

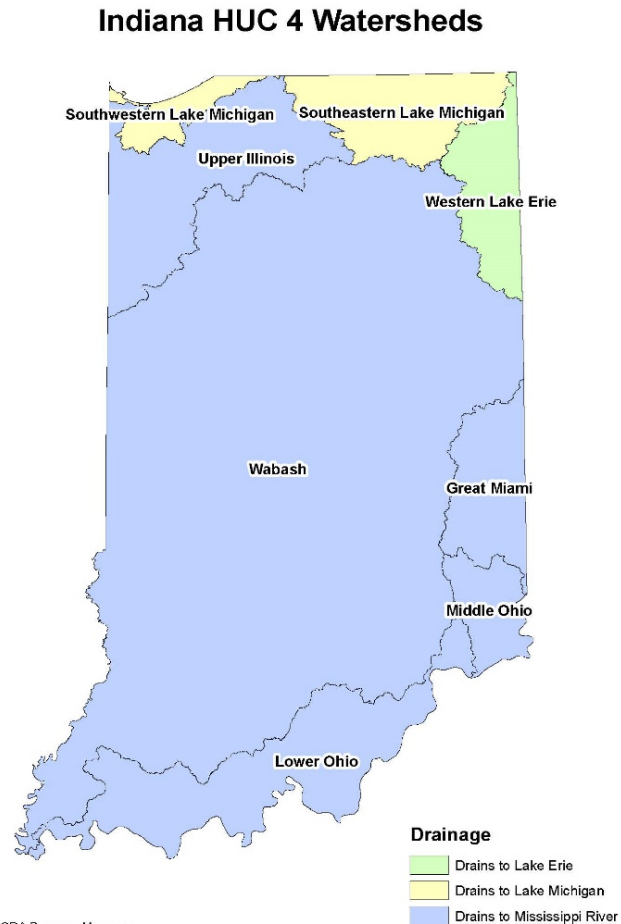


You Want Me to do What?

Implementing and Informing
Indiana's State Nutrient Reduction Strategy



Indiana Drainage Overview



- Three major drainage basins
 - Mississippi River Basin
 - Wabash, Ohio and Kankakee Rivers
 - Lake Michigan
 - Western Lake Erie Basin

Gulf of Mexico Hypoxic Zone

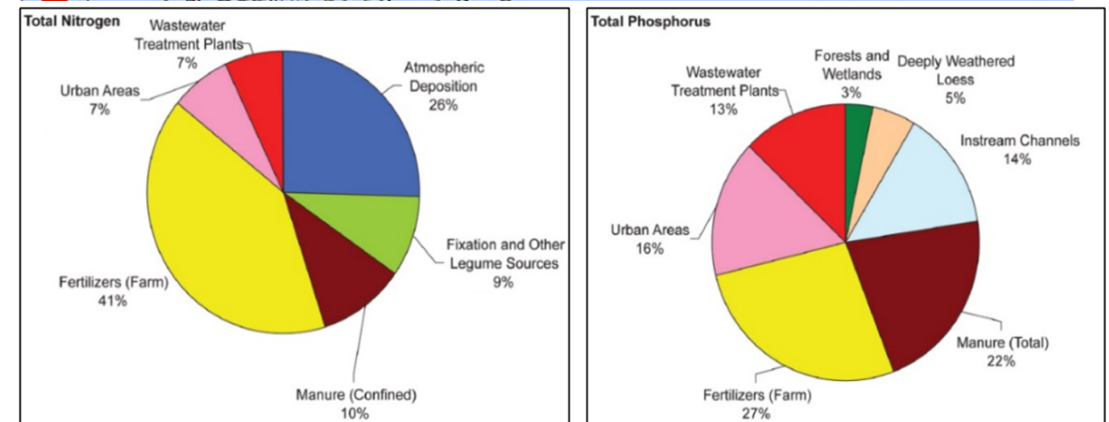
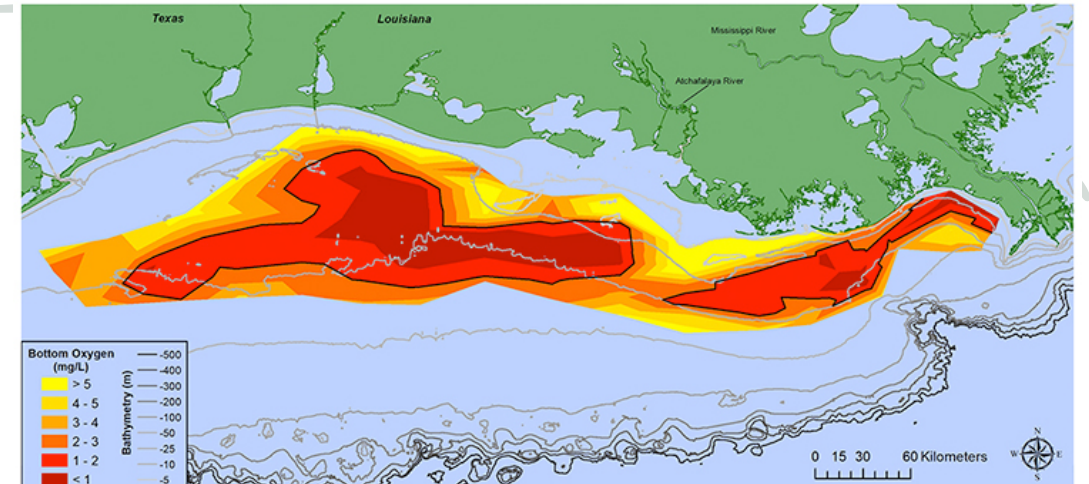
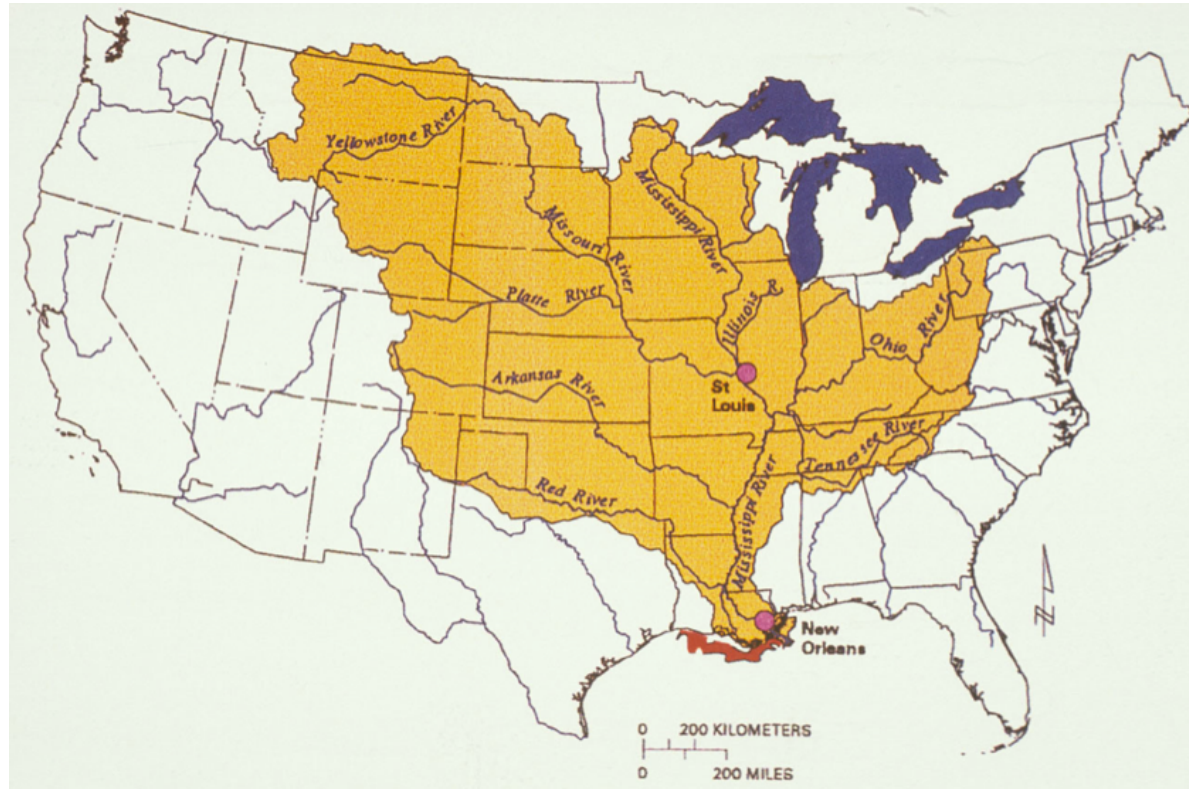
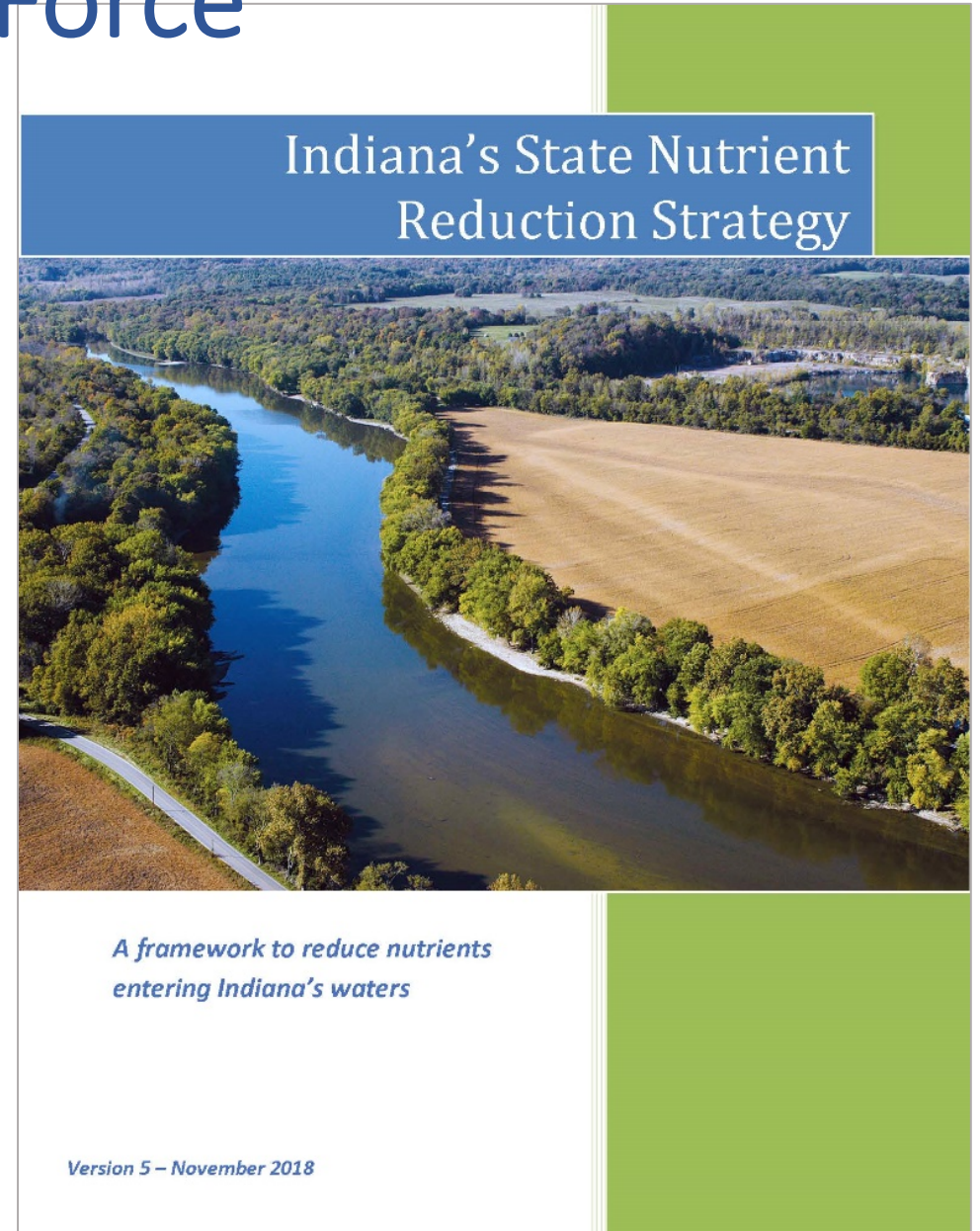


