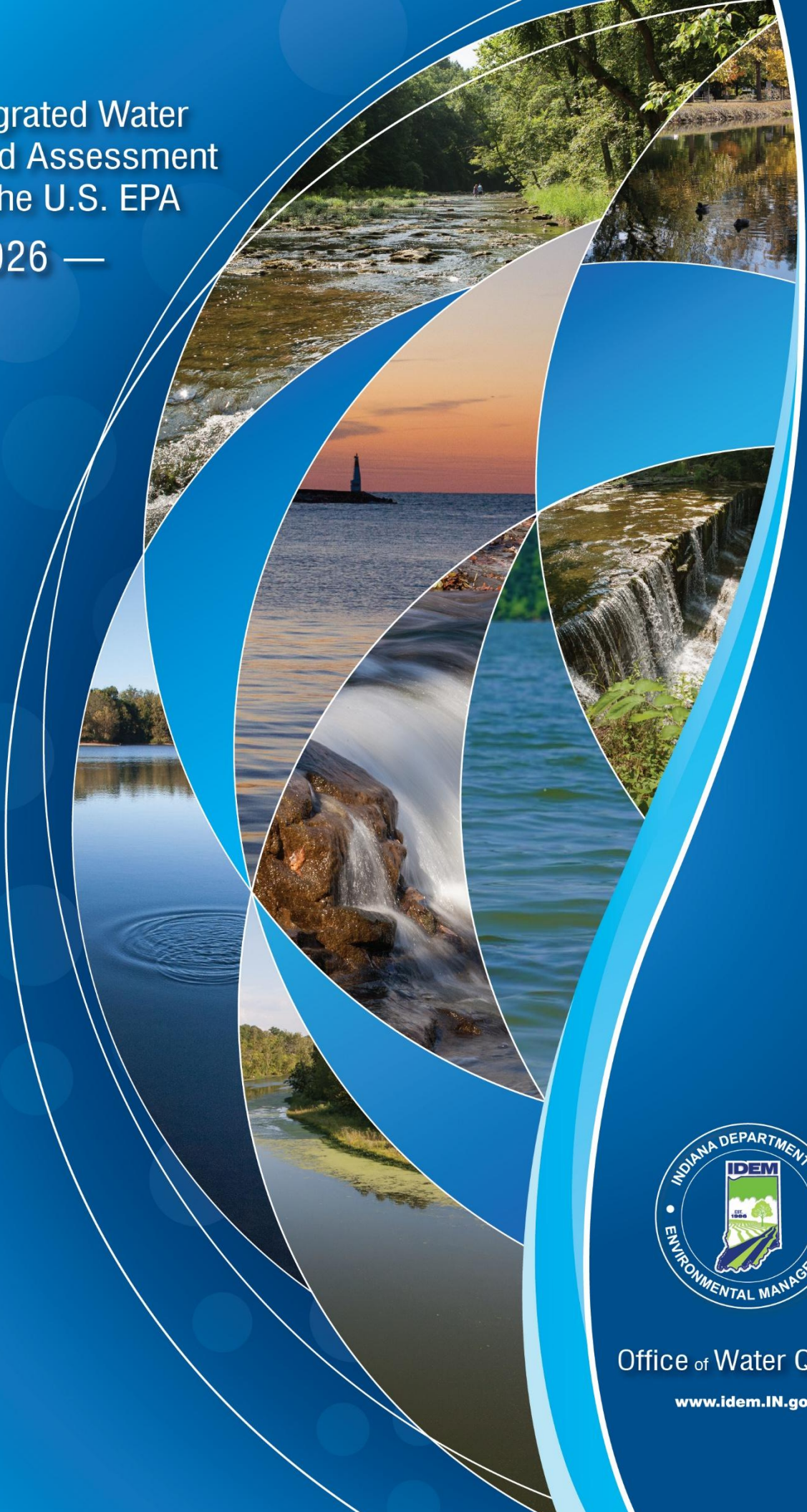


Indiana Integrated Water
Monitoring and Assessment
Report to the U.S. EPA

— 2026 —



Office of Water Quality

www.idem.IN.gov

Table of Contents

EXECUTIVE SUMMARY 1

INTRODUCTION..... 4

BACKGROUND 6

 WATER POLLUTION CONTROL IN INDIANA 7

 IDEM’S WATERSHED APPROACH 7

 IDEM’S OFFICE OF WATER QUALITY PROGRAMS AND ACTIVITIES 9

 Water Quality Standards Program 9

 NPDES Wastewater Permitting Program..... 10

 NPDES Wastewater Compliance Program 11

 Stormwater Program..... 11

 Waterways Program 12

 Total Maximum Daily Load Program..... 13

 Nonpoint Source Pollution Program..... 14

 Volunteer Monitoring Programs 20

 COORDINATION AND COLLABORATION WITH OTHER AGENCIES AND ORGANIZATIONS 21

 Indiana Department of Natural Resources..... 21

 Indiana Conservation Partnership..... 24

 U.S. Department of Agriculture, Natural Resource Conservation Service 25

 Indiana Finance Authority 26

 Indiana’s Great Lakes Water Quality Agreement Domestic Action Plan 26

 COST/BENEFIT ASSESSMENT 27

 Funding Water Quality Improvements through Better Infrastructure..... 27

 Successes in Water Quality Improvement through Strategic Measures 30

 SPECIAL STATE CONCERNS AND RECOMMENDATIONS 39

SURFACE WATER MONITORING AND ASSESSMENT 40

 IDEM’S SURFACE WATER MONITORING STRATEGY 40

 DATA QUALITY ASSURANCE AND QUALITY CONTROL..... 43

 DATA MANAGEMENT..... 43

 Management of Water Quality Monitoring Data 43

 Management of Water Quality Assessment Information 43

 WATER QUALITY ASSESSMENTS 44

 Water Quality Data Used to Make Designated Use Assessments 44

 Water Quality Assessment Methodology 48

2026 Indiana Integrated Water Monitoring and Assessment Report

REPORTING WATER QUALITY ASSESSMENT RESULTS.....	48
Indiana’s Consolidated List.....	48
CLEAN WATER ACT SECTION 305(B) ASSESSMENTS.....	51
Rivers and Streams Water Quality Assessment	52
Great Lakes Shoreline Water Quality Assessment.....	55
Lake Michigan Water Quality Assessment	56
Water Quality Assessments of Other Lakes	57
CWA SECTION 314 ASSESSMENTS.....	59
PUBLIC HEALTH/AQUATIC LIFE CONCERNS.....	62
Fish Consumption.....	62
Cyanobacteria and Algal Toxins	63
Fish Kills and Chemical or Other Spills.....	65
GROUND WATER ASSESSMENT.....	66
MAJOR SOURCES OF GROUND WATER CONTAMINATION	66
Sources of Nitrate.....	66
Fertilizers	66
Confined Feeding Operations.....	66
Septic Systems	66
Landfills and Underground Storage Tanks	66
Underground Injection Wells.....	66
Industrial Activities	66
Road Salts	67
Spills	67
GROUND WATER PROTECTION PROGRAMS.....	71
Classification of Indiana’s Ground Water Resources.....	71
Source Water Assessment Program.....	71
Other Programs Working to Protect Indiana’s Ground Water Resources	71
GROUND WATER MONITORING FOR PUBLIC WATER SUPPLIES	74
Statewide Ground Water Monitoring Network.....	81
REFERENCES.....	105

APPENDICES

Appendix A: Metadata and Definitions

Appendix B: Status of Category 4 Waters

Appendix C: IDEM's Priority Ranking and 2026 - 2028 Schedule for Total Maximum Daily Load Development

Appendix D: IDEM's 2026 Consolidated Assessment and Listing Methodology (CALM)

Appendix E: IDEM's Notice of Public Comment Period for the 2026 List of Impaired Waters and Consolidated Assessment and Listing Methodology Under Section 303(d) of the Clean Water Act

Appendix F: IDEM's Responses to Comments on the Indiana Draft 2026 303(d) List of Impaired Waterbodies and Consolidated Assessment and Listing Methodology (CALM)
Note: This appendix includes a spreadsheet file available in electronic format only.

Appendix G: Trend and Trophic Status of Indiana's Lakes

Appendix H: Listing Tables Including Indiana's Finalized 2026 303(d) List of Impaired Waters (Category 5) *Note: This appendix is a spreadsheet available in electronic format only.*

Appendix I: Indiana's 2026 Consolidated List (Categories 1-5) *Note: This appendix is a spreadsheet available in electronic format only.*

EXECUTIVE SUMMARY

Section 305(b) of the Clean Water Act (CWA) requires states to submit a biennial report on surface water quality to the U.S. Environmental Protection Agency (U.S. EPA). States must also provide a CWA Section 303(d) list of impaired waters. The Indiana Department of Environmental Management (IDEM) fulfills both requirements through the Integrated Water Monitoring and Assessment Report (IR), submitted on April 1 of even-numbered years.

IDEM prepares the report using data collected under its Surface Water Quality Monitoring Strategy (2022–2026) and incorporates qualified data from other organizations. The strategy outlines three primary monitoring approaches:

- Probabilistic monitoring using a stratified random design on a rotating basin schedule, providing a statewide dataset every nine years.
- Targeted monitoring of selected locations for specific objectives, including Total Maximum Daily Load (TMDL) reassessments.
- Fixed station monitoring collects monthly water chemistry data at long-term sites.

All data are reviewed for suitability in CWA Section 305(b) assessments and 303(d) listing decisions, following IDEM's Consolidated Assessment and Listing Methodology (CALM). Assessments determine whether waterbodies meet their designated uses under Indiana's water quality standards (WQS). IDEM evaluates aquatic life, recreation, and public water supply uses, along with fish consumption in rivers, streams, and lakes. These uses have the most stringent criteria and therefore protect additional designated uses, including agricultural and industrial.

IDEM first published the IR in 2002 and the 2026 IR provides the most current statewide assessment results. Most flowing waters in the state are represented by the 62,692 miles of streams included in Indiana's Reach Index, of which 43,657 miles (70%) have been assessed for at least one designated use. Table 1 summarizes the cumulative results for IDEM's stream-specific assessments. To date, IDEM has assessed 36,675 stream miles for aquatic life use, with 67 percent fully supporting that use. About 26 percent of the 33,994 miles assessed for full-body contact recreation support that use. All 67 miles of Lake Michigan shoreline support aquatic life with 39 miles (58%) supporting recreational uses. Overall, Indiana has assessed more of its waters than nearly all other states, providing a more comprehensive picture of water quality that assists IDEM with resource prioritization decisions.

The report identifies parameters contributing to water impairments in streams and lakes, including Lake Michigan and its shoreline. Pathogens remain the leading cause, affecting more than 25,023 stream miles for recreational use. Fish consumption assessments show polychlorinated biphenyls (PCBs) impact 4,877 miles of rivers and streams, while mercury affects 597 miles. IDEM has also documented biological impairment of fish and/or macroinvertebrate communities in 8,957 stream miles, many of which are due to unknown stressors.

