

# **Public Hearing on WY-23-19: Surface Water Standards for PFOS and PFOA**

Hearing Officer: Emma Esch, Department Administrative Rules Coordinator  
Expert Presentation: Meghan Williams, Environmental Toxicologist

December 10, 2021  
1:00 pm

# Submitting Comments

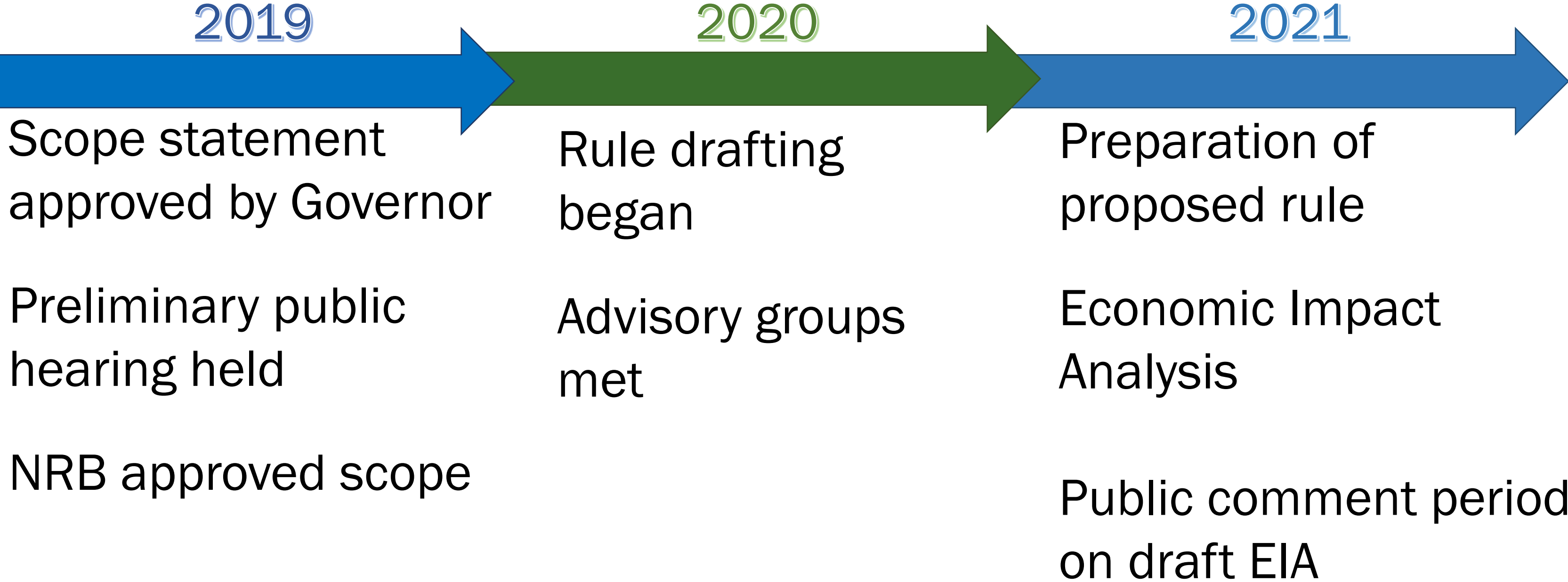
- Comments due: December 15, 2021
  - Email: [MeghanC3.Williams@wisconsin.gov](mailto:MeghanC3.Williams@wisconsin.gov)
  - Mail: Meghan Williams  
Wisconsin DNR WY/3  
PO Box 7921  
Madison, WI 53707
- Materials available at:  
[dnr.wisconsin.gov/topic/SurfaceWater/PFASCriteria.html](https://dnr.wisconsin.gov/topic/SurfaceWater/PFASCriteria.html)

# Surface Water Standards for PFOS and PFOA

Meghan Williams

[MeghanC3.Williams@wisconsin.gov](mailto:MeghanC3.Williams@wisconsin.gov)

# Recap of where we've been



# Materials can be found at [dnr.wi.gov](http://dnr.wi.gov)

## Search “Proposed Permanent Rules” or “PFAS criteria”

<a href="#">WY-23-19</a>	<a href="#">Revisions to add surface water quality criteria and analytical methods for poly- and perfluoroalkyl substances (PFAS) including PFOS, PFOA, and any other PFAS for the purpose of protecting public health as well as revisions to the procedures in the Wisconsin Pollutant Discharge Elimination System (WPDES) permitting program to implement the new water quality criteria</a>	NR 105, 106, 219	<a href="#">Public hearing Dec. 10, 2021 [PDF]</a> <ul style="list-style-type: none"><li>• <a href="#">Draft Rule [PDF]</a></li><li>• <a href="#">Fiscal Estimate &amp; Economic Impact Analysis [PDF]</a></li><li>• <a href="#">Technical Support Document [PDF]</a></li></ul>	<a href="#">Meghan Williams</a>
--------------------------	--	------------------	---	---------------------------------

# Main Goals of Rulemaking Effort

- Establish values to define existing narrative standard
- Define permit requirements
- Establish sample holding times and storage requirements

# Why pursue narrative standards?

- Preliminarily calculated numeric values
  - Value for PFOS (< 2 ppt) was close to background levels
  - Values would likely result in variances for permittees, slow reductions in effluent concentrations
- Decided to pivot to approach that would tie PFOS & PFOA levels to exposure routes of most concern and generate quick reductions in effluent concentrations

# Proposed Rule Language

- 1. Add definitions for PFOS & PFOA to NR102.03
- 2. Add narrative standard for PFOS & PFOA to NR 102.04

**(8) CRITERIA FOR PUBLIC HEALTH AND WELFARE USE.** (a) *General.* The criteria developed pursuant to ss. [NR 105.08](#) and [105.09](#) shall be met regardless of whether the surface water is used for public drinking water supply or the applicable fish and aquatic life subcategory.

(b) *Taste and odor criteria.* All surface waters providing public drinking water supplies or classified as cold water or warm water sport fish communities as described in sub. (3) shall meet the taste and odor criteria specified or developed pursuant to s. [NR 102.14](#).

(c) *Temperature criteria.* To protect humans from being scalded, the water temperature of a discharge may not exceed 120°F unless specifically authorized under provisions in subchs. V or VI of ch. [NR 106](#).



