



FFY 2018 Annual Report

Indiana Nonpoint Source Program

Indiana Department of Environmental
Management
Office of Water Quality

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Cover Photos

- Sunset at Eagle Creek Reservoir, Marion County

Introduction to the Nonpoint Source Pollution Management Program

Nonpoint source water pollution does not originate at single point sources, such as industrial or municipal wastewater discharge pipes, but comes from many diverse sources in the environment. When it rains or snow melts, water runs off streets, parking lots, lawns, and agricultural fields and carries with it pollutants such as motor oil, sediment, fertilizer (nutrients), bacteria, and pesticides. These pollutants are then carried, often untreated, to the nearest stream or lake through surface water runoff or storm sewers. Pollutants may also infiltrate into ground water. Untreated runoff is a significant source of water pollution in Indiana, and sediment, nutrients, and bacteria are the leading pollutants of concern. The *2018 Indiana Integrated Water Monitoring and Assessment Report* states that potential sources impacting Indiana waters include nonpoint sources that affect 16,099 miles of streams, while unknown sources affect 10,332 miles of streams. While some nonpoint source pollution is naturally occurring, most of it is a result of human activities.

The federal Clean Water Act (CWA) was amended in 1987 to establish the §319 Nonpoint Source Pollution Management Program to control nonpoint sources of water pollution. Section 319(h) provides the U.S. Environmental Protection Agency (U.S. EPA) with the authority to grant federal dollars to states to mitigate and prevent nonpoint source pollution in accordance with the state's approved Nonpoint Source Pollution Management Program. In Indiana, the *Indiana State Nonpoint Source Management Plan* guides the usage of CWA §319 funds, which are administered by the Indiana Department of Environmental Management (IDEM), Office of Water Quality (OWQ), Watershed Assessment and Planning Branch.

Environmental problems, such as nonpoint source pollution, often cut across environmental media (land, air, and water), land use types, and political jurisdictions. Consequently, environmental mitigation and protection require a comprehensive and collaborative approach that works with a multitude of programs, agencies, and concerned citizens. A watershed approach provides a framework for coordinating and integrating these programs and resources. This approach directs the focus on water quality to a geographic area delineated by a watershed. A watershed is an area of land that drains to a particular waterway, such as a stream, lake, river, or wetland. Watersheds are delineated by the U.S. Geological Survey (USGS) using a national standard hierarchical system based on surface hydrologic features, and are classified into hydrologic units identified by a unique hydrologic unit code (HUC). The HUC consists of two to twelve digits based on the level of classification (the longer the HUC the smaller the watershed level). Indiana has thirty-eight 8-digit HUC watersheds (Figure 1). Each of these may be subdivided into smaller 10-digit and 12-digit HUC watersheds. By examining water quality issues on a watershed basis, problems can be observed in relationship to their sources so that causes can be addressed in the most effective manner.

The watershed approach is based on four basic principles:

1. Geographic focus based on hydrological rather than political boundaries
2. Water quality objectives based on scientific data
3. Coordinated priorities and integrated solutions
4. Diverse, well-integrated partnerships

IDEM's ongoing effort to implement the watershed approach includes:

- Ensuring that internal resources continue to be focused on addressing the most significant water quality issues facing Indiana by conducting a periodic review of OWQ activities and making any necessary adjustments
- Improving internal coordination between water quality assessment and watershed planning and implementation programs to facilitate an integrated watershed management approach to restoring impaired waterways
- Improving coordination with local watershed groups, community groups, and other state and federal agencies to better leverage efforts in ways that will achieve greater improvements in water quality.

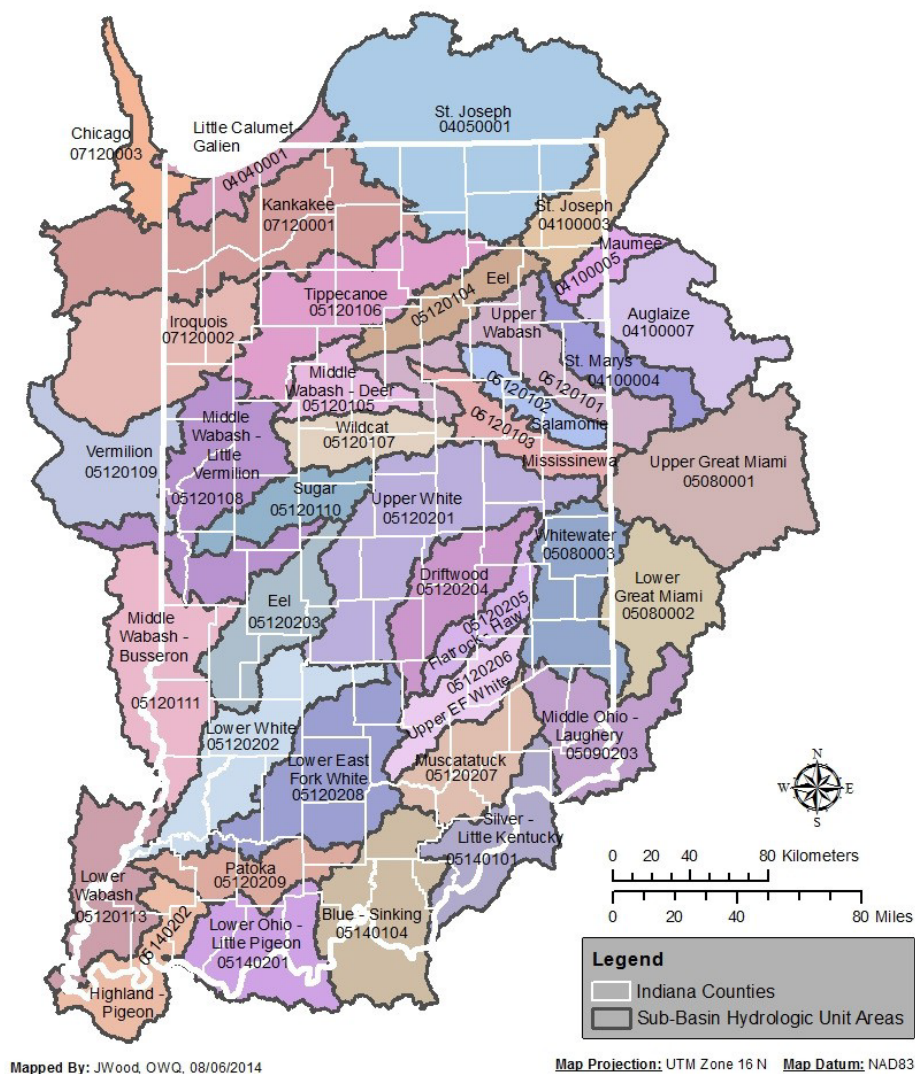


Figure 1. Indiana 8-digit HUC Watersheds

The 2018 Nonpoint Source Program Annual Report describes Indiana's progress towards meeting the goals, objectives, and milestones of the *State Nonpoint Source Pollution Management Plan* during the federal fiscal year (FFY) 2018 (October 1, 2017 through September 30, 2018), as well as the efforts and achievements of the many agencies, groups, and individuals working at the state and local level to address nonpoint source pollution in Indiana. It also describes how the \$319 grant funds were utilized to help accomplish these goals.

Indiana's Nonpoint Source Management Plan

Section 319(b) of the CWA requires states to develop a nonpoint source pollution management program to control nonpoint source pollution and guide the usage of CWA §319 funds. The nonpoint source pollution management program must be approved by U.S. EPA before §319 funds may be granted. U.S. EPA reiterated in its revised Nonpoint Source Program and Grants Guidelines for States and Territories, issued in 2013, that updating nonpoint source pollution management programs helps states to identify strategic priorities, develop goals and milestones, work more effectively to address water quality problems, and engage partners to address statewide nonpoint source pollution priorities. Therefore, states must review and update their nonpoint source pollution management program every five years.

IDEM's approved 2014 *Indiana State Nonpoint Source Management Plan* is a vision and mission-driven strategy to address nonpoint source pollution in Indiana. All goals, objectives, milestones, and measures of success are based upon the following two statements:

Program Vision:

The vision of Indiana's Nonpoint Source Program is to restore waters impaired by nonpoint source pollution and maintain water quality in healthy watersheds through locally led partnerships.

Mission:

To work with our partners to make measurable improvements in, and prevent degradation of, water quality by addressing nonpoint source pollution through education, planning, and implementation.

The State Nonpoint Source Pollution Management Plan's five goals relate to: utilizing partnerships to define and address nonpoint source pollution issues; monitoring the status of those issues; providing outreach and education to citizens of the state to raise awareness of nonpoint source pollution issues; remediating the causes and sources of nonpoint source pollution; and protecting areas already meeting water quality standards and those areas threatened by nonpoint source pollution. The next revision of this plan will be submitted to U.S. EPA by September 30, 2018 and will cover FFYs 2019-2023. The 2019 Annual Report will reflect the new goals and objectives.

Nonpoint Source Management Goals and Progress

GOAL 1: UTILIZE PARTNERSHIPS TO LEVERAGE RESOURCES AVAILABLE FOR NONPOINT SOURCE MANAGEMENT

Cooperation with state, federal, local, and private partners is critical to Indiana's Nonpoint Source Pollution Program's success. Coordinating with these partners optimizes the funds, staff, physical resources, and political capital available to work on nonpoint source pollution issues. IDEM's Nonpoint Source Pollution Program utilizes multiple partnerships to reach diverse stakeholder groups and further nonpoint source pollution management goals in Indiana. Some of these partners and their achievements from this year are highlighted below. A full accounting of progress made during FFY 2018 toward the objectives of Goal 1 outlined in *Indiana's State Nonpoint Source Pollution Management Plan* can be found in Appendix A.

Indiana Conservation Partnership

The Indiana Conservation Partnership (ICP) is comprised of eight Indiana agencies and organizations¹ who share a common goal of promoting conservation. To that end, the mission of the Indiana Conservation Partnership is to provide technical, financial, and educational assistance needed to implement economically and environmentally compatible land and water stewardship decisions, practices, and technologies. The ICP's soil health and nutrient management philosophies underpin its conservation initiatives in addressing the state's primary natural resource concerns. The principles of soil health are to minimize disturbance, optimize soil cover, optimize biodiversity, and provide continuous living roots. Nutrient management is best described by the "4 Rs"—applying the right nutrient source at the right rate at the right time in the right place. Each ICP initiative has at least an element of it rooted in promoting the soil health philosophy and most have a direct effect on nonpoint source pollution management in Indiana. Some of these initiatives/programs include the Conservation Cropping Systems Initiative, INfield Advantage, Pathway to Water Quality (2017 marked its 26th year as a permanent watershed exhibit at the Indiana State Fairgrounds), the State *Nutrient Reduction Strategy*, the Western Lake Erie Basin Interactive Story Map, and the Leadership Institute.

Many of these agencies also provide funding on a continuing or limited basis to address nonpoint source pollution in Indiana, such as NRCS's Regional Conservation Partnership Program and ISDA's Clean Water Indiana (CWI) program. The ICP has committed to report load reductions of sediment, nitrogen, and phosphorus achieved by the practices installed under the agencies' various funding authorities as a partnership. Agency technicians were trained by IDEM nonpoint source pollution staff to use the U.S. EPA Region V model to calculate load reductions.

The ICP reports its accomplishments on an annual basis. Key highlights for 2017 include:²

¹ IDEM, the Indiana State Department of Agriculture (ISDA), the State Soil Conservation Board, the Indiana Department of Natural Resources (IDNR), the Indiana Association of Soil and Water Conservation Districts (IASWCD), Purdue University Extension, the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS), and the USDA-Farm Service Agency (FSA).

² Indiana State Department of Agriculture. 2018. Indiana Conservation Partnership 2017 Conservation Accomplishments. Indianapolis (IN): ISDA, Division of Soil Conservation. 2018 April 4.

- Indiana landowners supported by the Indiana Conservation Partnership (ICP) installed over 19,000 new conservation practices in 2017. Of these practices, 11,911 had associated sediment and nutrient load reductions to Indiana waterways reducing:
 - 889,768 tons of sediment, enough to fill 8,898 fifty-foot freight cars stretching end to end.
 - 1,846,473 lbs. of nitrogen, enough to fill 9 fifty-foot freight cars.
 - 923,119 lbs. of phosphorus, enough to fill 4.6 fifty-foot freight cars.
- Indiana landowners increased no-till acres on corn and soybean fields by 379% since 1990.
- Indiana landowners increased conservation tillage acres on corn and soybean fields by 297% since 1990.
- Indiana landowners increased cover crop acres on corn and soybean fields by 466% since 2011.
- Indiana leads the nation in acres planted to cover crops, second only to Texas, which is 7 times larger than Indiana.

Table 1 INDIANA CONSERVATION PARTNERSHIP INVESTMENT FFY 2013 – 2017

2013-17 ICP Conservation Investment								
Year	Total Practices Installed*	Total Public Conservation Investment‡	Total Private Landowner Conservation Investment‡	Total Investment	NLR Practices Installed†	NLR Public Conservation Investment	NLR Private Landowner Conservation Investment	Total NLR Investment
CY2017	19,295	\$37,532,523	\$14,394,971	\$51,927,494	11,911	\$31,027,663	\$12,723,097	\$43,750,760
CY2016	17,767	\$44,353,735	\$13,328,869	\$54,023,763	10,602	\$26,112,548	\$9,588,988	\$35,701,536
CY2015	19,296	\$38,855,214	\$12,726,470	\$51,581,684	11,758	\$26,713,414	\$9,579,771	\$36,293,185
CY2014 [§]	19,564	\$30,106,330	\$8,900,217	\$39,006,547	12,958	\$18,205,125	\$5,904,048	\$24,109,173
CY2013 [§]	26,042	\$44,353,735	\$12,408,434	\$56,762,169	13,172	\$24,907,442	\$7,304,561	\$32,212,003

NLR: Nutrient Load Reduction

* Includes all calendar year installed/completed conservation practices associated with installation costs.

† Includes all calendar year installed/completed nutrient load reduction practices associated with installation costs.‡ Values are based on estimated project costs where available (CRP), or based on incentive payment rates for the region (NRCS). Investment only includes incentive payments and actual practice construction/implementation costs (earth moving, rock, erosion control blanket, grade stabilization structures, cover crop seed and planting costs, grass seed, tree seedlings, exclusion fencing, planter equipment modification costs, private construction contractor costs including fuel and labor, etc.). Costs do not include administration and public labor (NRCS, FSA, ISDA, IDEM, SWCD, DNR employee salaries, survey/planning/design costs, etc.).

§2013-14 DNR Lake and River Enhancement (LARE) and 2013 Conservation Reserve Enhancement Program (CREP) public or private conservation investments were not available. Conservation Reserve Enhancement Program (CREP) wetland or midland contract management practices were not included in the public or private conservation investments.

Indiana's State Nutrient Reduction Strategy

The latest version of *Indiana's State Nutrient Reduction Strategy* (SNRS) was submitted to U.S. EPA in November of 2016 and may be found at:

https://www.in.gov/isda/files/Indiana%20Nutrient%20Reduction%20Strategy_Final%20Version%204.pdf

. A revision will be submitted by December 2018. The SNRS is the product of an inclusive effort of the ICP under the leadership of the ISDA and IDEM to capture statewide present and future endeavors in Indiana

which positively affect the state's waters. Additionally, the SNRS gauges the progress of conservation, water quality improvement, and soil health practice adoption in Indiana. The SNRS represents Indiana's commitment to reduce nutrient runoff into waters from point sources and nonpoint sources alike. The objectives of this strategy include:

- 1 . Acknowledgment of the challenges facing the improvement of Indiana's impaired waters.
2. Involvement and engagement of stakeholders in the state's efforts to reduce nutrient loads.
3. Prioritization of HUC 8 watersheds and first-round HUC 12 watersheds.
4. Discussion of water quality monitoring and regulatory control of point sources.
- 5 . The inventory and utilization of resources to achieve their highest impact on nutrient reduction.
6. Encouragement of voluntary incentive-based conservation through the many state and federal water quality related programs.
7. Illustration of the means by which the state will provide reports and accountability of assisted conservation practices reported by staff in the Indiana Conservation Partnership.

Indiana's Domestic Action Plan for the Western Lake Erie Basin

Indiana's Great Lakes Water Quality Agreement (GLWQA) Domestic Action Plan (DAP) to reduce phosphorous to the Western Lake Erie Basin (WLEB) was released February 28, 2018 and may be found at <http://www.in.gov/isda/3432.htm>. It is the product of a dedicated Advisory Committee comprised of representatives from different stakeholder sectors and led by IDEM. Founded on the principle of adaptive management, the DAP is a dynamic document acknowledging that phosphorous loading in particular, and nutrient pollution in general, is a complex problem caused by point and nonpoint sources across all sectors, which requires a multi-dimensional solution.

The DAP emphasizes using existing programs and optimizing partnerships, effecting the most change with the least cost, prioritizing resources to areas with the most phosphorus export and/or reduction potential, seeking to engage citizens who are not participating in conservation efforts, making use of social indicators to guide actions, and employing adaptive management. Indiana's goal is to meet the spring-time phosphorus targets for the Maumee River as it flows across the border into Ohio. The DAP includes an Action/Milestone table that enumerates the current and planned activities to address the issues outlined in the DAP.

United States Department of Agriculture - Natural Resources Conservation Service

The NRCS mission statement is "Helping People Help the Land." The agency works with private landowners towards productive agriculture and a high-quality environment. The guiding principles of NRCS work are service, partnership, and technical excellence. NRCS' primary customers are people who make decisions about natural resource use and management on their land. This includes government agencies with a responsibility for natural resource use and management.

NRCS assists landowners in Indiana to develop conservation plans and provides technical assistance for natural resource management, including helping to install conservation practices and systems that meet technical standards and specifications. NRCS also provides financial assistance through incentive programs, easement programs, grants, and stewardship payments. NRCS utilizes targeted initiatives to work with partners on protecting critical natural resources in geographical areas of concern. NRCS' standards and specifications are utilized for many of the cost-share practices implemented through

\$319 grants, and NRCS Farm Bill conservation programs are utilized as one funding source for implementing local watershed management plans.

NRCS releases each fiscal year's report in the subsequent calendar year. Therefore, NRCS released FFY 2017 reports in 2018. For FFY 2017, NRCS programs in Indiana that support nonpoint source pollution reduction/amelioration efforts included:

Conservation Stewardship Program

The Conservation Stewardship Program (CSP) is a voluntary conservation program that encourages producers to address resource concerns in a comprehensive manner by undertaking additional conservation activities and improving, maintaining, and managing existing conservation activities. Indiana received almost \$1.5 million in CSP funding in FFY 2017. A total of 229 new contracts and 32 renewals received funding to treat 90,944 acres of cropland, pasture, and forest.

Emergency Watershed Protection

The Emergency Watershed Protection (EWP) program responds to emergencies created by natural disasters and is designed to help people and conserve natural resources by relieving imminent hazards to life and property caused by floods, fires, windstorms, and other natural occurrences. Three EWP contracts for over \$1 million were completed in FFY 2017.

Environmental Quality Incentives Program

Indiana received over \$21.7 million in EQIP funding in FFY 2017. A total of 1,240 contracts were entered into that will address natural resource concerns on 172,272 acres of land over the life of the contracts. These contracts provided financial assistance to help plan and implement conservation practices that address natural resource concerns and for opportunities to improve soil, water, plant, animal, air, and related resources on agricultural land and non-industrial private forestland. EQIP offered several targeted initiatives that provided funding to specific geographic areas and/or resource concerns. These included the On-Farm Energy Initiative, Organic Initiative, and State Specialty Crop.

Agricultural Conservation Easements Program

The Agricultural Conservation Easement Program (ACEP) provides financial and technical assistance to help conserve agricultural lands and wetlands and their related benefits. Under the Agricultural Land Easements (ALE) component, NRCS helps Indian tribes, state and local governments, and non-governmental organizations protect working agricultural lands and limit non-agricultural uses of the land. Under the Wetlands Reserve Easements (WRE) component, NRCS helps to restore, protect, and enhance enrolled wetlands. The Agricultural Conservation Easements Program consolidates three former programs - Wetland Reserve Program, Grassland Reserve Program, and Farm and Ranchland Protection Program. During FFY 2017, NRCS helped Indiana landowners protect and restore 2,960 acres of wetlands and spent over \$11 million under WRE.

Regional Conservation Partnership Program

The Regional Conservation Partnership Program (RCPP) promotes coordination between NRCS and its partners to deliver conservation assistance to producers and landowners. NRCS provides assistance to producers through partnership agreements and through program contracts or easement agreements.

Collectively, RCPP projects included 46 contracts for over \$1 million on over 10,108 acres in FFY 2017.

For FFY 2017, NRCS funded the following projects that affect Indiana:

1. University of Notre Dame's "Preventing Nutrient Loss from Indiana Farms: Watershed-Scale Pairing of Cover Crops and the Two-Stage Ditch" project – The project will assist with adoption of cover crops on 85 percent of cropland, and two-stage ditches along the majority of channelized ditches, in two targeted 12-digit watersheds – the Shatto Ditch watershed (HUC 051201060401) and Kirkpatrick Ditch (HUC 071200020403). Through water quality monitoring, the project will quantify the soil and water quality/quantity benefits from the implementation of these practices in the watersheds. Based on preliminary research, 40 to 45 percent reductions in nutrient loss are achievable with this approach, which will be monitored at the watershed scale. A key component of the project is to accurately document the effect of these practices on environmental conditions (water and soil quality) and estimate the full costs and benefits for both public and private interests. In addition, the data will support modeling efforts that will allow for broader conclusions regarding the effectiveness of these conservation practices, regionally and beyond.
2. Tri-State Western Lake Erie Basin Phosphorus Reduction Initiative – A diverse team of partners will use a targeted approach to identify high-priority subwatersheds for phosphorus reduction and increase farmer access to public and private technical assistance—including demonstrations of innovative practices that NRCS does not have approved standards for—in Michigan, Ohio, and Indiana. Identified actions are coordinated with the Ohio Phosphorus Task Force Report and will move Lake Erie towards goals developed in the Great Lakes Water Quality Agreement Annex 4 Nutrient Strategies. The partners will gauge success and monitor results using project-wide water quality monitoring and watershed modeling conducted by national experts from multiple scientific entities and institutions.
3. Michigan/Indiana St. Joseph River (Lake Michigan) Conservation Partnership – The partnership strives to find solutions to the increasing ground water withdrawals and sediment and nutrient loading that are economically good for the farmer but also have multiple conservation benefits, including optimizing ground water use, improving infiltration, and reducing nutrients and sediment while also improving wildlife and fisheries habitat. Innovative methods to target high-priority areas and appropriate conservation practices will take an already developed watershed management plan to the next level. Monitoring will be used to adaptively manage this project at various levels, from the field-scale to the entire watershed. Partners have a strong history of working with both NRCS and producers.
4. Big Pine Watershed- The Big Pine Watershed Partnership will engage the power of the supply chain and the trust of agronomy retailers to further conservation in Indiana's Big Pine watershed through the targeted implementation of nutrient and sediment reducing practices to achieve watershed water quality objectives. The Nature Conservancy, Benton County SWCD, Warren County SWCD, White County SWCD, and the Conservation Technology Information Center (CTIC) are proud to partner with Ceres Solutions, Winfield, and Land O'Lakes to scale targeted conservation in Indiana's Big Pine watershed. The Big Pine watershed, located in west-central Indiana, is a tributary of the Wabash River and part of the Mississippi River drainage.
5. Soil Health on Reclaimed Mine Lands – The partners will work with farmers, landowners, and mine operators to implement a suite of soil health practices on reclaimed mine lands in order to improve the health of the soil, reduce the amount of sediment laden runoff reaching our streams and rivers, and improve wildlife habitat. The project will focus on the roughly 175,000

acres of reclaimed mine lands that are cropped in the Indiana counties of Vigo, Clay, Sullivan, Greene, Knox, Daviess, Gibson, Pike, Dubois, Warrick, and Spencer.

