Ohio's Nutrient Rulemakings

July 22, 2025

Ohio EPA
Division of Surface Water
David Brumbaugh

Ohio Environmental Protection Agency

Two Related Rulemakings

Nutrient Assessment:

- Evaluate data from watershed survey
- Informs 303(d) listings

NPDES Implementation:

- Adaptive Management
- Point Source Nutrient Control

Ohio™

Environmental Protection Agency

Stream Nutrient Assessment Procedure (SNAP)

Weight of evidence approach to determine trophic status

Preliminary Assessment →

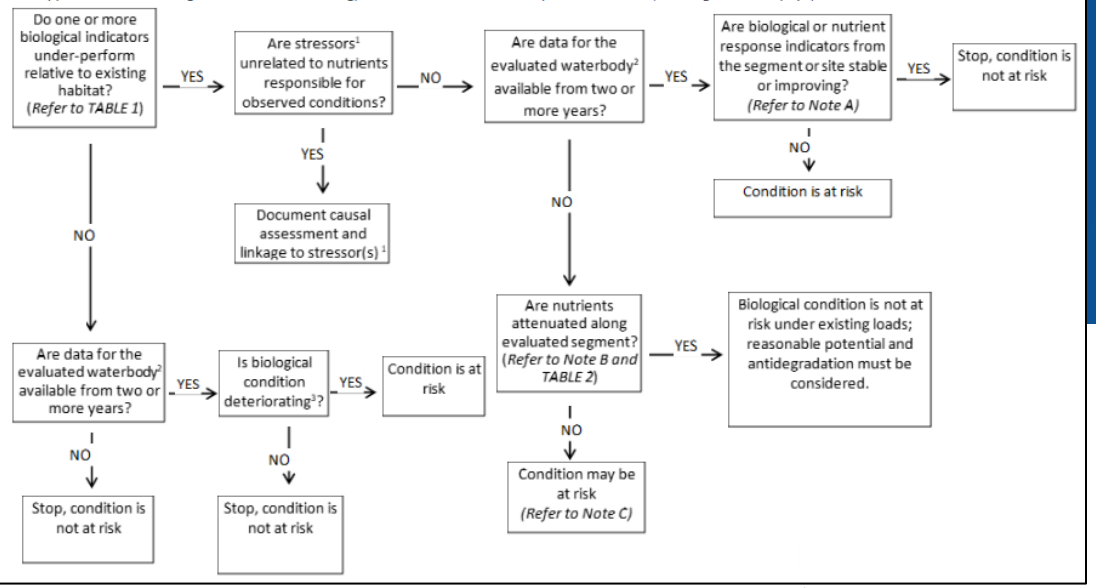
- **Biological Indices**
- **Trophic Indicators**

Biological eutrophication indicators			Additional indicators			Preliminary assessment	
Biological criteria	24-hr D.O. range[1]	Chlorophyll[2]	CBOD5	TSS	TKN		
All indices attaining or non-significant departure[3]	≤6.5 mg/l	Benthic ≤320 mg/m³ or sestonic ≤100 µg/l	≤2.5 mg/l	-	≤0.7 mg/l	Attaining use/not at risk	
		Benthic >320 mg/m³ or sestonic >100 µg/l	>6.0 mg/l	~25 mg/l; general screening level for inspection of data sets lacking chlorophyll observations.	>1.0 mg/l	Attaining uses but may be at risk	See flow chart A
	>6.5 mg/l	Benthic ≤182 mg/m³ or sestonic ≤30 µg/l	>6.0 mg/l		>1.0 mg/l		
		Benthic >182 mg/m³ or sestonic >30 µg/l	>6.0 mg/l		>1.0 mg/l		
Non-attaining (one or more indices below non-significant departure)	≤6.5 mg/l	Benthic ≤320 mg/m³ or sestonic ≤100 µg/l	≤2.5 mg/l	-	≤0.7 mg/l	Impaired but non-nutrient causes	See flow chart B
		Benthic >320 mg/m³ or sestonic >100 µg/l	>6.0 mg/l	~25 mg/l; general screening level for inspection of data sets lacking chlorophyll observations.	>1.0 mg/l	Impaired/likely nutrient enriched	See flow chart C
	>6.5 mg/l	Benthic ≤182 mg/m³ or sestonic ≤30 µg/l	>6.0 mg/l		>1.0 mg/l		
		Benthic >182 mg/m³ or sestonic >30 µg/l	>6.0 mg/l		>1.0 mg/l	Impaired/nutrient enriched	

Ohio Environmental Protection Agency

Flowchart A. Decision tree for determining when biologically attaining condition status is threatened by nutrients.