**NR 102.04 Categories of surface water uses and criteria.** (1) **GENERAL.** To preserve and enhance the quality of waters, surface water uses and criteria are established to govern water management decisions. Practices attributable to municipal, industrial, commercial, domestic, agricultural, land development or other activities shall be controlled so that all surface waters including the mixing zone meet the following conditions at all times and under all flow and water level conditions:

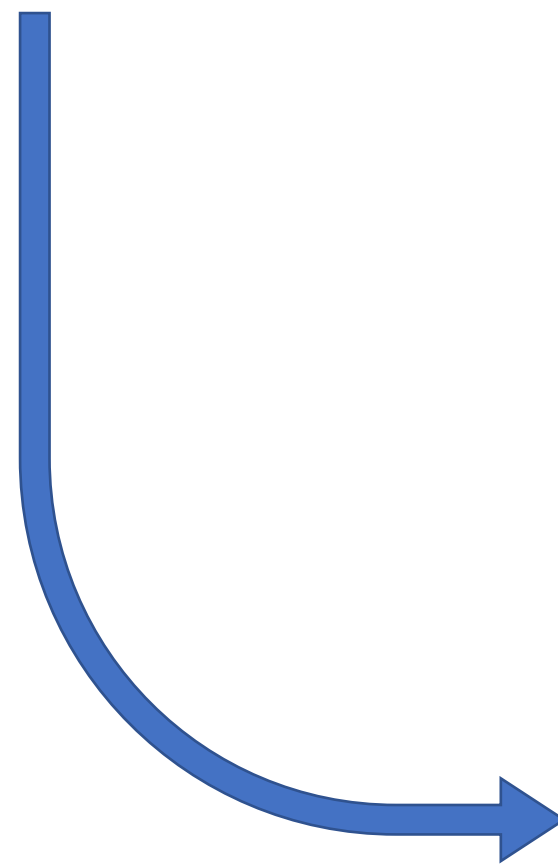
- (a) Substances that will cause objectionable deposits on the shore or in the bed of a body of water, shall not be present in such amounts as to interfere with public rights in waters of the state.
- (b) Floating or submerged debris, oil, scum or other material shall not be present in such amounts as to interfere with public rights in waters of the state.
- (c) Materials producing color, odor, taste or unsightliness shall not be present in such amounts as to interfere with public rights in waters of the state.
- (d) Substances in concentrations or combinations which are toxic or harmful to humans shall not be present in amounts found to be of public health significance, nor shall substances be present in amounts which are acutely harmful to animal, plant or aquatic life.





# Proposed Rule Language

1. Add definitions for PFOS & PFOA to NR102.03
2. Add narrative standard for PFOS & PFOA to NR 102.04
3. Add reference to narrative standard in NR105.04



## **NR 105.04 Determination of adverse effects.**

**(1)** Substances may not be present in surface waters at concentrations which adversely affect public health or welfare, present or prospective uses of surface waters for public or private water supplies, or the protection or propagation of fish or other aquatic life or wild or domestic animal life.

**(2)** A substance shall be deemed to have adverse effects on fish or other aquatic life if it exceeds any of the following more than once every 3 years:

(a) The acute toxicity criterion as specified in s. [NR 105.05](#), or

(b) The chronic toxicity criterion as specified in s. [NR 105.06](#).

(c) The acute and chronic toxicity criteria for ammonia nitrogen shall be determined on a case-by-case basis by the department for the appropriate aquatic life use category.

**(3)** A substance shall be deemed to have adverse effects on wildlife if it exceeds the wildlife criterion as specified in s. [NR 105.07](#).

**(4)** A substance shall be deemed to have adverse effects on public health and welfare if it exceeds any of the following:

(a) The human threshold criterion as specified in s. [NR 105.08](#); or

(b) The human cancer criterion as specified in s. [NR 105.09](#); or

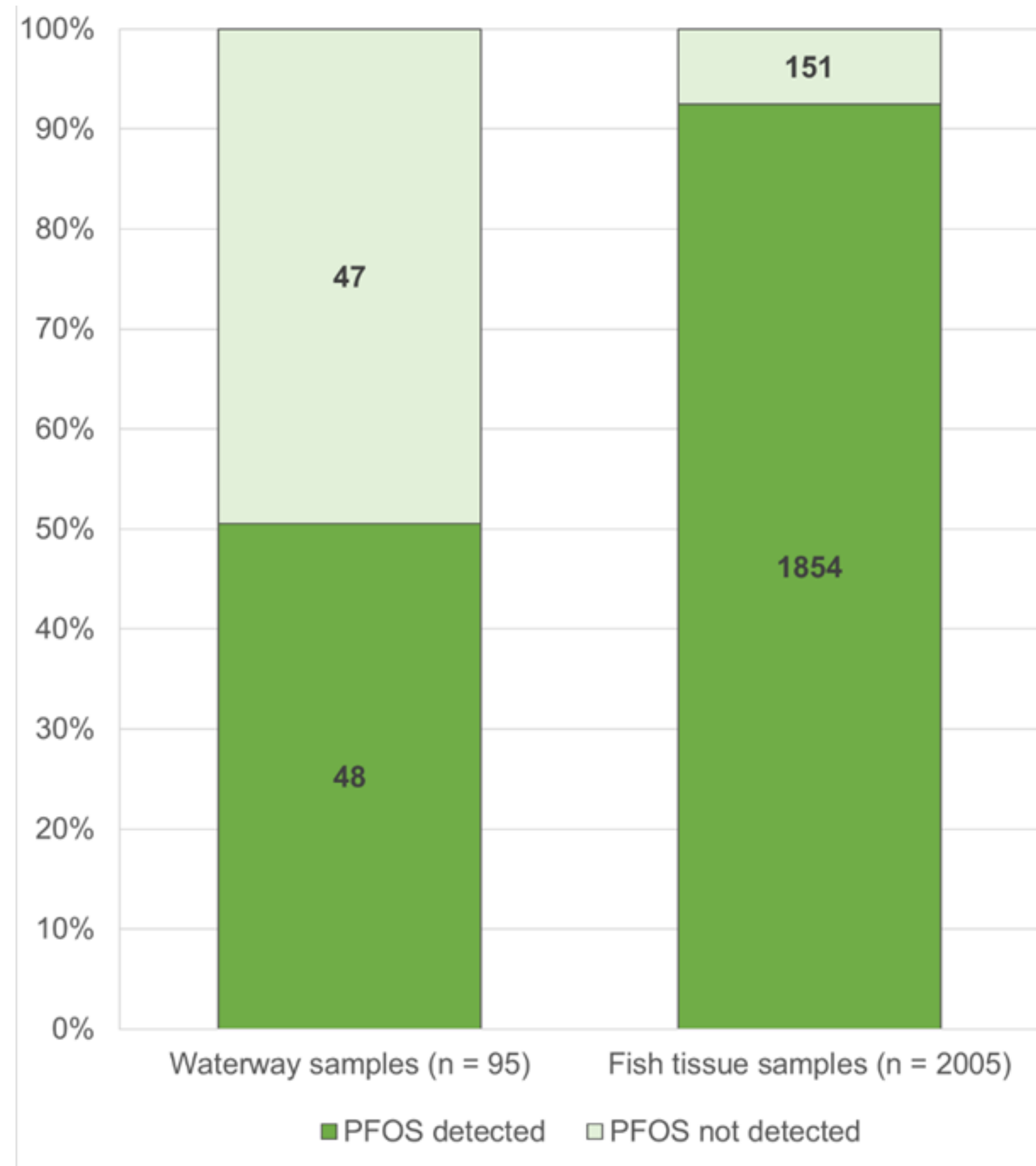
(c) The taste and odor criterion as specified in s. [NR 102.14](#).



