Indiana State Nutrient Reduction Strategy

Indiana Water Summit
September 8th, 2022

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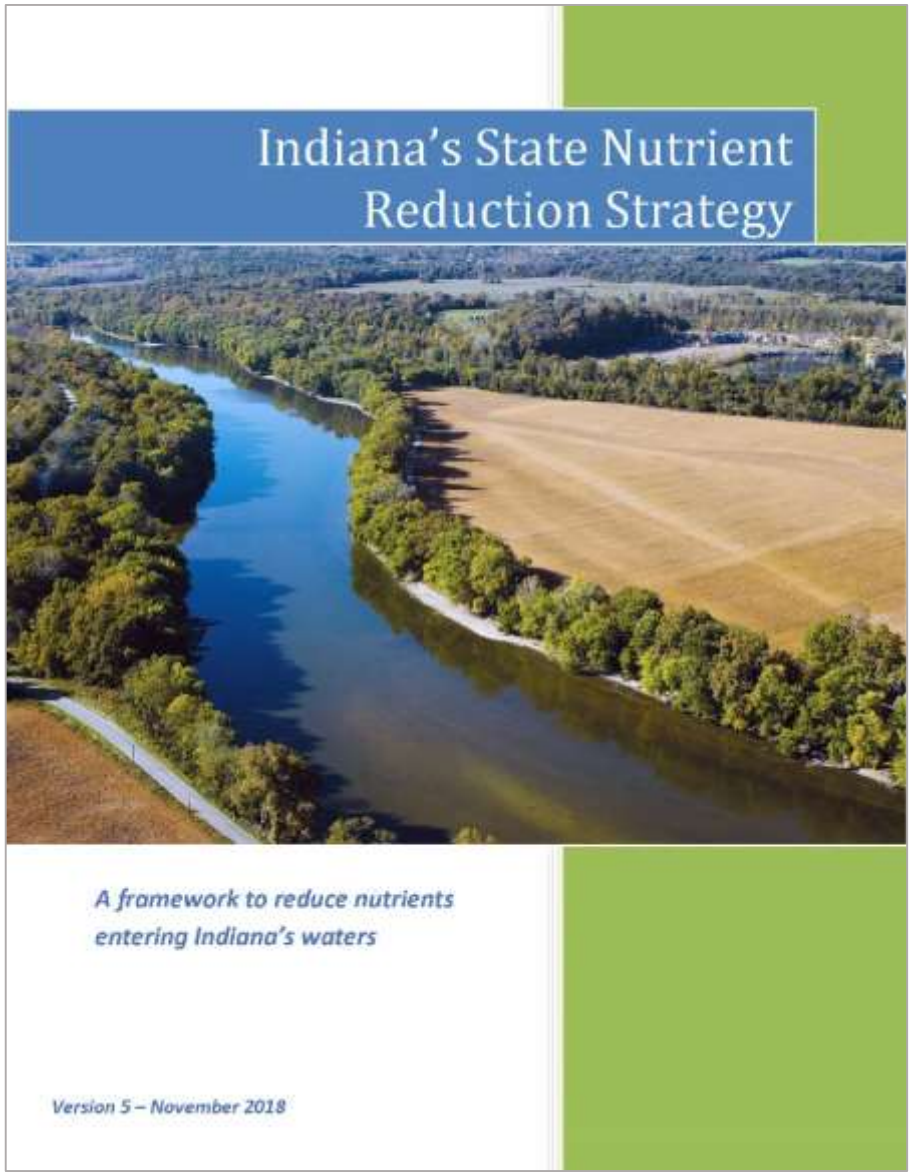


Background - Gulf of Mexico Hypoxia Task Force & State Strategies

- The Gulf of Mexico dead zone occurs every summer due to nutrient pollution from the Mississippi River Basin.

- To help protect our local streams and the Gulf of Mexico, Indiana and 11 other states in the Mississippi River Basin have developed state nutrient reduction strategies to reduce the nutrient loads leaving their state.
- These strategies are part of a national plan developed by the Gulf of Mexico Hypoxia Task Force (HTF) to reduce the size of the Gulf of Mexico hypoxia zone.

https://www.epa.gov/ms-htf

Mississippi River Gulf of Mexico Watershed Nutrient Task Force

The HTF goal is to reduce the areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by the year 2035, with an agreed upon interim target of a 20% nitrogen and phosphorus load reduction by the year 2025.

Indiana State Nutrient Reduction Strategy

- An inclusive effort under the leadership of the ISDA and IDEM to “capture statewide, present and future endeavors in Indiana which positively impact the State’s waters as well as gauge the progress of conservation, water quality improvement and soil health practice adoption in Indiana”.

