Arkansas Hypoxia Task Force Update

Tate Wentz

Chief, Water Strategy and Conservation

Arkansas Department of Agriculture

Natural Resources Division Water Quality Programs

Nonpoint Source Program

319 Program

Arkansas Nutrient Reduction Strategy

Gulf Hypoxia Program

Arkansas Unpaved Roads Program

Wetland and Riparian Zones Tax Credit Program

Gulf Hypoxia Program

Program Goals & Objectives:

- **Tier 1 Watersheds**: Increase or maintain downward nutrient trends
- **Tier 2 Watersheds**: Enhance monitoring and reduce nutrient levels
- **Statewide**: Continue reduction efforts across all watersheds

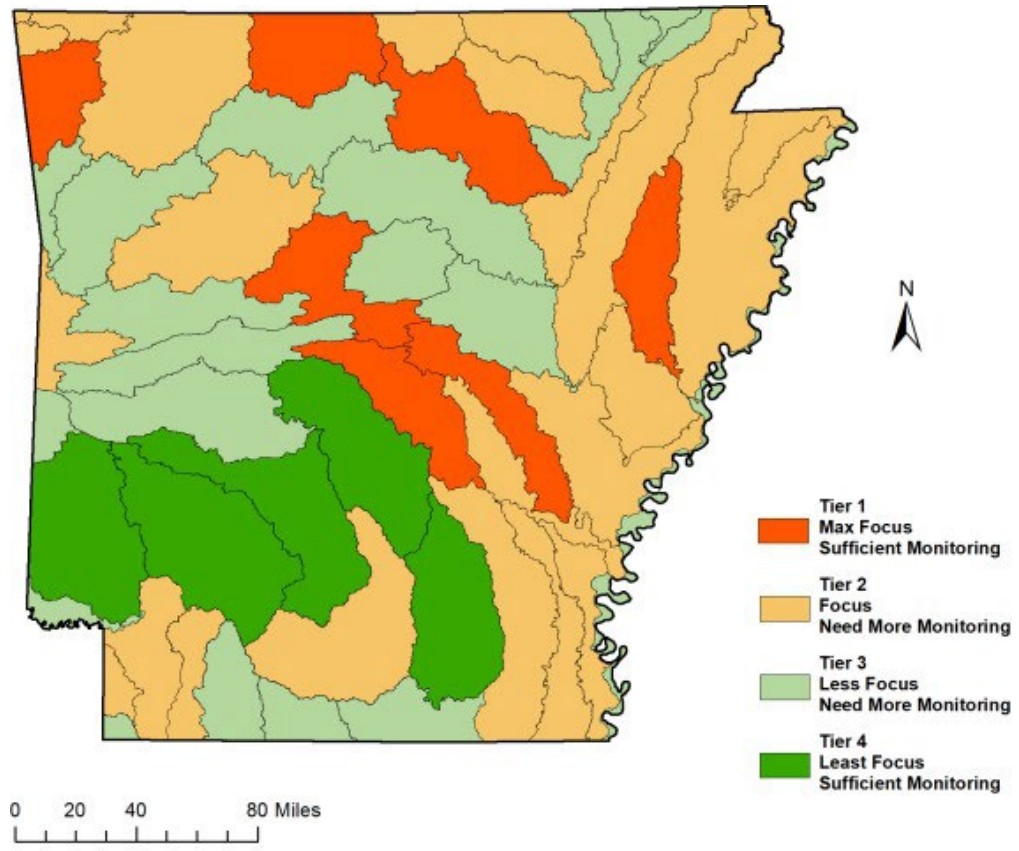
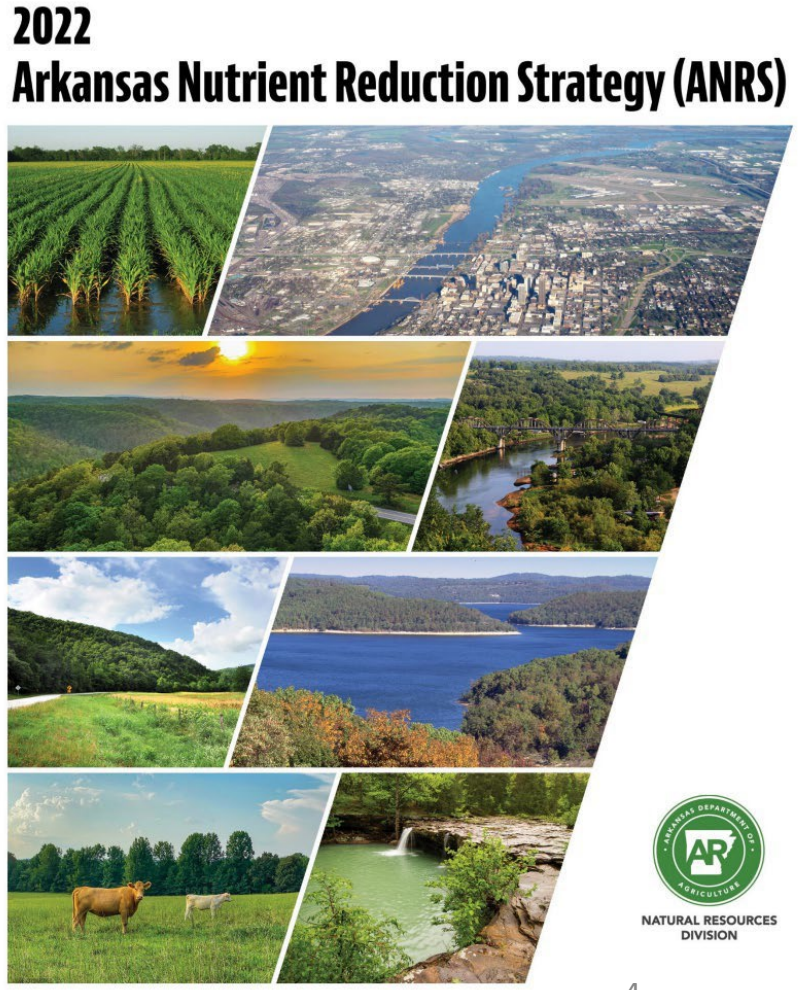


Figure 10. Four Tiers of HUC-8 Watersheds.

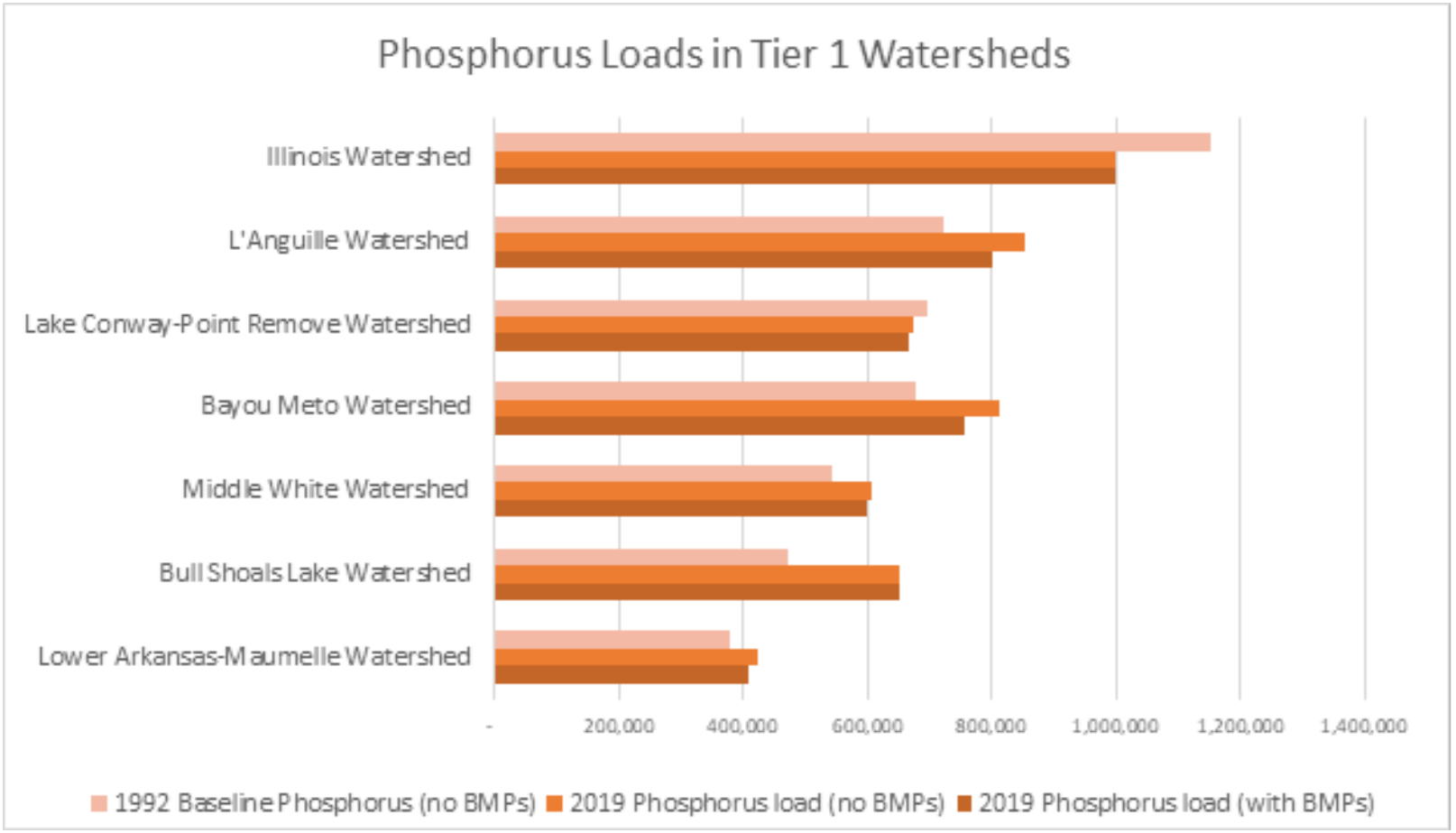
Focus of the Arkansas Nutrient Reduction Strategy (ANRS)

- Grassroots implementation, local partnerships, science-based approach to nutrient reduction
- Strengthening existing programs
- Promoting voluntary, cost-effective practices
- Adapting strategies over time
- Leveraging financial/technical resources
- Pursuing market-based solutions



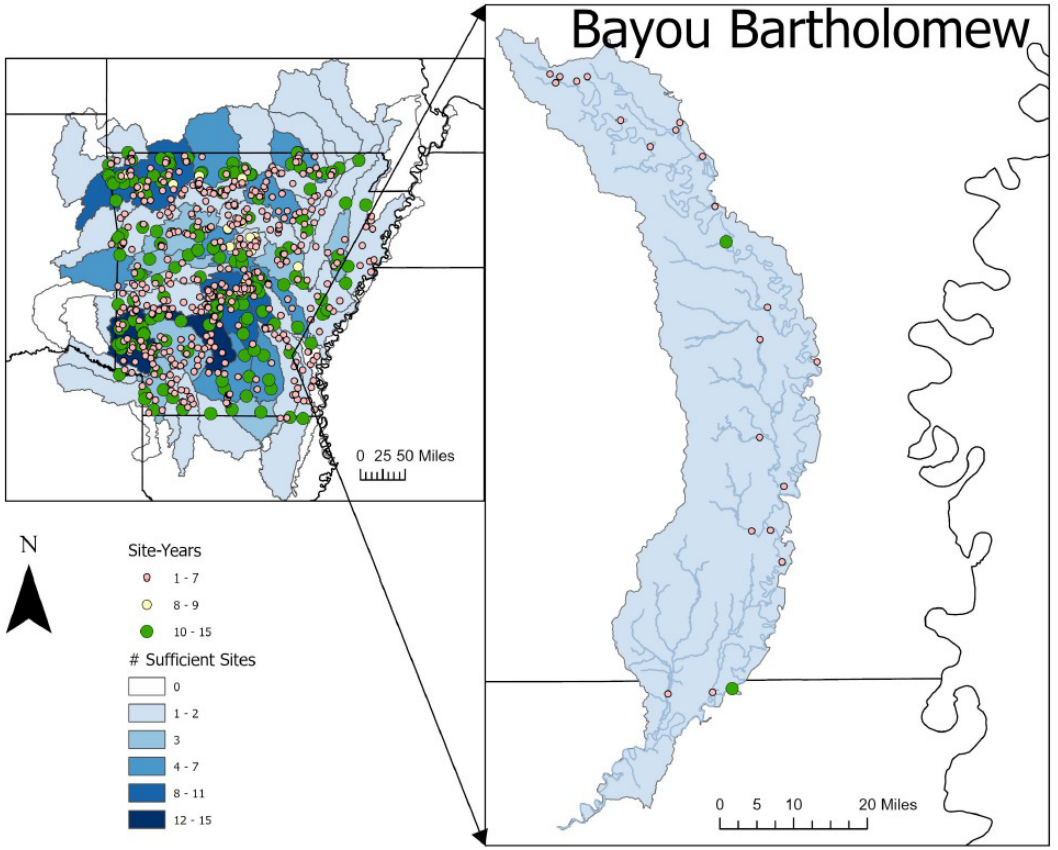
ANRS Progress to Date

1. Increase or maintain downward nutrient trends in Tier 1 watersheds



ANRS Progress to Date

2. Enhance water quality monitoring stations and increase or maintain downward nutrient trends in Tier 2 watersheds



Trend Status: Data Insufficient

- 2 long-term sites were available
- At least 2 additional were needed
- Many limited-data sites as possible candidates for enhanced monitoring
- But none in marginal status

ANRS Progress to Date

3. Continue efforts to reduce nutrients in all watersheds

- Since 2019, BMPs achieved a 2.22% reduction in nitrogen and a 3.85% reduction in phosphorus statewide.
- All 58 HUC-8 watersheds indicated a reduction of total phosphorus after BMP implementation
- 51% of HUC-8 watersheds showing a reduction from baseline.
- Removed 3.89 million pounds of nitrogen and 1.13 million pounds of phosphorus from waterways.

Focusing on EPA Strategic Outcomes

1. Support staff to implement the workplan

2. Reduce nonpoint source nutrient pollution as articulated in state strategies

3. Prioritize and target watersheds with the greatest opportunities for nutrient reductions

4. Collaborate across state boundaries with HTF partners

Ongoing Projects FY22

- FY2022
  - Arkansas State University – Cache River Watershed Monitoring for 2-Stage Ditches, to finish August 2027
  - The Nature Conservancy – Two-stage Ditches: Enhancing Arkansas Ag Drainage in the Upper Cache River Watershed, to finish June 2027
  - ✓University of Arkansas – Using the AWS Program to Achieve State NRS Goals, completed February 2025

Ongoing Projects FY25

- FY 2025
  - Nine projects underway
    - University, nonprofit, watershed alliance, consulting, and state agency partners

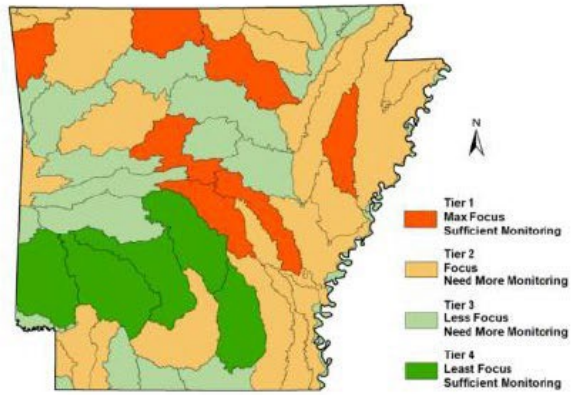
  - Water quality monitoring,
  - ANRS five-year update support,
  - Implementing conservation practices, BMPs, and demonstrations,
  - Farmer outreach campaign, watershed stewardship awareness/education,
  - Wastewater treatment plant optimization plan

Key Accomplishments

- Conservation practice training opportunities aligned with the ANRS to nearly 2,000 participants across 31 counties via the Arkansas Watershed Stewardship Program.

Free Native Tree and Shrub Program for Tier 1 Watershed Landowners

Bare root tree and shrub seedlings used for a streambank erosion problem and associated stream restoration.



Four tiers of watersheds developed using statewide monitoring data.

FARMER LEADERSHIP IN WATERSHED MANAGEMENT
MISSISSIPPI ATCHAFALAYA RIVER BASIN

Become an Arkansas Watershed Steward Today!

Take the online training or request one for the place where you live, scan the QR code or click on the link: https://www.uaex.uada.edu/environment-nature/water/ar-watershed-stewardship.aspx

Free bare-root trees and shrubs are being made available for Tier 1 landowners on a first come first served basis!

Key Accomplishments

- Arkansas 319 funds helped advance key projects in Tier 1 Nutrient Reduction Strategy watersheds, resulting in EPA publication of success stories

NONPOINT SOURCE SUCCESS STORY

Arkansas

Green Infrastructure Improves Water Quality and Changes Public Opinion in Stone Dam Creek Tributary

Figure 1. Aerial site view, before project began in 2021.

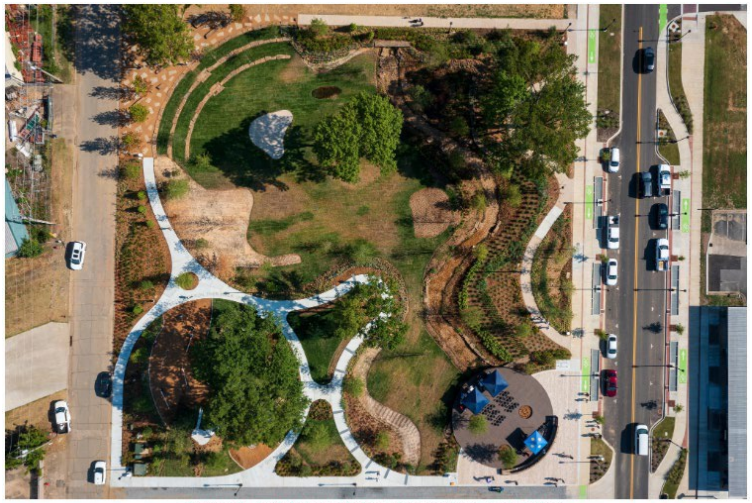


Figure 2. Aerial view of site, after project completion.

NONPOINT SOURCE SUCCESS STORY

Arkansas

Green Infrastructure and Low Impact Development Reduce Pathogens in Clear Creek

Figure 3. Clear Creek Raingarden Project

Key Accomplishments

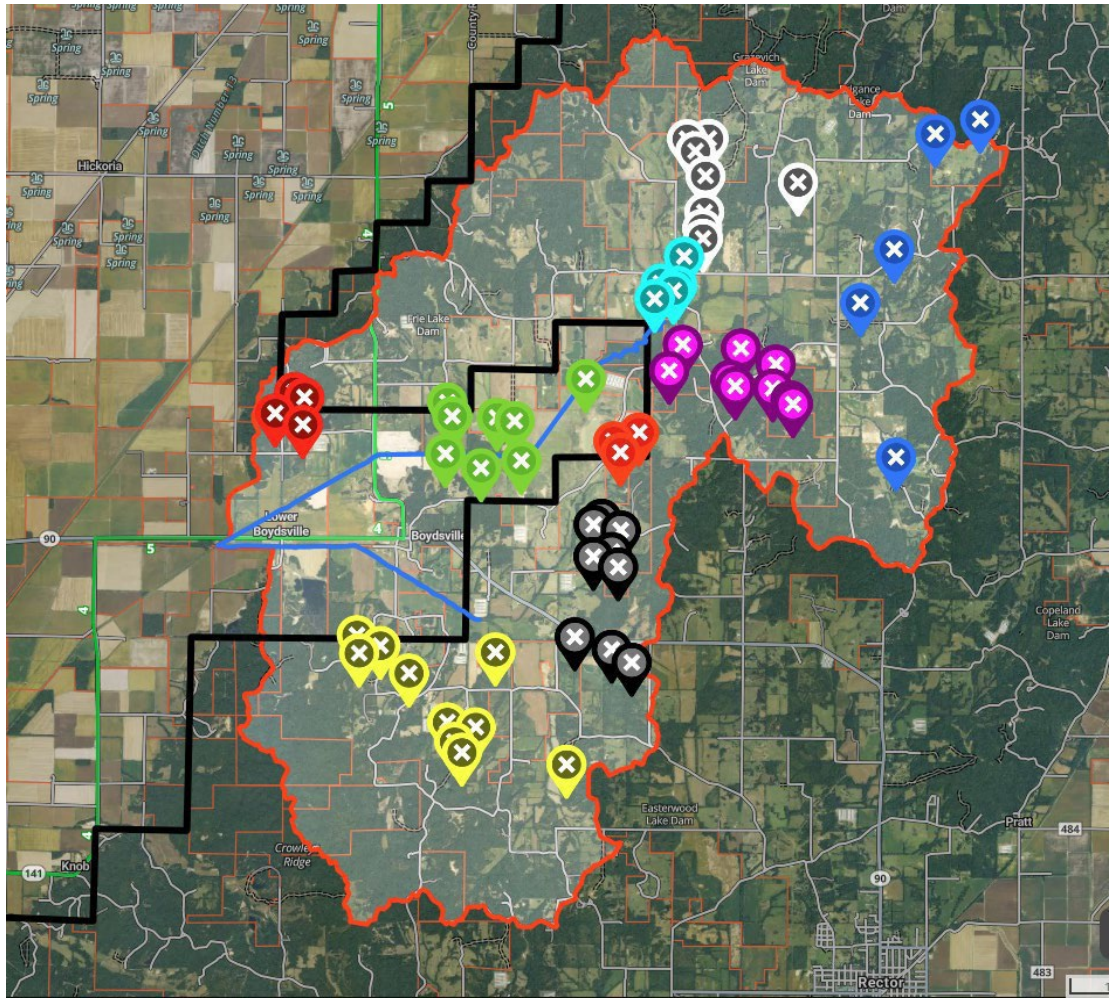
- Construction of over 9,000 linear feet of two-stage ditch in 2025, with an additional 2,600 to 5,200 linear feet planned for 2026.

Before and during two-stage ditch construction near Delaplaine, Arkansas. Banks were vegetated with winter oats and brassica

Cache River Watershed Discussion

Key roadmap findings in Clay County

- Maps identified areas of erosion. **Soil erodibility** and **Steepness** were combined to highlight gullies in the watershed, shown in red.
- **Gullies** greater than 0.5-acre inform the placement of gully remediations.
- Longitudinal profiles of main channels shown where **headcuts** are dropping off within the channel.
- These drop offs will inform the placement of grade controls structures to restore grade to the channel.



Overlaying soil erodibility and steepness in ArcGIS Pro allows for the visualization of key sediment sources hidden under tree lines

Large gullies on Crowley's Ridge contribute a high amount of sediment into the drainage networks of the Upper Cache

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Illinois Nutrient Loss Reduction Strategy Update

Hypoxia Task Force Meeting
February 5, 2026

Trevor Sample
Illinois Environmental Protection Agency

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Illinois
Nutrient Loss Reduction Strategy

RELEASED JULY 2015

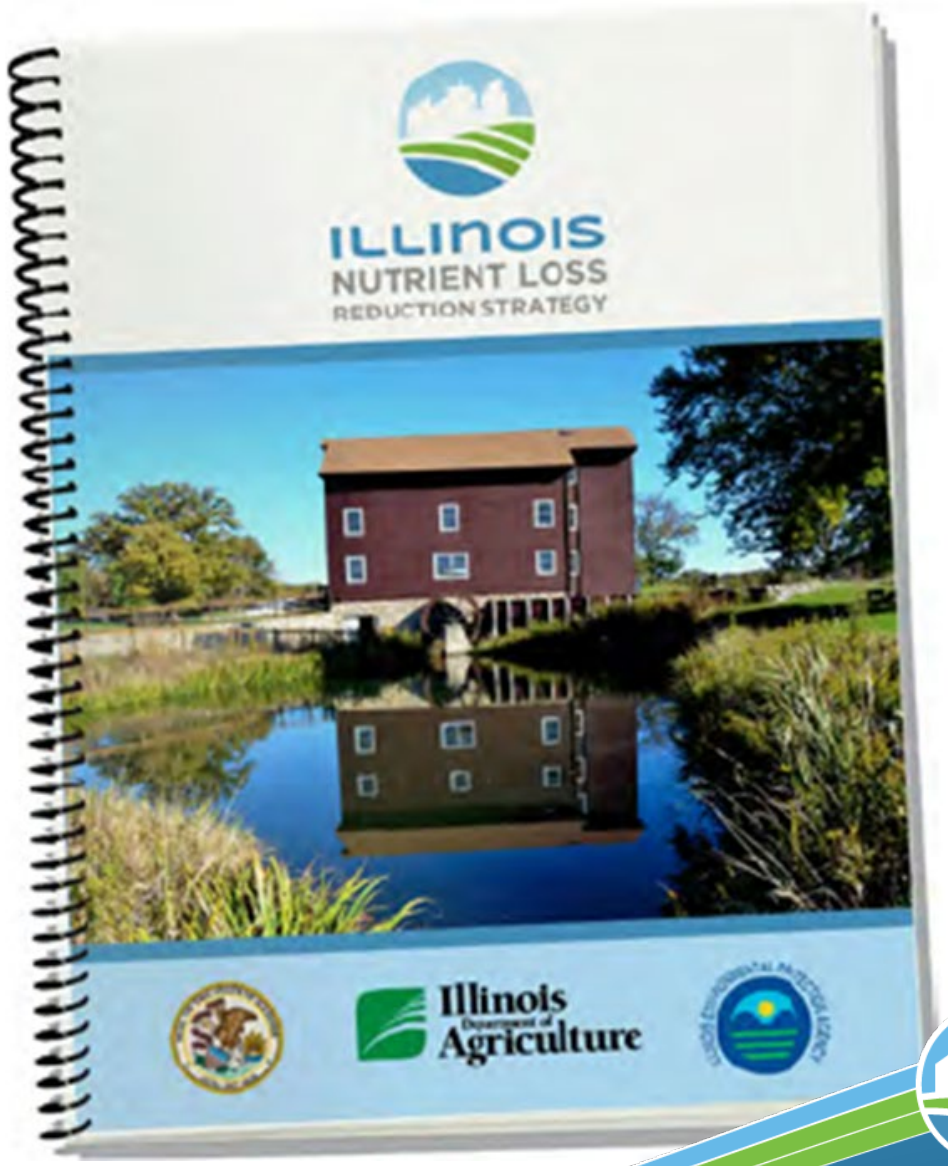
GOALS

45% Reduction of Nitrogen and Phosphorus

Interim Milestone—2025

25% Reduction in Phosphorus Loads

15% Reduction in Nitrate-Nitrogen Loads



ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Illinois Nutrient Loss Reduction Strategy

Addresses nutrient loads from:

Nonpoint Source
(agriculture, streambank erosion)

Point Sources
(wastewater treatment facilities)

Urban Stormwater

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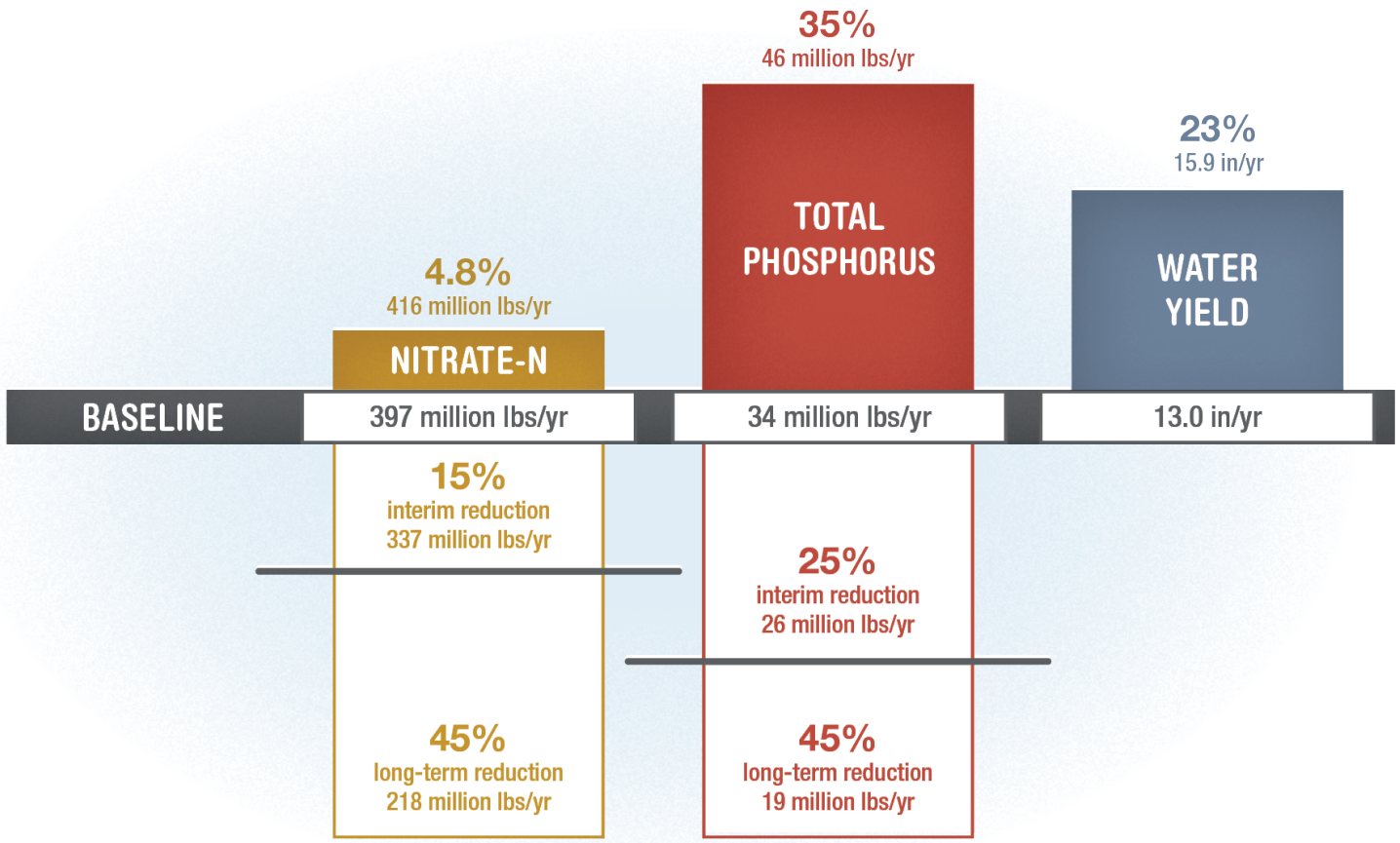
REDUCTION STRATEGY

Water Quality Results 2017-2021 Five Year Average



Statewide loads based on 8 major river systems

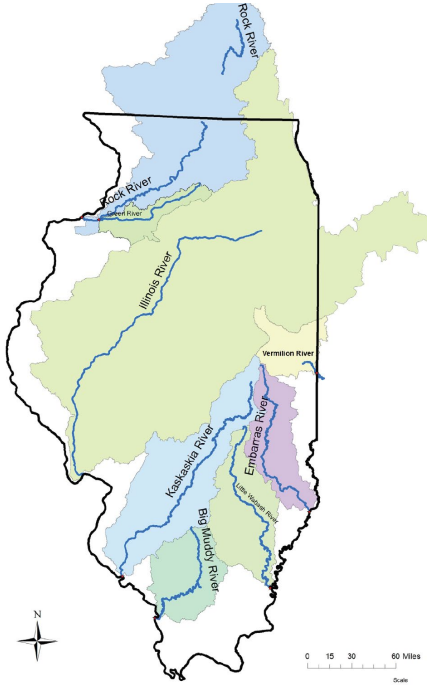


Figure 1.1 *Quantities and percent increases of recent five-year averages (2017–21) of nitrate-nitrogen, total phosphorus, and water yield relative to baseline and to interim and long-term NLRS goals in Illinois.*

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Water Year 2024 Statewide Nutrient Loads

Relative to the 1980-96 baseline:

- WY24 Loads:
  - Total Phosphorus -7%
  - Nitrate -5%
  - Streamflow -11%

Preliminary information-Subject to Revision. Not for Citation or Distribution.