# Proposed public health significance thresholds

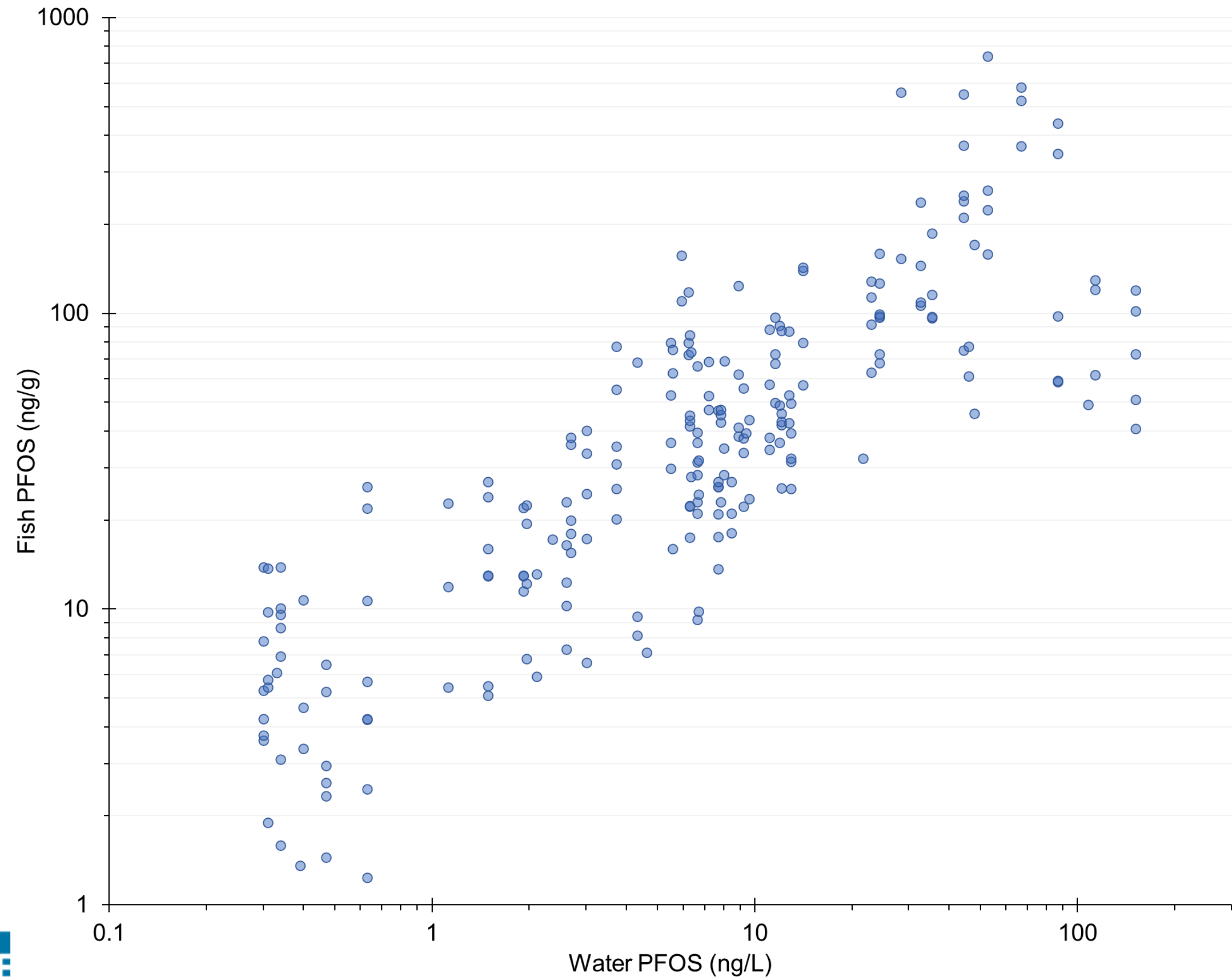
PFOS – 8 ng/L

- Exposure route of concern: fish consumption
  - PFOS builds up in fish tissue even when it is not detected in water



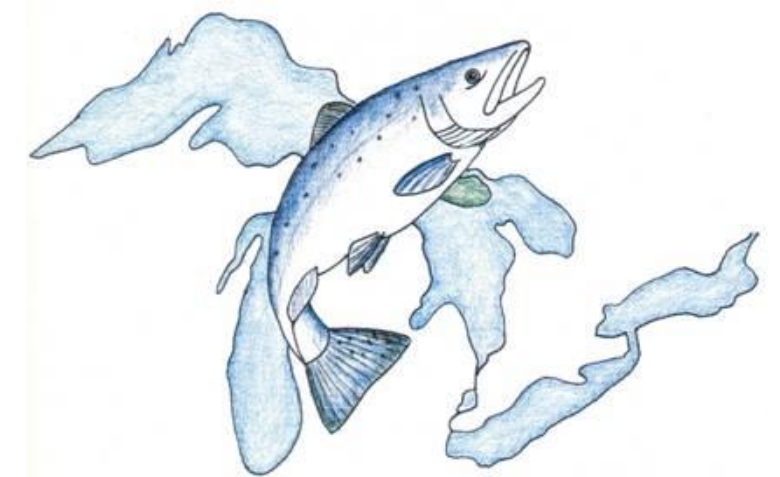
# Proposed public health significance thresholds

- Strong relationship between fillet PFOS and PFOS in water
- Amount of PFOS in water can be used to predict amount of PFOS in fish

