2023 38th Hypoxia Task Force Public Meeting
The Graduate Hotel, Fayetteville, Arkansas

Agenda

Wednesday, December 6

1:00pm Co-Chairs Opening Remarks
- Radhika Fox, Assistant Administrator for Water, U.S. Environmental Protection Agency (EPA)
- Mike Naig, Secretary, Iowa Department of Agriculture and Land Stewardship

1:20pm Welcome to Arkansas
- Chris Colclasure, Director of the Natural Resources Division, Arkansas Department of Agriculture

1:40pm Summary of Key Messages in the 2023 Report to Congress
- Katie Flahive, U.S. EPA

1:45pm HTF Federal Support

National Oceanic and Atmospheric Administration (NOAA) Update on Gulf of Mexico Hypoxic Zone
- Dave Scheurer, NOAA

United States Geological Survey (USGS) Update on Loading Trends
- Lori Sprague, Department of Interior, USGS

United States Department of Agriculture (USDA) Update
- Martin Lowenfish, USDA, Farm Production and Conservation, Natural Resource Conservation Service

2:10pm Break

2:25pm Gulf Hypoxia Program Report Out
- Tate Wentz, Arkansas
- Julie Harrold and Breegan Andersen, Indiana
- John Lyons, Kentucky
- Amanda Marshall, Louisiana
- Katrina Kessler, Minnesota

Partner Summaries
- Kirsten Wallace, Upper Mississippi River Basin Association
- Ken Genskow, Land Grant University Consortium, SERA-46

3:45pm Public Comments

4:00pm Adjourn

All times are in Central Time

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NOAA Update on Gulf of Mexico Hypoxic Zone

David Scheurer, Ph.D.
National Oceanic and Atmospheric Administration

Hypoxia Task Force Meeting
December 2023

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Outline

- Hypoxic Zone Monitoring Results
- Retrospective Analysis
- Climate Impacts on Gulf Hypoxia
- Emerging Technologies for Hypoxia Monitoring

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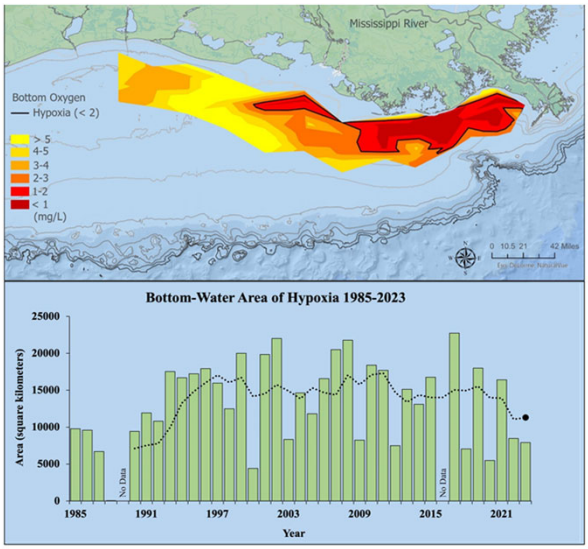
Hypoxia Zone Monitoring Results



Measured mid-summer extent of hypoxic zone – Key metric to assess progress toward the 2035 HTF Coastal Goal (5,000 km^2)

Predicted Size = 10,761 km^2
Measured Size = 7,920 km^2
5-Year Average = 11,259 km^2

Forecast models within margin of error but overall hypoxic zone was smaller than expected
Still impacting close to 2 million acres of habitat

Outreach Efforts
Two Press Releases and Media Teleconference
~27 news articles written with reach >88M

Source: (Rabalais, LSU, NOAA)

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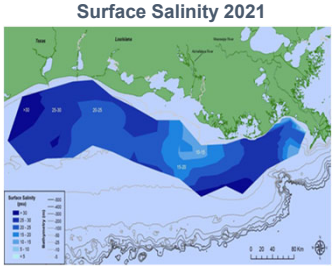
Retrospective Analysis

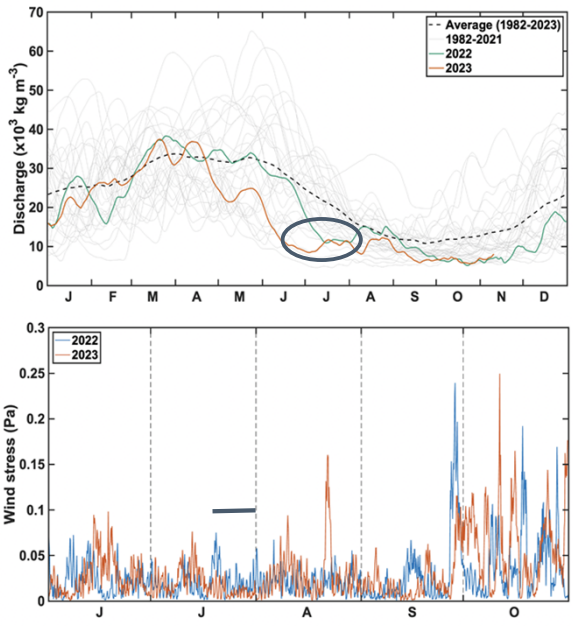
- Extremely low Mississippi River discharge resulted in high surface salinities
- Stratification was reduced even with calm winds and high temperatures
- River discharge and nutrient loading, both controlling factors of hypoxia size, were reduced in response to prolonged drought conditions

Surface Salinity 2021



Surface Salinity 2023

Source: (Rabalais, LSU)



Source: (Fennel, Dalhousie; Justic, LSU)

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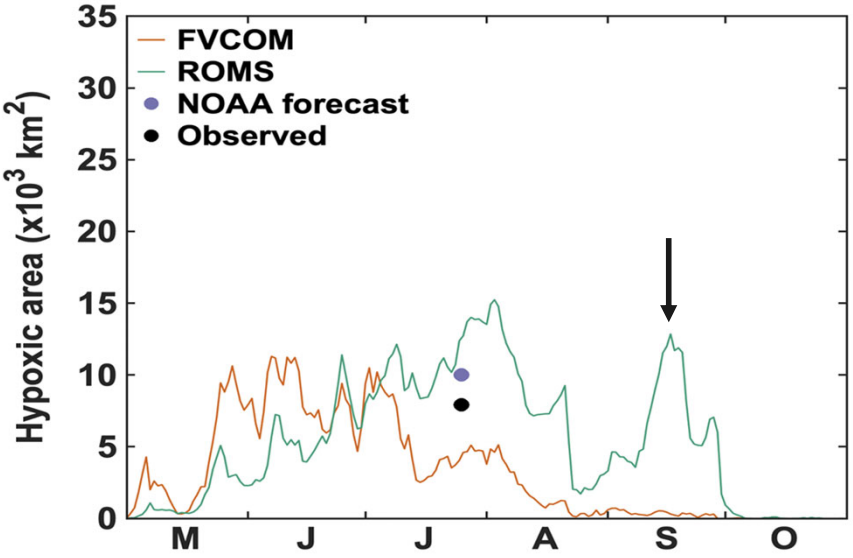
Retrospective Analysis



Source: (Fennel, Dalhousie; Justic, LSU)

Models captured seasonal dynamics but differed in hypoxia area magnitude

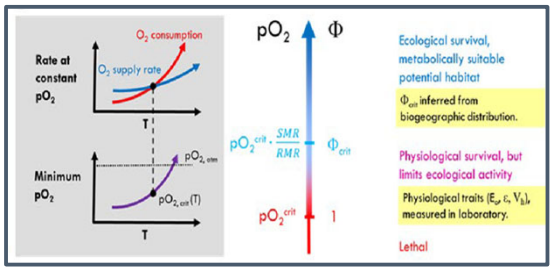
Unlike previous years, neither model had good agreement with cruise data

Differences in how mixing and stratification strength are modeled affected calculated hypoxia area

Climate Impacts on Gulf Hypoxia

- New NOAA Coastal Hypoxia Research Program (CHRP) project that will explore the combined effects of climate warming, ocean deoxygenation and eutrophication on hypoxia and ecosystems
- A trait-based ecophysiological framework for temperature-dependent hypoxia impact on species habitability will be utilized
- Will provide information to coastal managers and stakeholders to plan for nutrient reduction strategies to minimize the hypoxic zone within the context of climate change and species health

Title: Biological Vulnerability to Hypoxia from Climate Warming and Eutrophication in the Northern Gulf of Mexico
Institutions: LSU, Princeton University, University of Louisiana Lafayette, USGS
Project Period: 2023 – 2027



Ecophysiological Response Framework

Source: (Liang, LSU)

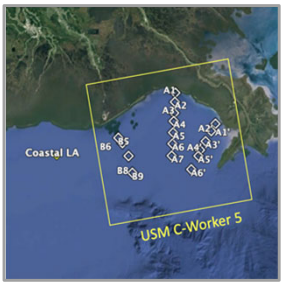
Emerging Technologies for Hypoxia Monitoring

C-Worker 5 (ASV)

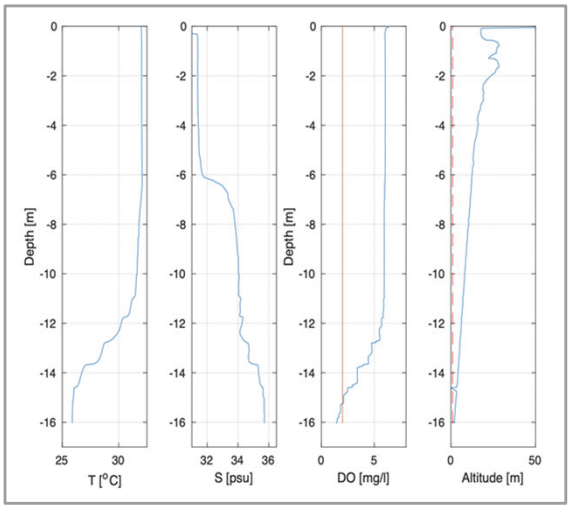
- Diesel powered with winch-based system
- Conducted initial near-shore field trial last year
- Offshore field trial was conducted in August

https://ioos.noaa.gov/project/ott-asv-hypoxia

USM Sea Eagle



Offshore Testing Locations



USM C-Worker 5 Winch Data

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Emerging Technologies for Hypoxia Monitoring

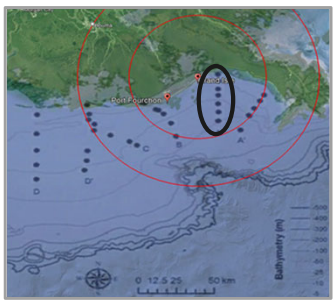
Triton (AUSV)

- Sail capability and solar charging with keel sensors
- Conducted first near-shore field trial in 2022

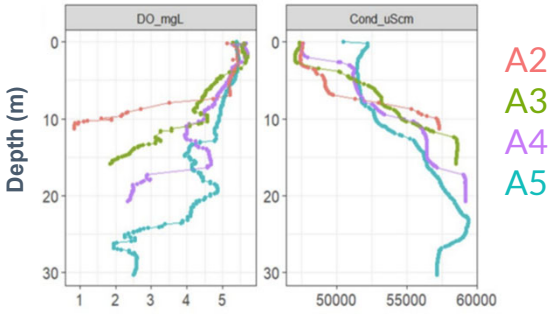
SP-48 (ASV)

- Solar charging with winch system and AML sonde
- Offshore testing in Sept on hypoxia A transect

Concurrent Triton and SP-48 offshore testing is planned for next week and in conjunction with the survey cruise next year



SP-48 Offshore Testing Location



SP-48 Winch Data (AML Sonde)

Triton (top) and SP-48 (bottom)

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Thank you
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Long-term Monitoring of the Mississippi River and Progress Toward Nutrient Reduction Goals

Lori Sprague
Hydrologist, U.S. Geological Survey, U.S. Department of the Interior

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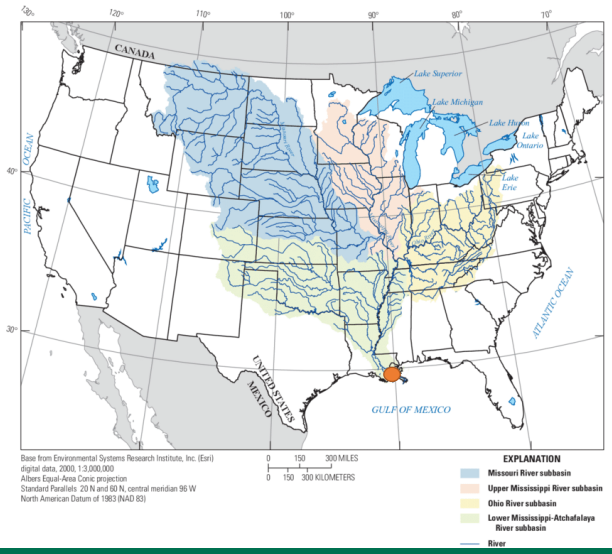
Long-term Monitoring by the U.S. Geological Survey



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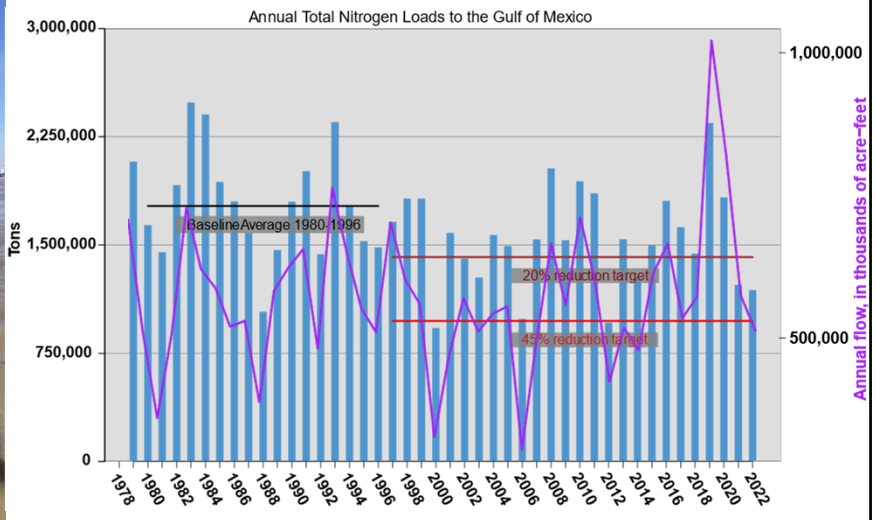
Progress toward reduction goals

Mississippi River Gulf of Mexico Watershed Nutrient Task Force

Basin targets set by the Hypoxia Task Force

Nitrogen and phosphorus loads from the Mississippi River Basin to the Gulf reduced by

- 20% by 2025 (interim)
- 45% by 2035



USGS Provisional results subject to revision. Not for citation or distribution. www.usgs.gov

3

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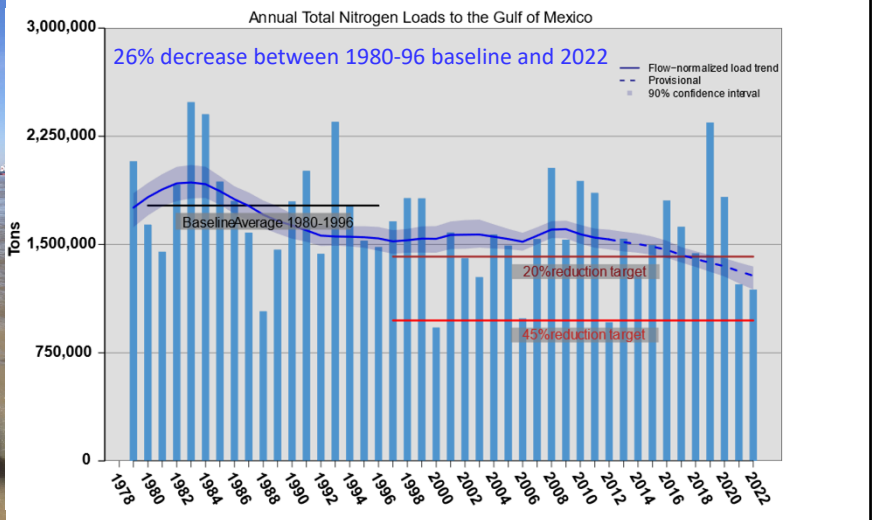