Figure 9. USGS SPARROW model estimates of sources of total nitrogen and total phosphorus transported from Mississippi River Basin to Gulf of Mexico (Robertson and Saad 2013).

Gulf of Mexico Hypoxia Task Force

- In 2008 created priority action plan guiding SNRS
- In 2011, USEPA released memo listing required elements to SNRS
- HTF goals:
 - Reduce areal extent of GoM hypoxic zone to less than 5,000 square kilometers by 2035
 - Interim target to reduce nitrogen loading by 20% by 2025



The Great Lakes



Western Lake Erie Basin (WLEB)

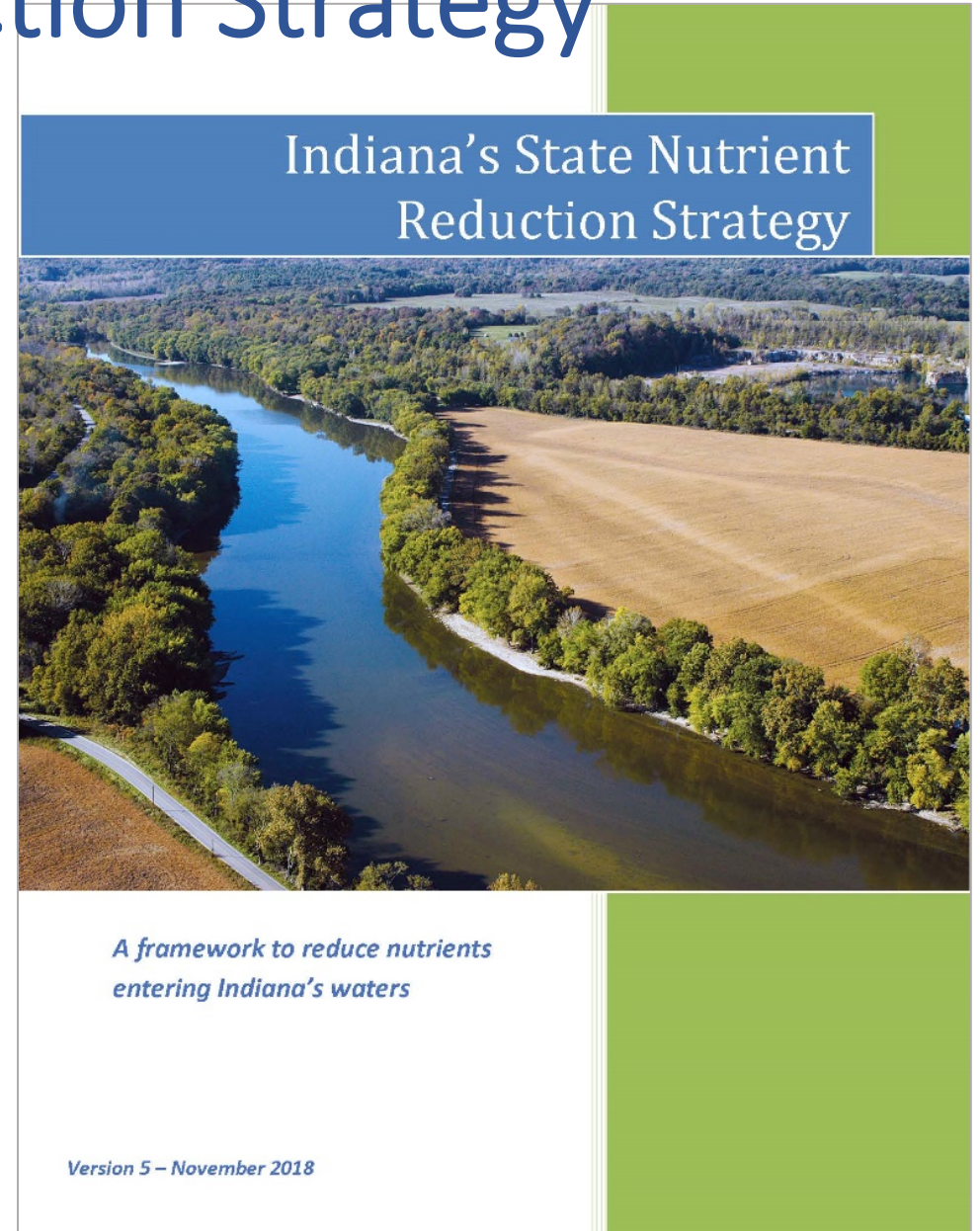
- Great Lakes Water Quality Agreement (GLWQA) Domestic Action Plan (DAP) for the Western Lake Erie Basin
- DAP released February 28, 2018 and can be found at <http://www.in.gov/isda/3432.htm>
- The focus of Indiana's DAP is the 40% phosphorus reduction goal for the Maumee River, which drives hazardous algal blooms (HABs) in the WLEB and contributes to central basin hypoxia.
- Indiana's goal is to meet the spring-time flow weighted mean concentration (FWMC) targets of 0.23 mg/L and 0.05 mg/L for total phosphorus (TP) and dissolved reactive phosphorus (DRP) respectively in the Maumee River as it flows across the border into Ohio.