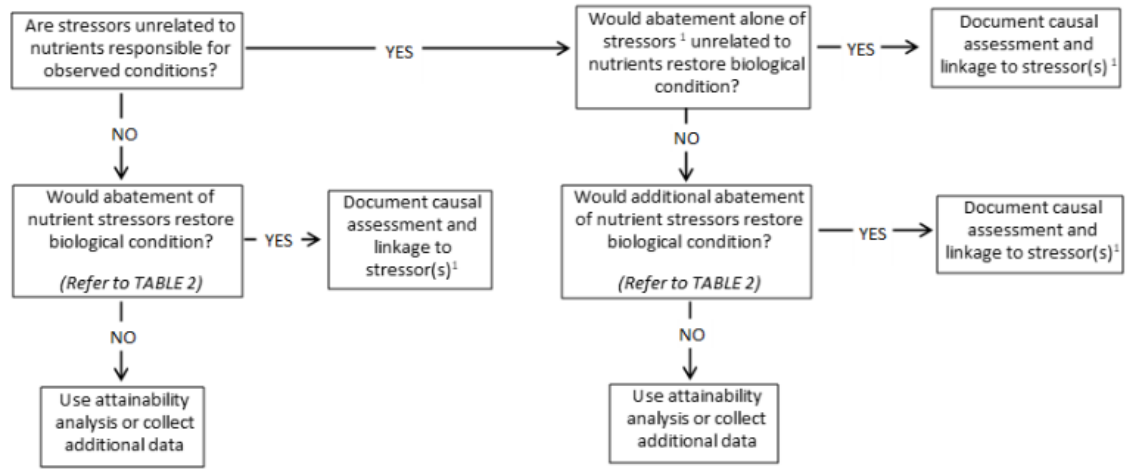
For application when biological criteria are attaining, but one or both nutrient response indicators (DO range or chlorophyll) are elevated.



At Risk due to nutrients?

Flow chart C. Decision tree for confirming biological impairment caused by nutrients.

For application when one or more biological criteria are non-attaining, and either nutrient response indicator (DO range or chlorophyll) is elevated.