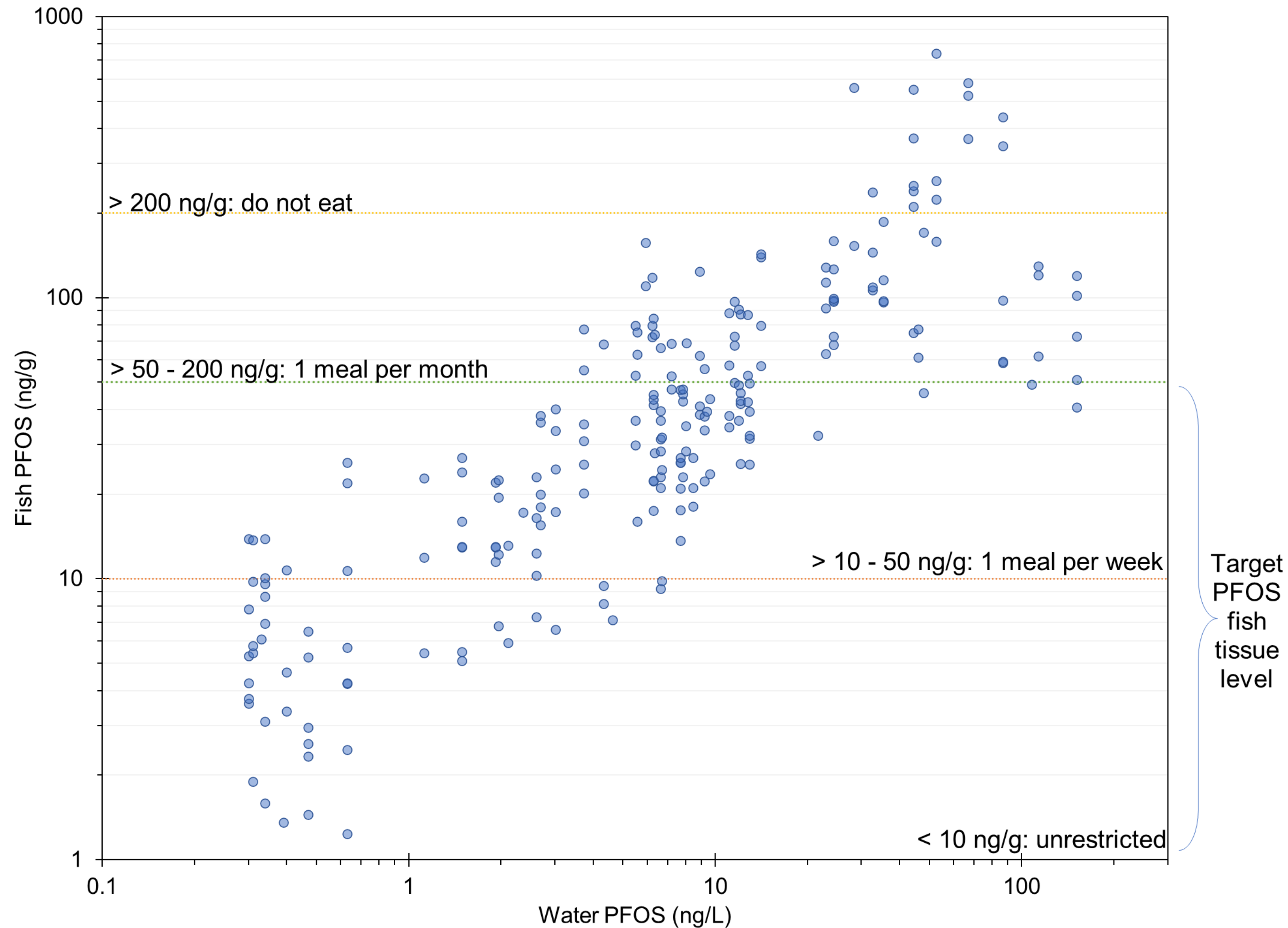


# Proposed public health significance thresholds

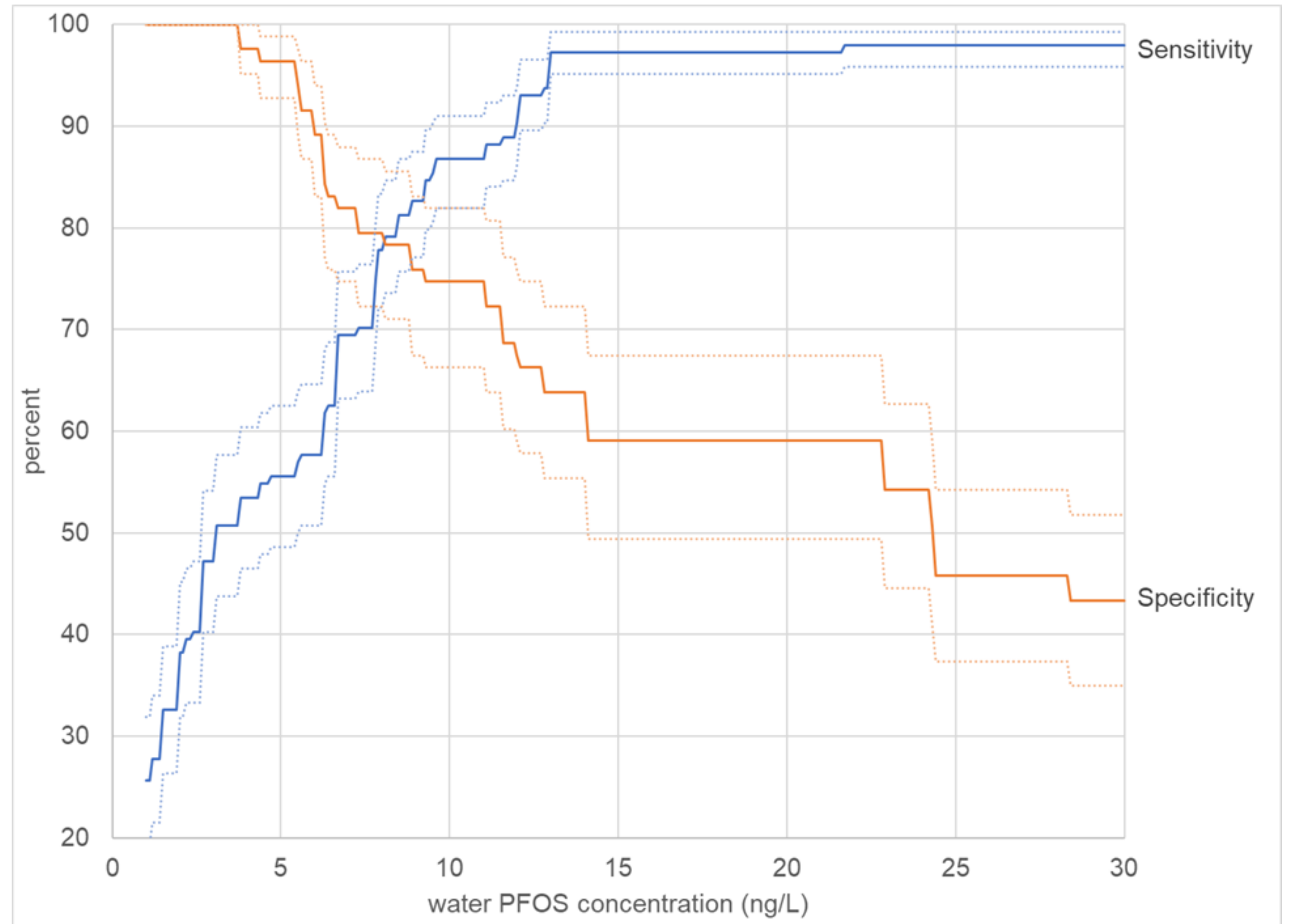
- Great Lakes Consortium for Fish Consumption Advisories has developed guidance on PFOS levels in fish tissue and meal frequency
  - 1 meal/week upper threshold is 50 ng/g
  - Equates to a fish consumption rate of  $\geq 32$  g/day



- Strong relationship between fillet PFOS and PFOS in water
- Allows us to see the water concentrations that correspond to meal advice categories



