TOOLS AND PARTNERSHIPS AIMED AT ADDRESSING NUTRIENT POLLUTION

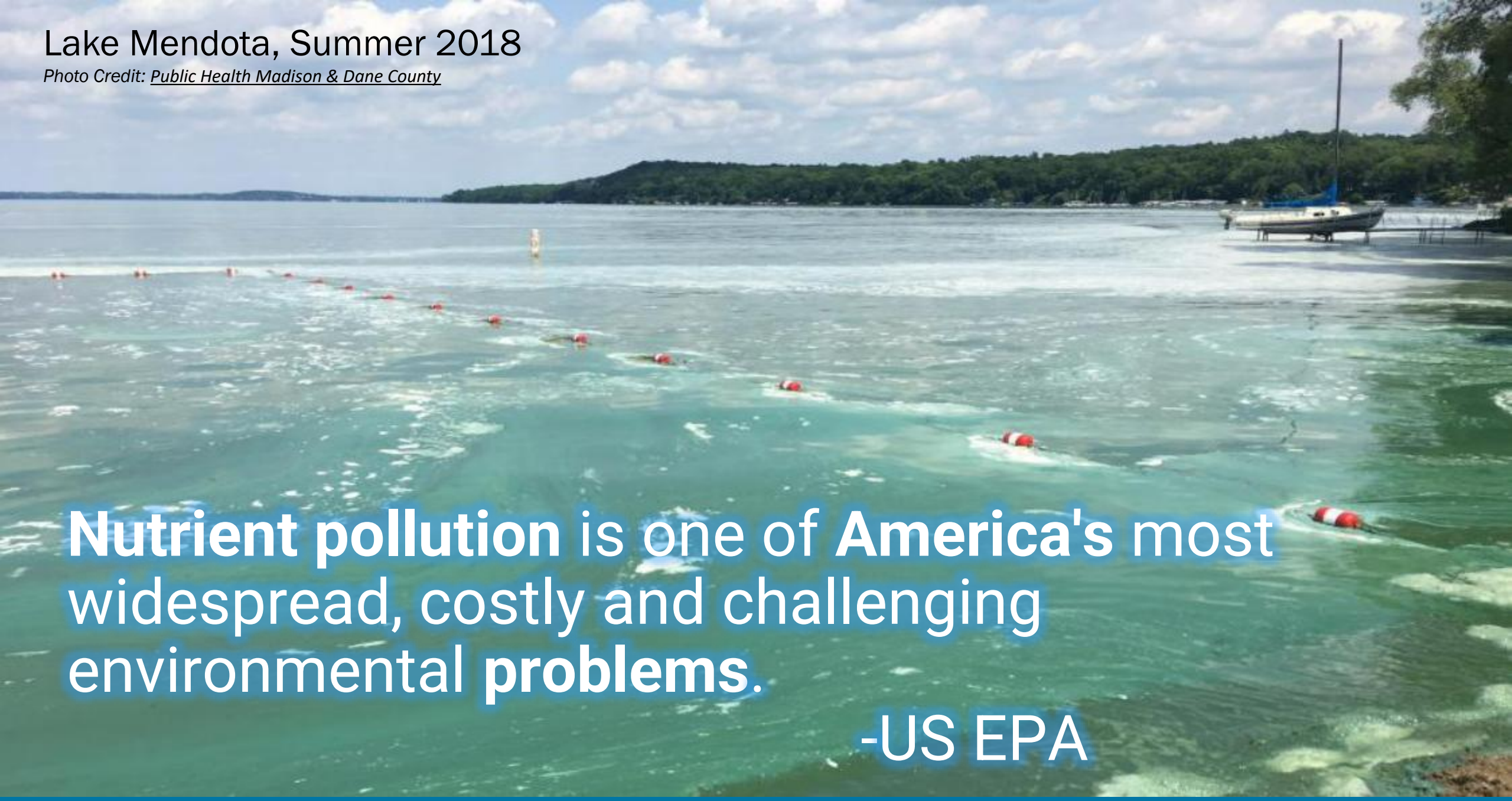
ACWA Annual Meeting

Matt Claucherty, Phosphorus Implementation Coordinator

8/15/2025

Lake Mendota, Summer 2018

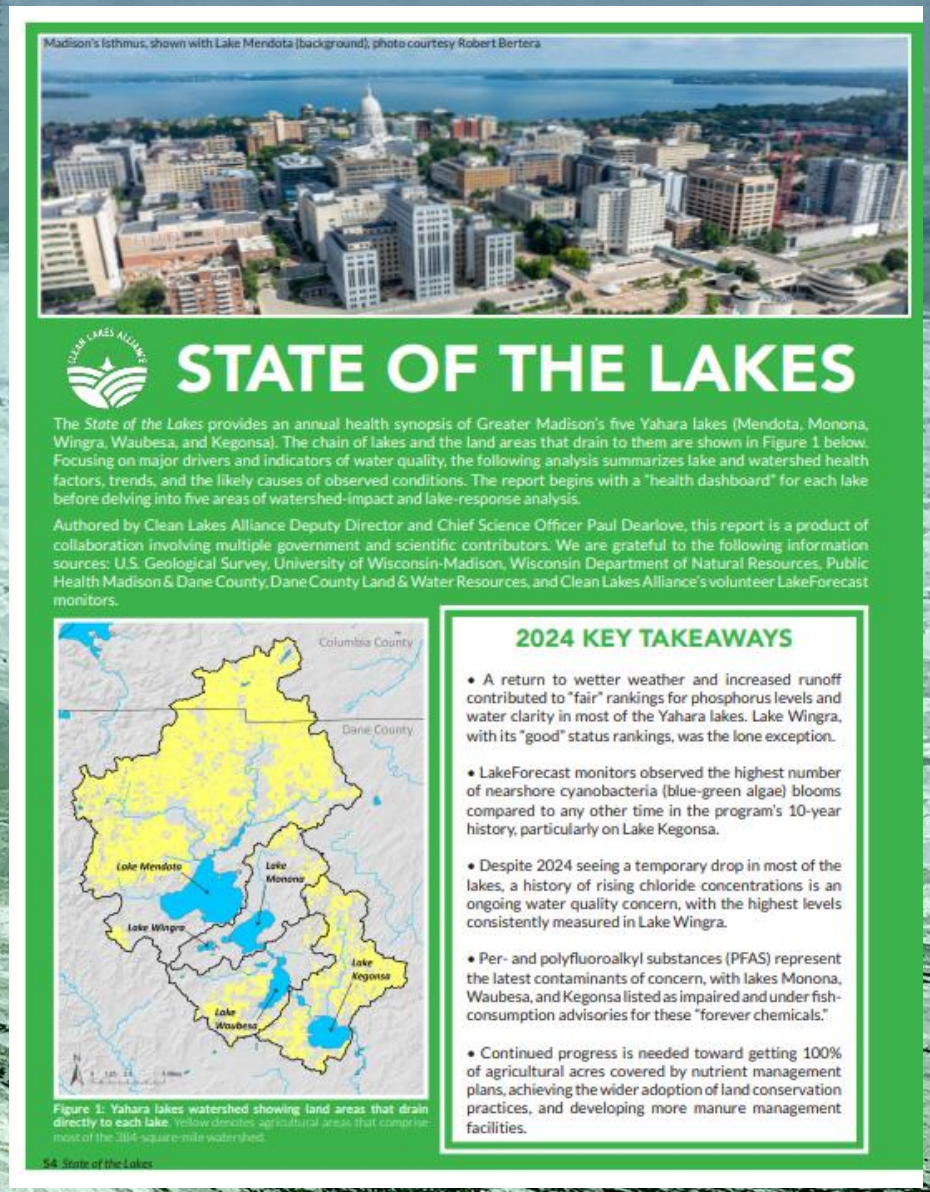
Photo Credit: Public Health Madison & Dane County



Lake Monona, Summer 2024

Photo Credit: Finn Ryan / Yaharaproject.org

"Monitors observed the highest number of nearshore cyanobacteria (blue-green algae) blooms compared to any other time in the program's 10-year history…"



Madison's Isthmus, shown with Lake Mendota (background), photo courtesy Robert Bertera

STATE OF THE LAKES

The *State of the Lakes* provides an annual health synopsis of Greater Madison's five Yahara lakes (Mendota, Monona, Wingra, Waubesa, and Kegonsa). The chain of lakes and the land areas that drain to them are shown in Figure 1 below. Focusing on major drivers and indicators of water quality, the following analysis summarizes lake and watershed health factors, trends, and the likely causes of observed conditions. The report begins with a "health dashboard" for each lake before delving into five areas of watershed-impact and lake-response analysis.

