 | PCBs Contaminated Fish Tissue                                                              |
| Fond Du Lac River                       | Fond du Lac                                | RIVER                 | 1.56                  | Chronic Aquatic Toxicity from Metals                                                       |
| Fox River (At Oshkosh)                  | Winnebago                                  | RIVER                 | 0.49                  | Acute Aquatic Toxicity from PAHs                                                           |
| Fox River (Illinois)                    | Racine, Waukesha, Kenosha                  | RIVER                 | 58.17                 | PCBs Contaminated Fish Tissue; PCB Contaminated Sediments                                  |
| Fox River At Buffalo Lake               | Marquette                                  | RESERVOIR             | 2178.92               | PCBs Contaminated Fish Tissue                                                              |
| Frame Park Creek                        | Waukesha                                   | RIVER                 | 1.26                  | PAHs Contaminated Sediments                                                                |
| Green Bay (Gl Shoreline)                | Brown, Door, Kewaunee, Marinette, Oconto   | GREAT LAKES SHORELINE | 131.2                 | PCBs Contaminated Fish Tissue                                                              |
| Green Bay (Inner Bay, AOC)              | Brown                                      | BAY/HARBOR            | 13867.36              | PCB Contaminated Sediments, PCBs Contaminated Fish Tissue                                  |
| Grubers Grove Bay, Lake Wisconsin       | Sauk                                       | BAY/HARBOR            | 25.01                 | Mercury and PCB Contaminated Fish Tissue; Chronic Aquatic Toxicity from metals,            |
| Hog Island Inlet                        | Douglas                                    | BAY/HARBOR            | 18.51                 | Chronic Aquatic Toxicity from metals and PAHs                                              |
| Hoopers Millpond                        | Jefferson                                  | IMPOUNDMENT           | 18.73                 | PCB Contaminated Sediments                                                                 |
| Jag Lake                                | Vilas                                      | LAKE                  | 161.71                | Mercury Contaminated Fish Tissue                                                           |
| Jordon Creek                            | Calumet                                    | RIVER                 | 1.36                  | PCB Contaminated Sediments, PCBs Contaminated Fish Tissue                                  |
| Kewaunee Inner Harbor                   | Kewaunee                                   | BAY/HARBOR            | 36.43                 | Chronic Aquatic Toxicity from metals                                                       |
| Kewaunee River and Marsh                | Kewaunee                                   | RIVER                 | 2.26                  | Acute Aquatic Toxicity from Arsenic                                                        |
| Kinnickinnic River                      | Milwaukee                                  | RIVER                 | 3.16                  | Chronic Aquatic Toxicity from metals; PCBs Contaminated Fish Tissue                        |

