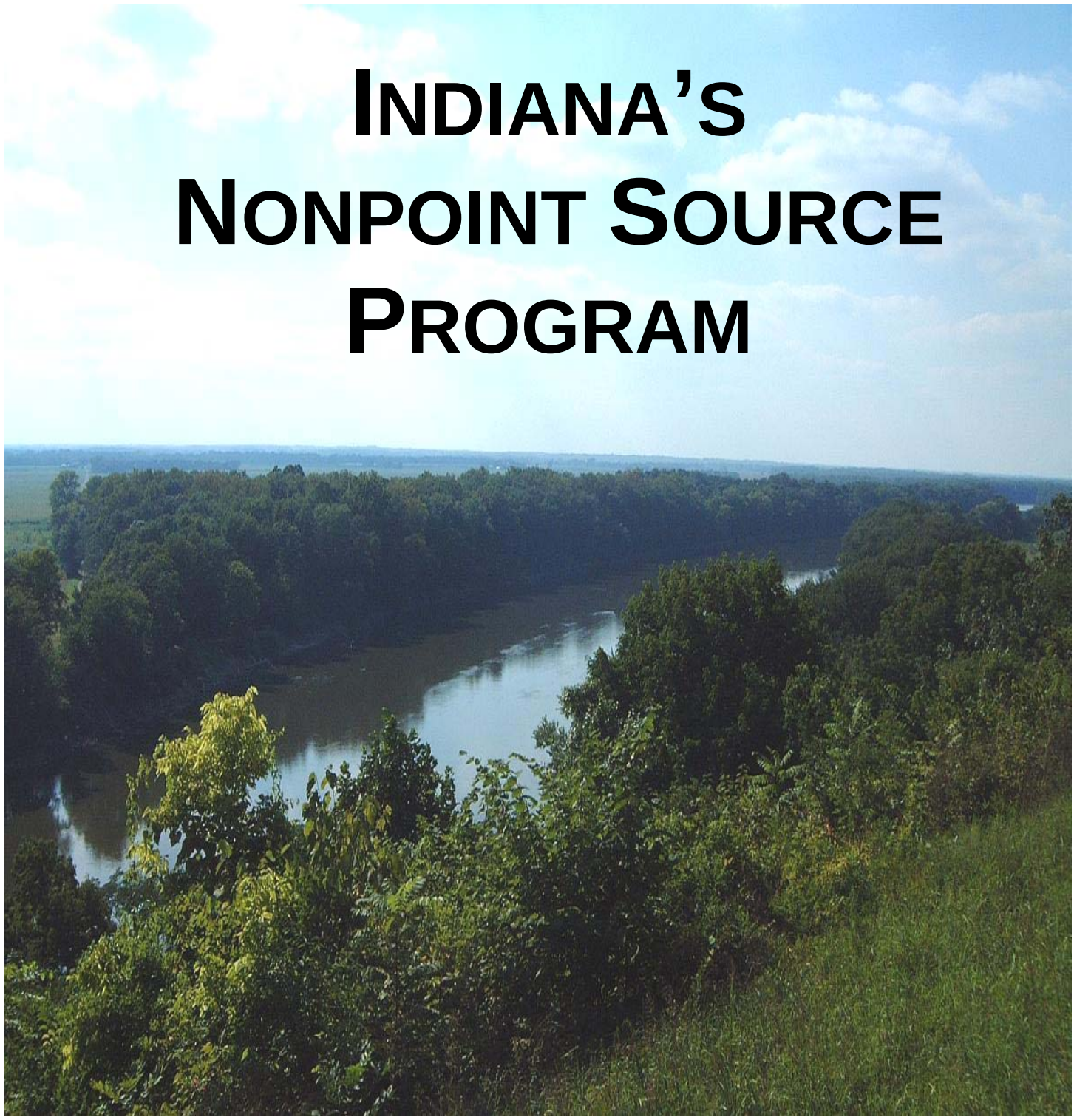
# INDIANA'S NONPOINT SOURCE PROGRAM



**FFY 2006 Annual Report to the**
**U.S. Environmental Protection Agency**

**Indiana Department of Environmental Management**
**Office of Water Quality**
**September 2006**

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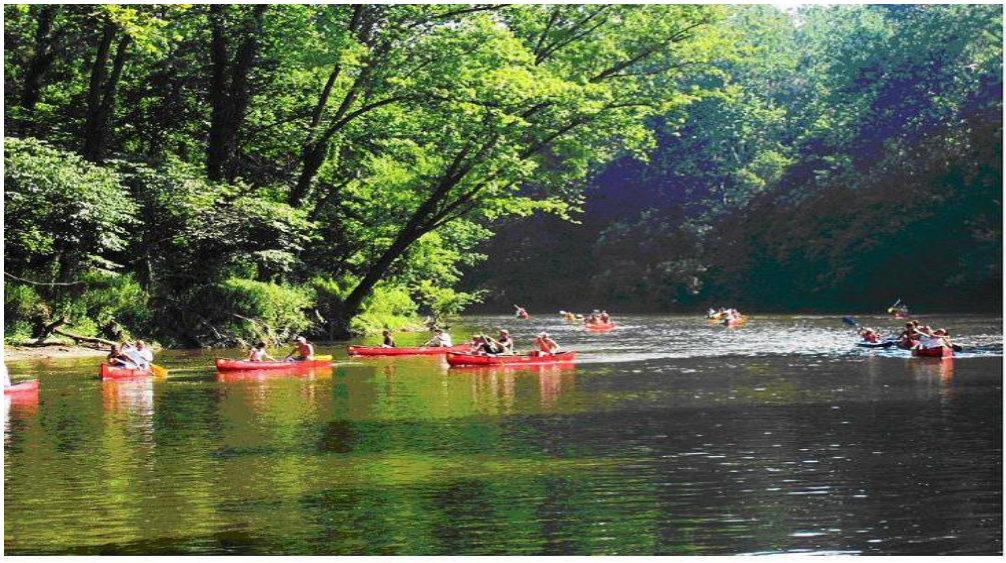
# OVERVIEW

This *2006 Nonpoint Source Program Annual Report,* as required by Section 319 of the Clean Water Act, reports Indiana's progress towards reducing nonpoint source pollution. It highlights the state's efforts during the reporting period to collect data and assess water quality, implement projects that reduce or prevent nonpoint source pollution, and educate and involve the public to improve and maintain the quality of water resources for current and future generations of Hoosiers. The report provides an overview of nonpoint source pollution and the Indiana Department of Environmental Management's (IDEM) role in leading efforts to address this significant source of water pollution. Information on program goals and achievements is presented, as well as information on how IDEM's Nonpoint Source Program is evolving to become more effective. Additionally, the report presents information on how IDEM's chief partners play an important role in the work to address nonpoint source pollution. Lastly, the report provides information on projects funded through Section 319 of the Clean Water Act.

IDEM and our many partners are working together on a watershed by watershed basis to improve and protect our water resources. The prevention of NPS pollution requires the cooperation of many groups and agencies at the federal, state, and local level, as well as all citizens living in the watershed. We cannot accomplish our goal of clean water without the help of many people working together.



Cover Photo: Alice Rubin, IDEM
Above Photo: Nathan Rice, IDEM

# INTRODUCTION

## What's the Problem?

Nonpoint source (NPS) pollution remains the largest source of water quality problems in Indiana. Information from the 2006 Indiana Integrated Water Monitoring and Assessment Report shows that NPS pollution is a significant source of impairment in Indiana waterbodies. Bacteria, nutrients, and sediments are the leading NPS pollutants of concern in Indiana. NPS pollution comes from many diffuse sources across the landscape that are difficult to specifically identify or abate in contrast to point source pollution, which is discharged from a single, identified, and regulated source, such as a pipe. While some NPS pollution is naturally occurring, most of it is a result of human activities.

## The Watershed Approach to Addressing Nonpoint Source Pollution

Environmental problems, such as NPS pollution, often cut across media and political jurisdictions. Consequently, environmental mitigation and protection require a comprehensive and collaborative approach that works with a multitude of programs and agencies. The watershed approach provides a framework for coordinating and integrating the myriad programs and resources. This approach directs the focus on water quality in 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. By examining water quality issues on a watershed basis, problems can be observed in relationship to their sources so that the causes can be addressed in the most effective manner. The Watershed Approach is based on four basic principles:

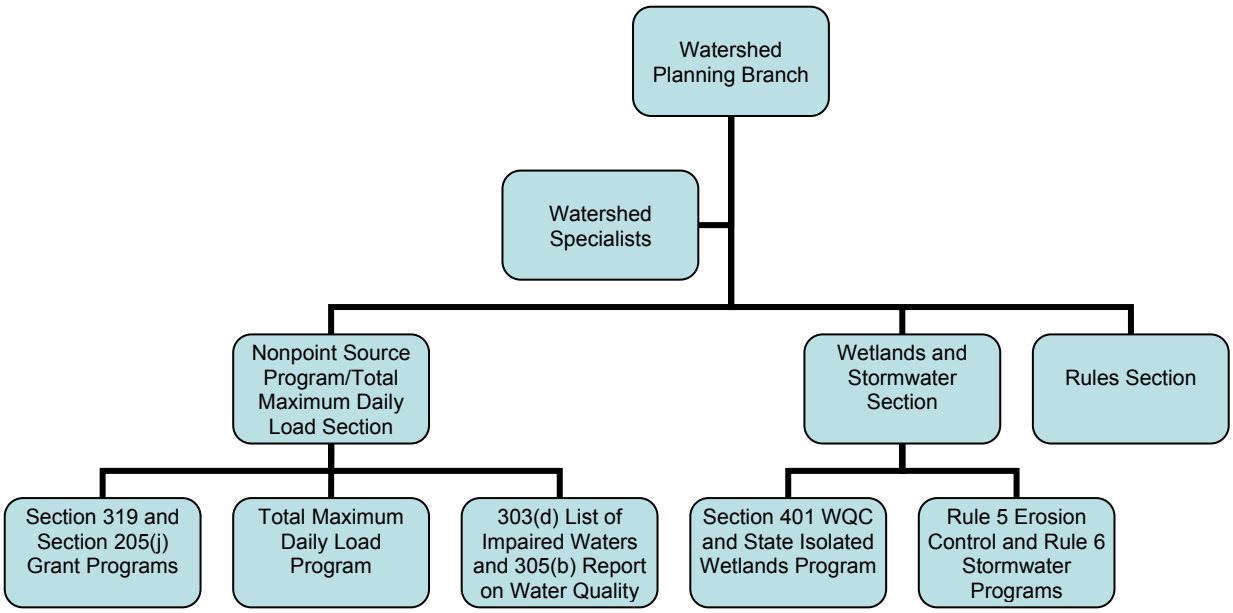
1. Geographic focus based on hydrological rather than political boundaries
2. Water quality objectives based on scientific data
3. Coordinated priorities and integrated solutions
4. Diverse, well-integrated partnerships

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 semi-annual review of Office of Water Quality (OWQ) activities and making any necessary adjustments;
- Improving internal coordination between water quality assessment, watershed planning and implementation programs to facilitate an integrated watershed management approach to restoring impaired waterways; and
- 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.

## Putting the Pieces Together to Improve Water Quality

IDEM has realigned several programs to address more effectively NPS pollution. This functional rethinking occurred during this reporting cycle and the goal is to greatly improve coordination of agency programs and increase assistance to partners outside of the agency.




Organization chart for IDEM's Watershed Planning Branch

IDEM relies on the interactions between the programs in the Watershed Planning Branch to lead statewide efforts to address NPS pollution. Each programs brings a different set of resources and expertise to this issue –

1. Section 319 and 205(j) Grant programs – provide funding to a variety of groups and agencies to develop comprehensive watershed plans to address NPS pollution, implement plans to carry-out on the ground solutions, and conduct education, outreach and assessment work to inform the public about NPS pollution and measure progress towards correcting problems. In addition, these programs work internally and externally to build capacity for watershed managers and other environmental professionals through trainings, seminars, conferences, and other educational opportunities. To date this program has funded over 400 hundred individual projects totaling nearly $39,000,000 in 319 and 205(j) funds.

2. Total Maximum Daily Load (TMDL) Program – develop reports to assess sources of pollution within a watershed and establish load reductions to ensure that water quality standards will be met. This program works closely with the 319/205(j) Program to increase local interest in applying for grants, implementing aspects of the TMDL report, and sharing information on water quality within a given watershed.

3. 303(d) List of Impaired Waters and 305(b) Report on Water Quality – compile information on the status of water quality within the state of Indiana and report this information internally and externally. Impaired waters are the chief priority of the Watershed Planning Branch, with priorities in all programs set to address directly the causes of impairments through planning, implementation, and regulatory oversight.

4. Wetlands/Stormwater programs – provide regulatory oversight on both issues through the implementation of state and federal permit programs. These programs work closely with other staff to provide technical expertise on a variety of issues including wetland and channel restoration, erosion control, and directly assist groups with education on water quality topics.