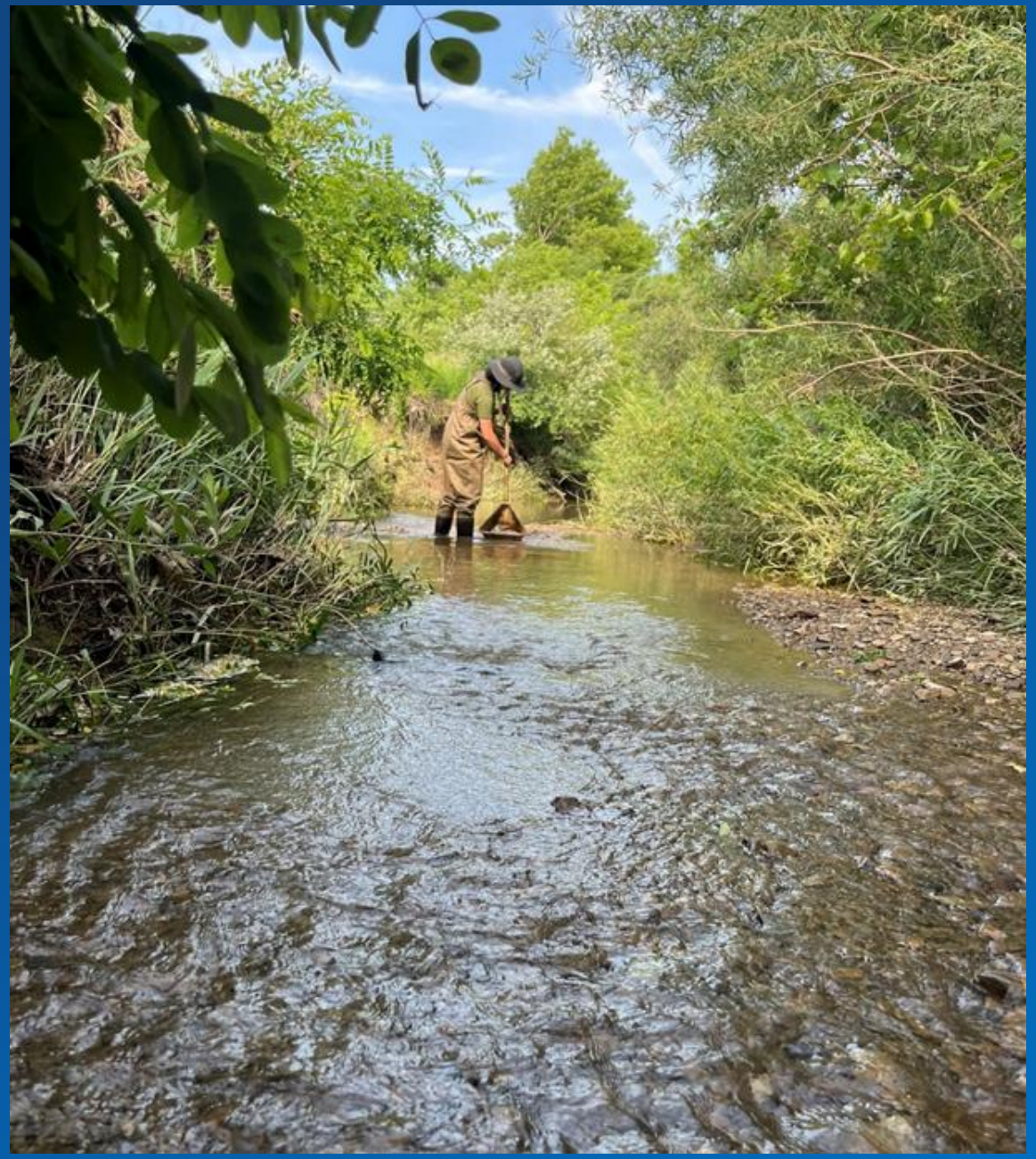
Impaired due to nutrients?

Risk profile for varying nutrients concentrations

	TP Conc. (mg/l)	←DECREASING RISK DIN Concentration (mg/l) <0.44	0.44 < 1.10	1.10 < 3.60	3.60 < 6.70	≥6.70
DECREASING RISK→	<0.040	background levels typical of least disturbed conditions (21.2% of observations)	levels typical of developed lands; little or no risk to beneficial uses (8.0% of observations)	levels typical of modestly enriched condition; low risk to beneficial use if allied responses are within normal ranges; high phosphorus uptake (5.2% of observations)	levels typical of enriched condition in phosphorus limited systems; moderate risk to beneficial use if allied responses are elevated; high phosphorus uptake (0.7% of observations)	characteristic of tile-drained lands; otherwise atypical condition with moderate risk to beneficial use if allied responses are elevated; high phosphorus uptake (0.2% of observations)
	0.040-<0.080	levels typical of developed lands; little or no risk to beneficial uses (6.9% of observations)	levels typical of developed lands; little or no risk to beneficial uses if allied responses are normal (8.6% of observations)	levels typical of working landscapes; low risk to beneficial use if allied responses are within normal ranges (6.5% of observations)	levels typical of enriched condition in phosphorus limited systems; moderate risk to beneficial use if allied responses are elevated; high phosphorus uptake (0.9% of observations)	characteristic of tile-drained lands; moderate risk to beneficial use if allied responses are elevated (0.1% of observations)
	0.080-<0.131	levels typical of modestly enriched condition with high nitrogen uptake; low risk to beneficial use if allied responses are within normal ranges (3.0% of observations)	levels typical of working landscapes; low risk to beneficial use if allied responses are within normal ranges (6.0% of observations)	levels typical of streams with a significant effluent fraction; low risk to beneficial use if allied responses are within normal ranges; pre-uptake condition (6.8% of observations)	characteristic of tile-drained lands; moderate risk to beneficial use if allied responses are elevated; increased risk with poor habitat – OR – large rivers with significant effluent fraction (0.9% of observations)	characteristic of tile-drained lands; moderate risk to beneficial use if allied responses are elevated (0.3% of observations)
	0.131-<0.400	levels typical of enriched condition with high nitrogen uptake; elevated risk to beneficial use (2.7% of observations)	levels typical of enriched condition with high nitrogen uptake; elevated risk to beneficial use (4.5% of observations)	levels typical of streams with a significant effluent fraction; moderate risk to beneficial use if allied responses are within normal ranges; pre-uptake condition (10.6% of observations)	enriched condition; generally high risk to beneficial uses; often co-occurring with multiple stressors; increased risk with poor habitat (1.7% of observations)	enriched condition; generally high risk to beneficial uses; often co-occurring with multiple stressors (0.6% of observations)
	≥0.400	high nitrogen uptake; atypical condition (0.2% of observations)	high nitrogen uptake; atypical condition (0.6% of observations);	typical of effluent dominated rivers; high risk (1.6% of observations)	enriched condition; high risk to beneficial uses; (1.2% of observations)	enriched condition; high risk to beneficial uses; often co-occurring with multiple stressors (1.0% of observations)