Lake Michigan

- A plan for Lake Michigan under the GLWQA will be developed in the coming years.

Indiana State Nutrient Reduction Strategy

- Indiana's State Nutrient Reduction Strategy (SNRS) was developed to “capture statewide, present and future endeavors in Indiana which positively impact the State's waters as well as gauge the progress of conservation, water quality improvement and soil health practice adoption in Indiana”.
- The Indiana SNRS represents the state's commitment to reduce nutrient runoff into Indiana's waters from **point** sources and **non-point** sources.
- The Indiana SNRS can be found at <https://www.in.gov/isda/2991.htm>

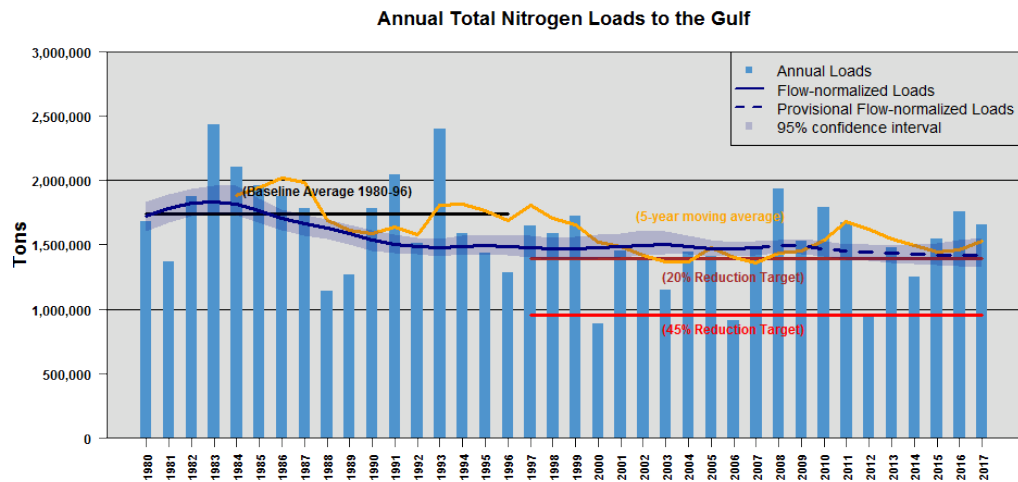


Guiding Principles

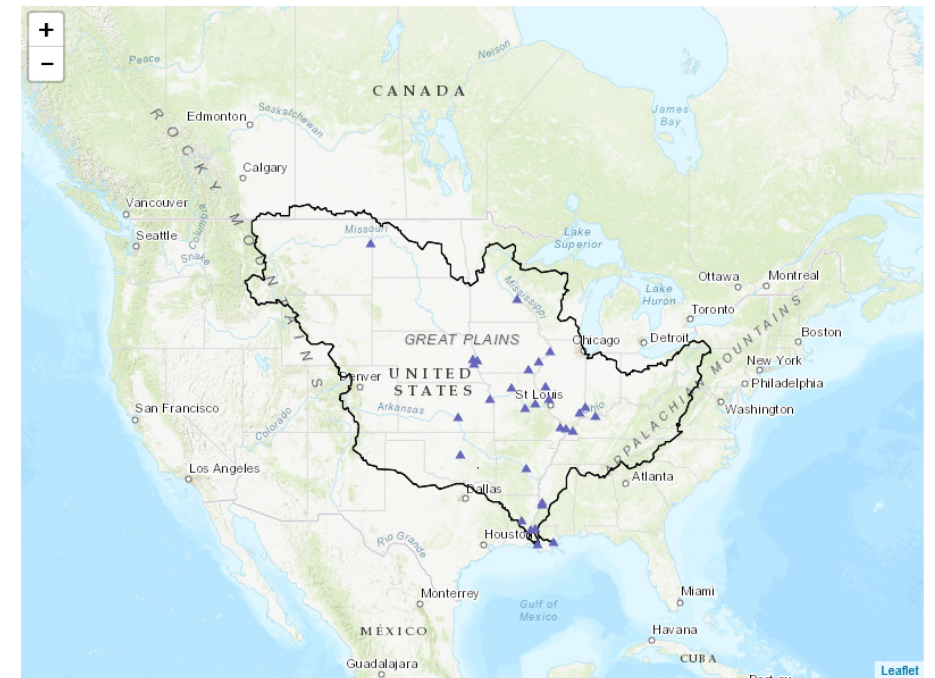
- ❖ **Encourage voluntary, incentive-based, practical, and cost-effective actions**
- ❖ **Use and strengthen existing programs**
- ❖ **Identify existing and additional funds needed and funding sources**
- ❖ **Identify opportunities for innovative, market-based solutions**
- ❖ **Follow adaptive management**

Is Progress Being Made (Basinwide)?

- In January 2018, the HTF adopted an additional reporting metric to show progress toward the task force's goal.
- Using USGS, WRTDS model to determine loads and trends



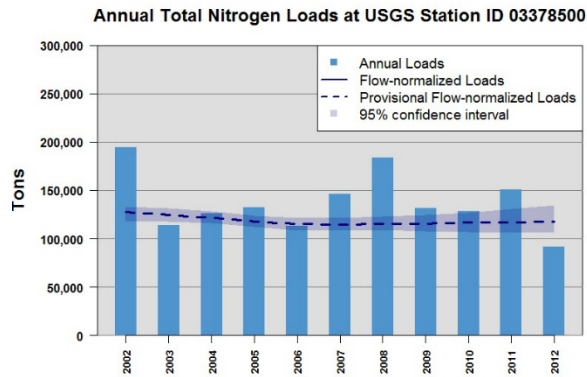
Annual Total Nitrogen Loads to the Gulf of Mexico from 1980-2017 showing two metrics to assess progress adopted by HTF.



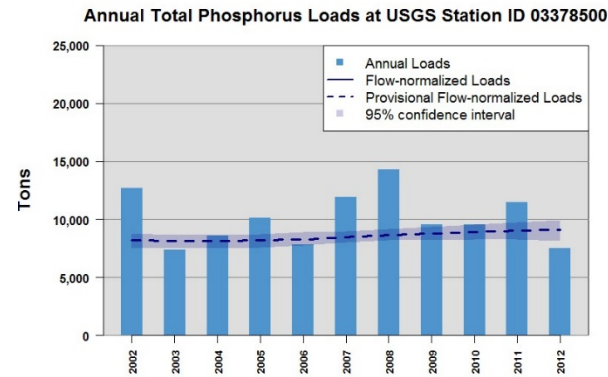
WRTDS map of the Mississippi/Atchafalaya River Basin

What about in Indiana?

- Began the process of showing Indiana trends using WRTDS also, to help determine loads and trends



Annual Total Nitrogen Loads at the New Harmony, IN USGS Station from 2002 – 2012.



Annual Total Phosphorus Loads at the New Harmony, IN USGS Station from 2002 – 2012.

*Only a decade of information from this USGS sampling station.



- There is a delay or lag-time, which can be decades, between installation of conservation practices and positive, statistically significant changes in water quality.
- Legacy of nutrients
- Illustrates the need to look at more WQ monitoring data, especially at a smaller scale, and more conservation practices.
- May decide another method of showing trends through a future Indiana Science Assessment.

Partnerships

- The Indiana SNRS highlights the importance of partnerships.