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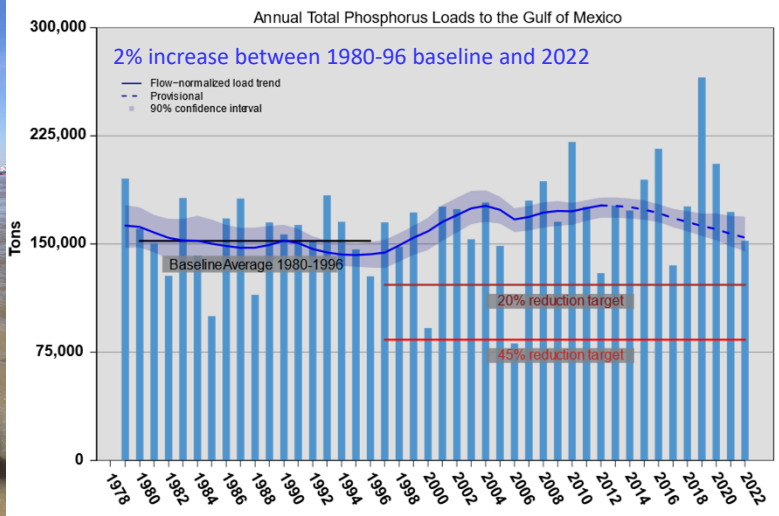

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Conclusions

As of 2022

- Total nitrogen loads from the Mississippi and Atchafalaya River Basins into the Gulf of Mexico have decreased below the 2025 interim reduction target set by the Hypoxia Task Force
  - Total nitrogen loads are above the 2035 reduction goal
- Total phosphorus loads are above both the 2025 interim target and the 2035 goal

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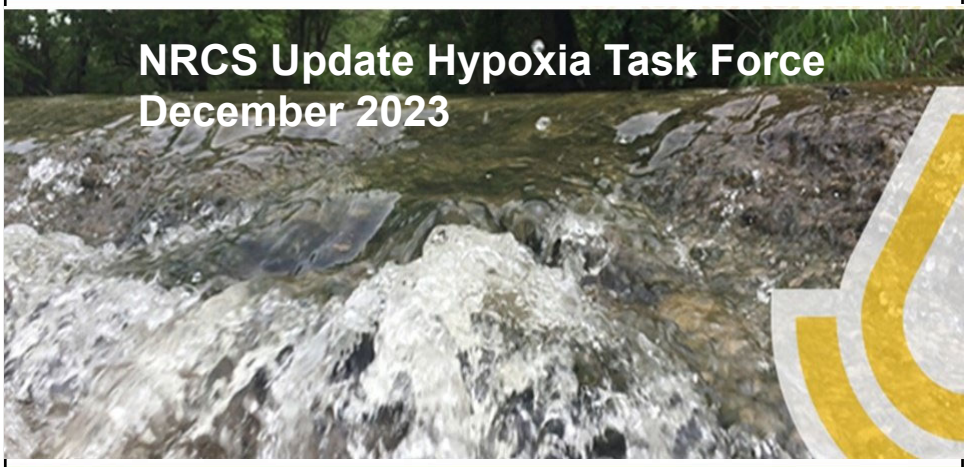
USDA United States Department of Agriculture

Area Wide Planning Branch, CPTAD

NRCS Update Hypoxia Task Force December 2023



Martin Lowenfish
USDA Natural Resources Conservation Service
Branch Chief for Areawide Planning
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John Bullough
USDA Natural Resources Conservation Service
NWQI | MRBI Initiatives Coordinator
John.Bullough@usda.gov

Natural Resources Conservation Service
nrcs.usda.gov/

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USDA United States Department of Agriculture

Inflation Reduction Act (IRA)

- Signed into law by President Biden in August 2022
  - IRA funds first available in fiscal year 2023
  - IRA funds must be spent by September 30, 2031
- The IRA provides NRCS with $19.5 billion in **additional** funds for its **existing** conservation programs:
  - $8.45 billion Environmental Quality Incentives Program (EQIP)
  - $4.95 billion Regional Conservation Partnership Program (RCPP)
  - $3.25 billion Conservation Stewardship Program (CSP)
  - $1.4 billion Agricultural Conservation Easement Program (ACEP)
  - $1 billion Conservation Technical Assistance
- IRA appropriations will scale up each fiscal year through FY 2026
- **The IRA does not create any new programs** – it gives NRCS additional funds to **expand its existing climate efforts** and satisfy unmet demand

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Focuses on Mitigation & Facilitating Practices

Tree/Shrub Establishment (612)
Tree Shrub Site Preparation (490)
Access Control (472)

Conservation Crop Rotation (328)
Cover Crops (340)
Irrigation Water Management (449)
Pest Management Conservation System (595)

Waste Separation Facility (632)
Waste Transfer (634)
Roofs and Covers (367)

Prescribed Grazing (528)
Watering Facility (614)
Stream Crossing (578)
Fence (382)
Livestock Shelter Structure (576)

- The IRA directs NRCS to use the additional funds specifically for **climate change mitigation**.
- Mitigation activities ***reduce greenhouse gas emissions and improve carbon storage.***
  - FY24 list of **NRCS climate-smart mitigation activities:** nrcs.usda.gov/mitigation-activities.pdf
- IRA funding can also be used for practices needed to ***facilitate a mitigation practice***.
- Here are some examples of **conservation systems** that **include** mitigation practices and the practices that may be needed to facilitate them.

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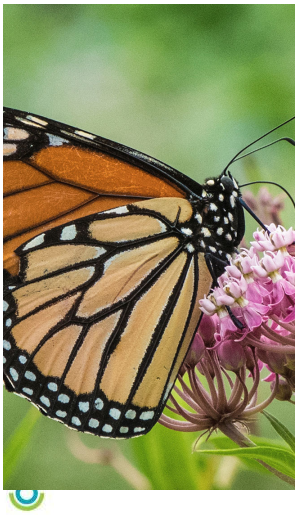
USDA United States Department of Agriculture

Conservation Systems' Multiple Benefits



- Conservation systems may also provide other benefits besides climate change mitigation, such as:
  - Reducing risks and vulnerabilities and building resilience to climate change impacts (***climate change adaptation***)
  - Addressing other resource concerns like soil health, **water quality**, pollinator and wildlife habitat, and air quality
- Although many conservation practices can provide other benefits, **practices without mitigation benefits are not eligible for IRA funding unless they are needed to facilitate a mitigation practice.**

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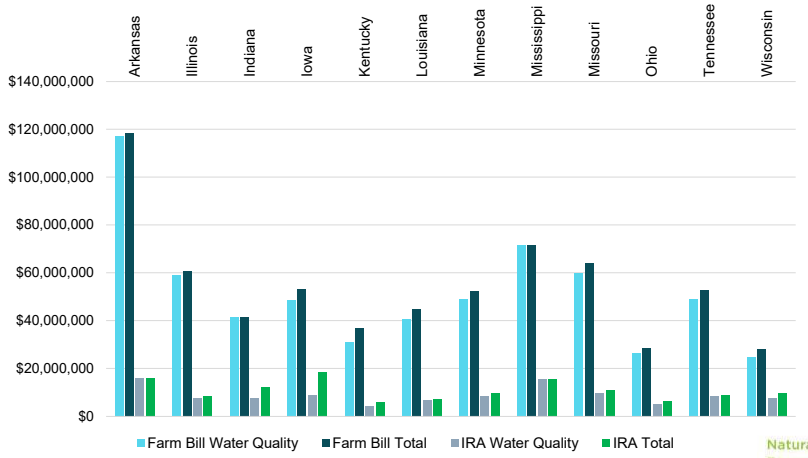
USDA United States Department of Agriculture

FY 2023 Obligations Benefitting Water Quality in HTF States (Farm Bill & IRA)



Obligations represent ACEP, CSP, RCPP, and EQIP.
Farm Bill data is limited by HUC2 05,06,07,08,10,11 (HTF). IRA data includes entire State.
IRA state total reports can be found at: Inflation Reduction Act Investments by State | Natural Resources Conservation Service (usda.gov)

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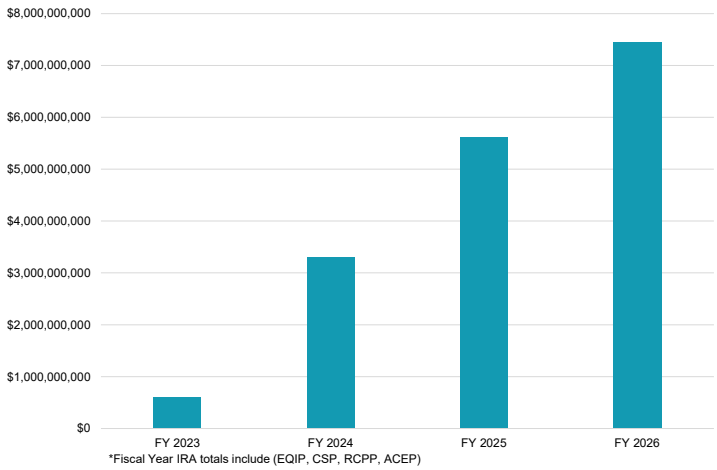
IRA Authorized Funding



*Fiscal Year IRA totals include (EQIP, CSP, RCPP, ACEP)

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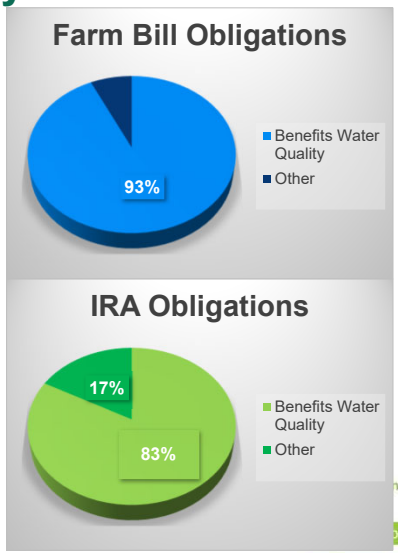
USDA United States Department of Agriculture

FY 2023 State Average for Obligations that Benefit Water Quality

- On average, 93% of **Farm Bill** obligations, and 83% of **IRA** obligations benefit water quality in HTF states
- Average **Farm Bill** obligations to benefit Water Quality in HTF states was $51.5 Million, and average **IRA** obligations to benefit Water Quality in HTF states was $8.8 Million (per state)



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USDA United States Department of Agriculture

MRBI and NWQI Updates

- NRCS Chief Cosby approved decision to extend the National Water Quality Initiative (NWQI) and the Mississippi River Basin Healthy Watershed Initiative (MRBI) beyond FY 2023
- Activities in each of these targeted water quality initiatives continue to expand
- Partners have the opportunity to work with State Conservationists to target these initiatives and other funding to address water quality concerns

FY 2023 Watersheds Enrolled		
	NWQI	MRBI
Implementation	123	285
Planning (TA)	30	30

FY 2024 Watersheds Enrolled		
	NWQI	MRBI
Implementation	138	314
Planning (TA)	44	70

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Nutrient Reduction: Northwest Arkansas

NATURAL RESOURCES DIVISION

Tate Wentz
Water Quality Section Manager

38th Mississippi River/Gulf Hypoxia Task Force Meeting
Fayetteville, AR
December 6, 2023

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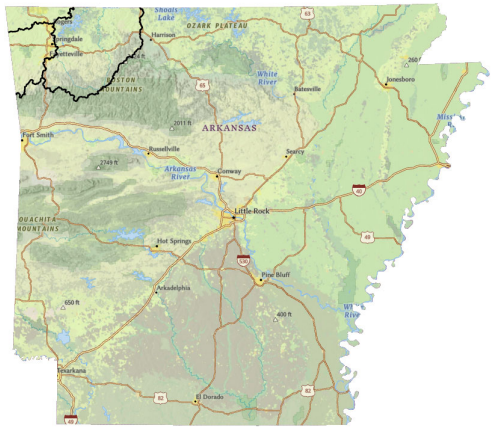
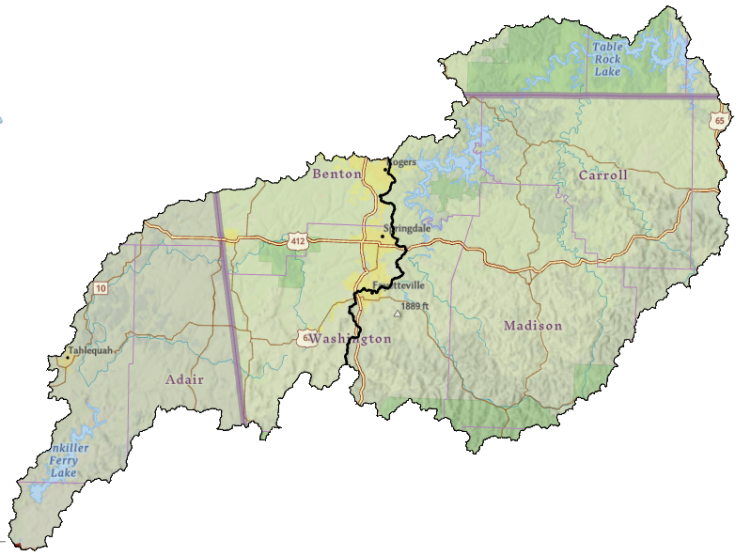
Nutrient Reduction and Northwest Arkansas





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Nutrient Reduction and Northwest Arkansas

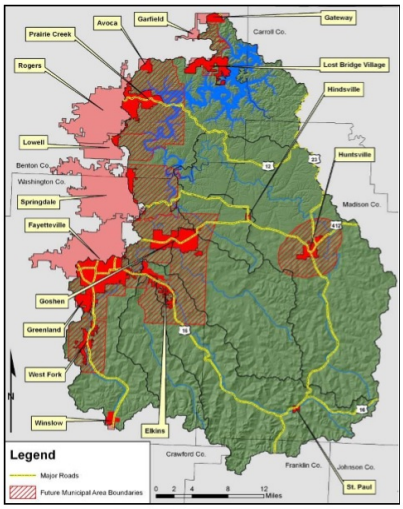
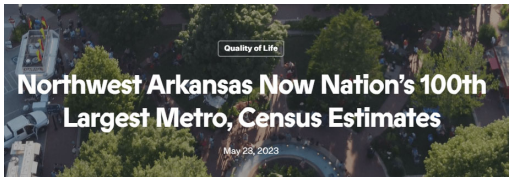


Figure 2-3. Comparison of Existing and Planned Future Municipal Boundaries



Preparing for
1 million people by 2045

Projected growth makes sediment loading reduction essential to maintain source water quality

Beaver Lake provides source water for one in five Arkansans

Nutrient Reduction: Illinois River

1970: Oklahoma designates the Illinois River a scenic waterway (among others) as part of the 1970 Oklahoma Scenic Rivers Act.

1988: US EPA approves Fayetteville NPDES permit - Oklahoma sues.

1992: U.S. Supreme Court rules Arkansas must meet downstream state WQS

2003: Arkansas and Oklahoma agree to work together to reduce pollution in the Illinois River watershed

2003: Arkansas Legislature passes four laws addressing poultry litter and nutrients

2005: OK files suit against 14 poultry companies

2009: Federal trial begins in Judge Gregory Frizzell's courtroom

2010: Arkansas P Index updated for implementation Title 22

2010: Final arguments in chicken poultry case. After more than eight years, no decision has been rendered.

2013: Oklahoma and Arkansas announce joint three-year study as a continuance of the 2003 agreement as a "Second Statement of Joint Principles and Actions."