6. Improving Working Lands for Monarch Butterflies Partnership – This project will restore, manage, and conserve wildlife habitat for monarch butterflies on agricultural and tribal lands using four main strategies: conservation planning and assessment; habitat improvement and best management practices; building an adequate seed supply for milkweed and nectar plants; and, enhancing organizational coordination and capacity. This project will contribute to national goals in terms of habitat and increasing the number of monarch butterflies.
7. Southern Indiana Young Forest Initiative – This project was established by 11 partner organizations with a history of conservation leadership in the state and will address a lack of early successional habitat and corresponding declines in at-risk wildlife species. The Initiative will focus on 43 counties in southern Indiana that contain the majority of forested land and provide the best opportunities for incorporating early successional forest regeneration into a predominantly hardwood forest landscape characterized by advanced forest succession. Partners will promote and use best management practices (BMPs), ranging from species-specific silvicultural guidelines to generalized private landowner management recommendations, that benefit young forest indicator species like the American Woodcock and the Ruffed Grouse. The project intends to work in similar fashion to successful young forest initiatives on the east coast and in Wisconsin and lays the groundwork for the establishment of an Ohio Valley Young Forest Initiative.

IDEM's Nonpoint Source Pollution Program was involved with each of these projects during development or the application process for the award.

Mississippi River Basin Initiative

Through the Mississippi River Basin Healthy Watersheds Initiative (MRBI), NRCS and its partners work with producers and landowners to put in voluntary conservation practices that improve water quality, restore wetlands, enhance wildlife habitat, and sustain agricultural profitability in targeted watersheds in the Mississippi River Basin. Targeted watersheds must be identified on the State's list of 8-digit watershed priorities in the State Nutrient Reduction Strategy. IDEM cross-referenced eligible watersheds with approved watershed management plans and active watershed efforts to provide the Indiana State Technical Committee (ISTC) with a list of candidate watersheds with the capacity to implement the program and demonstrate success. The ISTC utilized that list, alongside information from other partners, to choose seven 12-digit watersheds: Big Pine Creek Headwaters, Cicero Creek Headwaters, Little Wea Creek, Busseron Creek, Fish Creek, Big Pine Creek – Brumm and Darby and Plummer Creek. In FFY 2017, 24 targeted MRBI contracts provided almost \$600,000 to landowners and treated 4,522 acres of land.

National Water Quality Initiative

The NRCS and the U.S. EPA collaborated in FFY 2012 on a national effort to increase agricultural BMPs in critical watersheds. This effort was called the National Water Quality Initiative (NWQI). Five percent of each state's EQIP funds were to be dedicated to priority 12-digit watersheds with a goal of showing water quality improvement. In Indiana, NRCS coordinated with IDEM to choose four watersheds that met the following criteria: watershed is impaired (listed on the 2008 303(d) list) for pollutants associated with agricultural run-off; largely agricultural in land use; identified as critical areas in IDEM-approved watershed management plans; has a currently-active locally-led watershed group; there is a perceived willingness of producers to implement BMPs through EQIP; and there is a strong monitoring program in place to measure change. In addition, the NRCS ISTC added a criterion for "drinking water

source.” In FFY 2017, NRCS contributed \$157,780 under the NWQI to conservation efforts on 2 contracts in Indiana to treat 688 acres of land.

Great Lakes Restoration Initiative

America’s Great Lakes hold 21 percent of the world’s fresh surface water, providing habitat for a variety of fish and wildlife and drinking water for more than 40 million people. Recreational and commercial fishing are one of the region’s major industries, and the lakes facilitate transportation and commerce in the eight states that border the lakes. But the lakes suffer from pollution, caused by urban runoff and sprawl, sewage disposal, agriculture, industry, and other sources. This pollution damages the aquatic ecosystems and poses risks to human health. In recent time, algal blooms in Lake Erie underscored the importance of continued conservation efforts in the region. Launched in 2010, the Great Lakes Restoration Initiative (GLRI) helps NRCS accelerate conservation efforts on private lands located in targeted watersheds throughout the region. Through GLRI, NRCS works with farmers and landowners to combat invasive species, protect watersheds and shorelines from nonpoint source pollution, and restore wetlands and other habitat areas. Indiana received over \$664,500 in GLRI funding in FFY 2017. A total of 39 contracts were entered into that will address natural resource concerns on 8,728 acres of land over the life of the contracts.

Indiana Association of Soil and Water Conservation Districts

The mission of the Indiana Association of Soil and Water Conservation Districts (IASWCD) is to enable the conservation of the natural resources of Indiana. The IASWCD promotes the wise use of Indiana’s natural resources by providing information and outreach in support of statewide efforts to develop and enhance Indiana’s watershed programs that address nonpoint source pollution.

Indiana’s Conservation Cropping Systems Initiative (CCSI) is a collaboration between the ICP organizations, the agriculture industry, and Indiana farmers. With oversight from ICP representatives (including IDEM Nonpoint Source Pollution Program staff) and administrative responsibility from the IASWCD, the CCSI promotes a systematic conservation approach to production agriculture through field days, seminars, and one-on-one consulting. The systems approach to better soil health coupled with an innovative method for educating farmers positively and directly improves soil structure, resulting in improved water infiltration, less runoff, decreased erosion, and reduced incidence of flooding—all impacting the sustainability and productivity of Indiana’s soil and water quality. The program has grown to provide high level technical training for ICP staff and farmers so they can help provide technical assistance to others. Soil health measurements and economic case studies are also being conducted. A Director, two Program Managers, and Conservation Agronomist are current positions for this program.

Since 2011, CCSI partners have taken over 8,200 samples in replicated strip trials with over 170 treatment strips (data collected includes cover crop biomass and nitrogen (N) uptake, plant available soil N, soil moisture, soil temperature, basic soil fertility, corn leaf chlorophyll, stalk nitrate, and results from four soil health tests) and conducted over 450 educational events with audiences totaling over 25,500 farmers and agriculture professionals. In the fall of 2015, a survey was conducted and provided results of over 1.1 million acres of cover crops planted. This was an increase of 10% from the previous year. In 2016 and 2017, just over 1 million acres of cover crops were once again planted.

The IASWCD provides conference scholarships to qualifying SWCD supervisors. Nine SWCD supervisor scholarships were awarded for the 2018 Annual Conference providing opportunities for additional

supervisors to learn about the wise use and management of Indiana's natural resources, including nonpoint source pollution prevention, and to bring this information back to their districts.

The IASWCD provides significant resources to the Pathway to Water Quality (PWQ) Exhibit, a popular fixture at the Indiana State Fairgrounds since 1993. The exhibit is an excellent watershed demonstration site, showing how proper management practices at home, on the farm, and in business can protect our soil and water resources. The PWQ exhibit contains practical displays and information for anyone who uses the land. The PWQ exhibit is managed and maintained by the ICP. The IASWCD, through a 319 grant, provides a PWQ Coordinator to oversee the project and committee (about \$12,000 total). Additional funds have been spent on upgrades to the exhibit such as pervious pavement, a green roof gazebo, and a septic system display. IDEM participates on the PWQ Advisory committee and helps staff the exhibit during the Indiana State Fair each year.

IASWCD also provides additional outreach and educational tools. The IASWCD Conservation INsight, a biweekly electronic publication, communicates issues, events and resources in watershed management statewide. The Conservation INsight is an excellent tool to acknowledge successful watershed practices through the Annual River Friendly Farmer Awards and the District Showcase Awards. The Indiana State Fair Farmer's Day provides an excellent setting for the award presentations. The Indiana Conservation Farmer of the Year and Friend of Conservation awards are presented annually during the Annual Conference of Indiana Soil and Water Conservation Districts. Acknowledgment through these venues, local and statewide media, and the Conservation INsight, offer additional opportunities to increase public awareness and supports successful nonpoint pollution reduction practices.

The IASWCD provides support to Women4theLand (W4L)—Women's Conservation Circles by participation on the W4L Steering Committee. Women4theLand is a partnership of agricultural and natural resource conservation agencies and organizations working together to provide information, networking, education, and resources to Indiana women landowners and farmers. IASWCD helps promote and develop W4L statewide events.

The IASWCD Funding Resources web page can be accessed through the IASWCD website. The web page is updated on a continual basis and provides pertinent development and education resources for Indiana's watershed groups, SWCDs, and conservation partners. The web page features funding and grant information, organizational and professional development opportunities, and a calendar of events.

The IASWCD is a member of the National Association of Conservation Districts (NACD), whose mission is to serve conservation districts by providing national leadership and a unified voice for natural resource conservation. The NACD, in partnership with USDA's NRCS, awarded grants to two Indiana districts (Hamilton County SWCD and Marion County SWCD) in 2016 to help boost technical assistance for urban agriculture and conservation awareness and development. The Hamilton County SWCD hired two part-time urban agriculture program associates. One associate is providing on-site technical assistance on how to develop and sustain an urban food plot and community gardens. The second associate position is focusing on education and developing partnerships within the county to encourage established or developing community gardens, as well as individual gardeners, to donate part of their yield to local food banks. The Marion County SWCD is working to develop the Urban Growers Exchange, which will be a catalyst for urban farming sustainability based on soil health. Marion County SWCD is seeking to make this urban position permanent.

Indiana State Department of Agriculture

The [ISDA-Division of Soil Conservation](#) (Division) works alongside the [State Soil Conservation Board](#) (SSCB) to enhance the stewardship of Indiana's soil and water resources. This is done by providing face-to-face, on-the-land technical and financial assistance for implementing conservation practices, supporting Indiana's 92 Soil and Water Conservation Districts (SWCDs), and promoting the opportunities and benefits associated with caring for soil and water resources.

The Division employs Resource Specialists throughout the state to directly assist landowners with the planning and implementation of conservation practices addressing specific soil and water resource concerns. Resource Specialists work with regional Conservation Delivery Teams alongside staff from the NRCS and SWCDs. The ISDA Resource Specialists assist with the planning, survey, design, and construction of thousands of practices annually. The common practices that these professionals work on include, but are not limited to, filter strips, grassed waterways, forested and grassed buffers, water and sediment control basins, wetland restorations, and livestock watering systems. The Resource Specialists also work with the SWCDs to help them carry out Clean Water Indiana (CWI) programs and assist with educational events for youth, adults, and farmers/landowners.

The Division also employs District Support Specialists (DSSs) to work cooperatively throughout the state with the local SWCDs to develop conservation priorities, goals, and business plans, as well as assist in the design of programs on the husbandry and management of soil and water resources that reach landowners and the general public. They prepare and conduct trainings for SWCD supervisors and staff, assist SWCDs in expanding their capacity to fulfill their role in their communities, provide facilitation for strategic planning and similar sessions, and provide information, guidance, and direct on-site assistance to SWCDs in carrying out their legal and operational responsibilities. The DSSs also provide guidance and assistance to the districts in applying for competitive CWI grants for implementing multi-district sediment and nutrient reduction projects.

Conservation Reserve Enhancement Program

The [Conservation Reserve Enhancement Program](#) (CREP) is designed to help alleviate some of the concerns of high nonpoint source sediment, nutrient, pesticide, and herbicide losses from agricultural lands by restoring buffers and wetlands to improve water quality, as well as protect land from frequent flooding and excessive erosion by planting hardwood trees in floodplain areas along rivers and streams. This program is possible through an agreement between the State of Indiana and the USDA-FSA. Program participants receive both state and federal incentives to voluntarily enroll in the program and install water quality and erosion prevention practices on environmentally sensitive land directly adjacent to eligible surface waters or land located in the floodplain. ISDA administers the CREP program on behalf of the state.

The program was first announced in 2005, covering three watersheds in Indiana with an acreage enrollment goal of 7,000 acres. The program expanded in August 2010 to include 11 priority watersheds touching 65 counties with an acreage enrollment goal of 26,250 acres. The CREP watersheds include Lower Wabash, Lower White, Lower East Fork White, Upper East Fork White, Middle Wabash-Busseron, Middle Wabash-Little Vermillion, Middle Wabash-Deer, and the Upper Wabash.

Eligible buffer practices through the CREP must be adjacent to a water body and include:

- Native Grasses
- Hardwood Tree Planting
- Wildlife Habitat
- Riparian Forest Buffers
- Filter Strips

Wetland Restorations and Bottomland Timber Establishment are two other eligible practices under CREP.

CREP progress as of August 10, 2018 includes over 14,146 acres of conservation practices installed utilizing \$5,808,804 state dollars and protecting over 670 miles along Indiana's rivers, lakes, and streams. Enrollment in the CREP program is over 17,045 acres. For every state dollar that is spent on CREP practices, the federal match is approximately \$5-\$13.

Clean Water Indiana Program

The [Clean Water Indiana Program](#) (CWI) was established by the Indiana legislature to provide financial assistance to SWCDs, landowners, and conservation groups. The financial assistance supports the implementation of conservation practices that reduce nonpoint sources of water pollution through education, technical assistance, training, and cost-sharing programs. The CWI fund is administered by the Division of Soil Conservation under the direction of the SSCB.

The CWI program is responsible for providing local matching funds as well as grants for sediment and nutrient reduction projects for Indiana's SWCDs. In 2018, 15 proposals were funded, totaling \$935,035 and impacting 26 SWCDs. Applications for the 2019 CWI Grant cycle will be accepted through September 14, 2018.

In 2017, ISDA and the SSCB formalized a process for non-SWCD led projects. This process awarded funding totaling \$67,500 to Southern Indiana Cooperative Invasives Management and the Indiana Association of Soil and Water Conservation Districts. In 2018, the SSCB received applications for three non-SWCD led projects that are under consideration for funding.

CWI also contributes critical state matching funds for Indiana's CREP, and supports other statewide initiatives such as the Indiana [Conservation Cropping Systems Initiative](#) (CCSI). CCSI provides the soil health trainings that are the core of soil health messaging by Indiana Conservation Partnership staff. Trainings in 2017 included 16 events with over 400 attendees. In addition, CCSI provides assistance to local level partnerships by helping them develop and present their own field days geared to specific audiences. Since 2011, CCSI has participated in education events in 84 of Indiana's 92 counties, reaching over 25,000 attendees. CCSI training has enabled the ICP to build teams of professionals who are able to provide consistent, science-based and farmer-proven soil health messaging to Indiana farmers and landowners statewide. Rather than focusing solely on financial assistance, trained staff focus upon successful adoption of practices. Combined with CCSI's recruitment of experienced farmers to serve as advisors and mentors, the effects of this training is reflected in the adoption of practices without programmatic financial assistance. For the past 3 years, approximately 1,000,000 of Indiana's 12,000,000 acres of cropland was seeded to cover crops - with only 1 in 5 acres receiving cost-share.

INfield Advantage

INfield Advantage (INFA) is a proactive, collaborative opportunity for farmers to collect and understand personalized, on-farm data to optimize their management practices to improve their bottom line and benefit the environment. Participating farmers use precision agriculture tools, protocols, and technologies, such as aerial imagery and the corn stalk nitrate test, to conduct in-depth nitrogen analysis on their own farms and to determine nitrogen use efficiency in each field that they enroll. This concept is considered adaptive management and generally results in changes that increase profitability for the producer and ultimately has a positive impact on water quality. This program was developed to address key challenges in advancing water quality goals in the state related to production agriculture. The adaptive management process has shown that most growers can reduce their nitrogen rates by one-third while maintaining or increasing profitability. Field history information is also collected from every participating farmer – previous crop, manure history, manure applications, commercial N applications

(including timing of application, form, and rate), and tillage. This information is combined with analysis of results from the on-farm evaluation plots comparing different management practices (timing, form, application rate, etc.). All data collected through INFA are anonymous; reports can never be linked to a name or specific location. The data are reported back to the participating farmer as his/her individual farm data and as aggregate data results. The aggregate results can be used publically for educational purposes. INFA is funded through the Indiana Corn Marketing Council and the Indiana Soybean Alliance with checkoff funds, and is being offered at no additional charge to producers.

In 2018, INFA partnered with Dr. Shaun Casteel, Purdue University, to study the effect of sulfur application on soybean fields. Over 100 fields, representing the entire state's range of environment and soils types, were tested. The fields represented many of the standard Indiana management practices farmers used. In addition to testing soil and tissue samples for sulfur response, the growers submitted yields so an economic impact could be determined.

INFA started in 2010 as a pilot project in Jasper County in northwest Indiana, and included 15 producers, 39 fields, and 2,700 acres. It has expanded over the last 8 years and is now available in over 60 counties in Indiana. In 2018, there are 33 groups including approximately 400 producers, approximately 1,080 fields, and about 75,000 acres.

Nutrient Load Reduction Modeling and Mapping

In 2013, the ICP began using the U.S. EPA Region 5 Sediment and Nutrient Load Reduction Model to determine the impact on Indiana's water quality achieved by conservation best management practices (BMPs) implemented on agricultural land. It is part of a collective effort to generate a comprehensive statewide picture of installed voluntary conservation practices. The model is used to analyze the sediment and nutrient load reductions achieved by conservation practices funded by state programs such as the CWI, CREP, and IDNR's Lake and River Enhancement Program, as well as federally-funded programs through §319 administered by IDEM and the USDA's Farm Bill Programs like EQIP and CRP. The ICP utilizes the end products of this process to establish baselines and measure load reduction trends by watershed for each calendar year, allowing for prioritization of workload and staffing needs, all while serving as a tangible component of the [Indiana State Nutrient Reduction Strategy](#). Annual accomplishment reports that are generated as a result of this process can be found at <http://www.in.gov/isda/2991.htm>.

Cover Crop and Tillage Transects

To measure the impacts and trend of conservation tillage, Indiana began conducting a Tillage Transect in the spring of 1990, which is a predetermined route and set of points on-the-ground survey, that measures the amount of residue left on the ground after planting. The ICP introduced a cover crop assessment to the spring survey in 2011 to better tell the story of Indiana's conservation efforts. In 2014, a fall tillage and cover crop survey began to better assess the use of cover crops and the practice of conservation tillage in the fall after harvest. For more information, visit the [Cover Crop and Tillage Transect Data](#) page on the ISDA website.

GIS Basin Story Maps of the Ten Major River and Lake Basins in Indiana

The purpose of the GIS Basin Story Map applications is to showcase Indiana's efforts to enhance water quality within the ten major river and lake basins in Indiana, as well as educate landowners, both rural and urban, about local, state and federal cost-share programs, educational opportunities, and rural and urban conservation practices. The story maps feature interactive maps which allow users to click on watersheds, water monitoring locations along with links to water quality data, and educational sites to view detailed information about each basin. There is also information about local watershed

groups and organizations, the number of conservation practices in specific subwatersheds, nutrient load reductions from BMPs, and links to active grants. The development and purpose of the GIS story maps is making Indiana's nutrient reduction strategy more interactive.

<http://www.in.gov/isda/2991.htm>

Indiana Department of Natural Resources

Lake and River Enhancement Program

The Department's role in Lake and River Enhancement (LARE) is set forth in Indiana Code (IC 6-6-11). The Division of Fish & Wildlife administers the LARE program through financial grants awarded by the Director of Indiana Department of Natural Resources (DNR) to sponsors to reduce sediment and nutrient inflow to Indiana's lakes and rivers, and to enhance aquatic habitat.

The funding for LARE comes from the lake and river enhancement fee annually paid by boat owners when registering their boats with the Bureau of Motor Vehicles; thus, the LARE program strives to insure the continued viability of Indiana's publicly accessible lakes and streams for multiple uses, including recreational opportunities. The IDNR Division of Law Enforcement receives a portion of the funds to provide grants to conduct aquatic safety programs and maritime patrols.

Grants have been made available for technical and financial assistance to local and county agencies and non-governmental entities (such as a lake or homeowner association) for qualifying projects since 1989. In March of 2018, \$1,313,400 in 53 grants was awarded to address control of invasive aquatic species, logjam removal from rivers, and sediment removal from publicly accessible lakes.

In July of 2018, 28 grants totaling \$1,227,000 were awarded for new biological, diagnostic, design and construction projects on lakes and rivers as well as several new and continuing Watershed Land Treatment (WLT) projects with County Soil and Water Conservation Districts. These latter efforts depend on partnering with willing land users to put in place various measures to address nonpoint source pollution. Such measures include the installation of filter strips, water and sediment control measures, and other practices to reduce erosion and sedimentation in specific targeted watersheds.

Several LARE-funded projects feature active measures to improve aquatic habitat, including streambank stabilization with bioengineered practices, low-head dam removal, and various in-stream measures to benefit fish and other aquatic organisms. The stabilization of shorelines on natural lakes is also addressed in several projects. The end results of these efforts include enhanced recreational opportunities for those who use the water for boating, fishing, and paddling activities. They can also result in increased economic value for businesses, communities, and individuals who live on, or use these water bodies.

Indiana Lake Michigan Coastal Program

The purpose of the Indiana Lake Michigan Coastal Program (LMCP), funded primarily through the National Oceanic and Atmospheric Administration (NOAA), is to enhance the state's role in planning for and managing natural and cultural resources in the coastal region and to support partnerships between federal, state, and local agencies and organizations. The IDNR is the lead agency implementing the LMCP and the program houses a full-time Coastal Special Projects Coordinator who provides technical assistance, education and outreach, and coordinates efforts toward the achievement of management measures that combat sources of nonpoint source pollution.

The LMCP makes available approximately \$600,000 annually through the Coastal Grants Program for projects to protect and restore natural, cultural, and historic resources in Indiana's Lake Michigan coastal region. Project categories include land acquisition (e.g., riparian corridors), low cost construction (e.g., natural area restoration and BMP installation), education and outreach, and planning/coordination/management (e.g., land use planning and ordinance development). In the 2017 grant cycle project applications were received and grants awarded to coastal communities and organizations that will result in nonpoint source pollution runoff reduction and water quality improvements. Examples include storm water and drainage management planning, green infrastructure planning, water quality education for adults and youth, and natural area land acquisition. The annual Request for Proposals for the LMCP grant cycle is issued in July of each year.

As part of the Coastal Zone Act Reauthorization Amendments of 1990 (CZARA), Congress created a stand-alone provision, Section 6217, which requires that states and territories with approved coastal zone management programs develop a Coastal Nonpoint Source Pollution Control Program to address water quality impairment of coastal waters. The purpose of the program is to develop and implement management measures for nonpoint source pollution to restore and protect coastal waters. The DNR LMCP and IDEM §319 program staff work together to coordinate with other state and federal agencies such as state and local health departments, DNR, NRCS, local SWCDs, and not-for-profit organizations to meet the requirements of this program. The LMCP Special Projects Coordinator is responsible for 6217 development and implementation through collaboration with federal, state, and local partners.