Indiana Conservation Partnership (ICP)

<http://icp.iaswcd.org/>



**A truly unique Indiana approach*



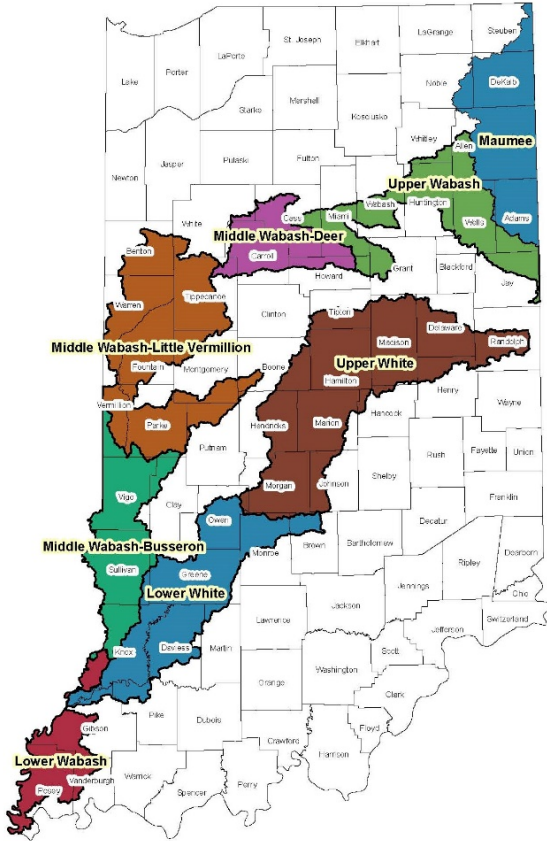
Other important partners

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



Watershed Prioritization and Characterization

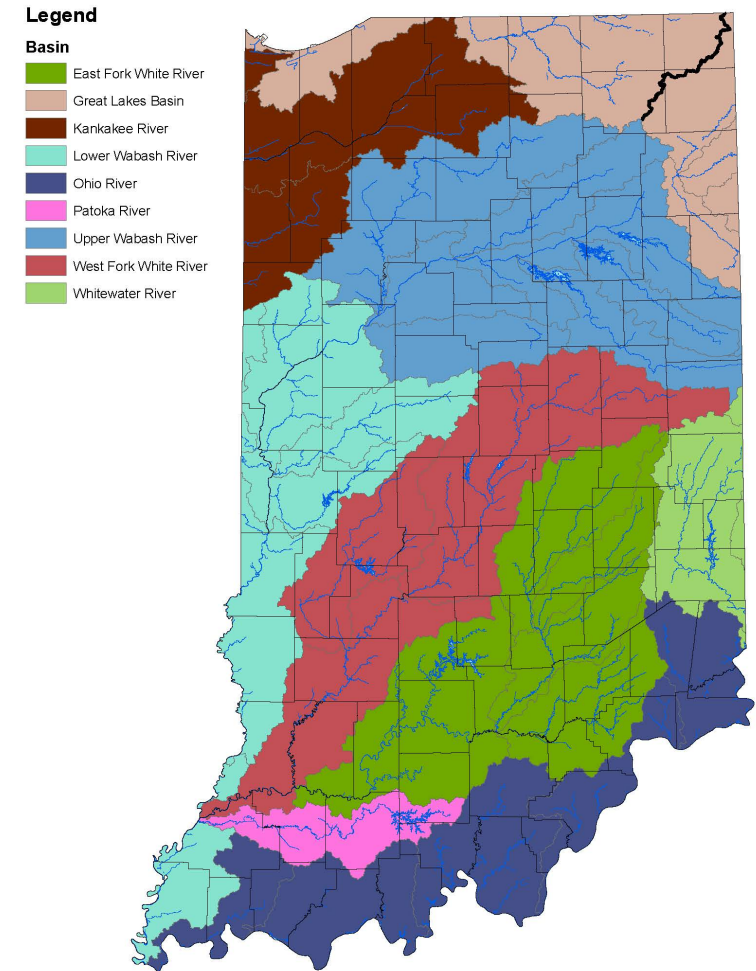


- Current Priority Watersheds in Indiana's strategy
 - Tools and resources used to prioritize included:
 - Watershed Management Plans
 - IDEM's 303 (d) listing of Impaired waters
 - LARE Watershed Diagnostic studies
 - NRCS Program priorities
 - CREP focused watersheds
 - State Resource Assessment (SRA) (geospatial tool)
 - SPARROW Model
 - Local watershed needs
 - Staff resources
- Was originally done in 2011

* Eight HUC 8 watersheds, situated along the Wabash and White Rivers, and the Maumee River watershed in NE Indiana.

Watershed Prioritization and Characterization

- Re-examining priority watersheds
 - Within the next two years, the SNRS Workgroup will reexamine the HUC 8 priority watersheds.
- Further Prioritization is being done at the Sub-Watershed Scale, at the HUC 12 level within the major river basins.
- Additional tools that will be used to characterize and re-examine the priority watersheds include:
 - Watersheds with drinking water reservoirs and surface water intakes
 - Areas of Aquifer Sensitivity and Groundwater Vulnerability
 - Nutrient Export Potential tool
 - An inventory of land use
 - Analysis of IDEM fixed-station and other WQ monitoring data
 - Critical areas identified in approved WMPs
 - Current social and environmental indicators
 - Current implementation activities



Ten Major River and Lake Basins in Indiana

Water Quality Monitoring in Indiana's Waters

IDEM Water Monitoring programs

➤ Surface Water Monitoring programs:

- *Indiana Water Quality Monitoring Strategy, 2017-2021*
- Probabilistic monitoring in one basin/year on a 9-yr rotating basin cycle
- Reference site monitoring
- Fixed-Station monitoring at 165 sites across the state
- Fish tissue and sediment contaminant monitoring on a 5-yr rotating basin cycle
- Watershed characterization monitoring
- Cyanobacteria monitoring (recreational use) at 13 state owned areas; 15 beaches
- Performance measures monitoring
- Thermal verification monitoring
- Clean Lakes Program- through Indiana University School of Public and Environmental Affairs
- Hoosier Riverwatch- a citizens' volunteer monitoring program



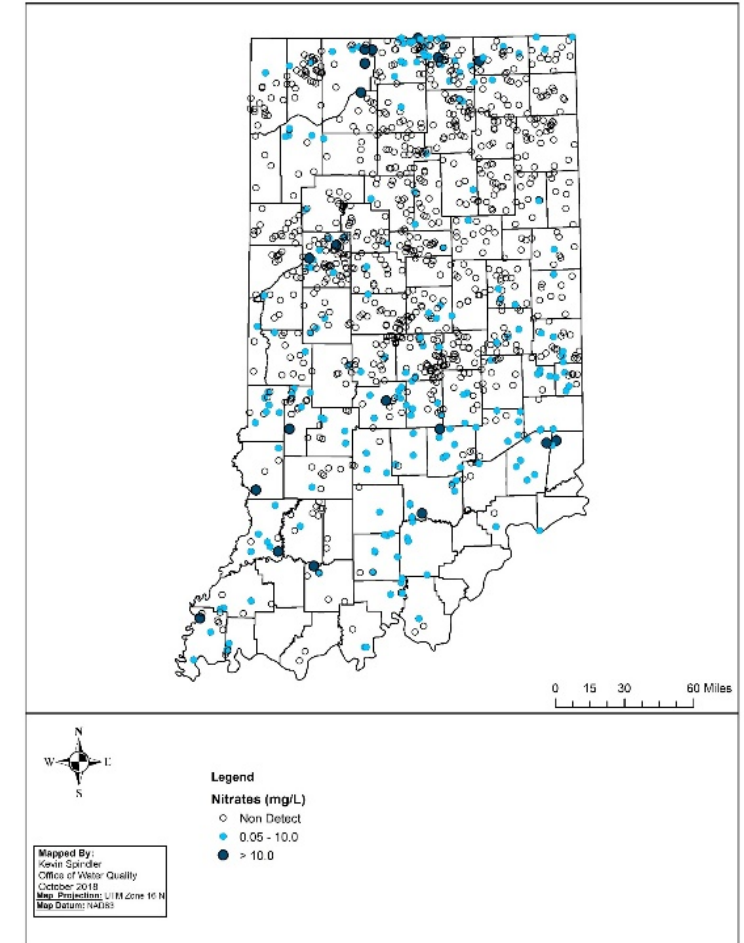
Water Quality Monitoring in Indiana's Waters

➤ Ground Water Monitoring Network (GWMN):

<https://www.in.gov/ide/cleanwater/2453.htm>

Ground water samples are collected from over 240 public water supply wells and approximately 1200 private residential wells.