|                                           |                             |                       |         |                                                                                                                               |
|-------------------------------------------|-----------------------------|-----------------------|---------|-------------------------------------------------------------------------------------------------------------------------------|
| La Crosse River Marsh                     | La Crosse                   | WETLAND               | 32.29   | Lead Contaminated Sediments                                                                                                   |
| Lac La Belle                              | Waukesha                    | LAKE                  | 1153.74 | Impairment Unknown                                                                                                            |
| Lake Michigan                             | Multiple                    | GREAT LAKES SHORELINE | 261.05  | PCBs Contaminated Fish Tissue                                                                                                 |
| Lake Superior                             | Douglas                     | GREAT LAKES SHORELINE | 186.01  | PCBs Contaminated Fish Tissue                                                                                                 |
| Lake Superior (mouth of Bois Brule River) | Douglas                     | LAKE                  | 66.09   | PCBs Contaminated Fish Tissue                                                                                                 |
| Lake Wisconsin                            | Sauk, Columbia              | IMPOUNDMENT           | 7197.26 | Mercury and pCB Contaminated Fish Tissue                                                                                      |
| Lincoln Creek                             | Milwaukee                   | RIVER                 | 9.7     | Chronic Aquatic Toxicity from metals; PCBs Contaminated Fish Tissue                                                           |
| Little Menomonee                          | Ozaukee, Milwaukee          | RIVER                 | 9       | Chronic Aquatic Toxicity from Creosote                                                                                        |
| Lower Barstow Impoundment (Fox River)     | Waukesha                    | RESERVOIR             | 28.18   | Low DO, Turbidity                                                                                                             |
| Lower Fox River                           | Brown, Outagamie, Winnebago | RIVER                 | 40.09   | PCBs Contaminated Fish Tissue                                                                                                 |
| Manitowoc R. So. Branch                   | Calumet, Manitowoc          | RIVER                 | 12.64   | PCB Contaminated Sediments, PCBs Contaminated Fish Tissue                                                                     |
| Manitowoc River                           | Calumet, Manitowoc          | RIVER                 | 35.8    | PAH Contaminated Sediments, PCBs Contaminated Fish Tissue;                                                                    |
| Master Disposal Drainage Channel          | Waukesha                    | RIVER                 | 0.99    | Chronic Aquatic Toxicity from Unknown Contaminant                                                                             |
| Menominee River                           | Marinette                   | RIVER                 | 88.15   | Mercury and PCB Contaminated Fish Tissue                                                                                      |
| Menomonee River                           | Milwaukee                   | RIVER                 | 2.67    | Chronic Aquatic Toxicity from metals; PCBs Contaminated Fish Tissue                                                           |
| Merrill Flowage                           | Lincoln                     | RESERVOIR             | 284.31  | Chronic Aquatic Toxicity from Unknown Contaminant                                                                             |
| Milwaukee Harbor                          | Milwaukee                   | RIVER                 | 0.32    | Chronic Aquatic Toxicity from metals; PCBs Contaminated Fish Tissue                                                           |
| Milwaukee River                           | Ozaukee, Milwaukee          | RIVER                 | 19.35   | PCBs Contaminated Fish Tissue; Unspecified Metals Contaminated Sediments; PCBs Contaminated Fish Tissue                       |
| Monona Lake                               | Dane                        | LAKE                  | 3359    | PFOS Contaminated Fish Tissue, PCB Contaminated Sediments, PCBs Contaminated Fish Tissue                                      |
| Murphy (Wingra) Creek                     | Dane                        | RIVER                 | 1.2     | Chronic Aquatic Toxicity                                                                                                      |
| Neenah Channel                            | Winnebago                   | BAY/HARBOR            | 101.62  | PCBs Contaminated Fish Tissue                                                                                                 |
| Neenah Slough                             | Winnebago                   | RIVER                 | 6.11    | PCBs Contaminated Fish Tissue                                                                                                 |
| Neshonoc Lake                             | La Crosse                   | IMPOUNDMENT           | 606.5   | Mercury Contaminated Fish Tissue                                                                                              |
| Newton Creek                              | Douglas                     | RIVER                 | 1.76    | Chronic Aquatic Toxicity from metals and PAHs                                                                                 |
| Oconto River                              | Oconto                      | RIVER                 | 14.16   | Mercury Contaminated Fish Tissue                                                                                              |
| Park Falls Flowage, Lower                 | Price                       | RESERVOIR             | 61.97   | Chronic Aquatic Toxicity from Mercury and Metals, Mercury Contaminated Fish Tissue, Mercury and Metals Contaminated Sediments |
| Peshtigo River                            | Marinette                   | RIVER                 | 11.72   | Mercury Contaminated Fish Tissue, Mercury Contaminated Sediments                                                              |