IDEM addresses nonpoint source pollution through its TMDL Program and Nonpoint Source (NPS) Program, which promotes a watershed-based approach in coordination with local groups. U.S. EPA's WQ-10a strategic performance measure requires states to develop "Success Stories" to document improvements in previously impaired waters resulting from watershed restoration activities, which in Indiana are supported by IDEM's NPS Program. IDEM has reported water quality improvements in more than 526 stream miles across 33 watersheds, ranking 5th in

2026 Indiana Integrated Water Monitoring and Assessment Report

the United States for total number of Success Stories submitted since 2008 and leading the nation with 13 Success Stories submitted in 2025.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 1: Summary of use support by waterbody type. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Waterbody Type	Designated Use	Total Size	Size Assessed	Percent Assessed	Size Fully Supporting	Size Not Supporting
Rivers and Streams (Miles)	Full Body Contact (Recreational Use)	62,692	33,994	54.2%	8,971	25,023
	Human Health and Wildlife (Fishable Use)	62,692	8,916	14.2%	3,361	5,555
	Public Water Supply (Drinking Water Use) ¹	96	39	40.9%	32	8
	Warm Water Aquatic Life (Aquatic Life Use)	62,692	36,675	58.1%	24,690	11,985
Lake Michigan Shoreline (Miles)	Full Body Contact (Recreational Use)	67	67	100.0%	39	28
	Human Health and Wildlife (Fishable Use)	67	67	100.0%	0	67
	Public Water Supply (Drinking Water Use) ¹	41	41	100.0%	41	0
	Warm Water Aquatic Life (Aquatic Life Use)	67	67	100.0%	67	0
Lake Michigan (Acres)	Human Health and Wildlife (Fishable Use)	154,176	154,176	100%	0	154,176
Lakes and Reservoirs (Acres)	Full Body Contact (Recreational Use)	129,529	40,559	31.4%	30,539	10,560
	Human Health and Wildlife (Fishable Use)	129,644	81,336	62.7%	42,215	39,120
	Public Water Supply (Drinking Water Use) ¹	22,851	12,471	55.8%	0	12,471
	Warm Water Aquatic Life (Aquatic Life Use)	129,529	17,890	13.8%	5,049	12,841

¹ While all waterbodies in Indiana are designated for aquatic life and recreational uses, not all are designated for use as a public water supply. There are currently a total of 22,851 lake acres, 96 stream miles, and 41 miles of shoreline designated for use as a public water supply in Indiana.

INTRODUCTION

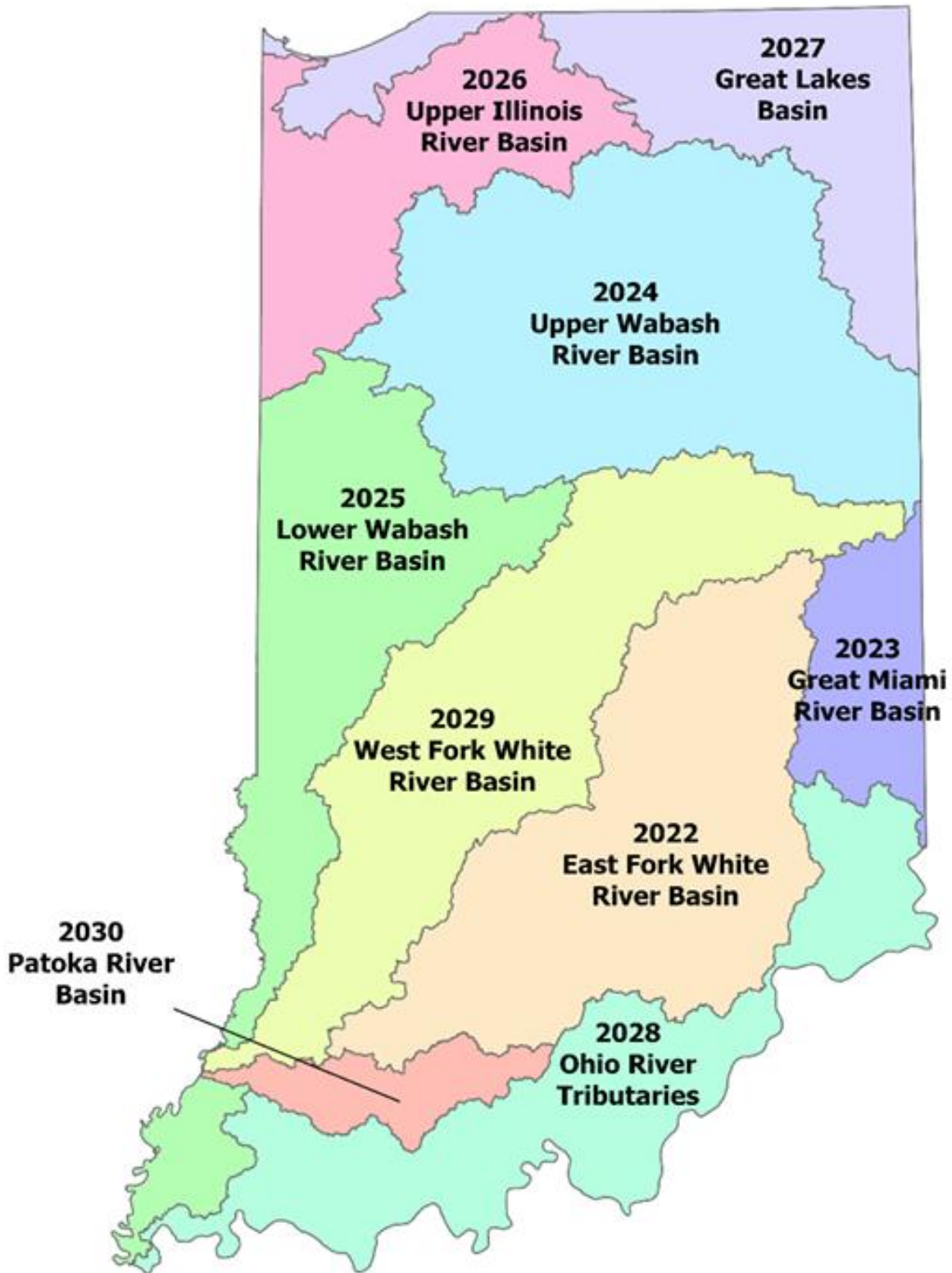
The federal Clean Water Act (CWA) requires each state to prepare and submit a water quality assessment report, including a list of impaired waters, to the U.S. Environmental Protection Agency (U.S. EPA) in even-numbered years. Accordingly, the Indiana Department of Environmental Management's (IDEM's) Office of Water Quality (OWQ) publishes the Indiana Integrated Water Quality Monitoring and Assessment Report (IR) biennially. As with previous editions, the 2026 IR was developed in accordance with U.S. EPA guidance (1997a, 1997b, 2003a, 2005, 2006, 2009a, 2011, 2013, 2015, 2017, 2021a, 2023a, 2025) to ensure compliance with the reporting requirements of CWA Sections 305(b), 303(d), and 314.

Indiana's IR includes both the Consolidated List and the 303(d) List of Impaired Waters, which differ in purpose and scope. The Consolidated List presents site-specific water quality assessment information for waterbodies across the state. The 303(d) List is a report card that identifies waters determined to be impaired and requiring total maximum daily loads (TMDLs) under CWA Section 303(d). The IR also provides Indiana's assessments of lake trends and trophic state pursuant to CWA Section 314, along with information on groundwater resources.

Most water quality assessments in the IR are based on data collected by the OWQ's Watershed Assessment and Planning Branch (WAPB). IDEM's Surface Water Quality Monitoring Strategy, 2022–2026 (WQMS; IDEM, 2023a) describes the OWQ monitoring programs that supplied the majority of data used in this report. A substantial portion of this data originates from IDEM's Probabilistic Monitoring Program, which uses a stratified random sampling design to generate representative sampling locations for each of the nine major watershed management basins defined in the WQMS (Figure 1). These probabilistic results support comprehensive use-support assessments—statistically valid evaluations of overall water quality within each watershed (see Table 8 on page 45)—and also inform site-specific assessments of individual waterbodies.

Data used in the IR also come from several targeted IDEM monitoring programs, including the Fixed Station, Watershed Characterization, Fish Tissue Contaminant, Performance Measures, Cyanobacteria Monitoring, and Special Studies programs. Additional data sources include the Indiana Clean Lakes Program (CLP), administered through a contractual agreement between IDEM's Nonpoint Source (NPS) Program and Indiana University's O'Neill School of Public and Environmental Affairs; the Ohio River Valley Water Sanitation Commission (ORSANCO), which provides data for the Ohio River; and sampling results submitted through IDEM's [External Data Framework \(EDF\)](#). IDEM highly encourages the submission of data through the EDF for consideration in future assessments.

Figure 1: IDEM's nine-year rotating basin monitoring schedule for 2022–2030.



BACKGROUND

Indiana is situated on the eastern margin of the North American interior plains. The North–South continental divide crosses the northern portion of the state, separating the Great Lakes basin and the Mississippi River basin. Surface water in the northern quarter of Indiana flows toward the Great Lakes and ultimately to the Atlantic Ocean via the St. Lawrence River. The remaining three-quarters of the state drains to the Ohio or Illinois Rivers, which convey water to the Mississippi River and then to the Gulf of Mexico.

Indiana contains approximately 62,692 miles of rivers, streams, ditches, and drainageways, as mapped in the Indiana Reach Index using the U.S. Geological Survey’s high-resolution National Hydrography Dataset (1:24,000 scale; USGS, 2014). Table 2 provides an overview of waterbody types in Indiana, including those assessed in this report. Appendix A provides the metadata and definitions used in this report.

Table 2: Atlas information for Indiana.

Description	Value	Units
Indiana Population ¹	6,973,333	People
Indiana Surface Area ²	36,099	Square Miles
Total Miles of Rivers and Streams ³	62,692	Miles
Number of Lakes, Reservoirs and Ponds ⁴	1,581	-
Total Size of Lakes, Reservoirs, Ponds ⁴	129,643	Acres
Great Lakes ⁴	154,176	Acres
Great Lakes Shoreline ⁴	67	Miles
Freshwater Wetlands ⁵	869,759	Acres

¹ [U.S. Census Bureau Quick Facts for Indiana](#) (estimated July 1, 2025):

² [Indiana Department of Administration State Information Center](#).

³ The Indiana High Resolution Reach Index (Version 20190129) identifies 62,162 miles of rivers and streams in the state. This figure has been adjusted to 62,692 miles to include additional waters tracked in the U.S. EPA’s Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS).