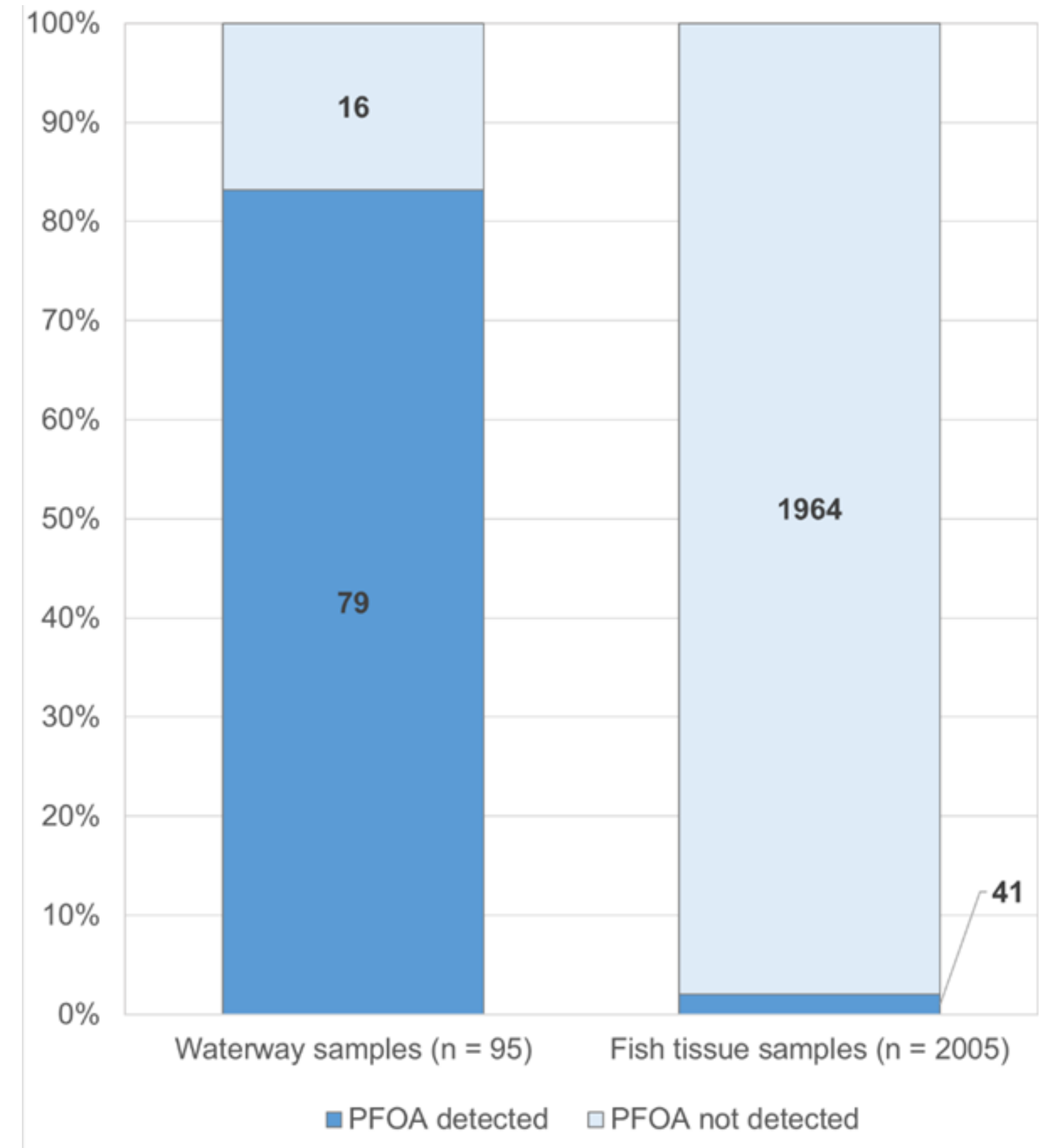
- Used statistical analysis of paired fish and water data to determine PFOS threshold
- Selected the Receiver Operating Characteristics (ROC) Curve



# Proposed public health significance thresholds

PFOA – 20 ng/L in drinking water sources  
95 ng/L in all other waters

- Exposure route of concern: ingestion of surface water
  - PFOA rarely detected in fish tissue but widespread in water samples
  - Indicates that water is primary exposure route of concern



# Proposed public health significance thresholds

PFOA – 20 ng/L in drinking water sources  
95 ng/L in all other waters

- For public water supplies, threshold equal to DHS' recommended MCL
- Revisions to Ch. NR809 (separate rulemaking effort)