2016: The Joint Principals agreement yields the Oklahoma-Arkansas Scenic Rivers Joint Phosphorus Study

2023: Judge Frizzell rules on poultry case

Nutrient Reduction: Beaver Reservoir

BEAVER LAKE SITE-SPECIFIC WATER QUALITY CRITERIA DEVELOPMENT: RECOMMENDED CRITERIA

In 2013, APC&EC adopted the following language into part (B) Site Specific Nutrient Standards of Regulation 2.509, Nutrients:

(B) Site Specific Nutrient Standards

Lake	Chlorophyll a (ug/L)**	Secchi Transparency (m)***
Beaver Lake*	8	1.1

*These standards are for measurement at the Hickory Creek site over the old thalweg, below the confluence of War Eagle Creek and the White River in Beaver Lake.
**Growing season geometric mean (May - October)
***Annual Average

FEBRUARY 8, 2008

Nutrient Reduction: Legislative Action

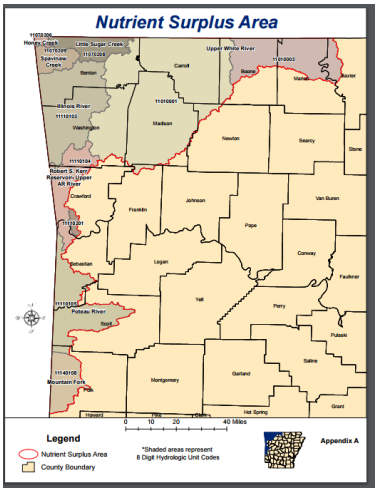
In 2003 the Arkansas 84th General Assembly passed 3 laws affecting the way Arkansas manages and applies nutrients

ACT 1059: Soil Nutrient Management Planner and Applicator Certification Act.

ACT 1060: Registry of Poultry Feeding Operations.
Title 19: Registry of PFOs

ACT 1061: Requires Proper Application of Nutrients and Utilization of Poultry Litter in Nutrient Surplus Areas.
Title 20: Nutrient Management Planner Certification Program
Title 21: Nutrient Management Applicator Certification Program
Title 22: Soil Nutrient and Poultry Litter Application and Management Program

ACT 2294: Requires a Nutrient Management Plan for all dry litter applications.



Nutrient Reduction: Implementation

Arkansas Phosphorus Index

- Arkansas Phosphorus Index
  - 2010 – Pasture and Hayland
  - 2019 – Row Crop (Pending)
- Factors Considered(Pasture)
  - Soil Test Phosphorus
  - Soluble P application
  - Soil Erosion
  - Soil Runoff Class
  - Flooding Frequency
  - Application Method
  - Application Timing
- Credit for BMP's Implemented

Best Management Practice	CPS#	Credit
Diversion	362	5%
Terrace	600	10%
Pond	378	20%
Fenced pond		30%
Filter strip	393	20%
Fenced filter strip		30%
Grassed waterway	412	10%
Fencing	382	30%
Riparian forest buffer	391	20%
Fenced riparian forest buffer		35%
Riparian herbaceous cover	390	20%
Fenced riparian herbaceous cover		30%
Field borders	386	10%

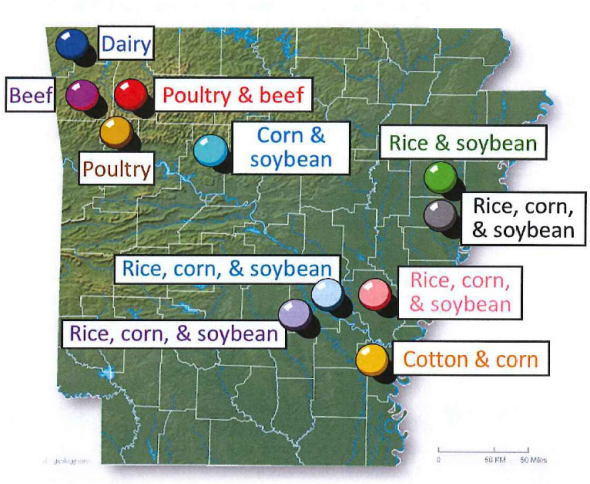
P Index Value	Site Interpretations and Recommendations
LOW	Caution against long-term buildup of P in the soil.
MEDIUM	Evaluate the Index and determine any field areas that could cause long-term concerns. Consider adding BMPs.
HIGH	Evaluate the Index and determine elevation cause. Add appropriate BMPs and/or reduce P application. The immediate planning target is an API value in the Medium class or lower. If this cannot be achieved with realistic BMPs and/or reduced P rates in the short-term, then a conservation plan needs to be developed with a long-term goal of an API value in the Medium class or lower.
VERY HIGH	No P application. Add BMPs to decrease this value below the Very High class in the short-term and develop a conservation plan that would reduce the API value to a lower risk category, with a long-term goal of an API in the Medium class or lower.

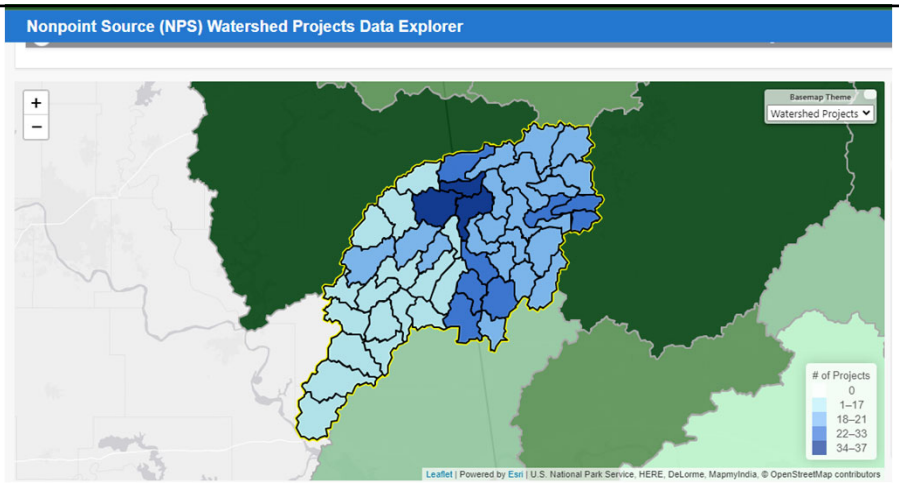
Nutrient Reduction: Implementation

Arkansas Discovery Farms

U of A – Division of Agriculture

- Conduct on-farm research and monitoring which assesses the need for and effectiveness of best management practices.
- Provide on-farm verification and documentation of conservation practices which ensure sound environmental land stewardship.
- Develop and deliver educational programs from data collected on-farm that will assist producers in achieving both production and environmental goals, thus increasing the overall sustainability of Arkansas' farming enterprises.





HUC12 EPA Investments (319 Funding)

$6,827,440 from 319 (45 projects)

$8,248,232 from local sponsors

$15,075,672 in total investments

Source: EPA's NPS tracking tool and Arkansas Natural Resources Division, 2022
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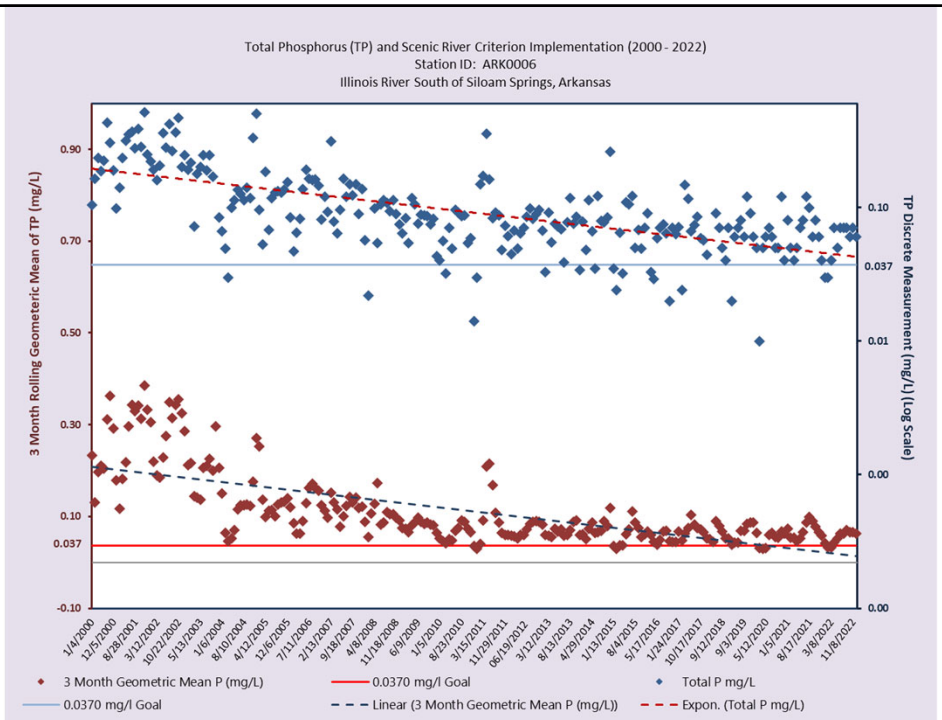

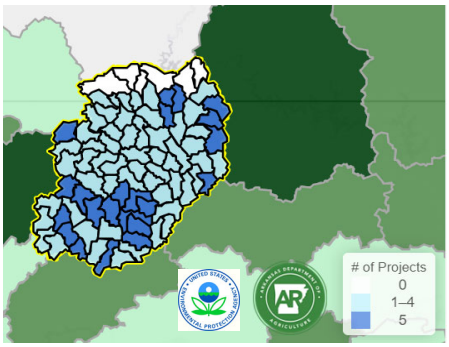

HUC12 EPA Investments (319 Funding)

$4,638,805 from 319 (17 projects)

$3,603,684 from local sponsors

$7,876,362 in total investments

Source Water Protection Funding – Beaver Water District

$2,846,900 SWP Funding (2011-2022)

$9,755,435 Leveraged for additional SWP programming and project implementation in the Beaver Lake watershed area

Source: EPA's NPS tracking tool and Arkansas Natural Resources Division, 2022
(https://ordspub.epa.gov/ords/grts/f?p=109:940:16762042680673::::P940_WIDGET:N#a_Collapsible2_INSTRUCTIONSHEADER_heading)

Investments are Leveraged to reach Full Potential of Project Dollars

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Watershed Success

Segment of West Fork – White River Delisted

16.5 river miles removed from the state's list of impaired waters for turbidity

- Streambank evaluation
- Streambank restoration efforts
- Technical publications on soils and water quality
- Water quality sampling efforts
- Land conservation efforts

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Voluntary, Non-Regulatory Watershed Management Plan for the Illinois River Watershed

3rd Stakeholder Meeting
West Siloam Springs, OK
August 10, 2023

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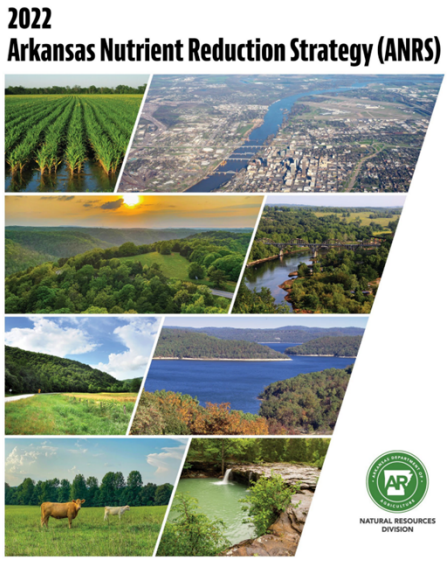
Illinois River: Guide for Arkansas's Strategy

- Clearly Defined Goal
- Extensive Study and Monitoring
- Point and Non-point both being addressed
- Nutrient Surplus Area
- State NPS Initiative
- Numerous 319 Projects
- NRCS Initiative
- Illinois River Watershed Partnership



14

Advancing of the Arkansas Nutrient Reduction Strategy

ANRS Workgroup Results

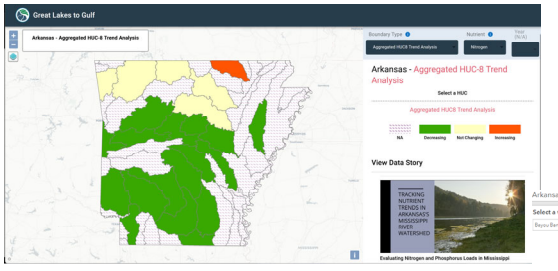
Innovation (Science & Research)

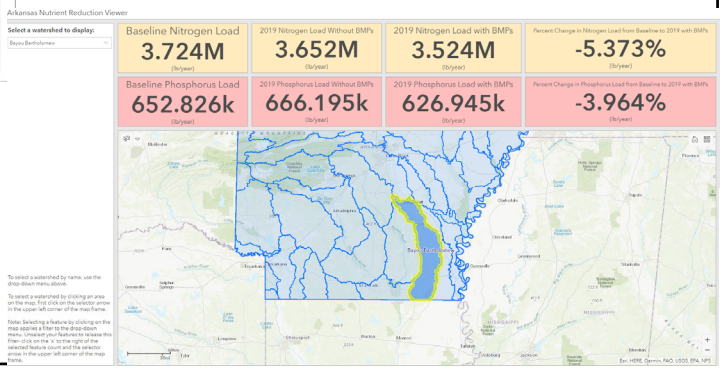
- Prioritizing Tier 2 Watersheds
- Determining Research and Development Needs
- Resources for Watershed Planning
- Reviewing Conservation Practice Efficiencies

Communication (Education & Outreach)

- Enhance communication, specifically to engage partners and stakeholders in watersheds.
- Review outreach and education strategies.
- Make recommendations for communication strategies.
- Other objectives and strategies as developed by the workgroup that enhance or advance the ANRS.

Advancing of the Arkansas Nutrient Reduction Strategy





Thank You

Tate Wentz
Water Quality Section Manager
Natural Resources Division-Arkansas Dept. of Agriculture
tate.wentz@agriculture.arkansas.gov
501.682.3914

Indiana's Use of the Gulf Hypoxia Program Dollars

Indiana's MRB Soil Sampling Program & the Indiana Nutrient Research and Education Program

HTF Meeting
Fayetteville, AR
December 6th, 2023

Julie Harrold – Program Manager, CREP and WQ Initiatives
Indiana State Department of Agriculture
jharrold@isda.in.gov

Breegan Andersen – Program Manager, Nutrient Stewardship
Indiana State Department of Agriculture

Mississippi River Gulf of Mexico Watershed Nutrient Task Force

INDIANA STATE DEPARTMENT OF AGRICULTURE

1

Overview of GHP Dollars

Workplan

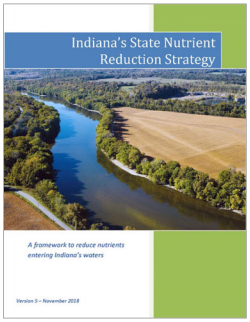
- The Indiana workplan is covering three main focus areas:
  1) Expanding **staff capacity** to manage the BIL-GHP funds, manage and administer the soil sampling program, and support the Indiana State Nutrient Reduction Strategy (SNRS) efforts, Indiana Conservation Partnership efforts, and on-farm trial programs.
  2) Development and expansion of a **soil sampling program** aimed at increasing 4R stewardship, nutrient use efficiency on Indiana farmland, non-point source pollution reduction, greenhouse gas reductions, and water quality improvements.
  3) Creation of an **Indiana Nutrient Research and Education Program (INREP)** to continue and expand the work of the Indiana Science Assessment, which focuses on quantifying nutrient reduction from conservation practices and determining conservation practice effectiveness toward improving water quality.

INDIANA STATE DEPARTMENT OF AGRICULTURE

2

1) Expanding Staff Capacity

- Strategic Outcome(s): Expand Capacity
- Nutrient Stewardship Program Manager
- Role was created to:
  - manage Indiana's Gulf Hypoxia Program funds,
  - manage and administer the soil sampling program,
  - support efforts of the Indiana State Nutrient Reduction Strategy (SNRS), and
  - support Indiana Conservation Partnership efforts



INDIANA STATE DEPARTMENT OF AGRICULTURE

3

2) Soil Sampling Program

- Focus is to increase the use of soil testing as a nutrient management practice to determine soil fertility levels to make good management decisions and provide essential information for the development of a nutrient management plan to improve nutrient use efficiency.