|                                      |                                                                                                        |             |          |                                                                                                      |
|--------------------------------------|--------------------------------------------------------------------------------------------------------|-------------|----------|------------------------------------------------------------------------------------------------------|
| Petenwell Flowage                    | Adams, Juneau                                                                                          | RESERVOIR   | 23000.81 | Dioxin, Mercury, PCBs Contaminated Fish Tissue                                                       |
| Pine Creek                           | Calumet                                                                                                | RIVER       | 9.12     | PCB Contaminated Sediments                                                                           |
| Pixley Flowage                       | Price                                                                                                  | IMPOUNDMENT | 181.58   | Mercury Contaminated Fish Tissue                                                                     |
| Portage Canal                        | Columbia                                                                                               | BAY/HARBOR  | 13.68    | Lead, PCB and Mercury Contaminated Sediments; PCBs Contaminated Fish Tissue                          |
| Sheboygan River                      | Sheboygan                                                                                              | RIVER       | 13.58    | PCBs Contaminated Fish Tissue                                                                        |
| Slaughterhouse Creek                 | Oneida                                                                                                 | RIVER       | 0.7      | Chronic Aquatic Toxicity from metals                                                                 |
| Spring Brook Creek                   | Langlade                                                                                               | RIVER       | 4.33     | Chronic Aquatic Toxicity from metals                                                                 |
| St Croix River                       | Pierce, Saint Croix                                                                                    | RIVER       | 54.55    | PCBs Contaminated Fish Tissue                                                                        |
| St. Louis River AOC, Howards Bay     | Douglas                                                                                                | BAY/HARBOR  | 140.57   | Lead Contaminated Sediments; Mercury and PCBs Contaminated Fish Tissue                               |
| St. Louis River AOC, St. Louis River | Douglas                                                                                                | BAY/HARBOR  | 5902.36  | Dioxin and Dieldrin Contaminated Sediments;                                                          |
| Starkweather Creek                   | Dane                                                                                                   | RIVER       | 3.65     | Chronic Aquatic Toxicity from Metals                                                                 |
| Unnamed (Trib To Crawford Creek)     | Douglas                                                                                                | RIVER       | 0.52     | Chronic Aquatic Toxicity from Creosote and PAHs                                                      |
| Unnamed (Trib To The East River)     | Brown                                                                                                  | RIVER       | 0.73     | Chronic Aquatic Toxicity                                                                             |
| Upper Fox River                      | Marquette, Columbia                                                                                    | RIVER       | 20.91    | PCBs Contaminated Fish Tissue                                                                        |
| West Twin River                      | Manitowoc                                                                                              | RIVER       | 5.9      | PCBs Contaminated Fish Tissue                                                                        |
| Wisconsin River                      | Crawford, Grant, Richland, Iowa, Dane, Sauk, Columbia, Adams, Juneau, Wood, Portage, Marathon, Lincoln | RIVER       | 312.68   | Dioxin, Mercury and PCBs Contaminated Fish Tissue; Chronic Aquatic Toxicity from Unknown Contaminant |

Table A.2. Sites in the WDNR BRRTS database with sediment contamination that are still being addressed (open sites). Note: the contaminants refer to all contaminants on site, all of which may not be contaminating sediment.

| Activity Name                            | Location      | Contaminants                                                     |
|------------------------------------------|---------------|------------------------------------------------------------------|
| WI DOT - POPLAR ST BRIDGE (MGP) COAL TAR | Hurley        | PAHs                                                             |
| RHINELANDER AMERIGAS MGP                 | Rhineland     | PAHs                                                             |
| PICKLE POND                              | Superior      | Lead, Mercury, PAHs, Metals                                      |
| HOWARDS BAY SEDIMENTS                    | Superior      | Lead, PAHs, Mercury, Other Substance Not Listed                  |
| C M CHRISTIANSEN #1 - POLE DIP           | Phelps        | PAHs, Chlorinated Solvents                                       |
| ASHLAND NSP LAKEFRONT MGP                | Ashland       |                                                                  |
| WPSC GREEN BAY MGP                       | Green Bay     | PAHs, PAHs                                                       |
| BADGER ARMY AMMUNITION PLT               | North Freedom | VOCs, PFAS, Trichloroethylene                                    |
| W P & L COAL GAS SITE MGP                | Fond Du Lac   | Cyanide, Metals, PAHs                                            |
| WPSC STEVENS POINT MGP                   | Stevens Point | PAHs, VOCs                                                       |
| AMCAST IND CORP                          | Cedarburg     | PCBs, PAHs                                                       |
| NORTHWEST TRANSPORT/BROTON               | Rice Lake     | Diesel Fuel, Lead, Chlorinated Solvents, VOCs, Trichloroethylene |
| WPSC MANITOWOC MGP                       | Manitowoc     | VOCs, PAHs                                                       |