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NUTRIENT LOSS
REDUCTION STRATEGY

Statewide Nutrient Loads--Four and Five year Averages

Relative to the 1980-96 baseline:

- 5-Year Average (2020-2024)
  - Total Phosphorus +12%
  - Nitrate -19%
  - Streamflow +2%

2025 Interim WQ Goals (5 yr avg)

-25% Total Phosphorus

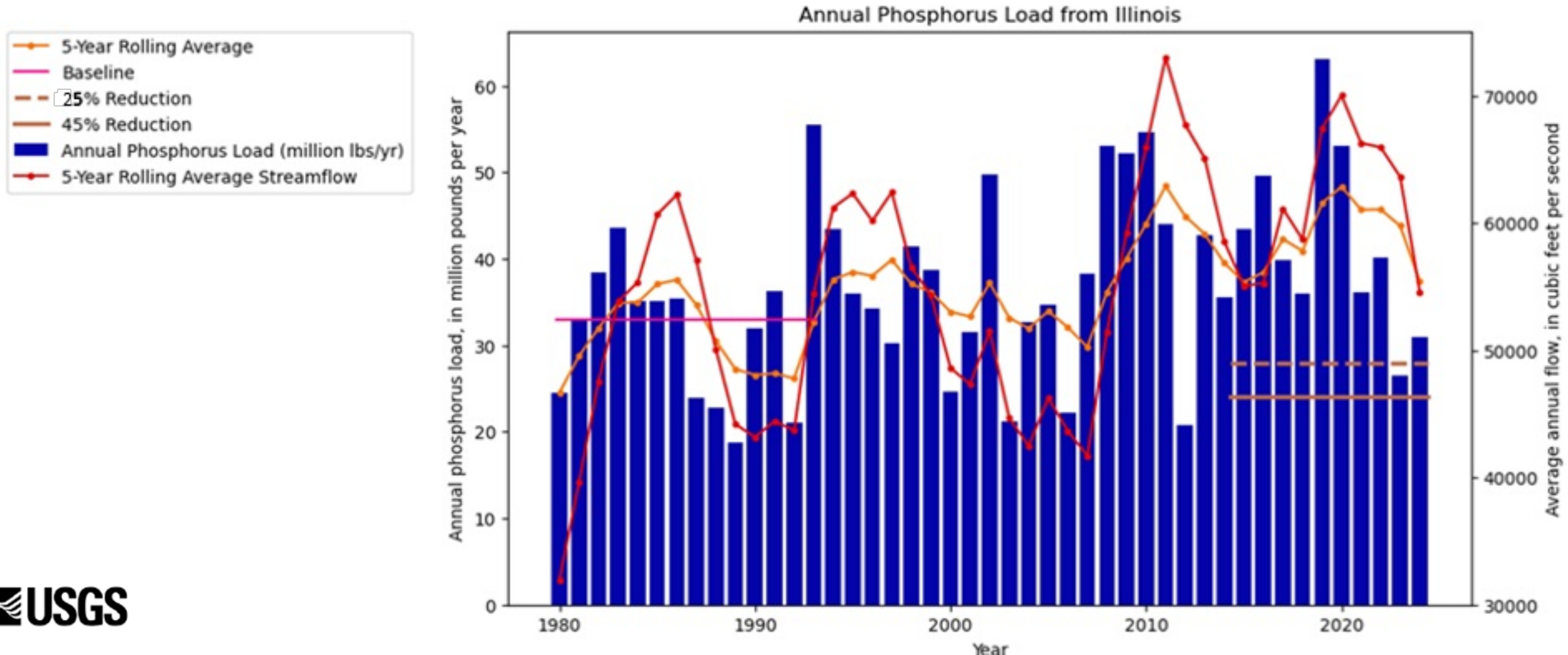
-15% Nitrate

- 4-Year Average (2021-2024)
  - Total Phosphorus no change
  - Nitrate -30%
  - Streamflow -10%

Preliminary information-Subject to Revision. Not for Citation or Distribution.

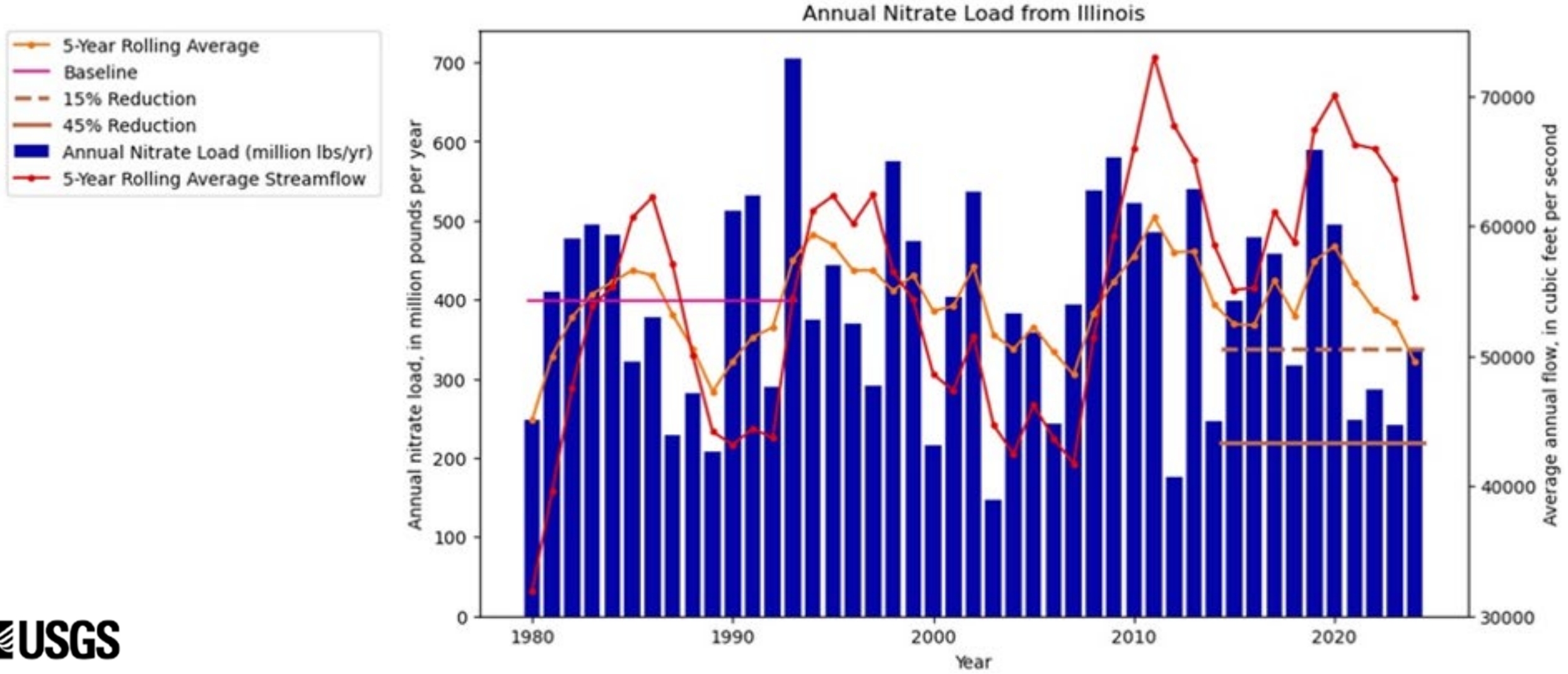
ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Statewide Water Quality Total Phosphorus Loads 1980-2024



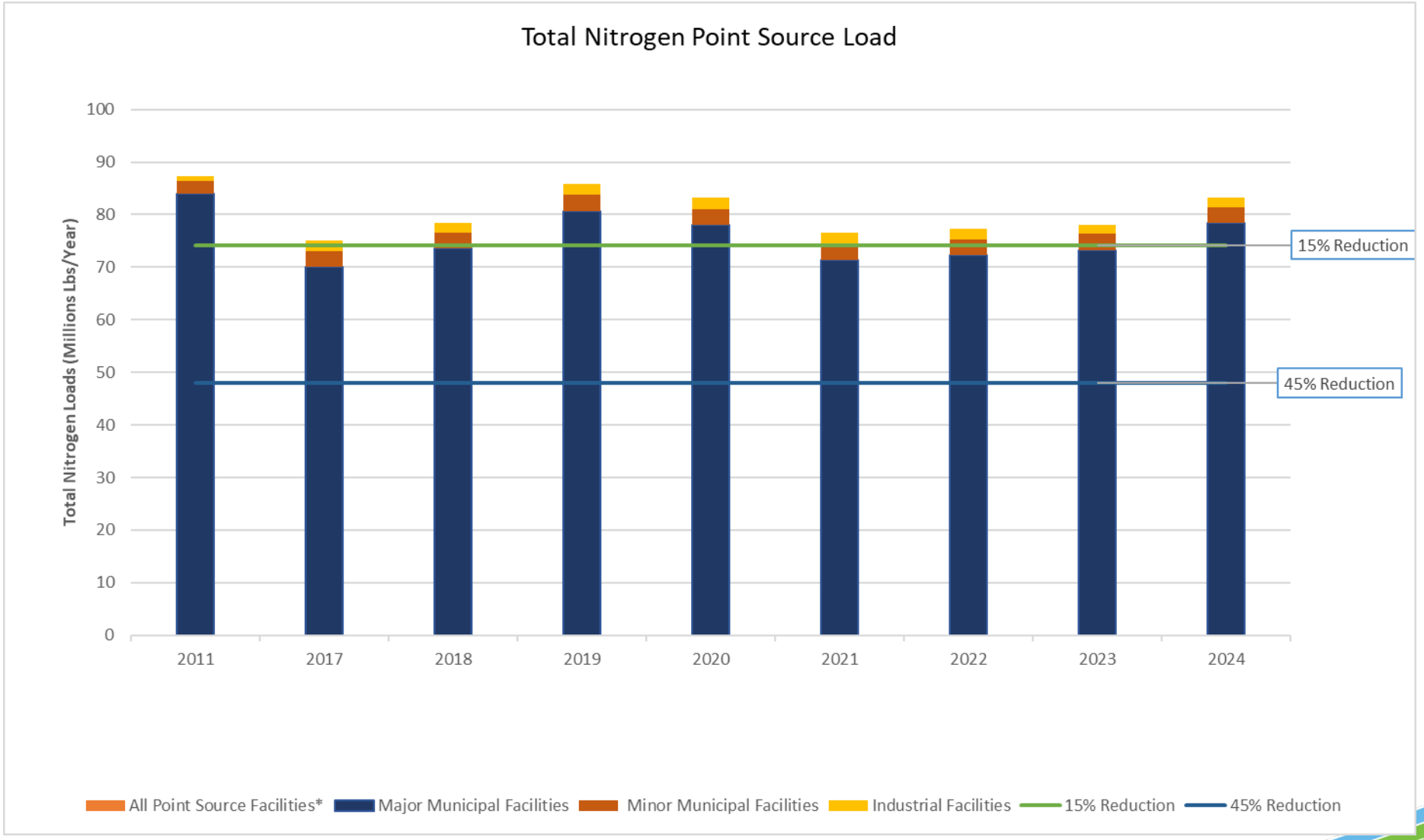
USGS

Statewide Water Quality Nitrate Loads 1980-2024



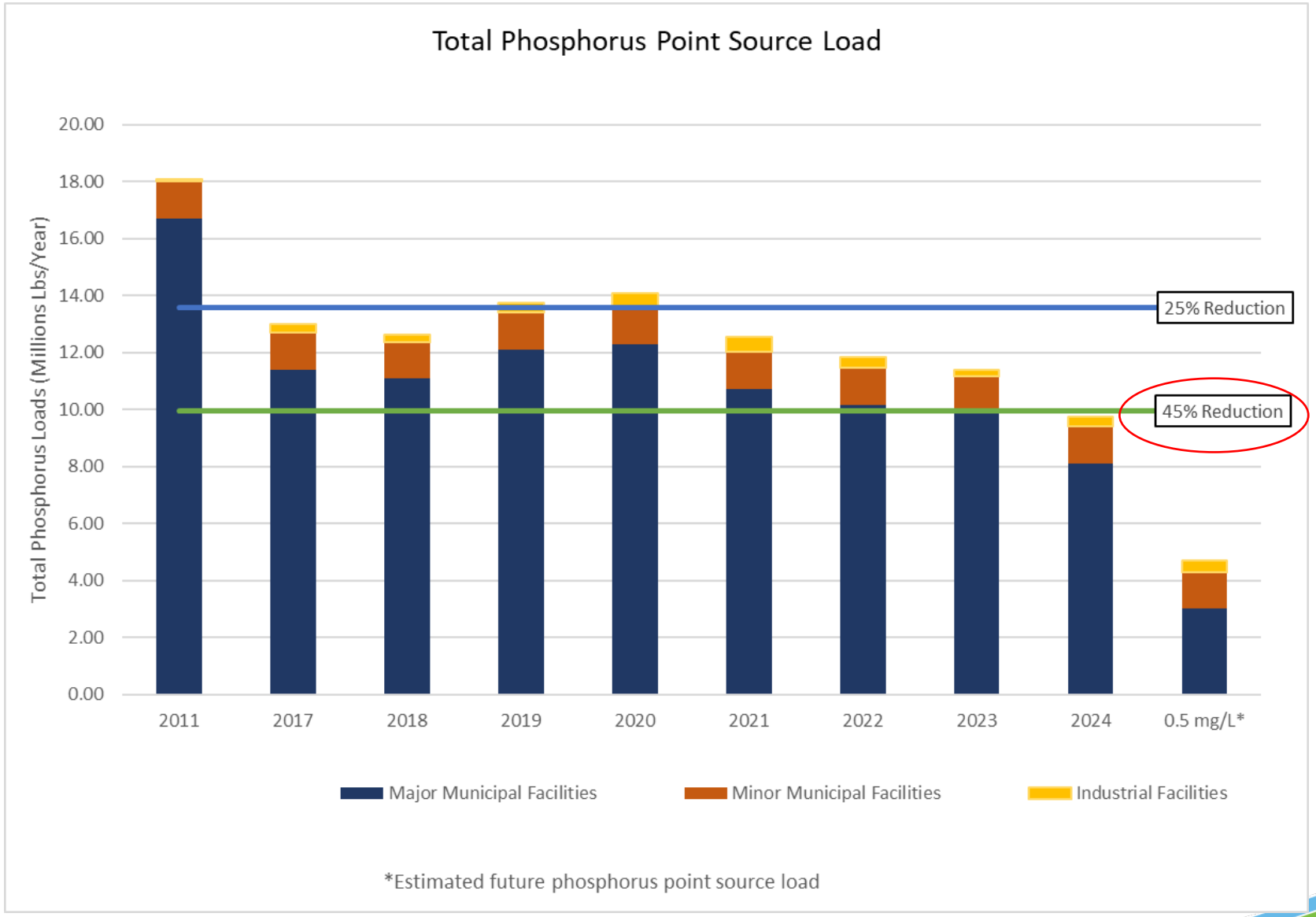
USGS

Illinois Point Source Nutrient Loads



ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Illinois Point Source Nutrient Loads



2024 Total Phosphorus

8.3 million pound reduction (46%)

2023 Major Municipal Loads TP (million pounds/yr)

Arkansas 1.1
Kentucky 1.7
Missouri 5.5

ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Illinois Point Source Nutrient Loads

Total Phosphorus

- 211 Major Municipal Water Reclamation Facilities
  - 60 facilities have annual average 0.5-1.0 mg/L
  - 44 facilities have annual average below 0.5 mg/L
- 60 Nutrient Assessment Reduction Plans
  - Accounts for 152 facilities
- All have completed Optimization and Feasibility Studies

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REDUCTION STRATEGY

NLRS Science Team

- Nutrient contributions from Streambank Erosion
- Updating Agriculture Conservation Practice Performances
- HUC-12 Watershed Nutrient Inventory

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REDUCTION STRATEGY

Illinois Gulf Hypoxia Program

- Work Plan #1 - Completed
  - Priority Watershed Outreach and Planning
  - 2023 Illinois Nutrient Loss Reduction Strategy Biennial Report.
  - United States Geological Survey Continuous Nutrient Monitoring Network
    - 8 Super gages
  - Ag Retail Survey (Crop year 2023)
  - Illinois Department of Agriculture Cover Crop Insurance Premium Discount Program (80,000 additional acres over two years)
  - Illinois Department of Agriculture Groundwater Nitrate Analyzer

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NUTRIENT LOSS
REDUCTION STRATEGY

Illinois Gulf Hypoxia Program

- Work Plan #2
  - United States Geological Survey Continuous Nutrient Monitoring Network
  - Ag Retail Survey (Crop years 2024-2026)
  - Illinois Department of Agriculture Cover Crop Insurance Premium Discount Program (120,000 additional acres over three years)
  - Priority Watershed Implementation Cost-Share
    - Edge-of-Field practices (Woodchip Bioreactors, Saturated Buffers, Constructed Wetlands)
      - Two projects selected

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REDUCTION STRATEGY

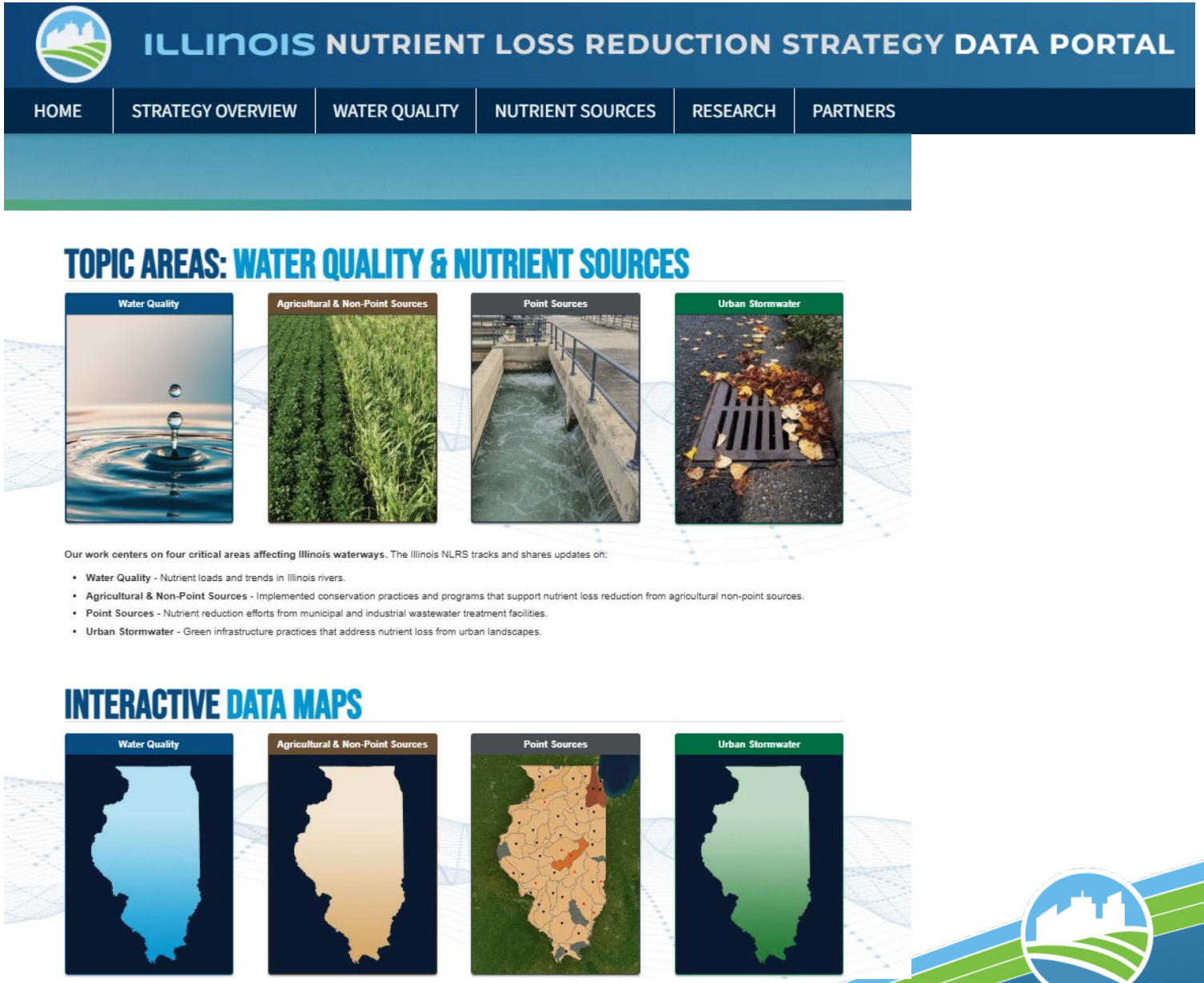
Illinois NLRS Data Portal

- Partnering with National Great Rivers Research and Education Center
  - Great Lakes to Gulf
- Hosted by the University of Illinois National Center for Supercomputing Applications

ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Illinois NLRS Data Portal

- Data Portal will replace Biennial Reports
- Data currently through 2022
- 2023-2025 data will be uploaded this year
- Update annually
- Interactive maps to come
- All data downloadable



ILLINOIS NUTRIENT LOSS REDUCTION STRATEGY

Illinois NLRS Resources

- Illinois EPA NLRS website go.Illinois.edu/NLRS
- Illinois Extension NLRS website https://extension.illinois.edu/nlr
- NLRS Data Portal https://illinois-nlrs.ncsa.illinois.edu/
- NLRS Podcast https://extension.illinois.edu/podcasts/illinois-nutrient-loss-reduction-podcast
- NLRS Blog https://extension.illinois.edu/nlr/blog
- Contact: trevor.sample@illinois.gov

ILLINOIS
NUTRIENT LOSS
REDUCTION STRATEGY

Indiana Update on State Nutrient Reduction Strategy and Gulf Hypoxia Program

Hypoxia Task Force Meeting
Washington, D.C.
February 5th, 2026

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Ophelia Davis – Program Manager, Nutrient Stewardship
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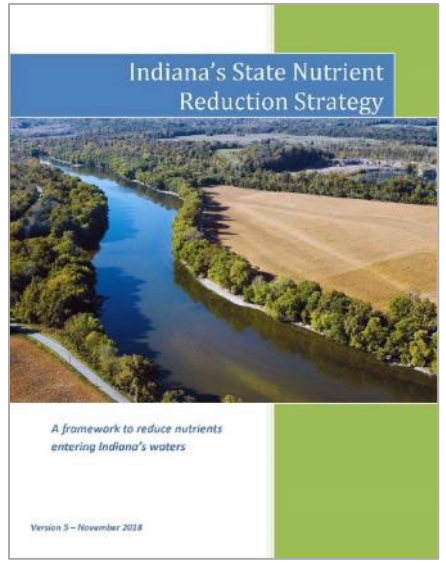
STATE DEPARTMENT OF AGRICULTURE

The State Nutrient Reduction Strategy

- Indiana's State Nutrient Reduction Strategy (SNRS) was developed to "capture statewide, present and future endeavors in Indiana which positively impact the State's waters as well as gauge the progress of conservation, water quality improvement and soil health practice adoption in Indiana".



- The Indiana SNRS represents the state's commitment to reduce nutrient runoff into Indiana's waters from **point** sources and **non-point** sources.





The State Nutrient Reduction Strategy

- Updated version includes:
  - Update on the progress that has been made in the MRB and in the state of Indiana in relation to water quality monitoring,
  - Re-assessment of HUC8 Priority watersheds – all 38 HUC8 watersheds in the state are being prioritized in a tiers,
  - Update on progress of our Indiana Science Assessment for:
    - Determining water quality trends
    - Determining effectiveness of conservation practices on improving water quality
  - Emphasize of the importance of a system of conservation practices since each practice treats nutrients differently, so therefore a system of conservation practices treats nutrient runoff more effectively.
  - Update to the multiple programs and initiatives available that support nutrient reduction.
  - Update on how we measure progress and share success stories.

Overview of GHP Dollars

- The Indiana GHP workplans covers several focus areas:
  1) Expanding **staff capacity** and supporting staff.
  2) Development and expansion of a **soil sampling program** aimed at increasing 4R nutrient stewardship, nutrient use efficiency on Indiana farmland.
  3) Support for the **Indiana Nutrient Research and Education Program (INREP)** which continues and expands upon the work of the Indiana Science Assessment in quantifying nutrient reduction from conservation practices and determining conservation practice effectiveness toward improving water quality.
  4) Support of the Cover Crop Premium Discount Program.
  5) Support to USGS to continue water quality monitoring at important sampling locations in Indiana.

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1) Strengthening Indiana's Nutrient Stewardship Through Staff Capacity

- In Fall 2023, grant funding supported the creation of a **Nutrient Stewardship Program Manager** position to strengthen program administration and coordination.
- This role expanded ISDA's capacity to manage BIL-GHP funds, administer the soil sampling program, and support statewide nutrient reduction and conservation efforts.
- Due to its value and impact, the position was absorbed as a permanent, full-time role within the Indiana State Department of Agriculture in Summer 2025, ensuring long-term program continuity well into the future.

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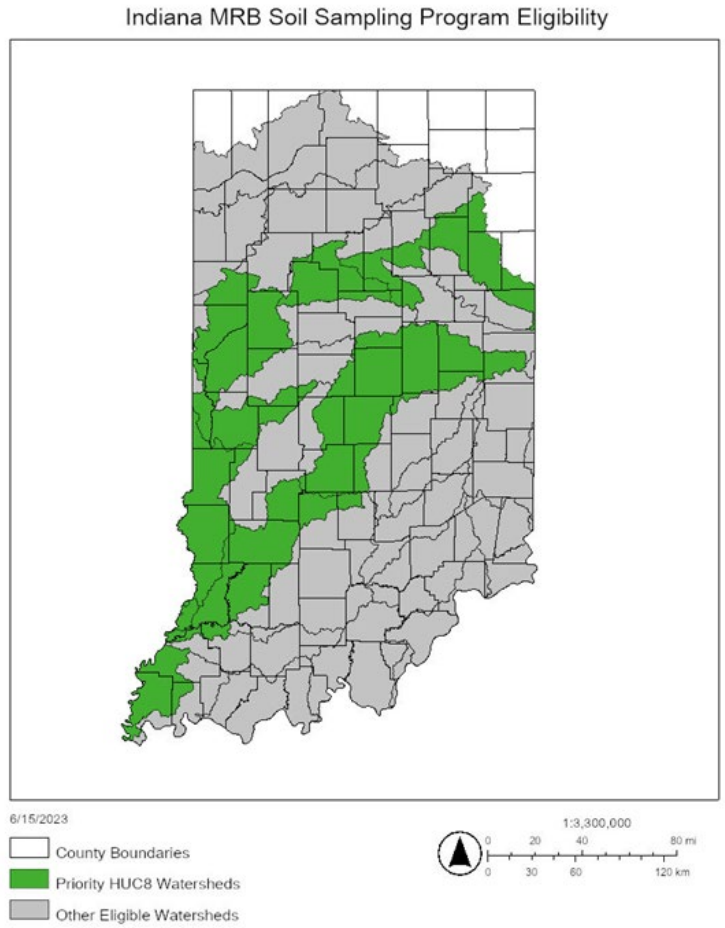
2) Soil Sampling Program

- Expand soil testing and soil sampling to guide nutrient management decisions, improve nutrient use efficiency and 4R stewardship, and support water quality, environmental, and climate benefits across Indiana farmland.
  - **Program Launch**: September 2023
  - **Partners**: Indiana Conservation Partnership members, Certified Crop Advisors (CCA), Ag Retailers, Indiana Agriculture Nutrient Alliance, Labs, and Landowners/Producers.
  - **Implementation**: ISDA Technical Staff & Private Sector; focus on smaller-scale growers who may not be sampling or not sampling regularly.
  - **Education**: Public meetings and workshops focused soil fertility, nutrient management, and importance of soil health/water quality for stakeholders, partners, and landowners/renters.



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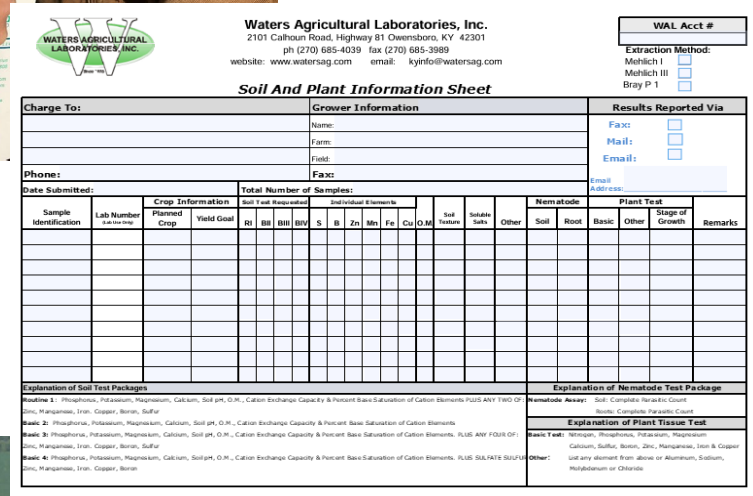
Soil Sampling Program Success

- **September 2023 (fall only) - April 2026**: spring and fall rounds of registration periods.
- Eligible if able to prioritize **100 acres** or less of production ag acreage within the MRB and 1) have never soil tested, OR 2)haven't soil tested within the last 3-4 years, OR 3) have recently acquire acreage.
- **Progress**: Nearly 83,500 production agriculture acres across 814 farms have been sampled by ISDA staff and partners to date.
  - Majority of participants have been indicating they have never soil tested.
  - ISDA has strong partnerships in place with Ag Retailers and Crop Advisors to assist with soil sampling and agronomic support – number above reflect these partnerships.