Work toward the Indiana Agriculture Nutrient Alliance (IANA) goal for 100% of Indiana farmers regularly performing soil sampling.

Provide Indiana farmers with the necessary information and tools to develop a plan for nutrient management to improve nutrient use efficiency.

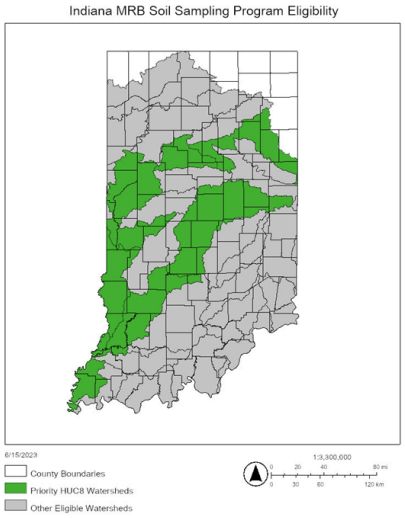
Educate and promote 4R Nutrient Stewardship to farmers, conservation professionals, and crop advisors.

INDIANA STATE DEPARTMENT OF AGRICULTURE

4

Soil Sampling Program

- **Program Launch**: September 2023
- **Partners**: Indiana Conservation Partnership members, Certified Crop Advisors (CCA), Ag Retailers, Indiana Agriculture Nutrient Alliance, Labs, and 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 on CCA engagement; soil fertility and nutrient management for stakeholders, partners, and participants; and importance of soil health and water quality.



INDIANA STATE DEPARTMENT OF AGRICULTURE

5

Soil Sampling Program

- Sept. 22, 2023, through Nov. 1, 2023.
- Eligible if able to prioritize less than 200 acres within the MRB and have never soil tested or haven't soil tested within the last 3-4 years
- Over 13,000 acres across 150+ Farms
- Estimating more than 800 samples to be pulled by ISDA Resource Specialist practicing zone sampling
- Majority of participants indicating they have never soil tested
- Next year, ISDA plans to partner with Ag Retailers and Crop Advisors to assist with soil sampling and agronomic support.

INDIANA STATE DEPARTMENT OF AGRICULTURE

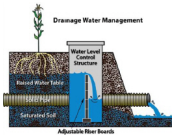
6

3) Indiana Nutrient Research and Education Program (INREP)

<u>Indiana Science Assessment</u>

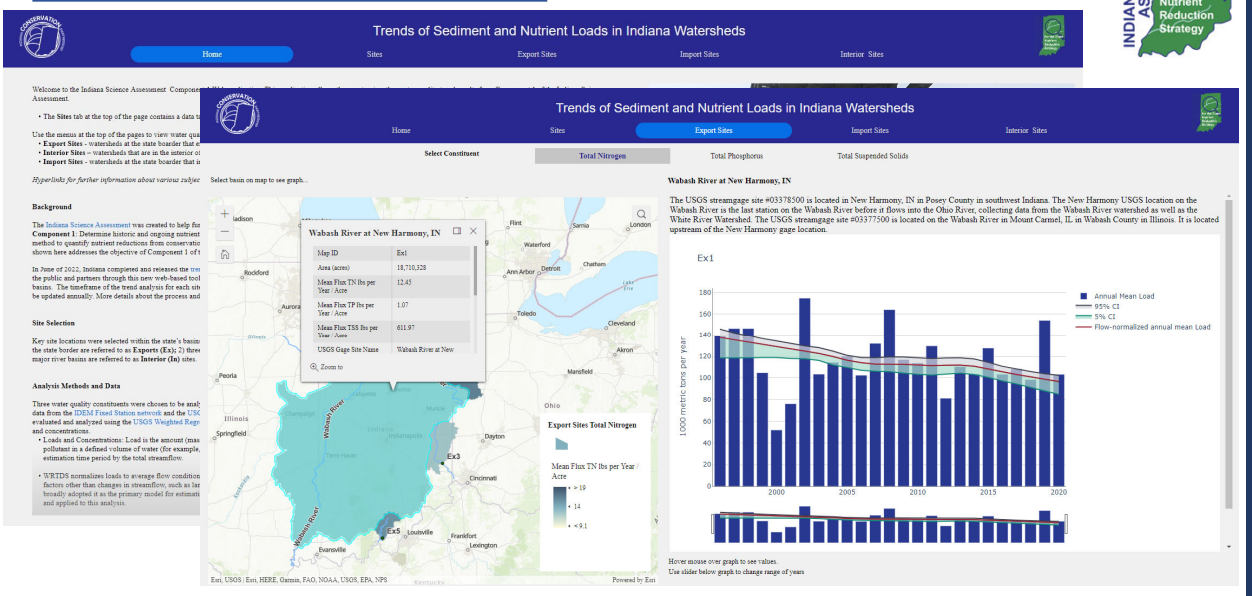
- Includes two components:
  - Component 1: Determine historic and ongoing nutrient load trends leaving the state, and also by watershed basins used in the SNRS.
    - A written report as well as an online tool are available showing trend results for loads and concentrations at 20 different locations in Indiana, including pour points and within the basins.
  - **Component 2**: Improve current method for determining sediment and nutrient load reductions from conservation practices, including dissolved nutrients, and determine efficiency of conservation practices in reducing nutrient loads.

https://www.in.gov/isda/divisions/soil-conservation/Indiana-state-nutrient-reduction-strategy/indiana-science-assessment



7

Trends Tool (Component 1)



8

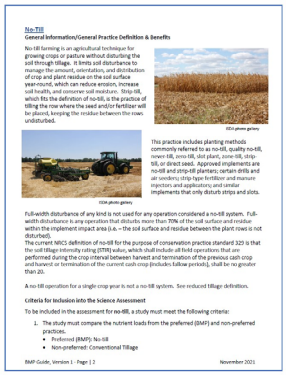
Products of the Science Assessment (Component 2)

- Component 2: Improve current method for determining sediment and nutrient load reductions from conservation practices, including dissolved nutrients, and determine efficiency of conservation practices in reducing nutrient loads.

1) Document of Practice Definitions;

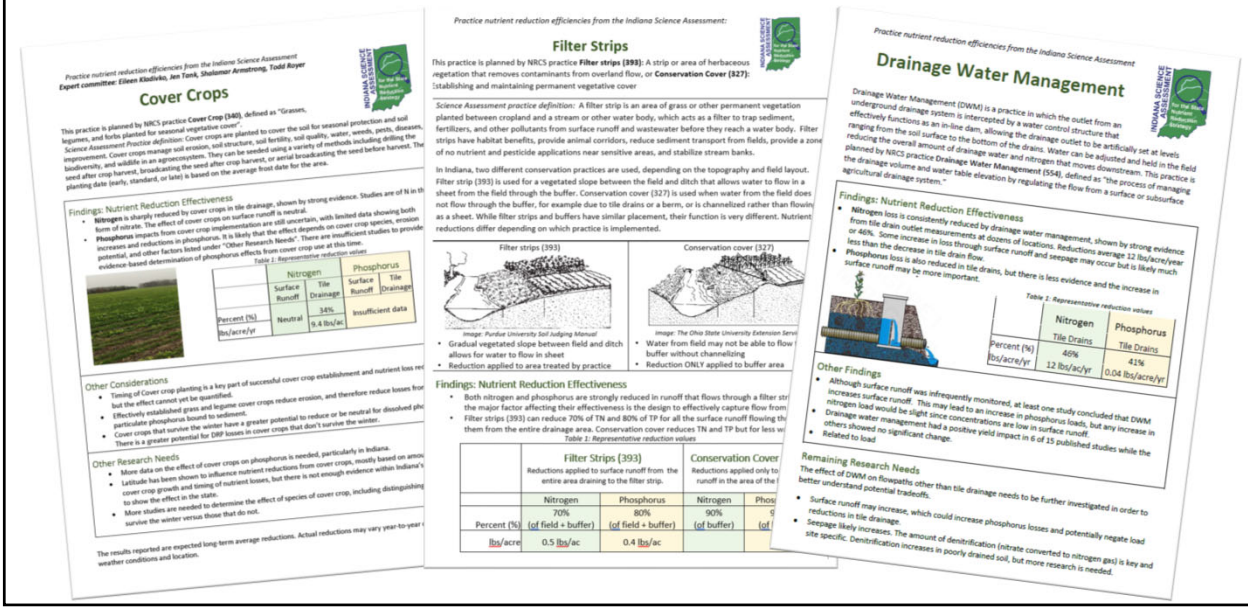
2) A tool that will calculate practice effectiveness for new practices implemented in the state and improve the current method to calculate and track nutrient reduction;

3) A table that will report effectiveness of each practice;


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.
USDA photo gallery
This practice includes planting methods commonly referred to as no-till, quality no-till, newer 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.
USDA photo gallery
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 30.
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

9

Practice Documents developed for each practice



10

The 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.

2023 Hypoxia Task Force Update

Kentucky

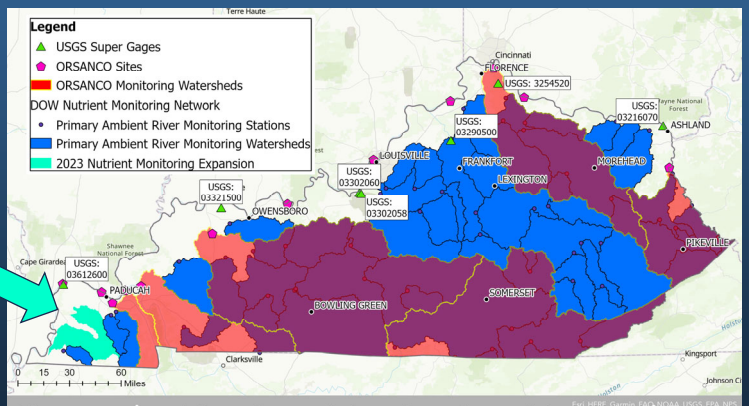
TEAM KENTUCKY®
ENERGY AND ENVIRONMENT CABINET

1

Gulf Hypoxia Program Grant Progress

USGS science for a changing world

Kentucky Water Resources Research Institute



Kentucky Nutrient Monitoring Network

TEAM KENTUCKY®
ENERGY AND ENVIRONMENT CABINET

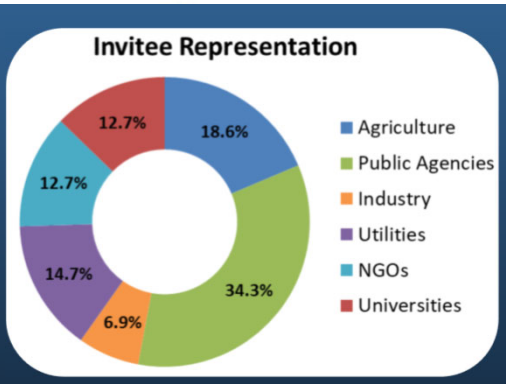
2

Nutrient Reduction Strategy Engagement

KY NUTRIENT NEWS

Kentucky Division of Water Quarterly Nutrient Newsletter I 4th Quarter 2023

TEAM KENTUCKY ENERGY AND ENVIRONMENT CABINET



NUTRIENT ENGAGEMENT

44 Kick-off Attendees **102** Invitees

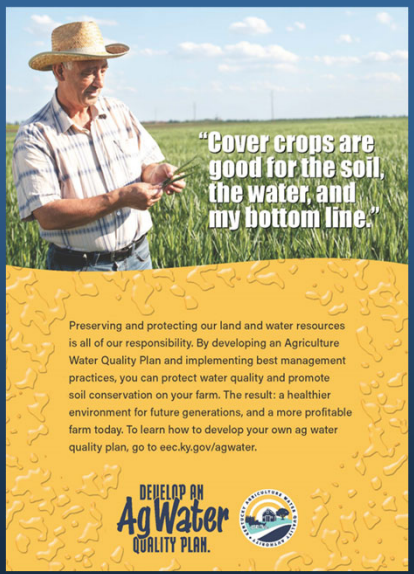
29 Workgroup Participants

Workgroups

- Ag Workgroup (9/21/23)
- Public Agencies Workgroup (9/12/23)
- NGO's workgroup (9/26/23)
- Utilities Workgroup (9/19/23)

3

Partnerships



TEAM KENTUCKY ENERGY AND ENVIRONMENT CABINET

4

Links:

- Nutrient Reduction Strategy
  eec.ky.gov/nutrientreduction
- Ag. Water Quality Act
  eec.ky.gov/agwater

Kentucky HTF Team

HTF Member – John Lyons, EEC Deputy Secretary

HTF Coordinating Committee

- John Webb, DOW Assistant Director
- Josiah Frey, Nutrient Reduction Coordinator
- Paulette Akers, GHP Engagement Coordinator

SERA-46 – Amanda Gumbert

TEAM KENTUCKY
ENERGY AND ENVIRONMENT CABINET

Louisiana Gulf Hypoxia Program Update

HTF Public Meeting
Dec. 6, 2023

Amanda Marshall, PhD
Staff Scientist
Louisiana Dept. of Environmental Quality
Water Planning and Assessment Division

1

Louisiana Nutrient Reduction & Management Strategy Implementation

- The Louisiana Department of Environmental Quality (LDEQ) is lead agency for this cooperative agreement
- Project 1 implemented by Louisiana Dept. of Agriculture and Forestry (LDAF)
- Project 2 implemented by the Louisiana Coastal Protection and Restoration Authority (CPRA)

2

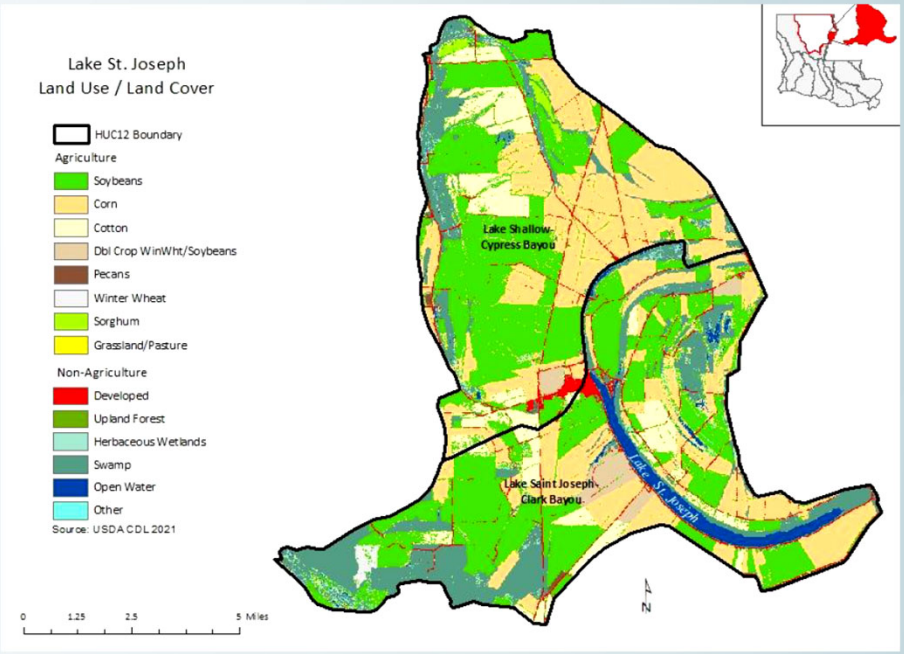
2

Project 1: Lake St. Joseph, Louisiana, Nutrient Loading Reduction

Objectives:

- Enroll producers in the Lake St. Joseph-Clark Bayou and Cypress Bayou Watersheds in Tensas Parish, LA in a program to implement agricultural best management practices targeted to reduce nitrogen and phosphorous runoff from edge of field.
- Measure impacts of targeted BMP implementation through sample collection on edge of field runoff for differences in water quality and clarity compared to control monitoring site(s).