In Indiana, only one 6217 coastal nonpoint pollution control program measure, Operating Onsite Disposal Systems, remains unapproved. To meet the measure the state must ensure that operating septic systems are inspected at a frequency adequate to ascertain whether the system is failing. In order to assist with meeting this measure, the LMCP provided funding to Save the Dunes, one of the Northwest Indiana Septic System Coordination Work Group partner organization, to develop and pilot a locally focused Septic System Outreach and Education Program. The community-based "Good Neighbor" outreach program promoting proper maintenance and inspection continues to be promoted in northwest Indiana septic-served communities. The Coastal Outreach and Education Program also funded an IOWPA Inspector/Installer Certification training and initiated a northwest Indiana realtor continuing education program on septic systems provided by the Indiana State Department of Health. A "Point of Sale" septic system inspection ordinance was passed by the LaPorte County Health Department which was reviewed by U.S. EPA/NOAA and determined to fully meet the inspection measure for septic systems in LaPorte County. LMCP also applied for, and received, a §319 grant to move forward on the septic system management measure by mapping on-site disposal systems located within 500 ft. of surface waters; documenting negative environmental and public health impacts that result from septic system failures in NW Indiana; educating local decision makers; and communicating the impacts that on-site disposal systems have on water resources, health, and property to targeted audiences via social and traditional media, community trainings, workshops, and literature designed to raise awareness. The LMCP will continue to work with all partners to meet the inspection measure in the coastal counties of Lake and Porter.

In September 2017 the Northwest Indiana Septic System Coordination Work Group promoted the annual U.S. EPA SepticSmart Week in the coastal region through distribution of SepticSmart education materials, community resolutions, and print and radio/television outreach. Northwest Indiana's efforts to promote community outreach during SepticSmart Week have been featured on U.S. EPA's SepticSmart website and on webinars conducted for the U.S. EPA National Onsite Systems Work Group. In Indiana, there was also a Governor's Proclamation of Septic Smart Week for 2017.

In June of each year the LMCP and partners celebrate Coastal Awareness Month by developing a wide variety of events highlighting the natural, cultural, and historic resources of the Indiana Coastal region.

Many of the over 70 events focus on the importance of water quality protection and restoration in the Lake Michigan Watershed.

Healthy Rivers Initiative (HRI)

The Healthy Rivers Initiative, led by the IDNR, is the largest conservation initiative to be undertaken in Indiana. The initiative includes a partnership of resource agencies and organizations who are working with willing landowners to permanently protect 43,000 acres located in the floodplain of the Wabash River and Sugar Creek in west-central Indiana and another 26,000 acres of the Muscatatuck River bottomlands in southeast Indiana. HRI partners include the IDNR, U.S. Fish & Wildlife Service, NRCS, and The Nature Conservancy in Indiana.

These projects involve the protection, restoration, and enhancement of riparian and aquatic habitats and the species that use them, particularly threatened or endangered migratory birds and waterfowl. This initiative will also be beneficial to the public and surrounding communities by providing flood protection to riparian landowners, increasing public access to recreational opportunities, and leaving a legacy for future generations by providing a major conservation destination for tourists.

Since HRI was launched in June of 2010, 36,985 acres of land are now permanently protected, over halfway to the goal of 70,000 protected acres. Eleven thousand nine hundred sixteen (11,916) acres have been acquired by IDNR in the Wabash River and Sugar Creek Conservation Areas, with 3,743 acres enrolled in NRCS Wetlands Reserve Easement program that are not owned by IDNR, to complement the existing 12,723 acres of state-owned land. In the Austin Bottoms Conservation Area along the Muscatatuck River, 4,405 acres have been acquired in addition to 1,709 acres enrolled in WRE that are not owned by DNR, complementing the existing 2,489 acres of state-owned land. To date, a total of 13,663 new acres are now open to the public for hunting, fishing, trapping, boating, and birdwatching through HRI.

Indiana State Revolving Fund Loan Program

The Indiana State Revolving Fund Loan Program finances projects that abate or prevent nonpoint source pollution of Indiana's waters. The State Revolving Fund Program has traditionally provided low interest loans to Indiana communities for projects that improve wastewater and drinking water infrastructure. The program was expanded in 2004 to fund projects that meet the objectives in the State Nonpoint Source Pollution Management Plan. The money loaned to these nonpoint source pollution projects is documented as match, when applicable, for the state §319 Grant Program. Eligible nonpoint source pollution projects must provide water quality benefits to their respective communities and may include one or more of the following:

- Wetland restoration/protection
- Erosion control measures
- Ground water remediation
- Storm water BMPs
- Source water and wellhead protection
- Failing septic system -repair, replacement or connection to sewer
- Brownfield remediation
- Conservation easements
- Agricultural and waste management BMPs.

This reporting period, State Fiscal Year 2018 (July 1, 2017 - June 30, 2018), the State Revolving Fund Program loaned \$2.9 million to three communities for projects to reduce nonpoint source pollution by extending sanitary sewers to areas with septic systems, thereby eliminating this potential source of pollution. Approximately 250 septic systems will be eliminated through this project. Throughout the life of the State Revolving Fund Nonpoint Source Pollution Program \$256 million has been loaned for nonpoint source pollution purposes. Approximately 15,500 septic systems have been removed from service, eight Brownfield sites have been remediated, and four communities completed storm water infrastructure projects.

The Nonpoint Source Pollution Program has also made a specific effort to coordinate with the Clean Water State Revolving Fund Program to link loan applicants with local watershed groups. Each quarter, when the Clean Water State Revolving Fund's Project Priority List is made available, the nonpoint source pollution program identifies those applications that fall within an area covered by a watershed management plan (WMP) or a Total Maximum Daily Load (TMDL) report. The Nonpoint Source Pollution Program then determines, with the help of Clean Water State Revolving Fund staff, whether or not those applicants have taken advantage of the 0.5% interest break available for projects that include a nonpoint source pollution or green infrastructure project. If no such project has been identified, and a WMP includes a project that may help the applicant qualify for the reduced interest rate, the application is flagged for contact. However, for the past several years, interest rates have dropped to 2%, which is the floor for the State Revolving Fund Program. This means that no further interest rate cut is currently being offered for nonpoint source pollution projects. Interest rates are adjusted quarterly on the first of January, April, July, and October.

GOAL 2: MONITOR AND ASSESS INDIANA WATERS FOR NONPOINT SOURCE IMPAIRMENTS AND IMPROVEMENTS

Without monitoring and assessment, it would be difficult to quantify the magnitude of the nonpoint source pollution problem and gains made in water quality through nonpoint source pollution actions. In order to grasp the extent and impacts of nonpoint source pollution in the state, IDEM uses several water quality monitoring approaches, including targeted and probabilistic monitoring designs, as outlined in the *Indiana Water Quality Monitoring Strategy 2017-2021*. Assessment of the data obtained through monitoring followed protocols outlined in the *2016 Consolidated Assessment and Listing Methodology*. Highlights of significant progress in monitoring and assessment of Indiana's waters for nonpoint source pollution during FFY 2018 are included below. A full accounting of progress made this year toward the objectives of Goal 2 in the State Nonpoint Source Pollution Management Plan can be found in Appendix A.

IDEM Water Quality Monitoring

The OWQ conducts water quality monitoring and assessments each year to determine statistically the degree to which waters within a given basin support aquatic life, human health, and recreational uses.

Water quality monitoring is conducted in a different basin each year using a probabilistic approach. In 2011, IDEM implemented a new water quality monitoring strategy in which monitoring is conducted in one of nine basins each year (Figure 2). This will result in a statistically comprehensive and updated data set for the entire state in 2019.

In 2018, IDEM sampled probabilistically in the Great Lakes Region (HUCs 04040001, 0405001, 04100003, 04100005, 04100007 and 04100004). The results of this monitoring effort will be used to:

1. Provide data on which to base statistical comprehensive assessments of state waters (305(b))
2. Provide data on which site-specific assessments can be made for the waterbodies' attainment of Indiana's designated uses (303(d))
3. Identify impairments for which TMDLs should be created for nonpoint source pollution and point sources
4. Provide baseline data for watershed management decisions, where possible.

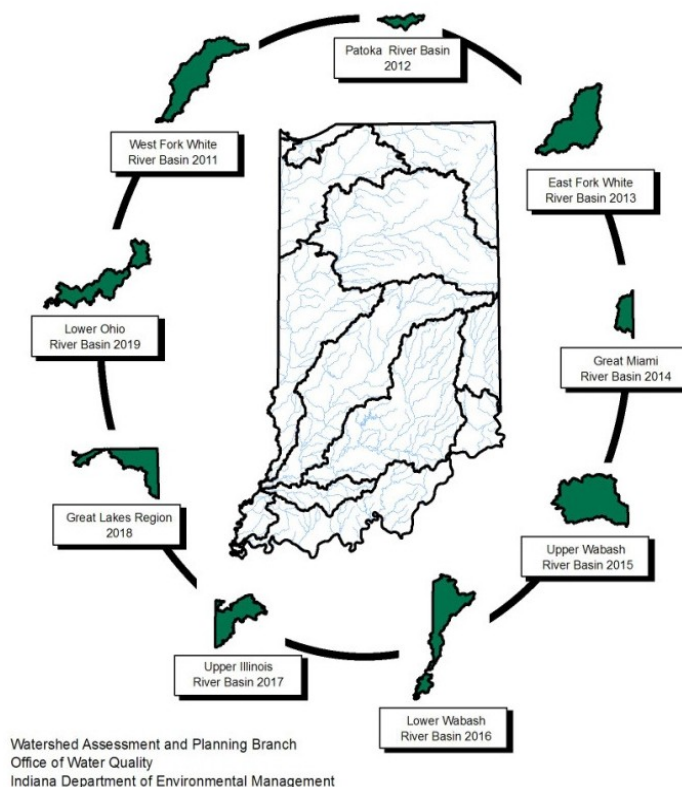


Figure 2.IDEM's 9-Year Rotating Basin Monitoring and Assessment Approach.

IDEM's nonpoint source pollution monitoring also includes two types of targeted monitoring: performance measure monitoring (monitoring for success, measured under the U.S. EPA's WQ-10(a) measure) and watershed characterization monitoring.

Performance Measures/Monitoring for Success (Success Stories/WQ-10(a))

Part of U.S. EPA's strategy for showing improvement in nonpoint source pollution impairment is through Success Stories submissions by the states. In order to show improvement, states must show that one or more of the waterbody/impairment causes primarily caused by nonpoint source pollution and identified on any state 303(d) list are removed.

Targeted monitoring to measure water quality improvement as a result of nonpoint source pollution grant projects was initiated in 2009. Monitoring for success continued this period in the West Branch Fish Creek (041000030401), Smith Ditch-Cedar Creek (041000030604), Peckhart Ditch-John Diehl Ditch (041000030702), King Lake-Little Cedar Creek (041000030705), and Dosch Ditch-Cedar Creek (041000030707) watersheds. Samples are still being processed and IDEM reserves judgment as to whether any of the sampling in these watersheds demonstrates improvement.

Success stories reported in FFY 2018 are reported under Goal 4 and can be found starting on page 43 of this document. Load reductions from BMPs is found in Table 3 on page 34 of this document.

Watershed Characterization Studies

Two conditions led to the decision by IDEM to conduct baseline watershed characterization studies in a limited number of watersheds each year. First, many watershed groups in Indiana lack the expertise to set up and use equipment to conduct a monitoring program that will provide complete baseline data for their watershed management plans. Secondly, in order to meet the data quality objective of delisting, IDEM needs to have a scientifically-defensible baseline to compare with follow-up monitoring.

Monitoring began in 2011 in the Plummer Creek watershed and has continued to the present for additional watersheds. In FFY 2014, it was further decided that all baseline projects would be conducted for the combined purposes of monitoring in order to prepare TMDLs and provide sufficient baseline monitoring to measure change after the preparation and implementation of a watershed management plan. Thus, the name of these studies has been changed to "Watershed Characterization" studies.

Parameters sampled in watershed characterization studies from 2013 through 2018 include alkalinity (as CaCO₃), total solids, total suspended solids, total dissolved solids, sulfate, hardness (as CaCO₃), total phosphorus, nitrate+nitrite-nitrogen, ammonia nitrogen, total Kjeldahl nitrogen, water temperature, specific conductance, dissolved oxygen percent saturation, total organic carbon, chemical oxygen demand, turbidity, chloride, dissolved oxygen, pH, stream flow, *E. coli*, fish community, macroinvertebrate community, and habitat-related parameters (e.g. embeddedness, canopy cover).

Following is an update of all ongoing watershed characterization studies and studies closed in FFY 2018.

Lower East Fork White River (HUC 0512020815) – Water quality monitoring in the Lower East Fork White River began in November 2017 and is to be completed by October 2018. Eighteen sites are being monitored monthly for water quality parameters following a modified geometric design and targeted site selection.

Laughery Creek (HUC 0509020306) – During this reporting period twenty-four sampling sites have been chosen. Selection and sampling procedures follow the same protocols as in previous watershed characterization studies. Data collection will begin in November 2018 and conclude in October 2019. Specific site locations are currently being finalized.

Ground Water Monitoring

Ground water monitoring continued during the 2018 field season. After spending 2017 revising sampling methods, the 2018 Ground Water Monitoring Network (GWMN) sampling season focused upon determining the occurrence of naturally occurring arsenic found statewide. Across the State of Indiana, the results from previous sampling as part of the GWMN showed arsenic at concentrations ranging from non-detect to levels well above the maximum contaminant level (MCL) of 10 parts per billion (ppb) in over 11% of residential wells sampled. For the 2018 sampling season, IDEM Ground Water Section staff revisited sampled residents that have previously had reported levels of ½ the MCL of 5 ppb and greater to gain a better understanding of the statewide distribution of arsenic. The focus of the resampling determined the specific concentration of two forms of arsenic, arsenic III and arsenic V. By knowing the ratio of arsenic III to arsenic V, IDEM can better assess the mobility of arsenic based on geological and geochemical conditions across the state and make better predictions of areas that may be affected by high levels of arsenic. Likewise, arsenic speciation is intended to assist residents in choosing appropriate treatment options for arsenic removal. In addition to arsenic speciation, wells tested during the 2018 field season were analyzed for general chemical parameters, including metals, anions/cations, nitrate, ammonia, and alkalinity. A subset of the samples was also analyzed for fungicides that are applied to corn and soybeans to prevent the rust fungus. Ultimately, this type of sampling can provide the information needed to characterize causes, sources, and magnitude of nonpoint source pollution in ground water.

Additional Water Quality Monitoring

Entities other than IDEM are conducting water quality monitoring programs around the state that are important to the Nonpoint Source Pollution Program. Many §319 projects conduct monitoring as part of their work to reduce nonpoint source pollution. These monitoring efforts and the subsequent data generated are shared and used by IDEM and others for many different purposes.

Hoosier Riverwatch Volunteer Monitoring Program

Hoosier Riverwatch (HRW), a program of IDEM's Watershed Assessment and Planning Branch, is a volunteer water quality monitoring initiative designed to increase public awareness of water quality issues and concerns by training volunteers to monitor stream water quality. The mission of HRW is "To involve the citizens of Indiana in becoming active stewards of Indiana's water resources through watershed education, water monitoring, and clean-up activities." This mission is accomplished through the following goals:

- Educate citizens on watersheds and the relationship between land use and water quality.
- Train citizens on the basic principles of water quality monitoring.
- Promote opportunities for involvement in water quality issues.
- Provide water quality information to individuals or groups working to protect water resources.
- Support volunteer efforts through technical assistance, monitoring equipment, networking opportunities, and educational materials.

HRW accomplishes its mission through providing monitoring equipment, supporting workshops to train volunteers, distributing water quality news to volunteers and stakeholders, and managing an online database as a repository of data collected by volunteers. In FFY 2018, HRW supported 23 (22 basic and 1 advanced) local workshops and educated and trained 180 water quality monitoring volunteers throughout Indiana. The program has distributed 21 equipment packages to a variety of schools, non-profit, and government organizations. There are 38 instructors actively leading workshops in the state, taking into account those who have retired or moved away plus 16 new instructors trained this spring. The HRW Program maintains about 24 loaner trunks throughout the state, which contain all the

equipment needed to monitor water quality. These trunks may be borrowed by trained HRW volunteers for varying lengths of time.

The Hoosier Riverwatch Volunteer Stream Monitoring Internet Database was developed in the summer of 2000, about 4 years after the HRW Program became fully staffed. The online database was upgraded in 2016 (using \$319 funds to contract with the developer) to update coding and allow the database to continue to function online. HRW monitoring groups utilize the database to enter data collected from their habitat, chemical, biological, and flow sampling. Only volunteers who have completed a HRW training workshop may enter data. Anyone can view and download stream data entered into the database. This provides a unique opportunity for volunteers to share data, not only with one another, but also with others interested in the quality of Indiana's rivers and streams. This year, according to the data entered into the online database by volunteers, approximately 166 stream sites were sampled during 148 days of sampling activities across the state.

Indiana Clean Lakes Program

The School of Public and Environmental Affairs (SPEA) at Indiana University (IU) has been working with IDEM to use \$319 funds to administer the Indiana Clean Lakes Program (CLP) since 1989. The Indiana CLP is a comprehensive, statewide public lake management program that includes public information and education, technical assistance, volunteer lake monitoring, and lake water quality assessment.

Indiana has over 1,400 lakes, reservoirs, and ponds—many of which are under pressure from human activities like poorly managed land disturbing activities, suburbanization of lakeshores, boating impacts, and septic system discharges. These activities can result in erosion, sedimentation, and excessive nutrient concentrations reaching lakes. This can lead to accelerated eutrophication and related undesirable effects including nuisance algae, excessive plant growth, murky water, odor, and fish kills.

Indiana's CLP is coordinated by IU-SPEA staff and students. The current grant agreement, which is in effect from March 2015 through January 2019, includes the following components:

- Annual sampling of 80 lakes and reservoirs (selected via a randomized approach) at one site for a variety of parameters
- Training and support of a corps of volunteer lake monitors to collect water transparency data using a Secchi disk. A select volunteer group also collects chlorophyll-a and total phosphorus data. Volunteers are also trained to identify aquatic macrophytes and aquatic invasive species, including Zebra mussels.
- Education and outreach through the production and distribution of the quarterly newsletter, *Water Column*; maintenance of the Indiana Clean Lakes Program website; preparation of brochures and fact sheets; and participation in the annual Indiana Lake Management Conference
- Providing technical assistance and expertise on lake-related issues

Section 314 of the CWA charges IDEM with responsibility for assessing and reporting the trophic status and trend in trophic condition of Indiana's public lakes. The State of Indiana began assessment of lake nutrient levels and effects in the early 1970s. Continued monitoring is necessary to:

- Report the status of lake eutrophication levels to the U.S. EPA in the State's Integrated Water Quality Monitoring and Assessment Reports

- Determine and track trends in eutrophication levels of lakes and reservoirs to inform restoration priorities and activities
- Provide data needed to support development of nutrient water quality criteria, as required by U.S. EPA
- Provide data needed to determine if lakes and reservoirs are meeting water quality criteria and supporting the beneficial uses designated in Indiana's water quality standards.

Over the years, the Indiana CLP has continually provided IDEM a wealth of data for its CWA §314 and 305(b) assessments and for the development of its 303(d) List of Impaired Waters, which identifies waterbodies in need of restoration. These data are not only used to make waterbody-specific assessment and listing decisions, but the data set as a whole provided the foundation for the development of IDEM's assessment methodology for lakes and reservoirs. The Indiana CLP data, collected over more than three decades, have also been analyzed extensively by IDEM for the purposes of considering numeric nutrient water quality criteria for lakes and reservoirs. Although this work continues, the data set provided by the program and IDEM's analyses have helped inform the Agency's current approach to reducing nutrient loading to Indiana lakes and reservoirs.

Monitoring for the National Water Quality Initiative

IDEM is currently working with several partners to monitor at various scales in the School Branch watershed, part of the Eagle Creek watershed (HUC 051202011108), in Hendricks County, Indiana. This watershed is the focus of a collaborative, public-private partnership tied to the national initiative for agricultural conservation cropping systems (see National Water Quality Initiative discussed previously). IDEM has provided the USGS with §319 grant funds to investigate three reaches of School Branch to determine if differences in physical, chemical, and biological indicators of stream water quality and quantity are related to long-term agricultural conservation cropping systems in the watershed. USGS is collecting and interpreting scientific data about water quality and water quantity in the School Branch watershed for the first three years of a 6-year study (the project began on January 11, 2016 and will end on January 10, 2019). The USGS operates three monitoring stations to continuously measure stream discharge. Real-time water-quality sensors and representative sampling are used to measure continuous and synoptic concentrations and loads of nitrogen, phosphorus, and suspended sediment in stream water at these stations. Continuous ground water levels and synoptic ground water quality are also measured. Chemical indicators of water quality and hydrologic data are used to understand the sources and transport of nitrogen, phosphorus, and sediment in the watershed. Biological inventories are used as additional indicators of water quality. Data from the study will be communicated by the USGS through internet webpages, presentations, and publications. A second phase of the project is in planning to begin in 2019 and end in 2022.

The USGS will also be completing a Tile Drain Synoptic Study in which three tile drain synoptic surveys will be performed on School Branch. Two will be performed during elevated flow events and one during stable flow. The USGS will measure flow, collect field parameter measurements, and collect a water quality sample from each flowing tile. Field parameters to be measured include dissolved oxygen, pH, specific conductance, temperature, and turbidity. The USGS laboratory will analyze the water quality sample for ammonia, nitrate + nitrite, nitrite, total nitrogen, orthophosphate, total phosphorus, *E. coli*, and total coliform. The USGS will prepare and submit an electronic copy of a tile drain study report to the state based on the surveys by the close of the project.

In addition, IDEM monitored two fixed station sites on School Branch monthly, an effort that began in April 2014 and continued through FFY 2018. IDEM and USGS data (as well as data collected by other project partners) will be evaluated to determine whether goals of the project have been met.

External Monitoring and the External Data Framework

IDEM recognizes that numerous universities, municipalities, watershed groups, and grassroots organizations throughout the state participate in water monitoring activities. There are also regulated facilities that conduct monitoring above and beyond their permit requirements. Section 303(d) of the CWA requires that states consider all existing and readily available water quality data and related information in developing their 303(d) List of Impaired Waters. IDEM is required to actively solicit this information from external organizations for potential use in its 305(b) water quality assessments. Water quality data and information received from external organizations are reviewed for their usability in making assessments.

In 2015, OWQ began roll out of the External Data Framework to provide a systematic, transparent, and voluntary process for external organizations to submit their water quality data for consideration in various OWQ programs. The External Data Framework describes OWQ policy regarding the agency use of external data, the guidelines for submitting data, and the technical assistance necessary to facilitate greater collaboration between OWQ and external parties.

The External Data Framework website is now active and available to the public. The website provides general information on the External Data Framework along with a frequently asked questions (FAQ) page, data solicitation schedules and timelines, and a technical assistance page. OWQ has also developed a number of presentations and other outreach materials to promote participation in the External Data Framework. The website offers two guidance documents: The *General Guidance for the Office of Water Quality External Data Framework*, which provides an overview of the External Data Framework and addresses some of the more common questions regarding its structure, policies, and participation; and the *Technical Guidance for the Office of Water Quality External Data Framework*, which provides more specific information regarding the requirements and recommendations of the External Data Framework that external organizations can use to develop their monitoring plans, improve the quality of the data they collect, and determine whether data sets they obtain from others are suitable for use in their projects.