Waters Agricultural Laboratories, Inc.
2101 Calhoun Road, Highway 81 Owensboro, KY 42301
ph (270) 685-4039 fax (270) 685-3989
website: www.watersag.com email: kyinfo@watersag.com

WAL Acct #

Extraction Method:
Mehlich I
Mehlich III
Bray P 1

Soil And Plant Information Sheet

Charge To:

Grower Information
Name:
Farm:
Field:

Phone:
Fax:

Results Reported Via
Fax:
Mail:
Email:
Email Address:

Date Submitted:
Total Number of Samples:

Sample Identification	Lab Number (Lab Use Only)	Crop Information: Planned Crop	Crop Information: Yield Goal	Soil Test Requested: BI	BII	BIII	BIV	Individual Elements: S	B	Zn	Mn	Fe	Cu	O.M.	Soil Texture	Soluble Salts	Other	Nematode: Soil	Nematode: Root	Plant Test: Basic	Plant Test: Other	Plant Test: Stage of Growth	Remarks

Explanation of Soil Test Packages

Routine 1: Phosphorus, Potassium, Magnesium, Calcium, Soil pH, O.M., Cation Exchange Capacity & Percent Base Saturation of Cation Elements PLUS ANY TWO OF: Zinc, Manganese, Iron, Copper, Boron, Sulfur

Basic 2: Phosphorus, Potassium, Magnesium, Calcium, Soil pH, O.M., Cation Exchange Capacity & Percent Base Saturation of Cation Elements

Basic 3: Phosphorus, Potassium, Magnesium, Calcium, Soil pH, O.M., Cation Exchange Capacity & Percent Base Saturation of Cation Elements. PLUS ANY FOUR OF: Zinc, Manganese, Iron, Copper, Boron, Sulfur

Basic 4: Phosphorus, Potassium, Magnesium, Calcium, Soil pH, O.M., Cation Exchange Capacity & Percent Base Saturation of Cation Elements. PLUS SULFATE SULFUR

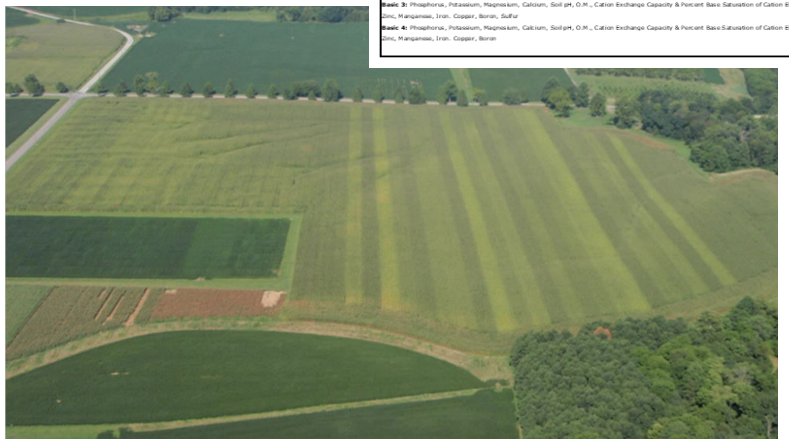
Explanation of Nematode Test Package

Nematode Assay: Soil: Complete Nora-Env Count
Roots: Complete Parasitic Count

Explanation of Plant Tissue Test

Basic Test: Nitrogen, Phosphorus, Potassium, Magnesium Calcium, Sulfur, Boron, Zinc, Manganese, Iron & Copper

Other: List any element from above or Aluminum, Sodium, Molybdenum or Chloride.



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3) Indiana Nutrient Research and Education Program (INREP)

Enhancing the scientific foundation for informing and improving nutrient stewardship in Indiana.

Purpose: to continue and expand the work of the Indiana Science Assessment

- INREP will be based at Purdue and include scientists and agencies from across Indiana.
- Goals are to:
  1. Sustain and strengthen the network of scientists and agencies collaborating to provide the scientific foundation for the Indiana SNRS and related conservation and education efforts.
  2. Lead a continual process of refining and improving the Science Assessment.
  3. Increase the availability of data from Indiana research on nutrient loss reduction.
  4. Synthesize and deliver the knowledge to conservation partners and the agricultural community.

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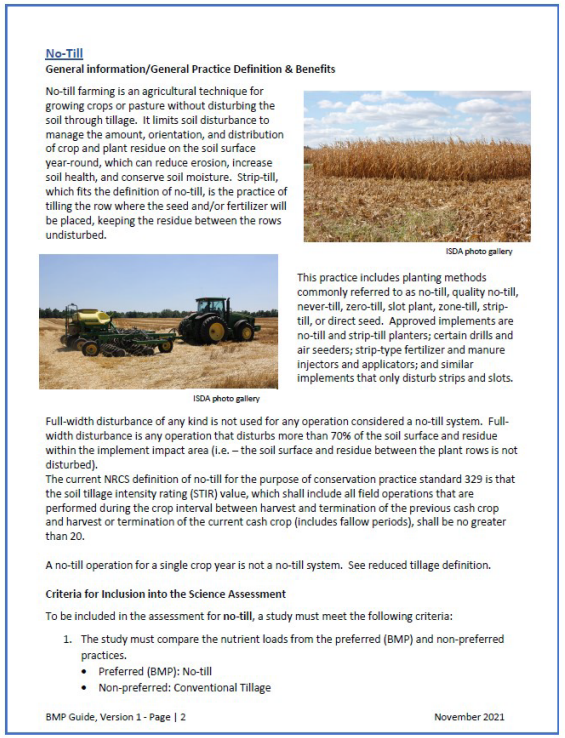
Products of the Science Assessment (Component 2)

1) Document of Practice Definitions;
2) A tool that will calculate practice effectiveness for new practices implemented in the state and improve the current method to calculate and track nutrient reduction;
3) A table that will report effectiveness of each practice;
4) Practice Fact Sheets for each practice



No-Till

General information/General Practice Definition & Benefits

No-till farming is an agricultural technique for growing crops or pasture without disturbing the soil through tillage. It limits soil disturbance to manage the amount, orientation, and distribution of crop and plant residue on the soil surface year-round, which can reduce erosion, increase soil health, and conserve soil moisture. Strip-till, which fits the definition of no-till, is the practice of tilling the row where the seed and/or fertilizer will be placed, keeping the residue between the rows undisturbed.

ISDA photo gallery

ISDA photo gallery

This practice includes planting methods commonly referred to as no-till, quality no-till, never-till, zero-till, slot plant, zone-till, strip-till, or direct seed. Approved implements are no-till and strip-till planters; certain drills and air seeders; strip-type fertilizer and manure injectors and applicators; and similar implements that only disturb strips and slots.

Full-width disturbance of any kind is not used for any operation considered a no-till system. Full-width disturbance is any operation that disturbs more than 70% of the soil surface and residue within the implement impact area (i.e. – the soil surface and residue between the plant rows is not disturbed).
The current NRCS definition of no-till for the purpose of conservation practice standard 329 is that the soil tillage intensity rating (STIR) value, which shall include all field operations that are performed during the crop interval between harvest and termination of the previous cash crop and harvest or termination of the current cash crop (includes fallow periods), shall be no greater than 20.

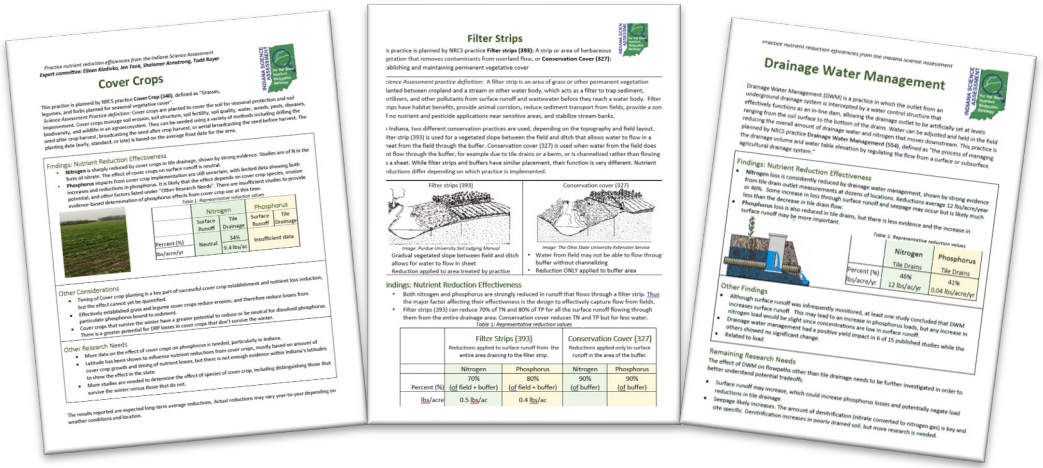
A no-till operation for a single crop year is not a no-till system. See reduced tillage definition.

Criteria for Inclusion into the Science Assessment

To be included in the assessment for **no-till**, a study must meet the following criteria:

1. The study must compare the nutrient loads from the preferred (BMP) and non-preferred practices.
   - Preferred (BMP): No-till
   - Non-preferred: Conventional Tillage

BMP Guide, Version 1 - Page | 2 November 2021



4 & 5) Support for CCPDP and to USGS

- Cover Crop Premium Discount Program
  - Funds support this program to target first time cover crop users in an effort to expand awareness and the adoption of cover crops as a management tool to improve farm resiliency.
  - Partner with The Nature Conservancy and the USDA Risk Management Agency.

- Support USGS Gages at 4 specific locations within the MRB system in Indiana to allow for continuation of monitoring for sediments and nutrients in order to keep long-term data collection going and support efforts of the Indiana Science Assessment.

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HTF – Iowa Updates

2026 Hypoxia Task Force Meeting

February 5, 2026

IOWA DEPARTMENT OF
AGRICULTURE &
LAND STEWARDSHIP

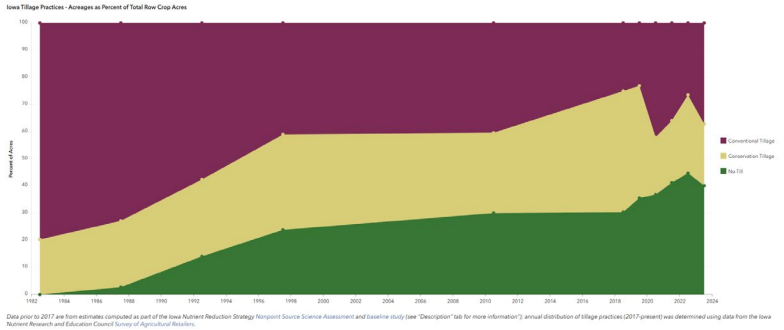
Nutrient Reduction Strategy

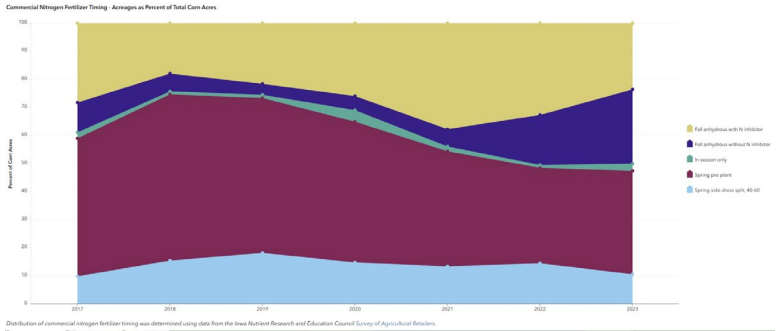
NPS - New and On-going Efforts

		1980-96 Baseline Load (tons)	2006-10 Benchmark Load (tons)	Change, 1980-96 to 2006-10		Major cause of change
Nitrogen	NPS	278,852*	293,395	5.2%	Increase	Land use change
	PS	13,170	14,054	6.7%	Increase	Flow increase
	Total	**292,022**	**307,449**	**5.3%**	**Increase**	
Phosphorus	NPS	21,436	16,800	21.6%	Decrease	Reduced tillage and soil test P
	PS	2,386	2,623	9.9%	Increase	Flow increase
	Total	**23,822**	**19,423**	**18.5%**	**Decrease**	

*The method used to derive the total nitrogen estimate of 292,022 tons indirectly reflected the point source contributions.

- Progress in advancing soil conservation and P reduction efforts
  - Historical effort to reduce soil loss (BMPs, reduced tillage, etc.) and improved P mgmt
  - Need to continue to maintain and grow these areas!
- Momentum on in-field practices, especially cover crops, due to alignment within multiple groups and efforts – AND less barriers to adoption than other practices (many of those have been worked through early on (RMA, seed availability, seeding dates/rates, etc.)
- More effort on N – recent, long-term investments are enabling scale-up of these key practices. Plenty of headwinds being and will be experienced
  - N Management - N Initiative https://www.agron.iastate.edu/portfolio/iowa-nitrogen-initiative/, 4Rs, etc.
  - EOF/Conservation Drainage Practices – Saturated Buffers, Bioreactors, Multi-purpose Oxbows, DWM, Water Quality Wetlands.
  - New/Emerging methods –DWR, Working Lands (rotations, perennials, etc.)

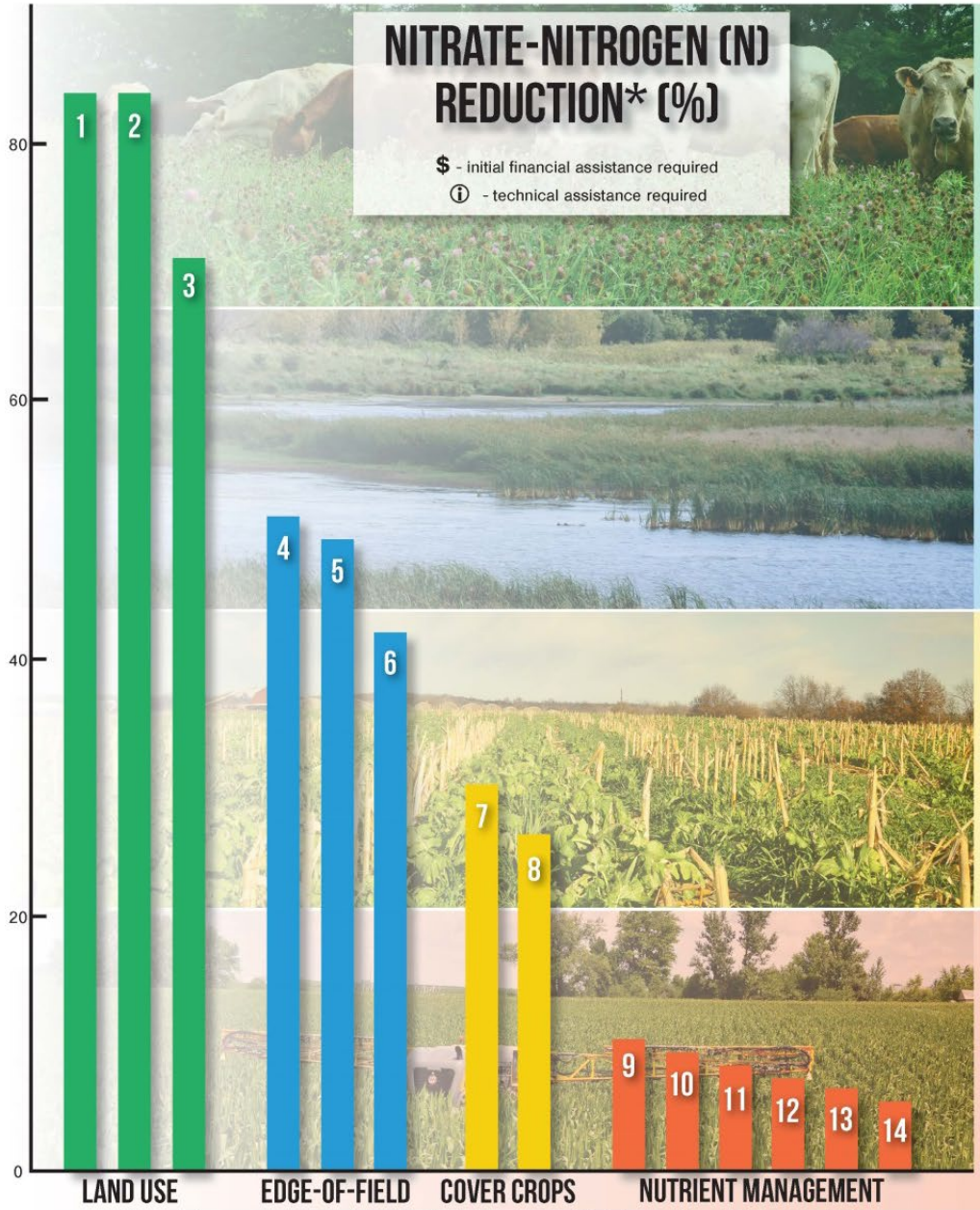




NITRATE-NITROGEN (N) REDUCTION* (%)

$ - initial financial assistance required

ⓘ - technical assistance required



LAND USE

$ $ $ ⓘ ⓘ ⓘ

Long-term transition of working lands, marginal lands, or unprofitable acres (areas with disproportionate benefits, like buffers) to conservation-focused management with added habitat benefits. Leverage federal and state dollars in form of incentives, cost share, and easements.

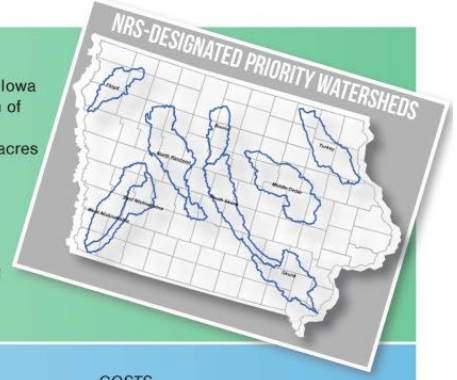
1. Pasture
2. Land Retirement/Buffers
3. Perennial Crops

NEXT STEPS

> Explore establishment of new Iowa program for long-term transition of working lands, marginal lands, or unprofitable acres into perennial crops

COSTS

> Long-term land-use change requires significant investment, though technical assistance will be less in comparison



EDGE-OF-FIELD

$ $ $ ⓘ ⓘ ⓘ

Prioritize infrastructure-based conservation practices that are placed at edge of fields to provide significant, longer-term nutrient reduction and additional habitat benefits. Additional funding available through state and federal programs, but historically underserved.

4. Wetlands
5. Saturated Buffers
6. Bioreactors

NEXT STEPS

> Provide access to low/no-interest loan programs or state revolving loan fund for EOF infrastructure paired with drainage system repairs or replacements
> Expand EOF water monitoring and scale of delivery
> Targeted, streamlined cost-share reflecting appropriate landowner financial commitment based on where benefits accrue

COSTS

> Financial Assistance: Longer-term, capital-intensive infrastructure requires larger upfront investments, but when compared to acres treated and load reduction over time, EOF is more cost effective than land retirement
> Technical Assistance: Need to increase in order to scale up these practices and make other adjustments

COVER CROPS

$ $ $ ⓘ ⓘ ⓘ

Use as part of a cropping system to prevent erosion, increase soil health, suppress weeds, break pest cycles, and supply nutrients. Funding available through federal and state cost-share.

7. Overwintering Cover Crop
8. Non-Overwintering Cover Crop

NEXT STEPS

> Expand targeting to specific regions of the state, cropping systems, and watersheds
> Provide longer-term access to funding practices over various weather and cropping patterns

COSTS

> Financial Assistance: Expanded usage to targeted areas of need
> Technical Assistance: Leverage and build agriculture professionals' expertise to spread understanding and adoption

NUTRIENT MANAGEMENT

$ $ $ ⓘ ⓘ ⓘ

The 4Rs: right rate, right source, right placement, right timing. Highly variable estimated load reduction due to weather, application, yield, etc. State and federal funds available, but largely driven by private sector.

9. MRTN Rate
10. Nitrapyrin
11. Sidedress N
12. Fall to Spring N
13. Spring Pre/Sidedress
14. Sidedress (Soil Test)

NEXT STEPS

> Expand public-private partnership user agreements with retailers, CCAs, and others to expand 4Rs and related nutrient management practices and other important programs

COSTS

> Financial Assistance: Less economic investment because of protential increase in nutrient-use efficiency
> Technical Assistance: Enhance and increase partnerships with agriculture professionals to coordinate improved nutrient management on a greater scale

*Actual reductions may vary year to year, but are based on the best science available for Iowa conditions. Reductions are not additive.

Nutrient Reduction Strategy
highlights

- Iowa communities beneft from Ag and Iowa Ag benefits from our communities – jobs, industry, food, fiber, fuel
- Enabling Conditions to support implementation efforts
    - Create opportunity for innovation and collaboration: Many partners want to engage and be a part of these efforts in their areas.
        - Don’t expect someone else to do it. Likewise ALLOW partners to help implement projects!
    - Need more people working on this and more reason to engage/benefit: Nutrient Reduction Exchange, Soil and Water Outcomes Fund, practices that achieve multiple benefits, interest in practices that benefit a critical watershed, location and/or landscape.

Launched in 2025

- ISU launched NFACT tool

https://n-fact.ag/start

- Streamside Buffer Initiative
- Updated NRS

https://www.nutrientstrategy.iastate.edu/documents

- Updated NRS Dashboard Reporting:

https://nrstracking.cals.iastate.edu/tracking-iowa-nutrient-reduction-strategy

NFACT

IOWA STATE UNIVERSITY

GHP Workplan 1– Conservation Agronomists

Leverage trusted advisors for conservation practice delivery

Credit Iowa Agriculture Water Alliance

Build network with individuals/organizations that farmers are familiar in working with and trust

Adapted from similar efforts and addressed challenges

Currently 16 CAs up from 8 in 2022. In part from GHP funding.

Key partners include: Agriculture's Clean Water Alliance, Heartland Cooperative, City of Cedar Rapids, Iowa Soybean Association, Landus, NEW Cooperative, AgState, Gold-Eagle Cooperative, NRCS, and many others!

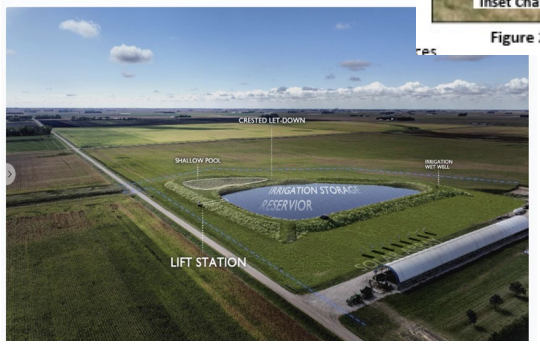
To date, CAs through this project have directly been involved with 130k acres of cover crops, 98 EOF practices, 200k acres of improved nutrient mgmt., and 75k acres of reduced tillage

GHP Workplan 2– Priority & Emerging Practices

Address barriers to implementation and advance new/innovative practices

Figure 1. Wilkin CD-44, S. Br. Buffalo River

Figure 2. Constructed Two-Stage Ditch



Credit ISG

- **Started summer of 2025**
- **Dedicated funding to demonstrate new/emerging practices in Iowa**
- **Additional support to address barriers to implementation of priority practices**
- **Advance optimization efforts for reducing nutrient losses at point source facilities**

Kentucky Nutrient Strategy

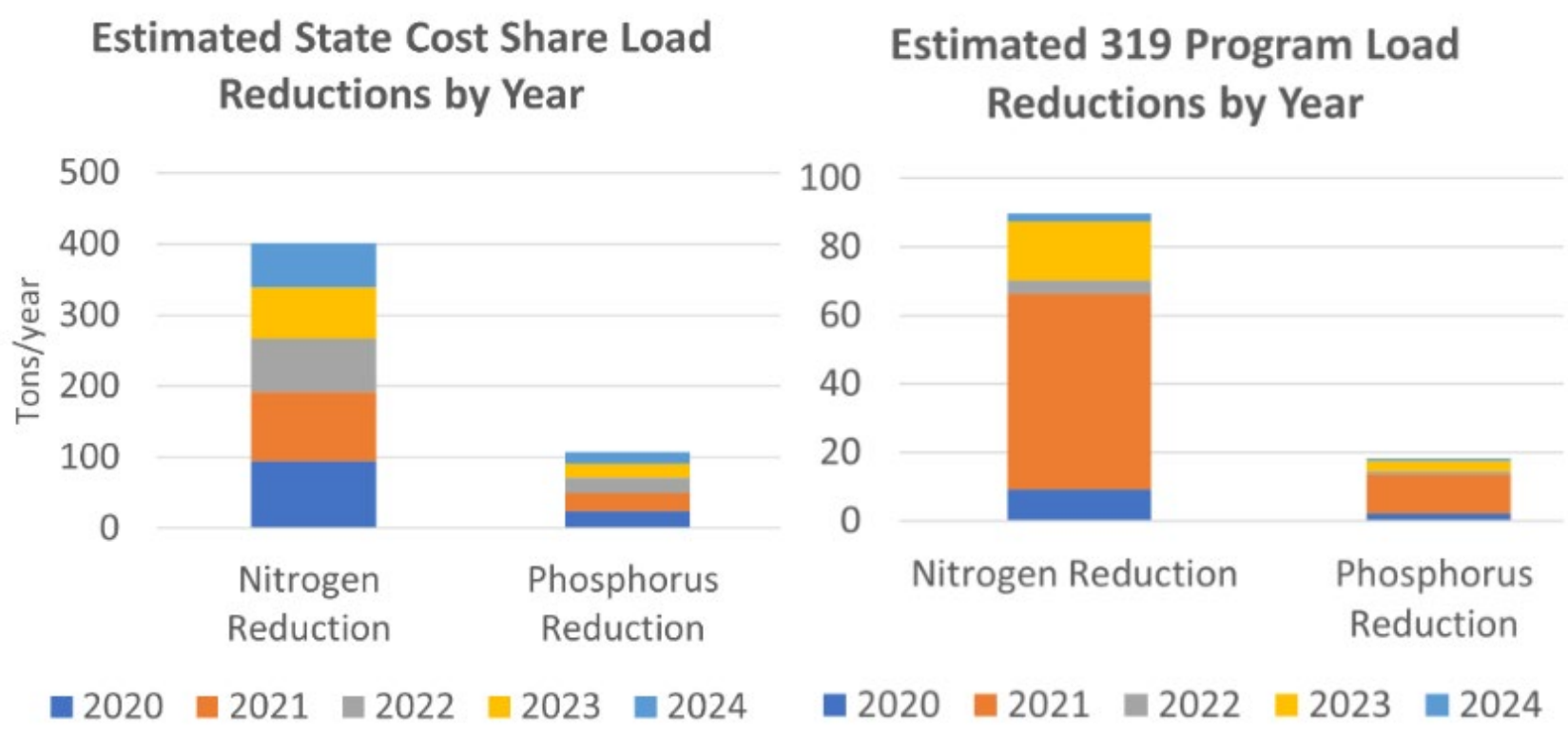
Hypoxia Task Force Update

Josiah Frey
Kentucky Division of Water

TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

Kentucky's Biennial Report

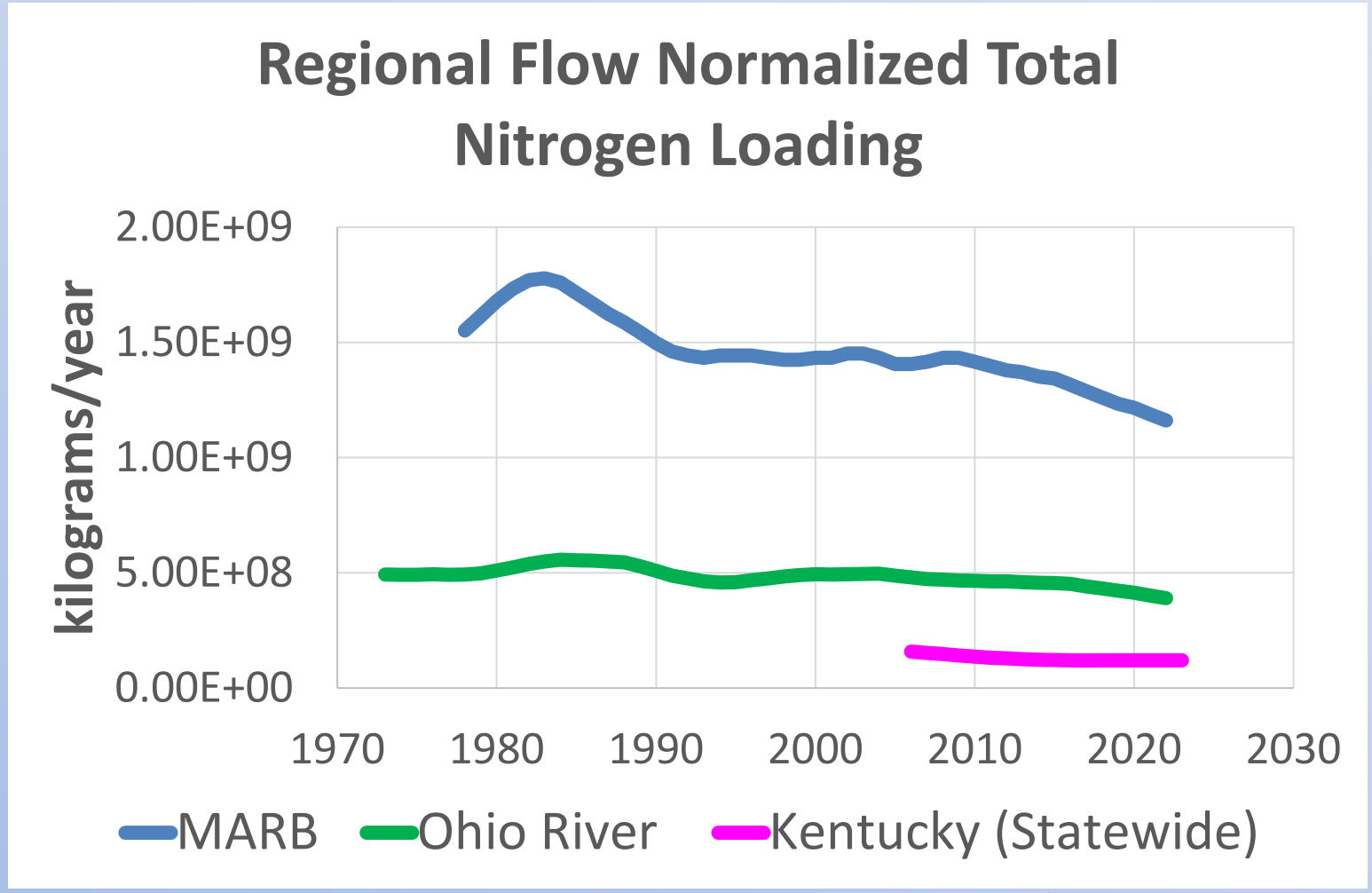
- Reporting on progress since 2022 Nutrient Reduction Strategy release



State Cost Share Nutrient Load Reductions (left) and Implementation in Nutrient Priority Areas (right)

TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

2024 Nutrient Loading Study



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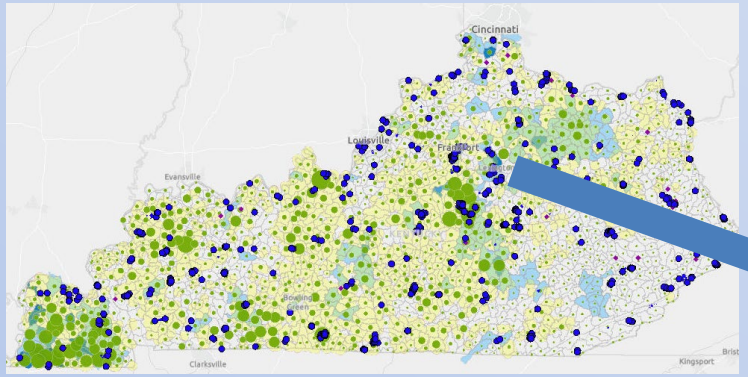
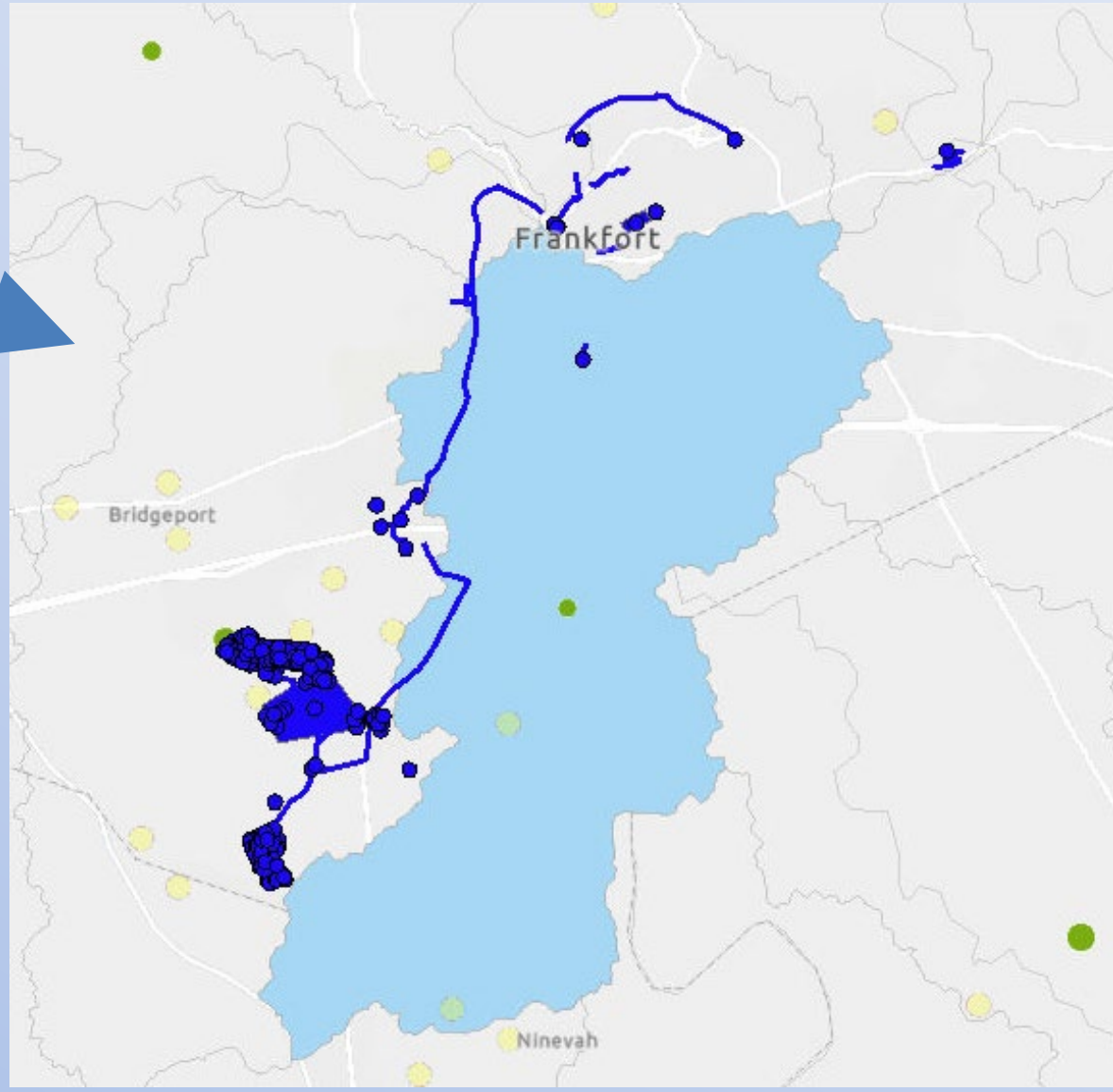
ENERGY AND ENVIRONMENT CABINET

Tracking Kentucky Investments





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ENERGY AND ENVIRONMENT CABINET

Optimization Progress

- About 100 major facilities
- Over 28 permits issued with optimization requirements
  - >15 audits completed or scheduled
  - 13 declined or deferred
- 9 facilities requested voluntary audits

~24% facilities participating in the first year!