Authored by Clean Lakes Alliance Deputy Director and Chief Science Officer Paul Dearlove, this report is a product of collaboration involving multiple government and scientific contributors. We are grateful to the following information sources: U.S. Geological Survey, University of Wisconsin-Madison, Wisconsin Department of Natural Resources, Public Health Madison & Dane County, Dane County Land & Water Resources, and Clean Lakes Alliance's volunteer LakeForecast monitors.

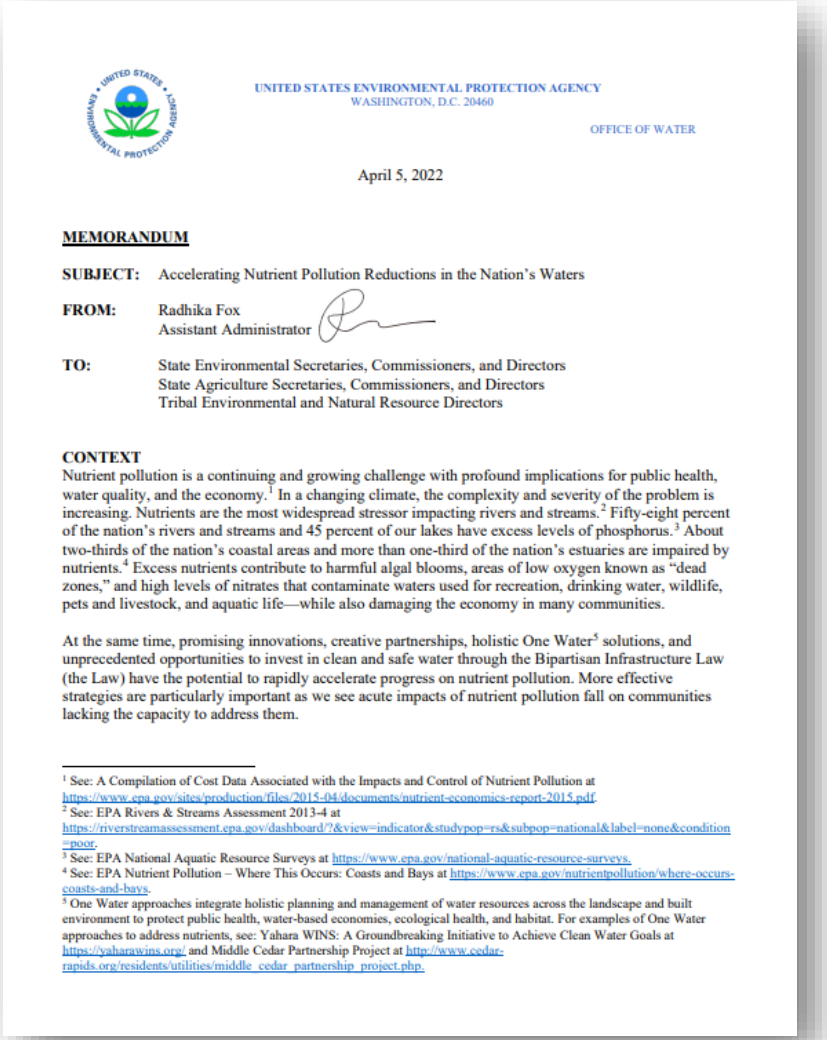
Figure 1: Yahara lakes watershed showing land areas that drain directly to each lake. Yellow denotes agricultural areas that comprise most of the 384-square-mile watershed.

2024 KEY TAKEAWAYS

- A return to wetter weather and increased runoff contributed to "fair" rankings for phosphorus levels and water clarity in most of the Yahara lakes. Lake Wingra, with its "good" status rankings, was the lone exception.
- LakeForecast monitors observed the highest number of nearshore cyanobacteria (blue-green algae) blooms compared to any other time in the program's 10-year history, particularly on Lake Kegonsa.
- Despite 2024 seeing a temporary drop in most of the lakes, a history of rising chloride concentrations is an ongoing water quality concern, with the highest levels consistently measured in Lake Wingra.
- Per- and polyfluoroalkyl substances (PFAS) represent the latest contaminants of concern, with lakes Monona, Waubesa, and Kegonsa listed as impaired and under fish-consumption advisories for these "forever chemicals."
- Continued progress is needed toward getting 100% of agricultural acres covered by nutrient management plans, achieving the wider adoption of land conservation practices, and developing more manure management facilities.

EPA's 2022 Memo: Accelerating Nutrient Pollution Reductions in the Nation's Waters

- Deepen collaborative partnerships with agriculture
- Utilize Clean Water Act authorities to drive progress, innovation, and collaboration
- Support states, tribes, and territories to achieve nutrient pollution reductions from all sources



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF WATER

April 5, 2022

MEMORANDUM

SUBJECT: Accelerating Nutrient Pollution Reductions in the Nation's Waters

FROM: Radhika Fox
Assistant Administrator

TO: State Environmental Secretaries, Commissioners, and Directors
State Agriculture Secretaries, Commissioners, and Directors
Tribal Environmental and Natural Resource Directors

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Nutrient pollution is a continuing and growing challenge with profound implications for public health, water quality, and the economy.[1] In a changing climate, the complexity and severity of the problem is increasing. Nutrients are the most widespread stressor impacting rivers and streams.[2] Fifty-eight percent of the nation's rivers and streams and 45 percent of our lakes have excess levels of phosphorus.[3] About two-thirds of the nation's coastal areas and more than one-third of the nation's estuaries are impaired by nutrients.[4] Excess nutrients contribute to harmful algal blooms, areas of low oxygen known as "dead zones," and high levels of nitrates that contaminate waters used for recreation, drinking water, wildlife, pets and livestock, and aquatic life—while also damaging the economy in many communities.