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

- Encourage voluntary, incentive-based, practical, and cost-effective actions
- Use and strengthen existing regulatory and non-regulatory programs
- Identify existing and additional funds needed and funding sources
- Identify research needs
- Identify opportunities for innovative, market-based solutions
- Follow adaptive management

• The inventory and utilization of resources and practices to achieve their highest impact on nutrient reduction;
• Encouragement of voluntary incentive-based conservation through the many local, state and federal water quality related programs;
• Measuring the impacts of urban and rural conservation best management practices and tracking nutrient load reductions;

Partnerships

- The Indiana SNRS highlights the importance of partnerships.

Indiana Conservation Partnership (ICP)

http://icp.iaswcd.org/

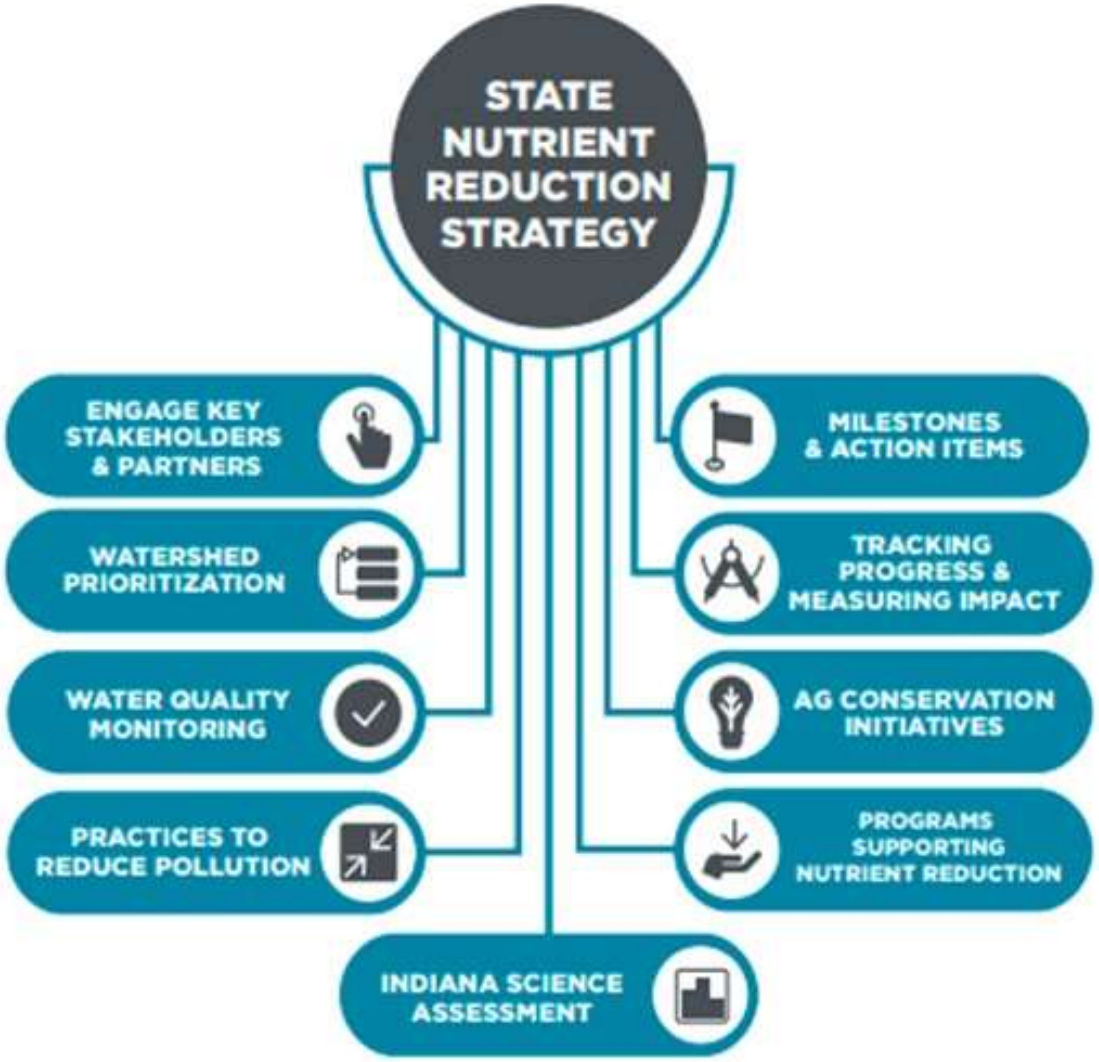
A truly unique Indiana approach

Other important partners

Indiana Agriculture Nutrient Alliance (IANA)