|                                             |              |                                                                                                                                               |
|---------------------------------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| JCI/TYCO (ANSUL)                            | Marinette    | Arsenic, Tetrachloroethene (Perchloroethylene), Trichloroethylene                                                                             |
| ERCO WORLDWIDE                              | Nekoosa      | Mercury, VOCs                                                                                                                                 |
| KOPPERS                                     | Superior     | PAHs, Chlorinated Solvents, Other Substance Not Listed                                                                                        |
| FRASER SHIPYARDS - AOC #14                  | Superior     | Metals, Other Substance Not Listed                                                                                                            |
| PETERS JOHNSON 3RD WARD COAL GAS MGP        | Milwaukee    | Metals, VOCs, PAHs, RCRA Sub. C Wastes, Gasoline, Diesel Fuel, Petroleum, Engine Waste Oil, Tetrachloroethene (Perchloroethylene)             |
| WPSC MARINETTE MGP                          | Marinette    | PAHs, VOCs, RCRA Sub. C Wastes                                                                                                                |
| WPSC OSHKOSH (CEAPE AVE) MGP                | Oshkosh City | VOCs, PAHs, Metals, Trichloroethylene                                                                                                         |
| GRAND TRUNK WETLAND RESTORATION PARCEL      | Milwaukee    | Arsenic, Chromium, Metals, VOCs, PAHs, Petroleum                                                                                              |
| CEDAR CREEK                                 | Cedarburg    | Chlorinated Solvents, Petroleum, PCBs, Trichloroethylene, Tetrachloroethene (Perchloroethylene)                                               |
| MILLER COMPRESSING (BURNHAM CANAL)          | Milwaukee    | PAHs, Lead                                                                                                                                    |
| WAUSAU STEEL 2 OXBOW & UPLAND               | Wausau       | Metals                                                                                                                                        |
| KEWAUNEE MARSH - SL                         | Pierce       | Arsenic                                                                                                                                       |
| TRI COUNTY CORRIDOR BRIDGE                  | Iron River   | PAHs, Pesticides, Herbicides and Insecticides, Metals                                                                                         |
| WPSC CAMP MARINA MGP                        | Sheboygan    | VOCs, PAHs, PAHs, Petroleum                                                                                                                   |
| SHEBOYGAN RIVER & HARBOR                    | Sheboygan    |                                                                                                                                               |
| APPLETON CTY (COAL TAR) MGP                 | Appleton     | VOCs, Gasoline, Diesel Fuel, Petroleum, Engine Waste Oil, RCRA Sub. C Wastes, Arsenic, Metals, Cyanide, PAHs, Naphthalene                     |
| NEWTON CREEK                                | Superior     | PAHs                                                                                                                                          |
| HAYTON AREA REMEDIATION PROJECT             | New Holstein | PCBs                                                                                                                                          |
| ANTIGO CITY GAS CO MGP                      | Antigo       | PAHs                                                                                                                                          |
| QUICFREZ - LGU SL                           | Fond Du Lac  | VOCs, Trichloroethylene                                                                                                                       |
| MOSS AMERICAN KERR MCGEE                    | Milwaukee    | PAHs                                                                                                                                          |
| ATI LADISH DRAINAGE CHANNEL                 | Cudahy       | PAHs, Chromium, PCBs, Pesticides, Herbicides and Insecticides                                                                                 |
| NEENAH SLOUGH - BYRD AVE OUTFALL            | Neenah       | Metals                                                                                                                                        |
| SUPERIOR WATER LIGHT & POWER PLT (MGP)      | Superior     | PAHs, VOCs, PAHs                                                                                                                              |
| W P & L COAL GAS SITE MGP                   | Ripon        | Cyanide, Metals, VOCs                                                                                                                         |
| WPSC TWO RIVERS MGP                         | Two Rivers   | VOCs, PAHs                                                                                                                                    |
| MILWAUKEE SOLVAY COKE & GAS - MGP           | Milwaukee    | PAHs, Chromium, Cyanide, Mercury, Metals, VOCs, Petroleum, Non-Chlorinated Solvents, Tetrachloroethene (Perchloroethylene), Trichloroethylene |
| MUNGER LANDING                              | Superior     | Metals, PCBs                                                                                                                                  |
| 128TH PFAS INVESTIGATION                    | Milwaukee    | Other Substance Not Listed, PFAS                                                                                                              |
| USACE-DRY DOCK OPERATIONS (KAUKAUNA LOCK 3) | Kaukauna     | Lead                                                                                                                                          |
| AIR RESERVE STATION (FORMER 440TH) - PFAS   | Milwaukee    | PFAS                                                                                                                                          |