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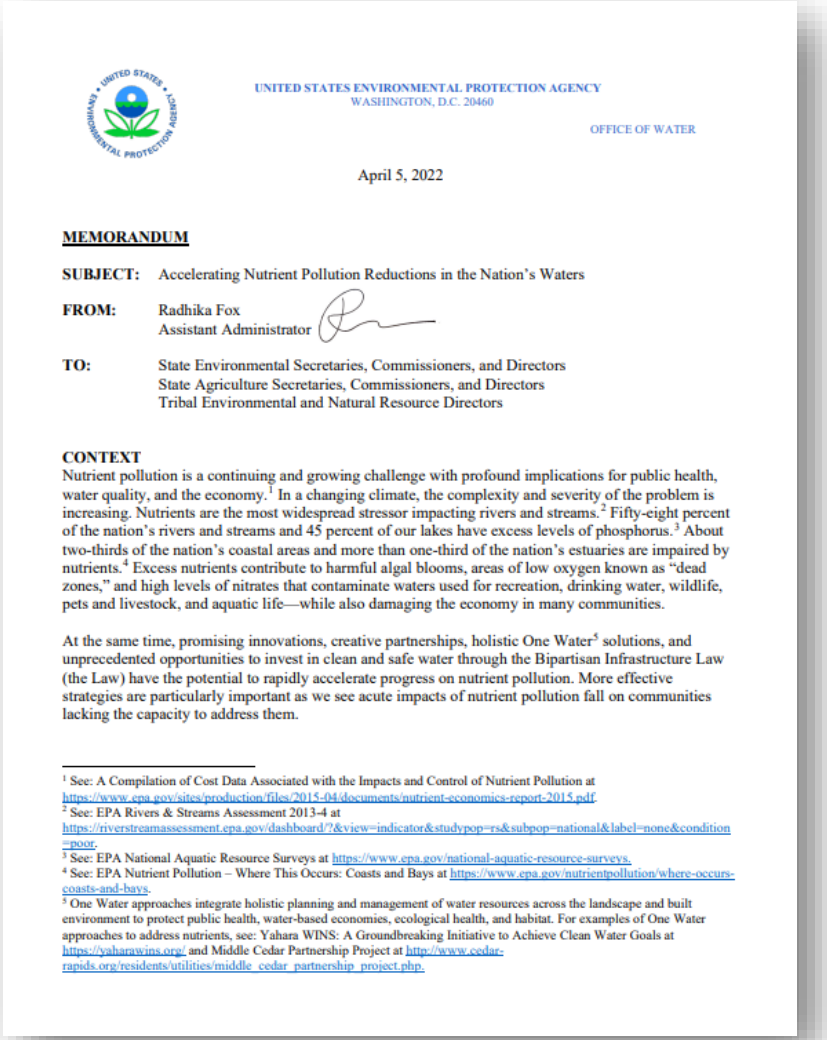

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Statewide Phosphorus Criteria

Rivers

100 µg/L

Streams

75 µg/L

Reservoirs

- Not Stratified = 40 µg/L
- Stratified = 30 µg/L

Inland Lakes

Ranges from 15-30 µg/L

Great Lakes

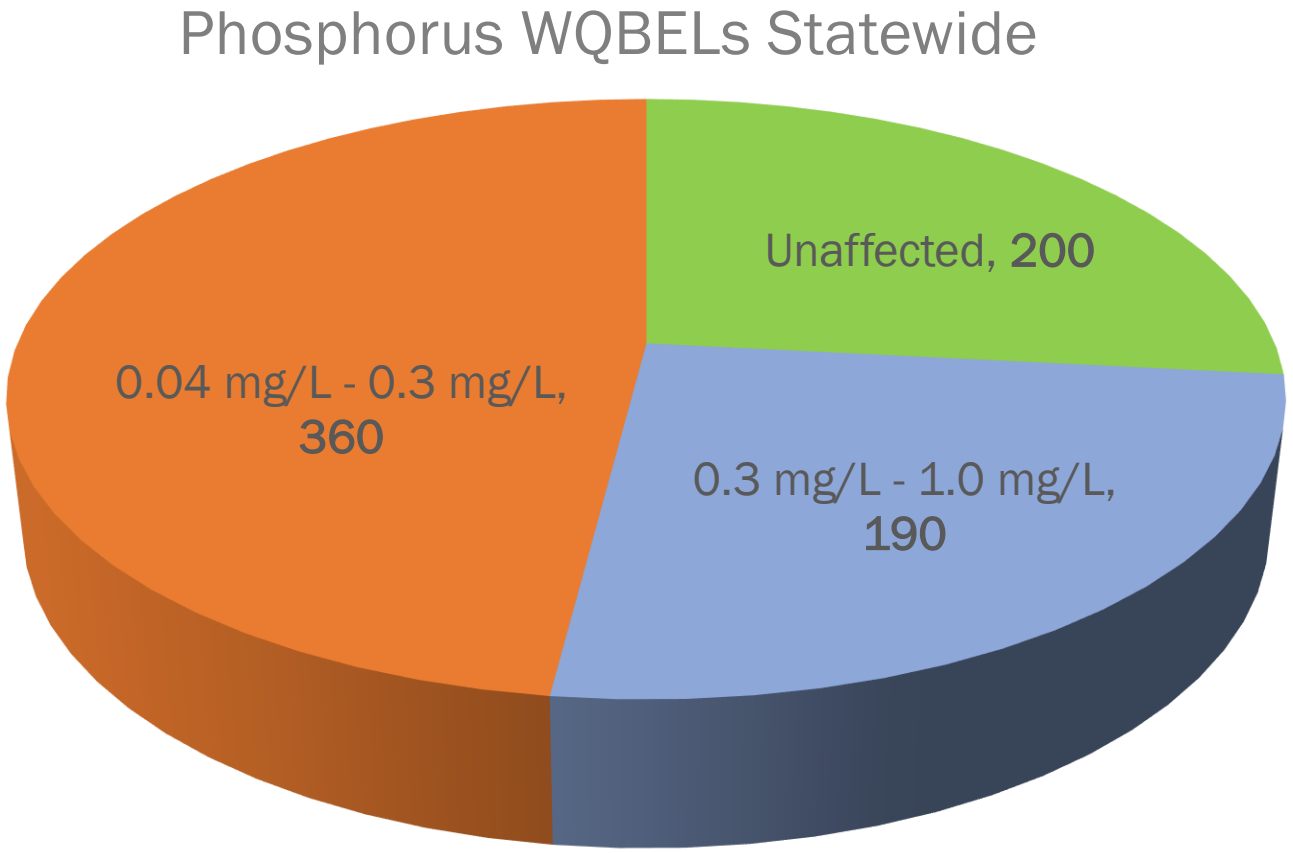
- Lake Michigan = 7 µg/L
- Lake Superior = 5 µg/L

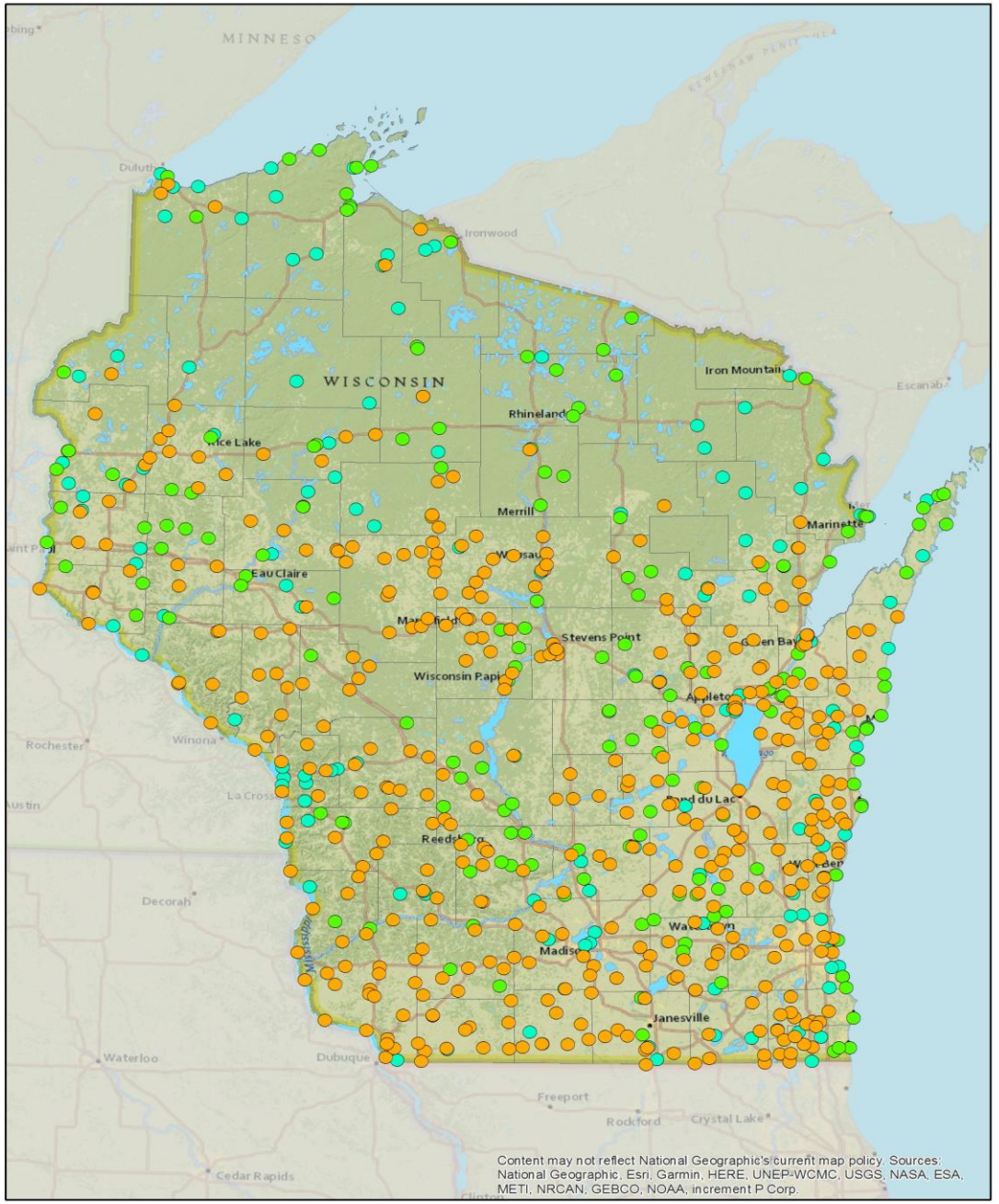
- Growing Season Median Value (rivers & streams)
- Summer Average Value (lakes & reservoirs)