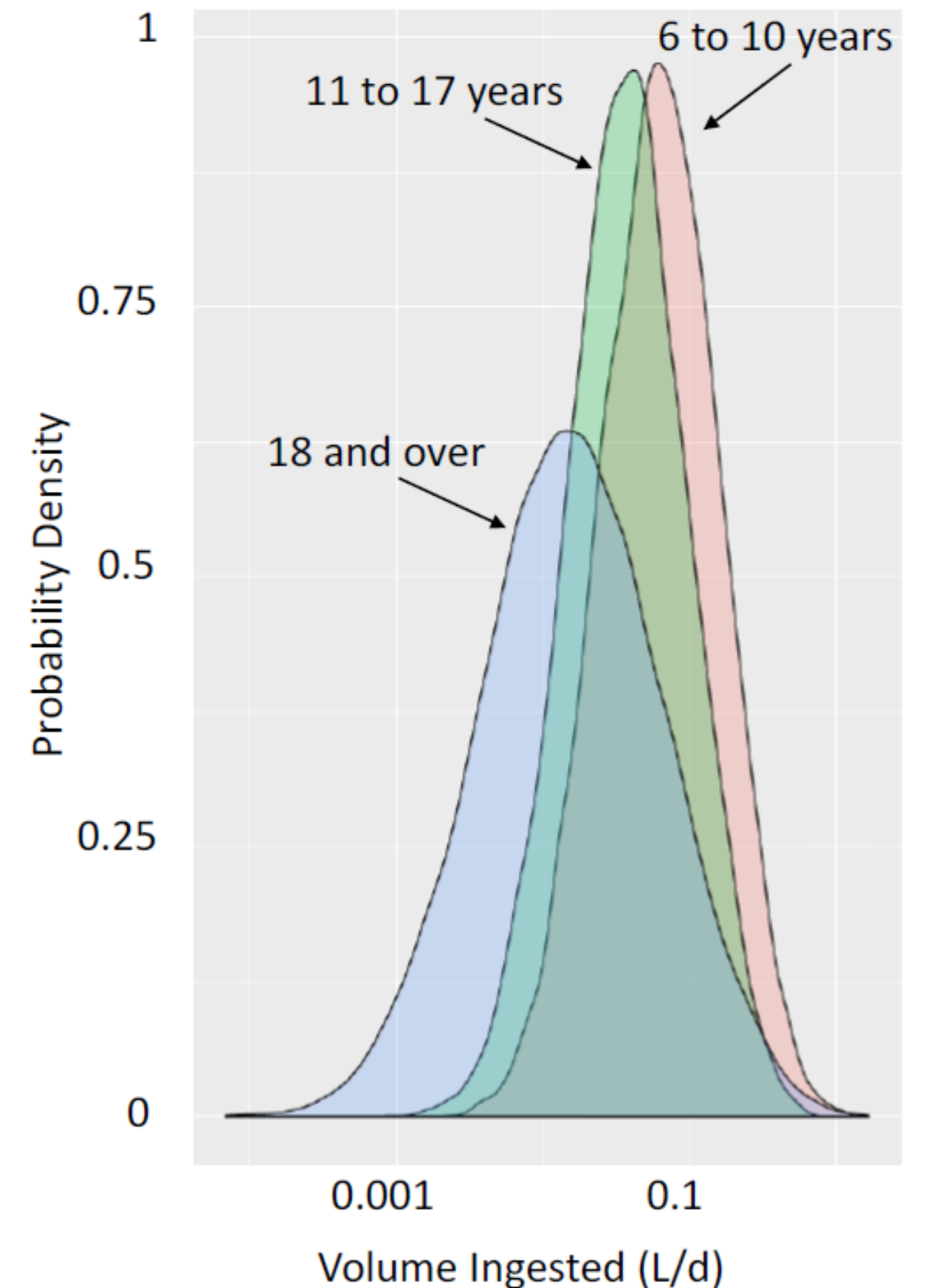


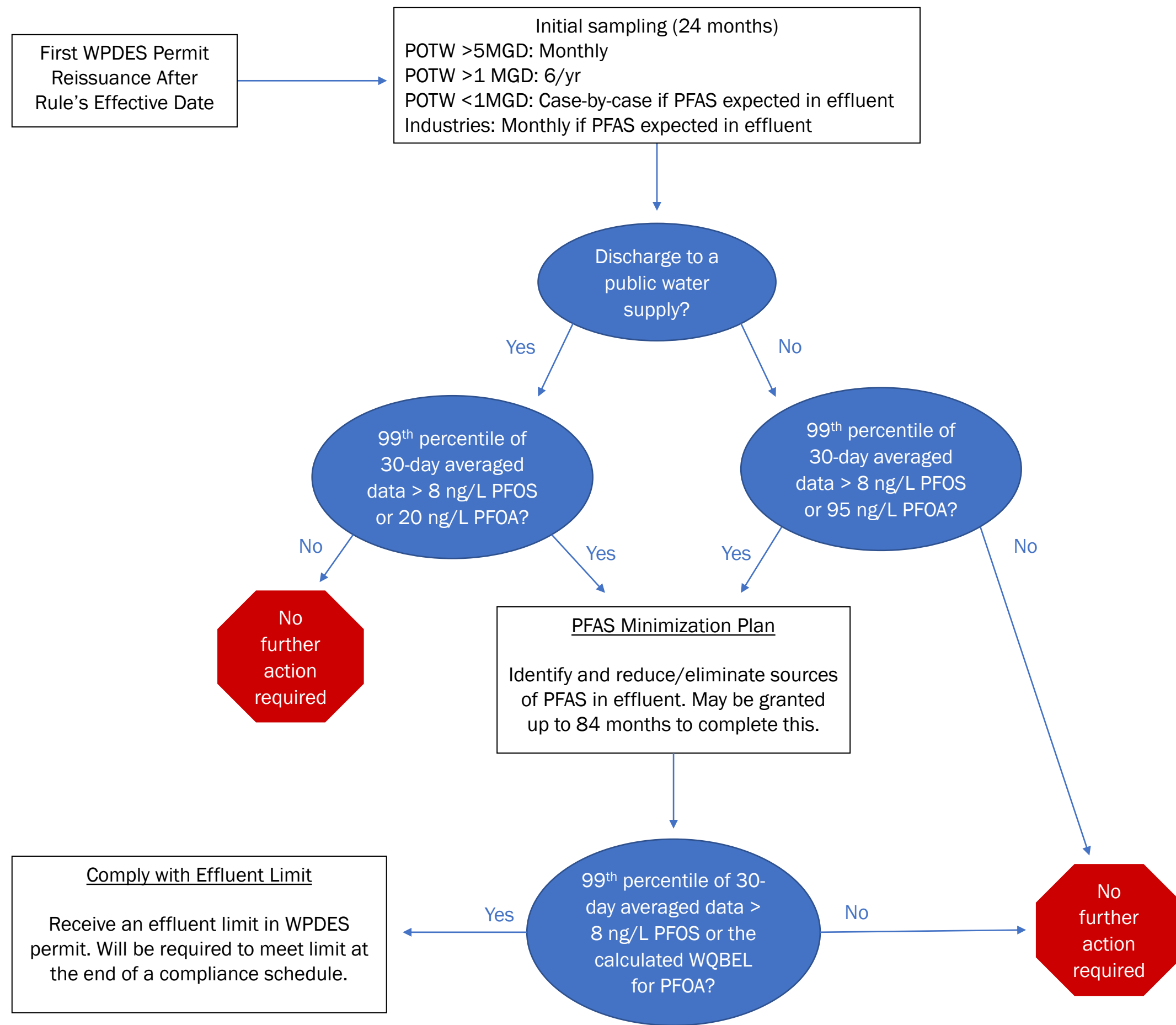


# Proposed public health significance thresholds

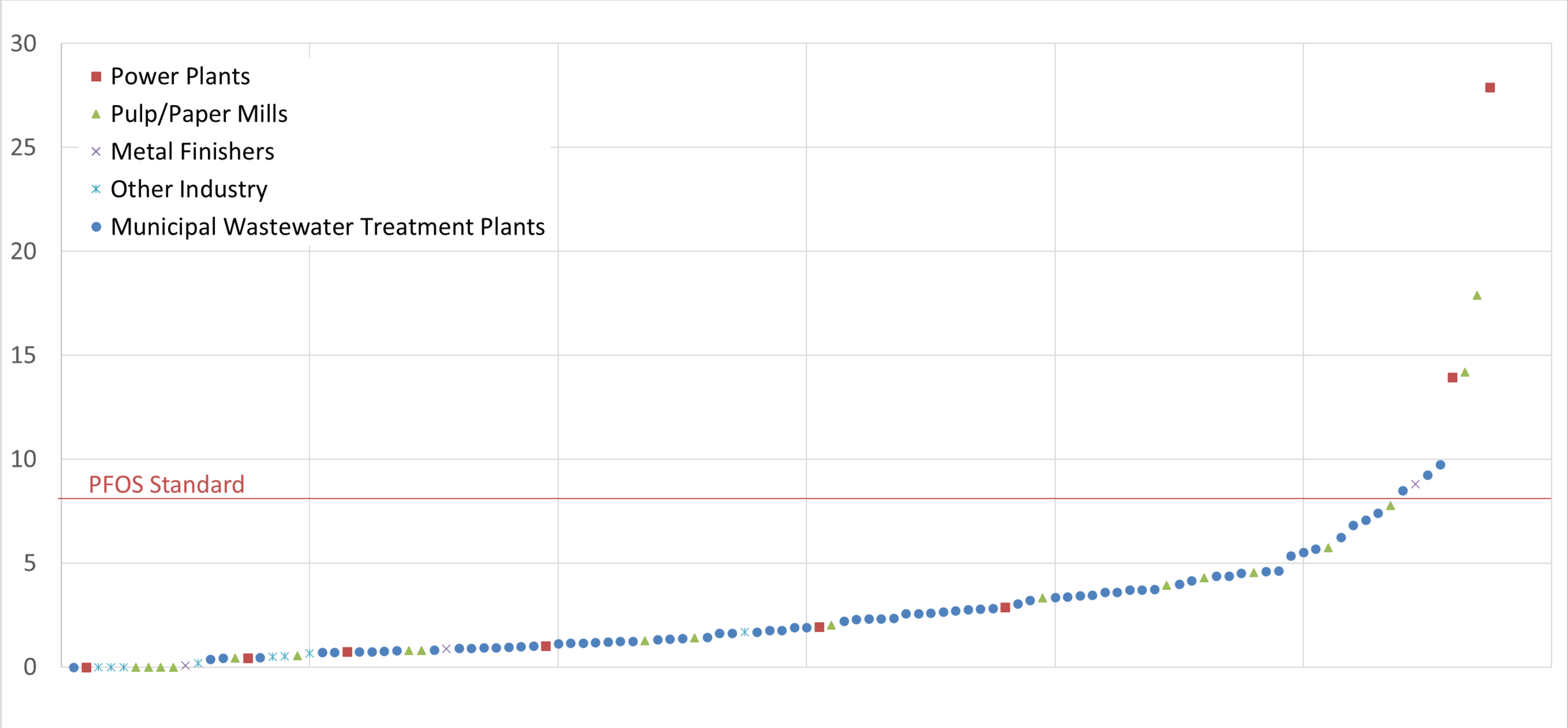
PFOA – 20 ng/L in drinking water sources  
95 ng/L in all other waters

- For non-public water supplies, we scaled the drinking water intake rate from the MCL equation to reflect ingestion during recreation.
  - Borrowed an approach used by EPA for HABs criteria/advisories to determine incidental ingestion rates for various age groups
  - Ingestion rate = time spent recreating + water ingested during recreation