5. Rules – develop rules and policy documents to implement agency regulatory programs that impact both point and NPS pollution.

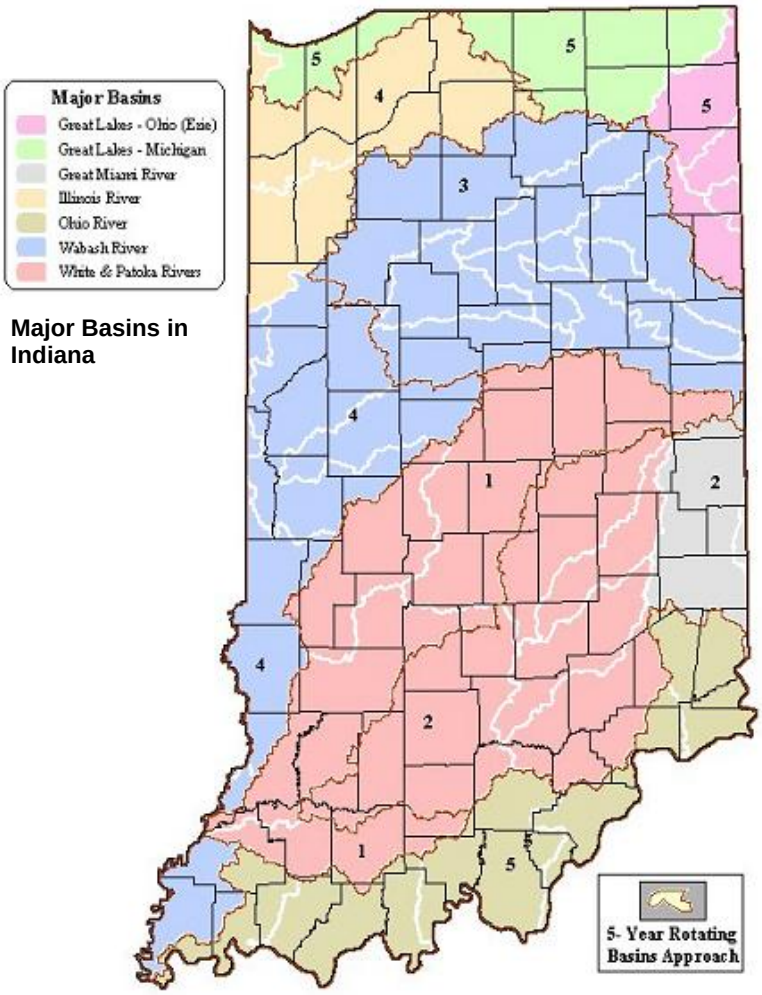
6. Watershed Specialists – facilitate all aspects of watershed planning at the local level. This includes providing technical support, coordination of meetings and bringing of groups together, aiding with grant applications and information transfer, reviewing watershed plans, and working with groups to find new ways to improve water quality on the local level. Staff in this program are integral to coordination of all programs within the branch.

Additionally, IDEM's efforts to address NPS pollution rely heavily on the efforts of our partners. With the extent and variety of NPS issues across Indiana, the need for cooperation across political boundaries is essential. Many local, regional, state, and federal agencies play an integral part in addressing NPS pollution, especially at the watershed level. They provide information about local concerns and infrastructure and build support for the kind of pollution controls that are necessary to prevent and reduce NPS pollution. By establishing coordinated frameworks to share information and resources, Indiana can more effectively focus its water quality protection efforts.

In particular, IDEM works closely with the Natural Resources Conservation Service, the Indiana Department of Agriculture, the Indiana Department of Natural Resources, and the Indiana Association of Soil and Water Conservation Districts. A workgroup comprised of key staff from these organizations meets on a monthly basis to exchange information and work towards better coordination of programs and resources on the mutually important issue of NPS pollution.

# STATUS OF INDIANA'S SURFACE WATERS

The Office of Water Quality assesses the quality of Indiana's waters using a rotating basin approach. Approximately one-fifth of the state's waters (1-2 basins) are assessed for support of aquatic life, fishing and recreational uses each year. The monitoring program is designed to characterize the overall environmental quality of each major river basin and to identify those monitored waterbodies within each basin that are not fully supporting their designated uses. The results are reported in the Indiana Integrated Water Monitoring and Assessment Report (commonly known as the 305(b) Report).




**Major Basins in Indiana**

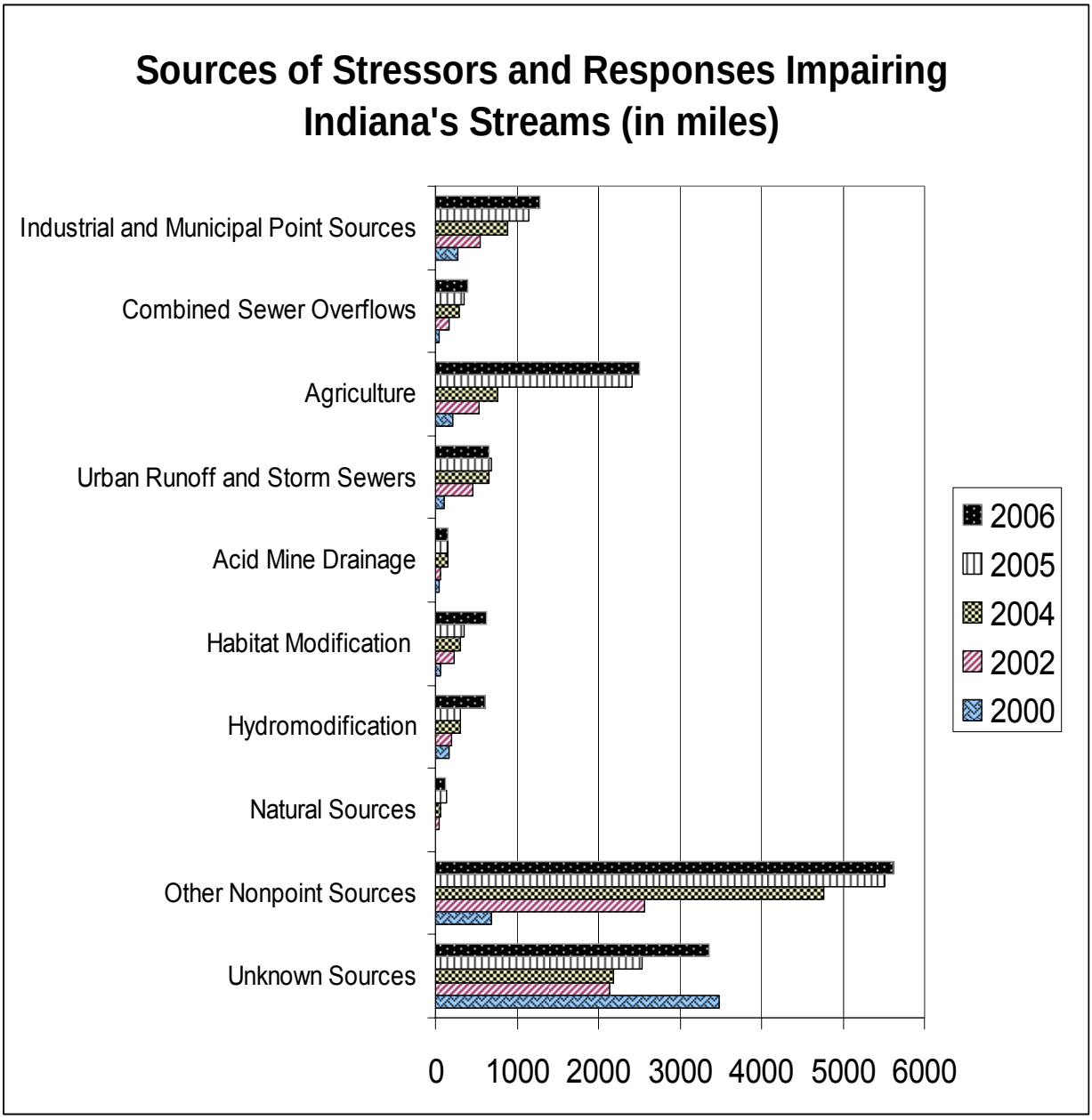
Waters that do not fully support one or more of their designated beneficial uses, even though all permitted dischargers are meeting their permit limits, are placed on the Indiana's 303(d) List of Impaired Waters, which may be viewed at –

http://www.in.gov/idem/programs/water/303(d)/index.html

According to the 2006 Integrated Water Quality Monitoring and Assessment Report, Indiana has monitored 47% of its streams to determine whether they are capable of supporting a well balanced warm water aquatic community. Of the streams monitored, it was found that 81.7% are supporting their designated aquatic life use. When these stream-specific results were analyzed statistically, it was found that 50% of the state as a whole supports aquatic life use. Indiana has monitored 35.3% of its streams for recreational uses. Of the streams monitored, 32.5% support full-body contact recreational uses, while 67.5% were found to be impaired. For more information on the assessment of Indiana waters, see the 2006 Integrated Water Quality Monitoring and Assessment Report at -

http://www.in.gov/idem/programs/water/305(b)/index.html

Many of the problems caused by point source pollution have been addressed during the last thirty years through the National Pollutant Discharge Elimination System (NPDES) permit program. The primary focus now is on reducing NPS pollution in order to restore waterbodies that are identified as impaired on Indiana's 303(d) list.




**Sources of Stressors and Responses Impairing Indiana's Streams**

# IDEM's NPS Goals and Progress

The goal of IDEM's NPS program, as stated in the current Nonpoint Source Management Plan (2005-2010), is to:

***Restore waters impaired by nonpoint source pollution and support preservation of local water quality through locally led partnerships***

In this reporting period, IDEM continued to retool and refocus the efforts of its NPS program. The key focus areas of the NPS program this reporting period include –

- improve coordination with partners (internal and external)
- target funding of projects on impaired waters to create watershed management plans and implement watershed plans
- build capacity to address NPS pollution on the local level
- actively manage funded projects to ensure successful completion of goals
- work closely with USEPA to identify needed areas of improvement
- expand the scope of projects to include urban NPS pollution issues
- develop consistent methods to assess the efforts of projects to address NPS pollution

These areas of program improvement have led IDEM to rethink the Nonpoint Source Management Plan and how it can accurately reflect not only IDEM's NPS pollution priorities, but also those of our partners. Consequently, IDEM has begun the process of formally revising and updating the entire document, with the goal of producing a web-based Plan that will map out IDEM and partner NPS pollution priorities for the next five years. IDEM will involve our key stakeholders in this process and will utilize outside expertise to make this document user-friendly and reflect the latest information on NPS pollution. Tentatively, a near final draft will be completed by the next reporting cycle.

## Short-term Goal Progress

In 2005, IDEM set forth a series of short-term goals to assess our progress on addressing NPS pollution. The status of these goals is reported in this document. These goals, however, are being reconsidered in light of the overall strategic planning process as IDEM wishes to establish short-term goals that are measurable, meaningful, and reflect the direction of the program as a whole.

The NPS Program short-term objectives are listed below, along with action items to accomplish the objectives, and measures being used to track progress in meeting the objectives. The objectives have baseline values reported for 2005. Explanation of progress towards goals is included following the metric table for each objective.

### *I. Objective: Support restoration through development & implementation of watershed management plans*

A. Target support to watershed groups in priority areas working on 303(d)-listed waters

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of active watershed groups | 66 | 76 | | | | |
| 2. Number of new watershed groups | N/A | 8 | | | | |

STATUS: Realignment of IDEM programs and priorities, as well as the concerted efforts of IDEM's Watershed Specialists, has increased locally-led watershed group formation within Indiana.

B. Set solicitation priorities each year to target restoration projects to implement watershed management plans in areas with impaired streams/lakes

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of watersheds with plans that meet USEPA's Nine Elements | 25 | 38 | | | | |

STATUS: IDEM actively works with watershed groups to insure that USEPA and IDEM requirements are met for every watershed plan funded by 319 and 205(j) grants. IDEM also seeks input from USEPA on ways to improve these plans.

C. Participate in the Region 5 Accountability Pilot Watershed-based planning and restoration in lieu of TMDL.

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Percent of completed watershed plans in the pilot that are implemented | 0 | 0 | | | | |

STATUS: This measure does not accurately reflect the work that has been completed by the projects in this pilot and will likely be revised for future reports.

## *II. Objective: Aid in the reduction and cleanup of NPS pollution to ground and surface water*

A. Work with State Revolving Fund staff to identify and implement opportunities for partnerships.

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of nonpoint source SRF projects | 16 | 10 | | | | |
| 2. Measure or estimate NPS load reduction from SRF projects. | Not complete | Not complete | | | | |

STATUS: Nonpoint source projects funded by SRF comprise IDEM's match requirements for implementation of Section 319 grant funds. Although IDEM has not developed formal methods for estimating pollutant load reductions from these projects at this time, this will be a priority activity for the next cycle, as these projects will also be tracked in Grant Reporting and Tracking System (GRTS).