Water Quality Based Effluent Limits: Total Phosphorus

Permitted Facilities:

- 750 surface water dischargers





What are the outcomes in Wisconsin?

-50 facilities commit to installing tertiary filtration to meet WQBELs

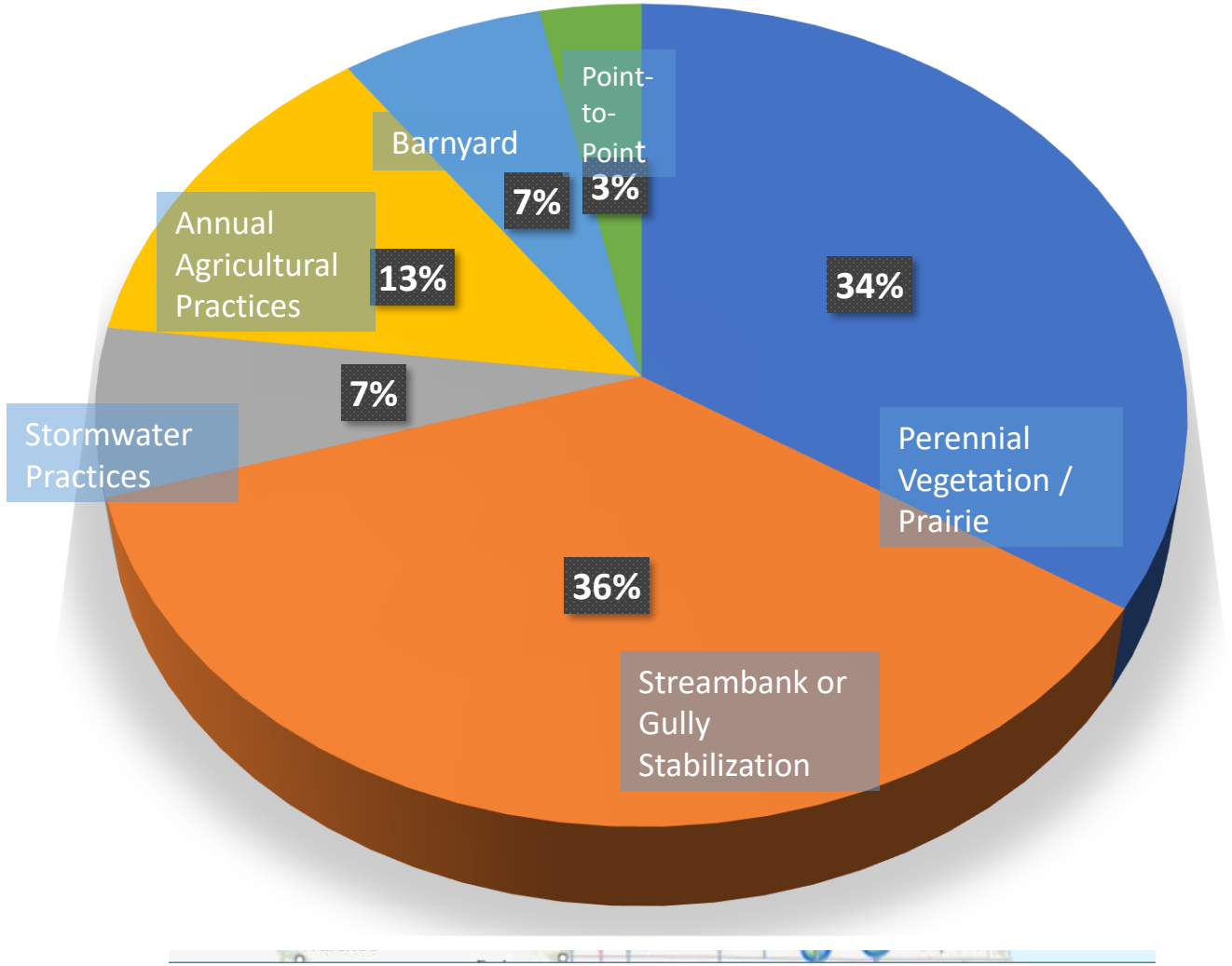
- 75 facilities offset excess phosphorus loading via water quality trading

-20 facilities undertake full watershed restoration

-200 small facilities commit to achieving 1.0 mg/L and optimize down to 0.5 mg/L

Water Quality Trading Program Summary

- Number of WPDES permittees with approved trades: 75
- Total credits traded (phosphorus): 26,800 lbs./year
- Total modeled nonpoint pollution reduction (phosphorus): 46,535 lbs./year
- Acres of perennial vegetation established (native prairie or grass/hay): 2,046.8
- Acres of nonpoint control (mainly improved cropping practices, buffers): 2,329.5
- Length of eroding streambank stabilization: 130,542.0 feet or 24.7 miles