⁴ U.S. EPA ATTAINS data for Indiana’s 2026 Integrated Report Cycle (Organization Public Comment, In Progress). This value may include both publicly and privately owned lakes, reservoirs, and ponds.

⁵ Wetland acreage was calculated using U.S. Fish & Wildlife Service [National Wetlands Inventory](#) (MWI) data obtained from the [State of Indiana GIS Enterprise Portal](#) (October 2022). The calculation includes Freshwater Emergent, Freshwater Forested/Shrub, Riverine, and other Palustrine wetlands, excluding those classified as ponds or lakes.

WATER POLLUTION CONTROL IN INDIANA

Several state and federal agencies share responsibility for managing water pollution in Indiana. IDEM administers key Clean Water Act (CWA) programs, including Sections 402, 305(b), 303(d), and 314. The Indiana State Department of Health oversees septic systems, while the Office of the Indiana State Chemist regulates pesticides and nutrients. Additional voluntary and grant programs addressing nonpoint source pollution are administered by the State Soil Conservation Board, the Indiana State Department of Agriculture, and the Indiana Department of Natural Resources, including its Lake and River Enhancement Program and Lake Michigan Coastal Program.

Indiana also works closely with federal agencies and nonprofit partners, including the U.S. Geological Survey, U.S. EPA, USDA, U.S. Fish and Wildlife Service, U.S. Forest Service, U.S. Army Corps of Engineers, and the National Park Service. Universities and organizations—such as Purdue University, Indiana University, The Nature Conservancy, county soil and water conservation districts, and local watershed groups—provide research, technical support, and funding.

IDEM'S WATERSHED APPROACH

IDEM implements a watershed-based approach to CWA programs. This hydrologically defined and geographically focused framework integrates multiple programs and stakeholders, allowing resources to be directed toward the most significant water quality issues. Effective communication, collaboration across programs, and adaptive management are central to the approach.

IDEM adopted a statewide rotating basin monitoring approach in 1996 and monitored watersheds throughout the state on a five-year rotation from 1996-2010. In 2011 IDEM shifted to a nine-year rotation and completed a statewide cycle in 2019. The cumulative assessments in this report include all waters evaluated through 2025. Figure 2 illustrates monitoring coverage and sampling density across IDEM programs over the past nine years.

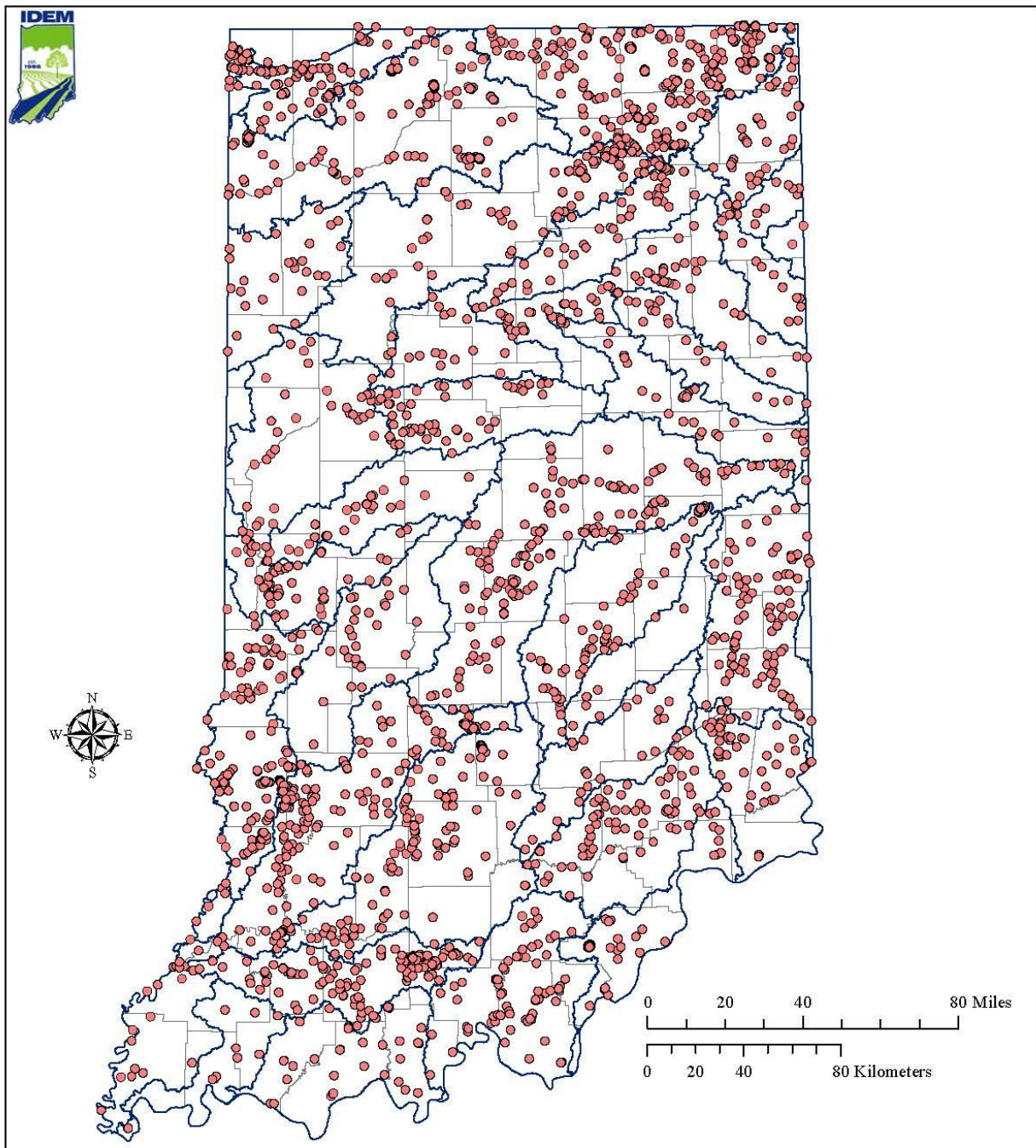
Within IDEM's Office of Water Quality (OWQ), program areas work together to protect Indiana's surface waters. The Water Quality Standards (WQS) program develops state WQS, forming the basis for implementing multiple CWA programs. Monitoring programs generate data used for Section 305(b) assessments, the development of the 303(d) List of Impaired Waters, and TMDL development.

Nonpoint source (NPS) pollution is addressed primarily through non-regulatory watershed management planning and implementation projects supported by the NPS Program and informed by TMDLs. Point source pollution is regulated under the National Pollutant Discharge Elimination System (NPDES).

IDEM also partners with the Indiana Finance Authority to provide low-cost infrastructure loans to communities for wastewater and drinking water improvements, particularly in watersheds with documented impairments and approved TMDLs. IDEM monitors resulting water quality changes to assess long-term outcomes.

2026 Indiana Integrated Water Monitoring and Assessment Report

Figure 2: IDEM's surface water monitoring sites sampled 2017-2025.



This map is intended to serve as an aid in graphic representation only. This information is not warranted for accuracy or other purposes.

Data Source- Obtained from the State of Indiana GIS Enterprise Portal. Monitoring sites obtained from the IDEM Assessment Information Management System (AIMS).

Map Projection: UTM Zone 16 N

Map Datum: NAD 83

Mapped By: Emmett Monroe, Office of Water Quality
Date: 03/10/2026

Legend

- Monitoring Site
- ▭ Sub-basin (HUC 8)
- ▭ County Boundary

IDEM'S OFFICE OF WATER QUALITY PROGRAMS AND ACTIVITIES

Water Quality Standards Program

IDEM is responsible for developing and maintaining Indiana's Water Quality Standards (WQS), which are codified in [327 IAC Article 2](#). Indiana maintains WQS for both Great Lakes System waters and "Downstate" waters. These standards form the regulatory foundation for water quality programs under the Clean Water Act (CWA). Required components of the state WQS include designated uses for each waterbody, criteria to protect those uses, and an antidegradation policy. Criteria may be numeric or narrative and are used for permitting, compliance, enforcement, and water quality assessments.

Indiana updated its WQS statewide in 1990 to incorporate toxic pollutant criteria developed under CWA Section 304(a). In 1997, Indiana revised its WQS and implementation procedures for the Great Lakes System to align with federal Water Quality Guidance for the Great Lakes (40 CFR 132).

Nearly all Indiana waters are designated for warm water aquatic life (fishable) and full-body contact recreation (swimmable). Additional designations exist for industrial or agricultural uses, public water supply, put-and-take trout fishing, outstanding state resource waters, and certain salmonid streams. Thirty stream reaches are designated for limited use due to their reduced ability to support aquatic life. In 2007, Indiana created a wet weather limited use subcategory for waters receiving combined sewer overflow (CSO) discharges in communities with approved Long Term Control Plans (LTCPs). This designation temporarily suspends full-body contact recreation for limited periods following overflow events. IDEM approved the first use attainability analyses supporting these designations for Indianapolis in 2019 and Fort Wayne in 2020.

Because most waters have multiple designated uses, IDEM applies the most stringent criteria to ensure all uses are protected. Narrative and numeric criteria in the WQS form the basis for NPDES permitting and water quality assessments. If a discharger's effluent has a reasonable potential to exceed these criteria, permit limits are imposed to protect receiving waters. When a waterbody meets all applicable criteria, its designated uses are considered supported. Together with designated uses and the state's antidegradation policy (adopted in 2012), Indiana's criteria establish the overarching framework for protecting water resources. WQS development and implementation are ongoing, with triennial reviews evaluating needed updates. IDEM initiated its 2024 review on November 20, 2024, with a public comment period extending through January 5, 2025. The final [2024–2025 Triennial Review Report](#) outlines priorities for 2024–2027.

IDEM also regulates public drinking water under the Safe Drinking Water Act (SDWA). Public water suppliers must meet minimum reporting and consumer confidence requirements which are provided to customers annually. Indiana's WQS include criteria to protect water supplies drawn from surface waters (such as reservoirs or rivers), while separate Ground Water Quality Standards, adopted in 2002, protect drinking water sourced from groundwater.

Current Water Quality Standards Development

In February 2022, IDEM updated Indiana's aquatic life and human health ambient water quality criteria for select metals, including selenium, for both Great Lakes System and Downstate waters. These updates incorporate the latest scientific research and align with many of the

2026 Indiana Integrated Water Monitoring and Assessment Report

National Recommended Water Quality Criteria (NRWQC) developed under CWA Section 304(a). IDEM is also undertaking rulemaking to revise aquatic life methodology for parameters lacking established criteria in Downstate waters and is evaluating adoption of U.S. EPA's 2018 nationally recommended aluminum criteria, which vary based on hardness, pH, and dissolved organic carbon (U.S. EPA, 2018). Updating aluminum criteria, along with several human health criteria and associated methodologies, remains a priority for the state.