OWQ's External Data Framework website also includes a page that describes three options for data submittal through OWQ's Secondary Data Portal. All participants in the External Data Framework will enter the system through a single Secondary Data Portal where they may select to 1) enter their data online via user-friendly forms into a database that will produce a Microsoft (MS) Excel file formatted for upload into OWQ's Assessment Information Management System (AIMS) database, 2) use a MS Excel template provided by OWQ that can directly upload into AIMS, or 3) request the development of an electronic data interchange that will automatically feed their data into OWQ's AIMS database. Once data are in the AIMS database, they will be reviewed and ranked based on their data quality and made available to OWQ staff for use in their programs and by request to the public.

Data may be submitted to the External Data Framework at any time for consideration by the OWQ for potential use in its programs. OWQ programs can access data submitted through the External Data Framework at different times depending on their varying needs. Two OWQ programs – the Integrated Reporting and TMDL Programs – have more specific timelines in which they review the data submitted through the External Data Framework. Regardless of when they are submitted, all data sets are reviewed by OWQ and evaluated for their potential use by OWQ programs. These data and their associated quality assurance information can be accessed by other programs within IDEM or the public by request to the Secondary Data Coordinator.

The OWQ recently secured funding through CWA Supplemental 106 (also called "Monitoring Initiative Funds") to develop an online tool to help improve the data quality documentation that External Data

Framework participants provide with their data submittals. This tool will facilitate the design of water quality monitoring projects and the development of associated quality assurance project plans (QAPP) by participants in the External Data Framework. The content needed for this technical assistance was developed with CWA Supplemental 106 funds in 2013. In addition to the development of technical assistance content, the contractor for the 2013 project provided a matrix to help IDEM choose the best platforms and software to use in delivering content to participants in a cost-effective way. IDEM has determined that this content will be best delivered online through an interactive interface that will benefit both OWQ and External Data Framework participants.

With the proposed system, External Data Framework participants will be able to:

- Fill out OWQ's QAPP template online through a self-paced, guided process through a series of online forms
- Access learning and other support materials in a variety of formats (video, downloadable documents, links to outside sources, etc.), tailored to their unique needs for a given section of the QAPP
- Upload additional materials if needed to append to their QAPP
- Print their completed QAPP and/or deliver it to an OWQ employee to facilitate review of data they submit through the External Data Framework.

Benefits for OWQ's internal External Data Framework processes include:

- The ability to deliver a large variety of technical assistance, tailored to individual user needs in a very streamlined way.
- The ability to check on the status of any QAPP in the system and to access the QAPP live on their computers to provide direct, real-time support to specific users when needed.
- The ability to offer highly targeted technical, yet streamlined, assistance to individual users via a "Help" section that will allow OWQ staff to embed responses to their questions within the sections of the QAPP to which they pertain.

GOAL 3: DEVELOP AND CONDUCT A STRATEGIC OUTREACH AND EDUCATION PROGRAM

There is a need to provide outreach and education to citizens of the state to raise awareness of nonpoint source pollution issues. Many citizens still do not have the basic knowledge or understanding of nonpoint source pollution, living in a watershed, or behaviors that lead to water quality impairments. Without this understanding, they are less likely to change their behavior or support nonpoint source pollution reduction efforts. There is opportunity to work with partners on unified messaging regarding nonpoint source pollution. IDEM realizes that any nonpoint source pollution messaging campaign undertaken by the agency should be consistent with partners across the state.

In the past, IDEM's Nonpoint Source Pollution Program refreshed its website to include updated information as a means to educate citizens on nonpoint source pollution; provide grantees with information and guidance to successfully complete their nonpoint source pollution grant projects; share information about nonpoint source pollution grant projects and their successes; and communicate with stakeholders and partners on nonpoint source pollution efforts. IDEM has also continued to provide technical and/or financial support to education/outreach and training initiatives such as the Indiana Watershed Leadership Academy (IWLA) sponsored by Purdue University, the ICP's Training and Certification Program, and citizen monitoring training through Hoosier Riverwatch and the Indiana Clean Lakes Program. IDEM nonpoint source pollution staff continues to engage interested groups and communities, through direct contact, conference attendance, involvement in statewide and regional committees, and webinar and other training opportunities. A full accounting of progress made this year toward the objectives of Goal 3 in the State Nonpoint Source Pollution Management Plan can be found in Appendix A.

Watershed Specialists

The Watershed Specialists work on watershed-based efforts throughout the state, providing financial, organizational, and technical assistance to local watershed groups, while also continuing to serve as grant Project Managers. Key accomplishments for FFY 2018 are:

- Assisted approximately 67 active and developing watershed projects.
- Participated in the planning and conducting of the 2018 IASWCD Annual Conference, including moderating several sessions. Planning has begun for the 2019 IASWCD Conference.
- Assisted Purdue University with the Indiana Watershed Leadership Academy by meeting the participants and explaining the Watershed Specialists' role and attending their graduation to evaluate the class projects presented that day.
- Worked with others in the Watershed Assessment and Planning Branch to develop watershed characterization studies and WQ-10(a) targeted monitoring sites.
- Continue to work with the IDNR Lake Michigan Coastal Program, Nonpoint Source Pollution Coordinator to gain interim approval on the final outstanding element of the LMCP's Coastal Nonpoint Source Pollution Management Plan, including creating a proposal that would help to move the program forward on its final measure.
- Continued to participate in the ICP's Pathway to Water Quality advisory committee to improve this Indiana State Fair exhibit that reaches tens of thousands of Hoosiers each year. Also staffed the exhibit during the State Fair.

- Provided extensive support to the committee, led by IDEM, that is dedicated to creating the Domestic Action Plan for Indiana under Annex 4 of the Great Lakes Water Quality Agreement.
- Coordinated actions between the watershed characterization/TMDL project staff and the watershed group.
- Provided input on National Fish and Wildlife Foundation applications to the Sustain Our Great Lakes program.

Indiana Watershed Leadership Academy

IDEM is continuing to partner with Purdue University to conduct the Indiana Watershed Leadership Academy (IWLA) to meet the needs of watershed coordinators, agency staff, and others who want to become more effective watershed leaders. Leading the development of a scientifically-sound watershed management plan that actively involves, engages, and is supported by the community requires people who have broad skills, and know how to employ diverse tools and strategies related to watershed management.

In the past 13 years, 361 people have participated in the Academy through which they have learned skills in organization and communication, watershed technology, geographic information systems, policy, watershed science, and leadership. Thirty-six participants attended the IWLA in 2018. Applications are currently being accepted for the 2019 IWLA class.

The IDEM Nonpoint Source Pollution Program participates in the IWLA in several ways. The IDEM Senior Project Manager is on the steering committee for the Academy. In 2018, the steering committee met once to discuss the success and future of the Academy. Staff from the Nonpoint Source Pollution Program reviewed student assignments and provided feedback. Nonpoint Source Pollution staff also attended one face-to-face session as a group to introduce IDEM's Nonpoint Source Pollution Program (particularly the Watershed Specialists) to, and network with, potential new contacts. Watershed Specialists and the Senior Project Manager attended graduation and facilitated a small group activity to discuss how to make Academy projects useful to other watershed leaders in the state. In FFY 2018, IDEM forwarded a \$319 proposal made by the IWLA to U.S. EPA for funding consideration.

Indiana Conservation Partnership Training and Certification Program

Since September 2009, IDEM has participated with other members of the ICP in developing a Training and Certification Program (TCP) to meet staff training and certification needs across the partnership. The ICP TCP operates as a volunteer planning team. In FFY 2018, the ICP TCP held the following trainings:

- March 2018 – Herbaceous Plant ID Webinar
- June 2018 – Weed ID Workshops
- August 2018 – Pollinators Training

A partnership-wide survey was conducted in April 2011 to determine training needs across the ICP. This original survey was last updated and redistributed in FFY 2017. These periodic surveys will continue to guide the ICP's Training and Certification Program.

GOAL 4: IMPROVE INDIANA’S WATER QUALITY, INCLUDING SURFACE AND GROUND WATER, BY REDUCING NONPOINT SOURCE POLLUTANTS SUCH AS NUTRIENTS, SEDIMENT, AND BACTERIA; RESTORING AQUATIC HABITATS; AND ESTABLISHING FLOW REGIMES THAT MIMIC NATURAL CONDITIONS

The heart of Indiana’s Nonpoint Source Pollution Program is its effort to restore waterbodies impaired by nonpoint source pollution. A primary focus of IDEM’s Nonpoint Source Pollution Program is on-the-ground work to reduce nonpoint source pollution and improve water quality. The Watershed Planning and Restoration Section (WPRS), which houses the Nonpoint Source Pollution Program, administers two federal pass-through grant programs aimed at improving water quality in the state: CWA §319(h) and §205(j). Funding from these grants is predominantly used for the development and implementation of comprehensive WMPs that guide efforts to restore water quality on waterways impaired for nonpoint source pollution. This has resulted in measurable improvements, especially in terms of stakeholder involvement and estimated pollutant load reductions (see Table 4 on page 44). The WPRS also administers the TMDL program and the 303(d) Vision, and efforts are underway to revisit and integrate both the Nonpoint Source and TMDL program priorities. More information about the §319 and §205(j) grant programs and the TMDL program may be found on IDEM’s website. A full accounting of progress made in FFY 2018 toward the objectives of Goal 4 in the *State Nonpoint Source Pollution Management Plan* can be found in Appendix A.

Section 319 Grant Program

The §319 Grant Program is a major resource for reducing nonpoint source pollution in Indiana. In FFY 2019 Indiana anticipates receiving \$3,608,000 in §319 funds that will be used for Nonpoint Source Pollution Program support (technical staff and administration) and nonpoint source pollution projects. As a result of our non-federal partnerships discussed under Goal 1, the Maintenance of Effort (MOE) level requirement under §319(h)(9) has been met this year.

Federal §319 grant funds require a 40% non-federal match. Match for Indiana’s nonpoint source pollution projects is provided by the project sponsor and its partners. Match for IDEM’s staffing and program support activities is provided by the Indiana State Revolving Fund Loan Programs administered by the Indiana Finance Authority. The State Revolving Fund Loan Programs provide low-interest loans, funded by federal capitalization grants, to Indiana communities for projects that improve wastewater and drinking water infrastructure, including nonpoint source pollution projects that are tied to a wastewater loan. The federal funds loaned by the state and subsequently repaid by the borrower to the state are considered state funds. These funds are “recycled” to provide loans for other projects, and can be used as match for the Nonpoint Source Pollution Program. To date, all of the State Revolving Fund projects used for Nonpoint Source Pollution Program match involve extending sewers to areas with failing and aging septic systems. Removing these septic systems eliminates nonpoint source pollutants including pathogens and nutrients. Since extending sewers is considered a point source activity, only the homeowners’ cost to decommission the septic tank and hook up to the lateral is documented as match.

Section 319 Funding Priorities

U.S. EPA recently placed an even stronger emphasis on using §319 funds to restore nonpoint source pollution impaired waters through implementation of watershed-based (i.e., watershed management) plans. States must use at least 50% of their annual appropriation of §319 funds (called watershed project funds) to implement WMPs in watersheds containing one or more impaired waters. States may

use a limited amount of these funds to protect identified unimpaired/high quality waters if doing so is identified as a priority in the updated *State Nonpoint Source Pollution Management Plan*. Protecting sensitive, vulnerable, and high quality waters of the state is Goal 5 of Indiana's updated *State Nonpoint Source Pollution Management Plan*. The other 50% (or less) of the total appropriation may be used for other activities that support the goals of the Nonpoint Source Pollution Management Program including education, watershed planning, and program support.

Each year, IDEM solicits applications for projects that will reduce nonpoint source pollution in Indiana's rivers, streams, and lakes and meet the state's Nonpoint Source Pollution Program goals. In an effort to more efficiently meet our goals and focus \$319 funds on restoration activities that will make measurable improvements in water quality and protect water quality designated uses (recreation, aquatic life, and public water supply), IDEM established the following four priorities for FFY 2018 funds. Projects focusing on these priorities through planning and implementation activities are considered a priority for funding:

- A. Develop a WMP or implement an IDEM-approved WMP that will reduce nutrient loads within the following 8-digit HUC watersheds (prioritized in *Indiana's State Nutrient Reduction Strategy*). See the [Nonpoint Source Pollution Priority Watersheds \(FFY 2018\) map](#) for these HUC8 Priorities.
 - 1. Upper Wabash (05120101)
 - 2. Middle Wabash-Deer (05120105)
 - 3. Middle Wabash-Little Vermillion (05120108)
 - 4. Middle Wabash Busseron (05120111)
 - 5. Lower Wabash (05120113)
 - 6. Upper White (05120201)
 - 7. Lower White (05120202)
 - 8. Maumee River (04100003, 04100004, 04100005, 04100007)
- B. Develop a WMP or implement an IDEM-approved WMP that includes a 10-digit HUC watershed with a surface water drinking water intake and waters identified in Category 4A and 5A of the Draft 2016 [§303\(d\) List of Impaired Waterbodies](#). This priority is derived from Goal 5, Objective 5.2 of the *Indiana State Nonpoint Source Management Plan*. See the [Nonpoint Source Pollution Priority Watersheds \(FFY 2018\) map](#) for the Drinking Water Priority watersheds.
- C. Develop a WMP or implement an IDEM-approved WMP that includes a 10-digit HUC watershed that impacts an outstanding state resource waters and/or waters with endangered, threatened, or rare species. This priority is derived from Goal 5, Objective 5.4 of the *Indiana State Nonpoint Source Management Plan*. See the [Nonpoint Source Pollution Priority Watersheds \(FFY 2018\) map](#) for the Protection Watersheds.
- D. Implement a WMP that meets the [IDEM 2009 Watershed Management Plan Checklist](#).

Section 319 Grant Projects

Grant applications are submitted each year by project sponsors, reviewed by a committee of WPRS staff, and selected for funding based on the Nonpoint Source Pollution Program's priorities and the quality of the proposal and project. Projects are administered through grant agreements that spell out the tasks, schedule, and budget for the project. Projects are normally two to three years long and work to reduce nonpoint source pollution and improve water quality in the watershed through: development of watershed management plans that meet IDEM's WMP Checklist (and U.S. EPA's required 9 Elements); implementation of approved WMPs via a cost-share program to implement BMPs in critical areas that address the water quality concerns outlined in the WMP; and education and outreach designed to bring about behavioral changes and encourage BMP implementation. IDEM Project

Managers or Watershed Specialists work closely with the project sponsors to help ensure that the project runs smoothly and the tasks of the grant agreement are fulfilled. Site visits are conducted at least quarterly to touch base with the project, provide guidance and technical assistance as needed, tour the watersheds and see the BMP installations, and work with the grantee on any issues that arise to ensure a successful project close-out.

All eight projects funded in FFY 2018 address one or more of the Nonpoint Source Pollution Program priorities. These projects will be developing or implementing WMPs in watersheds with impaired waterbodies. Currently, there are 43 open or pending §319 projects, of which 37 are implementing watershed management plans and installing BMPs in critical areas of the watershed. Table 2 (page 37) lists some of these BMPs. These implementation projects are doing “on-the-ground” work in their watersheds that leads to nonpoint source pollutant load reductions (as shown in Table 3, page 38), and improved water quality. A list of all §319 projects open or pending during this fiscal year is located in Appendix B. A map showing the watersheds throughout Indiana where water quality improvement projects (both §205(j) and §319, planning and implementation) are currently underway, ready to begin, or recently completed (2013-2018) is located in Appendix C.

Project information for all §319 projects is entered and maintained in U.S. EPA’s Grant Reporting and Tracking System (GRTS) database. State Revolving Fund or other projects used as match for the Nonpoint Source Pollution Program are also entered. GRTS enables U.S. EPA and states to demonstrate the accomplishments achieved with the use of §319(h) grant funds. The data is also used by U.S. EPA to respond to inquiries received from Congressional committees, the White House, and various constituent groups. Project information in GRTS includes the project schedule, budget, description, type of BMPs implemented, location of BMPs, estimated pollutant load reductions, and progress reports. Final reports and deliverables for all projects are also entered into GRTS. The public may view this information on the GRTS Home Page. Section 319 projects that closed this fiscal year are summarized in Appendix D, along with a description of compliance with the Programmatic §319 Grant Conditions.

The Nonpoint Source Pollution Program is continually working to update and improve guidance for grantees to help them as they work towards implementing their nonpoint source pollution grant project. Most information needed can be found on the IDEM web site; much of it in the [Nonpoint Source Pollution Grants Compendium](#), which is comprised of all the guidance, instructions and requirements for §319/205(j) grantees.

Project Highlights

Two grant projects that were completed in FFY 2018 year are being highlighted here as examples of successful nonpoint source pollution projects working in different regions of the state to improve water quality through watershed planning, implementation of BMPs, and education/outreach. The information below was taken primarily from the projects’ final reports and watershed management plans.

West Fork Whitewater River Implementation

The West Fork of the Whitewater River Watershed refers to an area containing three HUC 10 watersheds— Martindale Creek (0508000301), Greens Fork (0508000302), and Nolands Fork (0508000303). From west to east, these HUC10 watersheds span from the southeastern part of Henry County to central Wayne County. From north to south, they span from their headwaters in southern Randolph County, to small portions of northeast Fayette County and northwest Union County. The watershed covers approximately 412 square miles and lies within the 1,329 square miles of the Whitewater River Watershed. Land use in the watershed consists of 69% cultivated crops, 11% of hay/pasture, 10% of forested land, 7% developed land, and 3% other land uses. Cities within the

watershed include Cambridge City, Centerville, East Germantown, Economy, Fountain City, Greens Fork, Hagerstown, Losantville, Lynn, Milton, and Mount Auburn.

The Wayne County SWCD sponsored this 42-month project with the goal to develop, promote, and implement a cost-share program to install BMPs such as conservation tillage, forage and biomass planting, livestock exclusion, riparian buffers, and others that address the water quality concerns outlined in the West Fork Whitewater Watershed Management Plan. BMPs were implemented only in critical areas as described in the West Fork Whitewater WMP. The SWCD conducted a volunteer monitoring program to collect trend data in the West Fork and Middle Fork Whitewater watersheds using Hoosier Riverwatch methods monthly from April to October throughout the duration of the project. The SWCD also conducted an education and outreach program including: a storm drain labeling program within the West Fork Whitewater watershed, public meetings to update stakeholders on the West Fork watershed project, press releases about the project to local media, workshops or field days, newsletters, Middle Fork Reservoir clean-ups, West Fork watershed clean-ups, and brochures.

Accomplishments

All goals were successfully reached. Noteworthy accomplishments included the development, promotion, and implementation of the cost-share program; the implementation of a storm drain labeling and septic system campaign; and the promotion of BMPs and water quality protection through adult and youth education and outreach.

The details of the \$130,000 cost-share program were developed by the Watershed Coordinator and accepted by IDEM in the second quarter of the grant contract. During the BMP implementation, 23 landowners participated in the cost-share program. Numerous BMPs were implemented including vegetative, land management, and structural BMPs: 28,503 square feet of heavy use protection areas; 12,205 feet of fencing to exclude cattle from streams or to improve livestock distribution; 9 watering facilities to help improve livestock distribution; 1,730 feet of livestock pipeline; nutrient management plans created for 524 acres; 178 acres of forage and biomass plantings; 948 acres of cover crops; 1.5 acres of riparian forest buffer; and 18 conservation plans were written. Total load reductions from the project are estimated to be:

Sediment	3,523 tons/yr.
Nitrogen	7,951 lbs. /yr.
Phosphorus	3,984 lbs. /yr.

Twenty-six volunteers helped to label 310 storm drains within watershed project boundaries. A septic system brochure was distributed to landowners and a septic system maintenance newsletter was created and posted on the Wayne County SWCD website. In total, 117 people attended the four field days; 1,679 people attended the education events; and 3,885 people were informed about water quality protection throughout this grant.

Funding and Partnerships

Partnerships in the project included the Wayne County NRCS, Wayne County Farm Services Agency, Indiana American Water, Ball Brothers Foundation, Wayne County Foundation, Wayne County Highway Department, Earlham College, New Paris Lake Landfill, and Hagerstown High School. Donations that helped fund these projects were received through the Wayne County Foundation's Challenge Match Grant.

Future Activity

The Wayne County SWCD plans to continue to implement the West Fork Whitewater Watershed WMP. The SWCD is continuing to apply for funding for best management practices as well as continuing educational activities and water quality and environmental improvement projects. The SWCD recognizes that there is still a high amount of interest in receiving cost-share in the area. In 2018, 27 applicants for this 319 project were turned away because there were not enough funds to provide cost-share for all projects.

The Wayne County SWCD also looks to collaborate with other SWCDs in the region on water quality improvement grants. An application to fund a collaborative grant-seeking and educational partnership was recently submitted to a local foundation by the Grant County SWCD. If the grant is awarded, it will help support this regional SWCD cooperative in seeking Clean Water Indiana (CWI), DNR, and IDEM funds in the future. Encouragingly, CWI is particularly supportive of multi-county SWCDs grant applications.

The Wayne County SWCD continues to encourage and educate the public to improve water quality. They continue to hold the Tox-A-Way day event as well as free e-waste recycling days. They also continue to hold workshops and field days, as well as much more.

More Information

For more information on the West Fork Whitewater River Watershed Management Plan and Implementation project, please visit the Wayne County SWCD website at <http://waynecountyswcd.org>.

Central Muscatatuck Watershed Implementation

The Central Muscatatuck Watershed (CMW) project is a regional initiative in southeastern Indiana working to improve water quality. The watershed is made up of 164,196.87 acres in 5 counties: Jackson, Jefferson, Jennings, Ripley, and Scott. The Muscatatuck River winds its way from the hills of Jefferson County formed by the junction of Little Creek, Big Creek, and Big Graham Creek. Along with other major tributaries it flows southwest and west through the Muscatatuck Bottoms and into the East Fork of the White River. The CMW falls within the larger Muscatatuck River watershed (8-digit HUC 05120207). The 10-digit HUCs for the CMW include 0512020701 (100,637.62 acres) and 0512020706 (63,559.25 acres).

Agriculture accounts for approximately sixty percent (60%) of the land use in the watershed. Other types of land uses include forest, ponds, pasture, recreation, residential, and some (a minor portion) urban development. Agriculture in the watershed is typified by row cropping, tobacco production, and pasture (cattle, hog, goat, and horse). The potential exists for nutrient and sediment impact loads to surface waters, stream bank erosion, and degradation of aquatic habitat by way of livestock access to streams, lack of fencing, traditional tillage practices, and contamination from poorly functioning septic systems.

Many of the small towns within the watershed are not connected to a sewer and may have failing or a lack of septic systems.

In 2005 the Central Muscatatuck 319 grant committee, which consisted of the Friends of the Muscatatuck River Society Board, Historic Hoosier Hills RC&D, and the Jefferson County SWCD, conducted several meetings to discuss the project and come to agreement on a grant proposal. The Jefferson County SWCD initially indicated that *E. coli* source tracking (genetically tracking the source of *E. coli*) was a major priority for the success of the project. Through the process of writing the grant proposal, it was decided that *E. coli* tracking was too cost-prohibitive for the management planning phase and that focusing on gaining a clearer overall picture of water quality would be more beneficial.