|                                             |              |                                                                                              |
|---------------------------------------------|--------------|----------------------------------------------------------------------------------------------|
| WILSON PARK CREEK - REACH 3                 | Milwaukee    | PAHs, Metals                                                                                 |
| MKE AOC SPECIAL PFAS STUDY                  | Milwaukee    | PFAS                                                                                         |
| HARP DOWNSTREAM OF HAYTON MILLPOND DAM      | New Holstein | PCBs                                                                                         |
| KINNICKINNIC RIVER - REACH 3                | Milwaukee    | PAHs, PCBs, Cyanide, Arsenic, Lead, Mercury, Metals                                          |
| MILWAUKEE CNTY - JACKSON PARK HISTORIC FILL | Milwaukee    | PAHs, Metals, VOCs, PCBs, Trichloroethylene                                                  |
| RIVERSIDE PARK CRUISE SHIP LANDING          | La Crosse    | PAHs                                                                                         |
| SOLVAY CAR FERRY SLIP                       | Milwaukee    | PAHs                                                                                         |
| 1 E MAIN ST PROPERTY                        | Watertown    | Trichloroethylene, Tetrachloroethene (Perchloroethylene), Metals, Other Substance Not Listed |
| LYONS PARK CREEK                            | Milwaukee    | PAHs, PCBs, Metals, Lead                                                                     |
| HARP SITE LONG TERM MONITORING              | New Holstein | PCBs                                                                                         |
| RIB LAKE TANNERY CREEK                      | Rib Lake     | Mercury                                                                                      |
| WI DOT – BLATNIK BRIDGE SEDIMENT            | Superior     | PAHs, Metals, Other Substance Not Listed                                                     |

Table A.3. Sites in the WDNR BRRTS database with sediment contamination that have been closed (no further cleanup being required) but there are continuing obligations. This means that contamination remains, and there are legal requirements or restrictions assigned to the property to protect human health and the environment from the remaining contamination. Note: the contaminants refer to all contaminants on site, all of which may not be contaminating sediment.