- Agribusiness Council of Indiana
- Indiana Farm Bureau
- USDA-NRCS
- Indiana Soybean Alliance
- American Dairy Association of Indiana
- Indiana Association of SWCDs
- Indiana Beef Cattle Association
- Indiana Corn Marketing Council
- Indiana Dairy Producers
- Indiana Pork
- Indiana State Department of Agriculture
- Indiana Poultry Association
- Purdue University College of Agriculture
- The Nature Conservancy of Indiana

IN State Nutrient Reduction Strategy Components



- IDEM Water Quality Monitoring Programs
- Point Source Pollution strategies
- NPS Pollution strategies
- Indiana Science Assessment
- Programs Supporting Nutrient Reduction
  - NPDES, IDEM Wellhead Protection, CAFOs, Storm Water Runoff programs
  - State and Federal Voluntary Programs
- Ag Initiatives
  - ICP Soil Health Philosophy
  - Conservation Cropping Systems Initiative (CCSI)
  - IANA
  - 4R Nutrient Stewardship
- Sediment and Nutrient Load Reduction Tracking and Measuring Impact

Measuring Impacts

- Tracking Progress

Tillage and Cover Crop Transects

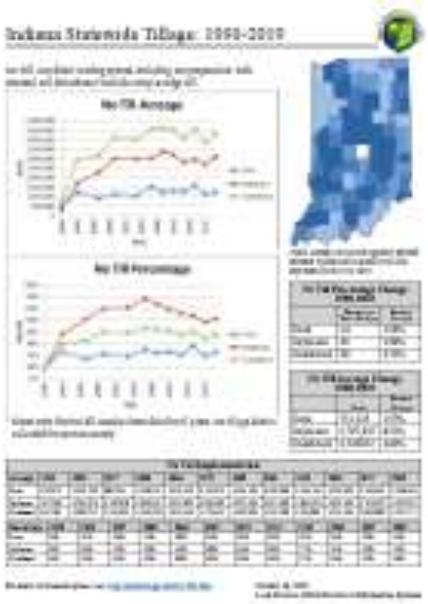
Region 5 Model Analysis

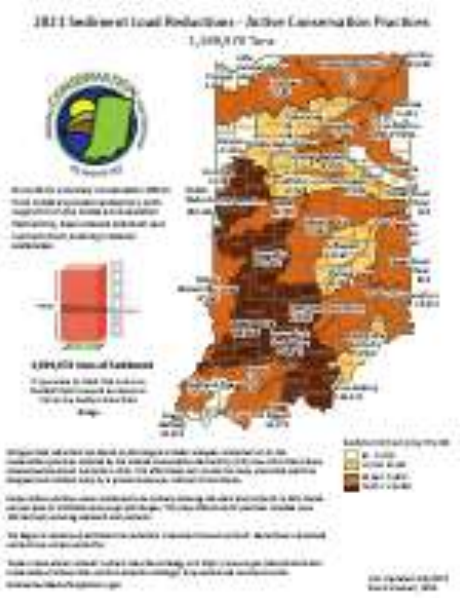
GIS Basin Story Maps

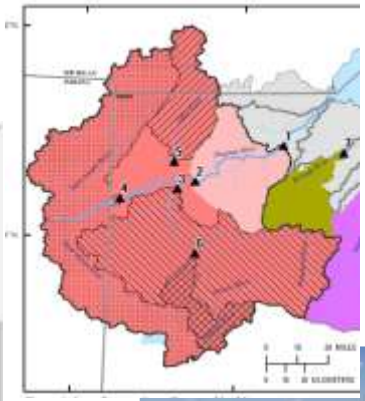
Performance Measures Monitoring

Regulatory Framework

- POTW and LTCP







Indiana Agriculture Nutrient Alliance (IANA)

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ABOUT IANA

INDIANA AGRICULTURE NUTRIENT ALLIANCE

AGRICULTURE ORGANIZATIONS

+

INDIANA CONSERVATION PARTNERSHIP

+

CONSERVATION ORGANIZATIONS

Keeping Indiana farmers at the forefront of proactive nutrient management and soil health practices that improve farm viability and, ultimately, reduce nutrient loss to water

BOARD MEMBERS

Executive Committee

- Agribusiness Council of Indiana
- Indiana Farm Bureau
- USDA Natural Resources Conservation Services of Indiana
- Indiana Soybean Alliance

- American Dairy Association of Indiana
- Indiana Association of SWCDs
- Indiana Beef Cattle Association
- Indiana Corn Marketing Council
- Indiana Dairy Producers
- Indiana Pork
- Indiana State Department of Agriculture
- Indiana State Poultry Association
- Purdue University College of Agriculture
- The Nature Conservancy of Indiana