B. Support environmentally friendly land use development

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of 319 projects with low impact development (LID) component | 2 | 4 | | | | |
| 2. Estimated sediment load reduction from LID areas funded by 319 | 0 | 0 | | | | |

STATUS: IDEM is actively working with groups in urban areas of the state to identify urban best management practices and LID principles for funding through the 319 grant program. IDEM expects to see an increase in projects with this type of BMP, as urban areas begin to look for more creative solutions to stormwater and urban water quality. At this point, projects with LID components have not been fully implemented, so sediment load reductions are not yet available.

Currently, four projects funded with Section 319 grants have LID components:

| ***Grant Year*** | ***Project*** | ***Sponsor*** |
|---|---|---|
| 2002 | Cedar Creek WMP Implementation Phase I | St Joseph River Watershed Initiative |
| 2003 | Small Grants for IN Lakes Water Qual Imp. | ILMS |
| 2003 | Dunes Creek WMP | Save the Dunes |
| 2005 | Clifty Creek Watershed Project | Bartholomew Co SWCD |

III. Objective: Support the Coastal Zone Management (CZM) Plan

A. For projects within the Coastal Zone, give priority to projects that are integrated with the Coastal Zone Program (CZP)

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of 319 projects in the Coastal Zone that also implement 6217 | 2 | 5 | | | | |

STATUS: Projects that are currently integrated with the CZP include:

| ***Grant Year*** | ***Project*** | ***Sponsor*** |
|---|---|---|
| 2001 | Dunes Creek WMP Implementation Phase I | Save the Dunes Conservation Fund |
| 2002 | Salt Creek WMP | Save the Dunes Conservation Fund |
| 2003 | Dunes Creek Watershed Plan | Save the Dunes Conservation Fund |
| 2004 | Trail Creek WMP Update | Sanitary District of Michigan City |
| 2005 | Little Calumet River WMP | Gary Storm Water Management District |

IDEM has begun to work more closely with the Department of Natural Resources CZP to identify needs within this section of the state and establish funding priorities. IDEM's 319 Program will be providing direct financial assistance to the CZM Program to meet goals and objectives.

IV. Objective: Develop tools to measure program effectiveness

A. Develop and implement the Evaluation Framework

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Meet milestones in the Framework | 100% on schedule | 100% on schedule | | | | |

STATUS: The development of social indicators to measure the effects of NPS pollution programs will provide another means for assessing the efficacy of programs. The project is on track for completion in 2008.

V. Objective: Share information on NPS restoration and status of water quality

A. Develop and implement a system to store environmental monitoring data in AIMS and transfer to STORET

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of 319 projects with environmental data in AIMS | 0 | 0 | | | | |

STATUS: To provide a mechanism to enter 319 project data into EPA's Storage and Retrieval System (STORET) the NPS Program has requested that funds be used to build onto and

improve the existing water quality database management system, AIMS, currently used by the Assessment Branch in IDEM. The current AIMS application handles data from multiple water quality and aquatic biota programs and will be expanded to include the programs, projects, and data collected through the nonpoint source and water quality grants. The improvements will incorporate web browser access to staff and management and enhanced STORET interface capabilities that will benefit all water quality programs in meeting federal mandates for this program and the agency's other water quality monitoring programs. Additionally, the querying and analysis tools available in AIMS will help in the evaluation of the data through statistical and GIS applications and be integrated with the Assessment Branch point and nonpoint monitoring data for further program analyses.

The project is currently in the planning stage to determine the user and programmatic needs, evaluation of these needs against current AIMS functionality, and coordinating with other related projects to ensure proper integration with STORET changes and revisions to AIMS to a web browser front end. Efforts are being made to begin nonpoint source data entry into the existing AIMS system for upload to the existing STORET by the end of the first quarter of 2007. This data will be selected for inclusion into the system due to its current compatibility with the current AIMS. As the enhanced system is ready, the new nonpoint source data will be uploaded, and testing will be done using data mapper-type software to upload current and older data that is in alternate formats.

B. Develop systems and tools for watershed planning, implementation, and TMDLs

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of tools and reports available via the www to Indiana watershed coordinators, TMDL Program | 4 | 4 | | | | |

STATUS: The four tools that form the baseline of this metric are -

***Indiana Water Quality Atlas: Internet Mapping and Analysis***
The Indiana Water Quality Atlas (IWQA) is a collaborative project to create a web-based interactive atlas of water quality-related GIS data. The primary project partners are IDEM, the Indiana Geographic Information Council (IGIC), Indiana Land Resources Council (ILRC), Upper White River Watershed Alliance (UWRWA), and Natural Resources Conservation Service (NRCS). The Atlas aims to spur water quality and watershed management, land use planning, and data exploration by facilitating access to a wide variety of spatially and temporally referenced data through a common interface. It also promotes interdisciplinary research by providing new tools to combine, analyze, and display multi-dimensional data from a wide array of disciplines. Access to the application can be found at
http://www.in.gov/idem/publications/maps/iwqa.html

***A Study of Indicators of Nonpoint Source Pollution***
The overall goal of the study was to develop an essential suite of indicator parameters, for use by state agencies and watershed groups, which can be cost-effectively used to assess NPS impairments and identify specific causes and sources linked to the impairments. The study

resulted in the development of a user's manual available upon request, which will be posted to the IDEM website in FFY 2007.

***Indiana Watershed Planning Guide and Watershed Management Plan Template***
This project revised and updated the *Watershed Action Guide for Indiana* and created the *Indiana Watershed Planning Guide* which provides guidance and specifications on the development of a watershed management. In addition, these documents provide a watershed plan template for watershed coordinators and stakeholders. This document is distributed in hard copy and is also available on the website at:

http://www.in.gov/idem/catalog/documents/water/iwpg.pdf

***Using Watershed Planning Tools for TMDLs***
The purpose of the project was to develop a framework for integrating IDEM's TMDL strategy with its watershed planning and restoration program and to coordinate internal discussions for enhancing collaboration on watershed restoration efforts. The materials developed through this project are being used by the TMDL Program.

Tools that are under development and are described in greater detail in this report include the IQWA (Phase II), the Evaluation Strategy Framework, and AIMS database upgrade for NPS monitoring data.

C. Improve communication between and among agencies and the watershed management community

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Implement an advisory group of state, federal agencies, and local/ regional coordinators | No advisory group | Interagency advisory group | | | | |
| 2. Number of projects with three or more active, contributing partners | 6 | 21 | | | | |

STATUS: IDEM works closely with the NRCS, the Indiana Department of Agriculture, the IDNR, and the Indiana Association of Soil and Water Conservation Districts (IASWCD). A workgroup comprised of key staff from these organizations meets on a monthly basis to exchange information and work towards better coordination of programs and resources on the mutually important issue of NPS pollution. IDEM places a high emphasis on the formation of active partnerships for all watershed projects. The increase in the number of projects with three or more active partners reflects changes to grant review criteria, direct assistance from IDEM staff, and the recognized need to engage all stakeholders in watershed-based activities.

D. Support lake water quality assessments and track trends in lake water quality

| Measure | 2005 Baseline* | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Lake acres with specific water quality assessment | 74,361 | 69,472 | | | | |
| 2. Number of lakes assessed for trophic conditions | 401 | 403 | | | | |

*2004 Integrated Water Quality Monitoring and Assessment Report

STATUS: The number of lake acres with specific water quality assessments decreased in 2006. This is due to IDEM's assessment methodology for fish consumption advisories (FCA); the method only identifies impairments, not fully supporting waters. This means that the total number of assessed lake acres can actually decrease when those lakes are not in the FCA.

The number of lakes assessed for trophic state has not changed dramatically as the numbers listed represent most of the lakes in the Clean Lakes Program rotation, which covers most of the 575 publicly owned lakes in the state.

E. Identify surface water and ground water interactions and locations with residential well contamination

| Measure | 2005 Baseline | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|
| 1. Number of basins assessed | 0 | 14 | | | | |
| 2. Number of residential wells assessed | 143 | 130 | | | | |

STATUS: This project continues to provide useful information on the relationship between NPS pollution and groundwater. Final reports are currently being prepared.

# RESTORATION EFFORTS AND ACHIEVEMENTS

A primary focus of IDEM's NPS Program is on-the-ground work to improve water quality. Funding for the implementation of watershed plans that work to restore water quality on waterways impaired for NPS pollution has resulted in measurable improvements in terms of estimated pollutant load reductions and stakeholder involvement, but much more work remains to restore fully water quality.

## Section 319(h) & Section 205(j) Grant Programs

The NPS/TMDL Section in the Office of Water Quality manages two federal pass-through grant programs aimed at improving water quality in the state: Section 319(h) and Section 205(j) – each named after the portion of the Clean Water Act that authorizes each 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. In FFY 2006, Indiana received approximately $160,000 in 205(j) funds and allocated those funds, in addition to unexpended funds, to two projects. Five 205(j) projects closed this year, including four projects that developed watershed management plans.

The Section 319 program is one of the primary resources for reducing nonpoint source pollution in Indiana. In FFY 2006, Indiana received approximately $4.4 million in Section 319 funds and awarded grants for fourteen projects. Projects are administered through contractual agreements that spell out the tasks, schedule and budget for the project. (Contractual agreements are currently being replaced by grant agreements that retain oversight by IDEM but streamline the administrative process). Projects are normally 2-3 years long and work to reduce NPS pollution and improve water quality in many different ways including education and outreach, technical assistance, and development and implementation of watershed management plans. IDEM Project Managers work closely with the project sponsors to help ensure that the project runs smoothly and the tasks of the contract are fulfilled.

There are currently eighty-two open 319 projects. A map showing the locations of Section 319 projects in the last five years is shown in Appendix A. All open Section 319 projects, including projects that closed this year, are listed in Appendix D. Final reports and products from the projects that closed are included as an attachment to this report, and a list of the final reports is included in Appendix E. Project information is entered and maintained in EPA's Grant Reporting and Tracking System (GRTS) database for all Section 319 projects. GRTS mandated elements that are entered for projects include the project schedule, budget, description, estimated pollutant load reductions, and progress reports. Projects implementing BMPs are also located and stored in the web-based Reach Indexing Tool (WebRIT). Streams receiving direct benefit from these projects are selected and identified using the National Hydrography Dataset (NHD). General information about the two grant programs may be found at:

http://www.in.gov/idem/programs/water/wsp/index.html

## Section 319 Program Focus

Developing and implementing comprehensive watershed management plans is an effective way to focus efforts and resources on a watershed and its particular problems and develop solutions to those problems. In this process, local stakeholders join forces to develop plans (usually at the 11-digit or 14-digit hydrologic unit code (HUC) level that make sense for the particular conditions found in that watershed. The group identifies the problems, causes, sources, and critical or target areas in the watershed, then sets goals and chooses measures or best management practices (BMPs) to be implemented to achieve those goals. Indicators are chosen and monitored to evaluate the effectiveness of the implementation efforts.

Before a watershed management plan can be implemented using Section 319 funds, it must meet the required elements of IDEM's *Watershed Management Plan Checklist.* This checklist incorporates EPA's nine required components of a watershed based plan and is found on the following website:

http://www.in.gov/idem/programs/water/wsp/fy2003checklist.doc

A *Watershed Management Plan Guidance* document is provided to help groups achieve the elements required in the checklist. This document is found on the following website:

http://www.in.gov/idem/programs/water/wsp/wmpguidance.html

Organizing a group to develop a watershed management plan that meets the required elements can be a daunting task. To help groups develop watershed management plans, IDEM developed the *Indiana Watershed Planning Guide:*

http://www.in.gov/idem/programs/water/wsp/watershedmgmtinfo.html

In an effort to more efficiently meet our NPS Program goals, coordinate with the TMDL Program and its efforts to identify and reduce NPS pollution, and focus more of the Section 319 funds on impaired waters, IDEM identified priority areas for Section 319 funding for the last several funding cycles. The focus of the Program for FFY 2006 was:

- Watershed management planning and implementation in areas with approved TMDLs;
- Watershed management planning and implementation in areas with waterbodies on the 2006 Section 303(d) list; and
- Implementation of watershed management plans that meet the IDEM Checklist that includes the EPA required nine elements

A Geographic Information System (GIS) map was created (Appendix B) to help identify areas that have been involved in the planning and implementation of watershed management plans and the relationships with the TMDL development activities. It also shows the areas of Indiana where there are watersheds with nonpoint source impaired waterbodies as listed in the 2006 303(d) List of Impaired Waterbodies. This assists with the continuation of the targeted approach to watershed management providing for coordination of TMDL, planning, and implementation efforts in areas of the state most in need of restoration.

Of the fourteen projects funded in FFY 2006, thirteen projects address one or more of the program priorities. Half of the funded projects are restoration and implementation projects and six are watershed planning projects in areas with waterbodies on the 303(d) list.

This fiscal year thirteen watershed management plans were completed. Of these, seven are being implemented or will soon be implemented using Section 319 funds. Twenty-two additional plans are being developed and will be completed and ready for implementation in the next two years. Of the eighty-five currently open projects, 39 are implementing watershed management plans. These projects are primarily installing BMPs in critical areas of the watershed as determined by the watershed management plan.