Accomplishments

The details of the \$242,431.42 cost-share program was accepted by IDEM in October 2014. During the BMP implementation, 20 landowners participated in the cost-share program. Numerous BMPs, including vegetative, land management, and structural BMPs, were implemented: 68,558 square feet of heavy use protection areas; 7,835 feet of fencing to exclude cattle from streams or to improve livestock distribution; 12 watering facilities to help improve livestock distribution; 4,341 feet of livestock pipeline; 3,585 acres of cover crops; and 70 acres of pasture/hayland was planted. Total load reductions from the project are estimated to be:

Sediment	16,279 tons/yr.
Nitrogen	30,587 lbs. /yr.
Phosphorus	15,287 lbs./yr.

Funding and Partnerships

The Central Muscatatuck project utilized \$449,914.00 in §319 funds and \$299,942.00 in match was provided. Partnerships in the project included Historic Hoosier Hills, Friends of Muscatatuck River Society, Indiana State Department of Agriculture, Purdue Cooperation Extension, Jefferson, Jackson, Scott, Ripley and Jennings County SWCDs, Hardy Lake State Recreation Area, Natural Resources Conservation Service, Farm Bureau, Farm Service Agency, Historic Hoosier Hills Regional No-Till Committee, and Big Oaks National Wildlife Refuge.

Future Activity

The Central Muscatatuck Watershed Steering Committee decided that more education and best management practices are needed to improve the watershed area. The steering committee, along with Historic Hoosier Hills, agreed to seek additional funding through IDEM's §319 grant process. The group submitted a grant proposal, which was funded. The grant began December 15, 2017, and will continue until 2021.

More Information

For more information on the Central Muscatatuck Watershed Management Plan and Implementation project, please visit the Historic Hoosier Hills Resource website at <http://www.hhhills.org/Projects.html>.

Best Management Practices and Pollutant Load Reductions

Best management practices are structural, nonstructural, and managerial techniques that are recognized to be the most effective and practical means to control nonpoint source pollutants that are compatible with the productive use of the resource to which they are applied. BMPs are used in both urban and agricultural areas. A project that is implementing a WMP administers a cost-share program to help landowners implement needed BMPs in critical areas to reach the overall WMP goals. If the planning process was successful, landowners will be aware of the water quality problems in the watershed and the ways to reduce the nonpoint source pollution and will be ready to participate in the cost-share program. When applicable and appropriate, IDEM encourages grantees to consider BMPs that will provide positive impacts to meet multiple objectives. For example, in the waters of the Coastal Zone, restoration activities undertaken with §319 funds will also be in accordance with the CZARA §6217(g) measures. IDEM is currently modeling this "bigger bang for the buck" concept through its TMDL/Nonpoint Source Pollution Program. TMDLs are being written on the TMDL-WMP template that allows watershed groups to incorporate TMDL data into their WMPs and streamline the watershed planning process. In addition, IDEM is encouraging a systems approach to implementing BMPs. During a

project's initial application and/or cost-share program development, IDEM encourages the project to work with landowners and prioritize cost-share recipients that implement a conservation cropping system (such as a nutrient management conservation system or a conservation cropping system for soil health and water quality) rather than a single BMP.

This federal fiscal year watershed groups continued working to implement WMPs and utilized approximately \$1,026,599 to install BMPs in critical areas of Indiana's watersheds. Table 2 lists some of the BMPs implemented this federal fiscal year compared with the last two fiscal years based on data from IDEM's Access database. The number of acres of cover crops has continued to remain successful since FFY 2015, due in part to IDEM changing the cover crop policy to reduce the five year maintenance commitment to one year, as well as increased focus on this BMP within the agricultural community. This fiscal year the heavy use area protection was almost doubled compared to last year.

Table 2 BMPs Implemented in Indiana FFY 2016 – 2018

BMP	Approximate Number FFY 2016	Approximate Number FFY 2017	Approximate Number FFY 2018
Cover Crop (acres)	29,175	27,575	26,427
Fence (feet)	41,006	13,968	16,389
Grassed Waterway (feet)	0	2,573	1,256
Heavy Use Area Protection (sq. feet)	53,140	43,918	80,384
Nutrient Management (acres)	515	4,108	6,232
Pasture and Hay Planting (acres)	465	21	253
Residue Management, No-Till (acres)	2,472	515	0
Tree and Shrub Establishment (acres)	352	17	27
Two Stage Ditch (feet)	6,968	2,868	0
Watering Facility (each)	13	9	20
Rain Barrels (each)	11	5	0
Rain Gardens (sq. feet)	20,305	392	467
Septic System Removal (each)*	250	173	**

* Septic systems eliminated as a result of State Revolving Fund project(s) used as match for the Nonpoint Source Pollution Program.

** Septic system removals totals for FFY 2018 will be reported after October 1, 2018.

Additional BMPs implemented this year include: access road, animal trails and walkways, conservation cover, critical area planting, forest stand improvement, grade stabilization structure, grassed swales, native plants, riparian herbaceous cover, roof runoff structure, subsurface drain, and stream crossings. The number of BMPs implemented in a given year varies depending on many factors including the weather, the focus of current nonpoint source pollution projects' implementation efforts based on their watershed management plan, the change in focus and availability of other federal and state program grant funds, and changes in BMP promotion and recommendations in the agricultural community.

One important indicator of Nonpoint Source Pollution Program and project success is the quantity of pollutants that were prevented from entering waterbodies as a result of BMPs implemented. Pollutant load reductions, in most cases, are estimated using the Region 5 Load Estimation Model. This simple Excel model provides a general estimate of pollutant reductions (sediment, phosphorus, and nitrogen) at the source level from structural and agricultural field practices and urban BMPs. Reductions achieved through practices related to nutrients (not tied to sediment), bacteriological, and pesticide management

are not captured through this estimation method; another model or method for estimating these load reductions must be used. In addition to the Region 5 Model, the Spreadsheet Tool for the Estimation of Pollutant Load (STEPL) model also is available and is used by some groups in Indiana. This model uses simple algorithms to calculate nutrient and sediment loads from different land uses and the load reductions that would result from the implementation of various BMPs. For each watershed, the annual nutrient loading is calculated based on the runoff volume and the pollutant concentrations in the runoff water based on factors such as the land use distribution and management practices.

Estimated load reduction data for each BMP implemented as a result of the project (including BMPs not funded with §319 funds and used as match) is submitted by the project sponsor with their invoice and entered by the IDEM project manager into an Access database at IDEM and the U.S. EPA GRTS database. Estimated load reductions vary depending on factors including the type of BMP implemented, the number of acres treated, land use, soil type, and in some cases, rainfall amounts. Urban BMPs generally provide lower estimated load reductions than agricultural BMPs.

Reported estimated load reductions for BMPs implemented this fiscal year compared with the last two years are shown in Table 3. All load reduction data were obtained from IDEM's Access database. Estimated load reductions for nitrogen continue to improve each year as more projects are implementing WMPs and putting more BMPs on the ground. Total phosphorus reductions increased this fiscal year, which was a result of a couple of large nutrient management practices focused on phosphorus reduction.

Table 3 Reported Estimated Load Reductions for BMPs Implemented FFY 2016-2018

Nonpoint Source Pollutant	Estimated Reduction FFY 2016	Estimated Reduction FFY 2017	Estimated Reduction FFY 2018
Sediment (tons/yr.)	94,151	85,707	113,882
Phosphorus (lbs. /yr.)	118,781	82,510	120,566
Nitrogen (lbs. /yr.)	220,453	258,435	313,520
Biological Oxygen Demand (lbs. /yr.)	8,788	49	491
Chemical Oxygen Demand (lbs. /yr.)	701	282	165
Ammonia (lbs. /yr.)*	1,878	0	0
Suspended Solids (lbs. /yr.)	30,151	995	0
Pathogens/Coliform (CFU)*	7.79E+09	0	0
Lead (lbs. /yr.)	1	0	0
Zinc (lbs. /yr.)	1	0	0
Copper (lbs. /yr.)	0	0	0
TKN (lbs. / yr.)	0	2	0

*Estimated using a modified STEPL model and the OH Septic Load Reduction Spreadsheet

Cumulative total estimated load reductions reported in Indiana from §319 projects since FFY 2000 are shown in Table 4.

Table 4 Cumulative Total Estimated Load Reductions in Indiana

Nonpoint Source Pollutant	Total Estimated Reduction
Sediment (tons/yr.)	864,136
Phosphorus (lbs. /yr.)	1,276,763
Nitrogen (lbs. /yr.)	2,385,617

BMPs and Load Reductions in FFY 2018 by Major Basins

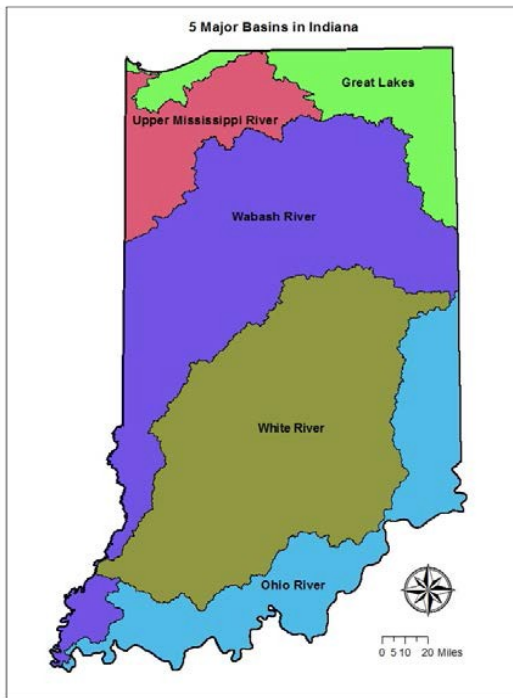


Figure 3. Major Indiana Basins

In an effort to show the work that is being done in the different basins of the state and help target future resources, the load reductions achieved and the types of BMPs implemented have been broken down and shown within the following five major basins: Great Lakes, Upper Mississippi River, Wabash River, White River, and Ohio River (Figure 3).

Almost 82 percent of Indiana (including the Wabash River and the White River basins) drains to the Ohio River and ultimately to the Mississippi River and Gulf of Mexico.

Approximately 10 percent of Indiana drains to the Great Lakes (Lake Michigan and Lake Erie), and 8 percent drains (through Illinois) to the Upper Mississippi River.

The charts on the following pages show the number of best management practices installed and the load reductions achieved in FFY 2018 in each of the five basins.

The BMPs implemented and load reductions achieved in the Great Lakes basin are the result of two projects working there this fiscal year. As seen from the charts below (Figure 4), many different BMPs implemented in this basin effectively reduced nonpoint runoff, especially sediment.

Any nutrient reduction to the Great Lakes is important because excess nutrients can result in algal blooms. Because of the recent problems resulting from large algal blooms in Lake Erie, phosphorus reduction to the lake has become a focus at the state and national level. Many efforts are currently underway to target harmful algal blooms and reduce the amount of phosphorus entering Lake Erie. To that end, U.S. EPA Region 5 awarded \$336,391 of FFY 2014 \$319 funds to IDEM to initiate a Phosphorus Risk Reduction Pilot Project in the Upper Maumee River watershed in Indiana. IDEM awarded the money to the Allen County Soil and Water Conservation District to implement the project, which is modeled after a portion of Ohio EPA's FFY 2011 GLRI project "Lake Erie Nutrient Reduction Demonstration Watershed," based on a modified Ohio NRCS Phosphorus Index scoring system. The project started in early 2016 and will work for three years to reduce phosphorus runoff from an estimated 3,500 acres of agricultural land within five 12-digit HUC watersheds in the Upper Maumee watershed. Best management practices are expected to include filter strips, riparian forested buffer, pasture/hay planting, constructed wetland, grassed waterway, nutrient management, residue management and drainage water management.

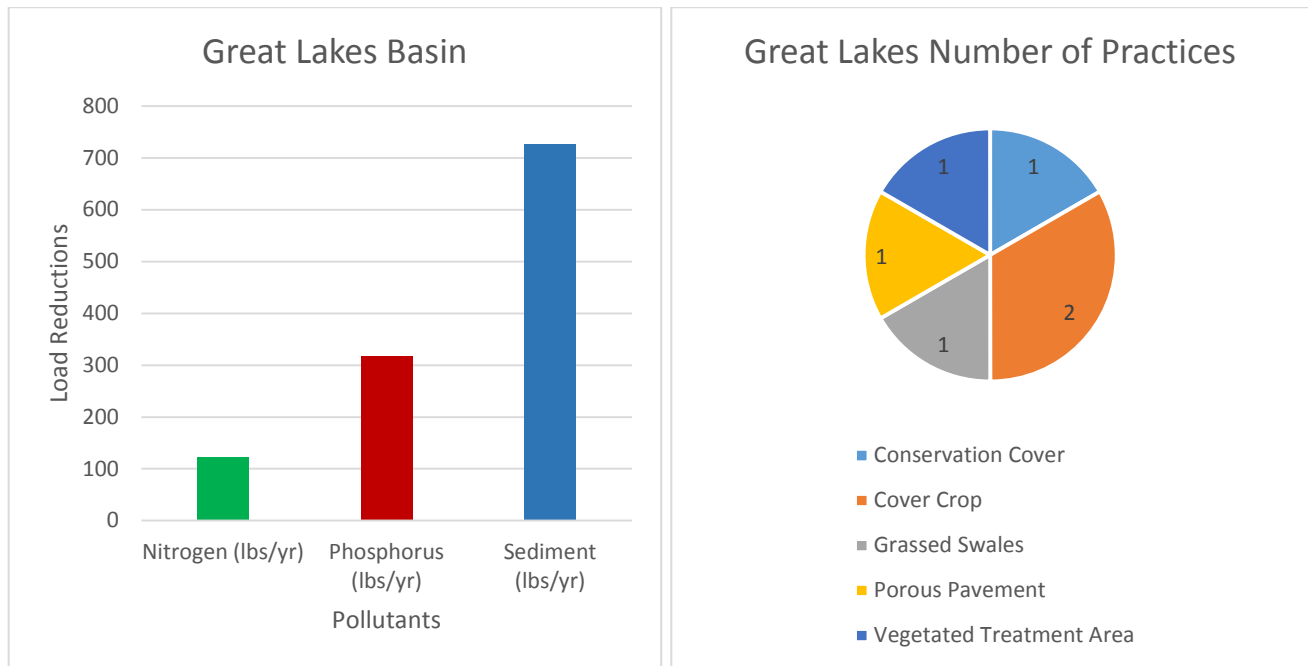


Figure 4. BMPs Implemented in the Great Lakes Basin

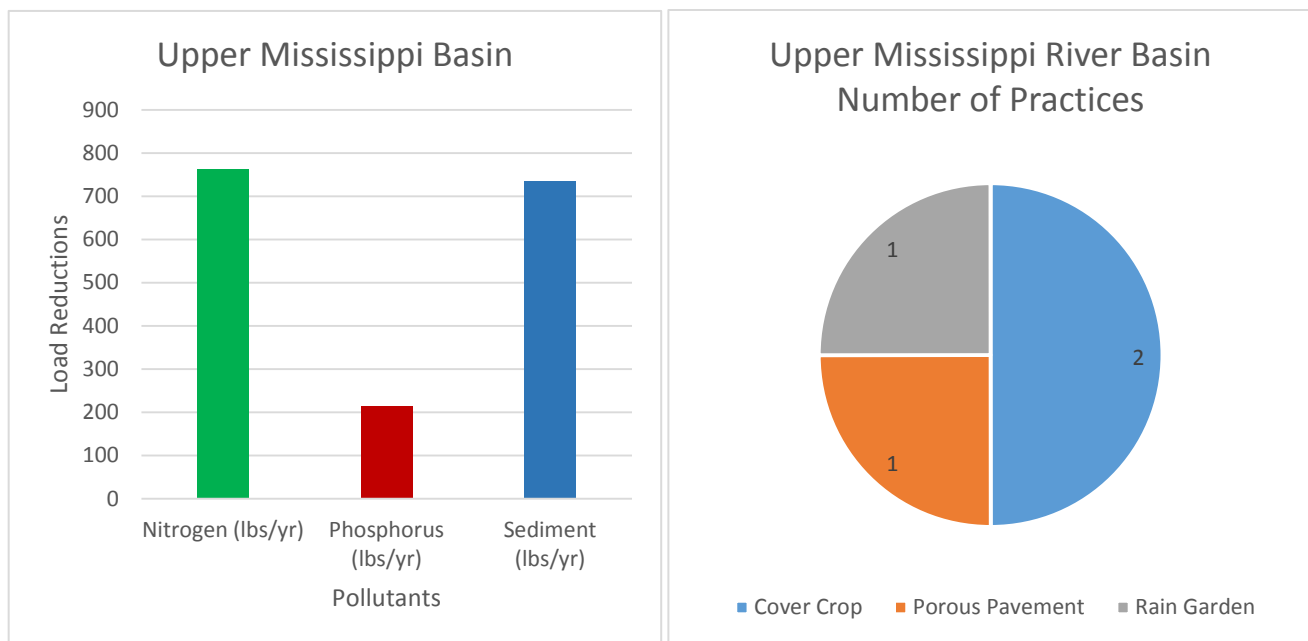


Figure 5. BMPs Implemented in the Upper Mississippi Basin

As part of the Mississippi River watershed, Indiana is involved in the Mississippi River/Gulf of Mexico Hypoxia Task Force and the strategy for eliminating the annual dead zone (or hypoxia zone) in the Gulf of Mexico. Nutrient loads from the Mississippi/Atchafalaya River Basin are contributing to eutrophication and harmful algal blooms in the Gulf. The development of *Indiana's State Nutrient Reduction Strategy* will benefit not only our state's local water resources, but ultimately the Gulf of Mexico and the Great Lakes.

Seven projects working in the Wabash River Basin this year reduced nutrient loads to the river as shown below. Although the number of BMPs implemented this year are less than last year, the estimated load reductions achieved for nitrogen nearly doubled (Figure 6).

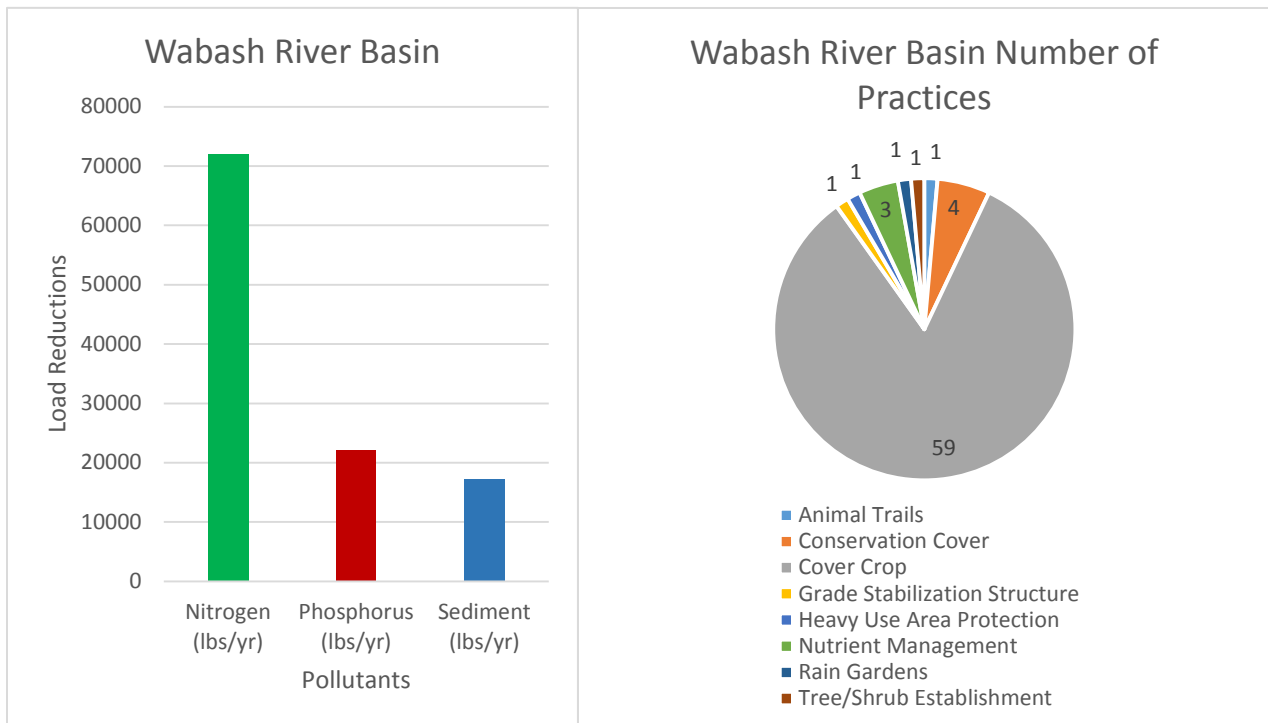


Figure 6. BMPs Implemented in the Wabash River Basin

Seven projects in the White River Basin worked to reduce nitrogen, phosphorus, and sediment in the watershed. Most of the load reductions in this basin were due to the implementation of cover crops. The number of BMPs implemented and the estimated load reductions are similar to last year (Figure 7).

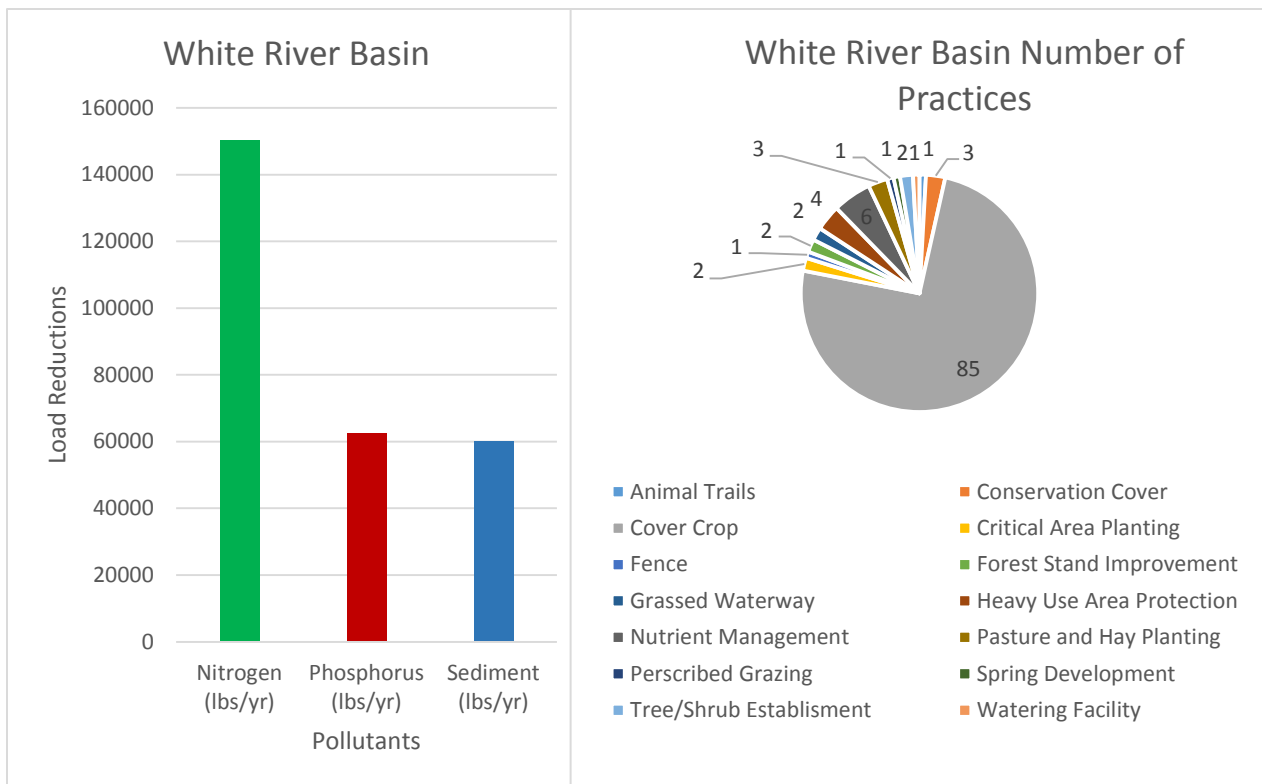


Figure 7. BMPs Implemented in the White River Basin

Six projects worked in the Ohio River Basin to reduce nitrogen, phosphorus, and sediment. These reductions came primarily from implementation of cover crops and livestock-related BMPs.