In coordination with U.S. EPA, Indiana continues to evaluate the value of developing numeric nutrient criteria to support CWA assessments and permit development. IDEM has implemented a non-rule policy establishing a 1 mg/L total phosphorus limit in NPDES permits for major sanitary treatment plants with design flows of one million gallons per day or more. This policy has significantly reduced phosphorus discharges. IDEM also requires these facilities to monitor total nitrogen, using the resulting data to improve understanding of nutrient loadings and inform future nutrient reduction strategies. Narrative water quality criteria are used to assess and list nutrient-impaired streams, which may then undergo TMDL development.

IDEM recently completed [U.S. EPA's N-STEPS](#) analysis of statewide nutrient and biological data. Early findings indicate that diatom indices show the strongest correlation with nutrient levels, macroinvertebrate indices show moderate correlations, and fish indices show limited or no correlation. These results suggest that diatom-based biological indicators could support future nutrient assessment approaches.

In 2021, U.S. EPA updated its ecoregional NRWQC for lakes and reservoirs, providing models and tools for states to derive locally relevant nutrient criteria. As part of this effort, EPA developed an Indiana-specific chlorophyll *a*-microcystin model for recreational use in certain lakes and reservoirs. IDEM determined that the model does not align well with existing Indiana lake datasets and is exploring whether additional U.S. Army Corps of Engineers data could support nutrient modeling for select reservoirs. IDEM also participates in the Indiana Conservation Partnership (ICP) and collaborates with the Indiana State Department of Agriculture (ISDA) on the State Nutrient Reduction Strategy.

NPDES Wastewater Permitting Program

Point source pollution in Indiana is primarily regulated through IDEM's National Pollutant Discharge Elimination System (NPDES) Permit Program. Facilities that discharge wastewater to surface waters must obtain an NPDES permit from IDEM's Permits Branch. Permit limits are established to protect all designated and existing uses of the receiving waterbody, as well as any more stringent technology-based requirements.

The Permits Branch issues individual NPDES permits for municipal, semi-public, and industrial dischargers, along with industrial pretreatment permits for facilities that send wastewater to municipal treatment systems. The branch also administers several master general permits, including those for:

- Once-through non-contact cooling water (renewed November 2025)
- Sand, gravel, dimension stone, and crushed stone operations (renewed October 2025)
- Petroleum product terminals (renewed November 2025)
- On-site residential sewage discharging disposal systems (renewed December 2024)
- Temporary wastewater dischargers (renewed April 2024)
- Pesticide applications (renewal scheduled for October 2026)

2026 Indiana Integrated Water Monitoring and Assessment Report

Over the past decade, Indiana has transitioned most general permits from permit-by-rule to administrative master general permits. The only remaining permit-by-rule is for coal mining, coal processing, and reclamation activities under 327 IAC 15-7; work is underway to convert this to a master general permit.

Indiana currently has 1,136 active individual NPDES permits (192 major and 944 minor dischargers), 188 pretreatment permits, and 191 facilities covered under general permits. The Permits Branch also reviews and approves Long Term Control Plans (LTCPs) for communities with combined sewer systems. All combined sewer overflow (CSO) communities are operating under enforceable mechanisms—either an approved LTCP, a federal consent decree, or both. To date, 73 of Indiana’s 110 CSO communities have fully implemented their LTCPs.

NPDES Wastewater Compliance Program

IDEM’s Compliance and Enforcement Branch works closely with the Permits Branch to ensure that NPDES permit limits protect designated uses and that permittees remain in compliance. When unpermitted discharges or violations occur, staff may refer cases for formal enforcement. The branch also:

- Conducts routine inspections and complaint investigations of wastewater treatment plants.
- Evaluates compliance data and ensures data quality.
- Issues informal and formal enforcement actions, including noncompliance letters and violation reports.
- Oversees and audits pretreatment programs in 47 municipalities with EPA-delegated programs.
- Provides laboratory support, operator training, and technical assistance.
- Administers wastewater certification and continuing education.
- Records NPDES permit and compliance data in the Federal Integrated Compliance Information System (ICIS) and helps automate data flows.
- Tracks bypasses and overflows and administers sewer ban/early warning programs.
- Manages the laboratory proficiency program and provides public access to records through the Virtual File Cabinet.

Stormwater Program

Stormwater runoff from urban, industrial, and rural areas contributes significantly to water pollution in Indiana. IDEM’s Stormwater programs process notices of intent for permit coverage, conduct compliance inspections, and audit Municipal Separate Storm Sewer Systems (MS4s). Three main program areas address stormwater impacts:

- Construction / Land Disturbance Stormwater
- Industrial Stormwater
- Municipal Separate Storm Sewer Systems (MS4)

IDEM regulates most stormwater discharges through general permits, which apply broadly across eligible activities. The agency has transitioned construction and MS4 permitting from permit-by-rule to master general permits and is preparing to convert industrial stormwater to a master general permit by the end of 2026.

2026 Indiana Integrated Water Monitoring and Assessment Report

Construction Stormwater

Projects disturbing one acre or more require coverage under the Construction Stormwater General Permit (CSGP), which primarily aims to reduce impacts from sedimentation. The CSGP also covers other construction-related runoff impacts such as concrete washout and fueling.

Industrial Stormwater

Industrial stormwater activities are currently regulated under 327 IAC 15-6, also known as “Rule 6”. Rule 6 defines [categories of industrial activities](#) which discharge stormwater runoff through a point source and require general permit coverage. Facilities may need an individual permit if discharge poses significant water-quality risks or if the industrial activity has established effluent limits under IDEM’s NPDES Program.

Municipal Separate Storm Sewer Systems

Certain stormwater regulations are administered under the Municipal Separate Storm Sewer Systems (MS4) program, which were implemented in two phases. Phase I (issued in 1990) required cities (and certain counties) with populations of 100,000 or more to obtain NPDES permit coverage for their stormwater discharges. Phase II (issued in 1999) required NPDES stormwater permits for smaller municipalities, universities, and conservancy districts in urbanized areas. Indiana currently has [208 MS4 permittees implementing Stormwater Quality Management Plans under a general permit](#). These systems must implement a Stormwater Quality Management Plan addressing six minimum control measures:

- Public education and outreach
- Public participation and involvement
- Illicit discharge detection and elimination
- Construction site runoff control
- Post-construction runoff control
- Municipal operations pollution prevention and good housekeeping

IDEM also provides training and technical support to local MS4s, which includes education on regulations, stormwater plan development, and monitoring. The IDEM stormwater program also maintains the [Indiana Stormwater Quality Manual](#) which targets project site planning, construction site stormwater measures, and post-construction measures.

Waterways Program

IDEM regulates placement of fill, excavation, and mechanical clearing of waterways through CWA Section 401 Water Quality Certification and Indiana’s State Regulated Wetland Law (IC 13-18-22), which covers those wetlands not under federal jurisdiction. Entities that want to place fill materials or use heavy equipment to excavate, dredge, or mechanically clear areas within a jurisdictional wetland, lake, river, or stream must obtain a federal Section 404 permit from the U.S. Army Corps of Engineers (USACE), which also requires a CWA Section 401 WQC from IDEM. Under Section 401, IDEM reviews the activity and may require impact avoidance, minimization, mitigation, or may deny certification if impacts are unmitigable or applications are incomplete. A project cannot proceed without IDEM approval. The state’s [Waterways Inquiry Request tool](#) helps landowners determine which permits are required.

2026 Indiana Integrated Water Monitoring and Assessment Report

IDEM's Wetland Protection Activities

Wetlands exist statewide and provide ecological benefits, but quantitative data gaps remain an obstacle to improving wetland conservation efforts. Indiana's most extensive wetland database is the [National Wetlands Inventory \(NWI\)](#), developed by the United States Fish and Wildlife Service (USFWS) in the 1980s and updated in 2008–2009 with high-resolution imagery. These updated maps show declines in emergent, forested, scrub-shrub, and shore wetlands in Indiana since 1986. IDEM's Wetland Program uses NWI data for permit review, impact assessment, mitigation planning, and complaint investigations. Staff conduct site inspections, outreach events, and maintain [public resources on wetland protection](#).

Wetlands Program Plan

Developed with support from U.S. EPA funding, the [Indiana Wetlands Program Plan \(IWPP\)](#) outlines long-term priorities for wetland protection. Although non-regulatory, the plan guides the future development of the IDEM Waterways Program. Its development included input from state and federal partners including Indiana State Department of Agriculture (ISDA), the Indiana Department of Natural Resources (IDNR), USACE, USFWS, USGS, U.S. EPA, and the National Resources Conservation Service (NRCS).

Total Maximum Daily Load Program

IDEM's Total Maximum Daily Load (TMDL) Program collaborates with the Nonpoint Source (NPS) Program and local watershed stakeholders to evaluate impaired waters and develop TMDL reports. A TMDL evaluation quantifies the amount of a specific pollutant a waterbody can receive while still meeting water quality standards (WQS). Under Section 502(6) of the Clean Water Act (CWA), pollutants include sewage, chemical and biological materials, and wastes from industrial, municipal, and agricultural operations, as well as drinking water contaminants regulated under Section 1412 of the Safe Drinking Water Act. A TMDL report provides a quantitative assessment that:

- Identifies pollutant contributions from point and nonpoint sources.
- Specifies the pollutant reductions needed from each source to meet WQS.
- Supports the development and implementation of strategies to achieve those reductions.

As of February 2026, IDEM has developed 2,491 TMDLs addressing impairments in more than 1,652 streams and stream reaches, all approved by the U.S. EPA (Appendix B). Earlier efforts focused primarily on E. coli impairments, while current work increasingly addresses nonpoint source issues such as impaired biotic communities and nutrient-related impairments.

In 2013, U.S. EPA introduced its long-term Vision program to strengthen implementation of CWA 303(d) assessments. States were required to adopt new approaches for prioritizing impaired waters for TMDL development. In response, IDEM created the [TMDL Program Priority Framework](#) in 2015, outlining its watershed prioritization methods through 2022. The framework was updated in 2024 following EPA's Vision 2.0 initiative. The revised [TMDL Program Priority Framework 2.0](#) (Attachment C-1) includes a prioritized list of watersheds for TMDL development from 2024 to 2032. Indian Creek in Monroe County (2026), Honey Creek (2027), and Leatherwood Creek (2028) will be the priority watersheds for the 2028 IR cycle.