## Pollutant Load Reductions

One important indicator of program (and project) success is the amount of sediment, phosphorus, nitrogen, *E. coli* and other pollutants reduced as a result of the best management practices installed. Load reductions, in most cases, are estimated using the Region V Pollutant Load Reduction Model (Region V Model), found at:

http://www.in.gov/idem/resources/grants_loans/319h/loadreduction.html

The model estimates load reductions from structural and agricultural field practices and urban runoff. Reductions achieved through practices related to nutrient, bacteriological, and pesticide management are not always captured through this estimation method. Reported estimated load reductions from Section 319 projects this fiscal year are:

- Sediment: 34,670 tons/yr
- Phosphorus: 44,384 lbs/yr
- Nitrogen: 94,646 lbs/yr

These reductions are a result of best management practices installed between 9/1/05 and 8/31/06. BMPs installed include filter strips, conservation cover, residue management (no-till), streambank and shoreline protection, water and sediment control basins, pasture and hay planting, grassed waterways, critical area planting, livestock fencing, and heavy use area protection. Other BMPs implemented which may not be reflected in the load reduction estimations include development of nutrient and pesticide management plans, replacement of failing septic systems with alternative septic systems for demonstration, reclamation of abandoned coal mine sites, and remediation of brine sites.

## Project Highlights

Twenty-six 319 projects closed this fiscal year. Four of these projects were chosen to be highlighted in this report as examples of successful projects working to improve water quality through watershed planning, implementation of best management practices (BMPs), and education and outreach.

### St. Joseph River Watershed Project and Cedar Creek Watershed Management Plan

The St. Joseph River (Lake Erie Basin) watershed, located in northeast Indiana, northwest Ohio, and south-central Michigan, encompasses 694,000 acres. With its headwaters in Hillsdale County, Michigan, the St. Joseph River flows southwest through Williams County in Ohio, and DeKalb, Steuben, Allen and Noble Counties in Indiana before converging with the St. Mary's River in Fort Wayne, Indiana to form the Maumee River. The Maumee flows in a northeasterly direction back into Ohio and eventually into Lake Erie. The City of Fort Wayne draws its drinking water from the St. Joseph River for its 250,000 residents and nearby communities. One of the major tributaries to the St. Joseph River is the Cedar Creek, which is on Indiana's 303(d) List of Impaired Waterbodies for *E. coli* and impaired biotic communities.

The St. Joseph River Watershed Initiative, a non-profit group formed in 1996 to share information and discuss issues and solutions to water quality concerns, received a Section 319 grant in 2002 to refine an existing database of antibiotic resistance patterns for fecal coliform bacteria to determine sources of fecal contamination in the St. Joseph-Lake Erie watershed; continue a trend water quality monitoring program in the watershed; and develop a watershed management plan for the Cedar Creek subwatershed. This project is part of the Accountability Pilot Project with USEPA to develop and implement a watershed management plan in lieu of a TMDL, which was scheduled to be developed for *E. coli*.

**Cedar Creek**

The Bacteria Source Tracking (BST) project was conducted by Indiana University-Purdue University Ft. Wayne, Department of Biological Sciences. Antibiotic Resistance Analysis (ARA) was used in an attempt to determine the source of bacterial contamination in the St. Joseph River watershed. The research included development and refinement of a database particular to Northeast Indiana of known source patterns of resistance to antibiotics for humans, horses, beef and dairy cattle, deer, geese, hogs and domestic pets. Knowledge of land use is an essential component of BST using ARA. Results indicated that wildlife, particularly geese, make a significant contribution to the bacterial contamination in the watershed. The human contribution is localized to particular sub-watersheds and is generally low. The final report from this study may be found on the Initiative's web site at:

http://www.sjrwi.org/projects.htm

The Soil and Water Assessment Tool (SWAT) model was used to assist in calculating loads and reduction estimates for the development of the Cedar Creek Watershed Management Plan. The objectives were to evaluate current conditions for loading of sediment, nutrients (nitrogen and phosphorus) and *E. coli*, then evaluate the reduction of loads as a result of management alternative and best management practices being implemented. Load duration curve analysis was used to analyze *E. coli* sources and loading due to a lack of information to adequately calibrate the SWAT model for *E. coli*. Prior to conducting simulations of the various BMP scenarios, the model was run to identify critical areas in the watershed for susceptibility to sediment and nutrient loading based on land use/land cover, soils, slopes and other physiographic characteristics. Two primary BMP applications feasible for implementation in the Cedar Creek for nutrients and sediment (conservation tillage and filter strips) were decided on, and eleven scenarios comprised of different levels and/or combinations of these BMPs were simulated with SWAT to evaluate load reduction estimates. Violations of *E. coli* are greatest during high flow events, suggesting the *E. coli* impairment is related dominantly to runoff-event loading. The information from this model, along with other information gathered during the planning process, including the results of the BST study, were used to determine critical areas and BMPs needed in the watershed.

The Cedar Creek Watershed Management Plan was approved and is currently being implemented, in part with a Section 319 grant received in 2005. The Plan focuses on decreasing pollutants (sediment, pesticides, bacteria, and nutrients) in the Cedar Creek watershed through the installation of BMPs in critical areas to help reach pollution reduction goals and education of watershed stakeholders. The Plan may be viewed at:

http://www.sjrwi.org/

Activities include protecting and increasing riparian corridors and vegetated buffers, installing bioswales and rain gardens to improve infiltration of runoff water, wetland restoration/protection, demonstrating environmentally sensitive landscaping that deters nuisance geese, an education campaign for adults and school children including information on septic system maintenance, and other best management practices for improving water quality in the Cedar Creek watershed. Phase I of the Cedar Creek WMP implementation will be completed in the fall of 2008.

In addition to the above activities, the St. Joseph River Watershed Initiative also conducted outreach activities throughout the St. Joseph River watershed to educate the public about the project and the water quality issues. Quarterly newsletters were mailed to more than 400 names and addresses on the mailing list, the SJRWI website was updated regularly with new information and activity notices, and regular press releases announced project activities and provided information to the public about the project.

### St. Joseph River Watershed Sediment and Nutrient and Pesticide Reduction Project

The St. Joseph River Watershed Initiative also completed an implementation project this year focused on expanding conservation tillage in the St. Joseph River watershed, primarily through making conservation tillage equipment available at a reduced rental cost to interested

producers; creating and implementing a cost-share program that would offset the cost of modification of planting, tillage, and harvesting equipment to implement conservation tillage and nutrient and pest management; and providing education and outreach opportunities for farmers and others to learn more about conservation tillage and nutrient and pest management.

Sedimentation and contamination of the St. Joseph River from pesticides and nutrients causes great additional expense to the City of Fort Wayne, which draws its drinking water from the river. It also creates problems downstream on the Maumee River, where excessive amounts of sediment must be dredged from Maumee Bay annually to keep Toledo Harbor navigable to Lake Erie traffic. Water quality degradation in the St. Joseph River and its tributaries has been documented by the St. Joseph River Watershed Initiative as well as government agencies. Land use in the watershed is mainly row crop agriculture. Tillage practices have been shown to have a strong effect on the amount of sedimentation and nutrient runoff from agricultural fields entering the adjacent streams and tributaries.

During this project, eighteen producers entered over 2,525 new acres into continuous conservation tillage contracts under the cost-share program. To qualify, the producer had to commit to a continuous no-till cropping plan for at least five years on a minimum of 100 acres that were previously conventionally tilled. Cost share up to 75% was provided on yield monitors, planter attachments, and other modifications needed to allow farmers to implement effectively conservation tillage and/or nutrient and pest management on their farms.

It is estimated (using the Region V Model) that due to this program and the BMPs implemented, sediment was reduced by 4,237 tons annually, phosphorus by 5,104 pounds annually and nitrogen by 10,201 pounds annually.

In addition to the cost-share program, the Initiative used Section 319 funds to lease conservation tillage equipment and made it available at a reduced rental rate for farmers interested in evaluating conservation tillage systems. There was much interest in the equipment, which produced a gross income to the St. Joseph River Watershed Initiative of approximately $85,525. This income was subsequently used for staff support, outreach, and education, updating the St. Joseph River Watershed Management Plan and other costs associated with the project. In addition, the load reductions associated with the conservation tillage implemented with the rented equipment amounted to 5,023 tons sediment/year, 6,745 lbs. phosphorus/year, and 13,473 lbs. nitrogen/year.

**John Deere 9520 Tractor with GPS auto steer system used to pull a Brillion Zone Commander sub tiller for more effective no-till.**

Tillage transects done during 2002 and again in 2004 or 2005 showed that in DeKalb County, the largest land contributor in the watershed, conventional tillage for corn decreased 17% (with an 8% increase in no-till) and conventional tillage forbeans decreased 8% (with a 5% increase in no-till). Conventional tillage in Steuben County decreased slightly for corn (1%) as well as for soybeans (6%). Allen County experienced an 8% decrease

in conventionally tilled soybeans, however, despite intensive efforts, conventional tillage increased slightly for corn.

The project included several types of outreach to educate farmers and others about conservation tillage and nutrient and pest management. Information was disseminated through the St. Joseph River Watershed newsletter, and through newsletters of partner organizations, including the county Soil & Water Conservation Districts of each county and the NRCS information network. The Tri-State Conservation Tillage Expo was held each winter from 2003-2006 to highlight equipment and information available for the practice of conservation tillage and the resultant reduction of pollutants in the watershed. This event was co-sponsored by various partners over the years, and drew an average of 300 attendees.

**Tri-State Conservation Tillage Expo**

Since Atrazine is a particular problem in the watershed, education efforts included encouraging farmers not to put Atrazine down right before rain was predicted; educating farmers on precision spray application using precision equipment and corresponding techniques such as turning off sprayers around waterbodies; and buffering tile inlets and the edges of waterways. Using the Initiative's water sampling data and other available data, results of Atrazine runoff during/after storm events was presented so producers could see how much is going "down the drain" through runoff. When farmers saw the Atrazine levels in the ditch adjacent to their fields at 60 ppb or more, it did make an impact. Atrazine levels vary widely throughout the watershed depending on proximity to the application sites and the weather. Water quality data shows that the application season average for Atrazine, measured at the Cedar Creek confluence with the St. Joseph River, has decreased since 2004 by 0.14 ppb to 1.7 ppb. The annual average has decreased since 2003 by 0.7 ppb to 0.38 ppb. The maximum contaminant level allowed for drinking water is 3.0 ppb. When the raw water exceeds this level, the filtration plant must treat it using additional carbon. This level is sometimes exceeded at the filtration plant (the lowest point of the watershed) during application season.

Because of the high percentage of agricultural land use in the St. Joseph River watershed, non-point source pollution from farms and farming activities remains a top concern. Conservation tillage in corn production proceeds at a very slow pace, but as educational efforts and cost-share programs continue to offset the high cost of adoption, the St. Joseph River Watershed initiative is confident that change can occur within the watershed. The St. Joseph River Watershed Initiative plans to continue to work closely with NRCS, Soil and Water Conservation Districts, and landowners to reduce conventional tillage practices and increase conservation on agricultural land. Phase II of this project, underway at this time, focuses on pollutant reduction through precision planting and application of fertilizers and pesticides by use of guidance systems, conservation tillage, and continuous outreach education to landowners and producers.

The St. Joseph River Watershed Initiative continues to create a public awareness of the value of the St. Joseph and its tributaries, and to improve communication and public access to

information about this resource. The website, www.sjrwi.org will continue to be a resource for community information and access to water quality information as well as river-related activities in the watershed.

## Improving Water Quality Through Livestock Management Planning

Located in the southwest portion of the Lower Peninsula of Michigan and encompassing part of northeast Indiana, the St. Joseph River (Lake Michigan Basin) watershed spans the Michigan-Indiana border and empties into Lake Michigan at St. Joseph, Michigan. The 303(d) List of Impaired Waterbodies for Indiana lists approximately 70 waterbodies in six Indiana counties (Elkhart, Kosciusko, LaGrange, Noble, St. Joseph and Steuben) that are a part of the St. Joseph River watershed that do not meet water quality standards. Parameters of concern include *E. coli*, impaired biotic communities, and ammonia. Livestock numbers in the watershed in these counties remain extremely high. Cattle, dairy cows, sheep, hogs, chickens, and ducks are raised extensively throughout the area. During the past few years chicken and duck populations have increased. Producers in the Basin have a wide range of management methods yet very few have and follow proper livestock management plans.

The six Indiana counties in the St. Joseph River watershed are working together to collect data and address the water quality concerns in the watershed. Concerns that continue to be identified include livestock access to streams and lakes, streambank erosion from livestock access, improper application, and storage of livestock waste, inadequate grazing systems, inadequate management of livestock watering sources and forest land degradation from over grazing. All of these practices either directly or indirectly increase pollutant loading to waterbodies in the watershed.