Water Quality Trading Program Beneficial Outcomes

1. Affordable phosphorus compliance for communities that cannot upgrade

2. Ancillary benefits associated with conservation practices

3. Reduced energy consumption compared to a tertiary filtration scenario

4. Established framework for a nutrients reduction market

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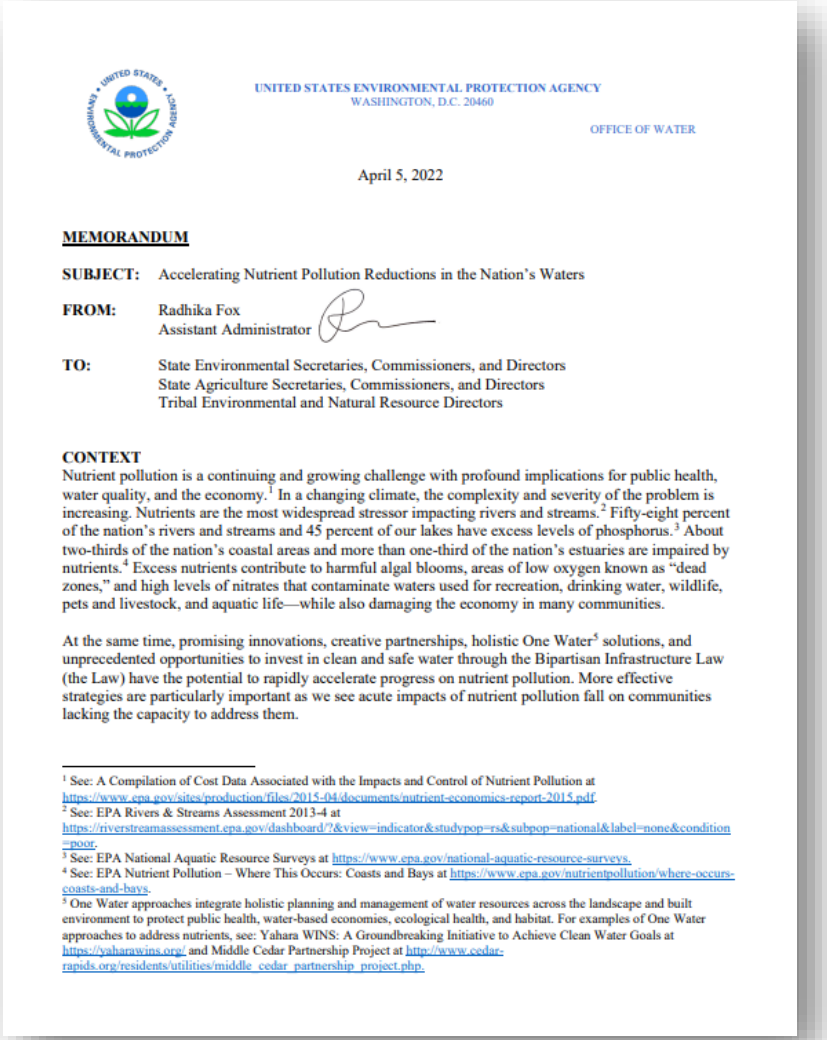

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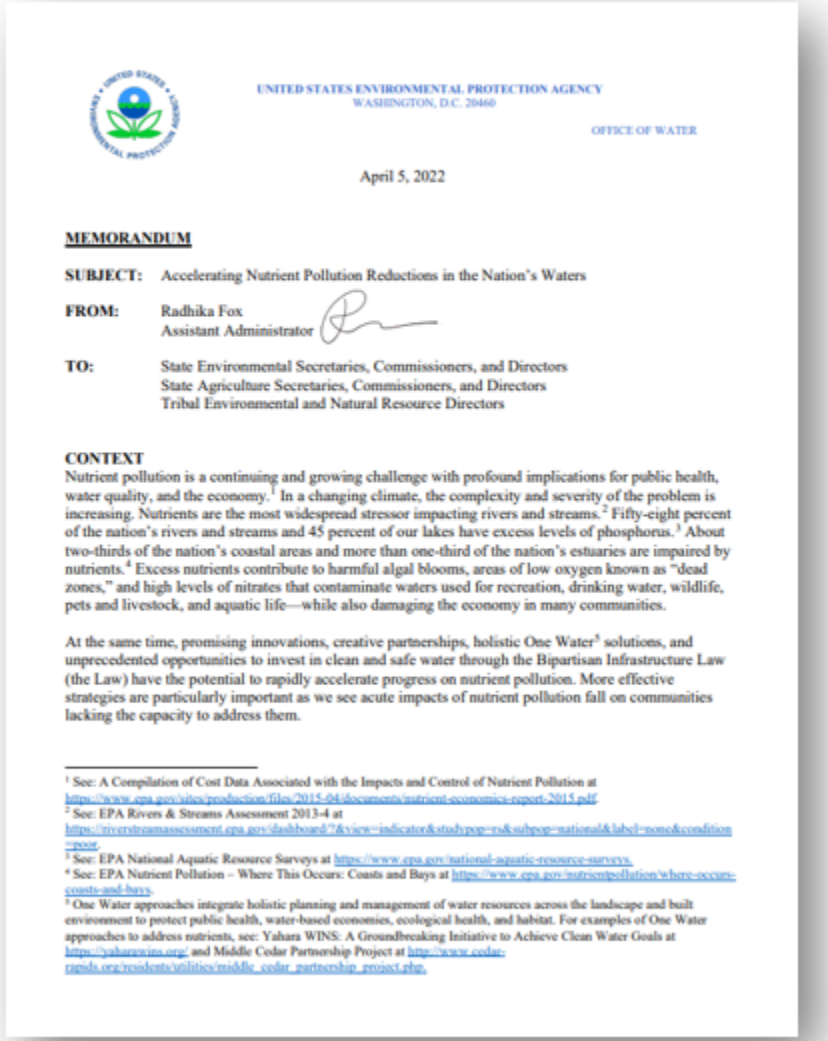

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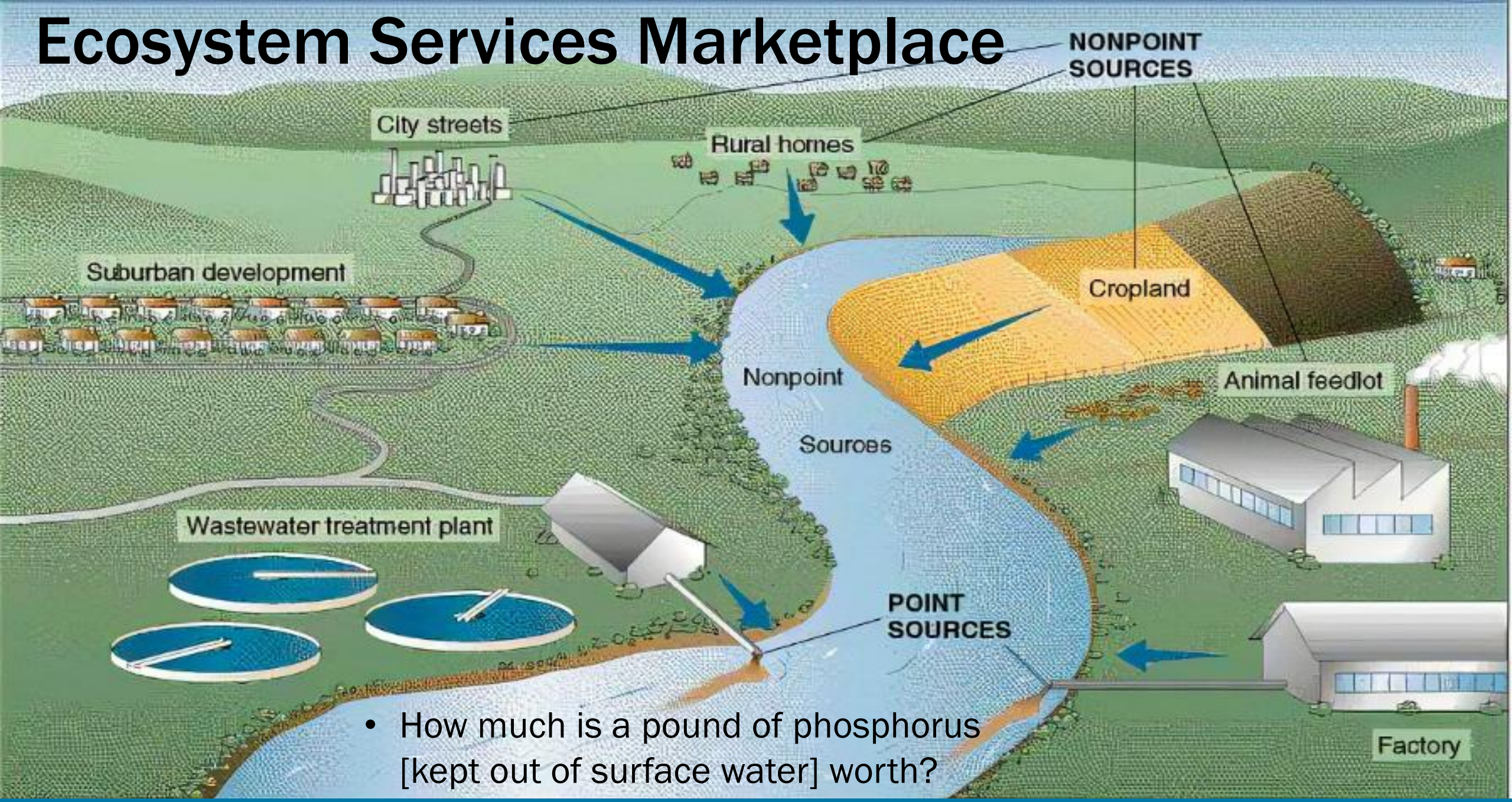
Ecosystem Services Marketplace



- How much is a pound of phosphorus [kept out of surface water] worth?