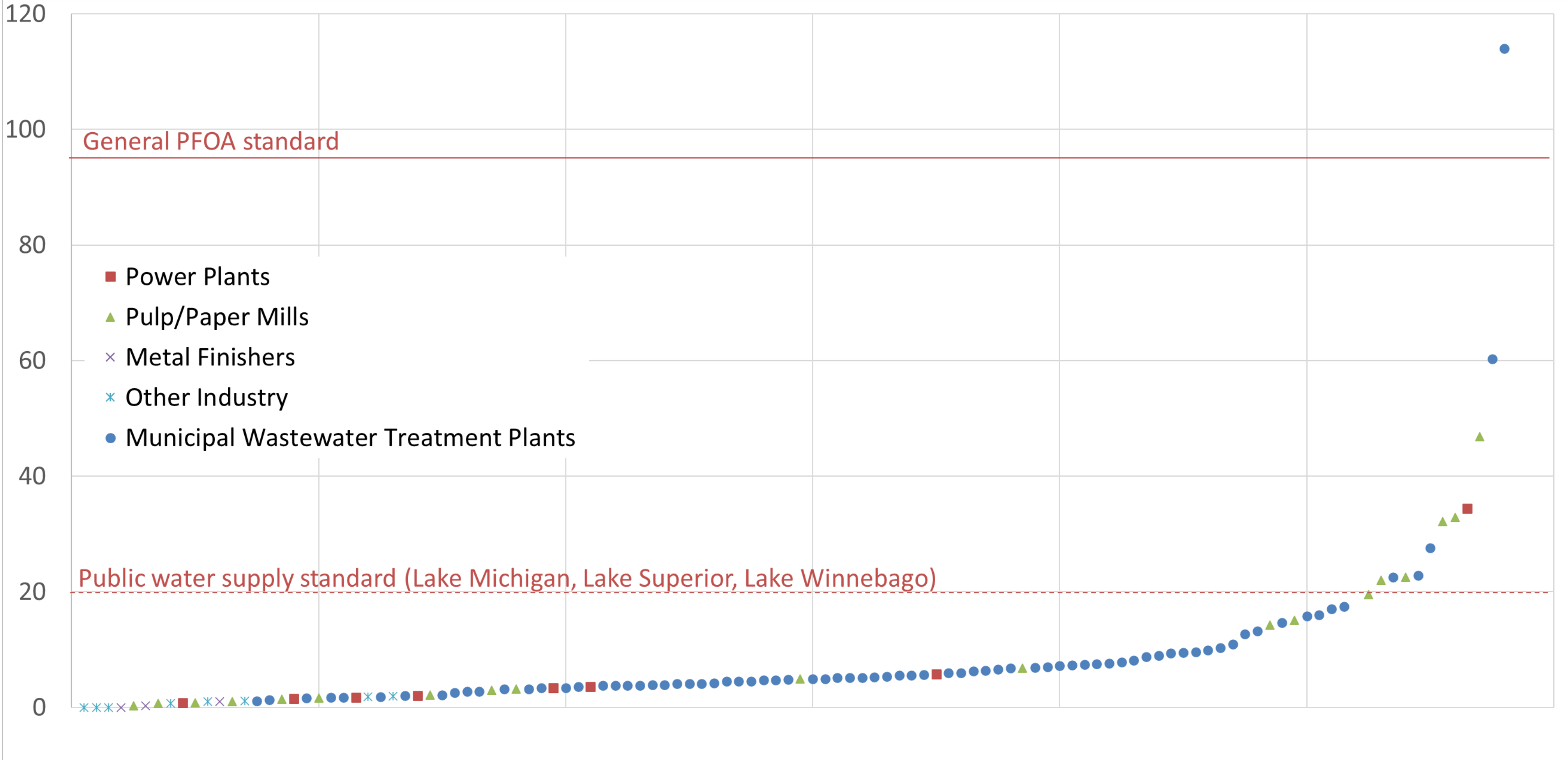




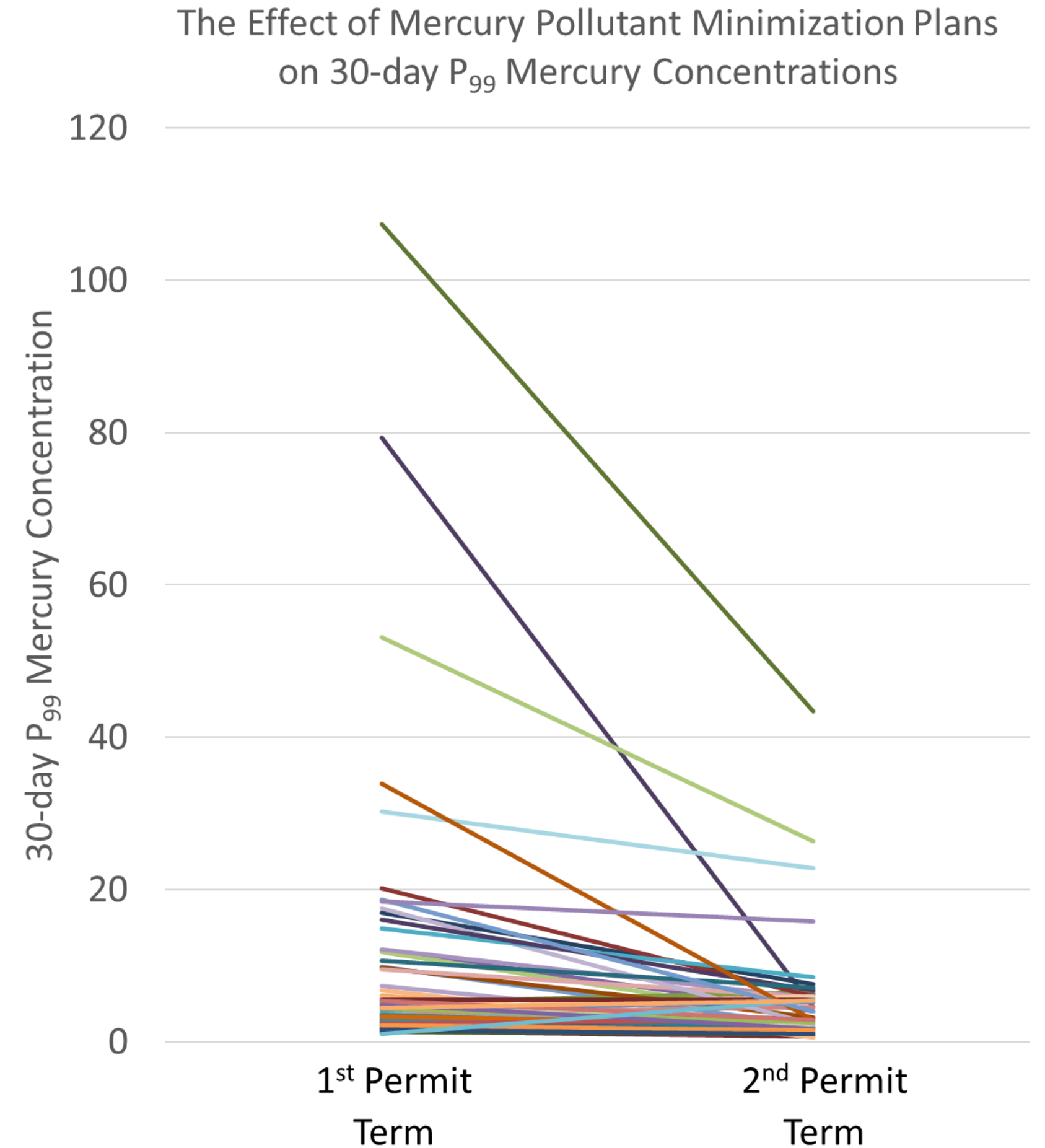
# PFOS Effluent Concentrations



# PFOA Effluent Concentrations



**Based on our experiences with mercury, we expect that PFAS Minimization Plans will result in substantial decreases in PFAS effluent concentrations**