The LaGrange County SWCD received a Section 319 grant in 2004 to provide educational and technical assistance to producers within the St. Joseph River watershed. A cost share program was implemented for best management practices (BMPs) in the watershed to improve water quality, including exclusionary livestock fencing, alternative watering sources, and pasture and hayland planting. Manure Management Plans were completed for all cost-share recipients. In addition, three Comprehensive Nutrient Management Plans were developed.

It is estimated (by the Region V Model) that due to the BMPs, sediment has been reduced in the waterbodies by 1,945 tons/year, phosphorus by 2,549 lbs/year, and nitrogen by 7,151 lbs/year.

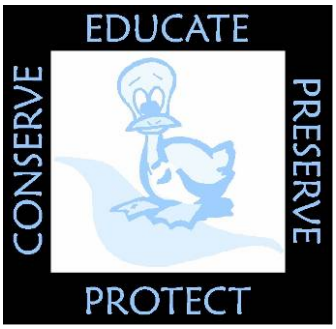
**Pasture Walk**

A comprehensive education program was implemented to educate the public on water quality and livestock related issues and promote BMPs. A newsletter, “Pasture News,” was distributed regularly to educate landowners about pasture related information, and “Pasture Walks” were held to promote pasture related BMPs.

During this project the SWCD partnered with the Friends of the St. Joe River Association, Inc., a Michigan group that received a grant to develop the St. Joseph River Watershed Management Plan (WMP). This plan, completed in 2005, provides communities in both Michigan and Indiana guidance and direction for improving water quality in the watershed.

The LaGrange Co. SWCD received another Section 319 grant in 2006 to continue its efforts to address water quality impairments in accordance with the new St. Joseph River WMP, including administering a comprehensive water quality testing program to validate BMP effectiveness.

## Tanners Creek Watershed Management Plan Implementation Project




The Tanners Creek watershed encompasses more than 68,000 acres located mostly in Dearborn County, Indiana. The creek begins in Franklin County and flows approximately 20 miles south and west into the Ohio River. In 2000, because of concerns about water quality and the need to address nutrient and sediment contamination, the Dearborn County SWCD applied for and received a Section 319 grant to develop a watershed management plan for the Tanners Creek watershed. Tanners Creek was placed on the 303(d) List of Impaired Waterbodies for impaired biotic communities in 2002. The watershed management plan was completed in 2003, and the SWCD received a 319 grant for $214,000 to begin implementing the plan.

Goals in the Tanners Creek Watershed Management Plan include reducing the amount of nutrients and sediments entering the waterbodies from agricultural activities through increased conservation tillage, increased quality of pasture/hayland areas, and managing livestock access to streams; reducing the impact of urban runoff; improving water quality through increased buffer strips and riparian buffers; and education of watershed stakeholders. This project worked to accomplish these goals through implementation of a cost-share program for BMPs that addressed the natural resource concerns outlined in the WNP, and conducting a public education and outreach program to educate citizens about NPS pollution and BMPs.

Twenty landowners in the watershed participated in the Tanners Creek Cost-share Program, contributing an average of 38% of the total project costs for BMPs that improve water quality. Practices included:

- 7,030 feet of woodland fencing
- 3,504 feet of interior fencing
- 226.5 acres of pasture/hay seeding
- 56.2 acres of wildlife seeding
- 9 alternative watering systems
- 514 feet of roof runoff guttering
- 770 feet of grassed waterways
- 20 acres conservation cover
- 10 Heavy use protection areas
- Two trickle flow collectors

Using the Region V model, the Tanners Creek Watershed Project estimates that the efforts of these landowners kept the following amounts of pollutants from entering Tanners Creek or one of its many tributaries:

- 2,896 tons/year of sediment
- 2,926 lbs/year of phosphorus
- 5,946 lbs/year of nitrogen

In 2005, the Tanners Creek Watershed Project received a $91,000 grant from the Dearborn Community Foundation – City of Lawrenceburg for a streambank stabilization project on Tanners Creek extending from the Tanners Creek Boat Ramp to the Ohio River. This streambank stabilization project will introduce more than 4500 native plants and over 300 trees to the eroded area and will provide additional pollution load reduction benefits. It is scheduled to be completed by the spring of 2007.

**Homeschoolers take an exciting journey into the world of aquatic insects during the TCWP's "What's Buggin' You" program.**

In addition to the cost-share program, the Dearborn County SWCD implemented an extensive education campaign. This included field days, workshops for contractors, water quality workshops for adults, classroom presentations, newsletters, news releases, community projects, festivals, river sweeps, and many other activities to educate kids and adults about the value of water quality. Throughout the two year project, the Tanners Creek Watershed Committee was able to educate approximately 4,460 school-youth and over 800 adults during field days and workshops. An ongoing service-learning project entitled "What's Buggin' You" promotes hand-on learning about water pollution and entomology and is offered to all grades within Dearborn County. The goals are to teach students about the value of macroinvertebrates and how to use them to indicate the presence of pollutants in the stream, provide teachers with materials and lessons they can use and to gather water quality information for the Tanners Creek Watershed Steering Committee. In addition to providing countless benefits to students, activities also provided benefits to communities. Community projects, such as storm drain marking and creek clean-ups, received thousands of hours of volunteer service, which might otherwise have cost taxpayers a substantial amount of money. Volunteers for the Tanners Creek Watershed Project have logged more than 3,700 hours in 2.5 years which averages to over 28 hours per week. This amounts to over $66,000 in volunteer time in two and a half years.

The Tanners Creek Watershed Project is continuing with another 319 implementation grant for $220,831. The Steering Committee, made up of stakeholders from a variety of backgrounds and agencies including landowners, educators, concerned citizens, the Farm Service Agency, and the NRCS, continues to give direction to the project. Monitoring is planned to determine if water quality target levels are being met within the 6-10 year anticipated timeframe outlined in the watershed management plan. More information on this project may be found on the Dearborn County SWCD web site at:

www.dearbornswcd.org/**Tanners**.html

# WORKING TO IMPROVE THE NPS PROGRAM

IDEM's NPS Program is actively working to expand agency resources devoted to addressing NPS pollution, develop planning and assessment tools to better gauge the effect of grant-funded projects, and fund projects to build watershed planning capacity within the state. This section of the report details efforts undertaken during this reporting period that will increase the effectiveness of the NPS Program in Indiana.

## Nonpoint Source Management Plan

IDEM has begun the process of formally revising and updating the entire document, with the goal of producing a web-based Plan that will map out IDEM and partner NPS pollution priorities for the next five years. IDEM will be involving our key stakeholders in this process and will utilize outside expertise to make this document user-friendly and reflect the latest information on NPS pollution. Tentatively, a near final draft will be completed by the next reporting cycle.

## Evaluation Strategy Framework

In an effort to measure the effectiveness of Indiana's NPS Program, the NPS/TMDL Section is currently developing an evaluation strategy framework that is updated yearly. The goal of this strategy is to develop and use indicators, both social and environmental, to establish baselines; to improve performance-monitoring systems, including a description at both the state level and project level of evaluation activities; to document what the state and citizens do and the impact of those actions on the environment; and to integrate the NPS program with the monitoring and assessment programs. The strategy will be implemented in a graded/stepwise approach with full implementation of the strategy into the NPS Program by September 30, 2009.

A draft list of social indicators has been identified through regional workshops and in cooperation with other states, the U.S. Environmental Protection Agency (EPA) Region 5 and the Regional Water Quality Leadership Team. The social indicators on the list will be used to assess the impacts of watershed planning and implementation projects on social outcomes such as knowledge, attitudes, and behavior of watershed residents and stakeholders.

The selection of environmental indicators has begun by forming a steering committee and subcommittees that will help to gather baseline data throughout the state. To assist the steering committee, plans are being made to conduct a statewide monitoring conference intended to gather baseline information and feedback on current monitoring strategies. Three workshops have been planned to refine further the list of social indicators and to develop a draft list of environmental indicators. In addition, three watershed projects were selected in Indiana for a more intense study using the draft list of both social and environmental indicators: Salt Creek,

Eagle Creek, and Clifty Creek. Through the collection of data from these projects, a correlation between social and environmental indicators will be assessed.

As a means of storing and collecting the indicator data, a database is being developed for the physical, chemical, and biological data collected as a product of the 319 and 205(j) projects. This database is being developed in a cooperative effort by the NPS/TMDL Section and the Assessment Branch. The social indicators will be stored in a region wide database that is also in the planning stages. This database will be used to store social indicator data for all of Region 5 and will be interfaced with GRTS.

## Accountability Pilot Project

Indiana has five watersheds included in EPA Region V's Accountability Pilot Project. Watershed projects included in the Pilot utilize planning followed by implementation to meet water quality standards in lieu of establishing a TMDL for the impaired waterbodies within the watersheds. Cedar Creek, Eagle Creek, and Little Elkhart River, were previously part of the Pilot, and this year Clifty Creek and Dunes Creek watersheds were added. For each project, updates on the project's status are submitted annually to EPA through a database. A summary of the management actions and project milestone dates submitted this year are as follows:

**Cedar Creek -** The St. Joseph River Watershed Initiative is implementing the management plan for Cedar Creek by placing BMPs to reduce NPS pollution that focuses on *E. coli*, sediment and phosphorous. Critical milestones for the project include a 40% average annual reduction in *E. coli*, 10% average annual reduction in total phosphorus and a 15% reduction in annual sediment loads by November of 2007 when the first phase of implementation ends. They anticipate completing implementation efforts in 2015 with the ability to de-list in 2019.

**Little Elkhart River** – LaGrange County is in the process of completing a management plan for headwater streams of the Little Elkhart River system. This mostly rural watershed with significant livestock production suffers impairments from *E. coli* and ammonia. Through the course of implementing the plan once it is completed they expect to reduce *E. coli* and ammonia by 25% by the end of 2010. Implementation efforts should be complete by 2014 and delisting possible by 2016.

**Eagle Creek** – The Eagle Creek Watershed Alliance is currently implementing the management plan for the Eagle Creek watershed. The Eagle Creek Reservoir is an important drinking water source for the city of Indianapolis. Critical milestones for phase I implementation efforts are a 40% reduction in *E. coli*, 8% reduction in sediment, 3% reduction in total P, and a 2% reduction in Total N by February 2008. Implementation efforts are expected to be finished by 2016 with delisting by 2019.

**Dunes Creek** – Save the Dunes Conservation Fund will implement the Dunes Creek Watershed Management Plan to address E*. coli* impairment and reduce other NPS pollutants. The watershed management goal is to improve the water quality and habitat of Dunes Creek by reducing and preventing pollutant loads in the watershed such that, at a minimum, the Creek meets Indiana water quality standards. Milestones include reducing nutrients (N&P) and

sediment 15%, *E. coli* to meet the state standard, improve biotic communities to partially supporting and reducing TDS and chloride concentrations to meet water quality standards by the end of 2012. The needed implementation efforts are estimated to be complete in 2016 and delisting is expected to take place during 2018.

**Clifty Creek** – The Bartholomew County SWCD and partners are implementing the Clifty Creek Watershed Management Plan by implementing a cost-share program and providing education and outreach. The education, outreach, and partnership-building activities include workshops, public meetings, newsletters, news releases, informational displays for use at events, and educational road signs within the watershed. The District will develop, promote, and implement a cost-share program that is consistent with the sediment, nutrient, and *E. coli* load reduction goals outlined in the Plan. Milestones include reduction of sedimentation by 92%, reduction of nitrogen loads by 50%, and reduction of Phosphorus loads by 89% all by 2011. *E. coli* spikes will be reduced by 20% by 2012 and to the state standard by 2018. Most implementation is expected to be complete by 2012 with *E. coli* delisting occurring by 2020.

## Total Maximum Daily Load Program

Under the federal Clean Water Act (CWA) Section 303(d), development of TMDLs is required for all the impaired waterbodies that do not meet the water quality standards (WQS) for the designated uses to protect aquatic life, wildlife, and human health. The NPS Program and the TMDL Program continue to work together to facilitate the integration of watershed management planning and implementation with the development of TMDLs and their implementation. The Section 319 Program priorities are developed in cooperation with the TMDL program in order to achieve the goals of both programs in the most efficient and cost-effective manner.

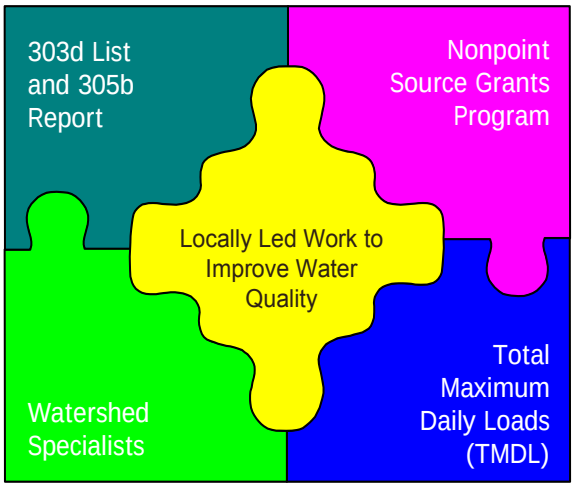
TMDL staff and Section 319 staff attend watershed meetings together, exchange information at monthly staff meetings, and match watershed groups to grant funding and data resources. Section 319-funded projects are often key stakeholders in the development of TMDLs and provide data, meeting spaces, and stakeholder lists which have greatly improved the quality of TMDL reports. The development of TMDLs has, in some cases, spurred the development of new watershed groups - five new watershed groups have been formed as the result of a TMDL (and were funded with 319 grants to continue the work started by the TMDL) and fourteen watersheds where TMDLs were completed had 319-funded watershed groups already established. TMDL staff has even worked with watershed groups to assist in the development of implementation projects designed to help meet load reductions stated in the TMDL report.