Project Area



Background

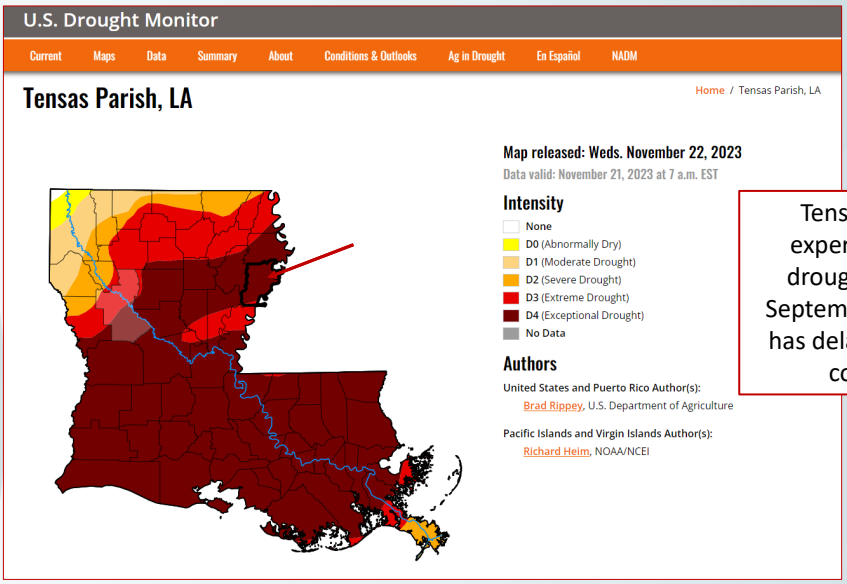
- Feb. 2023 - EPA approval of Quality Assurance Project Plan (QAPP)

- Additional Partners:
  - USDA Natural Resource Conservation Service (NRCS)
  - Tensas-Concordia Soil & Water Conservation Districts (SWCD)
    - LDAF, USDA NRCS, and Tensas-Concordia SWCD cooperated in development and enrollment of area producers in Ag BMPs
  - Louisiana State University Ag Center (LSU AgCenter)
    - LSU AgCenter is sub-contracted to manage edge of field sample collection and analysis

Overview

- Call for applicants completed in Summer 2023
- 10 area producers applied for BMP enrollment
  - ~8,000 acres cropland
- Proposed to implement 16 targeted agricultural BMPs
- Fall cover crops planted
- Additional BMP implementation and field-side sampling will begin in 2024

Drought Impacts



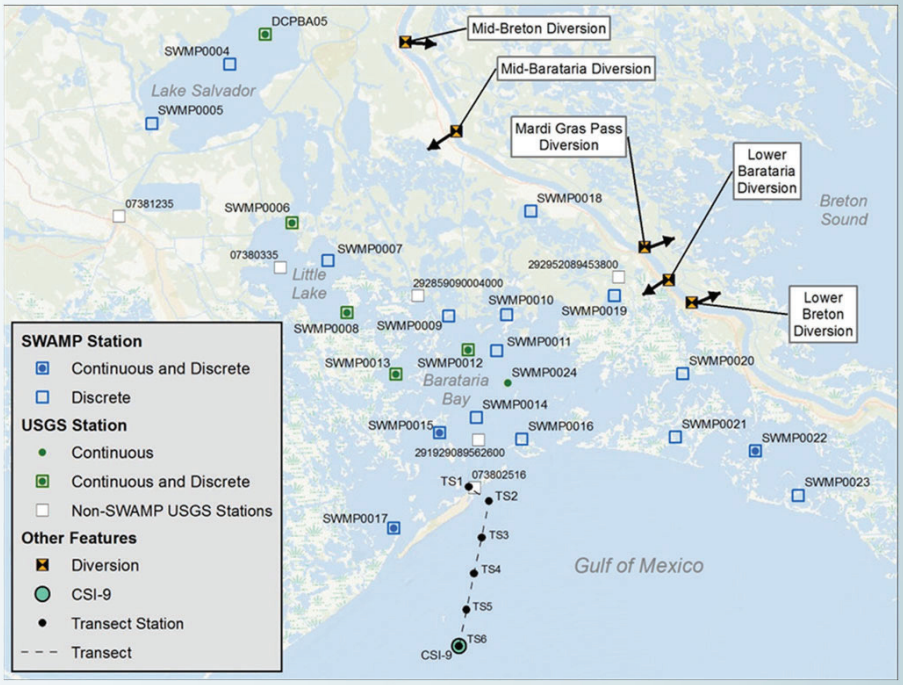
Tensas Parish has experienced D3-D4 drought levels since September 2023, which has delayed planting of cover crops.

Project 2: Pilot Transition to Autonomous Monitoring from Inshore to Offshore in Coastal Louisiana

Objectives:

- Provide continuous characteristic water quality data from inshore to offshore
- Coastal transect monitoring began in 2018 with Gulf of Mexico Alliance (GOMA) funding and has continued under EPA funding sources since 2019
- Monitoring has been conducted ~3x/year with boat-based surveys
- Goal is to transition from a boat-based survey in Spring 2023 to autonomous vehicle data collection by Fall 2023

Project Area



9

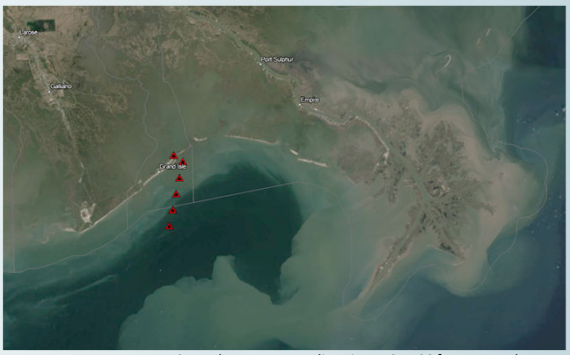
Background

- March 2023 - EPA approval of QAPP
- Boat-based monitoring conducted by CPRA sub-contractor for Spring-Summer 2023 sampling season
- Autonomous Vessel development by Principal Investigator Dr. Stephan Howden from the University of Southern Mississippi and partners L3Harris, Integral Consulting Inc., Texas A&M University, GCOOS (Gulf of Mexico Coastal Ocean Observing System), the USEPA, and the National Oceanic and Atmospheric Administration (NOAA)

10

Sample Collection

- Spring-Summer 2023 Sampling Season Completed
  - Samples collected by boat:
    - June 29, 2023
    - July 25, 2023
    - September 26, 2023
  - All transect sites sampled
  - Data is in QA/QC and will be available via CPRA's Coastal Information Management System (CIMS)



Coastal transect sampling sites, TS1-TS6 from top to bottom

Transition Status

- Autonomous vessel transition is still underway
- Has encountered some delays on the design side


L3Harris | ASV (Photo by Stephan Howden)

Summary

Project 1 Recap

- Enrollment in targeted agricultural BMPs is complete, and though delayed by exceptional drought will proceed with implementation and monitoring in 2024.

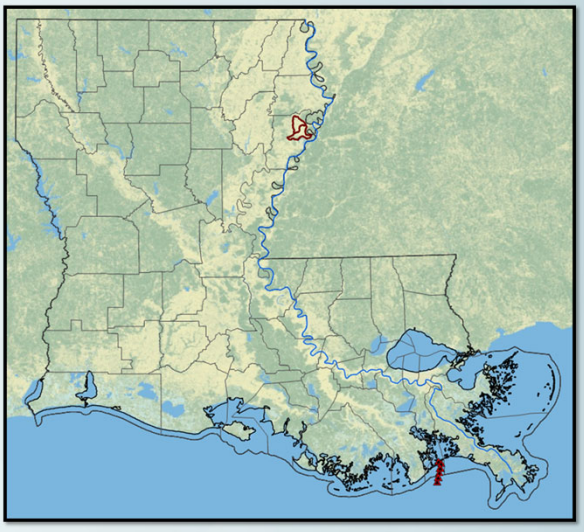
Project 2 Recap

- Boat-based sample collection was conducted 3 times in Spring-Summer 2023 Season and data review is underway. Autonomous vessel transition is still a work in progress.

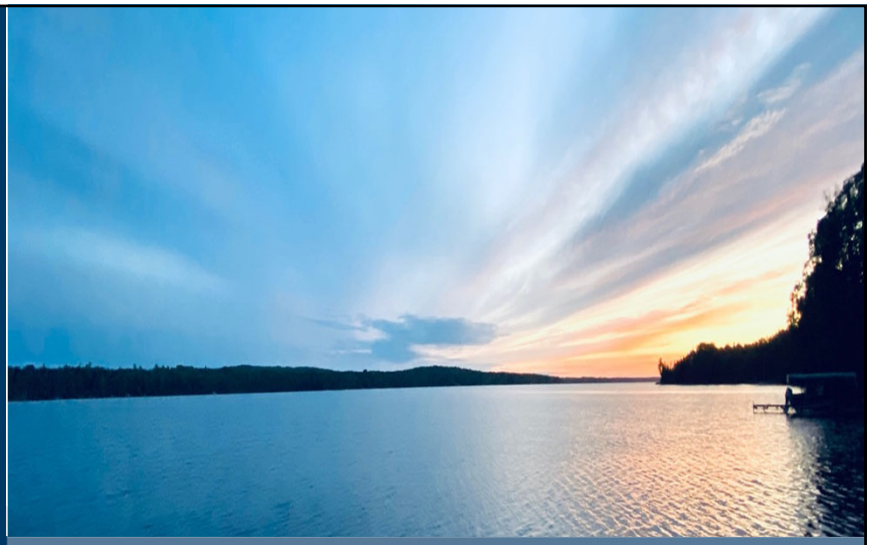
- Both projects enable the state of Louisiana to implement key strategic actions using innovative technologies to address nonpoint source water quality management.

Thank you

Questions?



Accelerating Nutrient Reduction in Minnesota



MINNESOTA POLLUTION CONTROL AGENCY

Katrina Kessler | MPCA Commissioner

Hypoxia Task Force Public Meeting | December 6, 2023

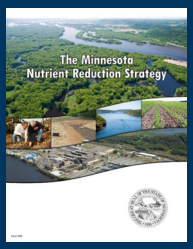
1

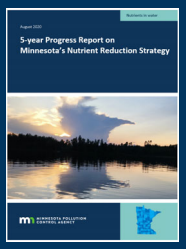
Collaboration with 11 tribes

2

Minnesota's Nutrient Reduction Strategy

2025 revision funded through EPA's Gulf of Mexico Hypoxia Program





New
Science
Technology

2014 Original strategy

2020 Progress report

2025 Revised strategy

3

Nutrient Reduction Strategy

State-level support
- BMPs
- Science
- Goals/targets
- Tools & resources
- Programs
- Progress tracking

MINNESOTA

Local watershed work

Rural & urban BMP practice adoption

Improve local waters

Reduce algae

Improve drinking water, biological health

Improve downstream waters

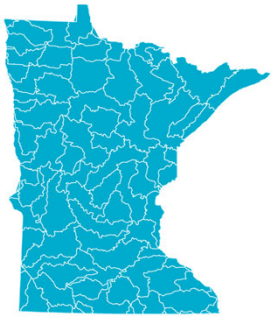
Started 2014

2023

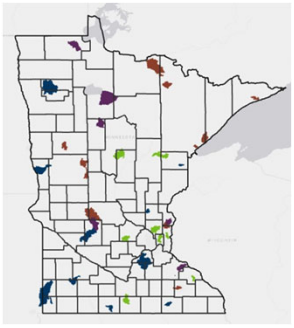
4

Large, medium & small scale

Large basins ⟷ **Minnesota's watershed approach** ⟷ **Small watersheds – 319 funds**



HUC 8 watershed-scale



35 Small-scale projects

5

Progress

2016:
8 of 80 watersheds

2023:
80 of 80 watersheds

CLEAN WATER ACT MINNESOTA 50 YEARS

100%
of watersheds completed

6

Minnesota Agricultural Water Quality Certification Program

DEPARTMENT OF AGRICULTURE

CLEAN WATER LAND & LEGACY AMENDMENT

7

Progress

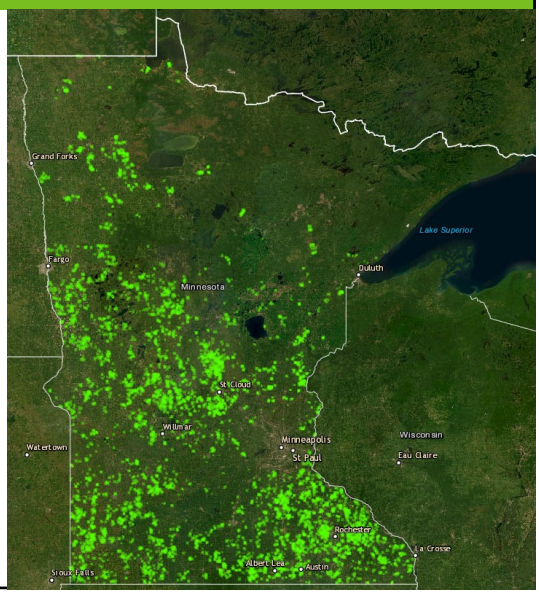
Minnesota Agricultural Water Quality Certification Program