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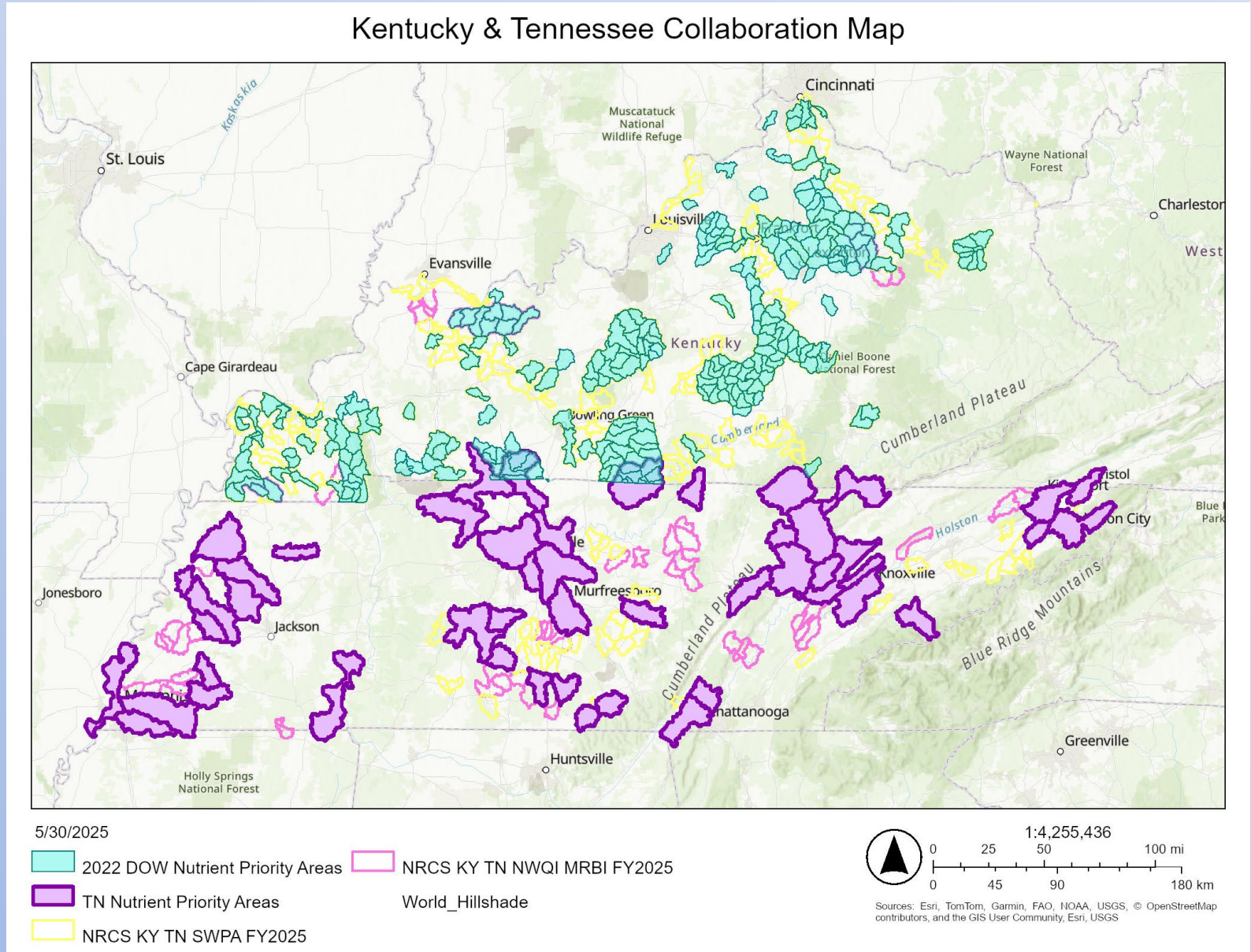
ENERGY AND ENVIRONMENT CABINET

Collaboration Tools



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ENERGY AND ENVIRONMENT CABINET

Mississippi River Gulf of America Watershed Nutrient Task Force

Break: Public Meeting will reconvene at 3:20pm

State Nutrient Reduction Strategy Outcomes

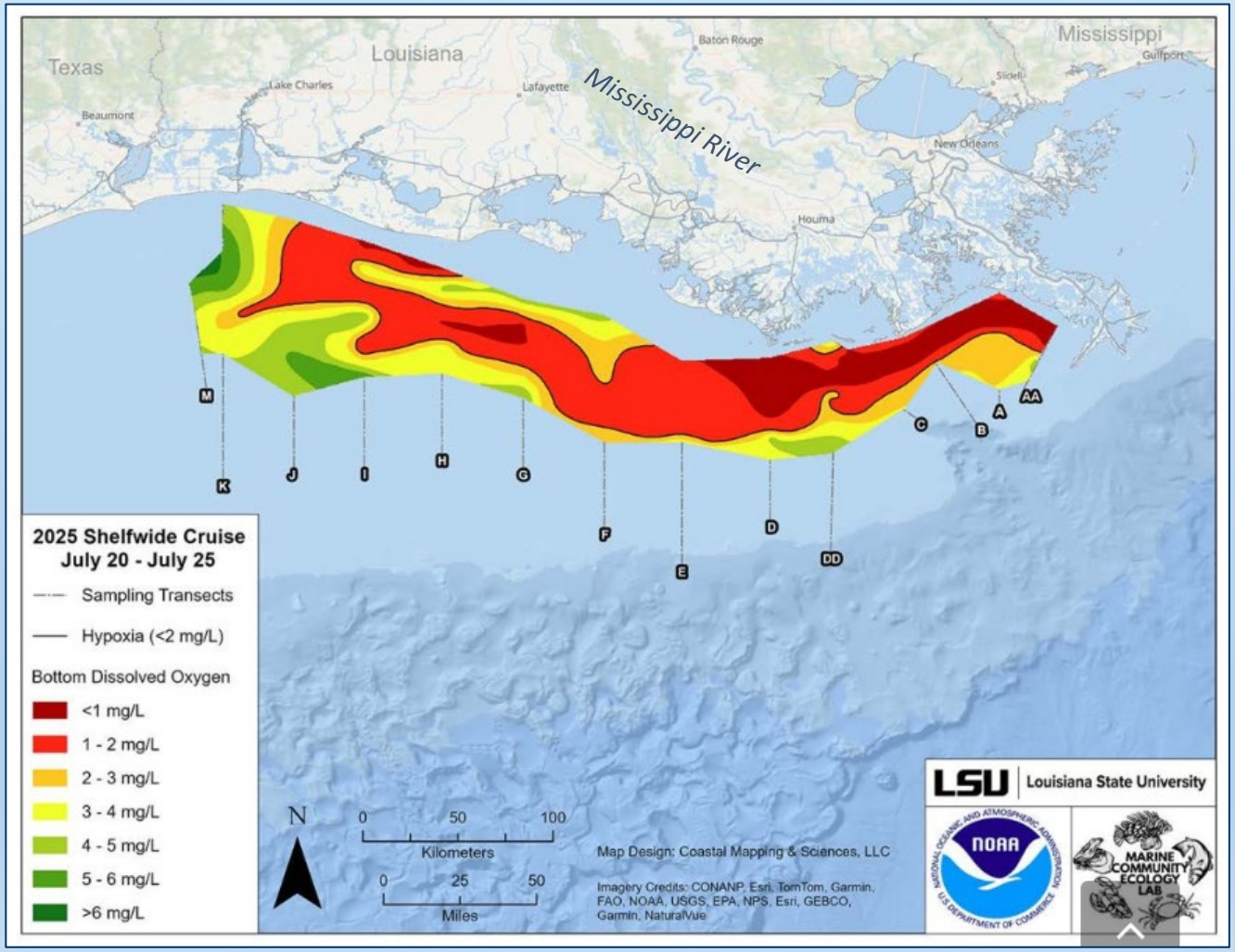
- *Louisiana, Brian Lezina, Louisiana Coastal Protection and Restoration Authority*
- *Minnesota, Katrina Kessler, Pollution Control Agency*
- *Mississippi, Natalie Segrest, Department of Environmental Quality*
- *Missouri, Chris Wieberg, Department of Natural Resources*
- *Ohio, Jessica Frey, Division of Surface Water, Environmental Protection Agency*
- *Tennessee, Sam Marshall, Department of Agriculture*
- *Wisconsin, Brian Weigel, Wisconsin Department of Natural Resources*

Louisiana: Collaborating to Address Nutrients

Mississippi River / Gulf of America Hypoxia Task Force

February 5, 2026

Louisiana's Nutrient Reduction and Management Strategy



- Although Louisiana contributes only a small portion of nutrients entering the Gulf, it is the **terminus of upstream impacts** from the Mississippi-Atchafalaya River Basin (MARB)
- Louisiana remains committed to **protecting inland and coastal water quality** and **collaborating with upstream states** to reduce nutrient loads
- Louisiana addresses nutrients through **local efforts** involving **nonpoint and point sources**, as well as river reconnection
- **Multiple agencies and partners** work collaboratively to implement strategies


Stakeholder Engagement
Decision Support Tools
Regulations & Policies
Management Practices
Status & Trends
Watershed Characterization
Incentives & Funding
Targets & Goals
Monitoring
Reporting
10 Component Framework

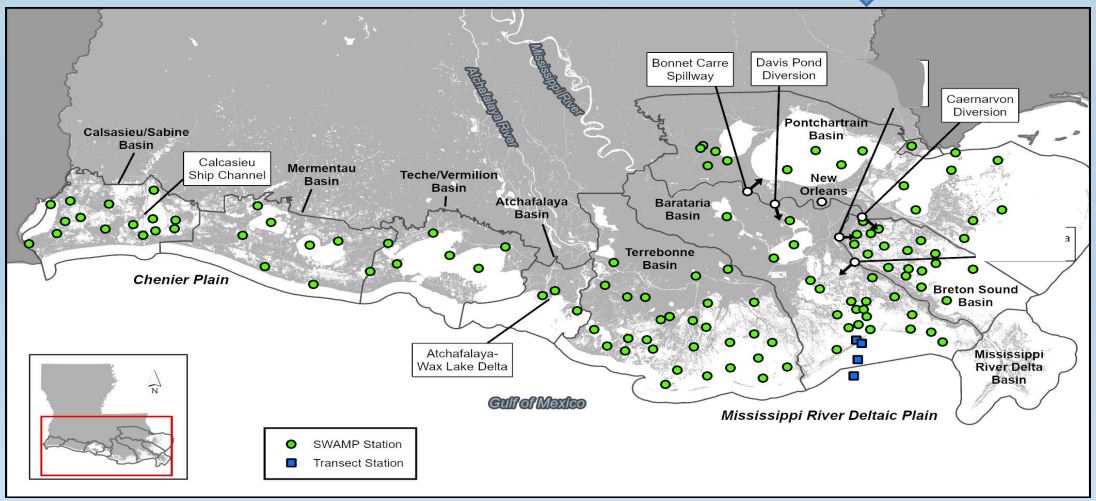
Monitoring Sites

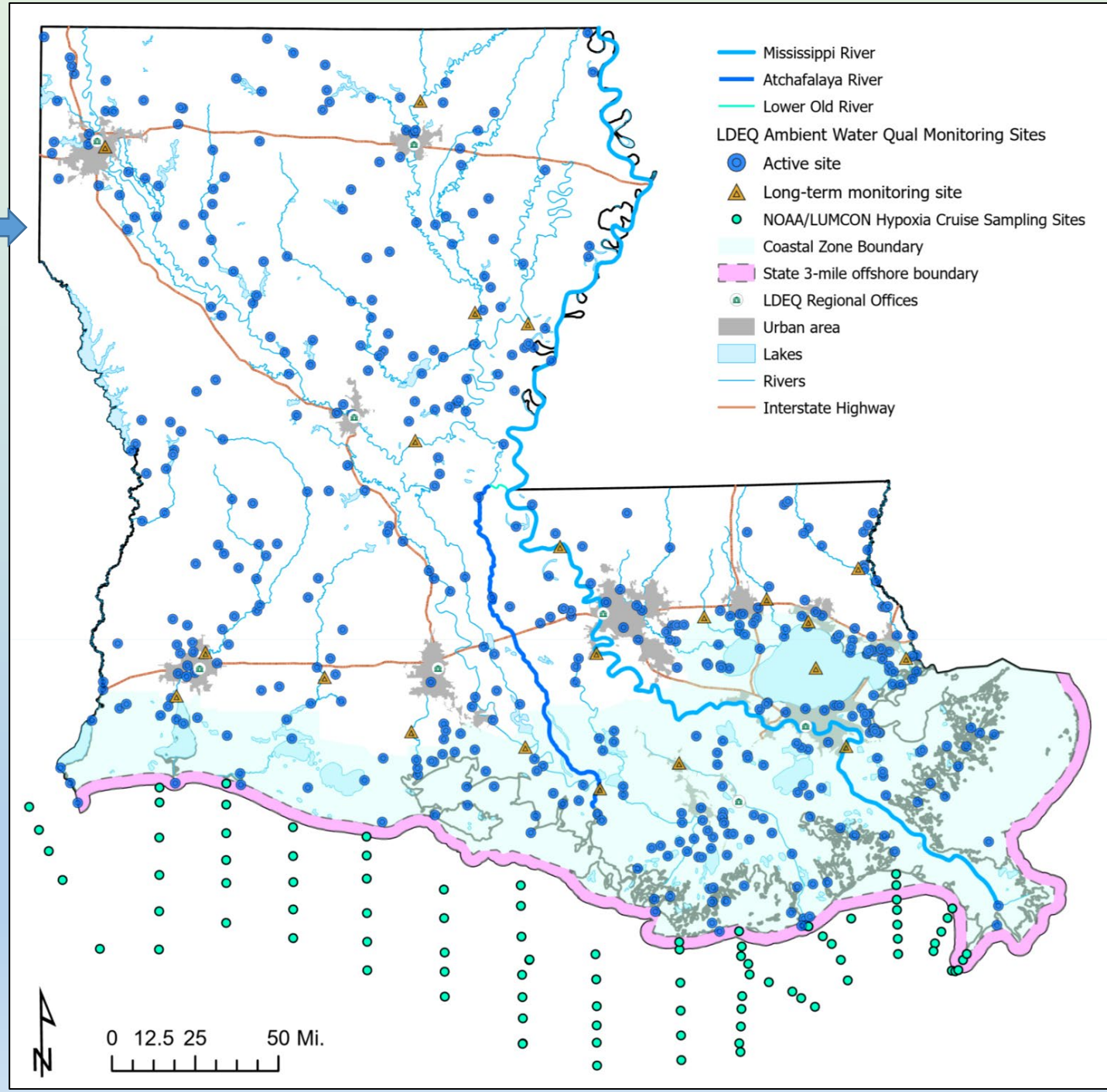
Ambient Water Quality Monitoring Network

- 21 long-term sites monitored monthly since 1978
  - TKN, NO3NO2, & TP

System Wide Assessment and Monitoring Program

- 120 discrete monthly water quality stations, starting in Barataria Basin in 2015





Fulfillment

Louisiana's primary focus is on *Agricultural Conservation Measures*

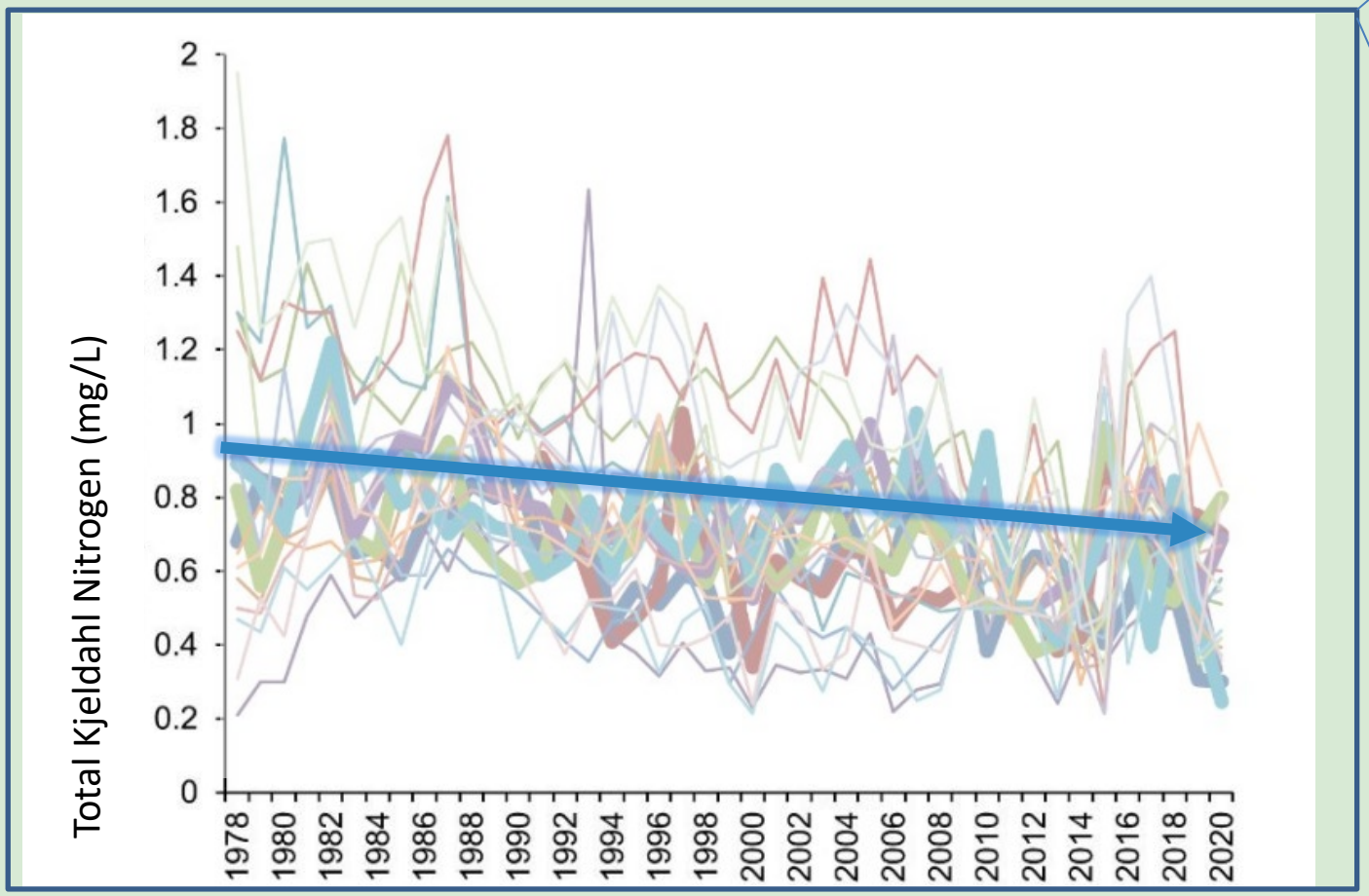
- **LDEQ Nonpoint Source Pollution Program** develops priority watersheds with LDAF and partners
    - Currently **43 target areas**; activities planned in 15+ watersheds through 2027
        - Other focal points: on-site wastewater treatment and EPA Vision activities
    - Additional USDA NRCS locations

- **LDEQ Water Division Efforts**
    - Nutrient-specific projects
        - Inland Rivers & Streams and Inland Lakes (ongoing)
        - **Nitrogen and phosphorus trends** every 5 years (due 2026)
        - Water Quality Trading (active)
    - Turbidity
        - Undergoing draft criteria refinement; in review & draft rule development
    - Regulations
        - Ammonia fresh water (FW) criteria promulgated; completed 2024
            - For protection of FW mussels where present (default)

*Details on LDEQ ongoing projects provided in Integrated Reporting

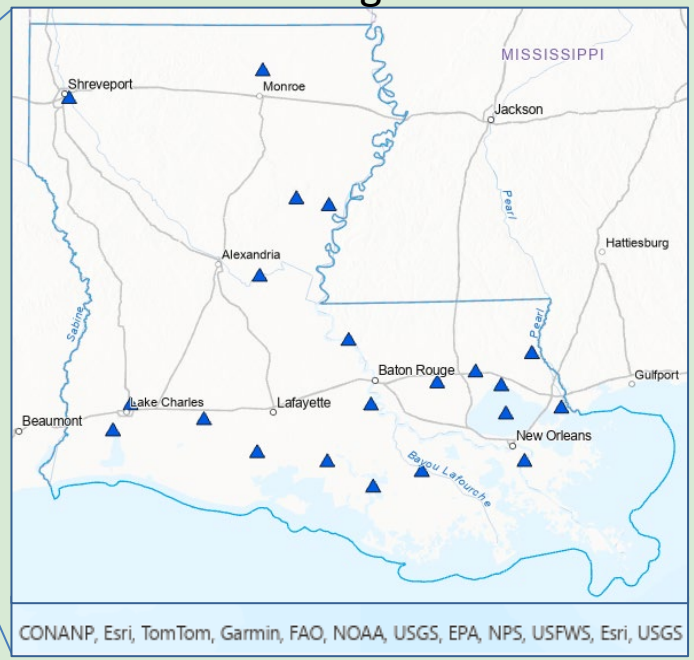
Nutrient Trends in Louisiana

Total Kjeldahl Nitrogen Across State



Modified from LDEQ, 2021

Monitoring Stations



Conservation practices (2019-2023) decreased loads:

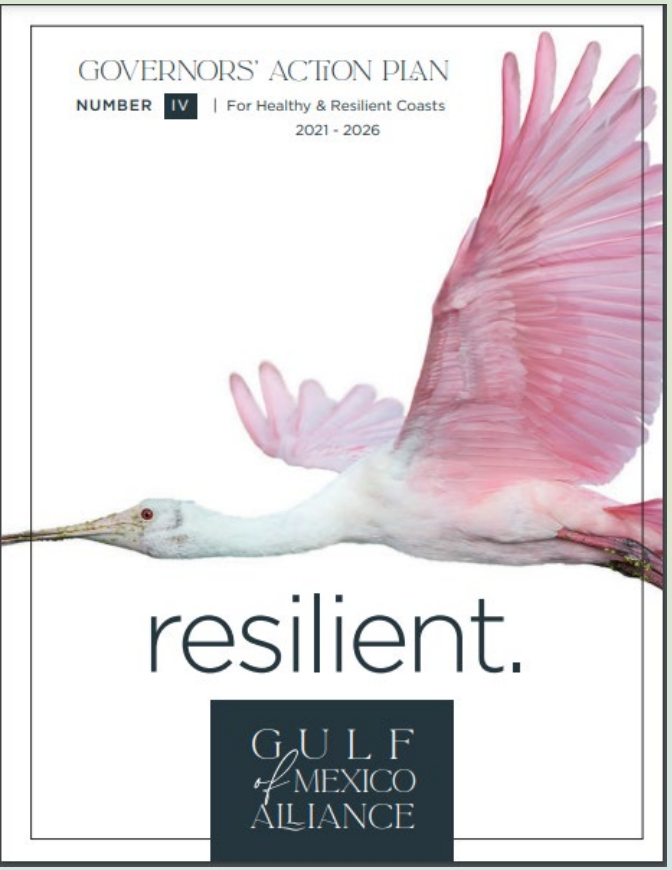
- **Nitrogen** by **~87,000 pounds**
- **Phosphorus** by **~19,224 pounds**
- Sediment by 3,012 tons

- Total Kjeldahl Nitrogen levels **decreasing** across state (LDEQ, 2021)
- Nitrate-Nitrite and Total Phosphorus show **decreasing** or **no trend** for **90%** of *long-term* locations

Water Quality Trading (WQT) Program

- LDEQ developed regulations for WQT in 2019 (LAC 33:IX.Ch. 26), supported by state legislation and consistent with the Clean Water Act, to facilitate trading among watershed stakeholders interested and eligible in participating in trading opportunities.
  - Regulations amended in 2021 to allow eligibility of projects funded with public conservation funds unless otherwise prohibited by the project terms and conditions.
  - Main objective:
    - Achieve equal or greater reduction of pollution and improvement of water quality at lower costs,
    - Reduce cumulative pollutant loading,
    - And prevent future environmental degradation.
  - WQT, particularly between point and nonpoint sources, does include inherent uncertainties around market supply and demand, as well as the challenge of quantifying nonpoint source pollutant reductions.
- Nutrients (TN, TP) are appropriate pollutants for trading, and LDEQ received and approved the first pollutant reduction credits in 2024.
- Details are available at: https://www.deq.louisiana.gov/page/water-quality-trading

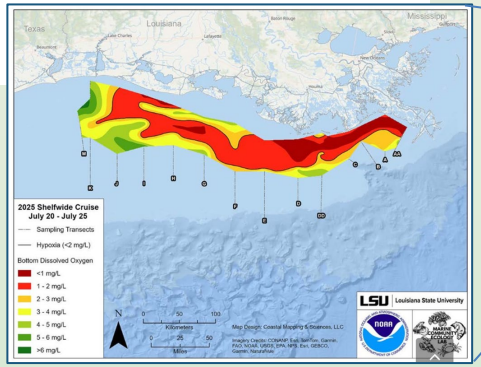
Gulf of America Alliance (GOAA)

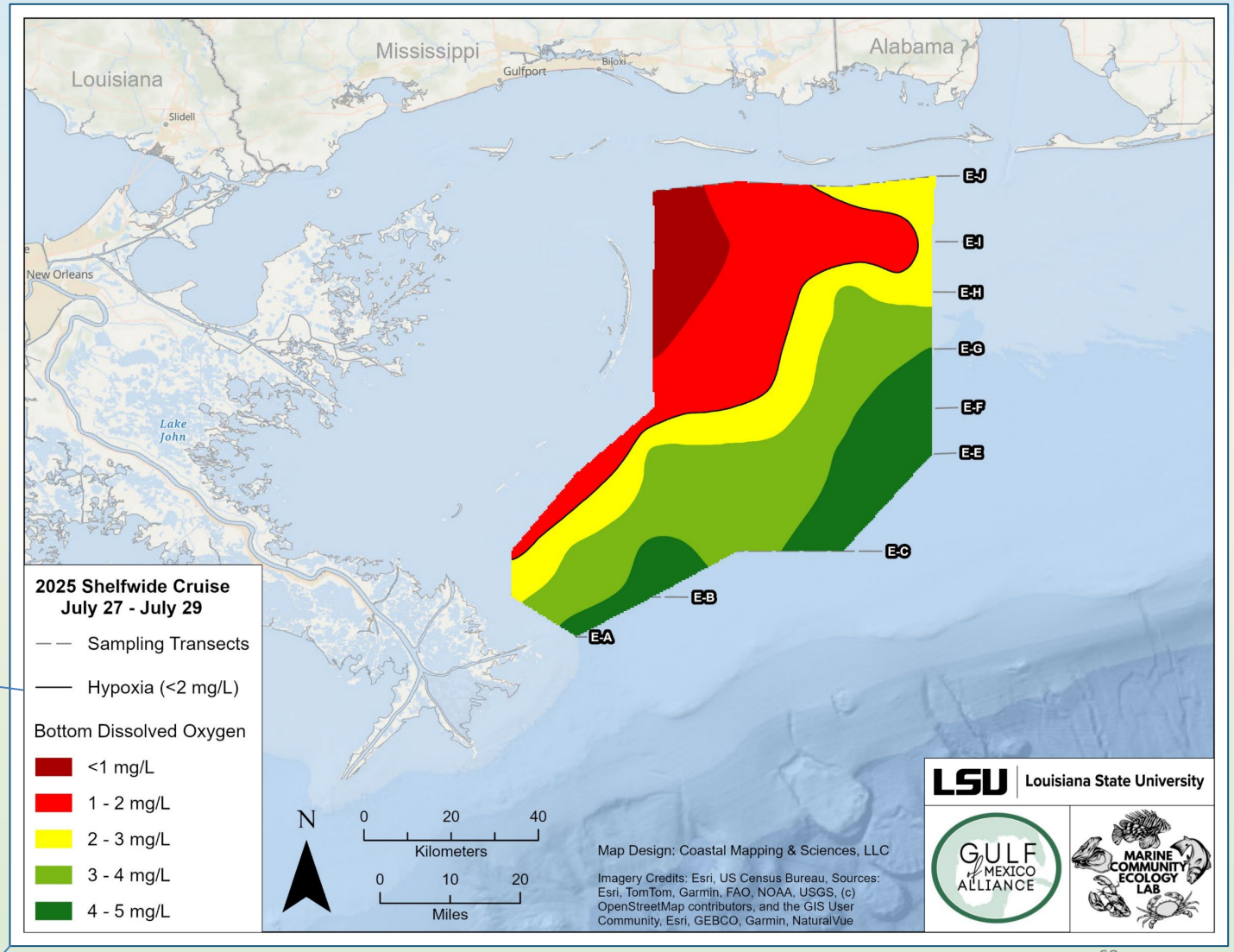


- The Governors' Action Plan for Healthy and Resilient Coasts
  - Action Plan I formed in 2006
  - Currently acting under **Action Plan IV**, 2021-2026
  - The Governor of Louisiana is one of five state governors pledging state support and implementation of the Action Plan.
- '**Impacts to Water Quality**' is one Focus Area of the Plan, action items include:
    - **Partner** to collect data and establish or expand pollutant reduction practices in agricultural watersheds
    - **Collaborate** with business and industry to demonstrate the economic value of water resource conservation
- GOAA supports projects that accomplish actions identified in the Plan through Gulf Star (a public-private partnership) and HTF BIL funding across the five Gulf states.