Indiana is divided into 2426 fourteen digit watersheds and 461 of these watersheds have TMDLs developed or scheduled to be developed by the end of 2007. This translates to 625 TMDLs and of these, 65% are in various stages of implementation. IDEM currently produces over 100 TMDL reports each year, a significant improvement over previous years. TMDLs have primarily focused on *E. coli*, but recent TMDLs have been developed that quantify the impacts of nutrients on waters with impaired biotic communities.

## Watershed Specialists

In August 2004, four Watershed Specialists were hired to work with watershed groups, stakeholders, local officials and others throughout the state to improve water quality. Each of the specialists is responsible for working independently to coordinate watershed management activities within a multi-county area of the state. These specialists act as liaisons between state and local programs and officials to facilitate watershed planning and TMDL development activities. They are an important component in locally lead work to improve water quality. A fifth specialist was hired in August 2006 to work specifically in the Indiana Coastal Zone watersheds. Accomplishments of the Watershed Specialists in 2005/2006 include:

- Assisted approximately 84 active and developing watershed groups on many levels including: meeting facilitation, reviewing draft and final watershed management plans, reviewing grant proposals, obtaining water quality data and watershed maps, connecting them with other local organizations and agencies to complement planning efforts, and assisting watershed coordinators with the overall watershed planning process




- Attended TMDL public meetings to provide information on watershed planning and generate interest in forming local watershed groups

- Attended Wellhead Protection Plan community meetings with IDEM Ground Water staff to provide information on watershed planning and generate interest in forming local watershed groups

- Developed and conducted three Watershed Coordinator Networking meetings/ field days in Vincennes, Bloomington, and Fort Wayne which served to build capacity and provide information on watershed planning and grant opportunities

- Began working with local watershed groups on regional strategic planning for their larger, 8-digit HUC basins (Upper White River Basin, Wildcat River Basin, Lower Eel River Basin, Patoka River Basin, Pigeon Highland Basin, Whitewater River Basin

- Continued working with the Indiana Association of Soil and Water Conservation Districts (IASWCD) Watershed Information Specialist to update the web page of resources for watershed coordinators (http://www.iaswcd.org/programs_idem.htm) and provide information on watershed group activities for the electronic newsletter

- Acted as liaisons between local watershed groups and various state, interstate, federal and non-profit programs, such as USEPA, NRCS, ISDA, IDNR, ISDH, Ohio EPA, Illinois EPA, Michigan DEQ, USGS, IGS, RC&Ds, Rural Community Assistance Program (RCAP), basin commissions, land trusts, universities, and economic development and metropolitan planning organizations;

- Served on inter-agency and organizational planning committees (such as Hoosier Heartland RC&D Rural Matters, Urban Matters and Educational committees, Watershed Leadership Academy, Social Indicators Workshop, Indiana Rural Water Alliance) to address local, regional and statewide watershed planning issues and needs

## Indiana Water Quality Atlas

The Polis Center at Indiana University Purdue University Indianapolis used Section 319 funds to develop the Indiana Water Quality Atlas (IWQA) to help watershed coordinators access and analyze water quality data for watershed management plan development and implementation. The IWQA is an Internet application of spatial and database analysis tools for mapping and charting water quality data and trends. It is continuing to be improved with the addition of high resolution digital elevation models and the porting in of the Purdue University based watershed delineation tool and L-THIA (Long-Term Hydrologic Impact Assessment) Model. Currently, the application can be accessed through the IDEM website URL:

www.in.gov/idem/publications/maps/iwqa.html

The IWQA was developed to be a part of a distributed system of data sharing. Along with the water chemistry, aquatic biology, and water body assessments and impairments data provided by IDEM, the application uses additional environmental and framework data sets from other sources. One major source is the distributed data served by the Indiana Geological Survey through its Internet application, A GIS Atlas for Indiana:

http://igs.indiana.edu/arcims/

This sharing of data has helped minimize duplication of effort, more specifically the collection, authorship, maintenance/security, and storage of data; and in turn, reduces user confusion as to its timeliness and accuracy.

Implementing the IWQA as a distributed model allows the watershed coordinators and other users to access multiple data sets through one interface. The IWQA interface offers additional capabilities that are not available at other sites. Along with watershed profiles and extensive querying capabilities, the IWQA allows users to download data to their own systems, add their own data to the application, save their data and analysis to the server, and print maps and charts for inclusion in plans and reports.

Through the development of this site, the agencies have gained a better understanding of ways to implement distributed data and tools via the Internet while providing highly requested data to watershed groups and the public at large. With immediate access to data, coordinators,

planners, and others seeking environmental and spatial information can easily acquire data or use the application without assistance, special requests, or delays.

## Nutrient Criteria Development and Implementation

States are currently working to meet requirements by EPA to develop nutrient criteria for various waterbody types. Numeric nutrient criteria will provide the NPS Program with parameter targets for meeting water quality standards. These targets will be based on data collected from a representative sample of Indiana streams that is more closely associated with use impairment rather than guidance EPA has proposed. In order to do this, a large amount of data must be collected. Approximately $782,343 of the funding for these studies has come from federal grant funds, with $455,893 coming from Section 319 funds and $326,450 coming from 205(j) funds.

The USGS has been working cooperatively with IDEM at randomly selected sites in each of the five basins that are sampled on an annual rotating basis to collect phytoplankton and algal biomass chlorophyll *a* samples as well as physical and chemical samples. This information will be coordinated with biological (macro-invertebrate and fish community), chemical, and physical data collected by IDEM to try to determine potential cause and effect relationships between nutrient concentrations, algal responses and biological condition. These studies form one of the basic components of Indiana's nutrient criteria development plan.

The studies that the USGS conducts at its National Water Quality Assessment (NAWQA) sites in Indiana also provide a major contribution to Indiana's plan to develop nutrient criteria for the state. Data gathered at these sites are providing Indiana with some useful information regarding seasonal and annual trends of nutrient and algal concentrations and their potential effects on the biotic community, and these studies have been included as part of the nutrient criteria development plan. The Survey is also doing fate and transport studies in one of the basins which will provide information about the fate and transport of nutrients in the waters. These studies have also been incorporated into the plan.

USGS and IDEM's Assessment Branch have finished one five year cycle following our rotating basin monitoring strategy, and collection and analysis of water chemistry data, habitat data, and biological data including algal biomass and chlorophyll data has been completed for each major water basin throughout the state. Analysis of these data as a group will begin in the fall of this year to see if cause and effect relationships can be established between nutrient concentrations, algal response, and biological condition. If these relationships can be established, they could form the basis for appropriate nutrient criteria.

IDEM has also entered into a contract with LimnoTech Incorporated (LTI) to evaluate the historical lake data collected by Indiana in order to develop nutrient criteria for lakes. This project is focusing on the development of criteria for different classifications of lakes based on the existing water quality and biological data, lake characteristics, and watershed characteristics. The project will provide a summary of the different models that may be considered for establishing the appropriate criteria, make recommendations as to some appropriate criteria, and provide a recommended process for developing site-specific criteria for a particular lake, if needed. This project is to be completed by January 2007.

# Capacity Building to Reduce NPS Pollution

IDEM is continually seeking ways to build capacity around the state in an effort to strengthen the effectiveness of groups working to achieve water quality goals and show measurable results. Our objective, along with the USEPA, is to promote the organizational development and growth of local watershed partnerships and stakeholders committed to improving and maintaining the natural and economic resources of their watersheds; and to provide training and technical assistance to these groups so they can better address watershed-based problems and help develop sustainable solutions. IDEM is currently partnering with the following organizations to build this capacity statewide through efforts such as training watershed coordinators and other water resource professionals, providing needed tools to help groups fulfill their mission and achieve their goals, and educating citizens and professionals on watershed planning and implementation and innovative ways to reduce NPS pollution.

### Conservation Technology Information Center

The Conservation Technology Information Center (CTIC) is working with IDEM and using Section 319 funds to survey water resource professionals on training needs and develop and conduct four workshops across the state to provide needed tools for watershed coordinators, environmental managers, and others in water quality planning and implementation. Participants will be given the necessary tools and materials to implement management programs that will lead to pollutant load reductions in their watershed. Funds will also be used to award scholarships to ten attendees for each workshop.

CTIC will develop a survey to determine participants' long-term retention of skills and knowledge. The survey will be conducted at the end of each training session and online three to six months after each workshop. Results of the evaluations will be used to assess the value of the training and identify any future training needs.

In addition to the four workshops, CTIC will advertise, provide scholarships, and manage travel arrangements for watershed professionals to attend the National Watershed Partnerships Seminar and/or other appropriate nonpoint source meetings and conferences. The National Watershed Partnership Seminar is a two week intensive seminar focusing on watershed or community based approaches for environmental protection. Also, the course concentrates on identifying, building, and maintaining watershed partnerships allowing participants to: build self-awareness skills; learn personal skills to better deal with interpersonal and group conflict; and recognize who needs to be involved in watershed decision making and when and how decisions are made. These are essential skills when working with watershed groups to identify and address water quality problems in their watershed.

### Indiana Lakes Management Society

The Indiana Lakes Management Society (ILMS) is a statewide non-profit organization with the mission to "...promote and encourage the understanding and comprehensive management of lakes and reservoirs and their watershed ecosystems." To that end, ILMS is partnering with

IDEM and using Section 319 funds to support sessions on nonpoint source pollution reduction and nutrient criteria development at the North American Lake Management Society (NALMS) 2006 International Symposium in Indianapolis. In an effort to build further capacity for improving water quality in Indiana's lakes, ILMS is recruiting lake leaders from across the state and providing scholarships for them to attend the International Symposium. The scholarship recipients will attend the entire conference, including an ILMS sponsored lake leaders' orientation session and a post-conference de-briefing session to help them absorb, understand, and eventually apply the information learned. It is anticipated that from this conference leaders in lake communities will be better equipped to develop stronger local interest and involvement in lake and watershed planning and implementation through education, networking, and motivation.

The next phase of the ILMS program to develop lake leaders includes working with specific lake leaders to develop watershed management plans for their lakes. ILMS has identified two lake watersheds (including five lakes) with impaired waterbodies that have strong local support for improving water quality and lake ecosystems. A proposal was submitted for FFY 2007 Section 319 funds to develop two watershed management plans for these 14-digit watersheds, one in Steuben County, the other in LaGrange County. Once these plans are developed, it is fully anticipated that ILMS will work with these lake associations to implement the plans. These plans will be a model for other lake associations to follow in developing their own watershed management plans, and ILMS will gain valuable experience that they can use to help other lake associations.

**Purdue University**

IDEM is partnering with Purdue University and using Section 319 funds to conduct The Indiana Watershed Leadership Program to meet the needs of watershed coordinators, agency staff, and others that want to become more effective watershed leaders. The program includes a watershed leadership course, technical assistance to watershed coordinators and groups, and an Indiana watershed conference. A steering committee, including representatives from groups such as current watershed partnerships, SWCDs, IDNR, NRCS, and other conservation and environmental groups provides guidance on developing the watershed leadership program.

Purdue assessed watershed coordinators and watershed group outputs and outcomes to investigate the impact of current watershed education and management efforts. It also assessed the needs of coordinators and their response to potential methods for providing education in watershed planning tools and techniques. A copy of this survey is attached to this report. The Indiana Watershed Leadership Course was developed based on the needs assessment conducted and the recommendations of the steering committee. The course is six months in duration and will be offered at least twice. Lessons include topics such as conducting a watershed inventory, assessing the effectiveness of nonpoint source pollution controls, and using the Indiana Water Quality Atlas.

The first class of 24 participants (who represented watershed groups and water quality professional organizations from all over Indiana) remained in the program throughout the training and 17 completed the requirements to receive their Professional Certificate in

Watershed Management from Purdue University. The graduates of this course are expected to strengthen community land and water management in Indiana.

Purdue is also providing technical assistance to watershed coordinators and partnerships throughout the project, including organizing no less than four single day field trainings on technical aspects of land use and water quality assessment. It will also develop a statewide watershed mentoring program in which experienced watershed coordinators who are willing to serve as mentors are paired with new watershed coordinators.