SHARED SOLUTIONS

INDIANA AGRICULTURE NUTRIENT ALLIANCE

Focused efforts for greater success – To further the adoption and implementation of practices that optimize nutrient use efficiency and enhance soil health, IANA will focus on four main areas:

1

Foundation:
SHARED GOALS
Establish goals for statewide practice adoption that encourage fertilizer and nutrient loss reductions

2

Collaboration:
SHARED OPPORTUNITIES
Communicate IANA partnership organizations' efforts to strengthen synergies and maximize awareness, support and implementation of strategic objectives

3

Education:
SHARED INFORMATION
Develop best management practice (BMP) educational materials for our farmers and stakeholders to encourage fertilizer and nutrient loss reductions

4

Research:
SHARED OUTCOMES
Assist partners with pursuing collaborative nutrient-focused research, identifying synergies and compiling outcomes

GUIDING PRINCIPLES: 4RS & SOIL HEALTH

INDIANA AGRICULTURE NUTRIENT ALLIANCE

Right Time

Make nutrients available **when** crops need them

Right Place

Keep nutrients **where** crops need them

Right Source

Match fertilizer **type** to crop needs

Right Rate

Match **amount** of fertilizer type to crop needs

SHARED GOAL: MANAGING NUTRIENTS

INDIANA AGRICULTURE NUTRIENT ALLIANCE

1. PLAN

Nutrient Management

GOAL:

100%

of farmers regularly perform soil sampling

GOAL:

100%

of farmers implement plans for nutrient management

2. APPLY

Application Timing

GOAL:

100%

of Indiana farmers making frozen and snow covered group applications only as a last resort

GOAL:

75%

of Indiana farmers making nutrient applications at planting or in-season (post-emergence)

3. PROTECT

Soil Health

GOAL:

Increase living green cover acres to

40%

of Indiana cropland

GOAL:

25%

increase of Indiana cropland acres using reduced tillage systems

GOAL:

10%

increase of Indiana cropland acres using no-till or strip-till systems

What Is a 4R Nutrient Management Plan

INDIANA AGRICULTURE NUTRIENT ALLIANCE

- Framework for making nutrient applications that maximize plant uptake and minimize risk of environmental loss
- Cropping system specific
- Adaptable to all farms

RIGHT TIME

Makes nutrients available when crops need them.

RIGHT SOURCE

Matches fertilizer type to crop needs.

RIGHT PLACE

Keeps nutrients where crops can use them.

RIGHT RATE

Matches amount of fertilizer to crop needs.

SHARED OPPORTUNIITES: INDIANA 4R CERTIFICATION

INDIANA AGRICULTURE NUTRIENT ALLIANCE

- Voluntary Certification for Nutrient Service Provider
- Program of the Agribusiness Council of Indiana
- Location Based

HEALTHY SOIL. CLEAN WATER. VIABLE FARMS.

INDIANA'S NUTRIENT REDUCTION STRATEGY — IN ACTION

Indiana Science Assessment

to support the IN Nutrient Reduction Strategy & IANA Goals

Indiana Water Summit
August 8, 2022

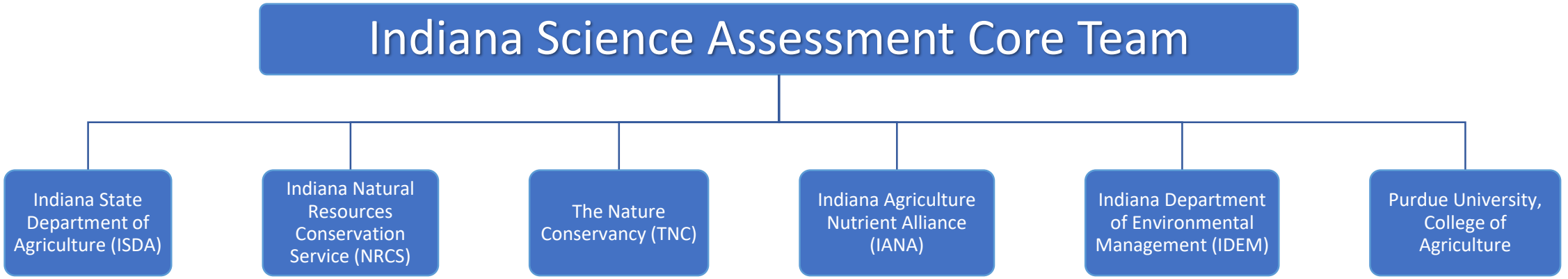
Jill Reinhart
ASTC Partnerships
USDA Natural Resources Conservation Service
Indiana State Office

Indiana Science Assessment

TWO COMPONENTS:

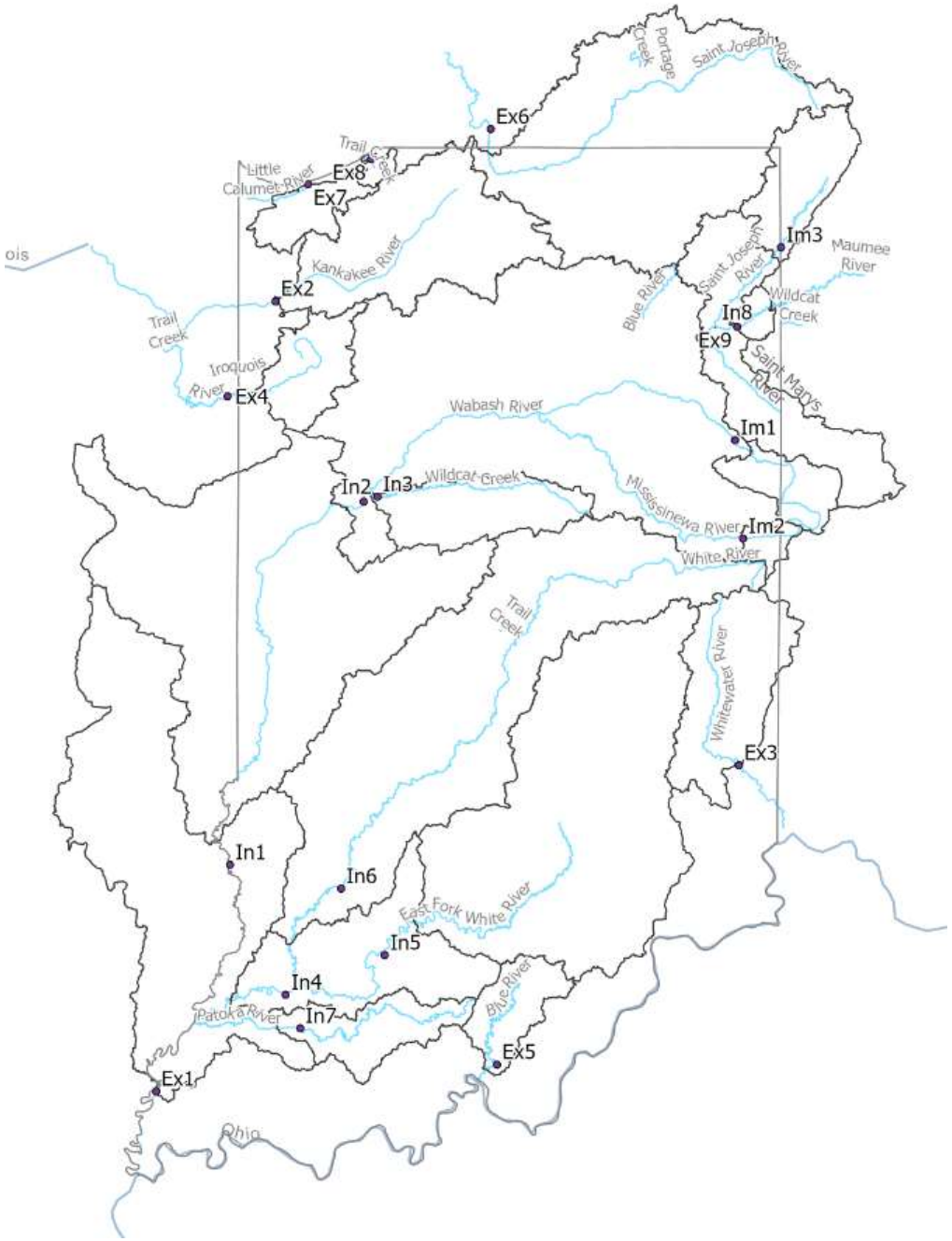
1. Determine Historic and Ongoing Nutrient Loads Leaving Indiana
2. Improve the way we track nutrient and sediment loss from ag practices

Indiana Science Assessment Strategy Developed and Finalized in September 2019



Component 1:
Determine historic and ongoing nutrient loads leaving the state

- Analyze major river basins & pour points leaving the state
- IDEM fixed station and USGS monitoring network sites
- Parameters include: Total Nitrogen, Total Phosphorus, Total Suspended Solids



INDIANA SCIENCE ASSESSMENT for the State Nutrient Reduction Strategy

Component 1 – Trend Analysis Results

All Sites that export from Indiana to the Mississippi River Basin

The largest period of overlapping data was used for the 5 export sites in the Mississippi River Basin, which was from 2000-2019, to show the flow normalized load/flux trend. The 5 sites are: 1) Ex1 - the Wabash River at New Harmony, IN, 2) Ex2 - the Kankakee River at Shelby, IN, 3) Ex3 - the Whitewater River at Brookville, IN, 4) Ex4 - the Iroquois River near Iroquois, IL, and 5) Ex5 - the Blue River near White Cloud, IN.