- Non-regulatory drivers for conservation
  - Cultural values
  - Voluntary programs / incentives
  - Consumer demand / labeling

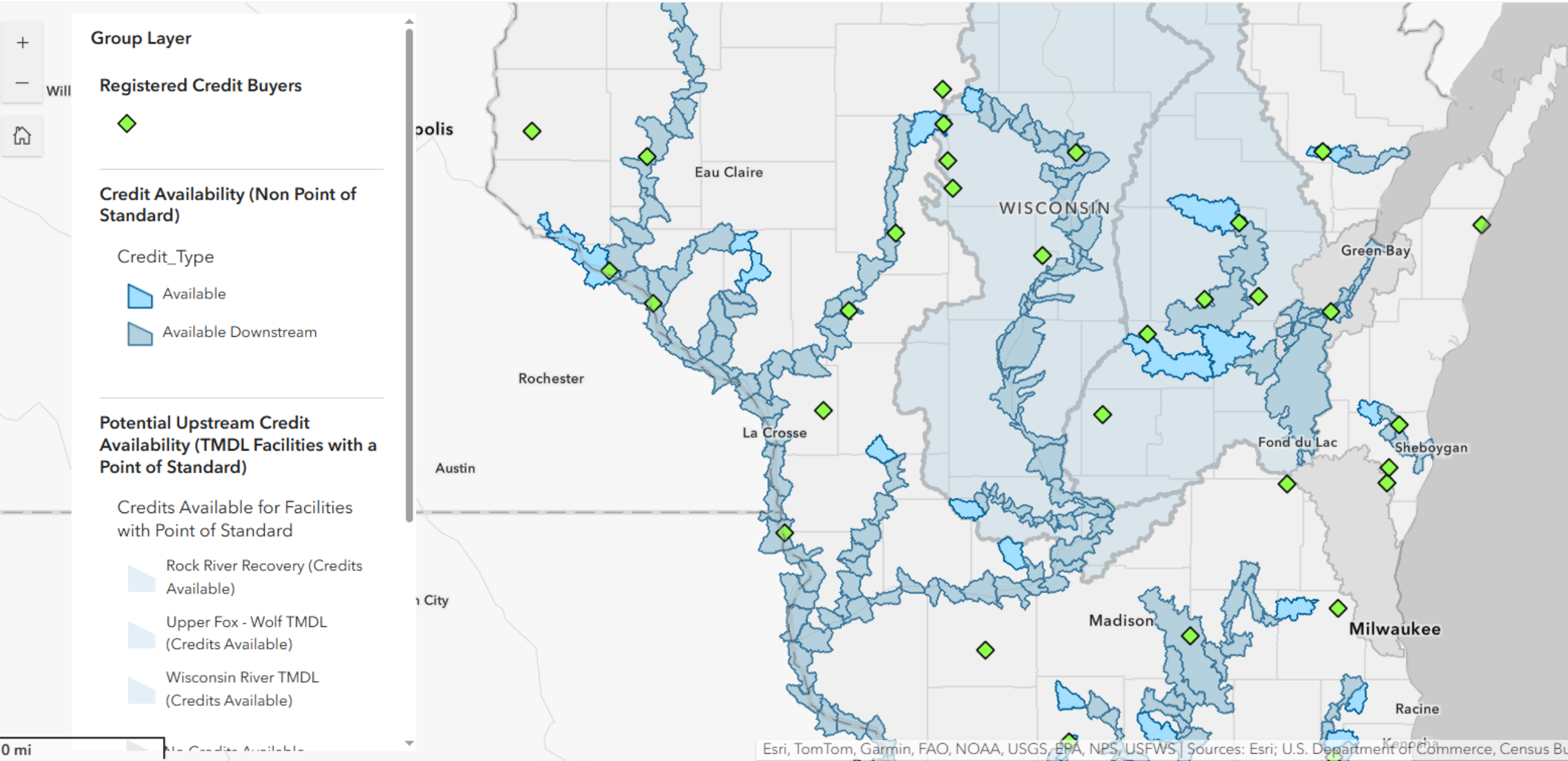
- Regulatory drivers for conservation
  - CAFO permits
  - Agricultural performance standards
  - Local ordinances

  Its not enough.

Consider adding:
- Municipalities
- Industries
- Municipal and Industry Associations
- Civil/wastewater engineering firms
- Dedicated water quality trading clearinghouse

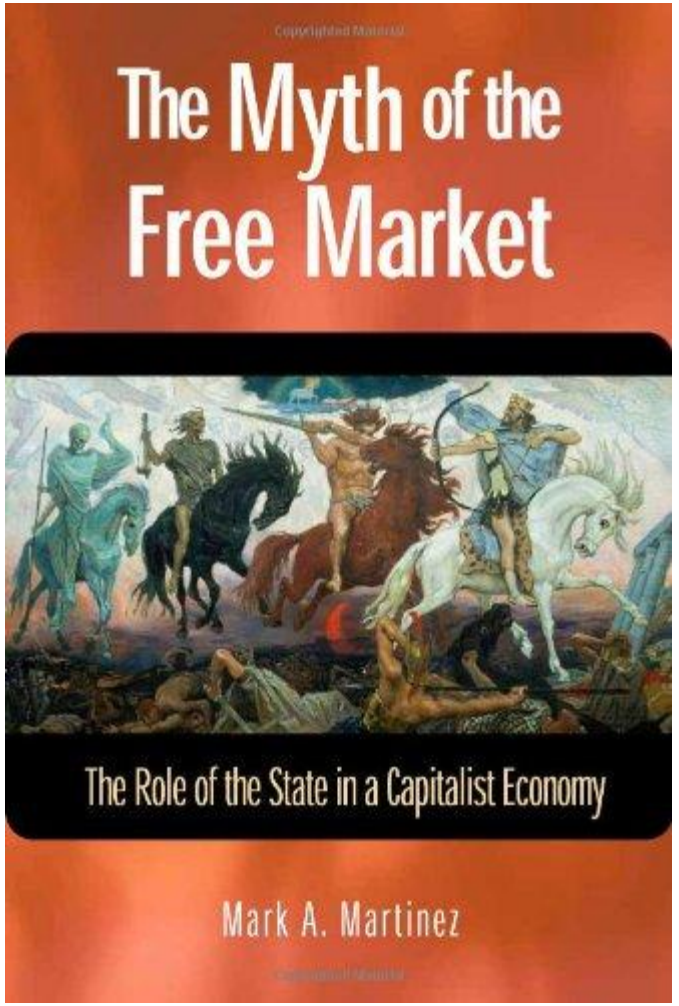
Wisconsin Water Quality Trading Clearinghouse

Wisconsin Nutrient Credit Availability



Negative Aspects of Regulatory Driver and Water Quality Trading

- Must be applied uniformly and consistent with CWA
  - Underfunded dischargers may have few options
  - Variances play an important role here
- Opens the door to manipulation
- Impetus to inflate credit quantities / benefits
- Administrative burden for agencies