The Indiana Watershed Conference will be conducted in conjunction with the "Indiana River Rally" that will begin on June 2007 in Lafayette. The watershed conference will focus on Indiana's watersheds and will bring together many watershed coordinators, state and federal officials, agency partners and university researchers to discuss high priority issues that watershed groups are having problems with.

**The Nature Conservancy**

IDEM is providing financial support with 319 funds for a conference entitled "Innovations in Reducing Nonpoint Source Pollution", organized by The Rivers Institute at Hanover College in collaboration with The Nature Conservancy, which will be held November 28-30, 2006 in Indianapolis. The conference will include presentations on methods, policies, programs, and measurements used for reducing nonpoint source pollution. The main goal of the conference is to bring in speakers from other states who can describe innovative approaches to reducing nonpoint source pollution in those states and other regions of the country, including technical and policy speakers. A pre-conference workshop called "Finally, a Tool I Can Use!" will teach participants about free, publicly available tools and how to use them. They will learn how the tools can help them delineate watersheds, estimate runoff and pollutants loads, and better understand their watershed for improved decision making.

# PARTNERS IN WATER QUALITY

The work that IDEM's many partners do to help assess and reduce NPS pollution is a vital component of how Indiana addresses this environmental challenge. Increased communication and partnership building will help insure that these efforts are complementary and that the resources available in Indiana are deployed in a manner that allows for maximum returns. These efforts will be an IDEM priority for 2007.

## Natural Resources Conservation Service

The NRCS mission statement is "Helping People Help the Land." Through financial and technical assistance, NRCS works toward a landscape with 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 non-federal land. This includes governments with a responsibility for natural resource use and management.

NRCS assists landowners in Indiana to develop conservation plans and provides technical assistance and advice about natural resource management. NRCS helps install practices and systems that meet technical standards and specifications. NRCS also provides financial assistance through cost-share/incentive programs, easement programs, grants, and stewardship payments. NRCS' standards and specifications are utilized for many of the cost-share practices implemented through 319 grants. NRCS Farm Bill conservation programs are utilized as one funding source for implementing local watershed management plans.

NRCS' strategic plan is focused on nonpoint source pollution issues in several areas. For example, one of the national goals for NRCS is "Clean & Abundant Water." The national objective is that agricultural producers will reduce potential delivery of sediment and nutrients from their operations by more than 70 million tons by 2010. Another goal is "High-Quality Productive Soils," and the national objective is that farmers will manage 70 percent of cropland under systems that maintain or improve soil condition and increase soil carbon by 2010.

In Indiana, NRCS is beginning an effort to conduct a statewide natural resources assessment broken down by 8-digit watersheds, following the national Rapid Watershed Assessment framework, to be completed over the next year.

New tools and program enhancements developed over the last year that directly assist NPS pollution efforts include:

- Web Soil Survey
- Energy calculators – tillage, nitrogen, irrigation
- Nutrient & Pest Management certification policy
- ProTracts – EQIP nationwide ranking processes
- Workload tracking at the Tech Team level

Some accomplishments in fiscal year 2006 include over 14,700 conservation practices applied to the land; securing funds to complete the Goose Pond Wetland Reserve Project, a 7,000 acre wetland of national significance; and two Wetland Reserve Enhancement Projects, including an 8-county project in southwest Indiana intended to develop a wetland corridor along the Wabash River. In addition, NRCS and the Indiana State Department of Agriculture have partnered in implementing conservation practices (survey, practice design, layout, and follow-up) through eight Conservation Implementation Teams throughout the state.

For 2006, NRCS programs in Indiana that support NPS pollution efforts included:

Conservation Security Program (CSP)

- 90 new contracts in 2006 for a total of $1.1 million
- 87 contracts in the Wildcat Creek Watershed
- 3 contracts in the Upper Great Miami Watershed

Environmental Quality Incentives Program (EQIP)

- 599 contracts for $10,633,085 in Financial Assistance
- 358 of the contracts are Livestock related (72% of the total allocation)
- 227 contracts include $502,238 for Technical Assistance (TSP Funds)
- 33 newly approved contracts for a total of $316,813

Wetland Reserve Program (WRP and WREP): 30 Easements for $9.8 Million

Wildlife Habitat Incentives Program (WHIP): 70 contracts for $305,297 in Financial Assistance

## Indiana State Revolving Fund Loan Program

The Indiana State Revolving Fund (SRF) Loan Program finances projects that abate or prevent NPS pollution of Indiana's waters. The SRF Program has traditionally provided low interest loans to Indiana communities for projects that improve wastewater and drinking water infrastructure. The Program has been expanded to fund projects that meet the objectives in the Indiana Nonpoint Source Management Plan. The money loaned to these NPS projects is also documented as match for the state Section 319 Grant Program. Eligible NPS 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;
- Groundwater remediation;
- Failing septic system repair, replacement or connection to sewer;
- Storm water best management practices (BMPs);
- Source water and wellhead protection;
- Conservation easements; and
- Agricultural and waste management BMPs.

This fiscal year, the SRF Program worked with ten communities on projects to reduce NPS pollution, primarily by extending sanitary sewers to areas with septic systems, thereby eliminating this potential source of pollution.

## Indiana Department of Natural Resources, Lake and River Enhancement Program

The Lake and River Enhancement Program (LARE) was developed to ensure the continued viability of public-access lakes and streams. The program's goal, much like that of the Section 319 Grant Program, is to utilize a watershed approach to reduce non-point source sediment and nutrient pollution of Indiana's and adjacent states' surface waters to a level that meets or surpasses state water quality standards. To accomplish this goal, grants are available for technical and financial assistance for qualifying projects. The funded projects will improve water quality through the installation of grass cover, filter strips, and streambank or shoreline stabilization structures to reduce sedimentation and nutrient runoff. Some grants will result in the production of scientific studies to document water-related problems and proposed solutions.

In July 2006, the IDNR awarded $986,850 of Lake and River Enhancement funds as grants to protect the water quality of Indiana lakes and streams and to reduce soil erosion. The 25 grants will benefit citizens and resources in 31 counties throughout the state. The projects funded by the grants will help restore not only natural beauty but also ecosystems. These projects, when completed, should result in improved boating, fishing, and other recreation.

## Indiana State Department of Agriculture, Division of Soil Conservation

The Division of Soil Conservation, formerly a part of the Indiana Department of Natural Resources, transitioned to the Indiana State Department of Agriculture in April 2005 to ensure that agriculture had a vehicle to carry out increasingly important conservation initiatives. The Division of Soil Conservation focuses on strengthening the capacity of local Soil and Water Conservation Districts to ensure that constituents have a local resource for conservation assistance and providing conservation assistance to implement the federal Farm Bill, capitalizing on federal dollars that Indiana has lost in the past.

The Division of Soil Conservation is a member of the Indiana Conservation Partnership. Working together, the Partnership provides technical, educational and financial assistance to landowners to reduce erosion and sediment-related problems on the land or in public waters. IDEM partners with the Partnership on many projects and programs.

The Division of Soil Conservation employs 30 Resource Specialists to directly assist landowners' implementation of conservation practices addressing specific soil and water resource problems. Resource Specialists work in regional Conservation Implementation Teams with staff from the other Indiana Conservation Partnership members.

The Division also employs eight District Support Specialists to work directly with the local Soil and Water Conservation Districts to develop conservation priorities, goals and plans for their respective territories.

## Indiana Lake Michigan Coastal Program

The purpose of the Indiana Lake Michigan Coastal Program (LMCP) 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 Indiana Department of Natural Resources is the lead agency implementing the LMCP.

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 management programs develop a coastal NPS pollution control program to address water quality impairment of coastal waters. The purpose of the program is to develop and implement management measures for NPS pollution to restore and protect coastal waters. A workgroup was formed in 2003 consisting of representatives from the LMCP, Purdue University, Cooperative Extension, and IDEM which began drafting the nonpoint source pollution control (6217) program.

In February 2005, the Indiana Coastal Nonpoint Pollution Control Program document was sent to EPA and NOAA for review. The document identifies the programs and enforceable authorities that Indiana uses to control NPS pollution in each of six NPS categories including agriculture, forestry, urban and rural areas, marinas and recreational boating, hydromodification, and wetlands, riparian areas and vegetated treatment systems. This program will serve as an update and expansion of existing NPS management programs. The LMCP is anticipating conditional approval of the Section 6217 program in late 2006 or early 2007.

Indiana's LMCP continues to address issues of local, state, and national concern in the coastal region. Priority areas for the Program are:

- Government coordination and streamlining among state agencies and between state and local government;
- Public access to coastal areas of environmental, recreational, historic, esthetic, ecological or cultural value;
- Habitat protection and restoration of areas designated as areas of particular concern;
- Shoreline erosion and coastal hazards; and
- Public participation in the management of coastal resources.

The Watershed Management Section of IDEM supports 319 funded projects in the coastal area that also support Section 6217 of the Coastal Zone Management Plan. The monitoring portion of the Indiana Coastal Nonpoint Pollution Control Program document was funded through a 319 grant. The Indiana Geological Survey was under contract to compile the monitoring information and develop a monitoring plan.

IDEM has dedicated a Watershed Specialist staff position specifically to the coastal program area. This position will work with local communities and groups to develop watershed management plans throughout the coastal program area. IDEM also requires that all watershed management plans being developed and implemented in the coastal program area be consistent with the Section 6217(g) guidance. IDEM is coordinating efforts with the LMCP to develop a Clean Marina Program to address nonpoint source pollutants generated by marinas and recreational boaters.

## Indiana Association of Soil and Water Conservation Districts (IASWCD)

The mission of the IASWCD is to represent Soil and Water Conservation Districts as one voice, and to assist the leadership of local SWCDs through coordination and education for the wise use and management of our natural resources.

One of the many ways the IASWCD promotes the wise use of Indiana's natural resources is by providing information and outreach in support of statewide efforts to develop and enhance Indiana's watershed program and help address NPS pollution. Section 319 funds are used to staff a Watershed Information Specialist position at the IASWCD that serves as a liaison with IDEM Office of Water Quality staff to help promote watershed management efforts throughout the state.

Following are the accomplishments for the 2006 reporting period:

1. Met regularly with the IDEM Watershed Specialists (WSS), Total Maximum Daily Load (TMDL) and Nonpoint Source (NPS) staff, Indiana watershed workgroups, and other internal and external IDEM workgroups as needed. Meetings also include representatives from the IDNR Lake and River Enhancement Program, the ISDA Division of Soil Conservation, and the USDA Natural Resources Conservation Service.

2. Provided assistance to the IDEM Watershed Specialists on their strategic plan. This involved working with the WSS to create a strategic plan of work including goals, objectives, and tasks for each team member.

3. Assisted in developing training opportunities for watershed groups. Coordination with IDEM watershed specialists resulted in a series of networking meetings for individuals involved in watershed organizations. These meetings included topics and speakers relating to watershed planning and implementation, as well as field trips to view agricultural and urban best management practices. Recaps of meetings were published in special electronic newsletters sent to all participants, and posted on the IASWCD Web site at:

   http://www.iaswcd.org/WatershedNet.htm

4. Developed supporting web site for the IDEM/IASWCD 319 grant-funded project. The web site provides information and links on watershed planning and implementation. The website can be found at:

   http://www.iaswcd.org/WatershedRes.htm

5. Created electronic newsletters to promote watershed planning and implementation. Provided information and assistance to watershed groups and Soil and Water Conservation Districts through the Watershed Update newsletter and the SWCD Weekly Update.

6. Established the biannual electronic newsletter, Watershed Update. The newsletter promotes watershed planning and implementation in Indiana. The first issue was published in the fall of 2004. Articles include watershed success stories, events, training and grant opportunities.

7. Established the eNews Weekly Update to Indiana's 92 Soil and Water Conservation Districts as a way to disseminate watershed information statewide. This newsletter is published every Friday and can be found at:

   http://www.iaswcd.org/WeeklyUpdates06.htm

8. Worked with IDEM's watershed specialists to create presentations on watershed planning and the implementation process (including the TMDL process). Presentations developed in conjunction with the IDEM watershed specialists for statewide SWCD training and annual SWCD conferences.

9. Established a presence for IDEM's Office of Water Quality with the Pathway to Water Quality (PWQ) exhibit at the Indiana State Fairgrounds. The PWQ is a watershed demonstration site, which showcases how proper management practices at home, on the farm, and in business can protect our soil and water resources. The exhibit contains practical displays and information for anyone who uses the land. PWQ sponsors are the Indiana Association of Soil and Water Conservation Districts, Indiana State Department of Agriculture - Division of Soil Conservation, Purdue University Cooperative Extension Service, State Soil Conservation Board, and the USDA Natural Resources Conservation Service. Major activities include:

   a. Introduced the IDEM OWQ as a contributing member of the PWQ exhibit in 2005. First IDEM OWQ exhibit included a rain garden and rain barrel. In addition, a website (http://www.iaswcd.org/PathwayBarrel.htm) was created for this project. Approximately 40,000 individuals visited the PWQ in 2005.

   b. The 2006 exhibit included an expanded "home" section showing how a rain barrel and garden can be incorporated into any home landscape to improve water quality. Approximately 43,000 individuals visited the PWQ in 2006. Plans for 2007 will include a large model home and second rain garden with a certified backyard wildlife habitat.