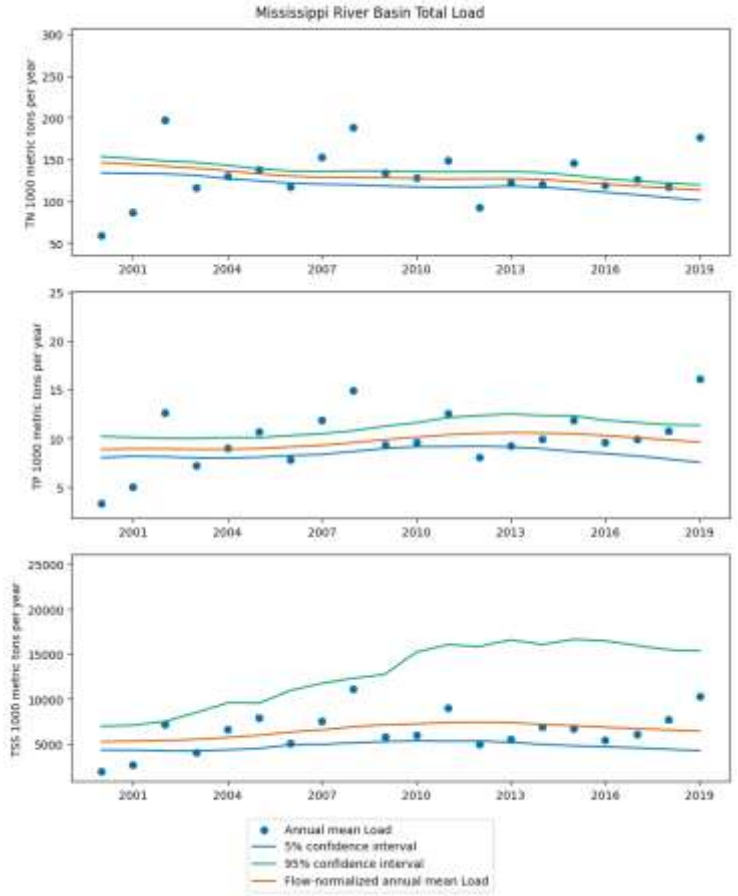
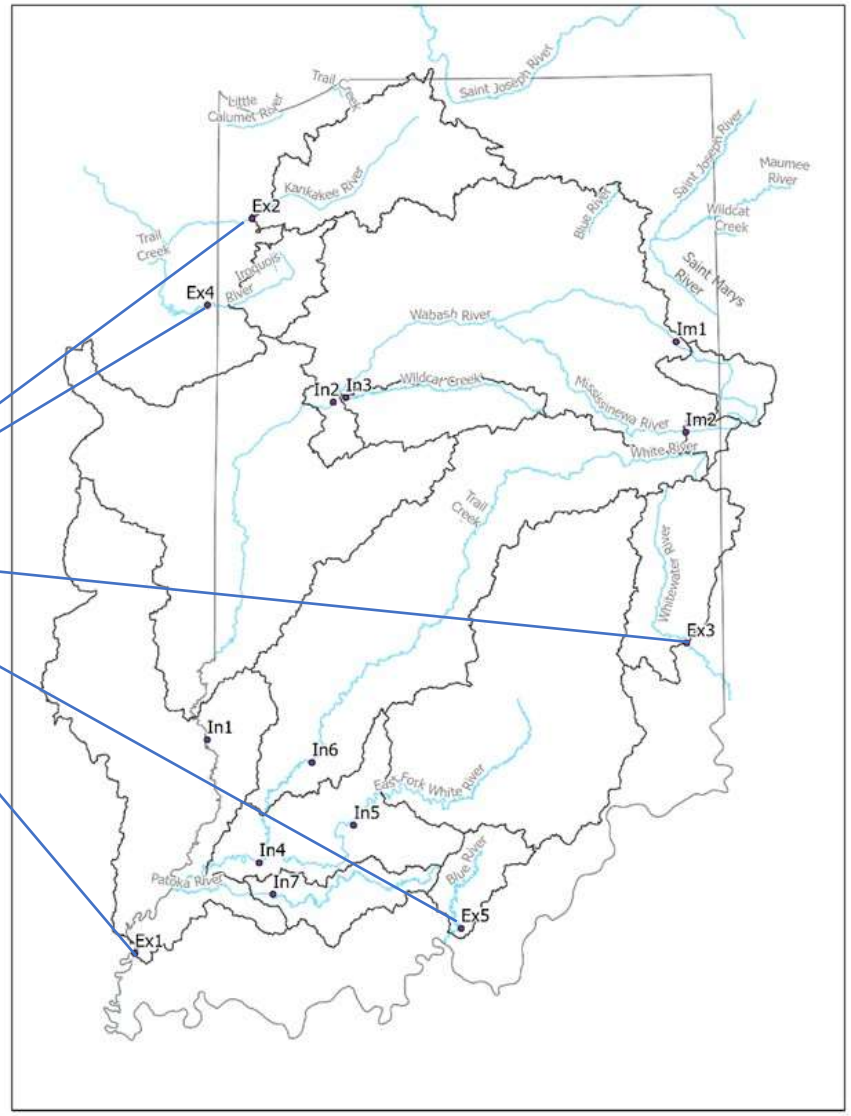