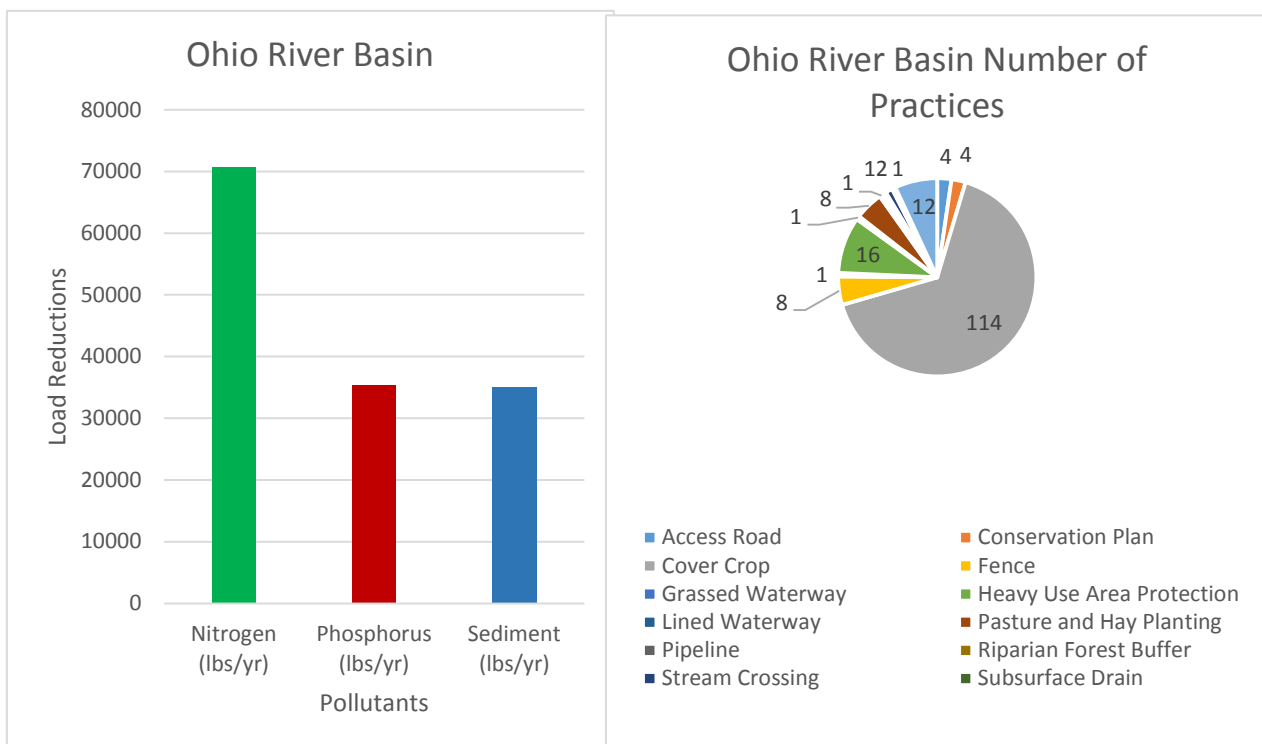


Figure 8. BMPs Implemented in the Ohio River Basin

Section 319 projects in Indiana continue to work to reduce nutrients, sediment, and other nonpoint source pollutant runoff into waters of the state, and ultimately into our larger national fresh and salt water resources. Each BMP installed by each project in each basin adds up to nonpoint source pollution reduction and improved water quality. The efforts of these projects help create nonpoint source pollution success stories in Indiana each year. Following is the Nonpoint Source Pollution Success Story for this year.

Nonpoint Source Success Story

Section 319 Nonpoint Source Pollution Success Stories are stories about nonpoint source pollution-impaired waterbodies where restoration efforts have led to documented water quality improvements. Many stories are about waterbodies that have achieved water quality standards for one or more pollutants and/or designated uses after having been previously included on the State's 303(d) List of Impaired Waters.

In 2018, IDEM submitted Buck Creek-Busseron Creek and Unnamed Tributary of South Fork Wildcat Creek as success stories under WQ-10(a).

Implementing Best Management Practices Corrects Nutrient Impairments in the Buck Creek-Busseron Creek Watershed

Waterbody Improved

Increased nutrient levels from nonpoint sources such as livestock, agricultural activities, and septic systems caused the Buck Creek- Busseron Creek watershed to be impaired for aquatic life use. As a result, the Indiana Department of Environmental Management (IDEM) listed nearly 27 stream miles in the watershed on its Clean Water Act (CWA) Section 303(d) List of Impaired Waters for nutrients in 2002 and for impaired biotic communities in 2010. Project partners implemented a variety of best management practices (BMPs) in the watershed between 2003 and 2015. Sampling in 2016 revealed that applicable nutrient benchmarks and biologic community water quality standards are now being met. As a result, Indiana is proposing to remove three waterbodies in the Buck Creek-Busseron Creek watershed from its 2018 CWA section 303(d) impaired waters list.

Problem

The Buck Creek-Busseron Creek watershed is in Sullivan County in southwest Indiana (Figure 9). The watershed contains 2 miles of Busseron Creek, along with 37 stream miles of two major tributaries of Busseron Creek: Robbins Branch (10.3 stream miles) and Buck Creek (27 stream miles). The watershed is mixed land use, with 54 percent in cultivated crops, 21 percent in forest, and 7 percent in pasture/hay with some minimal mining activity. Though the watershed is mostly rural, it also contains most of the city of Sullivan, whose wastewater treatment plant has several combined sewer overflow outlets that empty into Buck Creek.

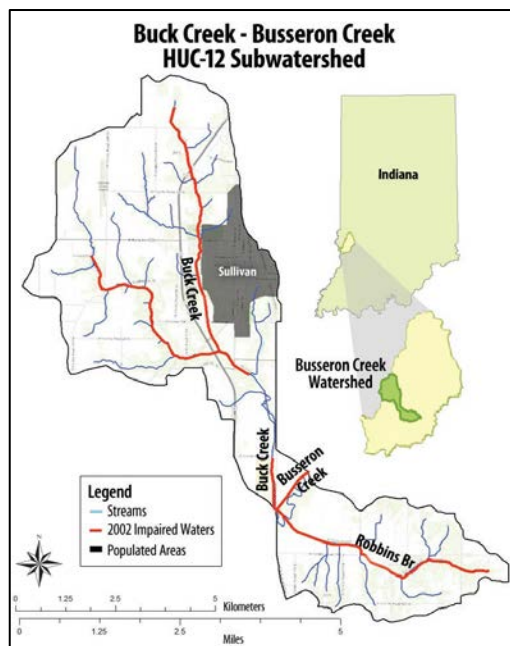


Figure 9. The Buck Creek-Busseron Creek watershed is in southwest Indiana. Buck Creek and Robbins Branch are being delisted in 2018.

Indiana's nutrient assessment methodology states that a waterbody is classified as impaired if two or more of the following conditions are met on the same date (assuming a minimum of three sampling events): (1) dissolved oxygen is less than 4 milligrams per liter (mg/L) or is consistently in the range of 4–5 mg/L; (2) nitrogen exceeds 10 mg/L; (3) total phosphorus exceeds 0.3 mg/L; (4) pH exceeds 9 or is consistently in the range of 8.7–9; and/or (5) algae is deemed “excessive” based on field observations by IDEM scientists.

Nutrient parameters were sampled in the watershed in 1999 and 2000. This sampling revealed an elevated level of phosphorus (1.1 mg/L and 0.47 mg/L) in both Buck Creek and Robbins Branch. In addition to elevated phosphorus levels, dissolved oxygen was found to be low in Buck Creek and Robbins Branch (4.79 and 4.7 mg/L, respectively); however, it was not low enough to prompt an official impairment listing.

Further monitoring in 2006 revealed that aquatic community scores were not achieving target benchmarks. For a waterbody to be considered supporting aquatic life use, the index of biotic integrity (IBI) score must be at least 36. The 2006 sampling revealed an IBI score of 16 in Buck Creek. On the basis of these data, Busseron Creek-Robbins Creek (INB11GA_00) was listed on Indiana's 2002 CWA section 303(d) list of impaired waters for nutrients, and on Indiana's 2010 CWA section 303(d) list for impaired biotic communities. Since being listed as impaired in 2002, Busseron Creek-Robbins Creek has been resegmented multiple times for assessment purposes. As of 2012, it was classified as three separate segments: INB11F9_T1001, INB11F9_T1003, and INB11F9_T1004.

Project Highlights

IDEM used CWA section 319 grant funding to support the creation of a watershed management plan (WMP) in 2010. A variety of state and federal programs were used to install BMPs including 20 acres of access control; 64.1 acres of conservation cover; 3,556 acres conservation tillage; 972 acres of cover crops; 2 acres of critical area plantings; 600 feet of fence; 34 acres of filter strip; 13.4 acres of grassed waterway; 10,725 acres of nutrient management; 3,687 acres of pest management; 100 feet of streambank protection; 13 water and sediment control basins; one waste management system; and 82.7 acres of waste recycling.

Results

IDEM reassessed the water quality in the Buck Creek-Busseron Creek watershed in 2016. Results of that sampling indicate that nutrients are no longer a water quality threat (Table 1) and that the biologic community has recovered (IBI score on Buck Creek was a 36). Due to these results, IDEM will propose to remove three segments (INB11F9_T1001, INB11F9_T1003, and INB11F9_T1004) from the State's 303(d) list in 2018. All three segments are being removed from the impaired waters list for nutrients, and the two Buck Creek segments (INB11F9_T1003 and INB11F9_T1004) are also being removed for impaired biotic communities (see Figure 9).

Partners and Funding

Federal, state and local partners supported restoration efforts. The USDA provided \$968,585 through the Conservation Reserve Program, Environmental Quality Incentives Program and the Wildlife Habitat Incentives Program. CWA §319 funding was provided by IDEM (\$668,932.50) and ISDA (\$430,250). Manchester University provided \$733,333 in local match funding. Miami County SWCD provided \$5,436.65 in cost share. Indiana Department of Natural Resources' Lake and River Enhancement program provided \$22,102.50. Lastly, ISDA and Miami County SWCD provided \$106,500 in state Clean Water Indiana funding.

Buck Creek-Busseron Creek was proposed for delisting in Indiana's 2018 Integrated Report.

Unnamed Tributary to South Fork Wildcat Creek

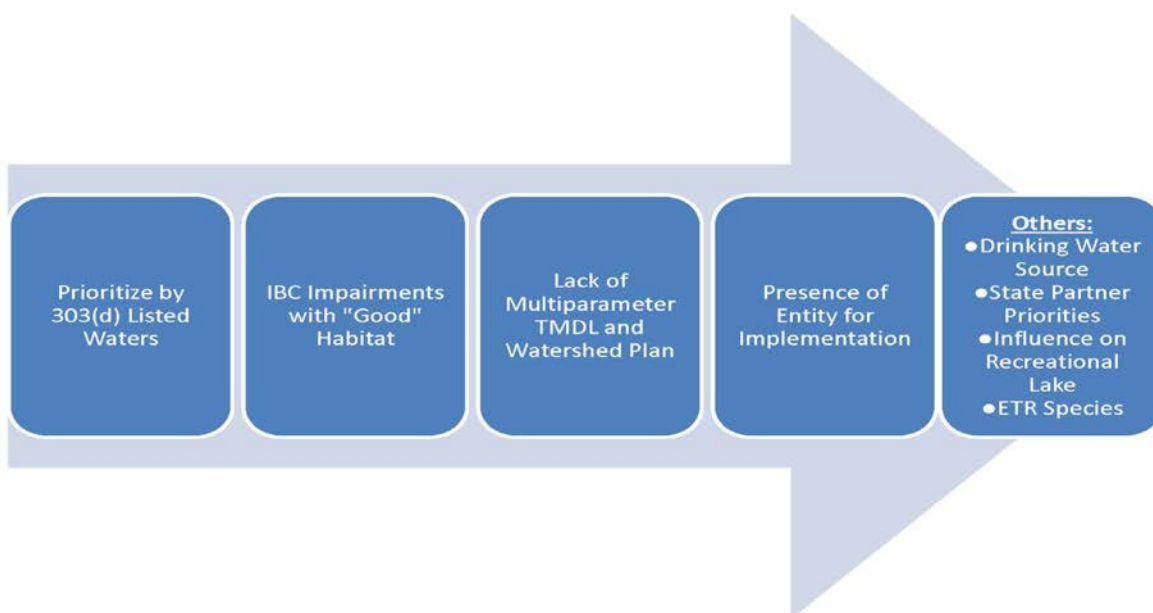
Indiana also submitted a success story for an unnamed tributary to the South Fork Wildcat Creek in 2018. This story has not been finalized as of the writing of this report, but will appear in next year's Annual Report.

§205(j) Grant Program

The §205(j) Grant Program is dedicated to water quality management planning. Funds are used to determine the nature, extent, and causes of point and nonpoint source pollution problems and to develop plans to resolve these problems. There is no match required for these funds. In FFY 2017 IDEM received \$323,000 in funds. These funds were used for two watershed management plan development projects: Lower Patoka and Big Blue River. This year IDEM anticipates receiving \$391,000 FFY 2018 funds. These funds will be used for one watershed management plan development project with Jasper County SWCD on the Lower Kankakee River, a project with ORSANCO for the installation and operation of two continuous monitors on the Ohio River, and a project to install and operate a streamflow gage on the St. Mary's River at Pleasant Mills. A list of all 205(j) projects open or pending during this fiscal year is in Appendix E of this report.

Integrating the Nonpoint Source Pollution Program with the 303(d) Vision

In FFY 2014, U.S. EPA announced that it was working with states to develop and implement a new framework to achieve the goals of CWA §303(d). This framework is known as the Long-Term Vision for Assessment, Restoration, and Protection under the Clean Water Act §303(d) Program. In FFY 2015, IDEM Nonpoint Source Pollution Program worked with the TMDL program to identify priorities according to the IDEM's TMDL Program Priority Framework that would complement Nonpoint Source Pollution Program efforts. In FFY 2018, IDEM TMDL continued to implement the vision by monitoring for watershed characterization in priority 10-digit watersheds, working with local watershed groups to raise awareness of water quality issues, and completing TMDL reports for submission to U.S. EPA.



The Nonpoint Source Pollution Program continues to work with groups following TMDL completion to write 9-Element watershed management plans that can be implemented using §319 funds (examples include Deep River, Southern Whitewater, Mississinewa, South Fork Blue River, and Salt Creek). The TMDL program is currently working to revise its TMDL template so that the TMDL documents can be directly implemented with §319 funding.

GOAL 5: PROTECT SENSITIVE, VULNERABLE, AND HIGH QUALITY WATERS OF THE STATE SO THAT THEY MAY CONTINUE TO MEET THEIR DESIGNATED USES

Prior to FFY 2013, IDEM's Nonpoint Source Pollution Program emphasized the restoration of impaired waters, while the issue of protecting sensitive, threatened, or high-quality waters was largely unrecognized. For the purposes of this goal, the Nonpoint Source Pollution Program considers "sensitive, vulnerable and high quality waters" to include water quality assessment Category 1 waters, watersheds including karst landscapes, outstanding state resource waters (OSRWs), outstanding national resource waters (ONRWs), drinking water source waters, cold/coolwater/salmonid waters, and waterbodies harboring endangered species.

The Watershed Planning and Restoration Section (WPRS) first attempted to address protection issues under this *State Nonpoint Source Pollution Management Plan* starting in FFY 2014. In November 2013, IDEM embarked on a watershed characterization study in the Southern Whitewater watershed (HUCs 0508000205, 0508000306, 0508000308), an OSRW. The purpose of this study was to provide the data to complete a TMDL (for *E. coli*, total nitrogen, total phosphorus, and sediment) that would then be passed on to the local watershed group (a §319 planning grant recipient) for additional public involvement and BMP decision-making for a portion of the watershed. This TMDL includes two sections of river with Indiana endangered species (the variegate darter, *Etheostoma variatum*, Family: Percidae and the cobblestone tiger beetle, *Cicindela marginipennis*, Family: Cicindelidae, which is also globally imperiled). These species are sensitive to sedimentation, a primary result of nonpoint source pollution. A 9-Element watershed management plan was approved. Potential priority implementation areas (PPIAs) and associated BMP recommendations were identified as having a high likely degree of effectiveness to achieve the *E. coli*, nutrients, and sediment load reductions allocated to sources in each subwatershed. These subwatershed rankings are based on the results of the Recovery Potential Tool (RPT), while the implementation activities are recommended based on potential point and nonpoint sources of pollution in the subwatershed.

The South Fork Blue River TMDL and WMP project is another example of nonpoint source pollution work being done on vulnerable landscapes. This watershed is in the karst region of southern Indiana – an area rife with sinkholes, springs, caves, and disappearing streams. In this type of geologic system, ground water and surface water are often directly connected, allowing pollutants to bypass the filtering capacity of the soil. The TMDL project and WMP for this watershed is complete and approved by U.S. EPA. The TMDL and WMP include protection elements for the South Fork Blue River which empties into the Blue River, the last-remaining Indiana refuge of the state-endangered eastern hellbender (*Cryptobranchus alleganiensis*).

Big Pine Creek is also an example of a group that is actively pursuing protection strategies. The Big Pine WMP outlines several priority areas for habitat protection in order to maintain high quality, and regionally rare, aquatic communities through additional conservation and restoration in uplands and floodplains near the stream. Though §319 funds have thus far not been used to institute protection measures, the group has nevertheless purchased land for protection and is pursuing funds to install additional vegetative measures that will protect the stream.

In 2018, the IDEM Nonpoint Source Pollution Program encouraged its applicants to work in these sensitive, vulnerable, and high quality waters by making these waters a priority of the solicitation. Ninety-eight watersheds were defined under this priority. Nine applications addressed these watersheds and five were proposed to U.S. EPA for funding under the §319(h) grant program.

Adaptive Management

The State Nonpoint Source Pollution Management Plan states that IDEM will work with U.S. EPA to correct any deficiencies that might become apparent in the program through the Nonpoint Source Pollution Annual Report. Since the completion of the *State Nonpoint Source Pollution Management Plan*, several errors, omissions, or the need for simple changes have come to light (Table 10). Revisions to Reportable Activities for 2018 (updates in bold) outlines changes (in bold) that should be made to two objectives of the State Nonpoint Source Pollution Management Plan, with justification.

Table 5. Revisions to Reportable Activities for 2018 (updates in bold)

Obj. #	MM	Objective	FFY Start	FFY End	Rationale for Change
3.3	c	Work with partners on consistent messaging surrounding sediment and nutrients.	2015	2018	This work will be a long-term coordination versus a one-time event, as originally conceived. IDEM would like to propose work on this topic will continue through 2018.
4.10	a	Investigate and adopt a standard method to estimate <i>E. coli</i> reductions	2014	2018	Indiana continues to struggle with this objective and has asked for assistance from Region V. The last word on this has been that Region V is working to update the STEP-L and Region V models to include <i>E. coli</i> . Until further assistance is received from Region V, Indiana will likely not be able to move forward on this issue.