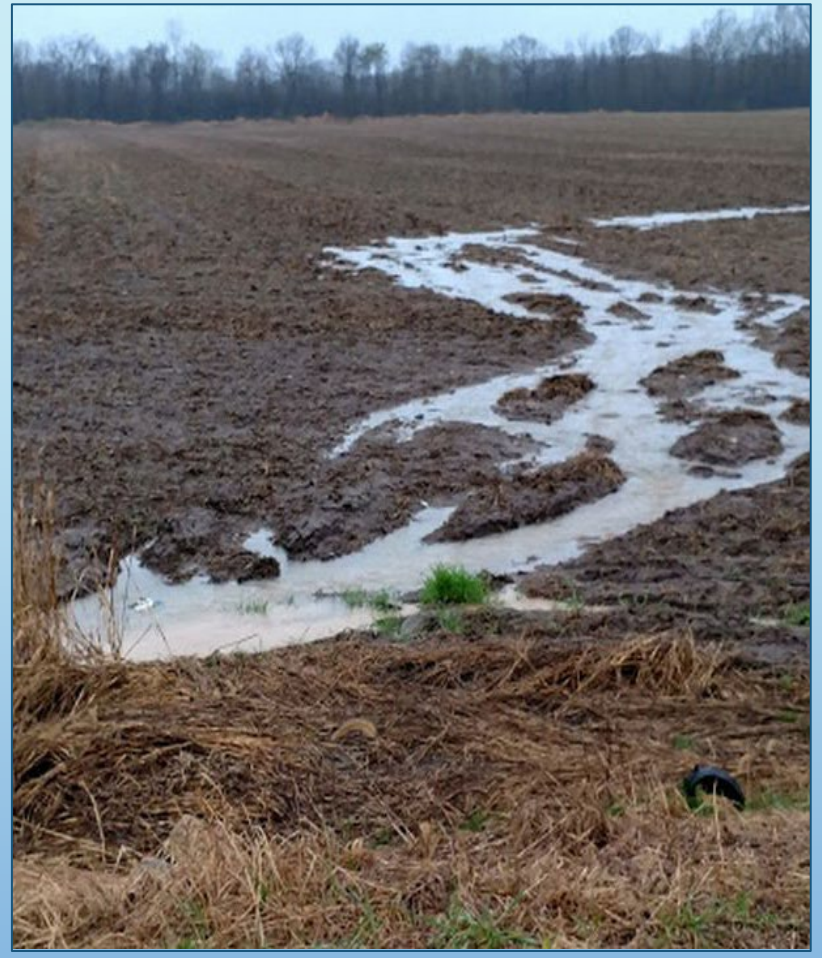
New Partnership, Expanded Gulf Hypoxia Monitoring

- Area **east of Mississippi River** is added to larger shelfwide hypoxia monitoring area
- **Nutrient data** collection
- Grantee: Louisiana Universities Marine Consortium
- Funding Source: Bipartisan Infrastructure Law (NOAA), through the Gulf of America Alliance





Additional Ag Conservation Measures



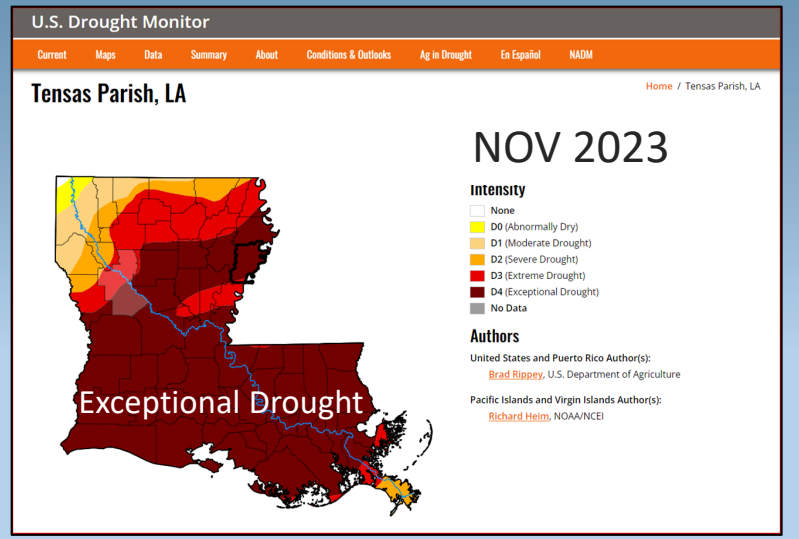
New Partnership for Nutrient Control, Morehouse Parish

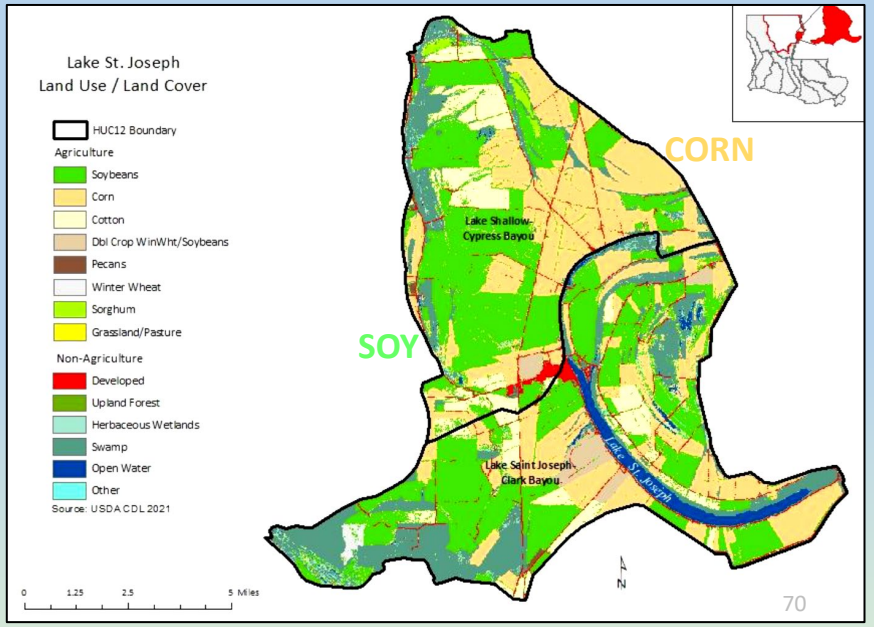
Collaborators: Louisiana Department of Environmental Quality, Louisiana Department of Agriculture and Forestry/Office of Soil and Water Conservation, Morehouse Soil and Water Conservation District, and University of Louisiana, Monroe, Gulf of America Alliance (Project Manager). Environmental Protection Agency Gulf of America Division (Funder).

Additional Ag Conservation Measures-GHP

Lake St. Joseph, Louisiana, Nutrient Loading Reduction (Gulf Hypoxia Program)

- Targeted **Best Management Practices** (BMP) program implementation in the Lake St. Joseph-to reduce nitrogen and phosphorous edge of field runoff & provide other water quality improvements.
- Monitor implementation through collection of **edge of field runoff** for differences in water quality and clarity compared to control site.
- 6 area producers qualified and were enrolled in the BMP implementation program.
- **Fall cover crops** planted late 2023, delayed by severe drought.
- Edge of field **monitoring** 2024-2025.





Minnesota Nutrient Reduction Strategy

Katrina Kessler, P.E.
MPCA Commissioner

Hypoxia Task Force Meeting
Feb. 5, 2026

Agenda

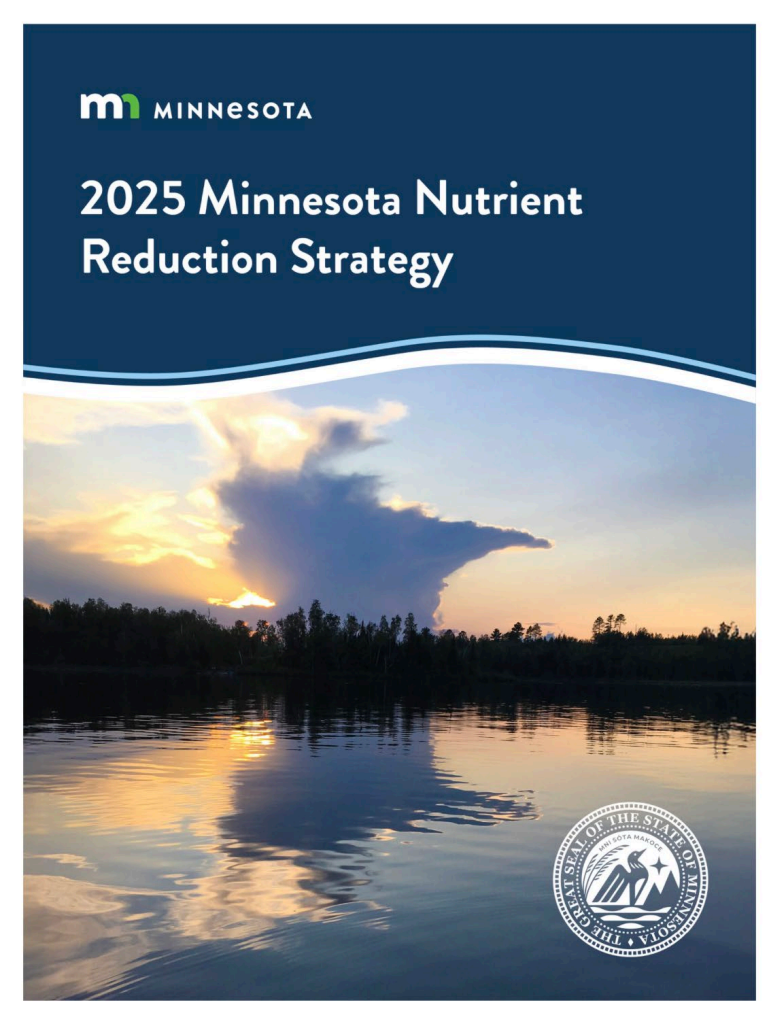
Overview 2025 Minnesota NRS 2025

10 years of progress 2014-2024

Future directions

Gulf Hypoxia Program state work plan phase 1 & 2

2025 Minnesota NRS released



2025 Minnesota NRS contributors

MINNESOTA

POLLUTION CONTROL AGENCY

DEPARTMENT OF AGRICULTURE

DEPARTMENT OF HEALTH

DEPARTMENT OF NATURAL RESOURCES

BOARD OF WATER AND SOIL RESOURCES

ENVIRONMENTAL QUALITY BOARD

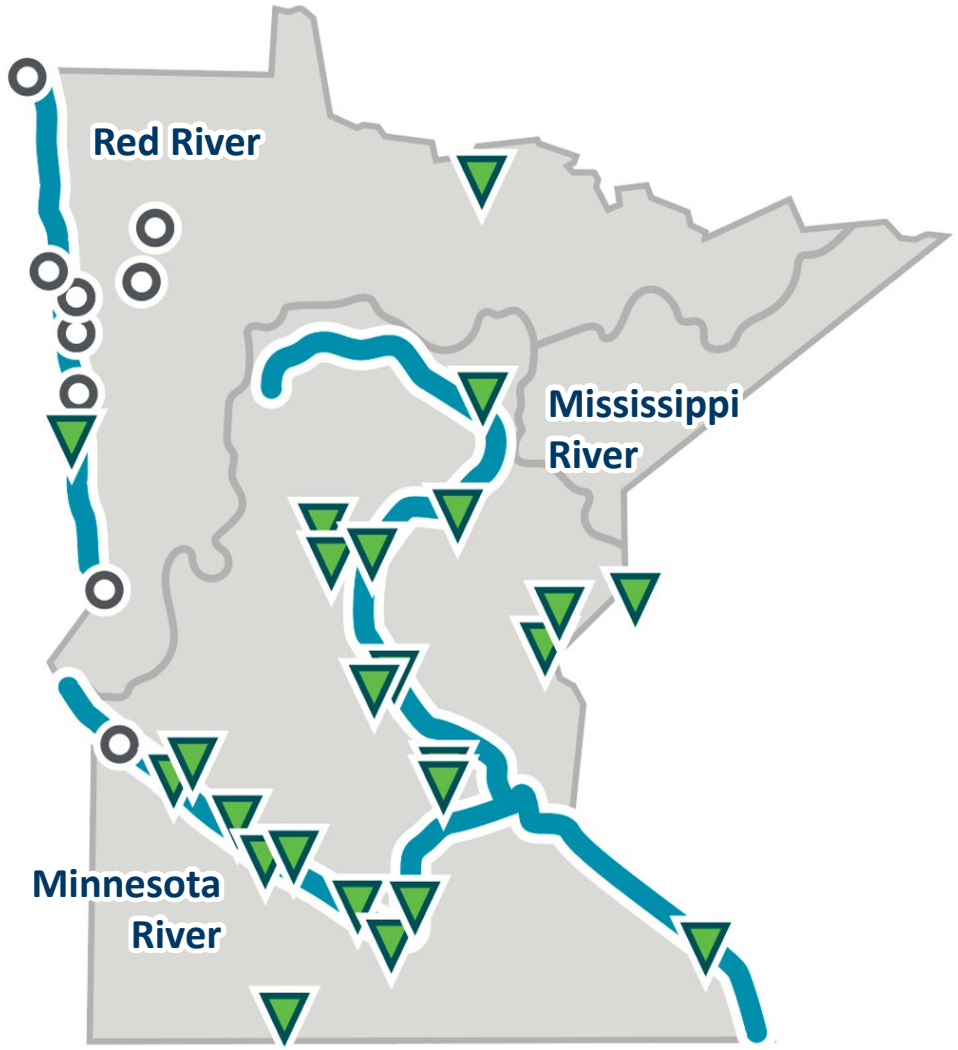
UNIVERSITY OF MINNESOTA
Driven to Discover®

METROPOLITAN COUNCIL

NRCS
Natural Resources Conservation Service

USGS
science for a changing world

Statewide – Phosphorus reduced in Minnesota



Phosphorus concentration

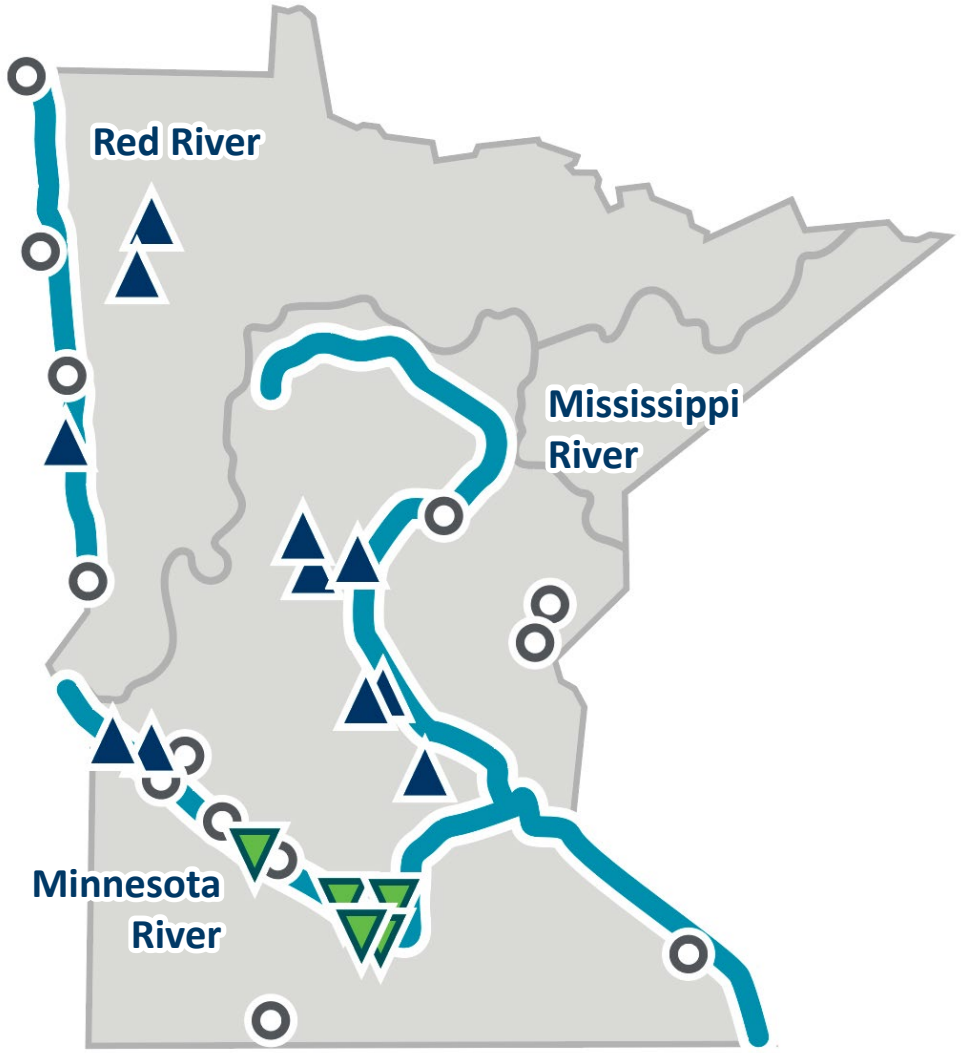
Streams and rivers

Flow corrected trends, 2003-2022

▼ Decreasing = 24

○ No trend detected = 12

Statewide mixed results – Nitrogen in Minnesota



Nitrate concentration

Streams and rivers

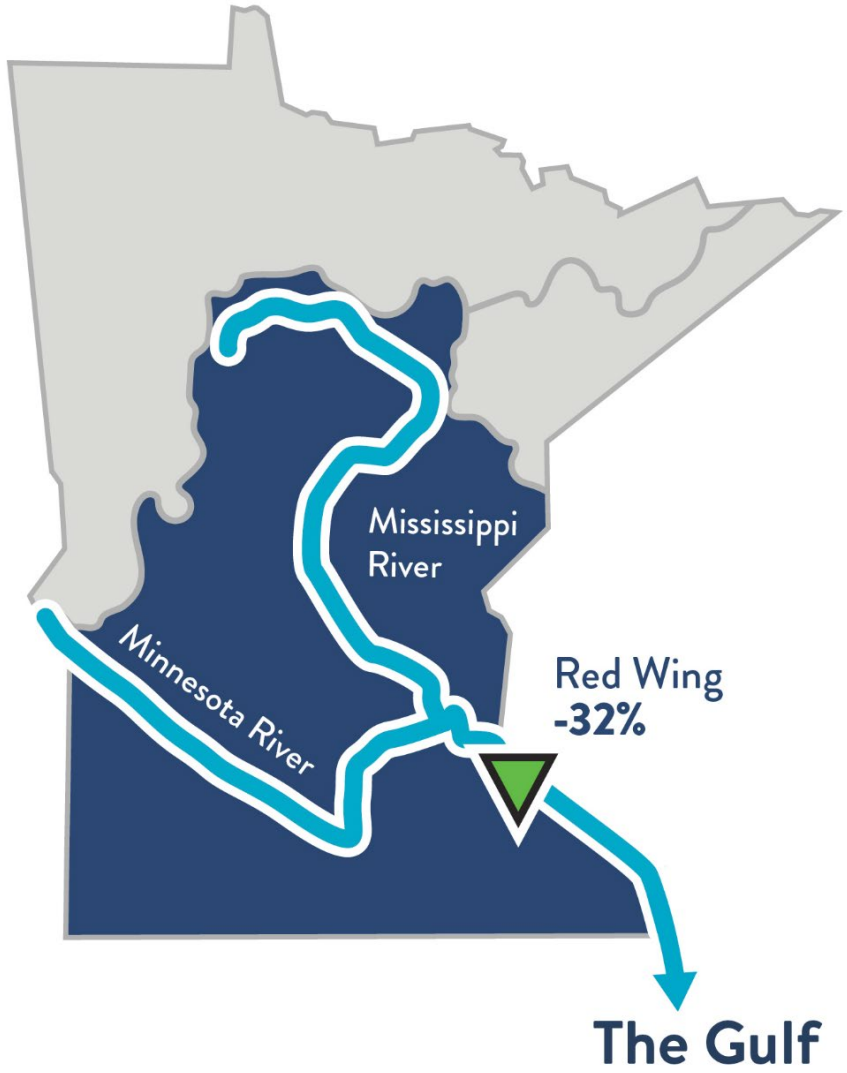
Flow corrected trends, 2003-2022

▲ Increasing = 11

▼ Decreasing = 5

○ No trend detected = 15

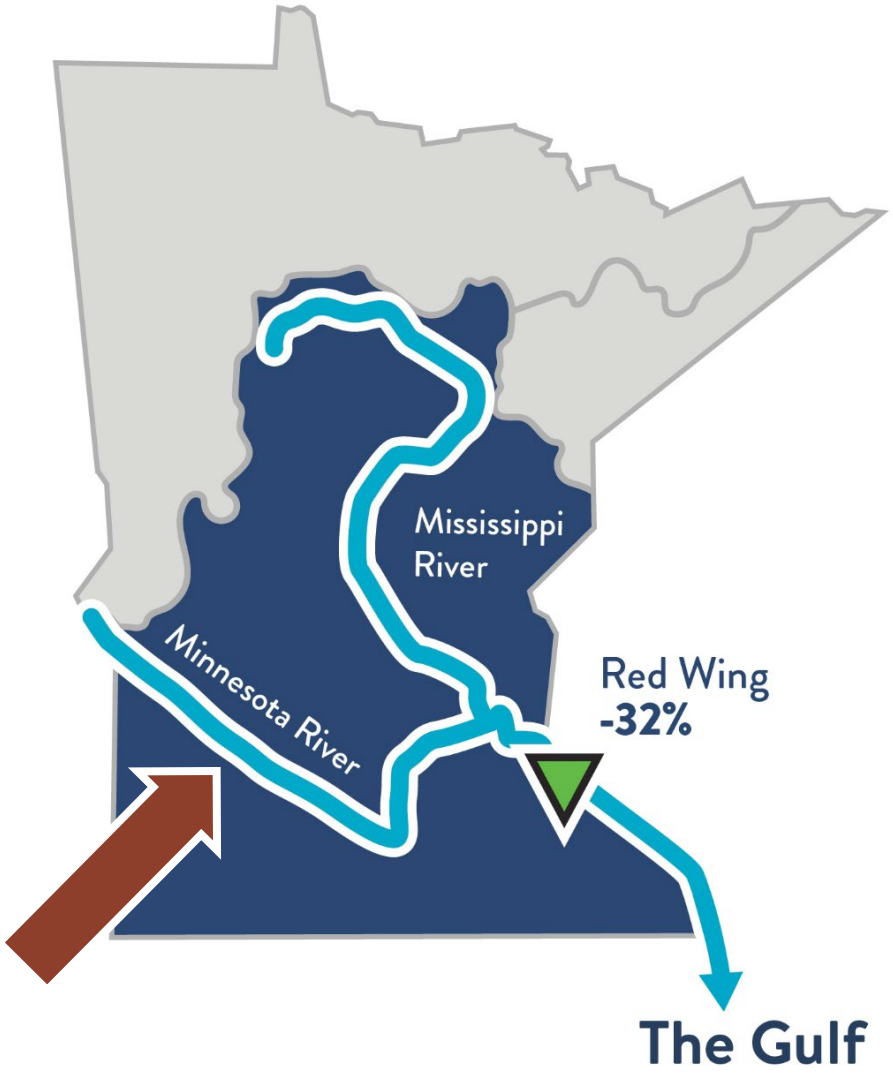
Success – Less phosphorus going to the Gulf



Phosphorus load decrease

-32% Red Wing monitoring station

Success – Signs of less nitrogen going to Gulf



First indication of nitrogen load decrease

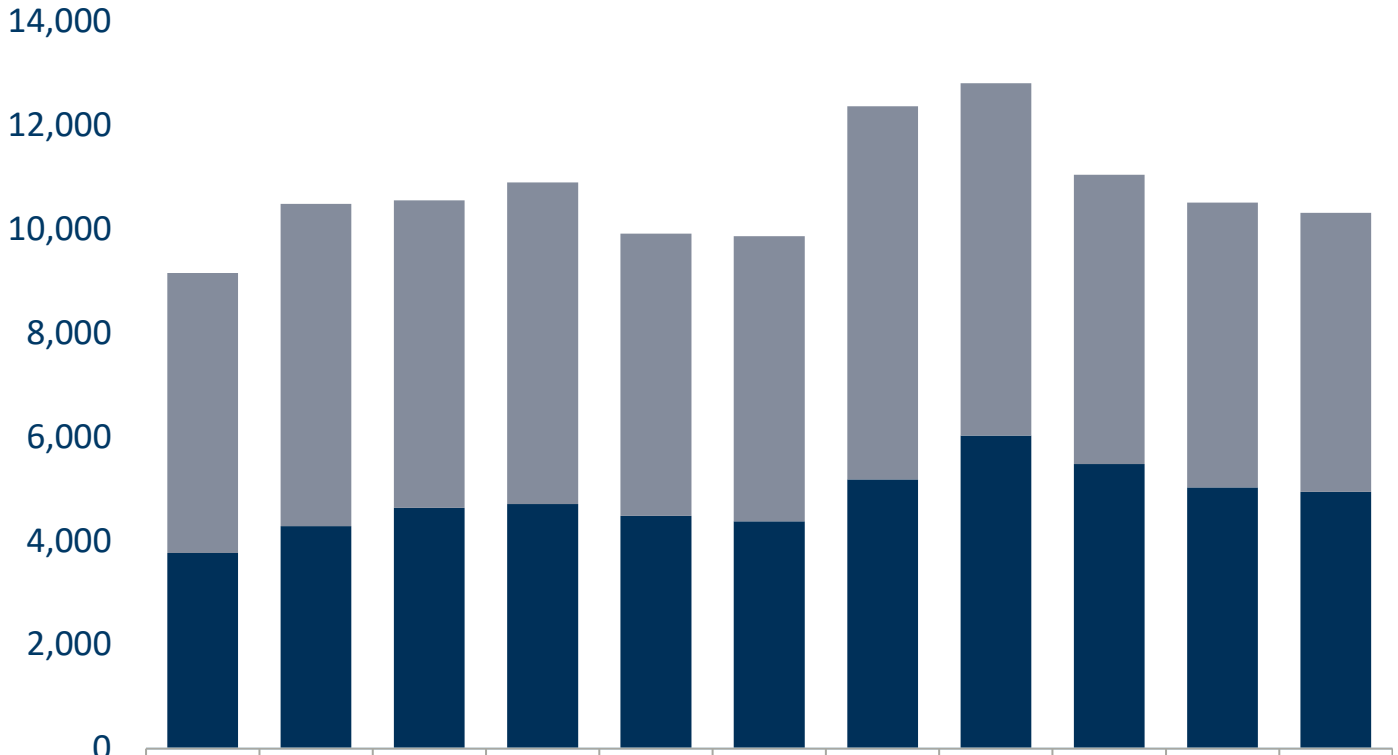
-6% Red Wing monitoring station

Success – Phosphorus reduced in wastewater

Urban wastewater phosphorus reduced 76% since 2008

Success – Working septic systems

New and replacement systems 2014-2024

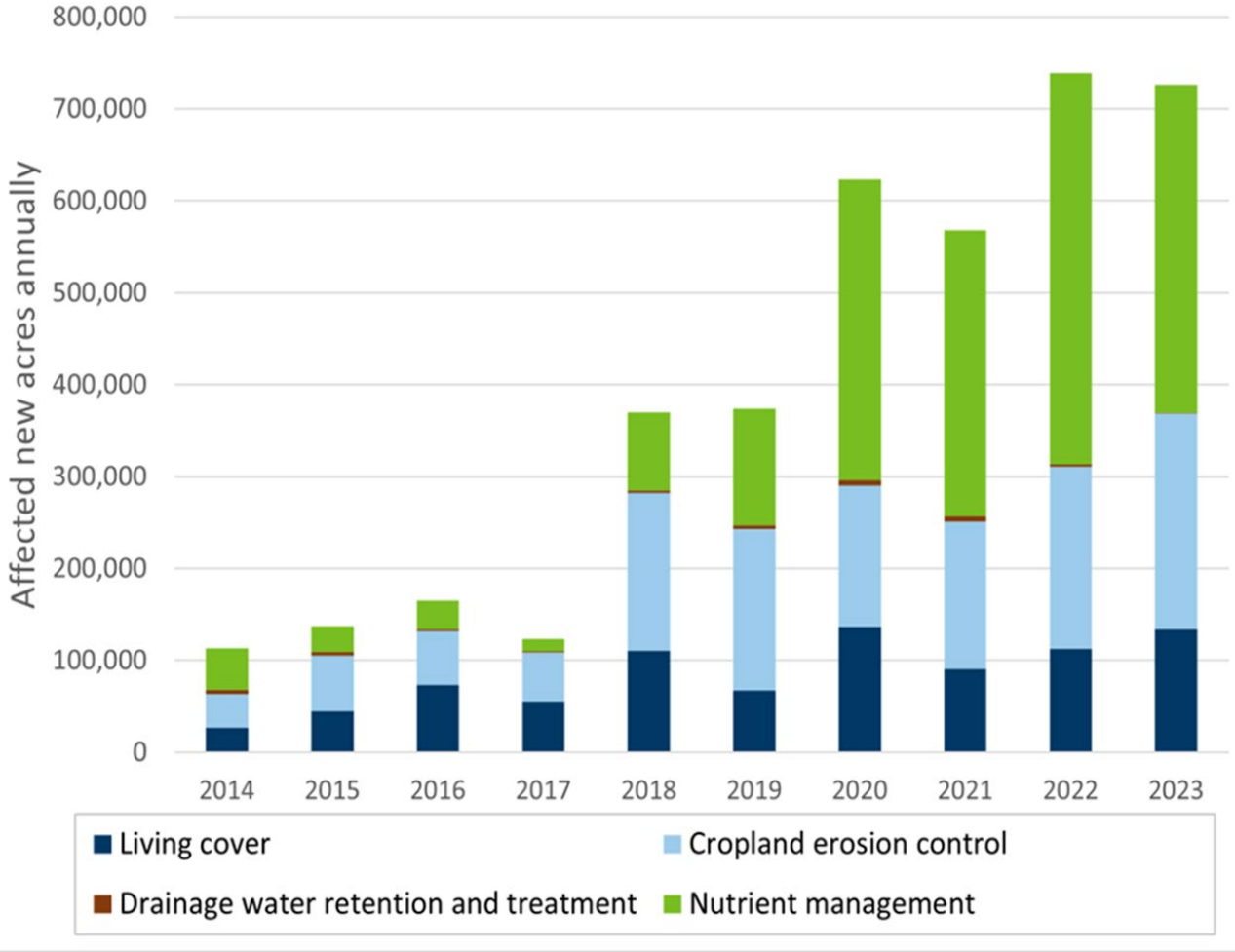


	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
Replacement	5,393	6,205	5,917	6,197	5,436	5,492	7,183	6,786	5,568	5,488	5,375
New	3,767	4,288	4,639	4,709	4,483	4,377	5,185	6,026	5,483	5,029	4,942