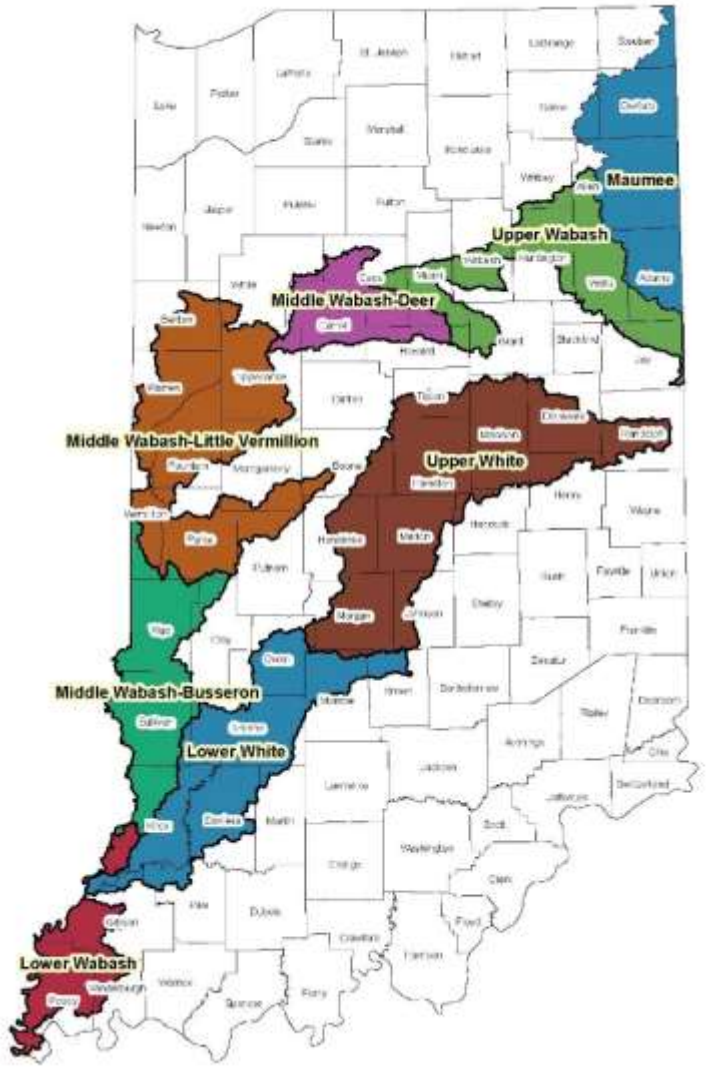
Figure 7: Figure 7 shows the trend in flow normalized load/mean flux combined for the **Mississippi River export sites**. (5 export sites)

*5 Mississippi River Basin Export Sites



Component 1 – Next Steps

- Component 1 of the Science Assessment informs the State Nutrient Reduction Strategy:
  - Analyzing water quality data to determine loads and trends within each of the basins in the state will help to show the current state of Indiana's water quality.
  - Inform prioritizing watersheds for more targeted conservation efforts in the future.