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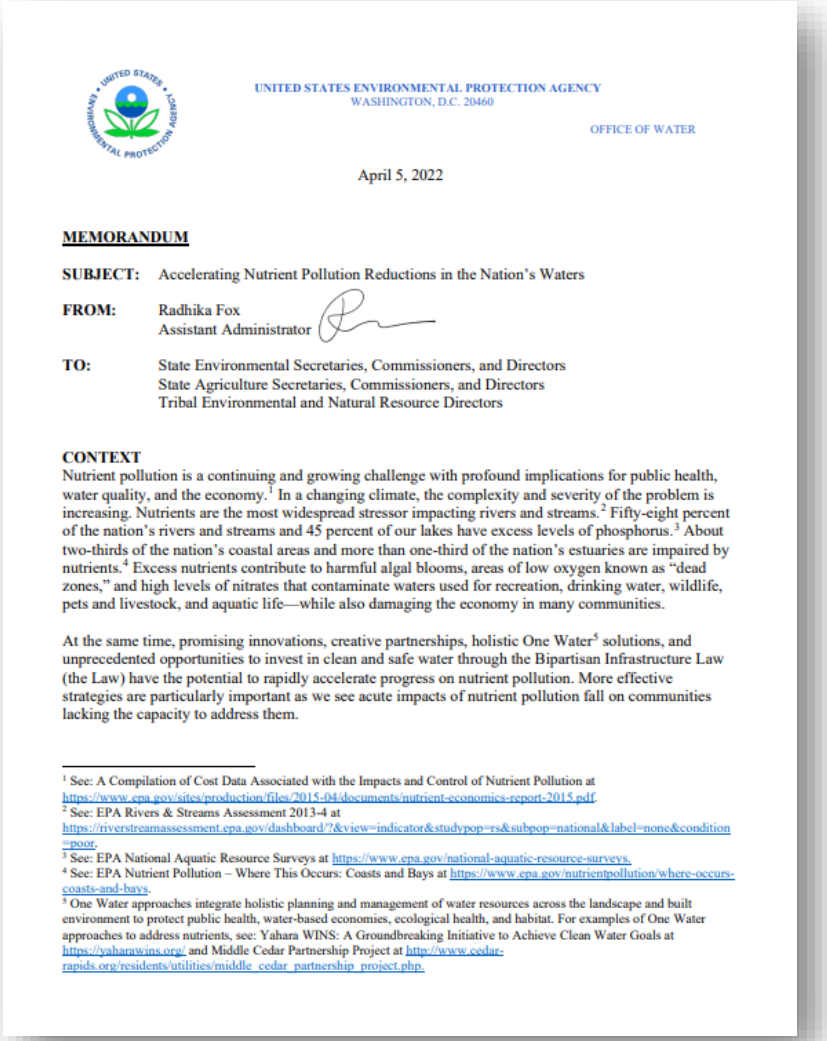

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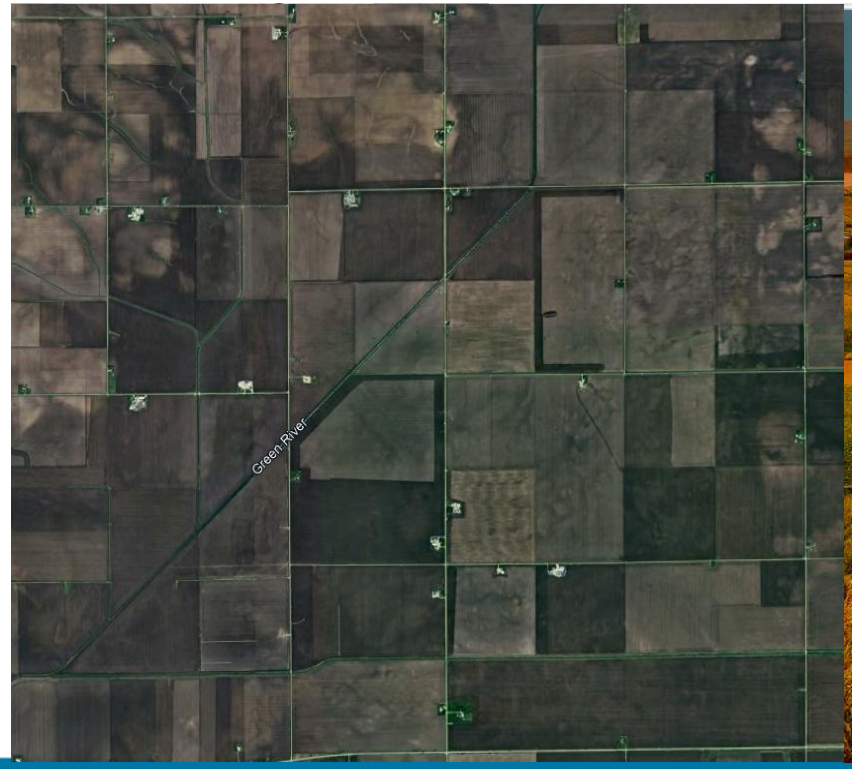
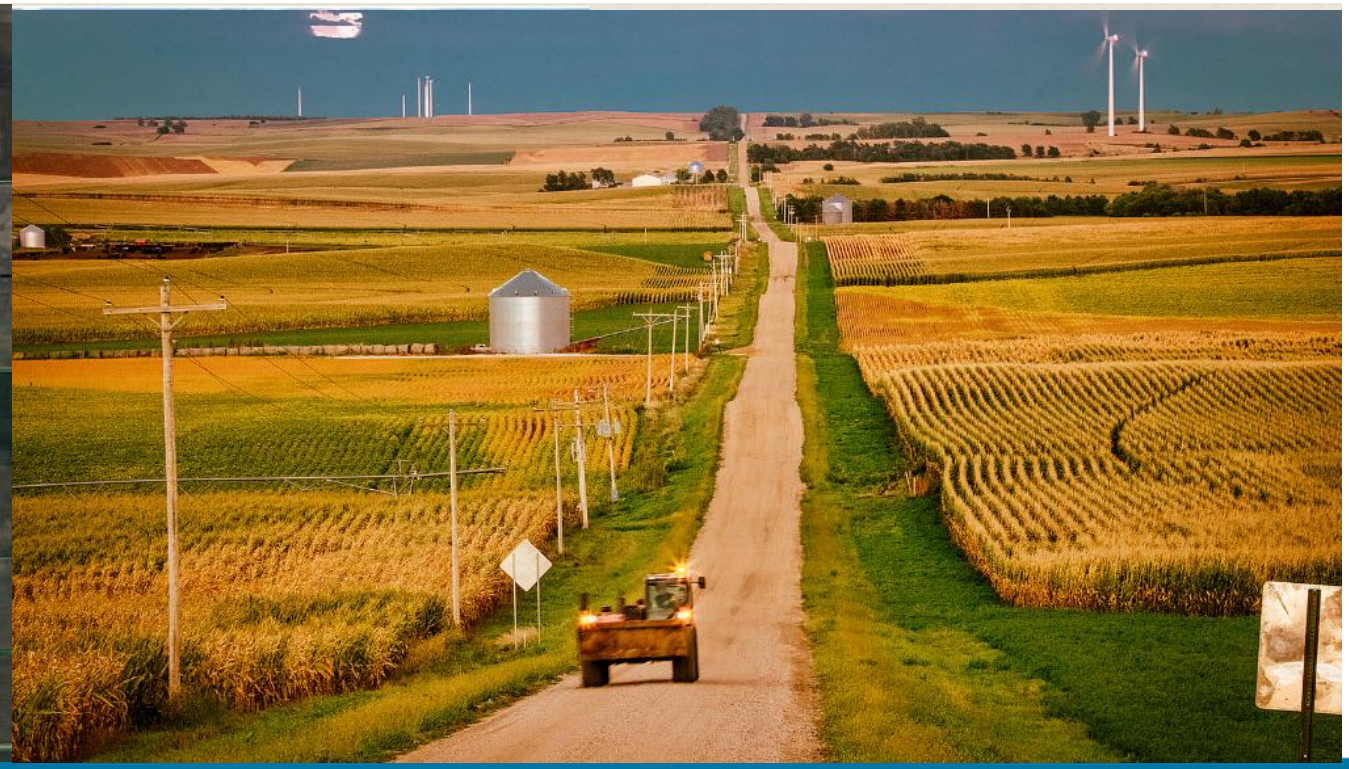
Point source reductions will only go so far towards achieving water quality standards.