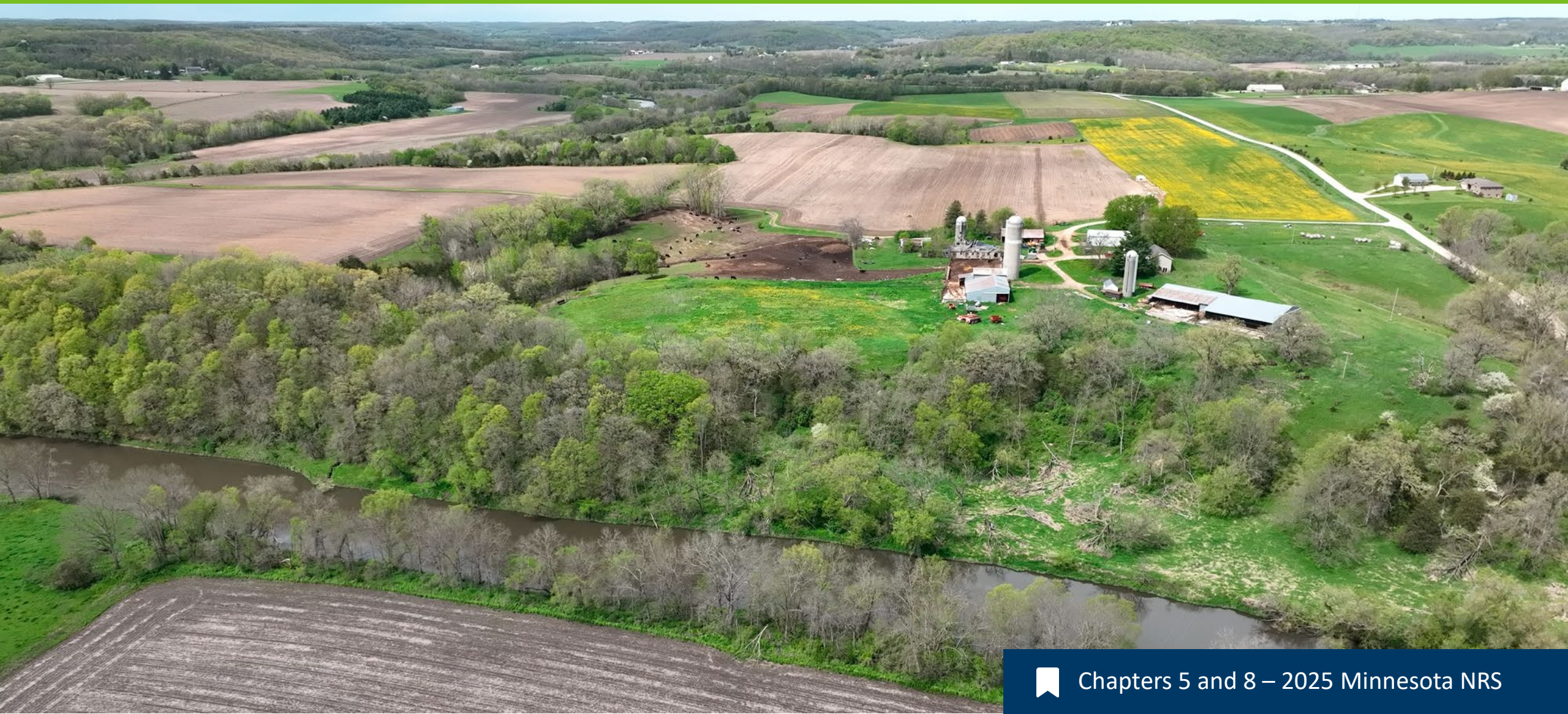
- **2014 Minnesota NRS** called for reduction of failing septic systems to less than 5% all systems
- **Goal met by 2020, maintained into 2025**

Success – Agricultural land practices

Government-funded acres of BMPs 2014-2023



Future - Vastly increase continuous living cover



Chapters 5 and 8 – 2025 Minnesota NRS

Future - Centralized dashboard to track progress

- Developed BMP Effects Estimator Tools (2025)
- Updating existing applications (now)
- Future work
  - Centralized tracking progress website (soon)
  - Single source of trackers
  - Story maps
  - Video content
- Dashboard development time-line 2026-2028

How you can stay involved

- Sign up for email list
  mnpca.info/4bKzmDP

- Check our web pages
  mnpca.info/nutrient-reduction

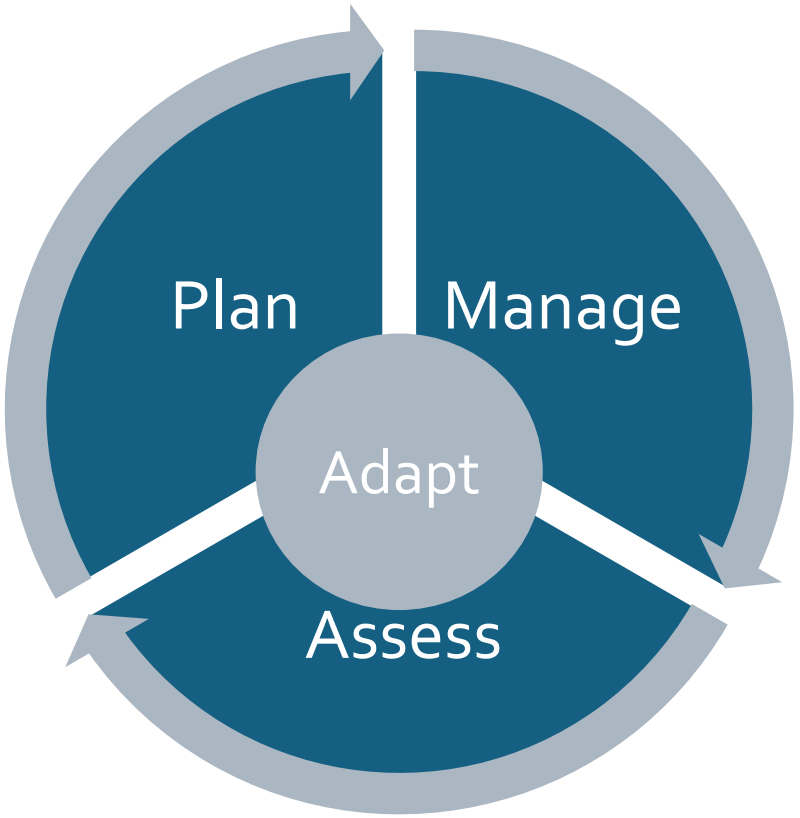
- Email: info.PCA@state.mn.us

- Follow on social media

Thank you

- Katrina Kessler, MPCA Commissioner

MINNESOTA



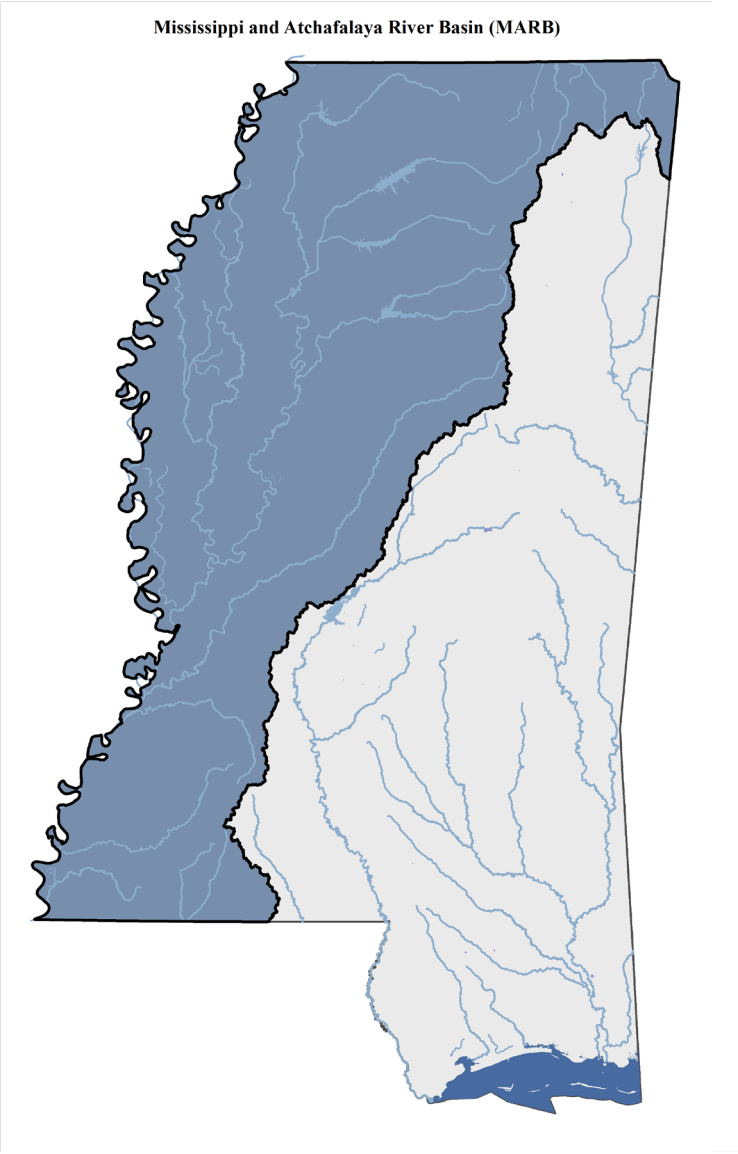
OUTCOME FOCUSED NUTRIENT MANAGEMENT

Natalie Segrest

Chief, Basin Management and NPS Branch; MDEQ

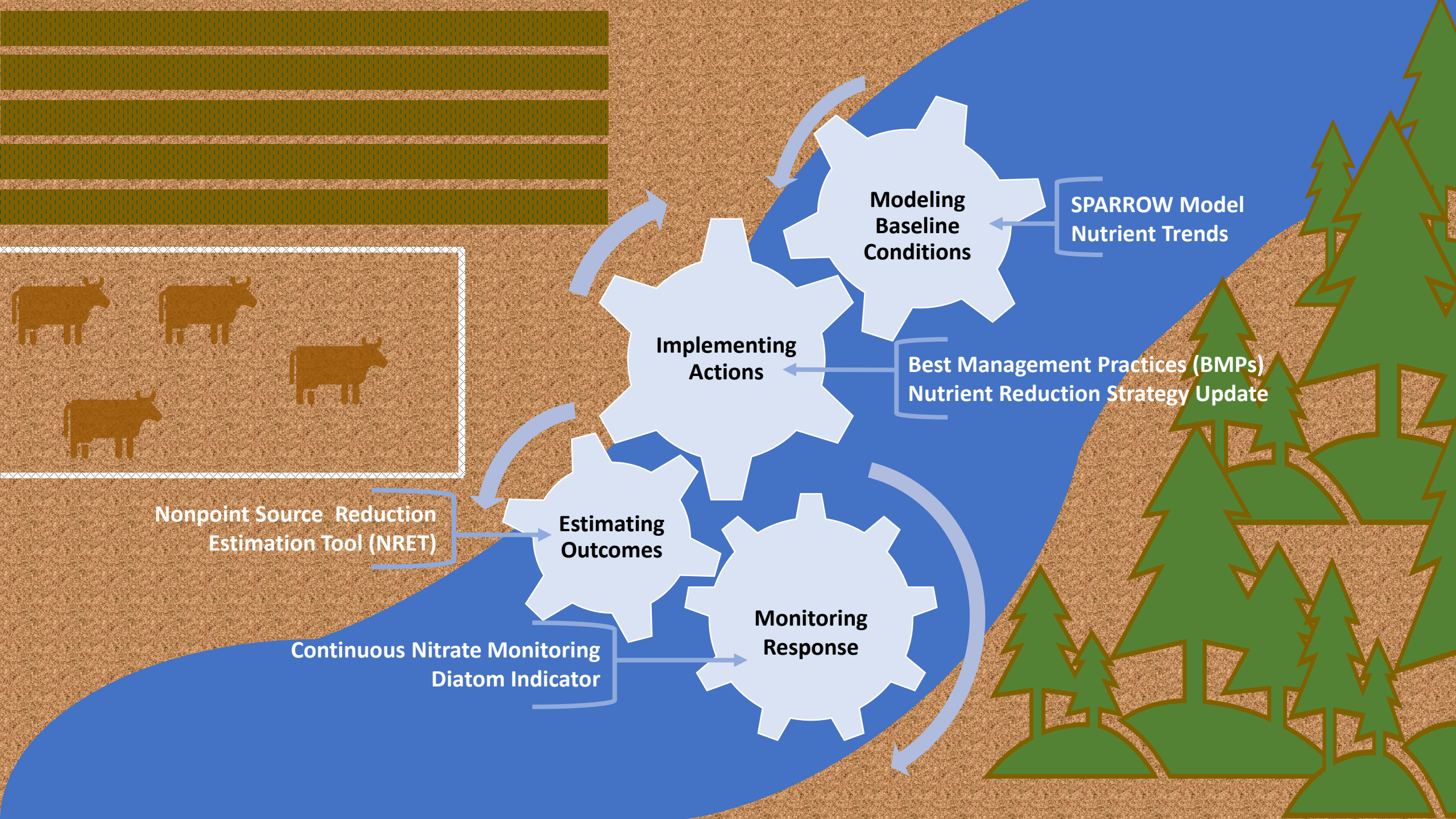
Hypoxia Task Force Public Meeting

February 5, 2026



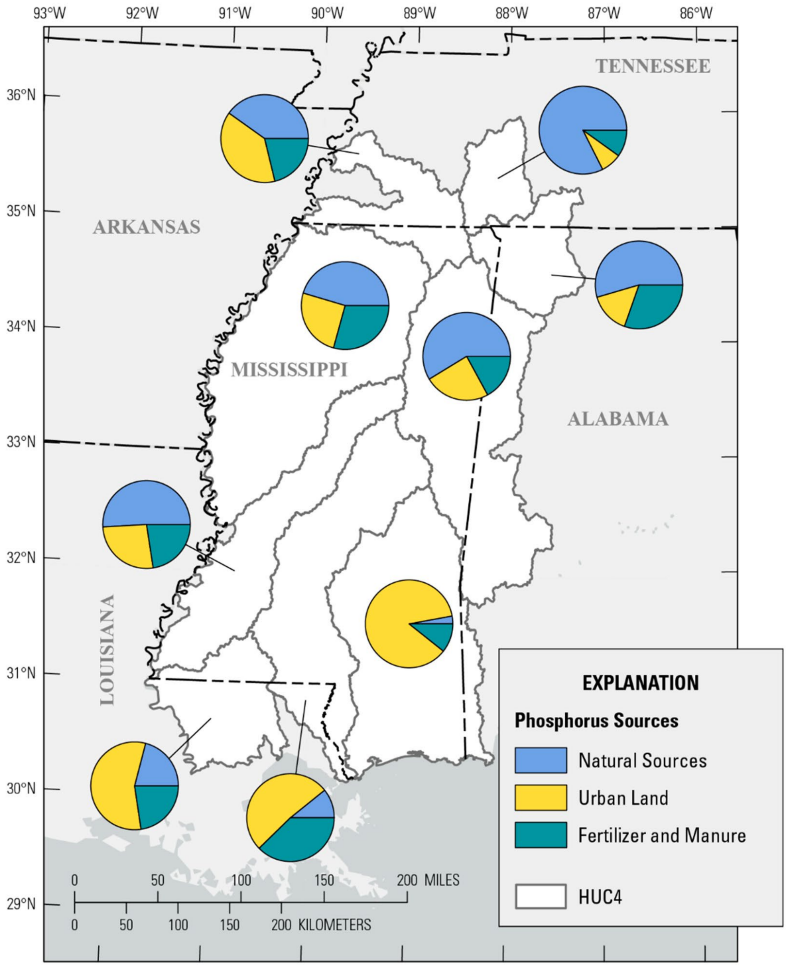
MISSISSIPPI'S GULF HYPOXIA PROGRAM

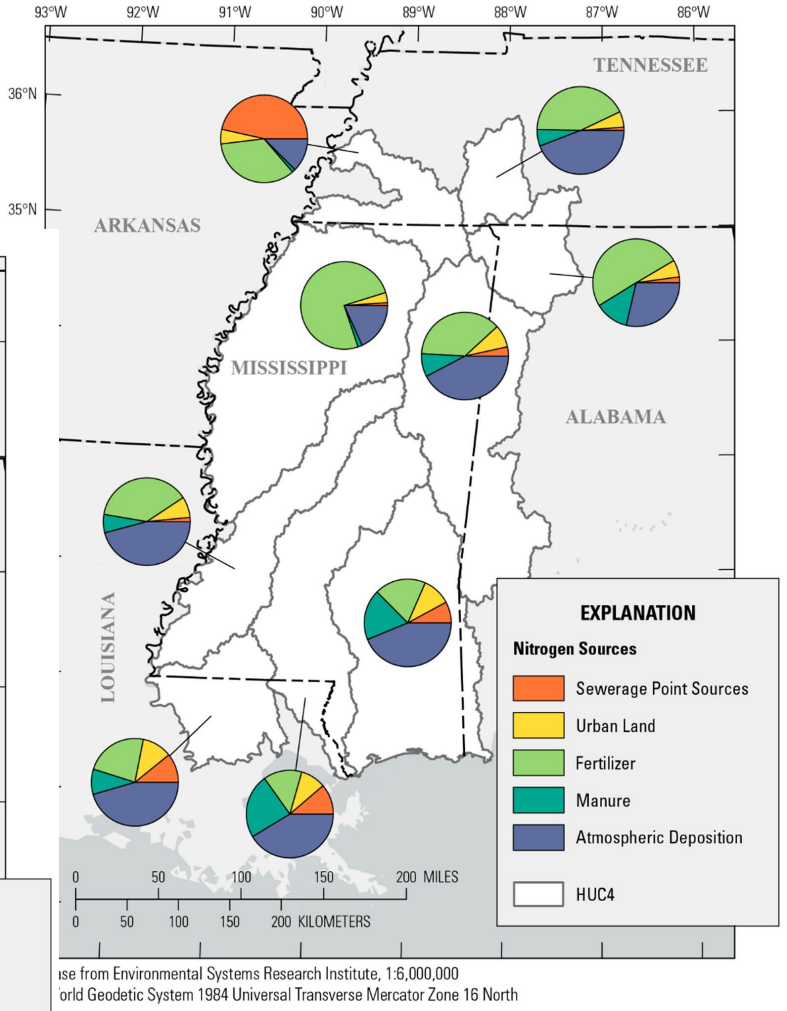
- **Support State Nutrient Reduction Strategies**
- **Provide Measurable Outcomes**
- **Leverage Long-Standing Partnerships, Funding, and Monitoring Approaches to Expand Project Impacts**
  - Expanded monitoring – Continuous Nitrate
  - Better estimates of background loads – MS SPARROW
  - Identify load reductions – NRET Tool
  - Measure nutrient response – Diatoms (near-term indicator of success)
  - Statewide Nutrient Trends (long-term indicator of success)
- **Re-Engage Stakeholders Through Adaptive Management to Share Progress, Confirm Priorities, and Amplify Success**


Modeling
Baseline
Conditions
SPARROW Model
Nutrient Trends
Implementing
Actions
Best Management Practices (BMPs)
Nutrient Reduction Strategy Update
Estimating
Outcomes
Nonpoint Source Reduction
Estimation Tool (NRET)
Monitoring
Response
Continuous Nitrate Monitoring
Diatom Indicator

MODELING BASELINE CONDITIONS: MS SPARROW

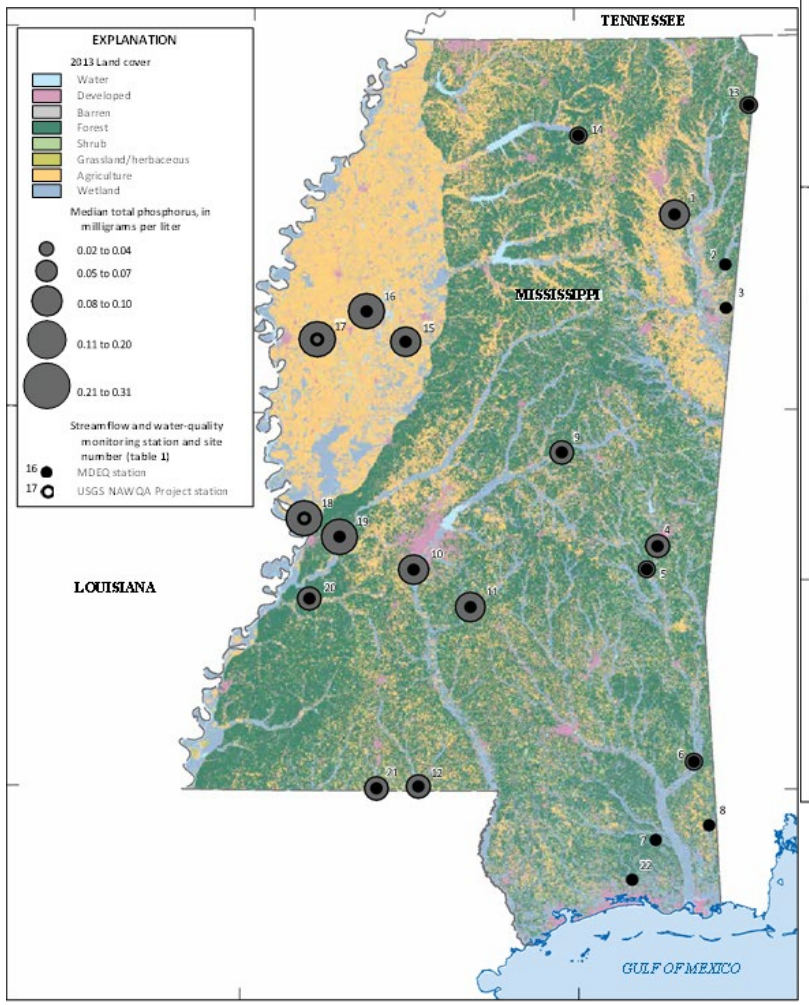
- **Update Mississippi's SPAtially-Referenced Regression on Watershed Attributes (SPARROW) Model**
  - More sites = better model calibration
  - MS specific data
  - Identify nutrient sources
  - Estimates at scale
  - Improve targeting

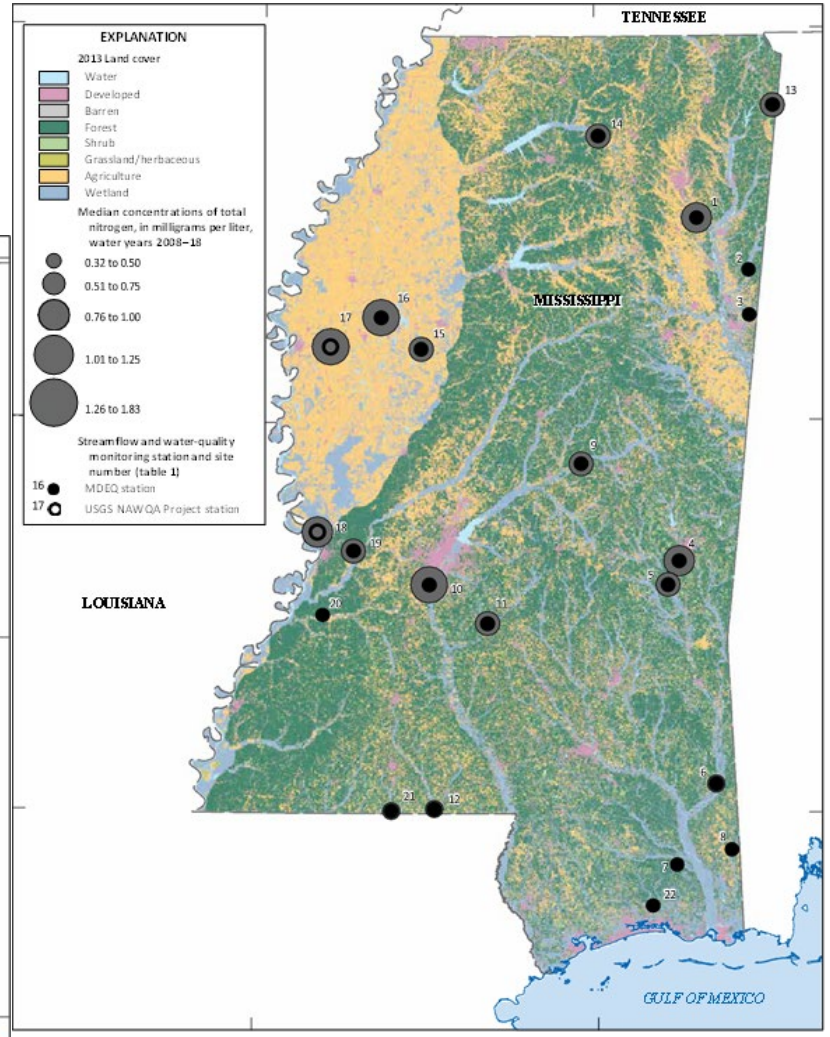




STATEWIDE NUTRIENT STATUS AND TRENDS:

- **Flow Normalized Nutrient Concentrations, Yields, and Loads**
  - 2008-2018
  - Concentrations influenced by landuse
  - TN Max Range 1.26-1.83 mg/L
  - TP Max Range 0.21-0.31 mg/L
  - Agricultural land is highest
  - Forest is lowest
- **GHP Funds to Expand Analysis**
  - More sites included in the analysis
  - Longer period of record (2008-2025)

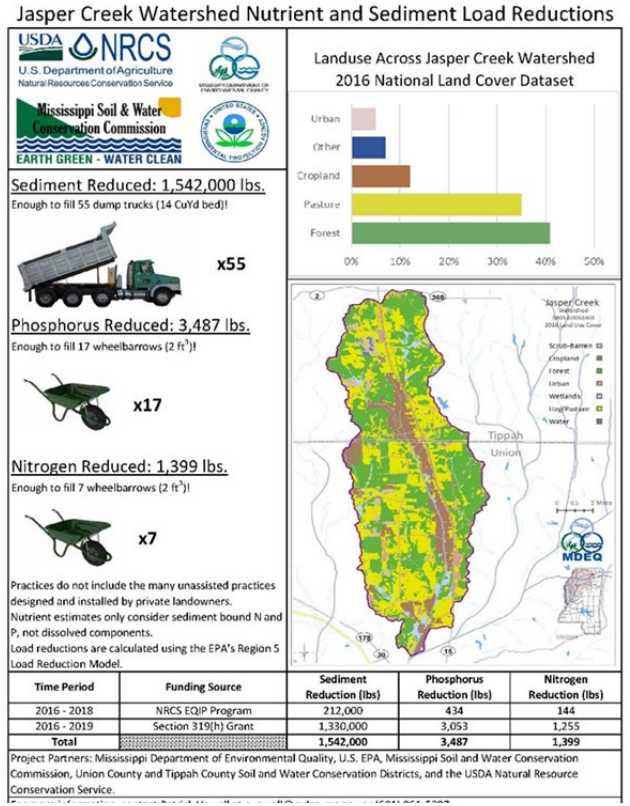




ESTIMATING LOAD REDUCTIONS - NRET

BMP Data → Nutrient Sources, Nutrient Management Actions, BMPs → Nutrient Reduction Estimation Tool

- **Nutrient and Sediment Load Reductions**
  - Incorporates data from multiple sources
  - Utilizes state and/or regional efficiency data
  - Outputs across scales: spatial, temporal, and by BMP type
- **Reviewed existing literature and models for existing functionality**
- **Compiled historic 319 BMP data, SPARROW model outputs, NRCS Practice information**
- **Report Environmental Outcomes**



Jasper Creek Watershed Nutrient and Sediment Load Reductions

USDA NRCS U.S. Department of Agriculture Natural Resources Conservation Service

Mississippi Soil & Water Conservation Commission

EARTH GREEN - WATER CLEAN

Landuse Across Jasper Creek Watershed
2016 National Land Cover Dataset

Urban
Other
Cropland
Pasture
Forest

0% 10% 20% 30% 40% 50%

Sediment Reduced: 1,542,000 lbs.
Enough to fill 55 dump trucks (14 CuYd bed)!

x55

Phosphorus Reduced: 3,487 lbs.
Enough to fill 17 wheelbarrows (2 ft³)!

x17

Nitrogen Reduced: 1,399 lbs.
Enough to fill 7 wheelbarrows (2 ft³)!

x7

Practices do not include the many unassisted practices designed and installed by private landowners.
Nutrient estimates only consider sediment bound N and P, not dissolved components.
Load reductions are calculated using the EPA's Region 5 Load Reduction Model.

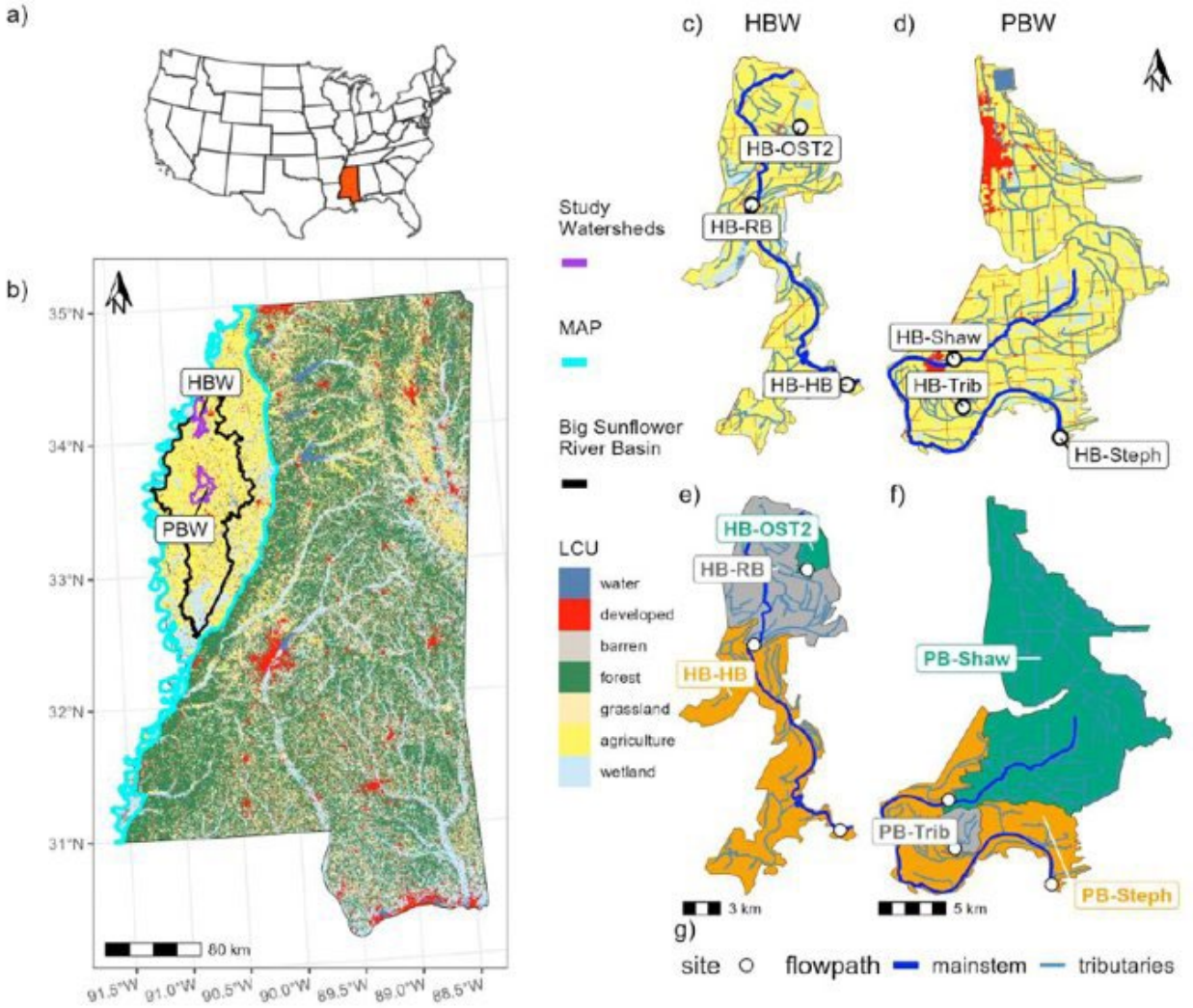
Jasper Creek
Tippah
Union
MDEQ

Time Period	Funding Source	Sediment Reduction (lbs)	Phosphorus Reduction (lbs)	Nitrogen Reduction (lbs)
2016 - 2018	NRCS EQIP Program	212,000	434	144
2016 - 2019	Section 319(h) Grant	1,330,000	3,053	1,255
Total		1,542,000	3,487	1,399

Project Partners: Mississippi Department of Environmental Quality, U.S. EPA, Mississippi Soil and Water Conservation Commission, Union County and Tippah County Soil and Water Conservation Districts, and the USDA Natural Resource Conservation Service.