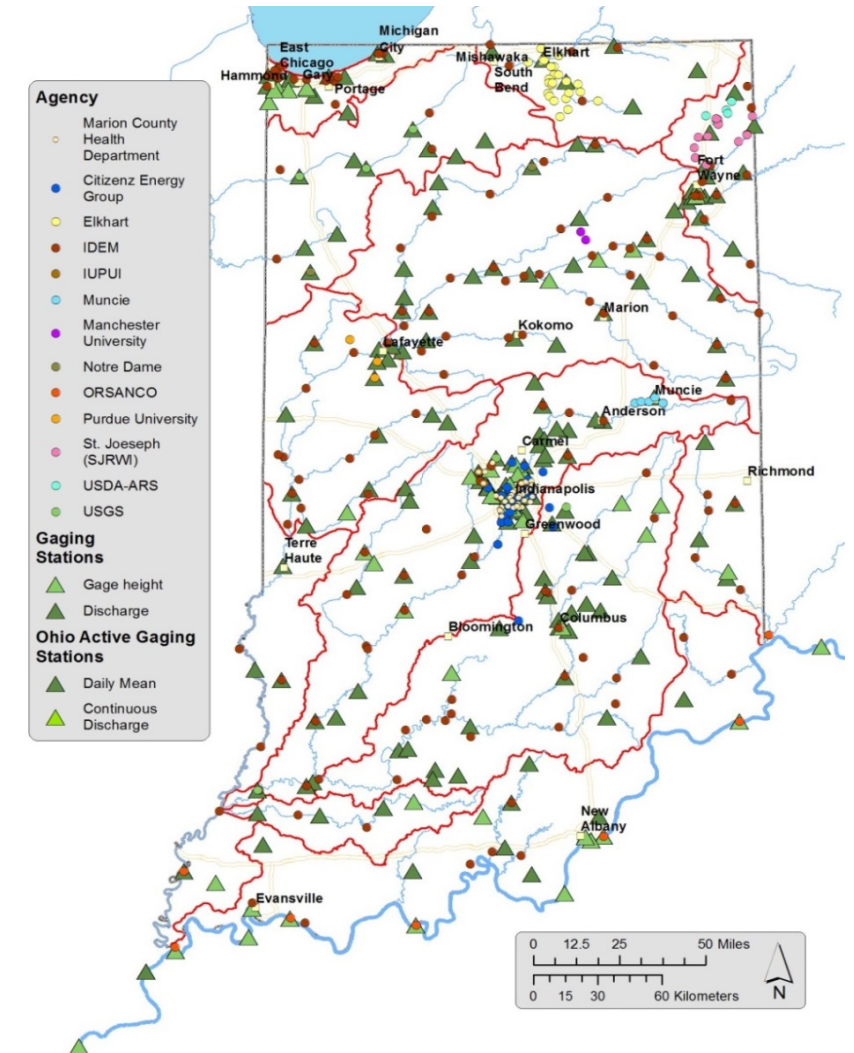
Samples are analyzed for 200 parameters.



Water Quality Monitoring in Indiana's Waters

Data Sharing and Inventory

- There is a wealth of monitoring data available in Indiana
- ***An Assessment for Optimization of Water-Quality Monitoring in Indiana, 2017***
 - Used by environmental managers, researchers, and interested citizens who need data from sampling sites that have long periods of record.
 - Goal of paper is to document existing, ongoing river and stream water quality networks in Indiana, and to identify potential sites of redundancy or where there are gaps in the network of monitoring sites.
 - Installation of a Supergage on the Wabash River in New Harmony, IN.
- Indiana Water Summary
<https://www.inwmc.net/resources/indiana-water-report/>



Reducing Point Source Pollution

- **Point Source Pollution strategies:**

- Urban/Suburban and Rural

- NPDES nutrient standards will be employed at wastewater treatment plants (WWTPs).
 - Combined Sewer Overflow (CSO) communities will implement their long term control plans (LTCPs) and associated schedules and will track progress.
 - Stormwater Management:
 - Municipal Separate Storm Sewer System (MS4) communities will implement their stormwater quality management plans and track progress.
 - Construction site sediment runoff controls will be implemented according to the Notice of Intent (NOI) and living stabilization covers will be used that minimize nutrient inputs.
 - Industrial site runoff controls will be implemented according to the Notice of Intent.
 - Local Health Departments and communities will continue to identify failing residential septic systems and seek to put infrastructure in place to replace them or connect them to WWTPs.

Reducing Non-Point Source Pollution

- **Non-Point Source Pollution strategies:**

- Urban landscapes:

- Support practices that promote infiltration, bio-retention, and slow natural water release
 - Seek installation of larger, regional or multipurpose green infrastructure practices
 - Provide technical and financial support to install rain gardens, green roofs, rain barrels, and porous pavement in industrial, commercial and residential settings.

- Rural landscapes:

- Restore stream sinuosity and riparian buffers
 - Restore and reconnect riparian wetlands and floodplains
 - Employ practices for the maintenance of legal drains such as retaining native vegetation on one streambank while staging maintenance equipment on the side with easier drain access.
 - Install 2-stage ditches where feasible
 - Install drainage water management BMPs and saturated buffers on working lands.

Reducing Non-Point Source Pollution

• Non-Point Source Pollution practices (most effective):

Urban/Suburban practices:

- Curb cuts
- Green roof
- Porous pavement
- Rain barrel
- Rain garden
- Vegetated Swale



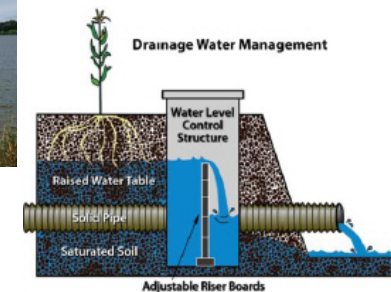
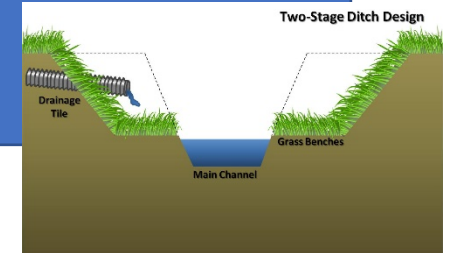
Agriculture Phosphorus Reduction Practices:

- Conservation Tillage Practices
- Cover Crops
- Conservation Buffers
- Perennial crops
- Grade Stabilization Structures
- Blind inlets
- Soil Testing
- Nutrient Management



Agriculture Nitrogen Reduction Practices:

- Improved nitrogen management
- Winter cover crops
- Increasing perennials in the cropping system
- Controlled Drainage Water Management
- Reduced Drainage Intensity
- Drainage Water Recycling
- Bioreactors
- Constructed Wetlands
- Two-Stage Ditches
- Saturated Buffers



Programs Supporting Nutrient Reduction

Point Source/ Regulatory Programs

- National Pollutant Discharge Elimination System (NPDES)
 - Phosphorus limits
 - Ammonia limits
 - Nitrogen monitoring

Non-Point Source/ Regulated Programs

- IDEM Wellhead Protection Program
- Confined Feeding Operations (CFOs)
- Concentrated Animal Feeding Operations (CAFOs)
- Fertilizer and Detergent Regulations
- Storm Water Runoff Programs
 - * MS4s
 - * Construction Site Runoff
 - * Industrial Site Runoff

Non-Point Source/ Non-Regulated (Voluntary) Programs

STATE PROGRAMS

- Indiana State Department of Agriculture (ISDA)
 - Conservation Reserve Enhancement Program (CREP)
 - INField Advantage (INFA)
 - Clean Water Indiana (CWI)
- Indiana Department of Natural Resources (IDNR)
 - Lake and River Enhancement (LARE)
 - Healthy Rivers Initiative (HRI)
- Indiana Department of Environmental Management (IDEM)
 - Section 319 Grant Funding
 - Section 205j Grant Funding
 - Clean Water Act Section 106 Supplemental Funding

FEDERAL PROGRAMS

- USDA, Natural Resources Conservation Service (NRCS)
 - Conservation Stewardship Program (CSP)
 - Environmental Quality Incentive Program (EQIP)
 - Agricultural Conservation Easement Program (ACEP)
 - Agricultural Land Easements (ALE)
 - Wetland Reserve Easements (WRE)
 - Regional Conservation Partnership Program (RCPP)
 - Mississippi River Basin Initiative (MRBI)
 - National Water Quality Initiative (NWQI)
 - Great Lakes Restoration Initiative (GLRI)
 - Joint Chiefs Landscape Restoration Partnership
 - Wetland Reserve Enhancement Program (WREP)
- USDA, Farm Service Agency (FSA)
 - Conservation Reserve Program (CRP)
 - State Acres for Wildlife Enhancement (SAFE)

Point Source/Regulatory Programs



➤ National Pollutant Discharge Elimination System (NPDES)

Phosphorus limits:

- IDEM set a practical state treatment standard of 1.0 mg/L of total phosphorus (TP) from sanitary wastewater dischargers with design flows of 1 million gallons/day or greater. Effective January 2015.
- Applying this limit will amount to nearly a 45-50% reduction of TP loads from major sanitary dischargers over the next permit cycles.
- Additionally, IDEM will implement TMDL load reductions as written and approved for TP upon the renewal of any affected permit.