10. Identified groups with potential interest in developing watershed projects, gave presentations, and provide information. Promoted existing Indiana watershed organizations through the following website:

    http://www.iaswcd.org/WatershedResOrgs.htm

11. Represented the IDEM Watershed Specialists at statewide events/organizations including the Indiana Agriculture Resource Council, Indiana Rural Development Council, "Pathway to Water Quality" Exhibit Steering Committee, Indiana Watershed Leadership Program, and Indiana Farm Bureau Inc. state convention.

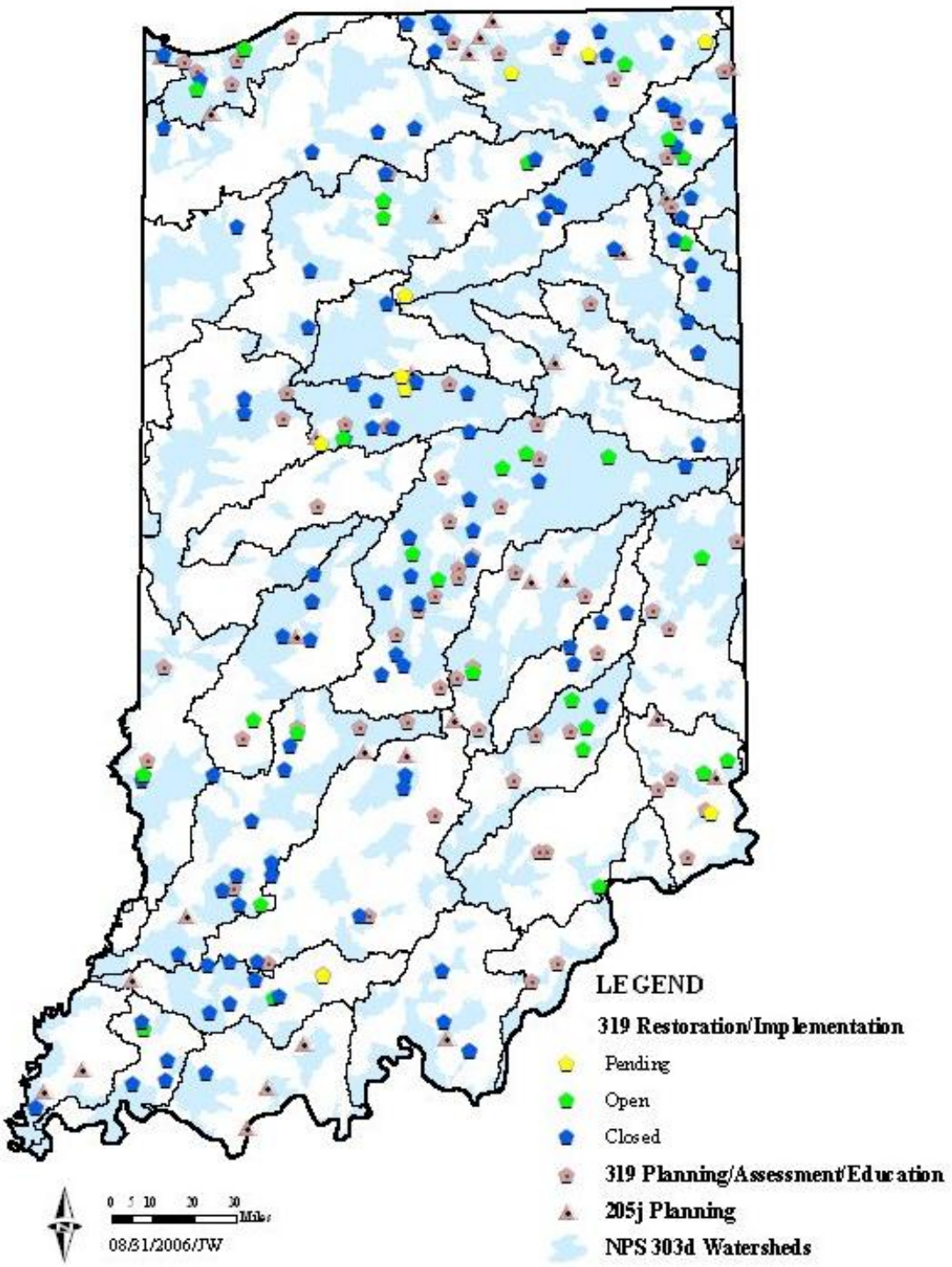
12. Developed a brochure entitled "Green Lawns /Clean Lakes – the Connection between Lawn Care and Water Quality." A webpage for the brochure was created at:

    htttp://www.iaswcd.org/CleanWater.htm

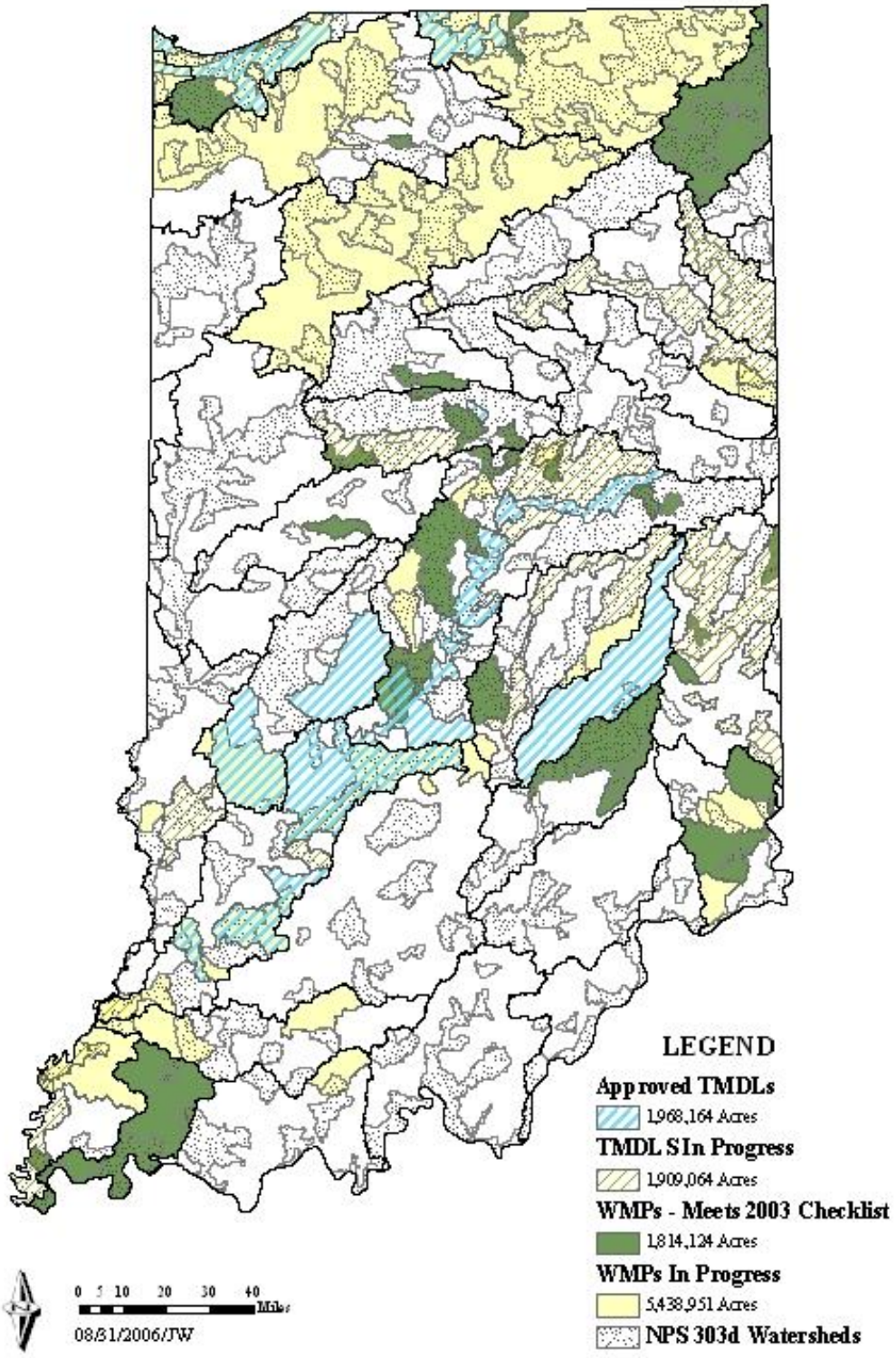
13. Worked with the IDEM watershed specialists to research grant opportunities for developing and implementing watershed related projects. Provided the eNewsletter GrantStation to IDEM watershed specialists to distribute to their watershed groups on a weekly basis. Provided information on grant opportunities in Watershed Update and Weekly Update.

# APPENDIX A: Geographic Location of Section 319 And 205(j) Projects

(Does not include statewide Projects)



# APPENDIX B: Location of Watershed Planning/TMDL Activities and 303(d) Listed Waterbodies by Watershed Area



# Indiana's FFY 2006 Nonpoint Source Program

**Summary of Cumulative Environmental Benefits from Project Activities**

Section 319(h) nonpoint source projects funded under the FFY 2006 grant cycle were highly successful in achieving important water quality benefits to Indiana's surface waters. The following is a summary of best management practices (BMPs) installed during these projects along with the associated estimated load reductions for sediment, phosphorus, and nitrogen:

## Agricultural Management Practices

- Implemented 68 nitrogen reduction practices on 18,660 acres of farmlands within targeted watersheds.
- 24 sites incorporated nutrient and pest management practices on 5,010 acres of producing farmland.
- Installed more than 19,000 linear feet of fencing to exclude livestock from waterways at 20 locations.
- Load reductions resulting from these practices: 33,857 tons/year of sediment, 39,465 lbs/year of phosphorus, and 70,573 lbs/year of nitrogen.

## Water Quality and Riparian Zone Restoration

- 10 Heavy Use Protection (561) totaling an area of 49 acres and 2 Roof Runoff Management (558) BMPs were installed and provided for the reduction of 253 tons/year of sediment, 421 lbs./year of phosphorus, and 1,073 lbs./year of nitrogen in annual loads.
- 4 water control structures were also installed to provide for an additional 41 tons/year of sediment, 38 lbs/year of phosphorus, and 76 lbs/year of nitrogen.

## Habitat Restoration

- Established 10 Upland Wildlife Habitat Management (645) areas totaling 163.5 acres and 3 Tree/Shrub Establishment (612) areas covering 15 acres.
- Additionally, 2 Use Exclusion (472) areas were designated in critical areas on 10 acres.
- Load Reductions resulting from these practices: 519 tons/year of sediment, 657 lbs/year of phosphorus, and 1,829 lbs/year of nitrogen.

**Waste Management**

- Successfully completed the installation of 2 Waste Storage/Utilization Facilities for a total load reduction estimated to be 3,803 lbs/year of phosphorus and 21,095 lbs/year of nitrogen.

## ANNUAL LOAD REDUCTION SUMMARY

***Total FFY 2006 Pollutant Load Reductions***

Reduced Sediment loadings by 34,670 tons/year

Reduced Phosphorus loadings by 44,384 pounds/year

Reduced Nitrogen loadings by 94,646 pounds/year

| Project Name | Sediment | Phosphorus | Nitrogen |
|---|---|---|---|
| St. Marys Sediment, Nutrient & Nutrient Reduction | 4190 | 5664 | 11311 |
| St. Joe Sediment, Pesticide, and Nutrient Reduction | 2826 | 3592 | 7180 |
| Grazing Land Water Quality Improvement | 683 | 742 | 1484 |
| Nutrient Management Specialist Phase II | 35 | 3288 | 8220 |
| CORE 4 Initiative | 9528 | 9473 | 18946 |
| Tanners Creek Watershed Project | 1611 | 1728 | 3563 |
| Young's Creek Watershed Plan Implementation | 6021 | 7384 | 15278 |
| Sand Creek Watershed | 113 | 128 | 259 |
| Water Quality Improvement/Livestock Management | 1553 | 2081 | 6218 |
| Livestock Waste Mgmt. for Prairie Ck. Watershed | 0 | 3334 | 18060 |
| Prairie Grass/Tree Planting & Wetland Restoration | 323 | 400 | 795 |
| Whitewater River Implementation Plan | 855 | 919 | 1839 |

*This table shows some of the larger load reductions by project.*

***Totals from Project BMPs installed during FFY 2000 through FFY 2005***

Sediment load reduction calculations: 79,231 tons/year

Phosphorus load reduction calculations: 93,570 pounds/year

Nitrogen load reduction calculations: 188,198 pounds/year

**Watershed Planning through Section 319 and 205(j) Funding**

In FFY 2006, the Nonpoint Source Program successfully completed thirteen watershed management plans of which seven have begun or soon will begin implementation in FFY 2007.