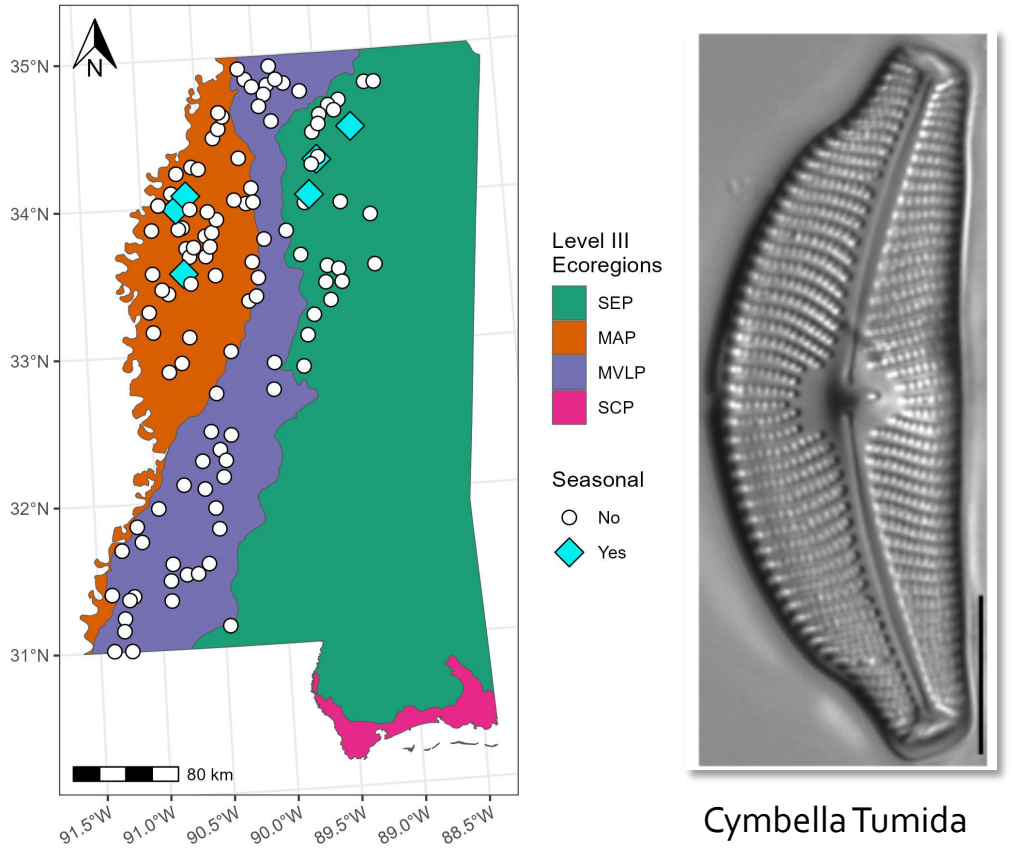
LESSONS LEARNED FROM WATERSHED IMPLEMENTATION

- **Long Term study of HUC 10 Watersheds:**
  - Harris Bayou
  - Porter Bayou Watersheds
- **Data and Model outputs show success**
  - 37.7 – 56.9% TN reduction
- **BUT…. Required 10+ yrs of Data – VERY EXPENSIVE**
- **BMPs at End of Life**



MONITORING RESPONSE: DIATOM INDICATOR

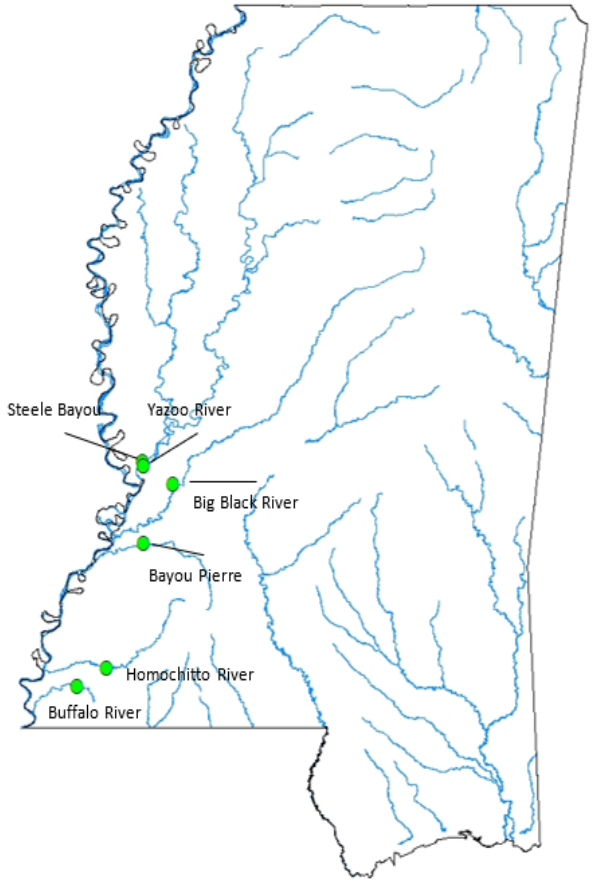
- Measure Response to Nutrient Reduction Actions
- Data Collected at 116 Sites
- Coupled with Habitat and Water Quality Data
- **Leveraged Efforts:**
  - DNA analysis for diatoms and sediment bacteria (USGS and USDA ARS NSL)
  - Sampling in Coastal MS – Deepwater Horizon Funding
  - State NPS Funding to fill gaps for statewide dataset



Cymbella Tumida

REAL TIME DATA COLLECTION: CONTINUOUS NITRATE MONITORING

- **Continuous Nitrate Data at 6 Major Tributaries to the MS River:**
  - Steele Bayou, Yazoo River, Big Black River, Homochitto River, and Buffalo River
- **Sensors Co-located at USGS Gauges**
  - Better understanding of the connection between flow and nutrient dynamics
- **Leveraged as Part of USGS Larger Continuous Nitrate Monitoring Network**
- **Provide Better Understanding of Nutrient Dynamics in Lower MS River**



NUTRIENT REDUCTION STRATEGIES UPDATE

- MS's Nutrient Reduction Strategies Guide Actions to Address Nutrients Flowing Into State Waters and Downstream to the Gulf
- Answer the Core Questions Identified by Stakeholders Using Updated Tools and Analyses
  - New resources to enhance outreach and public understanding of nutrient management
- Evaluate Progress Over Time in Reducing Nutrient Loads Through Science and Technical Updates
  - Identify new or novel approaches to assessing change over time
- Better Tools for Prioritization and Targeting of Nutrient Management Investments
- Adaptively Manage Based on Challenges, Successes, and Lessons Learned


Strategy #1

1. Engage Stakeholders

OBJECTIVE:

Identify target audiences and address perceptions through targeted awareness, outreach, and education programs.

Involving and engaging stakeholders early in the planning process is critical. Early involvement promotes transparency, allows time for trust to develop, incorporates local knowledge, and promotes collaborative problem solving. An inclusive process helps gain buy-in and stakeholder cooperation while increasing the likelihood of identifying sustainable solutions. This recognizes perspectives within the watershed giving insight into stakeholder awareness of nutrient issues and expectations for nutrient reductions.

Identify the appropriate audiences for targeted outreach and education programs.

- Homeowners and landowners
- Municipalities and counties
- Industries and businesses
- State and federal regulators
- Professional organizations and associations
- Academic and research institutions
- Environmental community members
- General public

Identify knowledge deficits in targeted audiences, build or leverage resources to fill knowledge gaps.

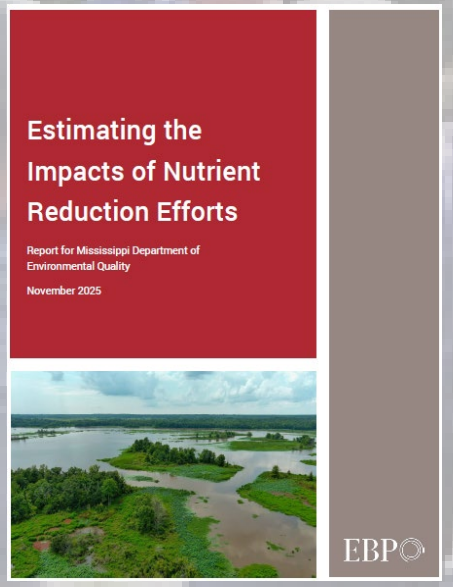
Develop outreach and education programs to reach targeted audiences

- Engage MDEQ Basin Team members and local organizations to determine effective outreach and education efforts.
- Document ways for various target audiences to receive and communicate information.

Document outcomes from education and outreach efforts

- Formulate quantitative measures of success for stakeholder awareness, outreach and education and track these over time to document behavioral changes.

For more detailed information, Mississippi's Nutrient Reduction Strategy can be accessed here or at https://www.mdeq.ms.gov/wp-content/uploads/2014/08/Mississippi_Strategies_to_Reduce_Nutrient_and_Associated_Pollutants_05_02_2012.pdf


Estimating the Impacts of Nutrient Reduction Efforts

Report for Mississippi Department of Environmental Quality

November 2025

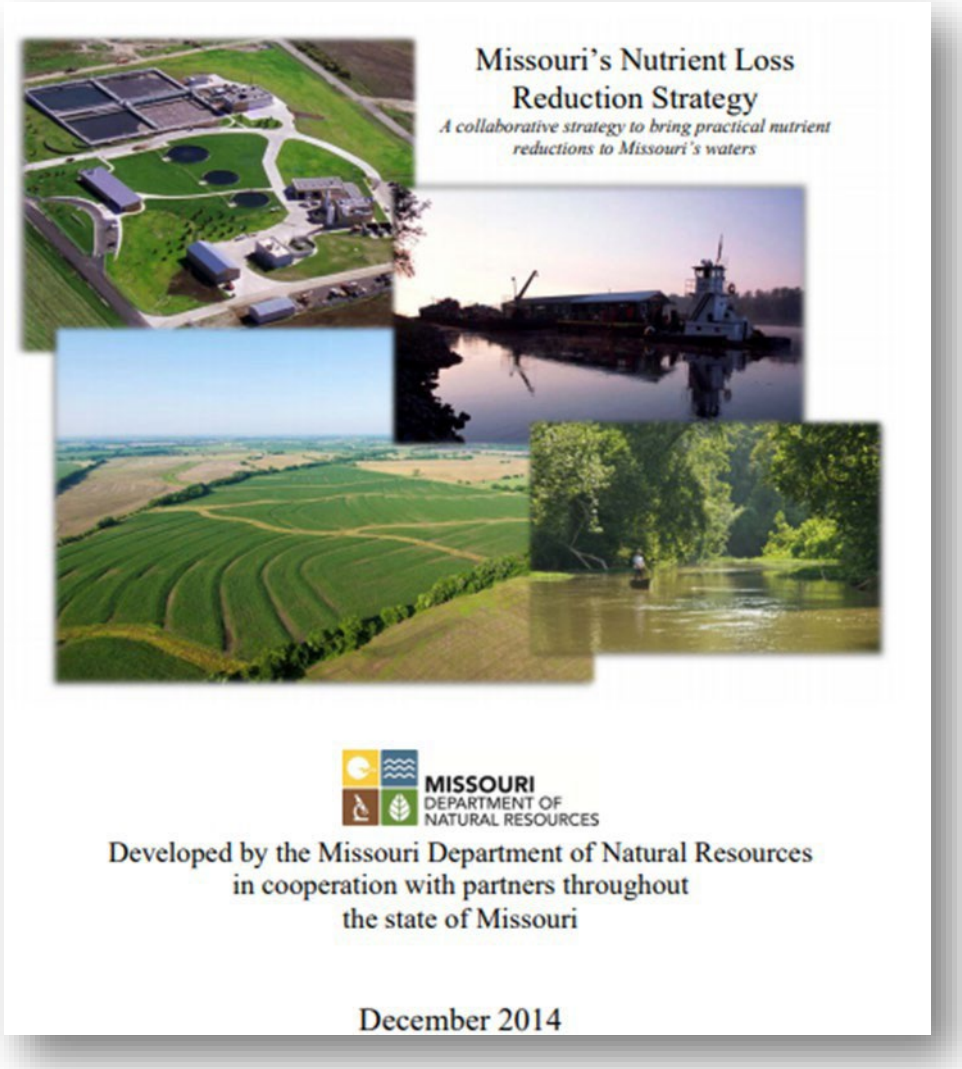
EBP

MISSOURI
DEPARTMENT OF
NATURAL RESOURCES

2026 Missouri Nutrient Loss Reduction Strategy Update

Chris Wieberg, Deputy Director Missouri Geological Survey

The Missouri Nutrient Loss Reduction Strategy (NLRS) is a collection of adaptive approaches to reduce nutrient pollution from point and non-point sources. The overarching goal of the NLRS is to improve local water quality and reduce statewide nutrient pollution that ends up in the Mississippi River and Gulf of America.



MISSOURI DEPARTMENT OF NATURAL RESOURCES

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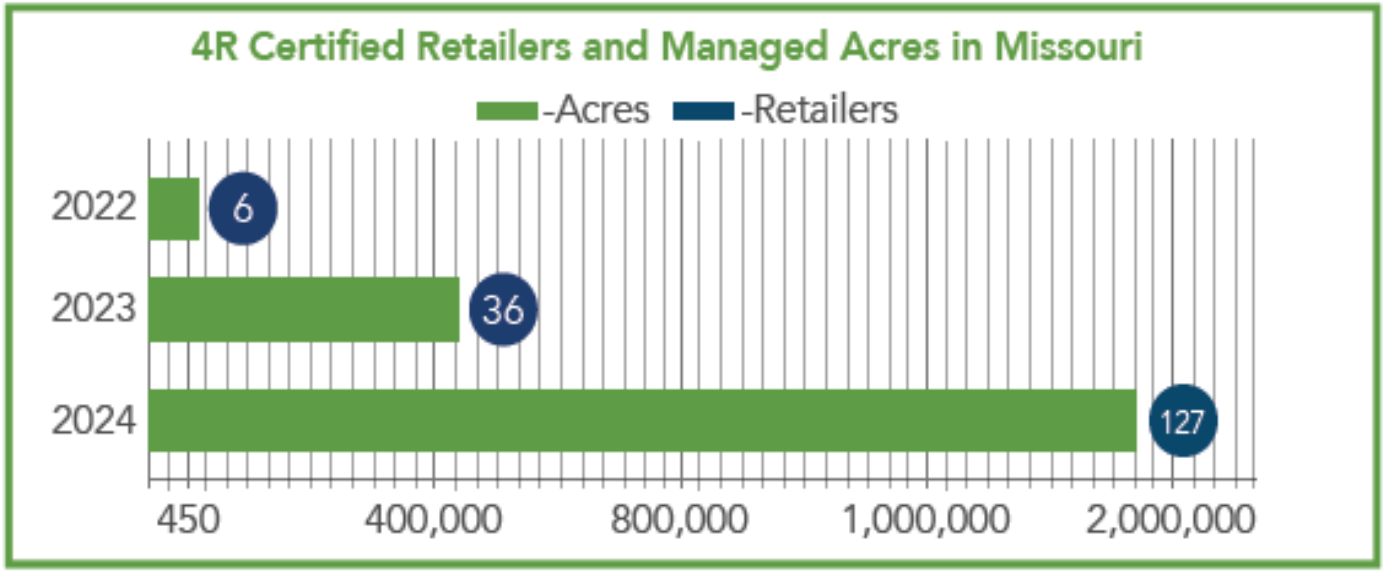
MO NLRS Objective Progress

2022-2025

Implement the 4R Nutrient Stewardship: Missouri Fertilizer Control Board (MoFCB) assisted with the creation and implementation of the 4R Nutrient Management pilot cost-share program in partnership with Missouri Soil and Water Conservation Districts Commission. To date the MoDNR's Soil and Water Conservation Program (SWCP) has 50 4R contracts active or have been paid covering 4,356 acres.



MISSOURI CRCL PROJECT

MISSOURI DEPARTMENT OF NATURAL RESOURCES

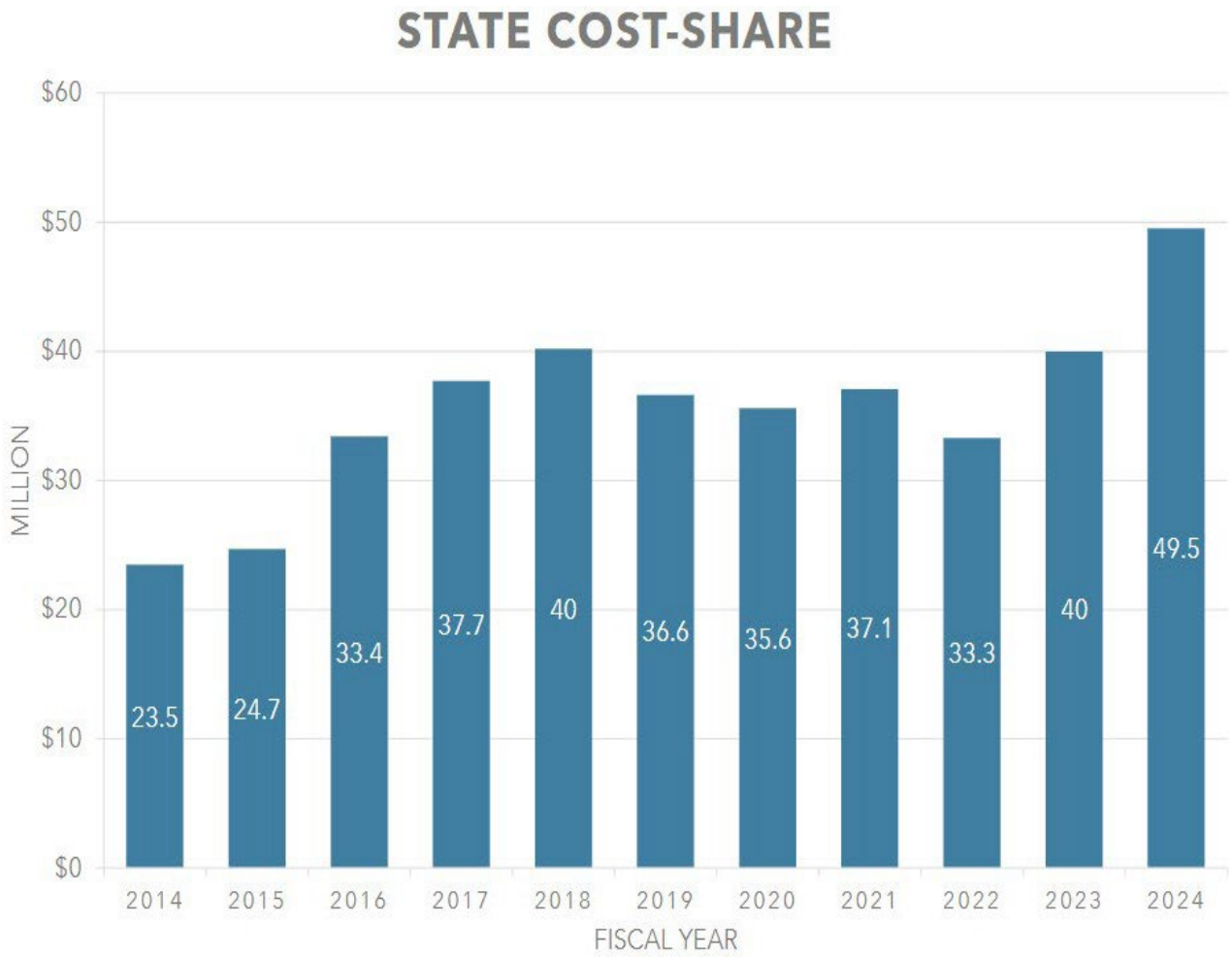
MO NLRS Objective Progress

2022-2025

Administers the Parks, Soil and Water Sales tax: Soil and Water Program funding $168.4 million in cost-share practices on the ground in fiscal years 2022-2025.

Sediment and Nutrient Runoff Prevention: Through the work of the State's 114 Soil and Water Conservation Districts an estimated 5,246,769 tons of soil was prevented from entering Missouri's waterways, along with the associated nutrients and pesticides.

Received GHP Grant to evaluate new nutrient reduction BMPs

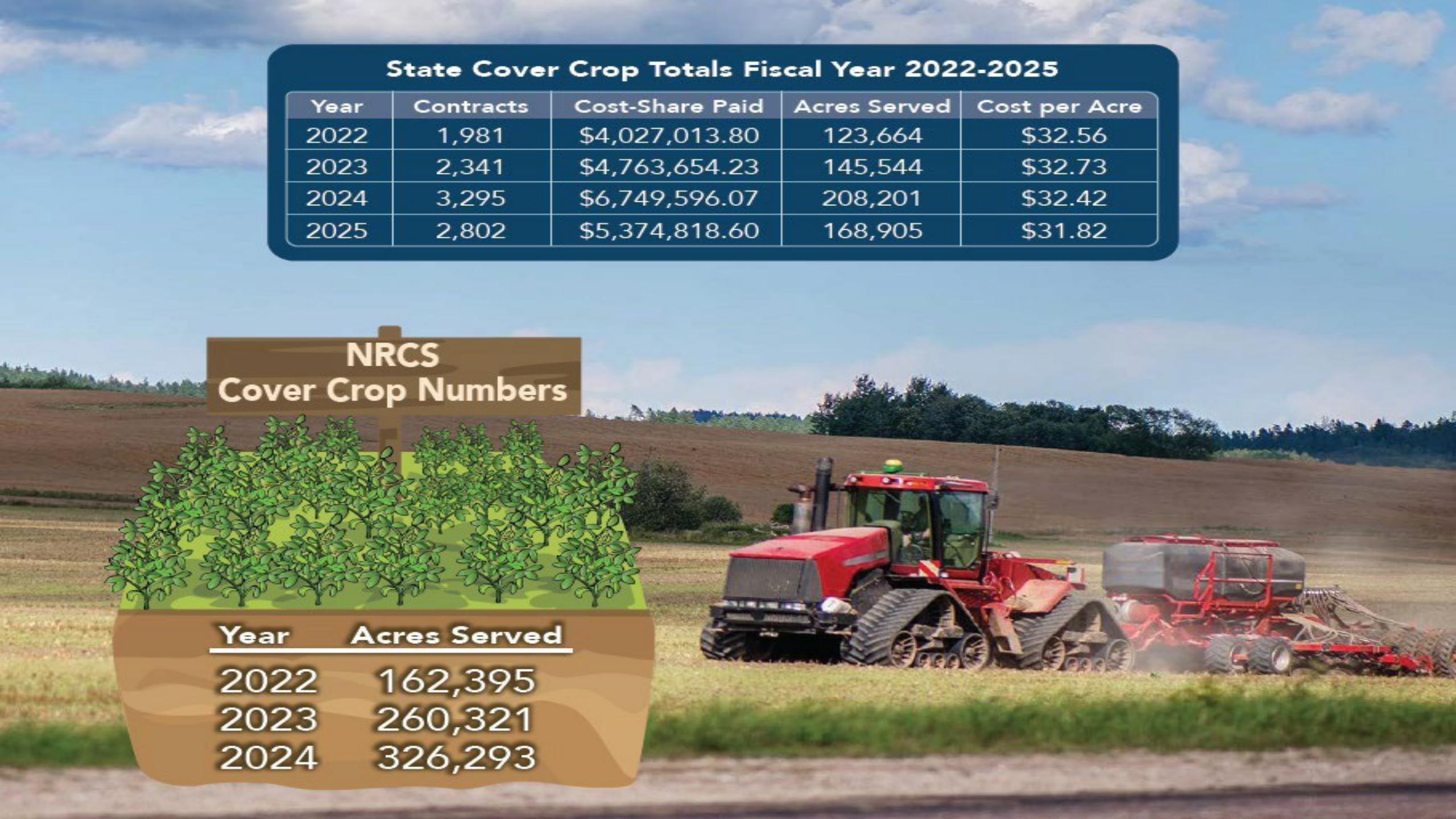


Nutrient Reduction Estimates from State Soil and Water Conservation

Type of practice	N Reduction (lbs/year) AVERAGE PER ACRE	P Reduction (lbs/year) AVERAGE PER ACRE	Sediment Reduction (tons/year) AVERAGE PER ACRE	2014-2024 C-S # Contracts	2014-2024 Acres served	N Reduction (lbs/year) STATEWIDE (based on per acre FY2014-2024)	P Reduction (lbs/year) STATEWIDE (based on per acre FY2014-2024)	Sediment Reduction (tons/year) STATEWIDE (based on per acre FY2014-2024)
Cover Crop Total	5.22	1.38	0.50	21,922	1,400,040	7,310,620.8	1,928,393.3	693,393.1
DSL-01 Total	1.06	0.07	0.00	4,379	113,851	120,226.8	7,481.6	-
DSL-11 Total	1.93	0.33	0.11	296	550	1,060.6	180.7	62.8
DSP-02/DSL-02 Total	1.43	0.09	0.00	1,757	49,610	71,168.2	4,420.4	-
Fld Border Total	6.10	1.35	0.47	160	6,872	41,922.3	9,272.1	3,257.3
N410 Total	3.08	0.73	0.24	4,057	223,067	687,788.4	163,244.1	54,414.7
N472 Total	8.01	1.47	0.53	2,324	62,917	504,210.8	92,408.8	33,564.9
Pond Total	3.62	0.57	0.21	2,784	53,084	192,243.3	30,123.2	11,251.0
Terrace Total	3.50	1.04	0.39	9,760	166,111	580,559.1	172,313.4	64,585.7
WASCoB Total	6.20	0.94	0.30	2,878	33,922	210,217.1	31,814.2	10,030.8
Waterway Total	2.98	0.87	0.32	3,635	120,322	358,419.8	104,338.9	38,471.5
WQ10 (Use Excl + Stream Protect) Total	5.85	0.69	0.30	964	8,135	47,577.3	5,600.0	2,408.2
Grand Total	**234.08**	**61.76**	**0.47**	**54,916**	**2,238,481**	**10,126,014.4**	**2,549,590.8**	**911,440.1**

State Cover Crop Totals Fiscal Year 2022-2025

Year	Contracts	Cost-Share Paid	Acres Served	Cost per Acre
2022	1,981	$4,027,013.80	123,664	$32.56
2023	2,341	$4,763,654.23	145,544	$32.73
2024	3,295	$6,749,596.07	208,201	$32.42
2025	2,802	$5,374,818.60	168,905	$31.82



MISSOURI DEPARTMENT OF NATURAL RESOURCES

MO NLRS Objective Progress

2022-2025

Changes to Land Application Rules:

- Passage of H.B. 2134 in 2024, initiated rule changes to No-Discharge Operations and Land Application Requirements regarding the land application of wastewater and wastewater treatment residuals.

- To implement rule, MoDNR developed the Missouri Industrial Nutrient Management Technical Standard for Industrial Wastewater and Wastewater Treatment Residuals. This standard is now required as part of a permit to conduct this land application.

MISSOURI DEPARTMENT OF NATURAL RESOURCES

MO NLRS Objective Progress

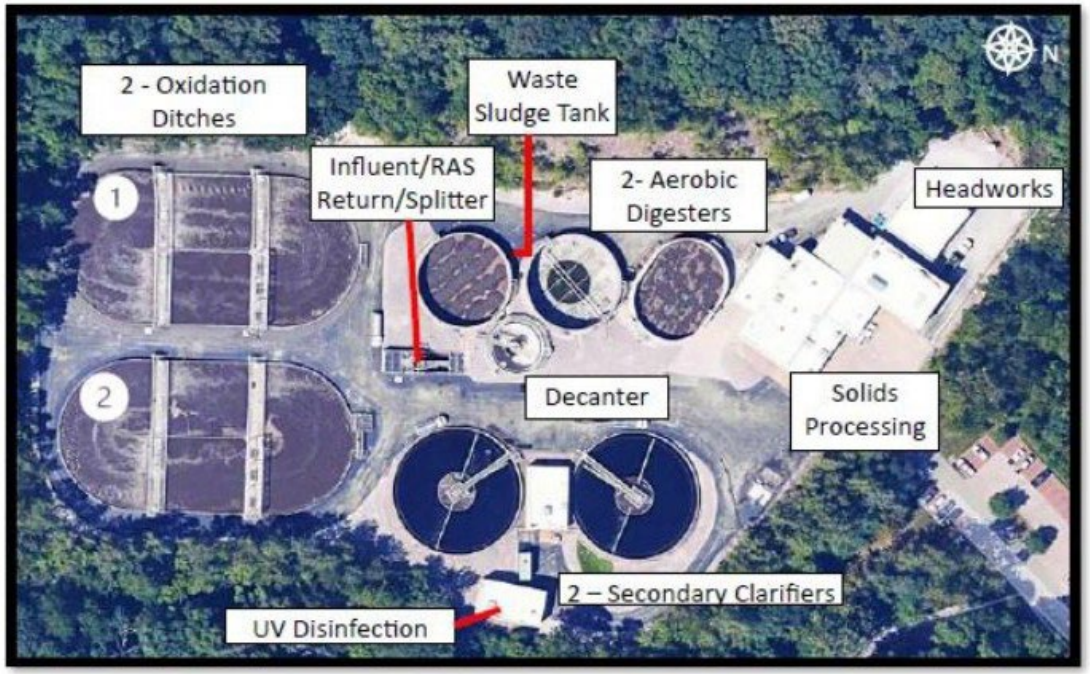
2022-2025

Nutrient optimization project conducted: MoDNR's conducted a nutrient optimization project for 8 wastewater treatment facilities with design flows between the range of 1 million gallons per day to 15 million gallons per day.

We worked to reduce nitrogen and phosphorus levels from their discharge using existing equipment.

Project highlighted possibilities for wastewater treatment facilities to affordable reduce nutrient discharges without the need for plant upgrades.