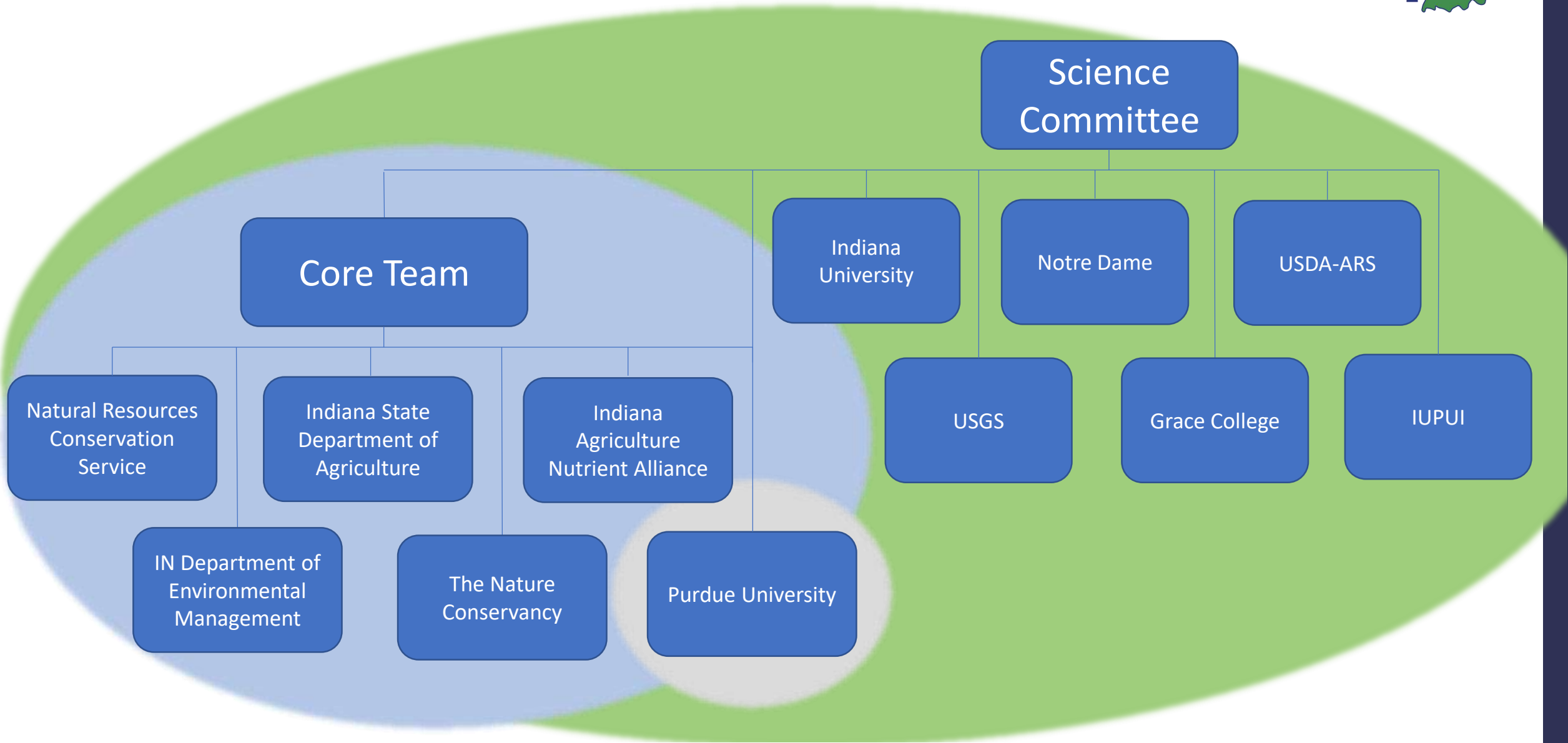
Component 2:
Improve the method to quantify nutrient reductions from conservation practices

- Quantify how ag conservation practices can reduce nitrogen, phosphorus, and sediment loads to waterways (% reduction)

Effect on N loss?
Effect on P loss?
Effect on sediment loss?




Component 2 Science Assessment Team



Analyzing Conservation Practices

- Chose 10 initial practices to assess:
  - In-Field Practices
    - Cover crops
    - Tillage practices (no-till, reduced tillage)
    - Nutrient management practices
      - Nitrogen rate and timing;
      - Phosphorus rate and placement
  - Edge-of-field practices
    - Filter strips
    - Drainage water management
    - Grassed waterways

1. Identify — Identify possible studies
2. Select — Select studies that meet criteria
3. Extract — Extract data into database
4. Analyze — Analyze data to quantify effectiveness
5. Report — Report and share findings; Document processes, data, analysis, and synthesis

The Indiana Science Assessment will lead to:

- Improved documentation of statewide progress towards nutrient reduction goals.
- Prioritization of the most effective conservation practices based on Indiana conditions, to improve program implementation.
- More accurate assessment of Indiana's contributions to downstream water quality issues.
- Alignment of researchers, agencies, and others throughout Indiana about conservation practices effectiveness.
- Enhanced transparency and accuracy for Indiana's water quality improvement quantifications.
- A bolstered set of reportable goal-tracking parameters that include dissolved nutrients.
- A scientifically sound understanding of the nature of nutrient loading in Indiana waterways.

Questions?