Appendix A

Reportable Activities for 2018*

*Items grouped together by color, denoting sub-objectives of the same parent objective

Reportable Activities for 2018

Goal 1: Utilize partnerships to leverage resources available for NPS management.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
1.1		Assist Indiana Department of Natural Resources, Lake Michigan Coastal Program to obtain full approval of all outstanding measures on the LMCP CNPC plan. Progress: The Indiana Lake Michigan Coastal Program has received interim approval for all measures except the measure requiring inspection of existing OSDS. 319 staff continue to communicate with the LMCP to track progress and discuss future plans, and provided feedback on all subcontracts, site visits, and quarterly progress reports. Northwest watershed specialist attended the opening/kickoff Steering Committee meeting on 7/16/18.	2014	2018	ongoing	Ongoing – some progress
1.1	a.	Nonpoint source pollution Northwest watershed specialist will assist the LMCP with on-site disposal systems measures as needed/requested. Progress: Northwest watershed specialist attended Septic System Coordination Work Group meetings on 9/21/17, 7/15/18. The Septic work group continues to plan, host, and hold outreach events including rebranding, signage, and realtor trainings.	2014	2018	ongoing	Ongoing – significant progress
1.2	c.	Complete ongoing TMDLs and WMPs in the Coastal Zone: <i>Salt Creek</i> . Progress: Reported as completed in FFY 2016.	2010	2018	ongoing	Complete
1.3	b.	Restore and protect water quality in critical areas of coastal WMPs: Deep River. Progress: The project completed its Watershed Management Plan and the plan was approved by IDEM and U.S. EPA on November 30th, 2016. Since then, the group has developed a cost share program which was approved by IDEM on January 30th, 2017. As of the	2015	2017	ongoing	Ongoing – some progress

Goal 1: Utilize partnerships to leverage resources available for NPS management.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		last quarterly progress report (5/2/17), 2 applications have been received but no conservation practices have been installed. The Little Calumet-Galien Collaborative (of which the Deep River group is a part) has submitted a Notice of Intent for FFY 2018 and has been meeting regularly to discuss restoration projects in the area.				
1.4		Support the Conservation Reserve Enhancement Program (CREP), Mississippi River Basin Initiative (MRBI), Great Lakes Restoration Initiative (GLRI), Lake and River Enhancement (LARE), Clean Water Indiana (CWI), and other Indiana Conservation Partnership (ICP) and statewide initiatives as they become available by:	2014	2018	ongoing	Ongoing – significant progress
1.4	a.	Forwarding solicitation or information as it becomes available. Progress: The watershed specialists share funding opportunities with groups and stakeholders in their regions as notices become available. Examples of funding that have been passed on include Regional Conservation Partnership Program from the Natural Resources Conservation Service and LARE watershed land treatment and diagnostic studies funding.	2014	2018	ongoing	Ongoing – significant progress
1.4	b.	Participating in ICP planning meetings to determine priorities for funding/initiatives that align with WMP critical areas, water quality, and/or TMDL priority areas (every other month). Progress: IDEM management attended ICP leadership meetings on 9/12/17, 11/14/17, 1/16/18, 3/13/18 and 5/1/18. IDEM management is also highly involved in the development of the <i>State Nutrient Reduction Strategy</i>. The Northeast watershed specialist is heavily involved in developing the <i>Annex 4 Domestic Action Plan</i>. Annex 4/DAP meetings/conference calls held 8/30/17, 9/25/17, 10/25/17, 11/3/17, 12/18/17, 1/23/18, 2/8/18, 3/19/18, 4/13/18, 5/9/18, 5/10/18, and 6/14/18. NE WSS involved in choosing proposals for Sustain Our Great Lakes (National Fish and Wildlife Foundation) funding.	2014	2018	ongoing	Ongoing – significant progress
1.4	c.	By promoting the programs through the watershed specialists and work with watershed groups to identify/recommend projects that would fit well under the priorities for each funding source. Progress: The WSS continue to promote the programs whenever possible. The Mill Creek – Blue River project is one example of a watershed group that has applied for, and received, LARE funding for the 2016-2017 and 2017-2018 funding years.	2014	2018	ongoing	Ongoing – significant progress
1.4	d.	By including them in relevant TMDLs as methods for implementation. Progress:	2014	2018	ongoing	Ongoing –

Goal 1: Utilize partnerships to leverage resources available for NPS management.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		Included in section 8 of the Lower Salt Creek draft TMDL.				significant progress
1.5		Utilize the ICP as an advisory group for priority state NPS policies and updates by participating in bimonthly leadership meetings. Progress: IDEM management attended ICP leadership meetings on 9/12/17, 11/14/17, 1/16/18, 3/13/18, 5/1/18, and 6/7/18.	2014	2018	ongoing	Ongoing – significant progress
1.6		Continue to provide technical assistance to local watershed groups through the WSS or project manager as documented through quarterly site visit reports and the §319 Annual Report. Progress: The watershed specialists provided technical assistance to at least 67 distinct groups in FFY 2018. Site visit reports are on-file with related project documents.	2014	2018	ongoing	Ongoing – significant progress
1.7		Utilize the TMDL-WMP template for 2014 TMDLs and beyond. Progress: The TMDL template is in the process of being updated to reduce redundancies and to align it more closely with U.S. EPA's 9 Elements of a Watershed-Based Plan. The TMDLs currently being written are using a revised version of the 2009 template.	2014	2018	ongoing	Ongoing – some progress
1.8		Continue to partner with the IN-USDA-NRCS on the National Water Quality Initiative (NWQI) for as long as the Initiative remains a national priority. Progress: Monitoring for NWQI continues on School Branch in Eagle Creek watershed, with monitoring at multiple levels by various partnership agencies (IUPUI - edge-of-field monitoring at Starkey property; IDEM - fixed station monitoring above and below Starkey; and §319 funded USGS - super gage for watershed monitoring). Partners continue to meet regularly to discuss current results and the future of the project. IDEM NPS continues to fund USGS through a §319 joint funding agreement (EDS# A305-6-5) to monitor School Branch using a super gage, 2 additional streamflow gages, 4 monitoring wells, a tile drain synoptic study, and additional monitoring and laboratory analysis. IDEM is also providing §319 funding for implementation and education/outreach in Beargrass Creek, an NWQI watershed.	2014	2018	ongoing	Ongoing – significant progress
1.8	b.	Coordinate with NRCS on at least an annual basis to share in the decision-making on next steps for the Initiative (annually). Progress: IDEM attended meetings and/or conference calls with NRCS on 10/11/17, 11/6/17, 2/16/18, 4/13/18 and 4/20/18.	2014	2018	annually	Complete for 2018
1.9		Support implementation of the State Nutrient Reduction Strategy once approved.	2014	2018	ongoing	Complete

Goal 1: Utilize partnerships to leverage resources available for NPS management.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		Progress: A revised version of the strategy was submitted to U.S. EPA in November 2016. At that time, it was decided that <i>Indiana's State Nutrient Reduction Strategy</i> would be updated every two years to reflect continuous improvement and adaptive management. In 2017, IDEM NPS aligned solicitation priorities with the priorities outlined in the SNRS, which continued into 2018.				for 2018
1.10		Dedicate an average of \$100,000 in 319 funds to the Coastal Zone (Little Calumet-Galien watershed, HUC 04040001) annually until all of the remaining conditions of the LMCP CNPCP are met. Progress: The NPS program's coastal allocation commitment continues to be met by the Deep River project into 2018. This project will move the group toward approval on its last remaining management measure, OSDS.	2014	until full approval	ongoing	Ongoing – significant progress
1.11		Coordinate with CWSRF to link loan applicants and local watershed groups. Progress: It has come to the attention of IDEM nonpoint source pollution that the Clean Water State Revolving Fund loan rates for most communities are at basement interest rates and that the addition of a NPS project will not lower the rate further, providing little incentive for communities to add a nonpoint source pollution project to their Clean Water State Revolving Fund loan.	2014	2018	ongoing	ongoing – no additional progress to date
1.11	a.	IDEM NPS will cross-reference the monthly SRF project status report with active 319 projects and/or other known watershed efforts to identify watershed opportunities and meet quarterly (March, June, September, December) with CWSRF Loan Program to communicate those that may benefit from SRF funding. Progress: IDEM continues to keep tabs on communities that have applied for CWSRF funding. However, given that the addition of a NPS project will not lower interest rates further, no communities have been approached this federal fiscal year to add a NPS project to their loan.	2014	2018	ongoing	ongoing – no additional progress to date
1.11	b.	Annually, the NPS program will notify the CWSRF and DWSRF program of the 319 projects that are approved for funding, upon notice from EPA. Progress: The NPS program notified the SRF programs of the 319 projects that were approved for funding for FFY 2018. As of the writing of this report, IDEM has not yet received the grant award, including approved projects, from U.S. EPA for 2018. IDEM NPS will communicate awarded projects to CWSRF and DWSRF upon receipt of the FFY 2018 grant award.	2014	2018	annually	Complete for 2018
1.11	c.	Where there are potential projects, the appropriate NPS staff participates with the	2014	2018	ongoing	ongoing –

Goal 1: Utilize partnerships to leverage resources available for NPS management.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		CWSRF staff in the community orientation or planning meeting. A fact sheet describing the potential NPS project(s) opportunity is included in the SRF packet to the community, and the NPS staff promotes the potential project(s), provides contacts for technical assistance, and provides information on other funding sources active in the watershed (such as NRCS, Clean Water Indiana, 319, 205(j) etc.) Progress: The Clean Water State Revolving Fund loan program always promotes NPS projects to its applicants. Since no potential projects were identified this fiscal year, no additional contacts/fact sheets were provided to CWSRF applicants.				no additional progress to date
1.11	d.	The CWSRF program communicates to the NPS program those NPS project BMPs funded through CWSRF that were identified in the approved 319 WMPs. NPS staff ensures that this information is input into GRTS. This information is included in the Annual 319 Report to U.S. EPA. Progress: The majority of CWSRF NPS BMPs are septic system removals. This information is uploaded into GRTS on a regular basis. FFY 2017, SRF replaced 173 units in 1 loan. Numbers for the remainder of FY 2018 septic removals will not be available until October 2018.	2016	2018	annually	Complete for 2017
1.12		Work with partners to model, assess, and prioritize critical watersheds in the state. Progress: Reported as complete in FFY 2015.	2015	2018	ongoing	complete
1.13		Utilize IDEM WSS to assist partners with NPS planning and implementation activities. Progress: As a whole, the IDEM WSS provided watershed planning and implementation assistance to at least 67 distinct groups in FFY 2018. The NE WSS has been heavily involved in the creation of the Domestic Action Plan for the Western Lake Erie basin and sampling on School Branch for the National Water Quality Initiative.	2014	2018	ongoing	Ongoing – significant progress

Goal 2: Monitor and assess Indiana waters for NPS impairments and improvements.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
2.1		Require the use of the <i>Environmental Monitoring for Watershed Groups</i> handbook for 319 grantees. Progress: The Handbook is provided to all grantees as guidance during QAPP development and core parameters must be included in the monitoring program. All grant agreements executed in FFY 2016 included the core parameters	2014	2018	annually	Complete for 2018

Goal 2: Monitor and assess Indiana waters for NPS impairments and improvements.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		outlined in the Handbook.				
2.3		Import 319 grantee data meeting appropriate data quality criteria into NPS-AIMS or the Hoosier Riverwatch Database to be uploaded into STORET on a routine basis. Progress: A total of 109,028 records have been imported into WQX from NPS projects, with 17,483 of them having been entered in 2018.	2014	2018	ongoing	Ongoing – significant progress
2.4		Invite the participation of local project leaders when conducting 305(b) CWA assessments on baseline monitoring data. Progress: Assessment of the Salt Creek baseline characterization occurred on 5/24-5/25/17, Though local project leaders were unable to attend the official assessment meetings. TMDL staff and the WSS conducted the final public comment meeting 7/9/18.	2014	2018	ongoing	Complete for 2018
2.5		Evaluate results of the monitoring program and make adaptive management decisions on an annual basis. Progress: Monthly sampling for the Lower East Fork White River watershed TMDL and WMP began on 11/13/17 and will end in October 2018. Monthly sampling for the Laughery Creek watershed TMDL and WMP will begin in November 2018 and end in October 2019.	2014	2018	annual	Complete for 2018
2.7		Continue to fund the Clean Lakes Program (volunteer and professional) data collection for use in Clean Water Act 305(b) and 314 assessments and 303(d) listings. Progress: Indiana University continues to sample for the Clean Lakes Program under a FFY 2014 \$319 grant. This grant will fund the program through the 2018 sampling season. In the 2018 sampling season, 80 lakes were sampled for assessment.	2014	2018	ongoing	Ongoing – annual progress made
2.8		Direct IDEM resources to perform baseline characterization monitoring of at least one watershed annually to support TMDL and watershed planning efforts. Progress: Monthly sampling for the Lower East Fork White River watershed TMDL and WMP began on 11/13/17 and will end in October 2018. Monthly sampling for the Laughery Creek watershed TMDL and WMP will begin in November 2018 and end in October 2019.	2013	2018	annually	Ongoing – significant progress

Goal 2: Monitor and assess Indiana waters for NPS impairments and improvements.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
2.9		Utilize IDEM resources to monitor waterbodies identified as targets of the National Water Quality Monitoring Initiative (NWQI) as described in the sampling design developed by IDEM and NRCS. Progress: IDEM continues to monitor the School Branch watershed of Eagle Creek through its fixed station monitoring program. IDEM has also contracted with USGS (using FFY 2016 \$319 funds) to bolster its discrete and continuous monitoring of School Branch. All of the data collected (including IDEM data) will be evaluated at regular intervals during the study.	2015	2018	annually	Complete for 2018
2.10	b.	Provide support for 20 Hoosier Riverwatch workshops (volunteer trainings) and maintain current loaner/teaching trunks. Progress: As of 9/30/18, the HRW Program has met its goal of scheduling at minimum 20 workshops each year. Seventeen out of twenty workshops have been held to-date, with two being cancelled due to a lack of registrants. Eight more workshops slated for this calendar year. Of these 25 workshops held, three were/will be an advanced <i>E. coli</i> training & online database training.	2014	2018	annually	Complete for 2017
2.10	c.	Provide support for maintenance and upgrades of the Hoosier Riverwatch water quality monitoring database and associated websites. Progress: Efforts continue to be successfully made in receiving feedback from users and, when needed, working with the contractor to tweak the coding and functionality of the online database. As time allows, staff are also working with contractor to tweak the administrative side of the database to make our own queries and fixes more efficient and timely.	2014	2018	ongoing	Ongoing – significant progress
2.11	c.	Accept, review and rank water quality data provided by external organizations and, if appropriate, using the data to make 305(b)/303(d) water quality assessment and listing decisions. Progress: The testing of datasets for inclusion into AIMS has been completed and the final testing of the updated ARUT is in progress, to be completed in September. Externally provided data will then be uploaded into the AIMS. The finalized ARUT will then be made available external data providers and can be submitted via the secondary data portal associated with the Hoosier Riverwatch/Secondary Data web site at http://www.hoosierriverwatch.com/portal/.	2014	2018	annually	Ongoing – significant progress
2.12	a.	Evaluate water quality data submitted through the EDF process, as well as grantee monitoring, to identify watersheds that should be surveyed for possible NPS water	2014	2018	annually	Ongoing – significant

Goal 2: Monitor and assess Indiana waters for NPS impairments and improvements.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		quality improvements. Progress: In FFY 2017, staff reviewed a data set provided by MCHD to determine the best methods for data submittal. These decisions have been made (see Objective 2.11c). Staff has entered the MCHD and USACE sites into AIMS and have received data from both parties on the customized templates provided to them. Review of these data sets are on hold pending some updates that are needed to the AIMS database into which they must be uploaded. These changes are anticipated to be complete by the third quarter of 2018 at which time the data will be uploaded into AIMS for quality assurance review and ranking.				progress
2.12	b.	Use additional resources (e.g., staff, funds, and technical support) to monitor water quality in watersheds where NPS restoration activities have occurred. The monitoring data will be compared to baseline information, if available, to gauge the efficacy of the work. Progress: Six watersheds where NPS restoration activities have occurred were sampled in 2018: West Branch Fish Creek (041000030401), Smith Ditch-Cedar Creek (041000030604), Peckhart Ditch-John Diehl Ditch (041000030702), King Lake-Little Cedar Creek (041000030705), and Dosch Ditch-Cedar Creek (041000030707).	2014	2018	annually	Complete for 2018
2.13		Continue the Ground water Monitoring Network (GWMN). Progress: Ground water monitoring continues at around 240 wells during the 2018 field season. Wells tested during the 2018 field season continue to be analyzed for geochemical parameters including: metals, anions/cations, nitrate, ammonia, alkalinity, Arsenic III, Arsenic V, and rust fungicides. Ultimately, this type of sampling can provide the information needed to characterize, causes, sources, and magnitude of NPS pollution in ground water.	2013	2018	ongoing	Ongoing – significant progress

Goal 3: Develop and conduct a strategic outreach and education program						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
3.1	d.	Publicize septic system care/repair/replacement water-quality success stories through multiple media applications. Progress: No major success stories have come to light in FFY 2018, therefore, no stories have been publicized.	2014	2018	ongoing	ongoing – no additional progress

Goal 3: Develop and conduct a strategic outreach and education program						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
						to date
3.1	e.	Support technical events (such as IEHA annual conference), to exchange information between government partners, watershed groups, and citizens. Progress: Two TMDL staff attended the EPA Region 5 TMDL training. One TMDL staff member attending a TMDL modeling workshop in June 2018. Two Nonpoint source pollution staff attended the EPA Region 5 GRTS training November 7-8, 2017. Several staff attended/presented at the 2018 IWRA conference. Several staff attended/participated in the 2018 Indiana Association of Soil and Water Conservation Districts Annual Conference held January 8-9, 2018. Three staff members attended/participated in the Indiana Lakes Management Society Conference March 21-23, 2018. Several staff attended EPA Region 5 ATTAINS Training December 5-7, 2017.	2014	2018	ongoing	Ongoing – some progress
3.1	f.	Assist in providing outreach on septic systems in the Lake Michigan Coastal Zone. Progress: IDEM awarded the LMCP a \$319 grant in FFY 2017 to assist them in developing methods and materials for septic system outreach that would assist them in meeting their final condition on the 6217 measures. The prep sheet for the LMCP grant has been completed and the grant project is expected to start on time. The Septic work group continues to plan, host, and hold outreach events including rebranding, signage, and realtor trainings.	2014	2018	ongoing	Ongoing – significant progress
3.1	f.iii	Promote the use of the Revolving Loan Fund for Septic upgrades and repairs. Progress: Watershed specialist promote the State Revolving Fund for these types of BMPs whenever possible.	2014	2018	annually	Complete for 2018
3.2	d.	Publicize hydromodification/stream restoration success stories through multiple media applications. Progress: No major success stories have come to light in FFY 2018, therefore, no stories have been publicized.	2014	2018	ongoing	Ongoing – no additional progress to date
3.2	e.	Continue outreach to the community of County Surveyors to become involved in water quality improvement through the IWLA, the Indiana Association of County Surveyors, local watershed groups, and county contacts. Progress: More and more county surveyors are becoming aware of the IWLA program. In 2018, no County Surveyors	2014	2018	ongoing	Ongoing – some progress

Goal 3: Develop and conduct a strategic outreach and education program						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		signed up to be a part of the IWLA.				
3.3	d.	Publicize success stories through multiple media applications. Progress: In 2018, IDEM submitted Buck Creek-Busseron Creek and Unnamed Tributary of South Fork Wildcat Creek as success stories under WQ-10(a).	2014	2018	ongoing	Ongoing – significant progress
3.3	e.	Work with other ICP organizations to strategize about outreach to absentee landowners. Progress:	2015	2018	ongoing	Ongoing – some progress
3.4		At least annually review print and electronic materials for updates and republish as needed. Progress: Webpages were updated and reorganized as needed throughout the year. Staff have begun internal meetings to discuss updates of other outreach materials.	2014	2018	annually	Complete for 2018
3.5		Continue to provide citizen monitoring training through Hoosier Riverwatch and the Clean Lakes Program. Progress: In 2018, HRW trained >180 water quality monitoring volunteers throughout Indiana (still waiting on the paperwork from one training workshop). The HRW Coordinator prepared drafts for three brief training videos to aid in keeping volunteers up-to-date with current HRW methods. Topics covered include temperature, turbidity and dissolved oxygen methods.	2014	2018	ongoing	Ongoing – significant progress
3.6	a.	Produce 5 “Success Stories” (EPA WQ-10 Strategic Measure) by 2017 and publicize widely within Indiana. Progress: Buck Creek-Busseron Creek and Unnamed Tributary of South Fork Wildcat Creek were submitted to U.S. EPA as Success Stories for Indiana. Buck Creek-Busseron Creek has been written up and posted to U.S. EPA’s website. The program is still awaiting notification as to whether or not the Unnamed Tributary to South Fork Wildcat Creek has been accepted by U.S. EPA.	2014	2017	N/A	Complete for 2018
3.6	b.	Publicize any awards given to watershed groups related to their water quality efforts in Indiana. Progress: No major success stories have come to light in FFY 2018, therefore, no stories have been publicized.	2014	2018	ongoing	Ongoing – some progress
3.7	a.	Utilize social media to provide up-to-the minute information to followers of IDEM’s social media outlets. Progress: Reduction in public information officer staff has thwarted this objective in FFY 2018. No NPS-specific posts have gone out in 2018.	2014	2018	ongoing	Ongoing – no additional progress

Goal 3: Develop and conduct a strategic outreach and education program						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
						to date
3.7	b.	Continue to participate in the Pathway to Water Quality at the Indiana State Fairgrounds. Progress: watershed specialist attended PWQ steering committee meetings on 9/13/17 and workdays on 8/1/17, 8/14/17, 9/13/17, 10/4/17, 11/1/17, 12/6/17, 1/10/18, 2/7/18, 3/7/18, 4/11/18, 5/2/18, 6/6/18, and 7/13/18. Several IDEM staff (both Nonpoint source pollution and non-Nonpoint source pollution) volunteered to work the Pathway during the State Fair.	2014	2018	ongoing	Ongoing – significant progress
3.8	b.	Initiate meetings with partners to discuss IDEM’s goal of strategic messaging for the state on hydromodification. Progress: IDEM continues to participate in the Silver Jackets’ Lowhead Dam subcommittee.	2014	2016	ongoing	Ongoing – some progress
3.9	a.	Continue to provide technical assistance to Purdue University’s Indiana Watershed Leadership Academy. Progress: The Senior Project Manager continues to be on the IWLA steering committee and provide technical assistance to the IWLA as needed. The Senior Project Manager attended a Steering Committee meeting on 7/24/18. All NPS staff attended the IWLA graduation ceremony in May 2018 and facilitated small group discussions on making IWLA projects relevant statewide.	2014	2018	ongoing	Ongoing – significant progress
3.9	b.	Continue to support the ICP’s Training and Certification Program on watershed related issues by sitting on the Technical Research Board and the advisory team. Progress: NPS staff continue to be on the advisory team for this group and participated in conference calls on 11/6/17, 12/5/17, 3/13/18, 5/14/18, and 7/16/18.	2014	2018	ongoing	Ongoing – some progress

Goal 4: Improve Indiana’s water quality, including surface and ground water, by reducing NPS pollutants such as nutrients, sediment, and bacteria; restoring aquatic habitats; and establishing flow regimes that mimic natural conditions						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
4.1	a.	Utilize the TMDL-WMP template for TMDLs sampled for and written in 2014 and beyond so that they are implementable using 319 funds. Progress: All TMDLs are written using the template. The Mississinewa River TMDL was approved by U.S. EPA on February 24, 2017. The Lower Salt Creek Watershed TMDL was submitted to U.S.	2014	2018	ongoing	Ongoing – significant progress

Goal 4: Improve Indiana's water quality, including surface and ground water, by reducing NPS pollutants such as nutrients, sediment, and bacteria; restoring aquatic habitats; and establishing flow regimes that mimic natural conditions						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		EPA on August 20, 2018 and is awaiting approval.				
4.1	c.	Link TMDLs with baseline water monitoring projects for §319 watershed management planning applications. Progress: In October 2018, IDEM will complete the watershed characterization (baseline study) of the Lower East Fork White River TMDL. Pike County SWCD group is the group that will be utilizing 319 funding to develop a WMP for this watershed with the use of IDEM's TMDL.	2014	2018	ongoing	Ongoing – significant progress
4.3		Promote integration of WMPs with local comprehensive plans. Progress: WSS continue to promote WMP and comprehensive plan integration. No plans were integrated this federal fiscal year.	2014	2018		Ongoing – no additional progress
4.4	c.	Develop database. Progress: The Watershed Assessment and Planning Branch has approved the funding for this database. NPS staff has discussed cost breakdowns with Technical staff and begun the process to develop the database.	2016	2018	ongoing	Ongoing – some progress
4.5		Use §319 funding to support implementation of WMPs that meet the U.S. EPA'S 9 Key Elements of a Watershed Plan (including staff support and outreach as well as the placement of BMPs in critical areas as identified in the WMPs). Progress: In 2017, thirty-four §319 projects were open exceeding \$8.5 million to implement WMPs or to create a WMP, then implement it. As of the writing of this report, Indiana's FFY 2018 §319 grant has not been awarded. The above reported projects are all funded through monies awarded prior to FFY 2018. Five implementation projects were chosen to receive FFY 2018 funding and were proposed to U.S. EPA, including Fourteen Mile Creek/Goose Creek-OH River Watershed improvement project, Plummer Creek implementation project II, Lower East Fork White WMP & implementation project, Big Creek implementation project, and Region of the Great Bend of the Wabash River implementation project.	2014	2018	ongoing	Ongoing – significant progress
4.6		Repair previously-installed BMPs with the caveats outlined in the program policy. Progress: No BMPs required repair during FFY 2018.	2014	2018	ongoing	Ongoing – no need for this FFY
4.7		Continue to leverage LARE and CWI funds to address erosion, sedimentation and nutrient input concerns as long as the General Assembly continues to approve	2014	2018	ongoing	Ongoing – significant

Goal 4: Improve Indiana's water quality, including surface and ground water, by reducing NPS pollutants such as nutrients, sediment, and bacteria; restoring aquatic habitats; and establishing flow regimes that mimic natural conditions

Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		appropriations. Progress: As the opportunity arises, LARE and CWI projects are used as match for nonpoint source pollution projects. The following watersheds with §319 staff contacts or funding history were awarded LARE funds for implementation in 2018: Mill Creek-Blue River (Washington Co), Cedar Creek (DeKalb Co), Deep River (Lake Co), Eel River (Wabash Co), Iroquois River and Carpenter Creek (Jasper Co), Mississinewa River (Delaware and Randolph Co), Spy Run Creek (Allen Co), Sugar Creek (Clinton Co), Trail Creek (LaPorte Co), Turtle Creek (Sullivan Co), and Upper Tippecanoe River (Kosciusko Co).				progress made
4.8		Develop guidance for the identification of critical areas. Progress: This guidance is complete.	2014	2014	one-time	complete
4.9		Show partial or total restoration in at least 5 12-digit watersheds (at least 5 SP12 and 5 WQ-10; watersheds identified may count for both measures) in the five-year cycle 2013-2017. Progress: IDEM has shown successful restoration in 5 waterbodies/watersheds since 2013: Jenkins Ditch, Emma Creek, Devils Backbone Indian Creek, Flowers Creek, Pendleton Branch-Indian Creek, and Buck Creek-Busseron Creek. This equates to 8 WQ-10(a) and 3 SP-12s. The number of SP-12s turned in to U.S. EPA has fallen short of the goal, despite the fact that IDEM has monitored water quality in twenty-two 12-digit watersheds with nonpoint source restoration having taken place since 2013. The main reasons for this is that 1) Indiana's 2002 list contains many large rivers where restoration will take decades; 2) many of the standards used in 2002 have been revised and impairments administratively removed; and 3) Indiana has gathered much more data since 2002, indicating nonpoint source problems on many more waters with local interest and restoration work has been focused on those additional waters. IDEM continues to raise concerns with U.S. EPA Region V on its ability to continue using 2002 as the baseline for the SP-12 measure.	2013	2017	ongoing	Ongoing – some progress
4.11		Geolocate all BMPs installed through the §319 grant program in order to enhance the BMP GIS layer located in the NPS program. Progress: BMPs are mapped upon receipt of the invoice and location information from the local project.	2014	2018	ongoing	Ongoing – significant progress
4.12		Solicit for proposals to use §319 funding to support implementation of WMPs that meet	2014	2018	annually	Complete

Goal 4: Improve Indiana's water quality, including surface and ground water, by reducing NPS pollutants such as nutrients, sediment, and bacteria; restoring aquatic habitats; and establishing flow regimes that mimic natural conditions						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
		the U.S. EPA'S 9 Key Elements of a Watershed Plan (includes staff support as well as BMPs). Progress: The FFY 2018 solicitation was published on March 15, 2017. Twenty notices of intent to apply were received on or before June 1, 2017. Full proposals were due September 1, 2017 and 17 applications were received and reviewed by Nonpoint source pollution staff. Eight proposals were forwarded to EPA for funding consideration, with an additional two planning proposals requested to be funded by CWA §205j monies.				for 2018
4.12	a.	Provide financial and technical support to install agricultural BMPs in critical areas identified in the plan. Progress: A list of the BMPs installed using §319 funding during FFY 2018 is available in Table 1 and on page 41-46 of this report.	2014	2018	annually	Complete for 2018
4.12	b.	Provide financial and technical support to install urban and/or residential BMPs in critical areas identified in the plan. Progress: A list of the BMPs installed using §319 funding during FFY 2018 is available in Table 1 and on pages 41-46 of this report.	2014	2018	annually	Complete for 2018
4.12	c.	Provide financial and technical support to install forestry BMPs in critical areas identified in the plan. Progress: A list of the BMPs installed using §319 funding during FFY 2018 is available in Table 1 and on pages 41-46 of this report.	2014	2018	annually	Complete for 2018
4.12	d.	Provide financial and technical support to install abandoned mine BMPs in critical areas identified in the plan. Progress: A list of the BMPs installed using §319 funding during FFY 2018 is available in Table 1 and on pages 41-46 of this report	2014	2018	annually	Complete for 2018
4.12	e.	Provide financial and technical support to install hydrological and aquatic habitat BMPs in critical areas identified in the plan. Progress: A list of the BMPs installed using §319 funding during FFY 2018 is available in Table 1 and on pages 41-45 of this report.	2014	2018	annually	Complete for 2018

Goal 5. Protect sensitive, vulnerable, and high quality waters of the state so that they may continue to meet their designated uses.						
Obj. #	MM	Objective	FFY Start	FFY End	Frequency	Complete
5.1		Encourage watershed planning activities in watersheds with Category 1 waters (including those waters identified in Table 15 and in subsequent Integrated Reports)	2015	2018	ongoing	Ongoing – progress

		Progress: In 2018, IDEM prioritized work in 98 HUC10 watersheds impacting outstanding state resource waters and/or waters with endangered, threatened, or rare species; including the following HUC10 watersheds with Category 1 waters: Salt Creek (HUC 0508000305), Hayes Branch-Laughery Creek (HUC 0509020306), South Fork Wildcat Creek (HUC 0512010703), and Dry Branch-Lost River (HUC 0512020808). The WSS are available to discuss watershed planning with all watershed groups, including those with Category 1 waters.				made
5.3		Participate as requested in Phase II wellhead protection planning. Progress: No request was made for NPS assistance in this endeavor due to a lack of staff in the Ground Water Section.	2014	2018	ongoing	Complete for 2018
5.4		Develop priorities for plans and implementation in watersheds that impact Outstanding State Resource Waters (OSRWs) and waters important for aquatic habitat. Progress: In 2018, IDEM prioritized work in 98 HUC10 watersheds impacting outstanding state resource waters and/or waters with endangered, threatened, or rare species.	2015	2018	annually	Complete for 2018
5.5		Fund 319-eligible protection strategies identified in critical areas of IDEM-approved 9-Elements watershed management plans proposed by § 319 grant applicants whose implementation applications rank high enough for funding. Progress: No protection strategies were funded in 2018.	2015	2018	annually	Complete for 2018
5.6		Work with IDEM's Ground Water section and watershed groups, as well as Drinking Water SRF, to identify wells in need of proper decommission. Progress: No wells have been decommissioned to date.	2015	2018	ongoing	Complete for 2018

Appendix B

Open 319 Projects 7/1/17 - 6/30/18

FFY	ARN/ Contract	Contractor	Project	Status	Start	End	Type
2013							
	3-120	Washington County SWCD	Mill Creek-Blue River Watershed	Closed	10/10/2013	11/9/2016	Restoration/Implementation
	3-125	Northwestern Indiana Regional Planning Commission	Deep River-Portage Burns Waterway Watershed Initiative	Closed	1/1/2014	12/31/2017	Combo
	4-159	Gibson County SWCD	Lower Patoka Implementation	Closed	12/9/2013	12/8/2017	Restoration/Implementation
	4-162	Orange County SWCD	Lost River Watershed Implementation	Closed	12/19/2013	12/18/2016	Restoration/Implementation
	4-163	Wabash River Enhancement	Region of the Great Bend of the Wasbash River Implementation	Closed	12/9/2013	12/8/2016	Restoration/Implementation
	5-9	Marshall County SWCD	Headwaters Yellow River WMP	Closed	1/1/2015	12/31/2017	Planning
2014							
	4-216	Indiana University	Indiana Clean Lakes Program	Open	3/1/2015	1/31/2019	Assessment
	4-215	Jasper County SWCD	Upper Iroquios Implementation	Open	11/8/2014	11/7/2018	Restoration/Implementation
	5-10	Upper Wabash River Basin	Upper Wabash River Implementation	Closed	1/15/2015	1/14/2018	Restoration/Implementation
	5-3	Dearborn County SWCD	Hogan Creek Implementation	Closed	11/16/2014	8/15/2018	Combo
	5-5	Wayne County SWCD	Whitewater River Initiative	Closed	10/2/2014	4/1/2018	Restoration/Implementation
	5-6	Historic Hoosier Hills	Central Muscatatuck Implementation	Closed	9/24/2014	9/23/2017	Restoration/Implementation
	6-9	Allen County SWCD	Phosphorus Risk Reduction Pilot in the Upper Maumee River Watershed	Open	1/20/2016	1/19/2019	Restoration/Implementation
2015							
	6-5	U.S. Geological Survey	School Branch NWQI Study	Open	1/11/2016	1/10/2019	Assessment
	6-184	Indiana Association of Soil and Water Conservation District	Pathway to Water Quality	Open	1/11/2016	4/10/2018	Education
	6-7	Tippecanoe Watershed Foundation	Upper Tippi-Walnut Creek WMP	Open	1/1/2016	9/30/2018	Planning
	6-1	Historic Hoosier Hills	Indian-Kentuck Implementation	Open	1/11/2016	10/10/2019	Restoration/Implementation
	6-183	Clay County SWCD	Lower Eel WMP Implementation	Open	1/12/2016	1/11/2019	Restoration/Implementation
	6-224	Sullivan County SWCD	Turtle Creek-Turman Creek-Kelley Implementation	Open	4/21/2016	4/20/2019	Restoration/Implementation
	6-226	Greene County SWCD	Plummer Creek Implementation	Open	5/19/2016	5/18/2019	Restoration/Implementation
	6-4	Manchester University	Middle Eel-Beargrass Creek Implementation	Open	1/11/2016	1/10/2019	Restoration/Implementation
	6-8	Posey County	Big Creek WMP Implementation	Open	1/15/2016	4/14/2019	Restoration/Implementation
2016							
	21678	Ouabache Land Conservancy	Otter Creek WMP	Open	8/18/2017	8/17/2019	Planning
	6-245	Wabash River Defenders	Treaty Creek-Wabash River Planning	Open	9/18/2017	3/17/2020	Planning
	19146	Purdue University	St. Mary's Initiative	Open	6/6/2017	6/5/2021	Assessment
	18273	Jay County Commissioners	Upper Salamonie River WMP Implementation	Open	2/27/2017	2/26/2020	Restoration/Implementation
	19223	Benton County SWCD	Big Pine Creek Watershed Implementation	Open	5/1/2017	12/31/2019	Restoration/Implementation
	6-240	Dearborn County SWCD	Whitewater River WMP Implementation	Open	11/10/2016	2/9/2020	Restoration/Implementation
	6-242	Orange County SWCD	Lost River Watershed Implementation	Open	12/19/2016	12/18/2019	Restoration/Implementation
	20403	Pike County SWCD	Middle Patoka River Source Water Protection Plan	Open	8/7/2017	8/6/2020	Restoration/Implementation
	6-246	Wabash River Enhancement	Great Bend of Wabash River Implementation	Open	12/9/2016	12/8/2018	Restoration/Implementation
	6-247	Washington County SWCD	Mill Creek-Blue River WMP Implementation	Open	12/6/2016	2/5/2020	Restoration/Implementation
2017							
	25136	Carroll County SWCD	Deer Creek-Sugar Creek Implementation	Open	3/26/2018	3/25/2021	Restoration/Implementation
	25438	Clay County SWCD	Lower Eel River Watershed Implementation Project	Open	4/9/2018	4/8/2021	Restoration/Implementation
	24998	Clinton County SWCD	South Fork Wildcat Creek Stewardship Initiative Phase 2	Open	11/14/2017	11/13/2020	Restoration/Implementation
	23710	Dearborn County SWCD	Hogan Creek Watershed	Open	2/15/2018	5/14/2021	Restoration/Implementation
	25901	Delaware County SWCD	Upper Mississinewa River Watershed Project Implementation	Open	5/3/2018	5/2/2021	Restoration/Implementation
	23633	Historic Hoosier Hills RC&D	Central Muscatatuck Watershed	Open	12/15/2017	6/14/2021	Restoration/Implementation
	24671	Huntington County SWCD	Lower Salamonie River Watershed Implementation Project	Open	2/19/2018	2/18/2021	Restoration/Implementation

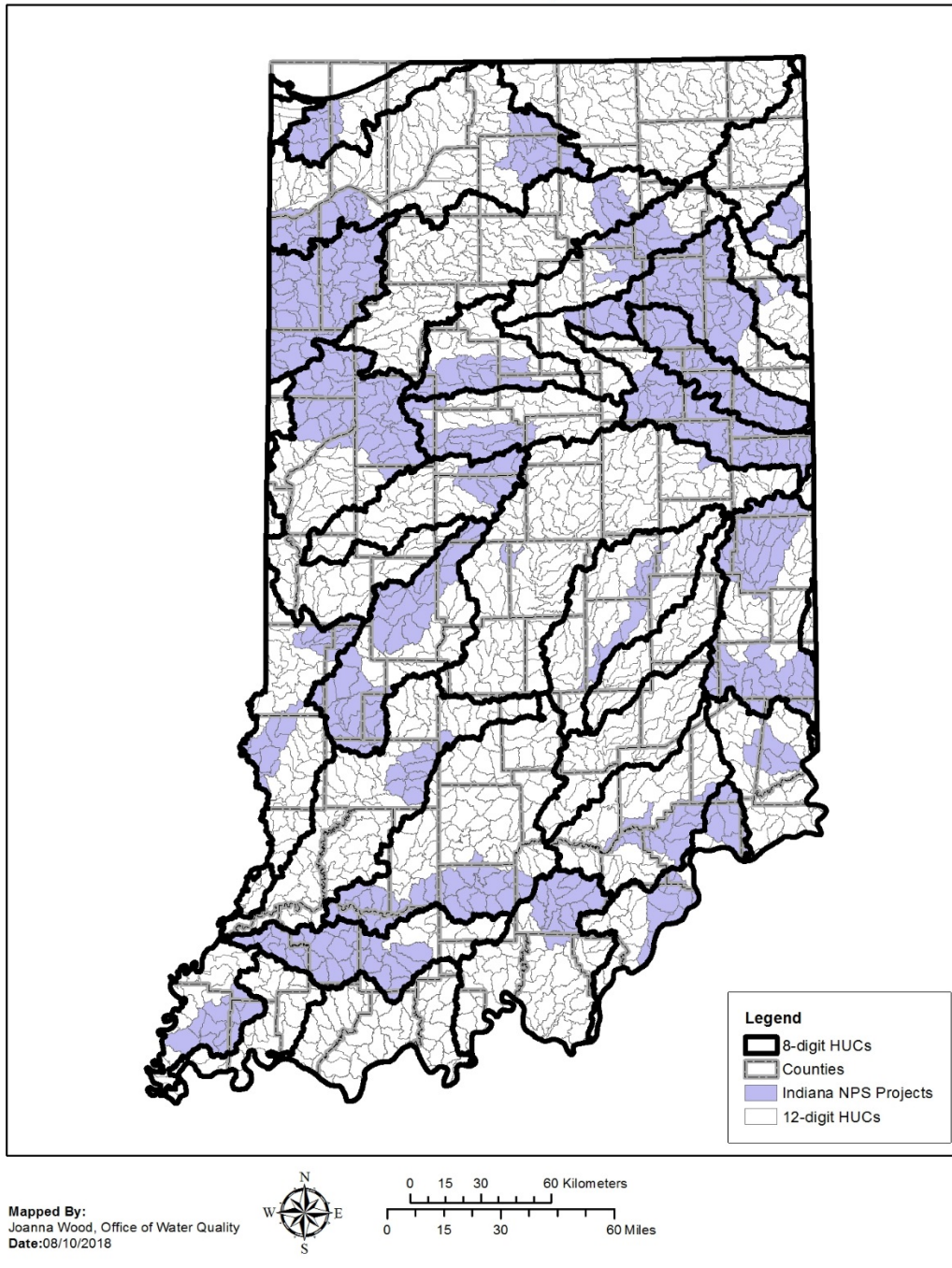
Appendix B

Open 319 Projects 7/1/17 - 6/30/18

26374	Indiana Lake Michigan Coastal Program	On Site Disposal System Outreach and Education/Targeted Source Track	Open	5/2/2018	5/1/2020	Restoration/Implementation
23109	Purdue University	Indiana Watershed Leadership Academy	Open	1/9/2018	1/8/2022	Program Support
22502	Washington County SWCD	South Fork-Blue River Watershed Project	Open	11/14/2017	11/13/2020	Restoration/Implementation
25594	Northwestern Indiana Regional Planning Commission	Deep River-Portage Burns Waterway Watershed Initiative	Open	3/24/2018	2/4/2019	Combo

Appendix C

Indiana NPS Projects Through 2018



Map Projection: UTM Zone 16 N; Datum: NAD83. Data obtained from the State of Indiana Geographical Information Office Library and the IDEM's Nonpoint Source Program. This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Appendix D

Project Summaries for Closed §319 Projects

FFY 2014

Central Muscatatuck Implementation (EDS# A305-5-6) The Historic Hoosier Hills RC&D (HHH) will develop, promote, and implement a cost-share program to install BMPs such as conservation tillage, cover crops, forage and biomass planting, livestock exclusion, riparian buffers, and others that address the water quality concerns outlined in the Central Muscatatuck Watershed Management Plan. BMPs will be implemented only in critical areas as described in the Central Muscatatuck WMP. The HHH will conduct an education and outreach program including: field tours/days to educate watershed residents about nonpoint source pollution and/or the importance of incorporating the BMPs outlined in the WMP, educational workshops about septic systems issues, public meetings, river or lake clean-ups to promote involvement in the project, a brochure to promote cost-share projects, news releases to local media, articles to be included in partnership newsletters, and radio announcements

Upper Wabash River Implementation (EDS# A305-5-10) The Upper Wabash River Basin Commission (UWRBC) will develop, promote, and implement a cost-share program to install BMPs such as conservation tillage, cover crops, vegetated buffers, rain gardens, and others that address the water quality concerns outlined in the Upper Wabash River Watershed Management Plan. BMPs will be implemented only in critical areas as described in the Upper Wabash River WMP. The UWRBC will conduct a monitoring program to evaluate trends in water quality as well as to educate and provide ownership opportunities for stakeholders to participate in the program. The UWRBC will also conduct an education and outreach program including: public meetings, field days, a workshop on septic system maintenance, river clean-up events, a Hoosier Riverwatch training workshop, newsletters, and press releases to the local media.

Whitewater River Initiative (EDS# A305-5-5) Wayne County SWCD will develop, promote, and implement a cost-share program to install BMPs such as conservation tillage, forage and biomass planting, livestock exclusion, riparian buffers, and others that address the water quality concerns outlined in the West Fork Whitewater Watershed Management Plan. BMPs will be implemented only in critical areas as described in the West Fork Whitewater WMP. The SWCD will conduct a volunteer monitoring program to collect trend data in the West Fork and Middle Fork Whitewater watersheds using Hoosier Riverwatch methods monthly from April to October for the duration of the project. The SWCD will also conduct an education and outreach program including a storm drain labeling program within the West Fork Whitewater watershed, public meetings to update stakeholders on the West Fork watershed project, press releases about the project to local media, workshops or field days, newsletters, Middle Fork Reservoir clean-ups, West Fork watershed clean-ups, and brochures.

FFY 2013

Deep River-Portage Burns Waterway Watershed Initiative (EDS# 3-125) The Northwestern Indiana Regional Planning Commission (NIRPC) will produce a WMP for the Deep River – Portage Burns Waterway Watershed, HUC 0404000105. After the WMP is complete, NIRPC will develop and implement a cost-share program for BMPs such as low impact development and stormwater retrofits, two stage ditches, wetland restoration, and others that address the water quality concerns outlined in

the Deep River – Portage Burns Waterway WMP. NIRPC will implement one agricultural BMP and one urban BMP as demonstration projects to educate the public on improving water quality through BMPs. NIRPC will conduct a volunteer monitoring program based on Hoosier Riverwatch methods to identify potential problems and increase public involvement. An education and outreach program will also be conducted including e-newsletters to watershed stakeholders, press releases to the local media, public service announcement to local radio station(s), newspaper articles to the local media, a watershed brochure, watershed signs to increase watershed awareness, workshops to educate stakeholders on BMPs that reduce pollutant loading from urban and/or agricultural areas, field days to promote agricultural conservation practices, and Fall Festivals to raise awareness about the project and share project accomplishments to date.

Lower Patoka Implementation (EDS# 4-159) The Gibson County SWCD will develop and implement a cost-share program for BMPs such as cover crops, filter strips, conservation tillage, livestock exclusion, and others that address the water quality concerns outlined in the Lower Patoka River Watershed Management Plan. The District will also conduct an education and outreach program designed to bring about behavioral changes and encourage BMP implementation including a public informational meeting at the beginning of the project; steering committee meetings; articles to the local media; information in the SWCD newsletter; workshops on proper septic system installation and maintenance and livestock and stream management planning; and field days, festivals, meetings, or bus trips each year promoting BMPs, water quality issues, and grant progress.

Headwaters Yellow River Watershed Management Plan (EDS# A305-5-9) The Marshall County SWCD will produce a WMP for the headwaters of the Yellow River watershed, HUC 0712000103. The WMP will incorporate the Heston/Stock Ditch WMP (draft 2012) and the Lake of the Woods WMP (2005), as appropriate. The WMP will be designed to achieve the reduction in pollutant loads called for in the nonpoint source Kankakee/Iroquois River Watershed E. coli TMDL (2009). The SWCD will develop a steering committee of local stakeholders to guide the development of the WMP and will meet no less than quarterly. The SWCD will conduct a monitoring program to establish baseline water quality, help identify sources of impairment, and help determine priority areas for implementation. The SWCD will also conduct an education and outreach program including the following: articles to partner and SWCD newsletters, press releases to the local media, educational PowerPoint presentations, field days to promote BMPs and showcase the demonstration projects, and demonstration of a conservation cropping system for the purpose of soil health and water quality.

Programmatic §319 Grant Conditions Met

- √ Progress reports and the Final Report entered in GRTS for all projects
 - √ All mandated elements entered in GRTS for all projects
 - √ QAPPs completed and approved prior to reimbursement for all projects collecting data
- All water quality monitoring data collected will be entered into STORET. Progress on this condition may be found in Appendix A, Goal 2, Objective 2.

Appendix E

Open 205(j) Projects 7/1/17- 6/30/18

FFY	ARN/ Contract	Contractor	Project	Status	Start	End	Type
2013							
	4-179	Delaware County SWCD	Mississinewa River WMP	Closed	1/30/2014	1/29/2017	Planning
	5-189	enfoTech and Consulting, Inc	AIMS II Expansion, Enhancements and Maintance	Closed	8/11/2015	8/10/2017	Program Support
2014							
	5-1	Clinton County SWCD	Browns Wonder-Sugar Creek Watershed Planning	Closed	9/2/2014	5/1/2017	Planning
	5-180	Washington County SWCD	South Fork Blue River Watershed Project	Open	11/7/2014	11/24/2017	Planning
2015							
	5-240	U.S. Geological Survey	Kankakee Continuous Water Quality Monitoring	Open	11/20/2015	11/19/2018	Assessment
	6-3	Kosciusko County SWCD	Upper Middle Eel River WMP	Open	1/2/2016	6/30/2018	Planning
2016							
	19207	Gibson County SWCD	Lower Patoka WMP Rewrite	Open	3/3/2017	3/3/2019	Planning
	7-211	Shelby County SWCD	Big Blue River Watershed	Open	12/7/2016	6/6/2019	Planning
2017							
		Decatur County SWCD	Salt-Pipe Creek	Open	10/20/2017	10/19/2019	Planning
		Huntington County SWCD	Upper Wabash River Phase 3 WMP	Open	4/25/2018	4/24/2021	Planning
		Putnam County SWCD	Big Walnut Watershed Plan Re-Write	Open	4/26/2018	4/25/2020	Planning
2018							
		ORSANCO	Installation and Operation of Two Continous Monitors on the Ohio River	Pending			Assessment
		Jasper County SWCD	Lower Kankakee River Watershed Management Plan	Pending			Planning