| Activity Name                          | City          | Contaminants                                                                                                                        |
|----------------------------------------|---------------|-------------------------------------------------------------------------------------------------------------------------------------|
| MGP W P & L COAL GAS SITE              | Baraboo       | Other Substance Not Listed                                                                                                          |
| BIRDS EYE VENEER CO                    | Butternut     | Petroleum, Engine Waste Oil                                                                                                         |
| C M CHRISTIANSEN #1 - POLE DIP         | Phelps        | PAHs, Chlorinated Solvents                                                                                                          |
| ASHLAND NSP LAKEFRONT MGP              | Ashland       |                                                                                                                                     |
| WPSC STEVENS POINT MGP                 | Stevens Point | PAHs, VOCs                                                                                                                          |
| WPSC MANITOWOC MGP                     | Manitowoc     | VOCs, PAHs                                                                                                                          |
| ERCO WORLDWIDE                         | Nekoosa       | Mercury, VOCs                                                                                                                       |
| KOPPERS                                | Superior      | PAHs, Chlorinated Solvents, Other Substance Not Listed                                                                              |
| MILLER COMPRESSING (BURNHAM CANAL)     | Milwaukee     | PAHs, Lead                                                                                                                          |
| WAUSAU STEEL 2 OXBOW & UPLAND          | Wausau        | Metals                                                                                                                              |
| KEWAUNEE MARSH - SL                    | Pierce        | Arsenic                                                                                                                             |
| OLSONITE CORP RIVER BANK SEDIMENT      | Algoma        | Metals, VOCs, Chlorinated Solvents, Tetrachloroethene (Perchloroethylene)                                                           |
| WPSC CAMP MARINA MGP                   | Sheboygan     | VOCs, PAHs, PAHs, Petroleum                                                                                                         |
| APPLETON CTY (COAL TAR) MGP            | Appleton      | VOCs, Gasoline, Gasoline, Diesel Fuel, Petroleum, Engine Waste Oil, RCRA Sub. C Wastes, Arsenic, Metals, Cyanide, PAHs, Naphthalene |
| ANTIGO CITY GAS CO MGP                 | Antigo        | PAHs                                                                                                                                |
| ATI LADISH DRAINAGE CHANNEL            | Cudahy        | PAHs, Chromium, PCBs, Pesticides, Herbicides and Insecticides                                                                       |
| SUPERIOR WATER LIGHT & POWER PLT (MGP) | Superior      | PAHs, VOCs, PAHs                                                                                                                    |

|                                          |                            |                                    |
|------------------------------------------|----------------------------|------------------------------------|
| WI SOUTHERN GAS CO MGP                   | Burlington                 | Metals, PAHs, Petroleum            |
| ARMY CORP OF ENGINEERS FOUNTAIN CITY BAY | Fountain City              | Petroleum, PCBs, PAHs, Naphthalene |
| LINCOLN WOOD PROD - COAL GAS MGP         | Merrill                    | VOCs, PAHs, Naphthalene            |
| FOX RIVER NRDA/PCB RELEASES OU1          | Covers Many Municipalities | PCBs                               |
| FOX RIVER NRDA/PCB RELEASES OU2-5        | Covers Many Municipalities | PCBs                               |

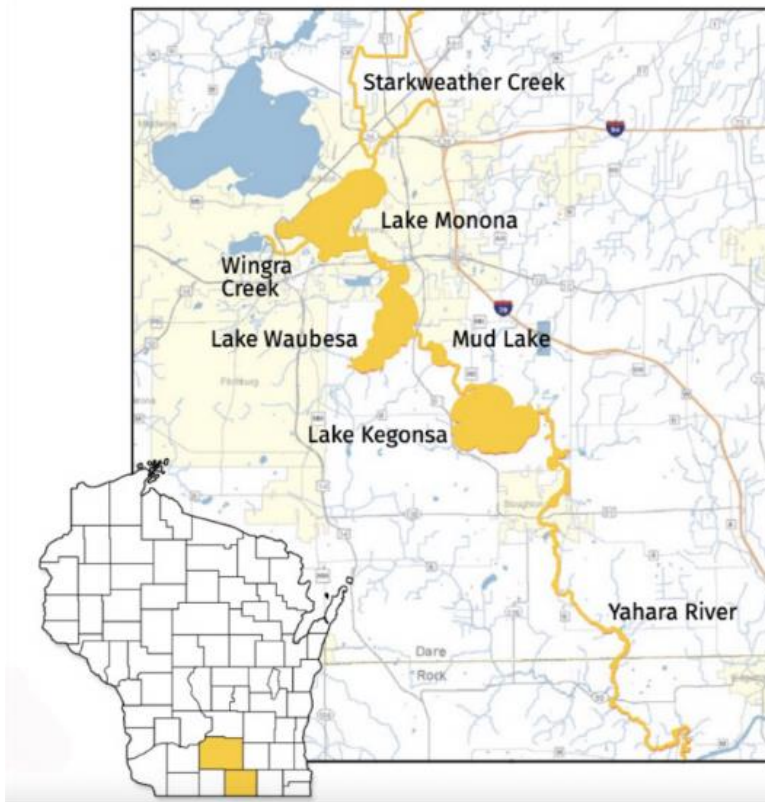
Table A.4. Sites in the WDNR BRRTS database with sediment contamination that are also Superfund/National Priority List (NPL) sites. These are contamination sites being managed by the Environmental Protection Agency and represent some of the most severely contaminated sites. Note: the contaminants refer to all contaminants on site, all of which may not be contaminating sediment.