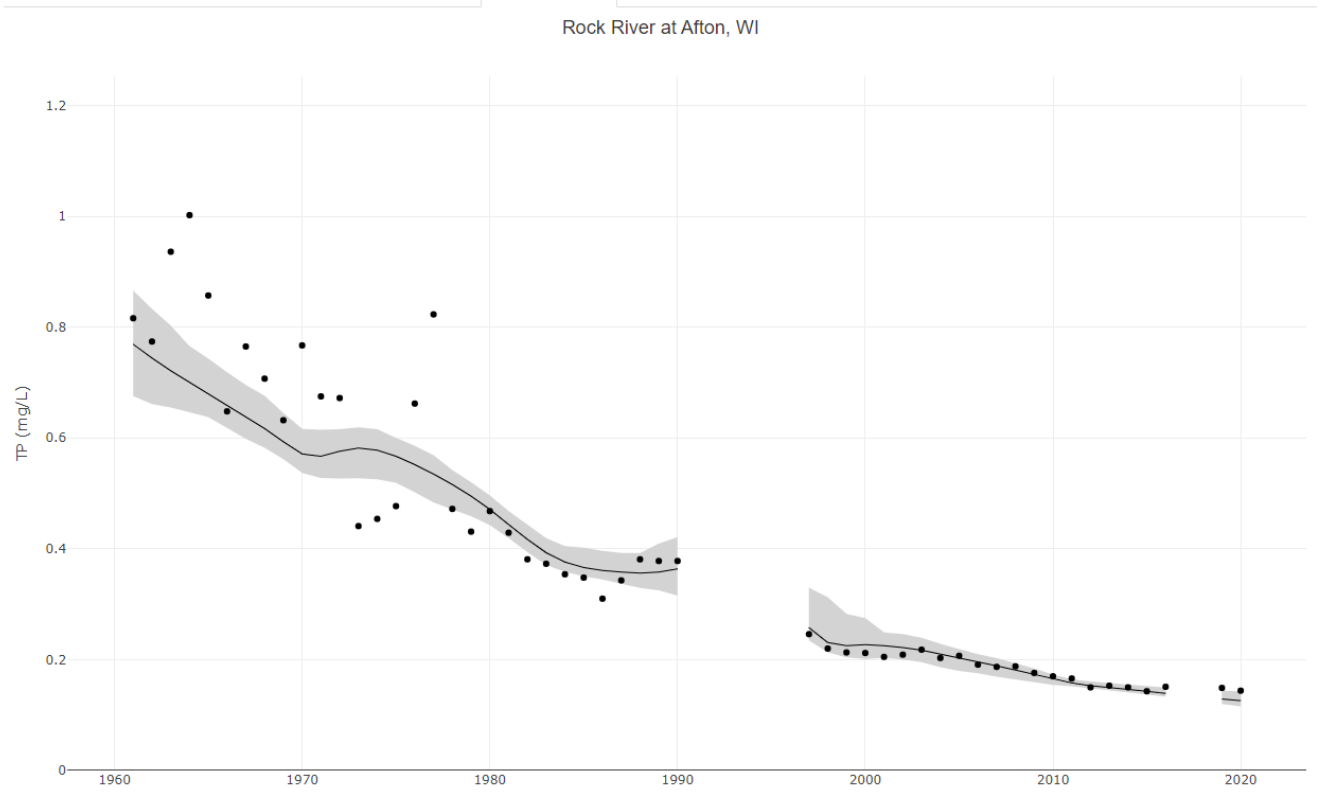
We need to fuel a cultural shift towards stewardship – well-funded municipalities and industries can do this locally.

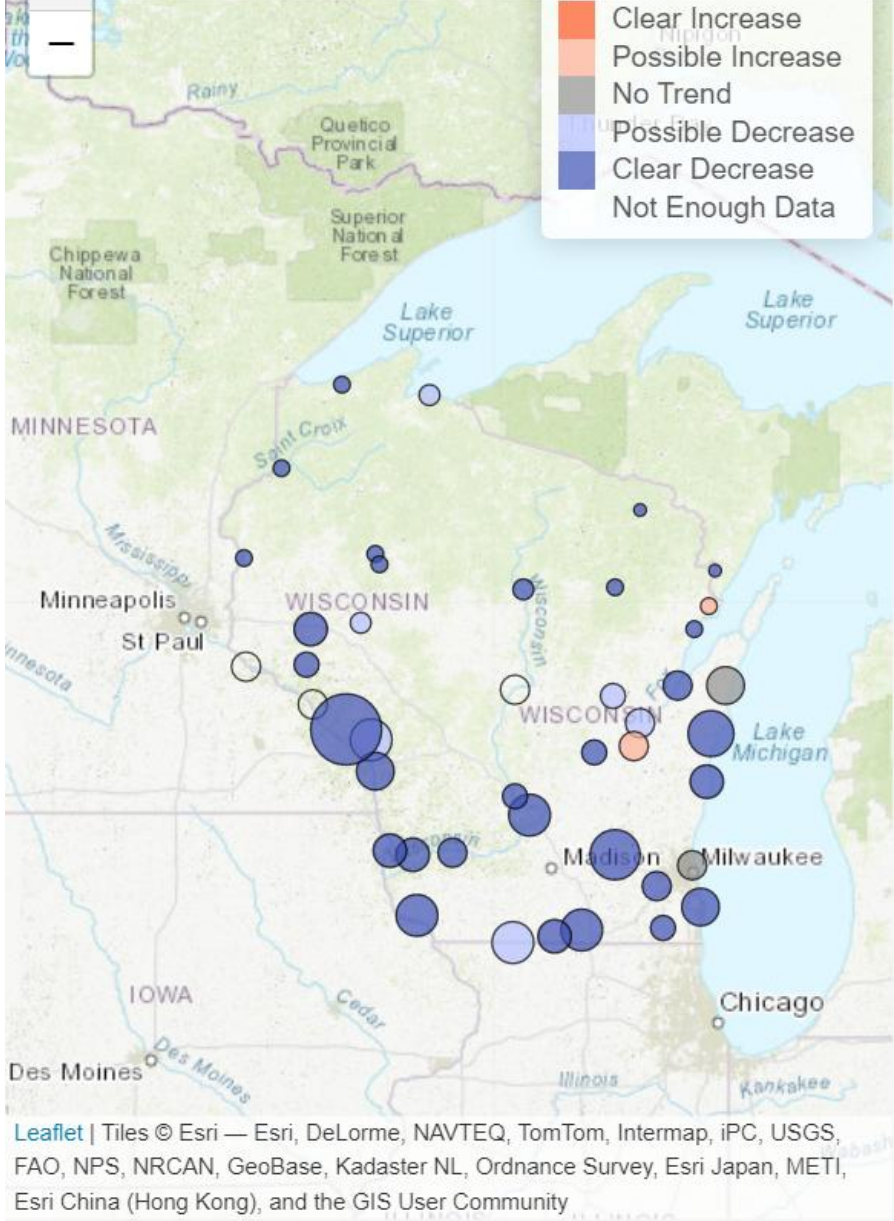
In some areas, additional nonpoint regulations are going to be required to achieve standards. How much support is there for additional regulation?





Downward Trends in Total Phosphorus Observed Widely





Select parameter

Total Phosphorus

Select time period

1961

2010

2020

CONNECT WITH US

Matt Claucherty

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@WIDNR

@WI_DNR

/WIDNRTV

"WILD WISCONSIN:
OFF THE RECORD"