1 million + acres

October 27, 2023

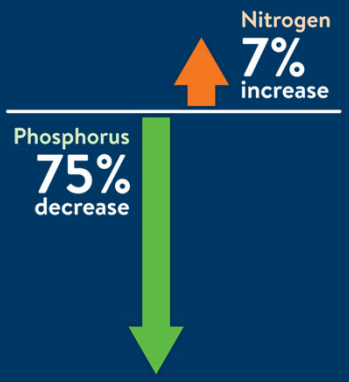
MINNESOTA WATER QUALITY CERTIFIED FARM

CLEAN WATER LAND & LEGACY AMENDMENT



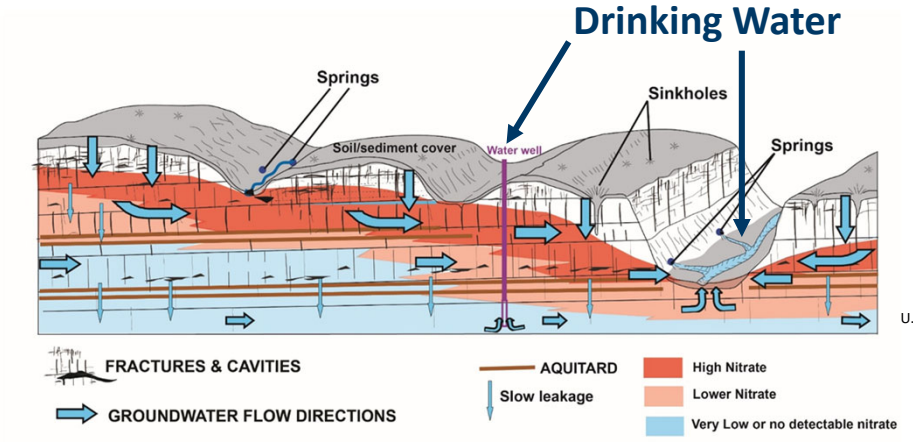
8

Reduce wastewater nitrogen



9

Groundwater nitrate

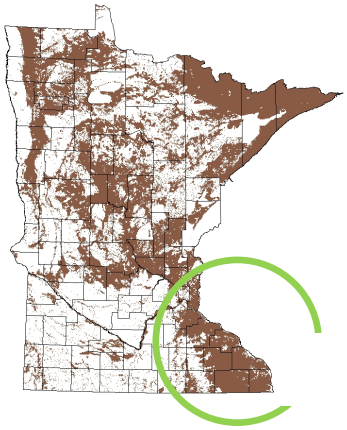


U.S. Geological Service

10

Addressing nitrate in groundwater

Minnesota's Vulnerable Groundwater Areas



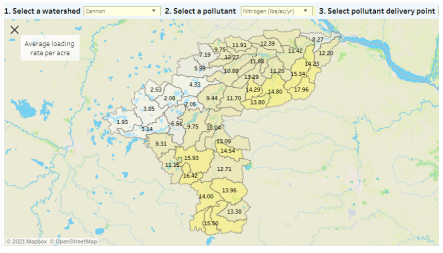
11

Progress tracking tools

Best Management Practices

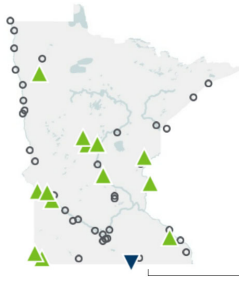
Lands adding BMPs

Watershed nutrient loads



Modeling BMP effects

Sampling the rivers

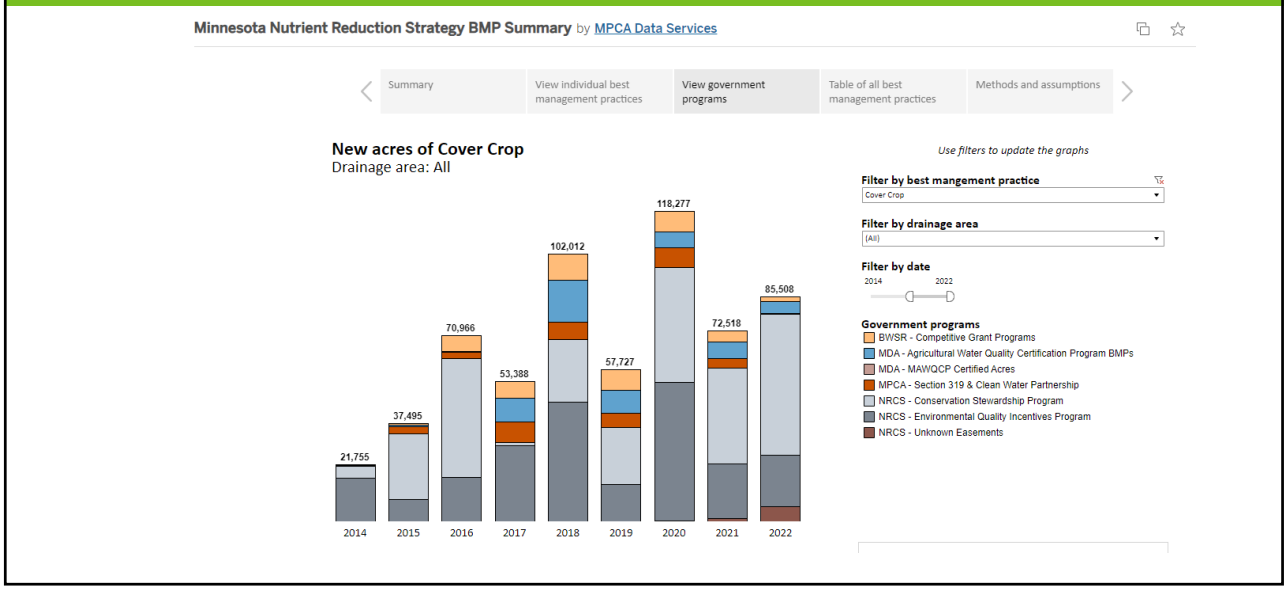


Measuring nutrients

https://www.pca.state.mn.us/air-water-land-climate/reducing-nutrients-in-waters

12

Tracking progress



Progress

Minnesota's Climate Action Framework

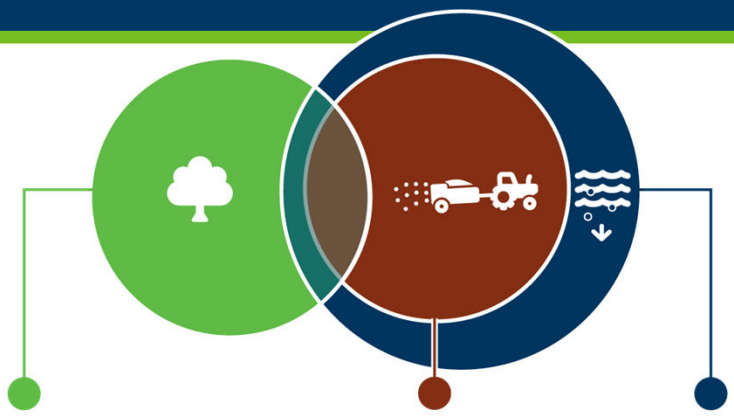
September 2022

OUR MINNESOTA CLIMATE

15

15

Accelerating progress



Climate Action Framework
- Resilient landscapes
- Reduce emissions
- Store carbon

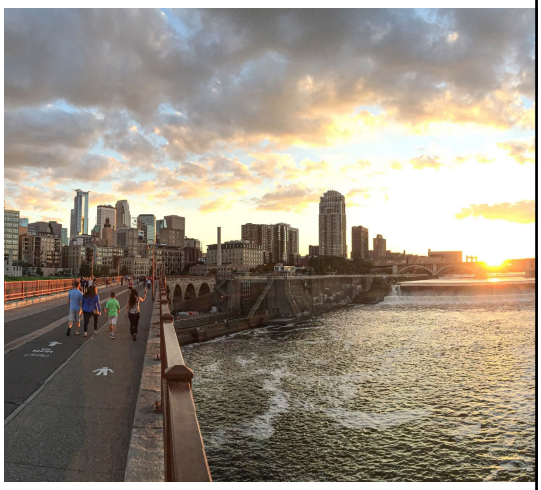
Agricultural BMPs
- Soil health
- Water storage
- Fertilizer efficiency

Nutrient Reduction Strategy
- Lakes & streams
- Groundwater nitrate
- Downstream to Gulf of Mexico

16

Minnesota legislature additional funding 2023 (partial)

+ $29 million increase for soil health practices
+ $17 million increase for water storage practices
+ $36 million increase for implementing the watershed approach



Thank you!

Katrina Kessler, MPCA Commissioner

MINNESOTA POLLUTION CONTROL AGENCY

1

UMRBA Background

- Governor-level interstate organization for multi-purpose management
- Governor-designated interstate WQ entity
- Facilitate dialogue, cooperative action, and coordination
  - Interstate forum
  - Cooperative planning, coordinated management
  - Information exchange
  - Regional positions, advocacy on states' behalf

2

Integrated, interstate strategy

- Identify shared priorities
- Illuminate opportunities

3

Continuous Learning

- Learning objectives
- Research, other learning recommendations
- Approaches for integrating learned information

4

Foster Interstate Collaboration

Basin-Wide Communications Strategy

Integrate Other Water Uses (multi-benefit)

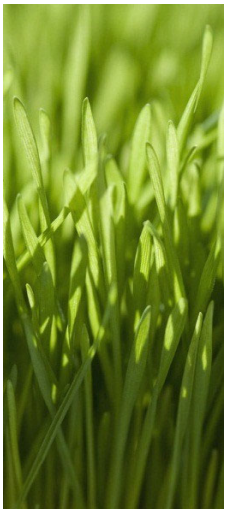
5

Kirsten Wallace
kwallace@umrba.org

Lauren Salvato
lsalvato@umrba.org

6

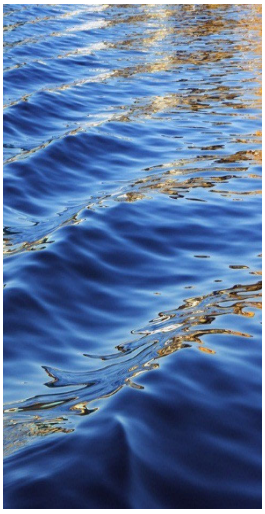
SERA-46



Land Grant Universities Working Collaboratively with the Hypoxia Task Force

Fall 2023 Hypoxia Task Force Meeting

Fayetteville AR



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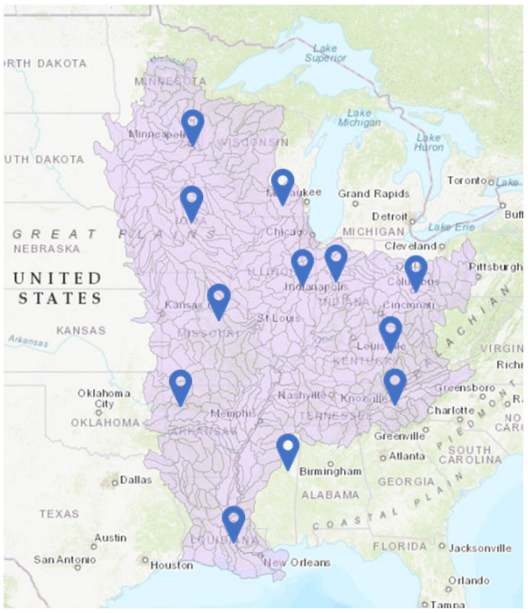
Southern **E**xtension & **R**esearch **A**ctivities committee number **46**

- USDA-NIFA coordinates multi-state efforts to address critical research & extension needs
- SERA-46 was initiated to address hypoxia in the Gulf of Mexico by way of nutrient reduction research and extension avenues throughout the MARB
- Formal MOU between HTF & SERA-46



2

SERA-46
Land-grant University
Extension & Research

Focus

Continuing Priorities:

1. Strengthening Networks
2. Conservation Systems Research and Outreach
3. Monitoring and Tracking of Progress

New funded Cooperative Agreement with EPA Gulf Hypoxia Program (anticipated Jan 1):

1. Communication & Coordination
2. Support networks in sharing results
3. Advance research in support of state Nutrient Reduction Strategies

3

Land Stewardship Summit

EPA funded Farmer to Farmer

Elkhorn, WI

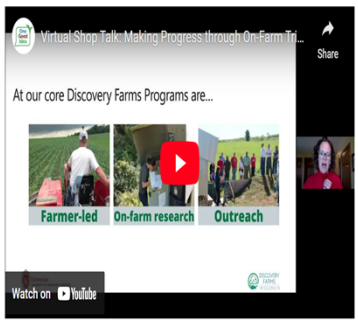
June 2022

Facilitate Basin-Wide Farmer Exchanges

- Mississippi River Basin farmer-led exchanges
- Basin-wide watershed leadership summit
- Virtual Shop Talk

Making Progress through On-Farm Trials

Wednesday, March 3rd, 2021



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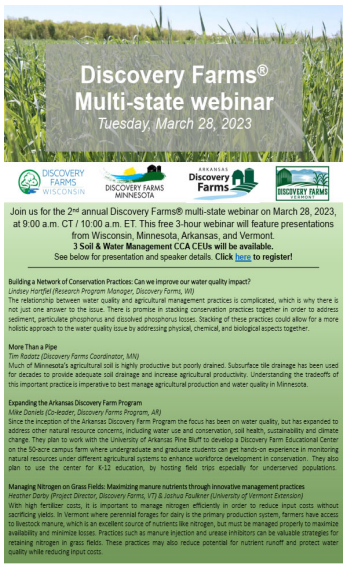
Outreach – Conferences & webinars



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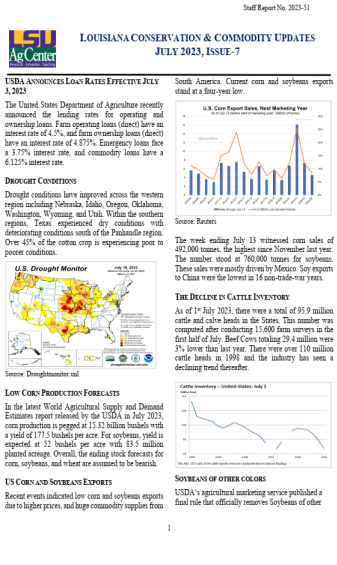
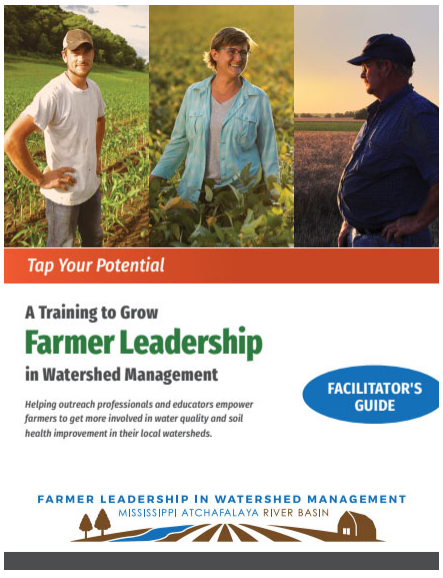
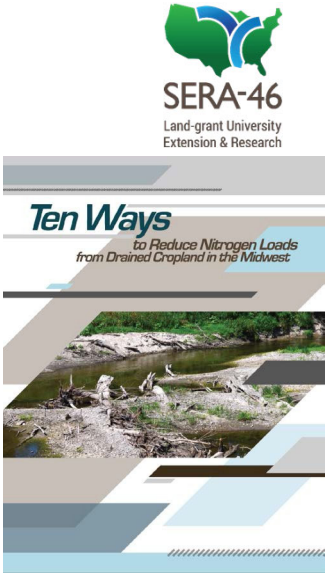
Publications and Newsletters







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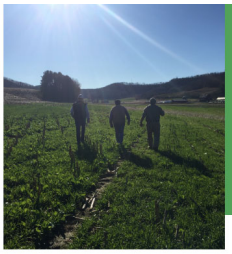
Web-based Outreach

One Good Idea

One Good Idea is a clearinghouse of videos and podcasts that feature farmers sharing their experiences implementing soil and water conservation practices to help other farmers discover good ideas to try on their operations.



OUR MISSION

One Good Idea helps farmers improve their soil, land, and profitability by providing a platform for sharing practical, evidence-based information that accelerates knowledge transfer between land stewards and demonstrates how farmers are making a difference for their operations, their communities, and the world.

VISIT GOODIDEAFARM.ORG

Subscribe to get emails and follow us

facebook.com/goodideafarm

@GoodIdeaFarm

#WhatsYourGoodIdea

Contact: Jenny Seifert, Watershed Outreach Specialist | UW-Madison Division of Extension, North Central Region Water Network | jenny.seifert@wisc.edu

FARMER-TO-FARMER LEARNING

Farmers want to learn from other farmers

Changing farming practices can seem risky to many farmers. One Good Idea is a starting place for farmers to find ideas from farmers who have already "done that" to help ease the worry about trying something new.

Farmers want information they can trust

All content is vetted by a team of land grant university experts and experienced farmers to ensure the information provided is based in evidence - whether that's research or a farmer's real-life experience.

Farmers want to know the "how"

Farmers who are contemplating conservation often want proof of what works or doesn't work. One Good Idea is focused on providing farmers practical information that can help them take the next step.

COLLECTIVE IMPACT

All videos and podcasts on One Good Idea are crowdsourced from farmers and people who work with farmers, such as extension professionals, conservation professionals, and farm advisors. One Good Idea is positioned to become a centralized place for farmers to find trusted information about how to make changes to their operations that will change the culture of agriculture. Learn how to submit content >>

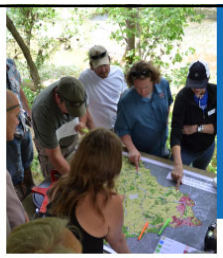
COLLABORATION

One Good Idea was created by a multi-state team of university extension professionals and farmers from across the U.S. Midwest and Mid-South. It remains a collaborative effort of SERA-46, a committee for land grant university research and extension to reduce nutrient loss in the Mississippi River Basin. Read our story >>

The Confluence
for Watershed Leaders

The Confluence for Watershed Leaders is a community and collaborative of people working for healthy watersheds in the Great Lakes, Mississippi River, and Red River Basins of the U.S. Midwest and Mid-South.

It is for watershed and conservation professionals, watershed educators, and engaged farmers and landowners to connect, learn, and increase their success in achieving clean water goals.



CURRENT ACTIVITIES

Life Hacks over Lunch: A Meet-up Series for Watershed Professionals

This free, virtual meet-up series is a peer-learning opportunity for watershed professionals to share ideas and advice for solving real-life challenges of watershed projects. More >>

Online Community

Our free online community is for watershed professionals and engaged farmers who want to connect with peers, seek and share advice and opportunities, and feel part of something bigger. As of October 2022, there are over 240 community members, representing at least 30 states. More >>

Watershed Leadership Curriculum Development

Collaborators develop curricula that equips watershed leaders with the competencies they need to achieve progress. Curriculum development to date has focused on cultivating farmer leadership in watershed management. See an example >>

Human Capital Blog

Our blog shares practical insights and stories that build human capital for healthy watersheds. More >>

WHAT WE DO

To achieve clean water goals, we need to invest more in people. The Confluence builds the capacity of watershed leaders and amplifies their stories to bring successful watershed management to scale.