Major Municipals eligible for Total Phosphorus Limits			
Watershed Group Name	2012-2014 Total Calculated Existing Average TP Loading (LBS/2 yrs)	2014-2016 Total Calculated Existing Average TP Loading (LBS/2 yrs)	2016-2018 Total Calculated Existing Average TP Loading (LBS/2 yrs)
Great Lakes Basin(s)	271,537	259,266	278,291
Whitewater River	21,389	16,052	19,189
Upper Wabash River	408,691	452,448	202,645
Lower Wabash River	685,105	526,884	285,860
West Fork White River	1,050,689	835,669	856,063
East Fork White River	275,612	215,704	225,712
Patoka River	26,791	28,236	25,829
Ohio River	485,860	477,028	439,271
Kankakee River	159,050	151,992	118,212
Estimated Total: 1490373	3,384,724	2,963,279	2,451,073
52 % Estimated Reduction		12.5 % Actual reduction from 2012	27.6 % Actual reduction from 2012
All Municipal Major Permits			
Watershed Group Name	2012-2014 Total Calculated Existing Average TP Loading (LBS/2 yrs)	2014-2016 Total Calculated Existing Average TP Loading (LBS/2 yrs)	2016-2018 Total Calculated Existing Average TP Loading (LBS/2 yrs)
Great Lakes Basin(s)	271,537	259,266	278,291
Whitewater River	24,542	22,002	33,483
Upper Wabash River	432,595	475,016	216,016
Lower Wabash River	686,091	530,167	289,120
West Fork White River	1,066,833	851,266	874,685
East Fork White River	291,610	244,520	249,031
Patoka River	26,791	28,236	25,829
Ohio River	497,707	493,500	455,911
Kankakee River	159,050	151,992	118,212
Estimated Total: 1833943	3,456,756	3,055,965	2,540,580
47 % Estimated Reduction		11.6 % Actual reduction	26.5 % Actual reduction

Point Source/Regulatory Programs



➤ National Pollutant Discharge Elimination System (NPDES)

Nitrogen monitoring:

- To begin the process of total nitrogen (TN) data collection, IDEM is proposing that all major sanitary dischargers with average design flow ratings of 1.0 million gallons/day or greater begin monitoring for total nitrogen as a requirement of their next NPDES permit renewal, commencing with permittees required to submit NPDES renewal applications or applications for modification of an effective NPDES permit after January 1, 2019.
- IDEM is proposing that total nitrogen be monitored and reported to IDEM on a monthly basis.
- The data collected will be used to garner a better understanding of nitrogen loadings in Indiana waters.

Non-Point Source/Regulated Programs



➤ IDEM Wellhead Protection Program

- Educational Awareness program focusing on source water protection and promoting the resource value of ground water.
- Wellhead Protection Plans

➤ Confined Feeding Operations (CFOs)

- All regulated animal feeding operations in Indiana are considered confined feeding operations.

➤ Concentrated Animal Feeding Operations (CAFOs)

- CAFOs are based on a size designation.

➤ Fertilizer and Detergent Regulations

- Detergents: Indiana prohibits the use of laundry detergents containing phosphorus; in 2012, this was extended to include detergents in residential automatic dishwashers.
- Fertilizers: *Certification for Distributors and Users of Fertilizer Materials*

➤ Storm Water Runoff Programs

* MS4s

* Construction Site Runoff

* Industrial Site Runoff

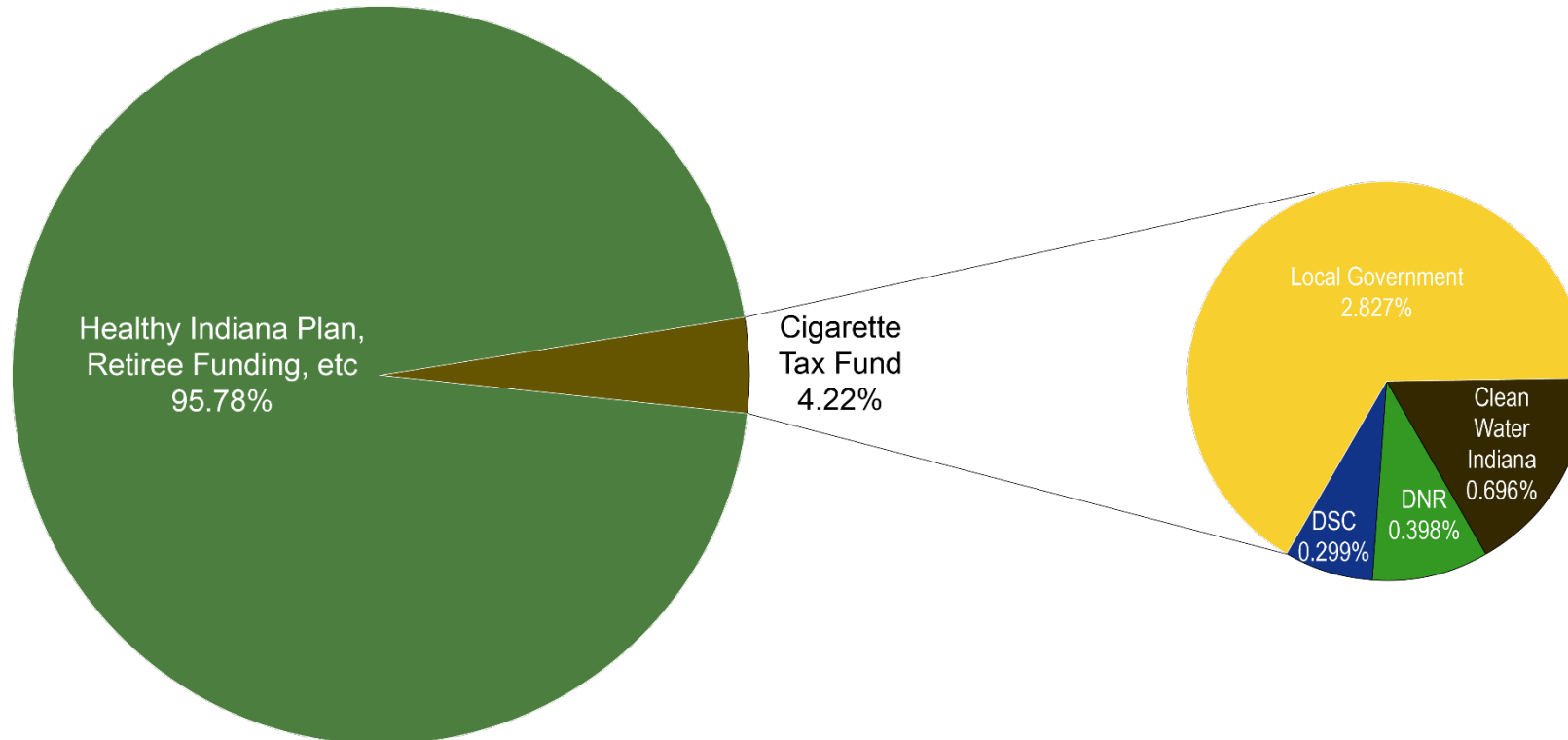
State Funding to ISDA, Division of Soil Conservation and Indiana DNR

STATE PROGRAMS

- Indiana State Department of Agriculture (ISDA)
 - Conservation Reserve Enhancement Program (CREP)
 - INField Advantage (INFA)
 - Clean Water Indiana (CWI)

STATE PROGRAMS

- Indiana Department of Natural Resources (IDNR)
 - Lake and River Enhancement (LARE)
 - Healthy Rivers Initiative (HRI)



Non-Point Source/Non-Regulated (Voluntary) Programs

STATE PROGRAMS

- Indiana State Department of Agriculture (ISDA)
 - Conservation Reserve Enhancement Program (CREP)
 - INField Advantage (INFA)
 - Clean Water Indiana (CWI)



INField Advantage



- INFA provides participants access to tools to collect and analyze on-farm, field specific data to make more informed decisions on NM and implement personalized best management practices.