2026 Indiana Integrated Water Monitoring and Assessment Report

Nonpoint Source Pollution Program

Several agencies and organizations collaborate to address nonpoint source (NPS) pollution in Indiana. IDEM's Watershed Planning and Restoration (WPR) Section leads statewide efforts to reduce NPS pollution in partnership with the Indiana Association of Soil and Water Conservation Districts (IASWCD), ISDA, IDNR, NRCS, and the Indiana Finance Authority's State Revolving Fund (SRF) Loan Program. The WPR Section also directs restoration efforts for waters listed on Indiana's 303(d) List of Impaired Waters through IDEM's [NPS Program](#), which provides Section 205(j) and Section 319(h) grant funding and technical support for locally led watershed planning and restoration activities.

Section 205(j) Grants

The Section 205(j) Grant Program supports water quality management planning. These funds help local organizations assess the nature and causes of point and nonpoint source pollution and develop solutions. For federal fiscal year (FFY) 2024–2025, Indiana received \$1,843,000 in 205(j) funds, which were used to support watershed management planning in the Upper East Fork Whitewater River, Mill Creek, St. Mary's River, Big Shawnee Creek–Wabash River, Patoka Lake, and Lower St. Joseph River watersheds.

IDEM also used 205(j) funds to support USGS monitoring of sediment and nutrient impacts on the Wabash and Kankakee Rivers and Eagle Creek Reservoir. The Ohio River Valley Water Sanitation Commission (ORSANCO) continued receiving support for harmful algal bloom monitoring upstream of Indiana drinking water intakes on the Ohio River. Additional 205(j) funding supported PFAS fish tissue studies in the Great Lakes and Ohio River basins, a Pigeon Creek stream gage, a statewide septic system inventory, maintenance of the Hoosier Riverwatch database and QAPP tool, and upgrades to the AIMS database.

Section 319(h) Grants

The Section 319(h) Grant Program is Indiana's primary funding source for reducing NPS pollution. Most funds support the development and implementation of watershed management plans (WMPs). The planning process identifies watershed problems, sources, and critical areas, and sets goals and best management practices (BMPs) to address them. All new WMPs must meet the requirements of IDEM's 2024 [Watershed Management Plan Checklist](#), which incorporates EPA's [nine required elements](#) of a watershed-based plan and provides comprehensive guidance for grantees.

Indiana receives significantly more funding through Section 319(h) than Section 205(j) (Table 3). For FFYs 2024 and 2025, Indiana received \$7,622,445 in 319(h) funds, [supporting 20 projects across the state](#). Project proposals are reviewed by an internal IDEM committee, which selects projects based on NPS Program priorities and proposal quality. Most funded projects develop or implement WMPs and carry out on-the-ground BMPs in critical watershed areas.

Many projects also include water quality data collection. Grantees must develop an approved Quality Assurance Project Plan (QAPP) to ensure data reliability before sampling begins. Data are submitted using templates designed for upload into IDEM's Assessment Information Management System (AIMS). IDEM continues to upgrade and maintain the AIMS database to improve access to NPS Program data.

2026 Indiana Integrated Water Monitoring and Assessment Report

Watershed Specialists

The NPS Program employs four watershed specialists who serve as a key connection between watershed groups, other stakeholders, and IDEM's Office of Water Quality (OWQ). In 2023 and 2024, these specialists assisted 74 watershed groups with tasks including meeting facilitation, reviewing watershed management plans and grant proposals, providing water quality data and maps, coordinating with local organizations, and supporting watershed coordinators through planning and implementation. They also support the TMDL Program by attending public meetings to share information and strengthen local partnerships.

Nonpoint Source Program Priorities

IDEM's NPS Program is guided by the [2025–2029 Indiana State NPS Management Plan](#), completed in 2024 and required under Section 319(b) of the Clean Water Act. The plan identifies strategic priorities, goals, and milestones to enhance Indiana's efforts to address NPS pollution and serves as the foundation for program funding decisions. Updates to the management plan occur every five years, with the next revision due in 2029. 1

Each year, IDEM selects 319(h) funding priorities consistent with this plan and coordinated with TMDL Program needs. For FFYs 2024–2025, funding priorities include:

- Developing or implementing watershed management plans (WMPs) in priority 8-digit HUC watersheds identified in Indiana's State Nutrient Reduction Strategy. These HUCs include Upper Wabash (05120101), Middle Wabash–Deer (05120105), Middle Wabash–Little Vermillion (05120108), Middle Wabash Busseron (05120111), Lower Wabash (05120113), Upper White (05120201), Lower White (05120202), and Maumee River (04100003, 04100005, 04100007, 04100004).
- Developing or implementing a WMP for a 10-digit HUC watershed with a drinking water intake and waters listed in Category 5A of the Draft 2014 303(d) List of Impaired Waters.
- Developing or implementing a WMP for 10-digit HUC watersheds that affect Outstanding State Resource Waters (OSRW) or waters supporting endangered, threatened, or rare species. This priority is also shown in the [FFY 2026 Section 319 Priority Watersheds map](#).
- Implementing a WMP that meets IDEM's [2024 Watershed Management Plan Checklist](#). While newer plans must meet these requirements, IDEM may fund implementation of older plans on a case-by-case basis. The [NPS Program offers guidance](#) to assist groups in updating older plans, and watershed specialists provide additional support.

Program Performance Measures

The NPS Program evaluates its success using multiple metrics. One key measure is the estimated quantity of pollutants—such as sediment, phosphorus, nitrogen, and *E. coli*—prevented from entering Indiana waters through BMP implementation funded by NPS grants. Most projects use the U.S. EPA Load Estimation Model to calculate pollutant load reductions, which are then reported to IDEM. Table 4 summarizes estimated reductions FFY 2024 and 2025. Another performance measure, known as WQ-10a or "Success Stories," tracks waterbodies primarily impaired by NPS pollution that have been partially or fully restored due to watershed restoration efforts. Table 5 provides Indiana's FFY 2024 and 2025 results.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 3: Clean Water Act Sections 205(j) and 319(h) investments for state fiscal years (SFY) 2006 - 2025. Table does not include an additional \$434,328 from the American Recovery and Reinvestment Act of 2009, which was awarded through the State Revolving Fund (SRF) Program.

Federal Fiscal Year	205(j)		319(h)	
	Number of Projects	Amount Awarded	Number of Projects	Amount Awarded
2006	2	\$251,310	18	\$3,374,538
2007	2	\$148,915	12	\$3,022,961
2008	0	0	8	\$2,967,181
2009	2	\$271,432	9	\$2,759,609
2010	2	\$293,753	11	\$3,653,209
2011	4	\$699,775	8	\$2,457,215
2012	2	\$331,250	8	\$2,221,471
2013	2	\$337,750	7	\$2,276,973
2014	3	\$341,000	9	\$2,628,234
2015	2	\$340,000	9	\$2,317,768
2016	2	\$196,000	10	\$3,124,410
2017	3	\$323,000	12	\$2,862,430
2018	3	\$308,516	8	\$3,564,000
2019	3	\$387,000	9	\$3,528,000
2020	3	\$387,000	9	\$3,777,000
2021	3	\$386,279	13	\$3,827,000
2022	8	\$738,000	10	\$3,777,000
2023	7	\$742,000	11	\$3,777,000
2024	6	\$805,000	11	\$3,990,000
2025	10	\$1,038,000	9	\$3,632,445

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 4: Reduction of sediment, phosphorus, and nitrogen reaching Indiana waters. Source: IDEM OWQ nonpoint source project tracking database.

Dates	Sediment Reduction (tons/year)	Phosphorus Reduction (pounds/year)	Nitrogen Reduction (pounds/year)
2006	25,831	40,538	99,434
2007	23,279	126,529	125,848
2008	18,119	25,400	65,367
2009	7,965	15,479	15,319
2010	33,420	31,374	66,400
2011	28,880	33,434	70,450
2012	47,616	94,980	141,709
2013	54,507	92,360	170,376
2014	67,403	168,542	168,710
2015	97,212	132,737	228,334
2016	101,205	126,732	243,402
2017	95,100	104,442	283,455
2018	113,882	120,566	313,520
2019	62,630	63,478	140,106
2020	119,813	215,657	448,930
2021	40,647	72,227	169,556
2022	61,096	65,795	134,146
2023	50,244	54,269	137,043
2024	30,378	35,675	128,950
2025	45,900	51,000	111,690

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 5: Summary of changes in water quality in watersheds reported to U.S. EPA under its success measures (SP-12 and WQ-10a) programs.

Stream Name	HUC	Stream Miles Improved	Impairments Removed	IR Cycle Removed
Pigeon Creek	05140202	32	Chlordane	2002
Lower Clifty Creek	051202060107	8.12	<i>E. coli</i>	2010
West Fork Big Walnut	051202030104	34.64	<i>E. coli</i>	2010
East Fork Big Walnut	051202030102	15.76	<i>E. coli</i>	2010
Bull Run	071200011308	25.09	Impaired Biotic Communities	2012
Metcalf Ditch	041000030504	14.33	Impaired Biotic Communities	2012
North Prong Stotts Creek	051202011404	1.25	Impaired Biotic Communities	2012
South Prong Stotts Creek	051202011405	13.23	Impaired Biotic Communities	2012
Mill Creek	051201011404	13.14	Impaired Biotic Communities	2012
Jenkins Ditch	051201070308	2.13	Impaired Biotic Communities	2012
Emma Creek	040500011201	2.32	Impaired Biotic Communities	N/A
Devils Backbone	051401040502	21	<i>E. coli</i>	2014
Flowers Creek	051201040601	12.72	Nutrients; Impaired Biotic Communities; Dissolved Oxygen	2018
Buck Creek-Busseron Creek	051201111509	37.3	Nutrients; Impaired Biotic Communities	2018
Pendleton Branch	050902030902	22	<i>E. coli</i> ; Impaired Biotic Communities	2018
South Fork Wildcat Creek	051201070400	5.48	Impaired Biotic Communities	2020

2026 Indiana Integrated Water Monitoring and Assessment Report

Stream Name	HUC	Stream Miles Improved	Impairments Removed	IR Cycle Removed
Boyles Ditch	051201070400	5.59	Impaired Biotic Communities	2020
Hogan Creek	0509020304	14.5	<i>E. coli</i> ; Impaired Biotic Communities	2022
Stump Ditch-Kilmore Creek	05120107040070	11.6	Impaired Biotic Communities	2022
Little Deer Creek	051201050503	11.94	<i>E. coli</i> ; Impaired Biotic Communities	2022
Big Creek	0512020701	44.95	Impaired Biotic Communities	2024
Hogan Creek	0509020304	22.48	<i>E. coli</i> ; Dissolved Oxygen	2024
Rock Creek	051201010701	12.96	Impaired Biotic Communities	2024
Turman Creek	0512011112	33.18	Impaired Biotic Communities	2024
Vestal Branch	051401010201	22.74	Impaired Biotic Communities	2024
Prairie Creek	051201070305	6.69	Impaired Biotic Communities	2024
Eel River	051202030805	7.44	<i>E. coli</i> ; Impaired Biotic Communities	2024
Indian Kentuck Creek	0514010102	24.15	Impaired Biotic Communities	2026
South Fork Blue River	051401040604	1.46	Impaired Biotic Communities	2026
Elliott Ditch	051201080104	4.96	Impaired Biotic Communities	2026
Muddy Fork	051202060302	9.43	Impaired Biotic Communities	2026
Big Branch	051201111504	1.27	Impaired Biotic Communities	2026
Flat Creek	0512020905	30.43	Impaired Biotic Communities	2026

2026 Indiana Integrated Water Monitoring and Assessment Report

Volunteer Monitoring Programs

Hoosier Riverwatch

[Hoosier Riverwatch](#) (HRW) is a statewide volunteer stream-monitoring program designed to engage Indiana residents as active stewards of the state's water resources through watershed education, water quality monitoring, and cleanup activities. Since 1996, the program has trained more than 5,000 volunteers through more than 480 full-day workshops, many of whom go on to educate youth and community members about water quality issues. 1

HRW maintains an [online database](#) where volunteers can enter and view water quality data. These results are available to other interested parties such as watershed groups, schools, and IDEM staff for potential use in various OWQ programs. The system includes visualization tools that allow users to compare results to watershed and state averages. Approximately one-third of trained volunteers submit data to the database. The program is administered by IDEM's Watershed Assessment and Planning Branch (WAPB), supporting coordination with IDEM's NPS Program and its [External Data Framework](#).