We are building human capital

The Confluence creates a central place for watershed leaders to access training, resources, and peer learning opportunities that can build their skills, knowledge, and confidence - their human capital. We also accelerate innovation in training by cultivating collaborations between watershed educators.

We are building a community of practice

The Confluence connects watershed professionals, farmers, and others involved in watershed management, so they can learn from each other, avoid recreating wheels, and feel part of something bigger.

We are building visibility for watershed leaders

The Confluence amplifies the stories, successes, and needs of watershed leaders to showcase their value in solving our water challenges and help them feel seen and supported.

WHO WE ARE

We are a collaboration of Extension, nonprofit, and government professionals who are passionate about empowering people to make change for clean water, healthy landscapes, and thriving [illegible]. Learn who's part of the collaborative >>

VISIT WATERSHEDLEADERS.ORG

Contact: Jenny Seifert, Watershed Outreach Specialist | UW-Madison Division of Extension, North Central Region Water Network | jenny.seifert@wisc.edu

7

More Information

SERA-46
Land-grant University Extension & Research

http://northcentralwater.org/sera-46/

https://www.epa.gov/ms-htf/task-force-partnerships

8

From: Gretchen Sabel
To: Flahive, Katie (she/her/hers)
Subject: Comments to the Gulf Hypoxia Task Force for consideration at the December 6 meeting
Date: Monday, November 27, 2023 4:43:28 PM

The League of Women Voters Upper Mississippi River Region is a multi-state organization (Minnesota, Wisconsin, Iowa, Illinois and Missouri), joining local LWV Leagues across five states to advocate for the Mississippi River. We do this through educational webinars on key issues in the basin, and leading LWV advocacy on the federal Farm Bill.

At the ten year point, it seems that the approach that states have been following for nutrient reduction is not as effective as it could be. Change is needed because the current policies and programs are not bringing about the reductions needed. The current system relies on voluntary involvement and tallies installed practices rather than measured outcomes, and incentivizes producers to install practices they are willing to do rather than more difficult practices that would lead to quantifiable NPS load reductions. The success of technical service providers is measured in terms of BMPs installed, not targeted BMPs installed or actual reductions in nutrient loading.

Policy reform is needed and the Hypoxia Task Force could lead that reform. Funding is still a critical necessity, but the focus needs to shift from practices to "outcome-based" programs so that both producers and service providers are motivated to seek out and implement those practices that result in the largest nonpoint source reductions. This will require change to familiar program and reward systems that will be hard to implement. And we will need to take steps toward mandatory measures in critical areas where willing partners are not able to get the job done.

A shift toward outcome-based program design is the necessary end goal of this work – we must work to reduce nutrient loss and demonstrate effectiveness of targeting practices that results in better water quality.

Thank you for this opportunity to speak.

Gretchen Sabel, Communications Director
League of Women Voters Upper Mississippi River Region
http://www.lwvumrr.org

To:
Hypoxia Task Force
c/o Katie Flahive
Environmental Protection Agency
Flahive.Katie@epa.gov

From:
R.E. Turner
Department of Oceanography and Coastal Sciences
Louisiana State University
euturne@lsu.edu

Re: Comments for the 6 December 2023 Hypoxia Task Force meeting in Fayetteville, AK

Summary

The Hypoxia Action Plan (HAP) has been a 'no action' plan. 1) Twenty-two years ago the HAP goal was to reduce the size of the zone to 5,000 km^2 in summer through nutrient load reductions, primarily nitrogen. There has been no reduction in the nutrient loading to the coast since that goal was adopted. 2) The size of the hypoxic zone is predictable, but less so recently. Hypoxia and food web models based on a stationary equipoise of elemental ratios and food web structure and functions in surface and bottom waters will be deficient as coastal waters warm, acidification increases and river water quality changes. 3) The present offshore monitoring is limited to a single summer cruise, which is woefully underfunded and missing cost effective additions to scientific understandings. 4) Public comments made at these meetings are not accessible to the public and never have been; the public comments from 2001 to present should be routinely posted on the HAP website.

The Hypoxia Action Plan is a 'no action' plan to date

The Hypoxia Action Plan of 2001 (HAP 2001) was established 22 years ago with a goal of reducing the hypoxic zone size to less than 5,000 km^2 over 5 years by 2035. An interim goal to accomplish this goal was to reach a 20% reduction in nutrient loading in the river by 2025. Scavia et al. (2017) estimated, based on models assuming a nutrient loading driven hypoxic zone size, that a 59% reduction in nutrient loading was required to meet the 5,000 km^2 goal. However, the nitrate loading in the river declined by only 4% since the 2001 agreement (Fig. 1; data from Casey 2022). Loading is primarily controlled by agricultural land uses, especially artificial drainage, and practices exist to reduce it but are sparsely adopted (Turner 2023).

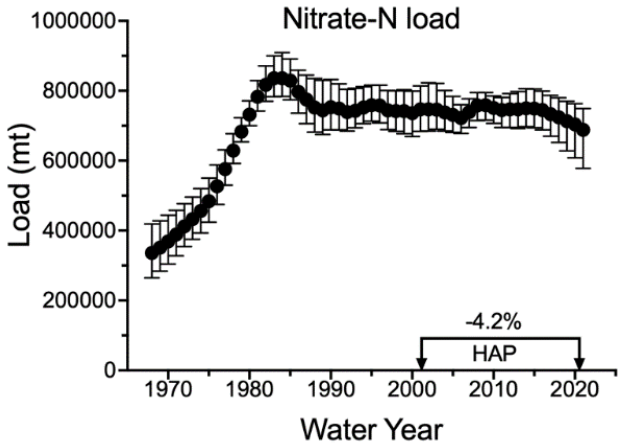


Fig. 1. The nitrate loading of the Mississippi River from 1967 to 2021 ± 90% Confidence Interval (n = 44 years). The change in concentrations from 2001 to 2021 is located above the bar marking the beginning of the Hypoxia Action Plan.

The size of the hypoxic zone is predictable, but less so recently

The size of the hypoxic zone (<2 mg O_2 L^{-1}) in the northern Gulf of Mexico (GOM) during late summer is the second largest human-caused hypoxic zone in the world's coastal oceans (Rabalais and Turner 2019). Its size in those years without storms has been predicted with great fidelity by using the preceding May's nitrogen loading from the Mississippi River (Fig. 1; Turner et al. 2012; Scavia et al. 2017). There are ecosystem models with considerably more spatial and temporal detail predicting hypoxic area that also include Mississippi River water quality (Justić et al. 2017; Laurent et al. 2018), but do not more accurately predict the total size. The hypoxic zone sizes in 2022 and 2023, however, were 56% and 82% of the predicted size, respectively (Fig. 2; Turner et al. 2012). In 2022 the 5-year average size for all years was about 2.2 times the HAP goal compared to the usual 3 times the goal before 2021. This declining size is not due to a nitrogen load reduction, which indicates that the model coefficients are changing or that unrealized non-linear or discontinuous dynamics exist.

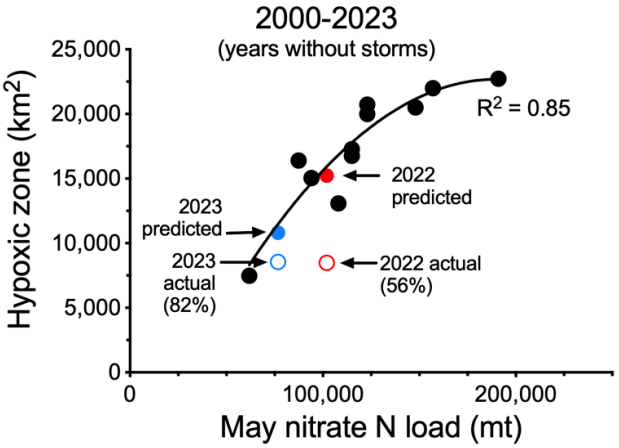


Fig. 2. The relationship between the nitrate load from the Mississippi River watershed in May and the size of the hypoxic zone in summer from 2000 to 2021 (updated from Turner et al. 2012; R^2 = 0.85). The figure also includes the 2022 and 2023 data which, if included, reduced the R^2 value to 0.75 (n = 11).

Example: the climate is changing

The *in situ* bottom water temperature has been increasing by 0.87 ºC decade^{-1} (Turner et al. 2017) reflecting the general warming of the Gulf of Mexico (Li et al. 2022). The confounding effect of rising temperature requires continuous observations to inform models, modelers and policy managers about food web changes and hypoxia zone size. Climate change and its consequences to circulation and food webs will be adding to, if not superseding, the consequences of coastal eutrophication. Hypoxia and food web models will be deficient as coastal waters warm, acidification increases and river water quality changes. Multiple tipping points are possible that may result in a more intense or a less expansive hypoxic zone, non-diatom blooms, reduced carbon deposition and a compromised fishing industry. A continuous monitoring of the hypoxic area's physical, chemical and biological constituents is essential to improve understanding of food web changes and futures. Thoughtful and continuous data collections are needed (and missing) to test hypotheses and contribute to the challenges of understanding more than status quo assumptions about a strictly nutrient-limited system.

Offshore monitoring is inadequate

Measuring changes to the physics and the ecosystem are being done through a limited routine monitoring of hypoxic zone size in summer; it needs to be expanded in quality and conducted throughout the year. The present NOAA budget does not include funding for nutrient analysis – a trivial amount of the funding program; it does not facilitate science groups to 'hitchhike' on cruises, despite having empty bunks; it does not adequately fund the core science party with funding for technicians and scientists; it does not support visiting scientists testing hypotheses, or making long-term complementary data collections (e.g., plankton, benthos, sediments).

Public comments made at these meetings are not accessible to the public and never have been

The public comments are not posted on the website or circulated to attendees and never have been, although promised several times. Not doing so demeans the public making the effort to participate, to engage in solutions, and to support the HAP. The message sent could be interpreted to conclude that the public does not matter to the Hypoxia Task Force, only that a brief public comment period is needed to check off the box of requirements in a public meeting.

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November 28th, 2023

Mississippi River/Gulf of Mexico Hypoxia Task Force
Radhika Fox (Co-Chair), U.S. Environmental Protection Agency
Katrina Kessler (Co-Chair), Minnesota Pollution Control Agency
Brian Weigel (Co-Chair), Wisconsin Department of Natural Resources

Re: Comments for the 38th Public Meeting of the Gulf Hypoxia Task Force on December 6th, 2023

Dear Gulf Hypoxia Task Force Chairs:

Thank you for the opportunity to provide comments on the public notice for the 2023 Hypoxia Task Force meeting. We appreciate the chance to participate and offer input on critical point and nonpoint source water quality project needs across the basin.

The Lake Pepin Legacy Alliance (LPLA) is a grassroots organization that works in Wisconsin and Minnesota to educate our community and advance policies that help protect Lake Pepin locally, and the overall Mississippi River nationally. Representing two headwater states of the Mississippi River, we are positioned to advance funding options that directly address nonpoint source pollution and would like to offer our recommendations for the fiscal year 2024 Hypoxia Task Force here.

- The Hypoxia Task Force goals should better align with state and federal climate frameworks and the goals of the UN's Intergovernmental Panel on Climate Change (IPCC). The economic and ecological impacts of the gulf dead zone are inherently linked to global climate change. More specifically, methane released from agricultural soils and industrial "fugitive methane" needs to be counted as a part of the calculus of decreasing fertilizer impacts to the gulf. Climate pollutants and watershed pollution together should guide our nitrate mitigation and enforcement activities. There can be no ambiguity when we acknowledge that a healthy Mississippi River acts as a weathervane for not only North America but our global effort to halt planetary warming at +1.5c.
- The Hypoxia Task Force should adopt a more accurate measurement of Mississippi River nutrient pollution to better describe and clarify the impacts of dilution on measurable mitigation efforts. Data presented in its current form limits citizens' comprehension of the issue and nullifies the efforts of the taskforce. The taskforce should be using watershed-based numerical nutrient reporting. A more accurate measurement not only shows where these issues originate but also what states are carrying their fair share of the work. Ambiguity does not serve the interests of our community or the health of the Mississippi River.

- The Bipartisan Infrastructure Law (BIL) has dedicated $60 million over the course of five years to the Gulf Hypoxia Program. The program must ensure that those funds are spent on strategic and efficient projects to address nutrient pollution. These funds at present have largely gone to states backfilling their preexisting nutrient management project budgets. A Hypoxia Task Force governance structure that would allow states to implement new programs aimed at reducing systemic barriers to achieving nutrient reduction goals will better serve the states we represent. These systemic barriers include ongoing installation of drain tile, unchecked fertilizer applications, and the ability of landowners to move from annual row crop production to perennial vegetation and pasture.

We thank you in advance for your consideration of these comments and look forward to working collaboratively in the coming years to support our agricultural landscape alongside the health of our Mississippi River. We look forward to your response to these recommendations and welcome opportunities to discuss them further.

Sincerely,

Rylee Hince
Executive Director
Lake Pepin Legacy Alliance

November 29, 2023

Mississippi River and Gulf of Mexico Hypoxia Task Force
Radhika Fox (Co-Chair), U.S. Environmental Protection Agency
Mike Naig (Co-Chair), Iowa Department of Agriculture and Land Stewardship

Submitted via email to Katie Flahive at Flahive.Katie@epa.gov

Re: Mississippi River Network (MRN) Comments for the 38th Public Meeting of the Gulf Hypoxia Task Force on December 6, 2023

Dear Gulf Hypoxia Task Force Members:

We appreciate the opportunity to provide a public comment for consideration of the Gulf Hypoxia Task Force at its 38th public meeting in Fayetteville, AR. The Mississippi River Network (MRN) will also deliver public comments at the in-person meeting. We look forward to responding to the day-of presentations at that time. In this comment letter, we propose ways for the Task Force to maximize public outreach and NGO participation, provide recommendations on how to use increased federal support to realize whole basin results, urge the Task Force to lead new efforts to understand how climate change will impact our basin, and offer organizational approaches that may help the Task Force orient towards innovation.

MRN & Our Public Engagement with the Gulf Hypoxia Task Force (GHTF)
MRN is a coalition of nearly 70 partner organizations working together to protect our Mississippi River. The Network seeks to influence not only policies that affect the River but also people's perceptions of and connections to the River. MRN's policy program works in tandem with our public education and advocacy program called *1 Mississippi* to urge decision-makers to create federal and state policies that improve the health of the River. MRN educates both its member organizations and the public on how River-friendly policies can promote a healthier Mississippi River, and MRN amplifies opportunities to reach decision-makers and advocate for such policies.

We have encouraged our grassroots supporter base of River Citizens to reach out to you over the years to share their visions for a healthy Mississippi River. We've engaged both grasstops

and grassroots networks to encourage them to make public comments at your meetings and take advocacy actions directed at GHTF members. We recognize that the Hypoxia Task Force is the only federal and state collaborative of its kind formally tasked with and responsible for specific goals related to reducing nutrient pollution in the Mississippi River basin. For this reason, we understand the Task Force's successes as our own and its failures as opportunities for all of us to work more intently on the issues that face our Mississippi River.

We see these public meetings as important occasions for GHTF member agencies and states to advance implementation of the Action Plan for Reducing Hypoxia in the Gulf of Mexico and to inform the public about the specific steps that are being taken to achieve the Plan's goals. While these meetings are open to the public, we continue to see opportunities for better public outreach and engagement.

Last year, we asked for the Task Force to meet in the Mississippi River basin rather than in Washington, DC. We appreciate that this meeting is taking place in Fayetteville, AR in 2023. If there are ways that MRN can help inform the decision-making process around locations to hold these meetings, we are eager to assist. Our grassroots supporter base is 20,000 people strong and our nearly 70 member organizations and small businesses are in all 10 mainstem states. The Task Force's public outreach and engagement efforts may be eased by being co-located in areas with higher numbers of individuals interested in Mississippi River policy and organizations active in this space.