- Oxidation ditch (7.0 MGD)



	TN (mg/L)	TP (mg/L)	TN (lbs)	TP (lbs)	
Before	23.76	3.92	921	151	
After	9.17	1.91	344	74	
			576	77	lbs/d removed
			105	14	tons/yr removed

MISSOURI DEPARTMENT OF NATURAL RESOURCES

MO NLRS Priorities 26-27

- DNR Water Protection Program will finalize supporting nutrient accounting worksheet and nutrient credit usage plan documents in preparation for point source nutrient trading implementation in Missouri State Operating Permits.
- Establish a Non-point Source Trading Program through DNR's Water Protection Program
- Soil and Water Conservation Program will continue working with NRCS and other partners to implement conservation practices in Missouri.
- The Soil and Water Conservation Program (SWCP) plans to model watersheds for nitrogen, phosphorus, BOD and sediment with an emphasis on the Lower-Missouri Moreau. This is an additional way to show the benefit and return on investment by Missouri's taxpayers through the implementation of the state cost-share program's available practices.
- Soil and Water Program will continue the targeted watershed approach with state-cost share in the Lower Grand. This will include approaching the commission with options to allocate additional funding to this watershed to encourage the use of underutilized and grouped practices with a 90% cost share rate to address sedimentation, water quality and nutrient loss.
- Use the EPA Hypoxia Grant to study the effectiveness of innovative practices

Ohio's Gulf Hypoxia State Update

Department of Agriculture

Environmental Protection Agency

Gulf Hypoxia Workplan 1 Tasks

- Update Ohio's Nutrient Reduction Strategy (ONRS)
- Build Ohio EPA and ODA staff capacity to support for HTF Goals
- Support development of HUC12 Nonpoint Source Implementation Strategies (NPS-IS)
- Support a program that reduces nutrients from Household Sewage Treatment Systems (HSTS)
- Measure the effectiveness of new innovative practices
- Support nutrient load monitoring at key pour points in the Ohio River Basin

Building Staff Capacity

Environmental Protection Agency

Ohio EPA now maintains a full-time Environmental Specialist focused on nutrient reduction in the ORB

Department of Agriculture

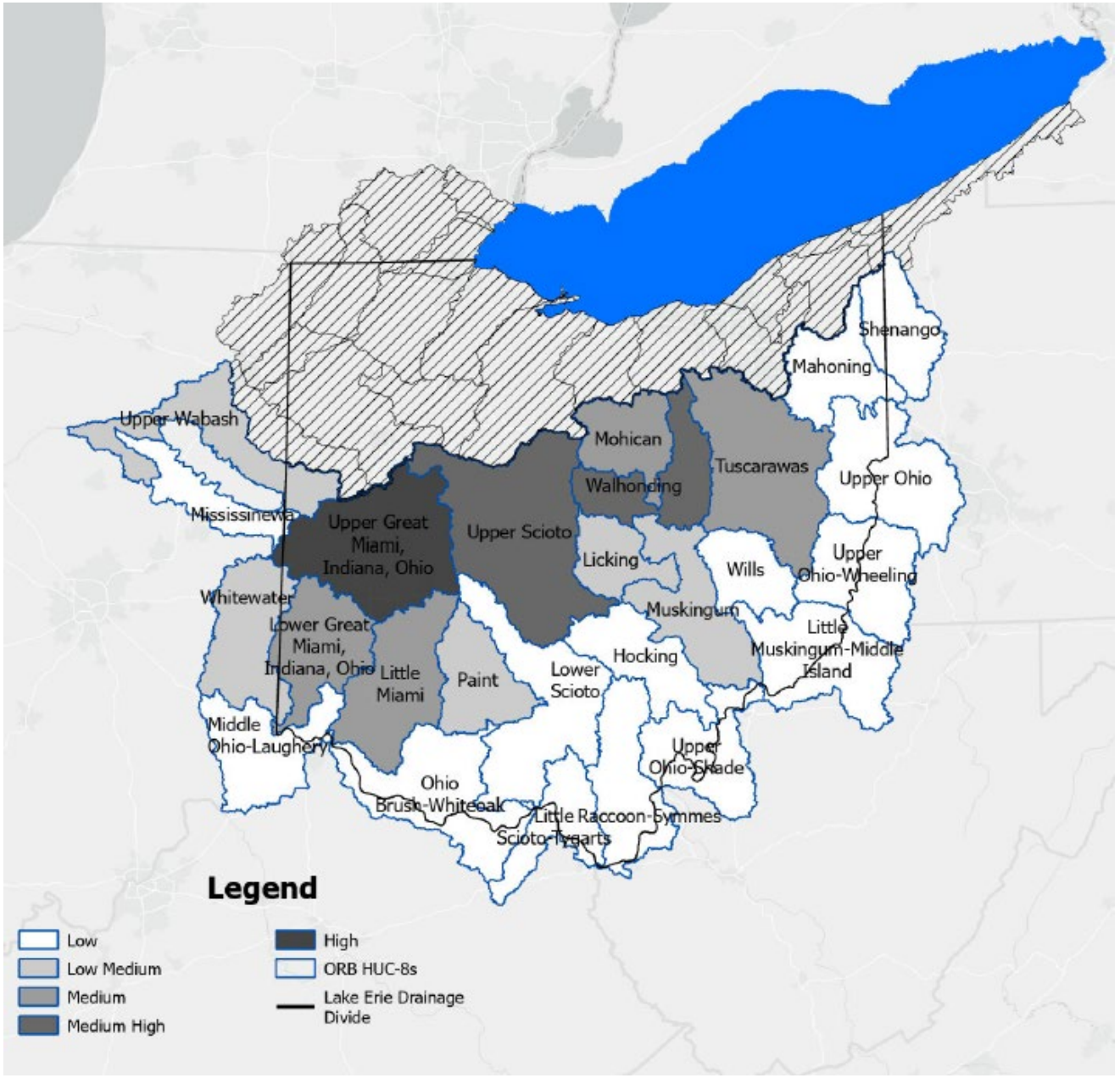
Ohio Department of Agriculture maintains two full-time positions supporting nutrient reduction in the ORB:

- A Conservation Engineer who provides engineering assistance
- A Nutrient Management Specialist who provides training and support to local personnel

Revise ONRS

Why did we need to update?

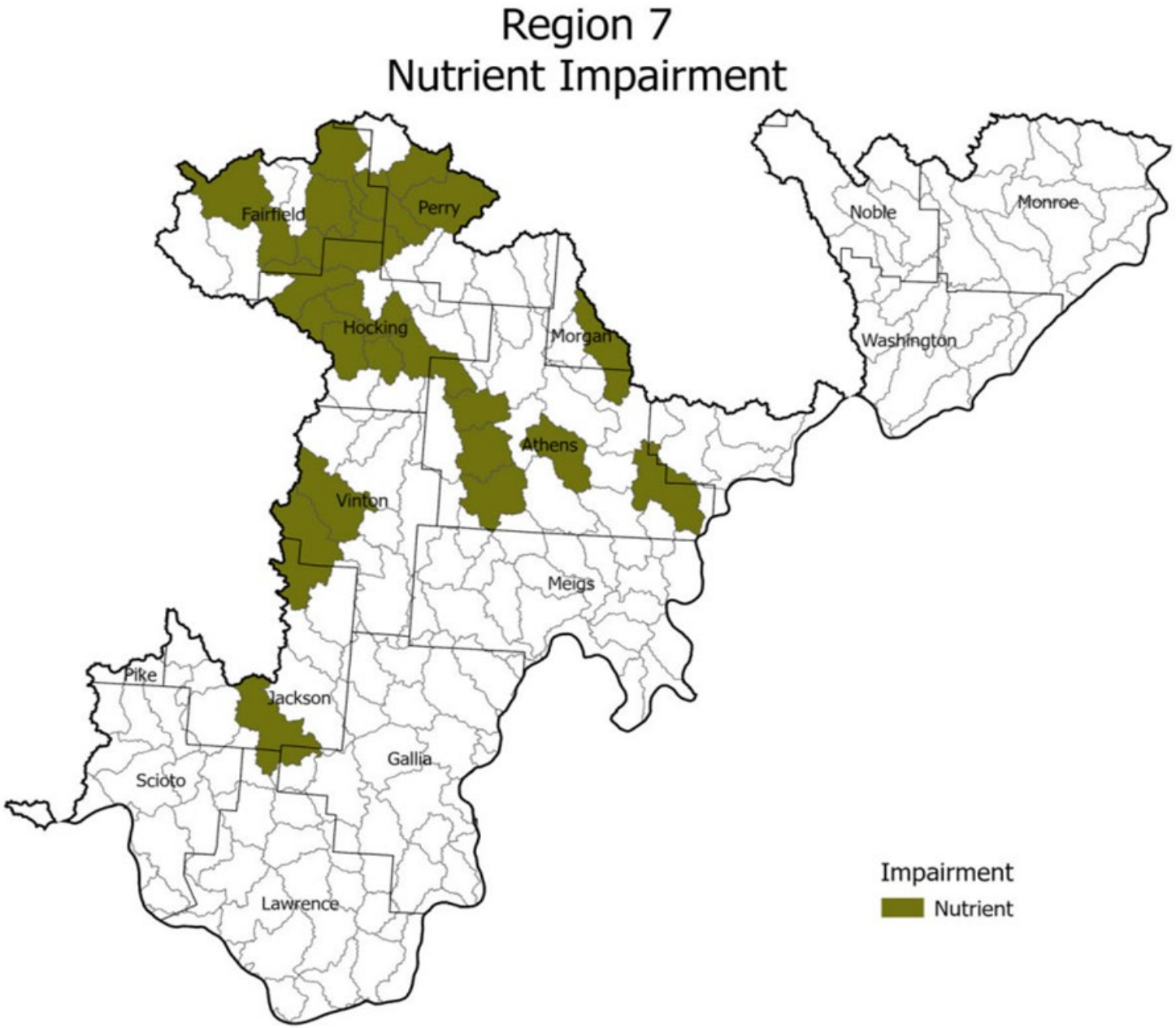
- New guidance
- New baseline data
- Updated priority watersheds
- Changes in WQ since 2013
- Address areas to improve
- Align objectives with changes since 2013



Revise ONRS

What will change?

- Development of baseline data for Ohio River Basin
- Map of impairments broken down by region
- Each strategy update based on comments received during public roundtable meetings



Revise ONRS

Updated Strategies

1. Agricultural Nutrients
2. Enhanced Nutrient Sinks
3. Developed Areas Nutrient Reduction
4. Point Source Nutrient Reduction
5. Decentralized Wastewater Management Reduction
6. Distribution of Resources
7. Outreach and Communication
8. Evaluation and Adaptive Management

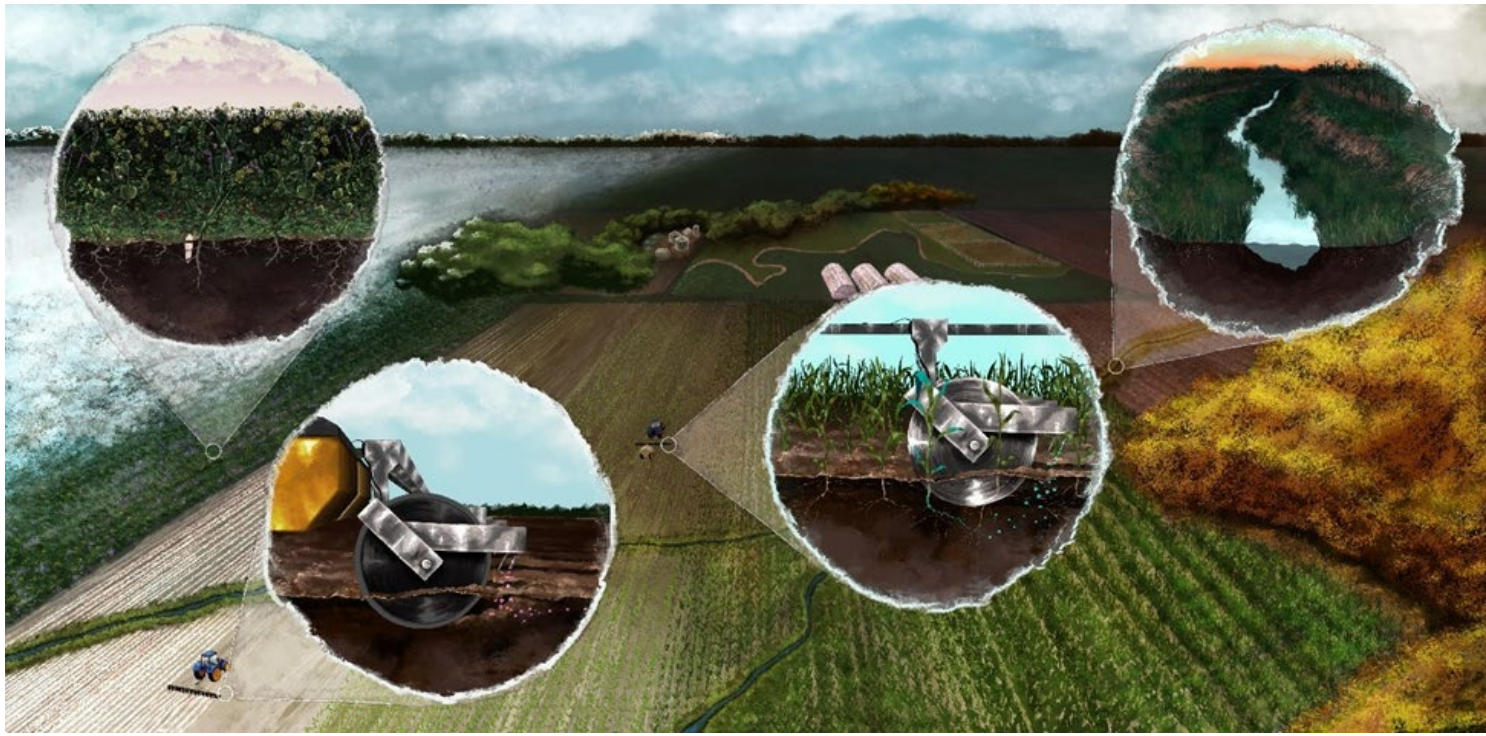


Illustration Credit: Brooke Ripley, MSES '26 Ohio University.

Other Updates

- Completed eight new NPS-IS throughout the Ohio River Basin
- Completed an HSTS project that assessed alternative pathways for treating septage

- Initiated monitoring of new cascading waterway with funding continuing through 2027
- Collected 2 additional years of data on the Hocking, East Fork Little Miami, and Little Miami rivers

Thank You

Department of Agriculture

Environmental Protection Agency

Department of Agriculture

Nutrient Reduction Strategy Implementation in Tennessee

Hypoxia Task Force Meeting

Sam Marshall, Administrator – Land and Water Stewardship Section | February 5, 2026

Tennessee Nutrient Reduction Efforts

- Nutrient reduction efforts in Tennessee is a joint effort between the Department of Environment and Conservation (TDEC) and the Department of Agriculture (TDA).
  - TDEC:
    - TMDLs, NPDES permits, water quality monitoring, etc.
    - Focus on point sources of pollution
  - TDA:
    - Focus on nonpoint sources of pollution
      - 319 nonpoint source grant program
      - Agricultural Resources Conservation Fund (ARCF)
    - Plays a role in CAFO permitting
- In 2019, TDA and TDEC jointly convened the Tennessee Nutrient Reduction Task Force

TDEC Activity and Accomplishments

- Since 2019, 21 wastewater treatment facilities have gone through the Tennessee Nutrient Plant Optimization Program (TNPOP).
- In 2025, 5 facilities going through the program achieved the following:
  - Prevented 1,000,000 lbs/yr of nitrogen, and 40,000 lbs/yr of phosphorus being discharged into Tennessee streams
  - Reduced annual wastewater treatment costs by over $500,000 on average
  - Across the board, reduced average annual energy use by 5,500 MWh

TDEC Activity and Accomplishments

- Bottomline…more is better
  - More watershed plans
  - More stream gauges
  - More data from municipal wastewater treatment plants
  - More firsts:
    - TN is the first state in the US to develop a centralized geodatabase that compiles SCM data reported by MS4s
    - TN hosted the first ever Tennessee Nutrient Summit in November 2025
      - 97 participants from a wide variety of organizations
      - Progress to date, current successes, future challenges and opportunities

TDA Activities and Accomplishments

- Long-term, ongoing cost-share programs:
  - Agricultural Resources Conservation Fund (ARCF)
  - 319 Nonpoint Source Program

- Special, limited-time cost-share programs
  - Gulf Hypoxia Cover Crop Program
  - Tennessee Riparian Incentives Program (TRIP)

Agricultural Resources Conservation Fund

- ARCF collections were slightly up in FY 2025 ($11.7 million) compared to FY 2024 ($11.4 million).
  - In FFY 2025, ARCF spent $7,026,526 for 2,131 BMPs
  - These BMPs impacted 76,684 acres
  - Estimated pollutant load reductions achieved:
    - 338,064 lbs N
    - 118,165 lbs P
    - 55,501 tons sediment

Streambank Stabilization and Exclusion Fencing (Before, 2017) –Bradley County

Streambank Stabilization and Exclusion Fencing (After, 2023) – Bradley County

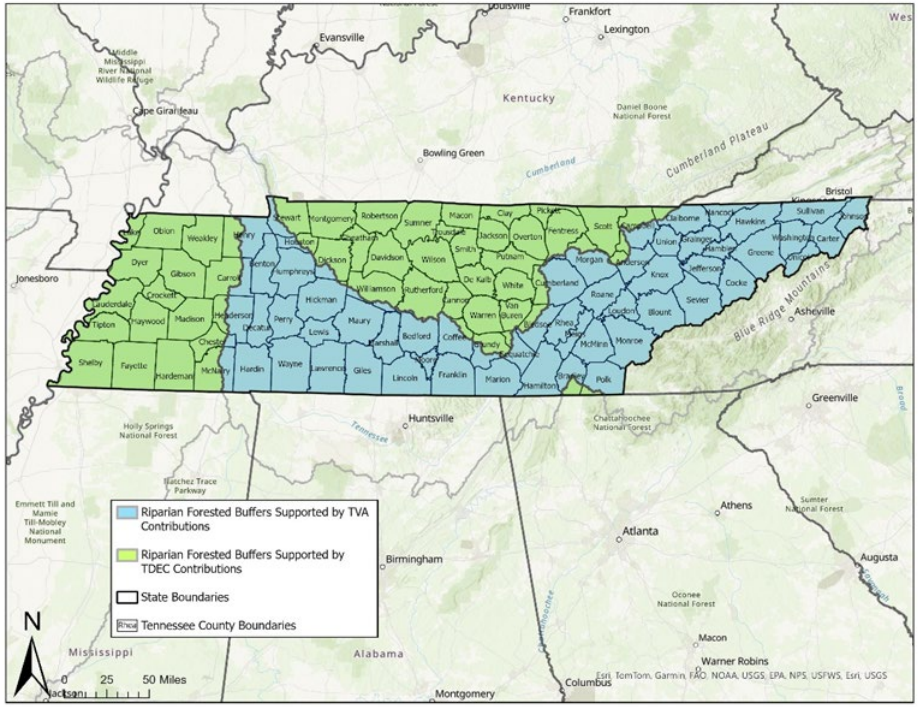
319 Nonpoint Source Grant Program

- Tennessee receives approximately $2.6 million in 319 grant dollars per year
- In FFY 2025, TN paid $540,929 for 104 BMPs
  - These BMPs impacted 2,240 acres
  - Estimated pollutant load reductions:
    - 5,164 lbs N
    - 1,229 lbs P
    - 561 tons sediment

Gulf Hypoxia Cover Crop Project (GHP)

- From 2023-2025, $687,148 in incentives have been paid to 153 landowners.
- To date, approximately 18,200 acres have been planted.
- GHP has resulted in the following estimated load reductions:
  - 69,544 lbs of nitrogen
  - 31,585 lbs of phosphorus
  - 15,779 tons of sediment
- TDA will be receiving an additional $943,000 over the next three years for additional cover crop practices.

Tennessee Riparian Incentives Program (TRIP)



- Unique partnership between Tennessee Valley Authority (TVA), USDA, TDEC, and TDA
  - TVA and TDEC provide $$$
  - USDA provides existing incentives
  - TDA provides conduit for cost-share
- The program pays a one-time $3,000/acre incentive payment to the landowner with a 5-acre cap per participant.

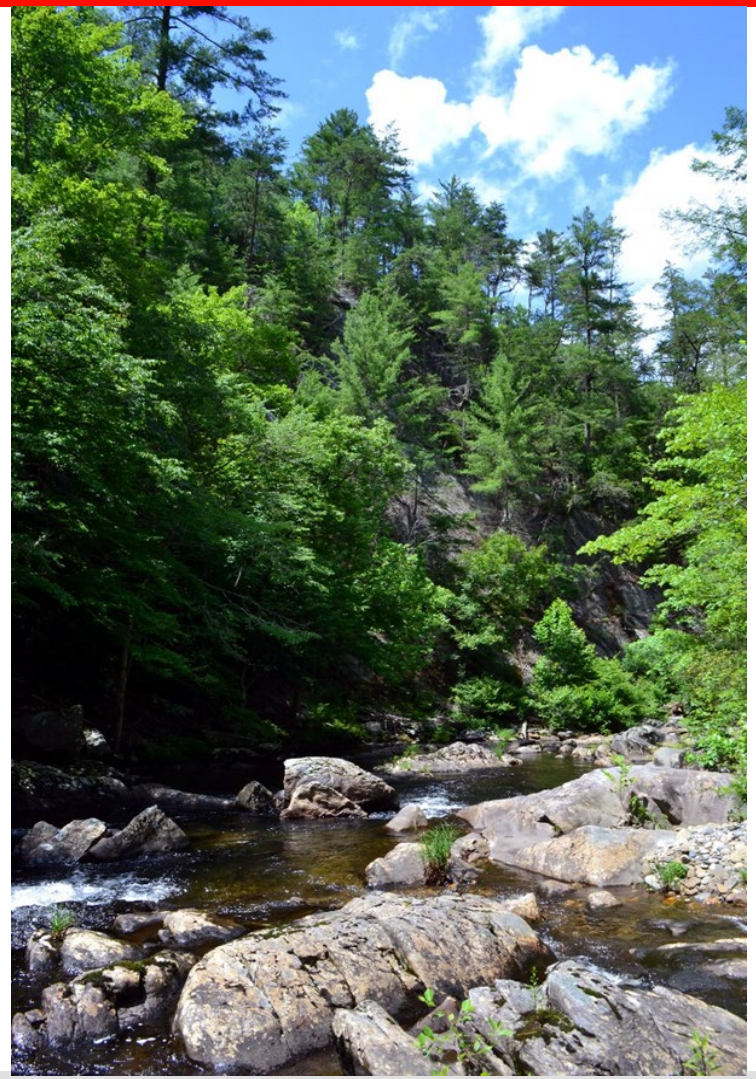
TDA Activities and Accomplishments

- Long-term, ongoing cost-share programs:
  - Agricultural Resources Conservation Fund (ARCF)
  - 319 Nonpoint Source Program

- Special, limited-time cost-share programs
  - Gulf Hypoxia Cover Crop Program
  - Tennessee Riparian Incentives Program (TRIP)

- **Success turns up where funding is provided and partners are willing to work**
  - **2 Success Stores published this year by USEPA**
  - **We are committed to writing 4 Success Stories per year**

Tennessee Hypoxia Contacts



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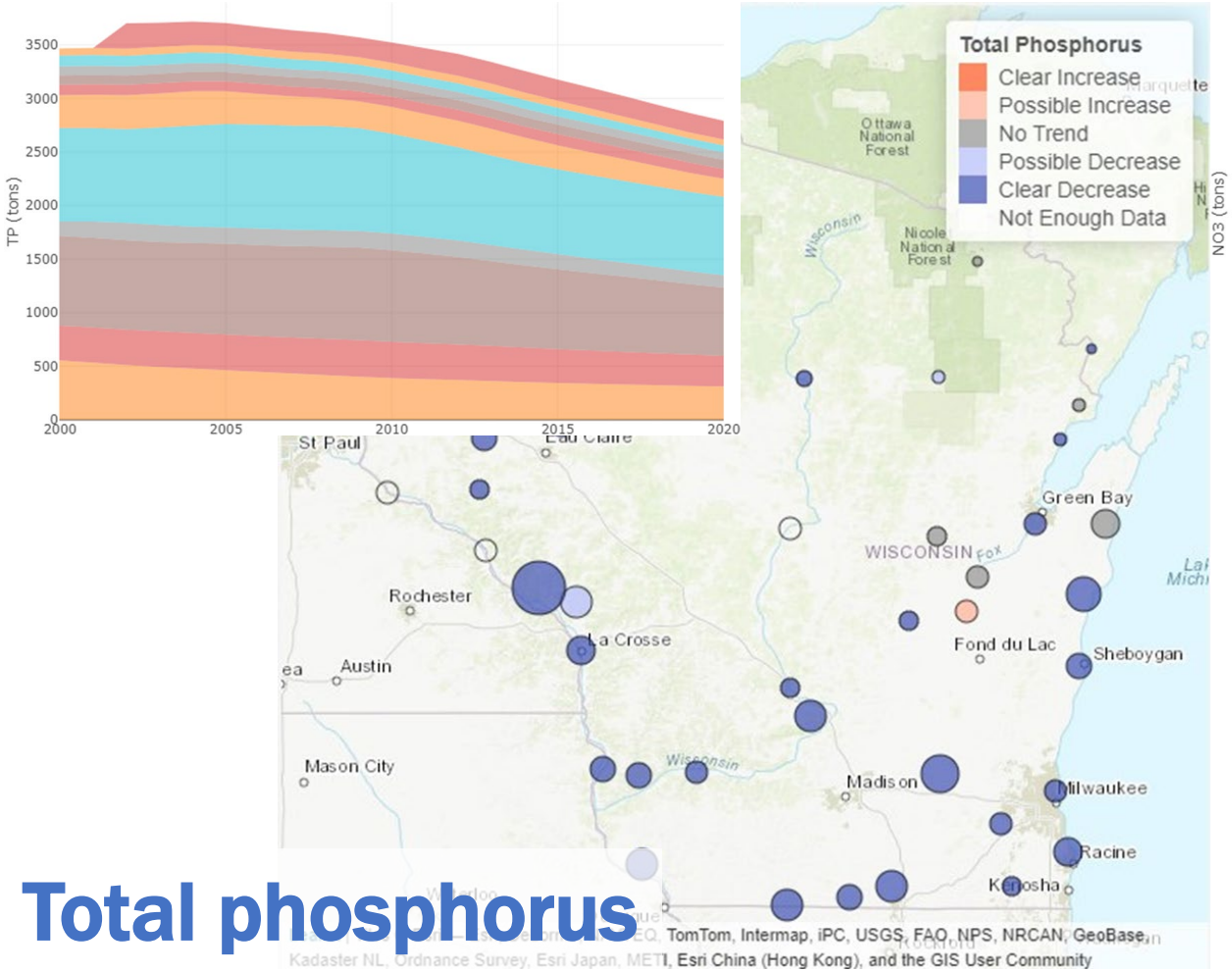
Advancing Wisconsin's Nutrient Loss Reduction Strategy

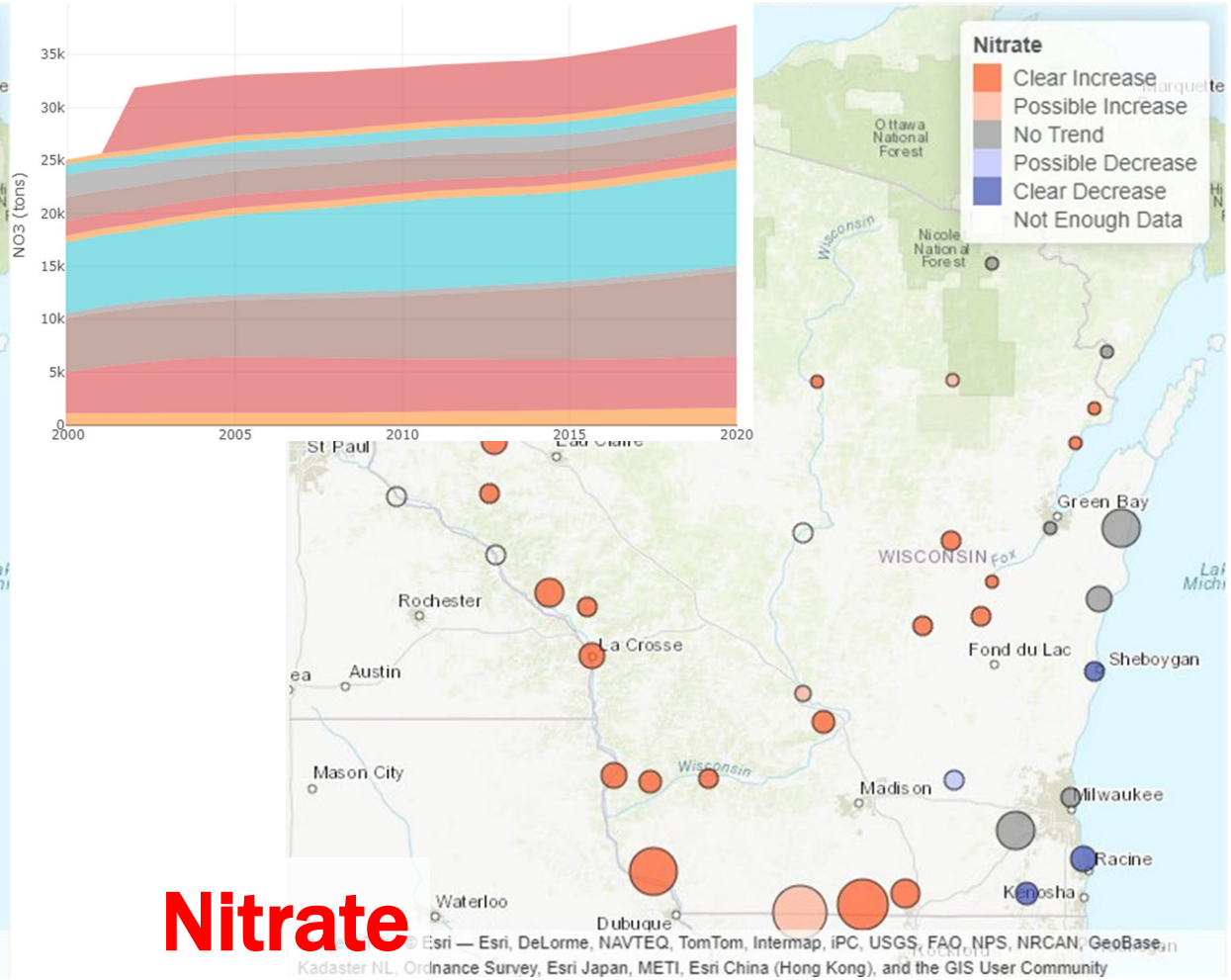
Brian Weigel, PhD | Wisconsin Department of Natural Resources

Hypoxia Task Force Public Meeting | February 5, 2026

Wisconsin is making progress on reducing nutrient losses, but we have more work to do.



Total phosphorus



Nitrate

Wisconsin's new Nutrient Loss Reduction Strategy (NLRS) emphasizes:

Partners

- Improved partner coordination and shared goals

Stakeholders

- Stakeholder participation to inform the strategy

Science

- Effectiveness of practices to reduce nutrient loss

We are prioritizing stakeholder input to the new strategy by seeking feedback and ideas from farmers, their advisors, and agriculture organizations.

Peer networks & local leadership

Trust & communication

Funding & economic opportunities

Technology & research

Consistency & accountability

Science assessments are increasing stakeholders' knowledge of practices, adoption, and impacts.

- Agricultural conservation practices nutrient loss reduction effectiveness
- Social science on adoption and behavior change
- Mass balance assessment of phosphorus and nitrogen

Working better together is Wisconsin's way forward to continue advancing progress.

- Continue partner engagement and communication for NLRS as a unified framework for clean water, resilient agriculture, and public health.
- Align research, funding, and support for short-term actions and long-term priorities.