Volunteers also interact with IDEM's professional staff through specialized trainings, such as advanced *E. coli* workshops, macroinvertebrate collection, and instruction on indoor teaching tools. Annual instructor gatherings offer supplemental training, recognition, and opportunities for program feedback. In 2025, IDEM launched the [Hoosier Riverwatch Junior](#) program for grades K–12, providing [classroom and field activities](#) aligned with Indiana education standards.

Clean Lakes Volunteer Monitoring Program

Since 1989, the Indiana University O'Neill School of Public and Environmental Affairs has partnered with IDEM's NPS Program to administer the [Indiana Clean Lakes Program](#) (CLP) using Section 319(h) funding. The CLP provides statewide lake monitoring, education, technical assistance, and citizen-science opportunities focused on improving lake water quality.

Many Indiana lakes face pressures from human activities such as poorly managed agriculture, suburban development, boating, and septic system discharges. These activities can result in excessive nutrient concentrations, which can lead to eutrophication and associated impacts like nuisance algae and fish kills. The CLP addresses these challenges through:

- Annual professional sampling of lakes and reservoirs
- Training and support for volunteer lake monitors
- Maintenance of the program website
- Technical expertise on lake-related issues

The program also develops educational materials, publishes a biannual newsletter, and participates in the annual [Indiana Lakes Management Society](#) conference. Workshops help the public understand lake ecosystems and often motivate volunteers to expand their monitoring efforts. The volunteer monitoring program was expanded in 2012 to include aquatic invasive species, with zebra mussel monitoring added in 2014. 1

Volunteers submit monitoring results through [online data submission forms](#), and historical [volunteer data reports](#) (1999–2023) are publicly available. Additional details on IDEM's use of CLP data for Section 305(b) and 314 assessments appear in a later section of the report.

COORDINATION AND COLLABORATION WITH OTHER AGENCIES AND ORGANIZATIONS

Nonpoint source (NPS) pollution originates from urban areas, construction activities, and agricultural runoff, making cross-jurisdictional and interdisciplinary cooperation essential. Local, regional, state, and federal agencies all play key roles in addressing NPS pollution, particularly at the watershed scale.

In Indiana, several agencies provide data, technical resources, and grants to watershed groups to support planning, infrastructure review, and implementation of best management practices (BMPs) that reduce and prevent NPS pollution. Through continued coordination and collaboration, IDEM and its partners can better focus water quality restoration and protection efforts where they are most needed.

This section describes how IDEM's Office of Water Quality works with individual agencies, organizations, and broader partnerships to address Indiana's water resource challenges. IDEM employs [four watershed specialists](#) who serve as liaisons among local, state, and federal entities to integrate watershed planning into local initiatives. These specialists also serve as Section 319(h) project managers, providing technical, managerial, and financial guidance to local watershed groups.

IDEM's Wetlands and Stormwater Program staff collaborate with the following agencies and organizations to provide technical assistance and to issue Clean Water Act Section 401 certifications, isolated wetland permits, and construction/land-disturbance permits that protect water quality:

- U.S. Army Corps of Engineers (USACE)
- Indiana Department of Natural Resources (IDNR)
- U.S. Fish and Wildlife Service (USFWS)
- Local Soil and Water Conservation Districts (SWCDs)

Indiana Department of Natural Resources

Division of Reclamation – Abandoned Mine Lands Program

IDEM's TMDL and NPS Programs collaborate with the Indiana Department of Natural Resources' [Abandoned Mine Lands \(AML\) Program](#) on TMDL development and on identifying opportunities to improve water quality in watersheds affected by abandoned coal mines. The AML Program supports these efforts by sharing water quality data and information on reclamation project costs and techniques. It also provides IDEM staff with field tours of reclamation sites at various stages of completion to improve understanding of acid mine drainage impacts.

Division of Fish and Wildlife – Lake and River Enhancement (LARE) Program

The [Lake and River Enhancement \(LARE\) Program](#) aims to reduce sediment and nutrient loads entering Indiana's lakes and rivers. In addition to improving water quality, LARE-funded projects support the protection and enhancement of aquatic habitat to maintain the long-term ecological health and recreational value of publicly accessible waters.

The LARE program awards state grants to eligible sponsors for technical and financial support. Funded activities include diagnostic studies of sub-watersheds, feasibility evaluations for erosion and sediment control measures, removal of sediment and logjams, and management of

2026 Indiana Integrated Water Monitoring and Assessment Report

invasive aquatic species. LARE also provides funding to county Soil and Water Conservation Districts to assist landowners with implementing best management practices.

During 2025–2026, LARE awarded more than \$2.4 million in grants statewide. Program funding is generated through annual boat registration fees collected by the Bureau of Motor Vehicles. These projects benefit all users of Indiana’s lakes and streams and contribute to reducing nutrient loads entering both the Great Lakes and Mississippi River basins.

Division of Land Acquisition – Indiana Stream and Wetland Mitigation Program

The Indiana [Stream and Wetland Mitigation \(SWMP\) Program](#) is a statewide in-lieu fee program that allows permit applicants to purchase stream and wetland mitigation credits, when available, to meet compensatory mitigation requirements associated with U.S. Army Corps of Engineers Section 404 permits and IDEM’s 401 Water Quality Certifications or State Regulated Wetland Permits. Purchasing credits provides an alternative to undertaking mitigation directly.

The U.S. Army Corps of Engineers and the Interagency Review Team approved IDNR’s final program instrument on May 3, 2018. The program operates in accordance with the federal mitigation rule (33 CFR 332.8), which governs administration and implementation of in-lieu fee mitigation programs.

IDNR uses available data from IDEM’s Office of Water Quality, the Watershed Assessment and Planning Branch, the LARE Program, and local watershed and conservation plans to help prioritize potential project locations for in-lieu fee–funded restoration efforts.

Lake Michigan Coastal Program

The [Lake Michigan Coastal Program \(LMCP\)](#) strengthens Indiana’s capacity to plan for and manage natural and cultural resources in the coastal region. The program supports collaboration among federal, state, and local agencies, as well as nonprofit and academic partners. Through the Coastal Grants Program—funded by the federal Coastal Zone Management Act—the LMCP provides annual grants to coastal communities, counties, nonprofits, and universities for projects that protect and restore natural, cultural, and historic resources. Grant-funded activities may include habitat restoration, hazard mitigation, improved public access, waterfront revitalization, interagency coordination, and pollution prevention.

In 2020–2021, the LMCP awarded approximately \$30,000 in pass-through grants for water quality planning, outreach, research, and improvement projects across the Lake Michigan watershed. Indiana’s Coastal NPS Pollution Control Program, established under Section 6217 of the Coastal Zone Act Reauthorization Amendments and administered jointly by NOAA and U.S. EPA, is implemented through the LMCP. The program received conditional approval in 2008 and full approval in 2021 and includes management measures addressing runoff from agriculture, urban areas, marinas, hydromodification, wetlands and vegetated systems, and forestry.

All coastal and Great Lakes states participating in the National Coastal Zone Management Program must develop nonpoint source (NPS) pollution control programs for their coastal regions. Indiana’s Lake Michigan Coastal Program (LMCP) works with IDEM’s NPS Program and other partners to implement U.S. EPA-specified management measures that prevent and reduce NPS pollution in Lake Michigan coastal watersheds. In March 2021, Indiana submitted documentation demonstrating that all Coastal NPS Pollution Control Program requirements established by EPA and NOAA were being met and anticipates full federal approval in 2024.

2026 Indiana Integrated Water Monitoring and Assessment Report

Indiana has developed all 56 required measures for its Coastal NPS Pollution Control Program. The final measure involved establishing processes across the coastal watershed to ensure routine inspection and maintenance of septic systems to reduce pollution from failing systems. In 2017, IDEM's NPS Program awarded LMCP funding for the following efforts:

- Mapping septic systems within 500 feet of surface waters in the Lake Michigan watershed
- Conducting *E. coli* monitoring and molecular source tracking to better understand septic-related
- Implementing a neighborhood-based outreach and education program for homeowners, in partnership with community ambassadors and realtors

The LMCP completed septic system mapping in early 2019 in partnership with the Northwestern Indiana Regional Planning Commission, including identification of target neighborhoods for outreach. The program also finished its neighborhood-based outreach and education campaign that same year, distributing materials and signage through Neighborhood Ambassadors. *E. coli* monitoring and molecular source tracking were completed in late 2021 through a partnership with Indiana University Northwest, identifying coastal waterbodies with potential contamination from residential septic systems.

The LMCP continues to work with local health departments to strengthen septic system inspection and maintenance tracking. It is also collaborating with the Indiana Department of Health to develop a dashboard for visualizing septic systems through the Indiana Network for Tracking of Onsite Sewage Systems (iTOSS). Additional work with Lake, Porter, and LaPorte counties includes comparing local ordinances with state requirements in preparation for submissions to the Technical Review Panel (TRP).

Indiana's Low Head Dam Removal Initiative

Low-head dams are human-made structures that span entire stream channels and create continuous flow over the crest (IDNR, 2024). Although historically built for purposes such as powering mills, supplying drinking water, diverting cooling water, and improving navigation, many of these structures are now aging, costly to maintain, and no longer serve their original functions. Indiana has cataloged more than 150 low-head dams.