<http://www.infieldadvantage.org/>

Conservation Reserve Enhancement Program



- Enroll 26,250 acres of buffer land on waterbodies, and restore wetland and floodplain areas.
- Protect 3,000 linear miles of waterbodies in the Wabash River System.

- Top two practices are wetland restorations and bottomland timber establishment in the floodplains.
- Record enrollment in the last three years

<http://www.in.gov/isda/2377.htm>

Clean Water Indiana



- The CWI Program is responsible for providing local matching funds to Indiana's Soil and Water Conservation Districts (SWCDs), as well as grants for sediment and nutrient reduction projects.

<http://www.in.gov/isda/2379.htm>

Non-Point Source/Non-Regulated (Voluntary) Programs

STATE PROGRAMS

- Indiana Department of Natural Resources (IDNR)
 - Lake and River Enhancement (LARE)
 - Healthy Rivers Initiative (HRI)



• *Lake and River Enhancement Program*

- A portion of all **boat registration fees** is used for grant projects that reduce non-point source sediment and nutrient pollution of surface waters on publicly accessible lakes and rivers, to protect and enhance aquatic habitats for fish and wildlife.

<http://www.in.gov/dnr/fishwild/2364.htm>

• *Healthy Rivers Initiative (HRI)*

- Goal is to protect 43,000 acres in the Wabash River and Sugar Creek floodplains, and over 26,000 acres of the Muscatatuck River bottomlands.

<http://www.in.gov/dnr/6498.htm>



STATE PROGRAMS

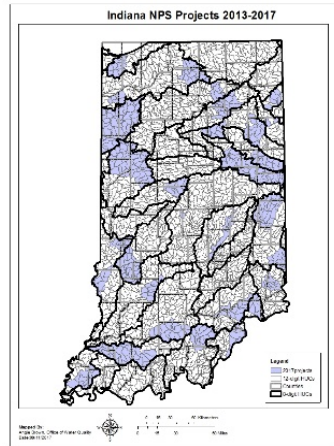
- Indiana Department of Environmental Management (IDEM)
 - Section 319 Grant Funding
 - Section 205j Grant Funding
 - Clean Water Act Section 106 Supplemental Funding



- There are no state dollars to support these programs, funding comes from EPA.
- Since 1994, Indiana has directed over \$40 million of its USEPA 319 non-point source grant funding to projects related to reducing nutrient loads to surface waters.
- Section 205j Funding is approximately \$350,000 per year.

• *CWA Section 106 Supplemental Funding*

- Funds gaps identified in the WQ Monitoring Strategy.
- Funds the Ground Water Monitoring Network.



Non-Point Source/Non-Regulated (Voluntary) Programs

FEDERAL PROGRAMS

- USDA, Natural Resources Conservation Service (NRCS)
 - Conservation Stewardship Program (CSP)
 - Environmental Quality Incentive Program (EQIP)
 - Agricultural Conservation Easement Program (ACEP)
 - Agricultural Land Easements (ALE)
 - Wetland Reserve Easements (WRE)
 - Regional Conservation Partnership Program (RCPP)
 - Mississippi River Basin Initiative (MRBI)
 - National Water Quality Initiative (NWQI)
 - Great Lakes Restoration Initiative (GLRI)
 - Joint Chiefs Landscape Restoration Partnership
 - Wetland Reserve Enhancement Program (WREP)
- USDA, Farm Service Agency (FSA)
 - Conservation Reserve Program (CRP)
 - State Acres for Wildlife Enhancement (SAFE)

- In 2018, NRCS approved million of dollars to landowners to conserve natural resources. Here are a few of the programs:



\$172,000 awarded through ALE
\$8,500,000 awarded through WRE



\$1,443,465 awarded through CSP



\$20,935,351 awarded through EQIP



\$770,629 awarded through RCPP



\$438,015 awarded through MRBI



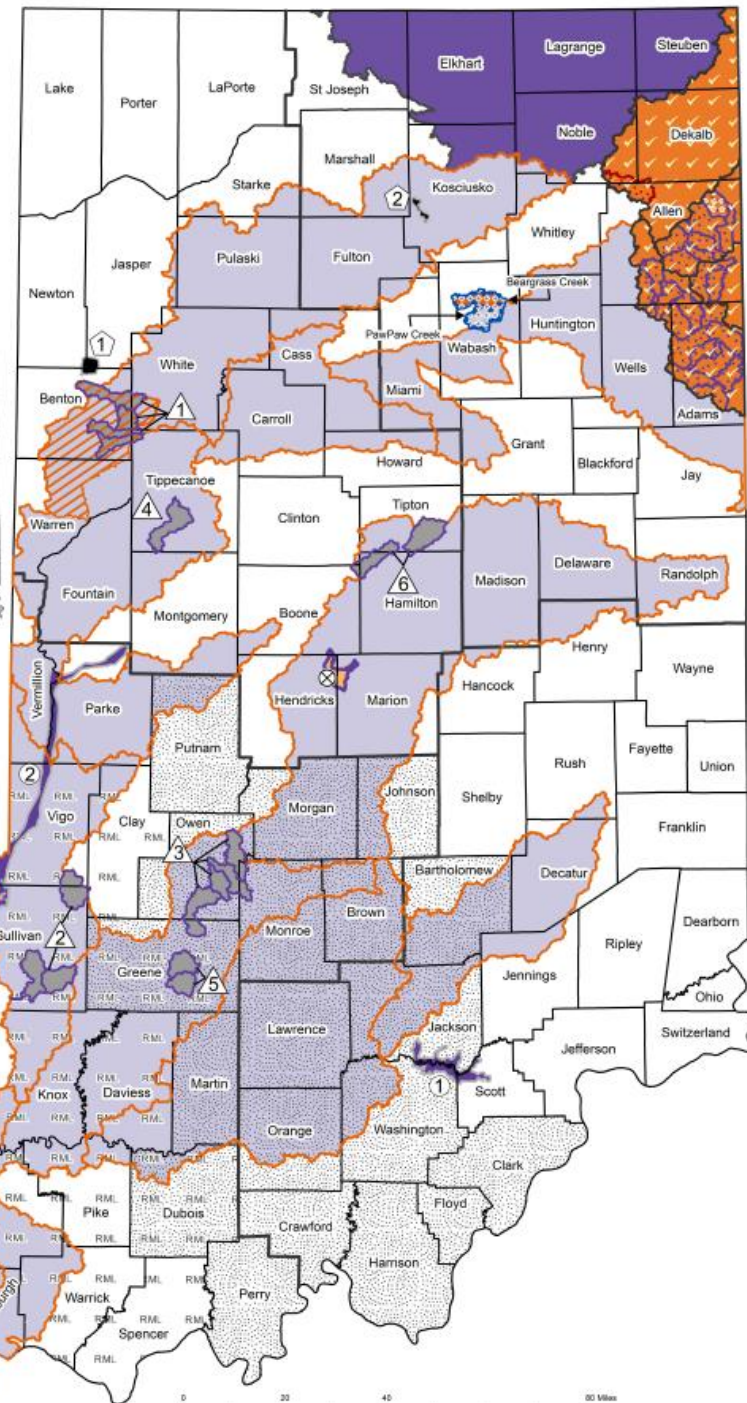
United States Department of Agriculture
Natural Resources Conservation Service

www.in.nrcs.usda.gov



www.fsa.usda.gov/state-offices/Indiana/index

Indiana Special Projects/Initiatives FY2018



Indiana Special Projects/Initiatives - FY2018

Initiative Projects

Great Lakes Restoration Initiative (GLRI)

Auglaize, St. Marys, St. Joseph-Maumee and Upper Maumee Watersheds

Mississippi River Basin Initiatives (MRBI)