We also heard in 2022 that state agencies pursue public engagement and stakeholder outreach on a local and state-level for specific projects and campaigns throughout the year and outside of the HTF meeting. While this is valuable, we're curious: why are those state NGOs and other stakeholders not engaged in or present at these annual Hypoxia Task Force public meetings?

We appreciate that state agencies are engaging robustly on the ground, but the opportunity to think about the Mississippi River system **as a whole** is a powerful lens that the Task Force is uniquely positioned to provide. Yet, when the Task Force gathers we are witness to presentations on a siloed, state-by-state basis. Are there whole river conversations and discussions that take place prior to the public meeting? How and when do state agencies discuss lessons learned or models to replicate throughout the basin? We see these types of discussions as meaningful potential future agenda items for this public meeting.

As an organization that works in all 10 mainstem Mississippi River states, MRN finds it challenging to keep tabs on each state's variable and irregular nutrient loss reduction plans. The lack of uniformity may give states flexibility, but it also makes it impossible to compare progress or understand how any one state may be impacting the River system.

MRN urges the Task Force to take a coordinated, whole basin approach wherever possible, rather than relying exclusively on state plans. State plans have an important role to play, but without overarching direction, coordination, targeting, and standardization at a federal and geographic level we will continue to miss the forest for the trees.

How did HTF use Bipartisan Infrastructure Law (BIL) Funding? What level of federal support is needed to meet the scale of our basin wide issues?

The Bipartisan Infrastructure Law (BIL) included $12 million per year for five years ($60 million total) for actions to support the Task Force's Action Plan. At the 2022 public meeting in DC, we heard about how this federal support was going to be used. We look forward to receiving more updates at the 2023 public meeting in Fayetteville about how BIL investments are being spent by the Task Force and how that federal funding is honoring the intentions of the Biden Administration's Justice40 initiative.

As laid out in EPA's June 2022 Guidance document, funding through BIL amounts to less than $1 million per year per state and closer to $750,000 per year per state in FY23 through FY25. While this funding is a step in the right direction, we can all agree that it is nowhere near the scale of dedicated investment needed to achieve HTF goals.[1] Based on the state presentations from 2022, this amount of funding is mostly going to existing programs or staff capacity, and it is *not* leading to significant innovation or scaling up of basinwide efforts.

What level of funding *would* the GHTF require to think outside the box about your collective work? The state and federal agencies (and the individual staff) involved in the Task Force work on much more than Mississippi River issues on a daily basis; it's one of the many topics and geographies you all work on. With significant increases in funding, MRN would recommend the GHTF pursue efforts such as:

- Dedicated staff in each state that could coordinate directly with federal agencies on Mississippi River issues
- Holistic monitoring and reporting on the health of the Mississippi River from the state and federal agency perspective
- Mississippi River specific data sets pulled from EPA's myriad of existing tools such as the Beach Act dataset[2], Cyanobacteria Assessment Network mobile application, or How's My Waterway
- A dashboard for the Mississippi River states (perhaps pulled from the dataset above) that lives on the GHTF's existing website.

These ideas require funding and increasing collaboration also has a cost. MRN has a history of advocating for increased federal funding for state nutrient reduction strategies and related programs, especially where they can focus on basin wide issues and have an impact on the scale and at the speed of the issues we are facing in the Mississippi River basin. If there are specific ways we can advocate for the Task Force, we are eager to do so.

[1] HTF has an Interim Target of reducing nitrogen and phosphorus loading to the Gulf by 20 percent by the year 2025, as a key step in reaching an average annual size of the Hypoxic Zone of 5,000 square kilometers by the year 2035.

[2] The U.S. EPA manages the Beach Act dataset which currently only includes coastal and Great Lakes states; there is no Mississippi River state info despite the fact that our states experience beach closures in the summertime: https://www.epa.gov/beaches/find-information-about-particular-us-beach

At last year's meeting, we also expressed our interest in knowing more about how the Justice40 Initiative would factor into the Task Force's work and implementation of BIL funds. We look forward to learning more about that at the meeting in Fayetteville.

Decreasing trends in pollution do not mean our work is done, and we need to incorporate climate change into future modeling.

Given all of the above, we are pleased to know that the Task Force is working with the National Great Rivers Research and Education Center (NGRREC) – an MRN member organization and a voting member of MRN's Policy Committee – to analyze overall trends for the Mississippi River basin. We look forward to learning more about NGRREC's trends analysis at the Fayetteville meeting and how it will inform the Task Force's work moving forward.

As is the case with any model, the results are only as good as the data it's based on. We know data and monitoring in Mississippi River states is uneven. We need consistent monitoring and evaluation in all states. We also need better tools to understand the cumulative impacts on the entire basin. For example, could a decreasing trend in the Upper Mississippi River region still contribute to overall increase trends in the Lower River?

Lastly, in September 2023 MRN hosted Dr. Christopher J. Gobler[3] from Stony Brook University to present his latest research on the impacts of climate change on harmful algal blooms (HABs). Summer 2023 was the hottest summer on record by a significant margin. There is limited research to-date on the combined influence of HABs, acidification, hypoxia, and thermal stress (all symptoms of climate change) on freshwater systems and aquatic life. Studies in marine systems have already shown that increasing water temperatures are changing the nature of HABs, expanding their presence toward the poles and extending bloom seasons.[4] In some contexts, this research found the bloom period of HABs containing neurotoxins have been extended by as much as two months in the last 30 years. In other words, the season for HABs is now two months longer than it was in the 1980's.

Through MRN's grassroots engagement over the years, we have found that most of our supporters experience the impacts of fertilizer and runoff pollution by way of harmful algal blooms and beach closures in their state every summer. The issue of HABs also makes clear the importance of our work to the realms of public health and recreation. What role can the Task Force play in anticipating and modeling the impacts of climate change on the Mississippi River system?

[3] Dr. Gobler's presentation "How Climate Change is making HABs more toxic" is viewable on our 1 Mississippi program's YouTube channel: https://youtu.be/yzNGZsESsb0?si=bQniIFM6aA5O689g

[4] Gobler et al. 2017, PNAS, Ocean warming since 1982 has expanded the niche of toxic algal blooms in the North Atlantic and North Pacific oceans. https://www.pnas.org/doi/10.1073/pnas.1619575114

Shifting the Task Force towards a Learning Organization model and away from an over-reliance on success stories

Over the years, we have noticed that the presentations made by state agencies at HTF meetings are almost always a collection of success stories and positive readouts. Perhaps this over-reliance on success stories at the only public meeting of this body is something that contributes to the frustration from the NGO community that the GHTF is simply "not doing enough." It is hard to reconcile the individual state successes with the overall picture of a declining River basin (even if some trends in some reaches are showing progress). As the only 12-state group considering the state of the Mississippi River, we also look to you to provide transparent updates on the whole river from the perspective of state and federal agencies.

There are numerous resources related to Learning Organizations and their characteristics, but the ones we are urging the GHTF to demonstrate more are embracing failure as an inseparable component of innovation and operating from the perspective that we are all learners. From the outside public's perspective, the GHTF operates in a top-down, expert-knows-best manner. This makes it challenging for NGOs to know how to support the work of the GHTF or what kinds of challenges agencies are facing daily as they contemplate the overall goals of the Task Force.

The Task Force has an upcoming opportunity to reckon with a failure. The Interim Goal of reducing nitrogen and phosphorus loading to the Gulf by 20 percent by 2025 will not be met. We urge the EPA and the Task Force to use this failure as an opportunity to be transparent and communicate why this goal wasn't met, what was learned, and how the approach will change moving forward. It cannot be used as an excuse to simply change the goal post to something different.

Thank you for receiving our comments. We look forward to being in person with you in Fayetteville next week. If you have any questions or would like additional information about any of the above, please reach out to Maisah Khan, Policy Director at the Mississippi River Network at mkhan@1mississippi.org.

Sincerely,

Maisah Khan

Maisah Khan
Policy Director
Mississippi River Network

Iowa Environmental Council

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November 29, 2023

Mississippi River/Gulf of Mexico Hypoxia Task Force
Radhika Fox (Co-Chair), U.S. Environmental Protection Agency
Mike Naig (Co-Chair), Iowa Department of Agriculture and Land Stewardship

Submitted via email to Katie Flahive at Flahive.Katie@epa.gov

Re: Comments for the 38th Public Meeting of the Gulf Hypoxia Task Force on December 6, 2023

Dear Gulf Hypoxia Task Force Chairs:

The Iowa Environmental Council (IEC) offers the following comments regarding nutrient pollution in Iowa to the Gulf Hypoxia Task Force (GHTF). These comments represent the views of the Iowa Environmental Council, an alliance of more than 100 organizations, thousands of individual supporters, and an at-large board of farmers, business owners, and conservationists. IEC works to build a safe, healthy environment and sustainable future for Iowa. IEC will also deliver public comments at the in-person meeting on December 6th.

Lack of Progress on Nutrient Reduction

The GHTF needs to do more to hold states like Iowa accountable for progress on its nutrient reduction strategy (NRS). This year is Iowa's 10th year of implementation of its NRS. While Iowa state agencies and agriculture groups have been on a media blitz celebrating the success of the strategy and the progress they claim has been made, Iowa continues to be nowhere close to reaching its actual water quality goals. Further, the state refuses to reevaluate the strategy and update it based on progress made or lack thereof, a crucial step for any successful or serious strategy. The GHTF should require states to develop benchmarks and timelines for evaluation and nutrient reduction targets.

A Holistic Approach to Addressing the Dead Zone

The GHTF has set a basin-wide goal for reducing the size of the Gulf hypoxic zone by 45%. However, the Task Force has not developed a coordinated, basin-wide approach to reducing the nutrient pollution that causes the hypoxic zone. Instead, it relies on individual states to develop and implement strategies for nutrient pollution reduction. The Task Force should create a whole-basin strategy to reduce nutrient pollution that identifies targets, provides tools for project development and evaluation, and creates a framework for states to standardize implementation and reporting. The capacity of the federal government should be leveraged through the EPA's role with the Task Force to implement and evaluate nutrient pollution reduction.

Numeric Nutrient Criteria

The Iowa Department of Natural Resources (DNR) is approaching its 2024-26 triennial review. As in previous years, we will call on Iowa DNR to include numeric nutrient criteria (NNC) in the triennial review. IEC has petitioned the state to adopt NNC in the past and the state has denied those petitions. We cannot wait any longer for Iowa to commit to adopting NNC. U.S. EPA has made it clear and our own experience demonstrates that states need to adopt NNC to successfully address nutrient pollution. After the latest EPA recommendations to develop locally appropriate NNC, with an Iowa case study using water quality monitoring data, the Iowa DNR has run out of excuses. U.S. EPA must ensure that Iowa DNR will include numeric nutrient criteria in its triennial review.

Bipartisan Infrastructure Law Funding to Address Gulf Hypoxia

The Bipartisan Infrastructure Law (BIL) has dedicated $60 million over the course of five years for the Gulf Hypoxia Program. The GHTF must ensure that those funds are spent on strategic and efficient projects to address nutrient pollution. With less than $1 million allotted to each state per year, this funding provides a small fraction of the funding necessary to implement Iowa's NRS, which is estimated to cost $77 million to $1.2 billion per year.[1] Instead, the funding should support water quality monitoring and tracking of progress toward NRS goals. In addition to tracking implementation of agricultural conservation practices, the other side of the ledger must be accounted for – the amount of new drainage tile installed annually, which accelerates delivery of fertilizer pollution to the state's waterways, and conversion of perennial vegetation and pasture to annual row crop production.

The GHTF should also use BIL funds to support a coordinated, whole-basin approach to nutrient pollution reduction. EPA could fund staff to work with states to coordinate nutrient reduction work, provide tools and capacity, and increase efficiency and frequency of reporting.

Public Input and Accountability

Finally, we are disappointed that public feedback is not considered seriously by the Gulf Hypoxia Task Force. In the previous meetings we have participated in, the public has called on the Task Force to do more and take action to meaningfully address lack of progress on its goals. The Task Force has ignored those calls and done nothing to address the concerns. The Gulf Hypoxia Task Force meetings continue to be an opportunity for states and the EPA to share positive, isolated stories despite ongoing, systemic lack of progress, change, or improvement in water quality. As we approach the Task Force's 2025 interim goal of reducing nutrient pollution and the Dead Zone by 20%, the Task Force should honestly assess and explain why the goal will not be reached and how its approach must change going forward to have any hope of actually improving water quality and achieving its goals in the future.

[1] "Iowa Nutrient Reduction Strategy," Iowa DALS, Iowa DNR, and Iowa State University (updated Dec. 2017) at Section 1.1, page 12.

We appreciate the opportunity to provide comments to the Gulf Hypoxia Task Force and look forward to further discussion at the meeting in December. Please contact me anytime to further discuss these comments and our proposed solutions.

Sincerely,

Alicia Vasto
Water Program Director

December 6, 2023

RE: Oral Comments Delivered at the 38th Public Meeting of the Gulf Hypoxia Task Force

Good afternoon. My name is Alicia Vasto, and I am the Water Program Director for the Iowa Environmental Council. We are a statewide nonprofit coalition with a mission to create a just, healthy environment and sustainable future for all Iowans.

I am here in person to meet you and comment because I don't believe that my words or the calls from my fellow Iowans to take substantive action on nutrient pollution are being taken seriously by this Task Force. That feeling is reinforced and validated learning that you had a presentation from the Farm Bureau again this year, but environmental groups and members of the public still only get a few minutes to speak every year.

This year is the 10th anniversary of Iowa's Nutrient Reduction Strategy. Last fall, my organization asked the state agencies to do a comprehensive analysis and update of the NRS at the 10 year mark. They did not. It is common sense that a real, effective strategy requires evaluation and regular updates based on lessons learned. The Task Force and EPA should require states to do regular evaluation and updates to show how they will make actual progress on nutrient pollution reduction and incorporate changing climactic conditions. States should be held accountable for failure to reach goals and refusal to adapt a failing strategy.

While Iowa state agencies and agriculture groups have been celebrating so-called progress made in the 10 years since the adoption of the Iowa NRS, our state continues to suffer from contaminated waterways and increasing costs of drinking water treatment. Isolated success stories do not reflect the scale of the pollution problem in Iowa and the lack of progress toward actual water quality goals.

People have raised the Polk County "batch and build" initiative many times in these meetings as an example of success. We support the local staff that have worked hard to make this innovative model effective and impactful. The county installed 136 bioreactors and saturated buffers through batch and build from 2021 to 2022. However, the reality is that we need more than 1,000 bioreactors and saturated buffers installed every year across the state of Iowa in order to reach the goals of the Nutrient Reduction Strategy in 100 years. This demonstrates that individual edge-of-field practices are merely Band-Aids to an ever-increasing problem.

From 2017 to 2021, commercial nitrogen application to corn following soybeans averaged 175 lbs/acre in Iowa. For continuous corn, average application was 202 lbs/acre. Those amounts far exceed maximum return to nitrogen rates and represent application over 24 million acres of row crop ground in Iowa. And that doesn't even include manure application rates. How can we possibly reach nutrient reduction goals if this level of fertilizer application is allowed year after year without question? It is impossible.

The Gulf Hypoxia Task Force called for an interim nutrient reduction goal of 20% by 2025. We have one year left to make this happen. What will the Task Force do when it fails to meet this interim goal? It appears from the latest report to Congress that the idea is to change to a new measurement methodology that uses provisional data, leading to ambiguity on the metrics. When will we see the EPA take its role on this Task Force seriously and embark on a coordinated, whole-basin approach to nutrient pollution reduction, including a TMDL and updated action plan?

We cannot make progress on nutrient reduction without clear standards, benchmarks, timelines, and accountability. We've known about the Dead Zone since the 1970s. The Hypoxia Task Force was created when I was 8 years old. When will there be real accountability to Iowans and our downstream neighbors that any efforts over the past three to five decades have actually had an impact on water quality or the size of the Dead Zone.

Iowans are suffering due to the lack of accountability and the Task Force's inability to adequately address the problem. EPA must step up.