| Activity Name                              | City                       | Contaminants                                                                                                                                  |
|--------------------------------------------|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| ASHLAND NSP LAKEFRONT MGP                  | Ashland                    |                                                                                                                                               |
| WPSC GREEN BAY MGP                         | Green Bay                  | PAHs, PAHs                                                                                                                                    |
| WPSC STEVENS POINT MGP                     | Stevens Point              | PAHs, VOCs                                                                                                                                    |
| AMCAST IND CORP                            | Cedarburg                  | PCBs, PAHs                                                                                                                                    |
| WPSC MANITOWOC MGP                         | Manitowoc                  | VOCs, PAHs                                                                                                                                    |
| WPSC MARINETTE MGP                         | Marinette                  | PAHs, VOCs, RCRA Sub. C Wastes                                                                                                                |
| WPSC OSHKOSH MGP                           | Oshkosh City               | VOCs, PAHs, Metals, Trichloroethylene                                                                                                         |
| CEDAR CREEK                                | Cedarburg                  | Chlorinated Solvents, Petroleum, PCBs, Trichloroethylene, Tetrachloroethene (Perchloroethylene)                                               |
| MILLER COMPRESSING (BURNHAM CANAL)         | Milwaukee                  | PAHs, Lead                                                                                                                                    |
| WPSC CAMP MARINA MGP                       | Sheboygan                  | VOCs, PAHs, PAHs, Petroleum                                                                                                                   |
| SHEBOYGAN RIVER & HARBOR                   | Sheboygan                  |                                                                                                                                               |
| MOSS AMERICAN KERR MCGEE                   | Milwaukee                  | PAHs                                                                                                                                          |
| WPSC TWO RIVERS MGP                        | Two Rivers                 | VOCs, PAHs                                                                                                                                    |
| MILWAUKEE SOLVAY COKE & GAS - MGP          | Milwaukee                  | PAHs, Chromium, Cyanide, Mercury, Metals, VOCs, Petroleum, Non-Chlorinated Solvents, Tetrachloroethene (Perchloroethylene), Trichloroethylene |
| FOX RIVER NRDA/PCB RELEASES OU1 (ALT SF)   | Covers Many Municipalities | PCBs                                                                                                                                          |
| FOX RIVER NRDA/PCB RELEASES OU2-5 (ALT SF) | Covers Many Municipalities | PCBs                                                                                                                                          |