"allied responses" = allied response indicators (24-hour DO range, chlorophyll)

Ohio Environmental Protection Agency



SNAP Outcomes

Full Attainment

At Risk

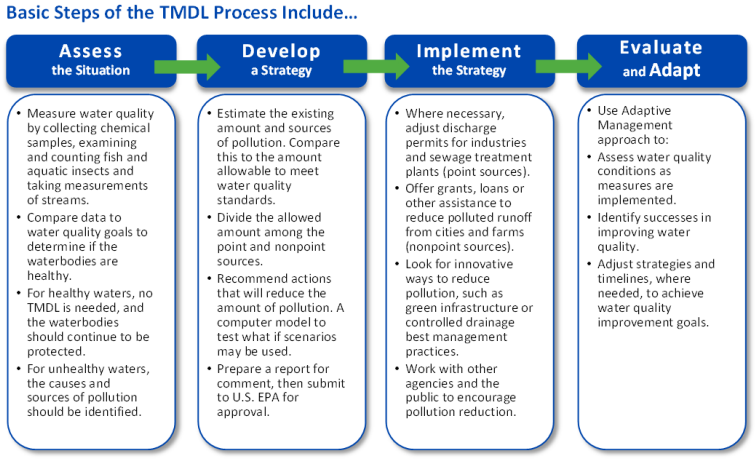
Impaired Nutrient-Related

Impaired Non-Nutrient Cause

Ohio Environmental Protection Agency

Watershed Adaptive Management

Nutrient Reduction → Stream Response → Reassess Condition



- Environmental benefit via early action on PS nutrient reduction
- Lower the priority of associated TMDL (or perhaps avoid a TMDL altogether)
- Opportunity for PS to avoid restrictive wasteload allocation and associated capital expenses

Ohio Environmental Protection Agency

Applicability Guardrails

Who should be subject to this rules?

- Exclude watersheds with an approved TMDL
- Point sources with ≥0.5 MGD design flow
- 5:1 ratio of stream : effluent nutrient load

Ohio Environmental Protection Agency

Proposed Implementation Requirements

At Risk → **Monthly Avg TP Limit = 1.0 mg/L or Watershed Control Project(s)**

Impaired Nutrient-Related → **Monthly Avg TP Limit = 0.7 mg/L**

Ohio Environmental Protection Agency

Next Steps

Write the rule language!

↓

“Interested Party Review”

- Other Guardrails?
- Year-round vs. Growing Season
- Concentration vs. Load
- All tributary PS vs. Single largest PS

Thank You

David Brumbaugh
Division of Surface Water
614.644.2138
David.Brumbaugh@epa.ohio.gov

Ohio Environmental Protection Agency