Low-head dams significantly alter stream hydrology, impede fish movement, and disrupt the reproductive cycles of freshwater mussels that depend on specific host fish species. These disruptions have contributed to long-term declines in mussel diversity and distribution. The structures also break river connectivity, cause localized flooding, and interfere with natural sediment transport. In addition to ecological impacts, low-head dams create dangerous hydraulic conditions downstream, posing substantial risks to boaters, swimmers, and anglers. Indiana [ranks 10th nationally in fatalities](#) associated with low-head dams.

Removing these structures improves ecological function, restores river continuity, and enhances public safety. However, removal projects can be complex and costly, often requiring multiple state and federal permits. To streamline the process, IDEM's Offices of Water Quality and Land Quality partnered with IDNR to produce joint guidance for applicants, clarifying permit requirements and promoting dam removal. The agencies also developed an [online mapping tool](#) to identify factors—such as potentially contaminated sediments, invasive species, or historic resources—that may complicate removal projects.

2026 Indiana Integrated Water Monitoring and Assessment Report

This coordinated approach has reduced permitting delays and enabled more efficient project planning. Since 2012, [removal of 38 low-head dams](#) has resulted in nearly 20,000 miles of reconnected rivers and streams in Indiana. One river reach has been successfully restocked with endangered freshwater mussels, while another will expand habitat for the state-endangered Eastern Hellbender. Removal of two remaining dams on the Eel River created the longest contiguous stretch of accessible fish habitat in the state. As of 2025, eight additional dam removals have been proposed.

Indiana Conservation Partnership

IDEM participates in the Indiana Conservation Partnership (ICP), a coalition of eight state and federal agencies and organizations dedicated to advancing conservation across the state. The partnership provides technical, financial, and educational support to implement conservation practices that protect soil and water resources while promoting environmentally and economically sustainable land management. ICP members include:

- USDA Natural Resources Conservation Service
- USDA Farm Service Agency
- State Soil Conservation Board
- Indiana State Department of Agriculture
- Indiana Department of Natural Resources
- Indiana Association of Soil and Water Conservation Districts
- Purdue University Extension

The partnership develops an annual work plan that identifies conservation focus areas, outlines objectives, assigns responsibilities, and sets timelines. ICP members meet bimonthly to coordinate efforts, share updates, and collaborate where possible to maximize resources and support water quality improvement. A significant component of the partnership's work involves technical training for partner staff and coordination of cost-share and grant programs.

The ICP promotes a widely recognized definition of soil quality as the soil's ability to function as a vital, living ecosystem that supports plants, animals, and humans. Its soil health framework emphasizes four core principles applicable across land uses which are to minimize disturbance and maximize soil cover, biodiversity, and continuous living roots.

Applying these principles improves organic matter, aggregate stability, water infiltration, and water-holding capacity. It also enhances nutrient efficiency and supports a more diverse and resilient soil ecosystem. The ICP assists producers in implementing integrated, systems-based management practices that improve soil health and address key natural resource concerns in Indiana.

State Nutrient Reduction Strategy

Indiana's [State Nutrient Reduction Strategy \(SNRS\)](#) provides a unified framework for coordinating nutrient-reduction efforts across the Indiana Conservation Partnership and other stakeholders. The strategy has strengthened collaboration in conservation planning and implementation statewide. The ICP also maintains an [interactive application](#) on the SNRS website that highlights progress through watershed-based story maps. The next updated version of the SNRS is scheduled for release in 2026 as part of its regular five-year revision cycle.

2026 Indiana Integrated Water Monitoring and Assessment Report

U.S. Department of Agriculture, Natural Resource Conservation Service

National Water Quality Initiative

The USDA directs Farm Bill funding each year to the NRCS National Water Quality Initiative (NWQI) to support the implementation of conservation practices. IDEM works closely with NRCS to identify priority watersheds for NWQI based on factors such as documented impairments, high-risk natural resource conditions, active watershed groups, and available baseline water quality data.

As Indiana's Clean Water Act authority, IDEM is required by U.S. EPA to provide monitoring support in at least one NWQI watershed. The selected watershed is School Branch, an 8.4-square-mile, predominantly agricultural sub-watershed within the Eagle Creek and Upper White River watersheds in Hendricks County. The area is extensively tiled and drains into Eagle Creek Reservoir, a major drinking water source for Indianapolis. School Branch, Eagle Creek, and the Upper White River appear on Indiana's 303(d) List for nutrient impairments.

Focusing on the small, mostly agricultural School Branch watershed allows researchers to better isolate the effects of conservation practices—something that has been difficult in larger watersheds due to limited baseline data, mixed land uses, insufficient sampling duration, and incomplete adoption of conservation systems. Collaboration among federal, state, local, and academic partners, along with support from participating farmers, has created a unique opportunity to measure chemical, physical, and biological responses to soil-health-oriented cropping systems.

Multiple partners, including IDEM, the USGS, the Indiana Geological and Water Survey (IGWS), the Marion County Public Health Department (MCPHD), USDA-NRCS, and the Center for Earth and Environmental Services (CEES) at Indiana University, Indianapolis, are involved in this study. The project includes monitoring at multiple scales—edge-of-field, sub-watershed, and watershed—supported by historical data. Current efforts (continuing through 2024 and 2025) include streamflow and groundwater monitoring through USGS gauges and wells; tile drain synoptic studies; isotope and major-ion analyses; soil moisture and nutrient assessments; biological indicator monitoring; nutrient source tracking; and sediment characterization. USGS published initial findings for water years 2016–2018 in its report [*Hydrologic and Ecological Investigations in the School Branch Watershed*](#) (2021).

The cooperation of local farmers has allowed the research partners to better distinguish between conservation cropping systems and other agricultural and non-agricultural sources of sediment and nutrients. As land use in the watershed transitions from agricultural to more urban development—particularly with the expansion of the Ronald Reagan Parkway—the ongoing dataset will enable evaluation of water quality responses to shifting land use patterns.

A second NWQI implementation project began in 2020 in the Upper Sinking–Blue River watershed, targeting reductions in nutrients, sediment, and pathogens. The 319(h)-funded effort installed 37 best management practices, including cover crops, fencing, heavy-use area protection, pasture plantings, livestock pipelines, watering facilities, roof runoff management, and underground outlets. Outreach efforts also focused on agricultural, forestry, and urban conservation practices, including septic system maintenance. Targeted Environmental Quality Incentives Program (EQIP) funding further supported nutrient and sediment reduction. The project

2026 Indiana Integrated Water Monitoring and Assessment Report

concluded in March 2025 and received an additional round of 319(h) funding to continue implementing the South Fork Blue River Watershed Management Plan.

Indiana Finance Authority

The Indiana Finance Authority (IFA) administers the State Revolving Fund (SRF) Loan Programs, which provide low-interest financing for drinking water and wastewater infrastructure projects that protect public health and the environment. Eligible applicants include cities, towns, counties, regional water and sewer districts, conservancy districts, and—on the drinking water side—private and nonprofit public water systems.

Eligible wastewater projects include treatment plant construction or upgrades, sewer extensions to unsewered areas, decentralized treatment systems, combined sewer overflow (CSO) elimination, and infiltration/inflow corrections. Drinking water project eligibility includes treatment facilities, distribution systems, water storage improvements, and water supply projects.

SRF loans may extend up to 35 years with fixed interest rates. The base interest rate is recalculated quarterly using 90 percent of the average 20-year AAA municipal bond index for the prior month. Rates may be further reduced based on borrower median household income and projected user rates. Additional rate incentives—up to 0.5 percent—are available for projects that include lead service line replacement, green infrastructure, nonpoint source pollution reduction components, or brownfield elements. A 2 percent minimum rate applies unless lead service line replacement brings the loan below this floor.

Beginning in FY 2022, the SRF Loan Programs also receive funding through the Bipartisan Infrastructure Law (BIL), including General Supplemental funding, Lead Service Line Replacement funding, and Emerging Contaminants funding.

SRF partners with other state and federal programs, including IDEM's Office of Water Quality, to coordinate funding and maximize environmental benefits. The Clean Water SRF scoring system awards additional points to projects that remove pollutant sources from impaired waters, increasing their priority ranking. Loans used for projects eligible under Section 319 of the Clean Water Act may also serve as match for NPS Program grant proposals. Eligible match activities include wetland restoration or protection, erosion control, groundwater remediation, septic system repair or sewer connections, stormwater BMPs, source water protection, conservation easements, and agricultural or waste management BMPs.

The SRF Loan Programs also participate in the Indiana Rural Wastewater Task Force's Environmental Infrastructure Working Group, providing financing guidance to communities facing CSO challenges, enforcement actions, or potential sewer bans.

During fiscal years 2024 and 2025, twelve SRF projects with nonpoint source components saved approximately \$132 million over their loan terms, with project completion typically occurring within two years—allowing communities to realize water quality benefits well before the end of the repayment period.

Indiana's Great Lakes Water Quality Agreement Domestic Action Plan

Indiana's Domestic Action Plan (DAP) under the Great Lakes Water Quality Agreement (GLWQA) outlines the state's strategy for reducing phosphorus loads to the Western Lake Erie Basin (WLEB). Originally finalized in 2018 and updated in 2023, the plan focuses on leveraging

existing programs, strengthening partnerships, prioritizing high-impact areas, engaging landowners who are not yet participating in conservation efforts, and applying adaptive management.

The state’s objective is to achieve the spring phosphorus reduction targets for the Maumee River at the Ohio state line. To better characterize nutrient conditions, USGS auto-samplers have been installed throughout the WLEB. Indiana has advanced several major efforts to address nutrient inputs from both urban and agricultural landscapes. These include long-term control plan projects for combined sewer overflow communities—such as Fort Wayne’s Deep Tunnel project—and sewer extensions in areas with failing septic systems, such as Adams County.

Restoration efforts along the Maumee River and its tributaries include installation of wetlands, native plantings, and riparian buffers to improve natural hydrology and ecological function. Urban areas are increasingly adopting green infrastructure practices, including rain gardens, to reduce runoff and enhance water quality.

Cost/Benefit Assessment

Water resources are essential to Indiana’s economic vitality, supporting diverse agricultural, industrial, and environmental sectors. Achieving a balance between these competing needs requires sustained investment, yet available funding remains limited relative to the scope of restoration and protection needs. The following section summarizes key funding sources that help state, regional, and local entities advance Clean Water Act goals and highlights associated water quality benefits.

Funding Water Quality Improvements through Better Infrastructure

Since 1992, Indiana’s State Revolving Fund (SRF) Loan Programs have financed more than 1,000 wastewater (Figure 3) and drinking water (Figure 4) infrastructure projects, providing approximately \$9 billion in assistance. During state fiscal years (SFYs) 2024 and 2025, the Clean Water SRF Program and related programs closed 60 loans totaling about \$947 million, generating an estimated \$523 million in savings compared to market-rate financing. Over the same period, the Drinking Water SRF Program closed 66 loans totaling roughly \$679 million, with estimated savings of \$407 million (Table 6).