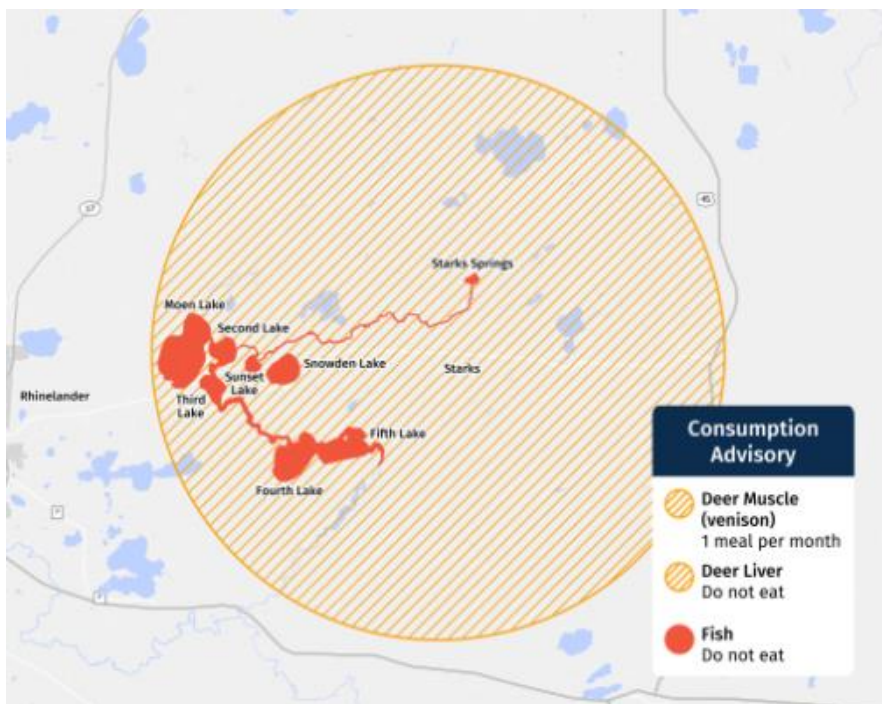
### PFAS-related Consumption Advisories

The Wisconsin DNR has been sampling fish for PFAS, including PFOS and PFOA, across numerous waters since 2006, with ongoing efforts to expand and revisit locations (Wisconsin DNR 2025 b). Some sampled waters have elevated PFOS levels, prompting PFAS-based consumption advisories, while others did not warrant PFOS-specific warnings but may still have advisories for other contaminants like mercury or PCBs. Current PFOS-based advisories exist for several waterbodies, including parts of the Moen Lake Chain, Snowden Lake, Sunset Lake, Starks Creek, Lake Kegonsa, Lake Monona, Lake Waubesa, Lake Superior, the Stevens Point Flowage, and multiple sections of the Wisconsin, Mississippi, Menominee, Peshtigo, and Oconto rivers, among others. Some waters previously sampled,

such as Lake Mendota, Lake Michigan, Lake Wingra, and various river segments, did not trigger PFOS-based advisories.



**Figure A.1:** Fish consumption advisories in Yahara Chain waters, including Wingra Creek, Starkweather Creek, Lake Monona, Lake Waubesa, Upper and Lower Mud Lake, Lake Kegonsa, and the Yahara River downstream to its confluence with the Rock River. Following the initial advisory for parts of the Yahara Chain in June 2021, the WDNR Bureau of Fisheries Management collected additional fish samples for analysis. These tests revealed elevated levels of PFOS (perfluorooctane sulfonate), a type of PFAS (per- and polyfluoroalkyl substances), in white bass from Lake Kegonsa, calling for the updated advisory (Source: Urban Milwaukee 2023).



**Figure A.2:** Fish and deer consumption advisories in Oneida County. Results from these sampling efforts showed elevated levels of perfluorooctane sulfonate (PFOS), a type of PFAS, in the tissue of all fish sampled from the outlined waterbodies. This led to fish consumption advisories for the Moen Lake Chain and new advisories for Snowden Lake, Sunset Lake and Starks Creek upstream to Starks Spring. As seen in the map, WDNR and WDHS have also issued new PFAS-based guidance for the consumption of deer found within a 5-mile radius of the Town of Stella town hall. The new guidance for consuming muscle tissue from harvested deer in this area is one meal per month, and “Do Not Eat” for liver. (Source: Urban Milwaukee 2023).