1 - Big Pine Creek 3 - Fish Creek 5 - Plummer Creek
2 - Busseron Creek 4 - Little Wabash Creek 6 - Cicero Creek

National Water Quality Initiative Watersheds (NWQI)

Eagle Creek

Western Lake Erie Basin Initiative

Auglaize, St. Marys, St. Joseph-Maumee and Upper Maumee Watersheds *same area as GLRI*

Wetland Reserve Enhancement Partnership (WREP)

Lower Wabash and Lower White River
see inset map

USFS & NRCS Joint Chief's Landscape Restoration Partnership

Hoosier Hills & Highlands Oak
Community Restoration Partnership

GLRI Phosphorus Initiative

Black Cr, Blue Cr, Bohnke Ditch-Hoffman Cr, Borum Run, Bottom Ditch-Maumee Rv, Buhman Ditch-St Marys Rv, Bullerman Ditch-Maumee Rv, Blue Cr-St Marys Rv, Fairfield Ditch, Gales Ditch, Headwaters Blue Cr, Headwaters Hoffman Cr, Holthouse Ditch, Houlik Ditch, Marsh Ditch-Maumee Rv, Marz Cr, Nicklesen Cr, Simmerman Ditch-St Marys Rv, Sixmile Cr-Maumee Rv, Snyder Ditch-St Marys Rv, Trier Ditch and Weber Ditch-St Marys Rv Watersheds

Monitoring Projects

Agricultural Research Service Study Area

Upper Cedar Creek Watershed

GLRI USGS Edge of Field Monitoring

Black Creek

ICP & CCSI Paired Watershed Study

Beargrass Creek and PawPaw Creek Watersheds

School Branch Watershed Study

School Branch Creek Watershed

Regional Conservation Partnership Program (RCPP)

FY-14/15 RCPP

ND Cover Crop & 2-Stage Ditch

1 - Kirkpatrick Ditch 2 - Shatto Ditch

St. Joseph River Conservation Partnership

Western Lake Erie Phosphorus Reduction

Auglaize, St. Marys, St. Joseph-Maumee and Upper Maumee Watersheds

FY-16 RCPP

Big Pine Watershed

Big Pine Creek, Mud Pine Creek Watersheds

Soil Health on Reclaimed Mine Lands

Clay, Daviess, Dubois, Gibson, Greene, Knox, Pike, Spencer, Sullivan, Vigo and Warrick Counties

FY-17 RCPP

DNR Southern Young Forest

see inset map

Partner Projects

Environmental Defense Fund CIG (EDF)

Beargrass Creek Watershed

Healthy River Initiative Areas (HRI)

1 - Muscatatuck River
2 - Sugar Creek and Wabash River

Ohio River Basin Trading Project

Great Miami, Middle Ohio, Ohio River and Wabash 6 Digit Watersheds *see inset map*

Conservation Reserve Enhancement Program (CREP)

Highland-Pigeon, Lower East Fork White, Lower Wabash, Lower White, Middle Wabash-Busseron, Middle Wabash-Deer, Middle Wabash-Little Vermillion, Tippecanoe, Upper East Fork White, Upper Wabash and Upper White Watersheds



United States
Department of
Agriculture

Natural Resources Conservation Service

USDA is an equal opportunity provider, employer and lender.

Projects/Initiatives Supporting Nutrient Reduction

Agricultural Initiatives

- Indiana's Conservation Partnership (ICP) Soil Health Philosophy
- A System's Approach of Conservation Practices
- Conservation Cropping Systems Initiative (CCSI)
- Indiana Agriculture Nutrient Alliance (IANA)
- Market-Based Agricultural Initiative
 - Ohio River Basin WQ Trading Project



GUIDING PRINCIPLES: 4RS & SOIL HEALTH



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



**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



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

SHARED GOAL: MANAGING NUTRIENTS



1. PLAN

Nutrient Management

GOAL:

100%

of farmers regularly perform soil sampling

GOAL:

100%

of farmers implement plans for
nutrient management

SHARED GOAL: MANAGING NUTRIENTS



1. PLAN

Nutrient Management

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2. APPLY

Application Timing

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

GOAL:

75%

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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

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

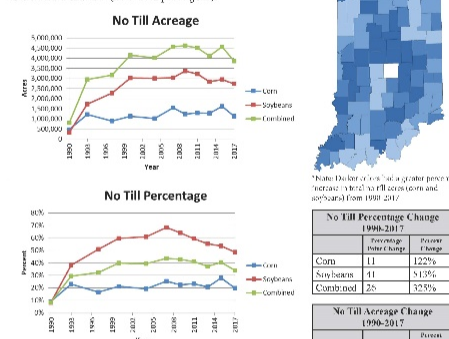


Don Meals, Stone Environmental, Inc.



Indiana Statewide Tillage: 1990-2017

No Till: Any direct seeding system, including site preparation, with minimal soil disturbance (including strip & ridge till).



* Please note that not all counties have data for all years. No tillage data is collected for Marion county.

No Till Implementation												
Year	1990	1993	1997	2000	2004	2007	2009	2011	2013	2015	2017	
Acres	1,000,000	1,500,000	2,000,000	2,500,000	3,000,000	3,500,000	3,800,000	4,000,000	4,200,000	4,400,000	4,600,000	
Percentage	10%	15%	20%	25%	30%	35%	38%	40%	42%	44%	46%	

For more information please see: <http://www.in.gov/agriculture/2355.htm>

November 15, 2017
1 of 3 Minutes, 30 Seconds Program Manager

2017 Sediment Load Reductions 889,768 Tons



In 2017, voluntary conservation efforts from Indiana's private landowners, with support from the USFS, have reduced sediment and nutrients from entering Indiana's waterways.

*Note: Data is based on a greater percentage of no-till acres than in 1990-2017.

No Till Percentage Change 1990-2017

Category	Percentage Change	Percentage
Con	11	122%
Non-Cons	11	135%
Combined	25	325%

No Till Acreage Change 1990-2017

Category	Acres	Percent Change
Con	889,768	1,047%
Non-Cons	2,390,228	733%
Combined	3,051,305	278%

889,768 tons of sediment. A football field covered to a depth of 386 feet, which is 81 feet taller than the Statue of Liberty.

Sediment Reduction (tons/year)

Category	Reduction (tons/year)
No Reported Reductions	0
Less than 25,000	25,000
25,001 - 100,000	100,000
100,001 - 175,000	175,000

Based on the 2017 5-Minute survey conducted on 1,917 conservation practices installed by the Indiana Conservation Partnership during 2017. The 2017 survey data was used to estimate the sediment reduction for the 2017 survey year. The 2017 survey data was used to estimate the sediment reduction for the 2017 survey year. The 2017 survey data was used to estimate the sediment reduction for the 2017 survey year.

For more information please see: <http://www.in.gov/agriculture/2355.htm>

Indiana's Commitment to Enhance Water Quality in the East Fork White River Basin

Background

The East Fork White River Basin is located in the southern part of Indiana. It is a major tributary of the Ohio River. The basin is characterized by its steep, erodible banks and its high sediment load. The basin is home to a variety of wildlife and is an important source of water for the state.

The East Fork White River Basin is a critical component of the state's water supply. It is a major source of water for the state's agriculture and industry. The basin is also an important source of water for the state's recreation and tourism industry.

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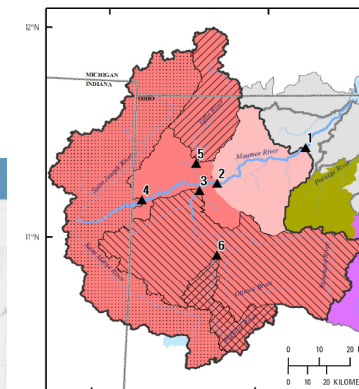
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Development of an Indiana Science Assessment

❖ Main components:

1) Determine loads and establish a baseline load of nutrients leaving the State.

2a) Develop a consensus-based strategy for quantifying dissolved nutrients

- Expand upon the use of the Region 5 Model that captures sediment-bound reductions

2b) Identify practices that are most efficient in reducing loads

- Collective and consistent definition of best management practices
- Practice-efficient targeting

1. EDUCATE

You Want Me to Do What?



2. ENGAGE

You Want me to Do What?





3. REPORT

You Want Me to Do What?



Ben Wicker, Executive Director

www.inagnutrients.org

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