# Economic Impact Analysis

Sector		Direct dischargers with reasonable potential to exceed standard + pretreatment industries that must do source reduction	Total Universe
POTWs	Authorized Pretreatment Programs	6	27
	Contributing Pretreatment Industry	17	92
	No Contributing Industries	0	520
Industries	Pulp/Paper/Packaging	21 (9 Pretreatment Industries; 12 Direct Dischargers)	53
	Metal Finishers	37 (36 Pretreatment Industries; 1 Direct Discharger)	56
	Centralized Waste Treaters	7 (Pretreatment Industries)	12
	Power Plants	2 (Direct Dischargers)	31
	Chemical Manufacturers	10 (Pretreatment Industries)	18
	Commercial Laundry	8 (Pretreatment Industries)	8
	Airports	2 (Direct Dischargers)	2 with permits
	Landfills	11 (Pretreatment Industries)	57

# Economic Impact Analysis

- Revisions after public comment period:
  - Updated PMP development/implementation costs
    - Based on median hourly rate for Wisconsin wastewater operators
  - Included costs associated with landfill leachate management
    - Hauling costs to different POTW
  - Updated sampling costs
    - Took highest sampling costs from 4 reporting labs
    - Included field blank and shipping costs

# Economic Impact Analysis

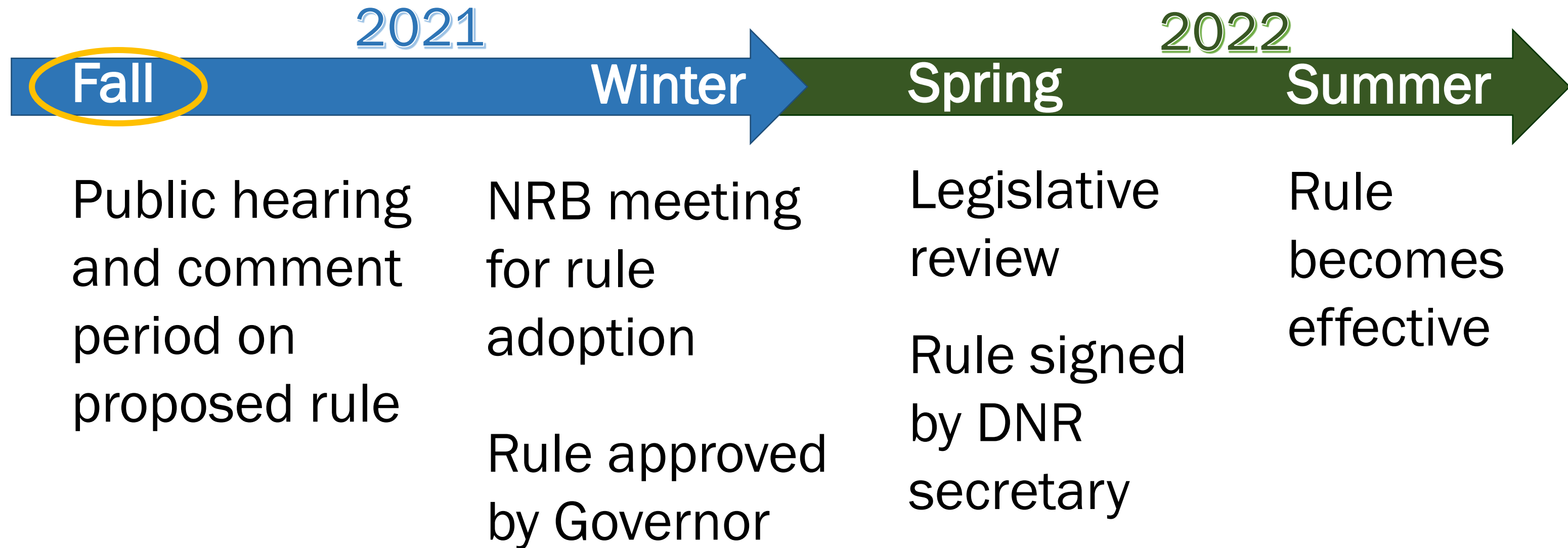
- Pre-public comment period estimated costs:
  - Maximum Annual Costs: \$2,205,652
  - Maximum 2-Year Costs: \$4,271,304
- Updated estimated costs:
  - Maximum Annual Costs: \$4,780,613
  - Maximum 2-Year Costs: \$9,268,046



# Recap

- Proposing numeric thresholds that interpret existing narrative standards
  - PFOS: 8 ng/L – fish consumption
  - PFOA: 20 ng/L (PWS), 95 ng/L (NPWS) – water ingestion
- Implementation – focus on source reduction and pollutant minimization plans
- Revised Economic Impact Analysis includes updated PMP and sampling costs, costs associated with landfill leachate management

# What's next?



# Materials can be found at [dnr.wi.gov](http://dnr.wi.gov)

## Search “Proposed Permanent Rules” or “PFAS criteria”

<a href="#">WY-23-19</a>	<a href="#">Revisions to add surface water quality criteria and analytical methods for poly- and perfluoroalkyl substances (PFAS) including PFOS, PFOA, and any other PFAS for the purpose of protecting public health as well as revisions to the procedures in the Wisconsin Pollutant Discharge Elimination System (WPDES) permitting program to implement the new water quality criteria</a>	NR 105, 106, 219	<a href="#">Public hearing Dec. 10, 2021 [PDF]</a> <ul style="list-style-type: none"><li>• <a href="#">Draft Rule [PDF]</a></li><li>• <a href="#">Fiscal Estimate &amp; Economic Impact Analysis [PDF]</a></li><li>• <a href="#">Technical Support Document [PDF]</a></li></ul>	<a href="#">Meghan Williams</a>
--------------------------	--	------------------	---	---------------------------------

# CONNECT WITH US

**Meghan Williams**

MeghanC3.Williams@wisconsin.gov

608-590-8052 (cell)



/WIDNR



@WIDNR



@WI\_DNR



/WIDNRTV



"WILD WISCONSIN:  
OFF THE RECORD"

# Submitting Comments

- Comments due: December 15, 2021
  - Email: [MeghanC3.Williams@wisconsin.gov](mailto:MeghanC3.Williams@wisconsin.gov)
  - Mail: Meghan Williams  
Wisconsin DNR WY/3  
PO Box 7921  
Madison, WI 53707
- Materials available at:  
[dnr.wisconsin.gov/topic/SurfaceWater/PFASCriteria.html](https://dnr.wisconsin.gov/topic/SurfaceWater/PFASCriteria.html)