Table 6: State Revolving Fund (SRF) investments in state fiscal years (SFY) 2024 and 2025. Source: SRF program tracking database.

SRF Program	Number of Projects	Loan Amount	Savings Realized
Clean Water	60	\$946,809,358	\$523,371,260
Drinking Water	66	\$678,829,013	\$406,713,594

2026 Indiana Integrated Water Monitoring and Assessment Report

Figure 3: State Revolving Fund Clean Water Program projects, 1992-2023.



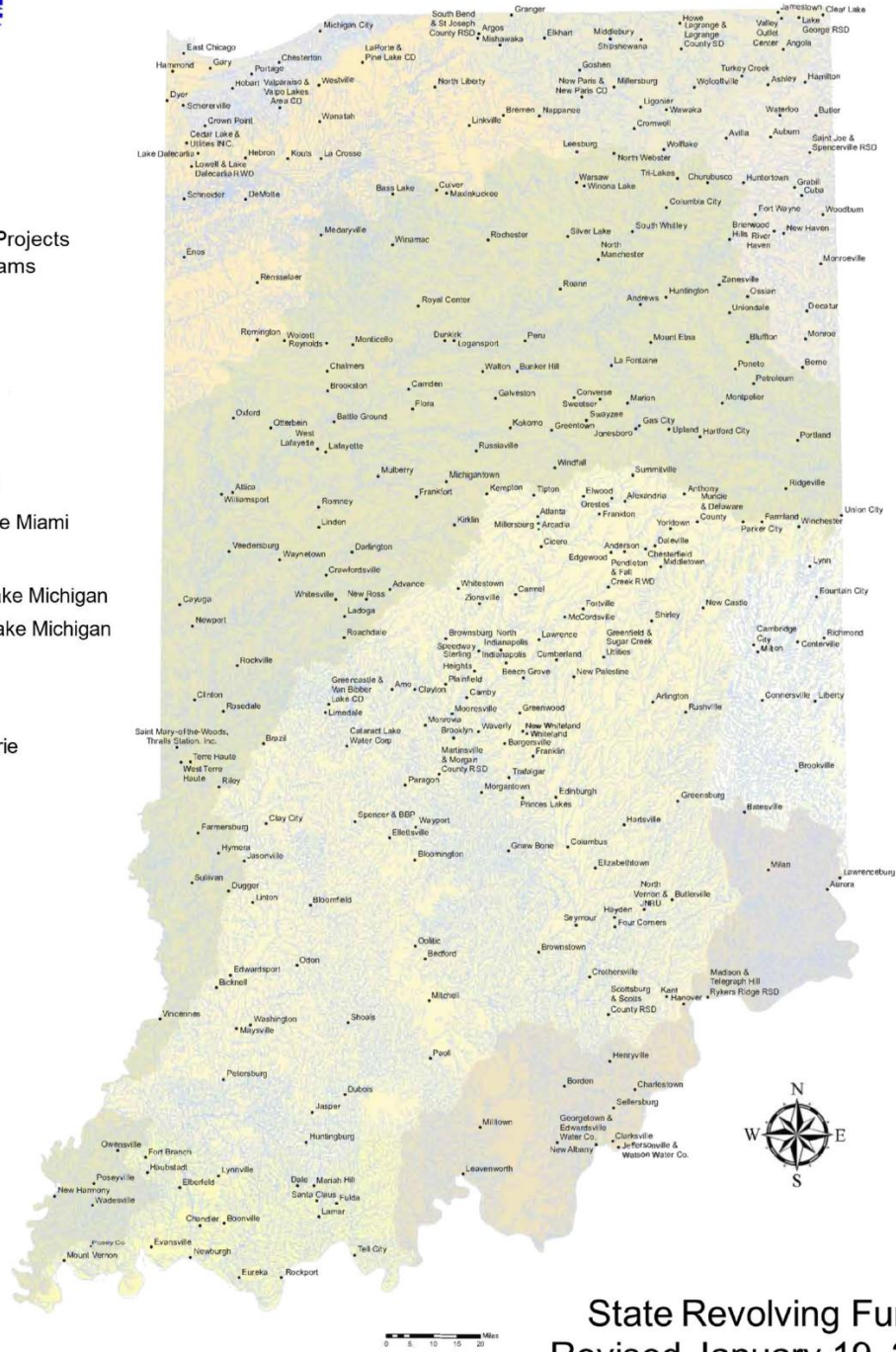
State Revolving Fund Clean Water Projects (SFYs 1992-2023)

Legend

- Location of Closed Clean Water Loan Projects
- Rivers and Streams

Watersheds

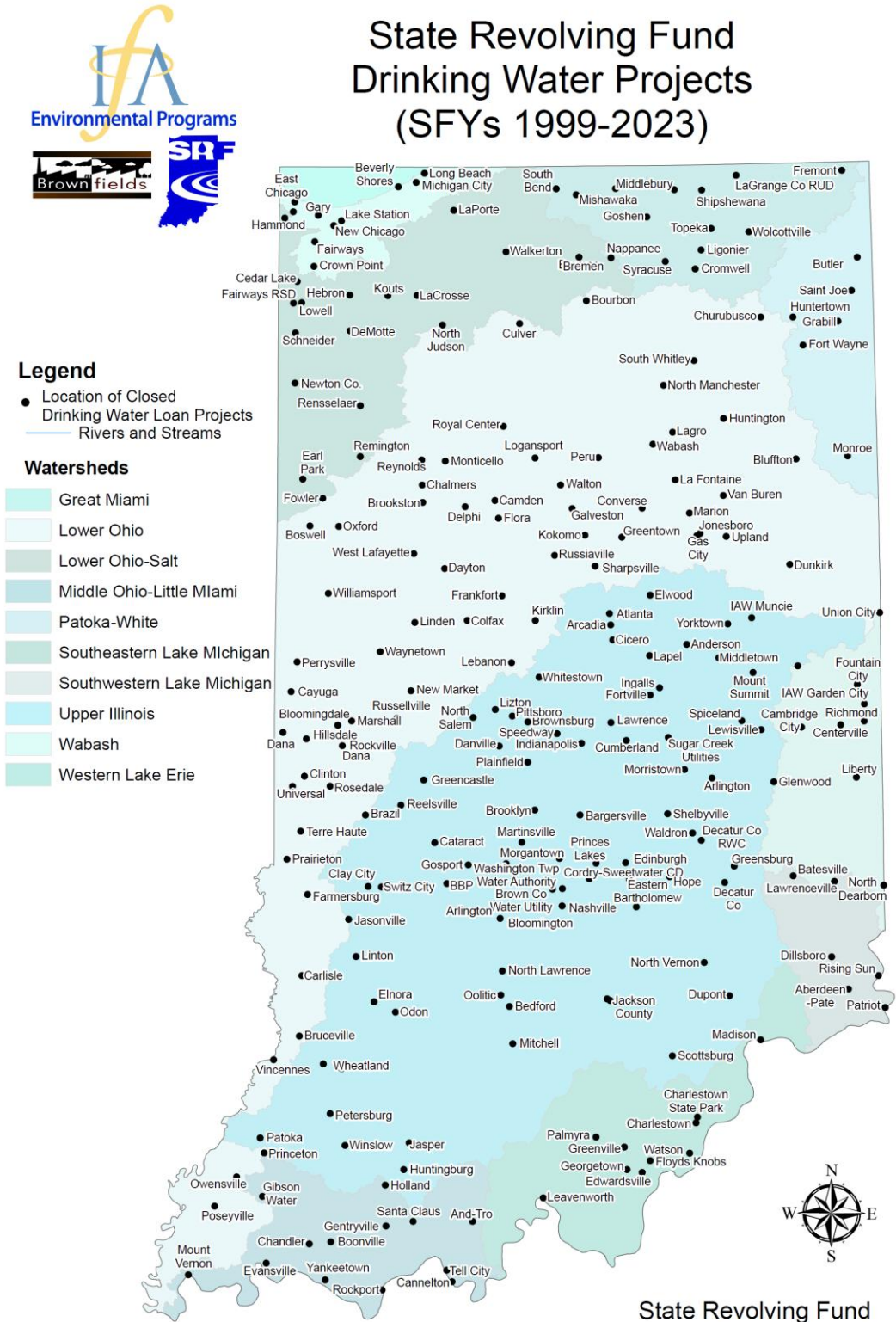
- Great Miami
- Lower Ohio
- Lower Ohio-Salt
- Middle Ohio-Little Miami
- Patoka-White
- Southeastern Lake Michigan
- Southwestern Lake Michigan
- Upper Illinois
- Wabash
- Western Lake Erie



Locations of cities or towns are not intended to represent specific project sites.

State Revolving Fund
Revised January 19, 2024
By April Douglas

Figure 4: State Revolving Fund Drinking Water Program projects, 1999-2023.



2026 Indiana Integrated Water Monitoring and Assessment Report

Successes in Water Quality Improvement through Strategic Measures

Since 2007, IDEM has reported water quality improvements in more than 526 stream miles across 33 watersheds to the U.S. EPA, meeting the agency's strategic performance measure WQ-10a (Table 5). This measure requires states to develop Nonpoint Source (NPS) Program "Success Stories" that document improvements in previously impaired waters resulting from watershed restoration activities supported in whole or in part by IDEM's NPS Program.

In 2024 and 2025, IDEM reported documented water quality improvements in the following watersheds: [Rock Creek](#), [Indian Kentucky Creek](#), [South Fork Blue River](#), [Turman Creek](#), [Elliott Ditch](#), [Muddy Fork](#), [Vestal Branch](#), [Big Branch](#), [Prairie Creek](#), [Eel River](#), and [Flat Creek](#). These and other restoration successes are featured on U.S. EPA's [Nonpoint Source Success Stories](#) website.

Flat Creek Recovery: Watershed Planning and Implementation Leads to Multiple Delistings

The Flat Creek watershed spans Pike and Dubois counties and is one of five HUC-10 watersheds within the Middle Patoka River watershed (Figure 5). Land use is predominantly forested, with areas of agriculture and pasture. Historically, land-disturbing activities—particularly mining—have contributed to water quality impairments, with up to 45 of the 54 stream miles listed as impaired.

Between 2006 and 2012, IDEM monitoring identified multiple impairments across Flat Creek segments, including low Index of Biotic Integrity (IBI) scores, low dissolved oxygen (DO), and excessive nutrients. For example, the upstream segment (INP0951_06) had failing IBI scores, indicating degraded biological communities, while middle segments (INP0952_02 and INP0952_04) showed both failing IBI scores and impaired DO levels below 4.0 mg/L. The tailwaters segment of Flat Creek (INP0953_01) exhibited failing IBI scores, low DO, and nutrient impairments. Nutrient impairment was determined using a weight-of-evidence approach, with total phosphorus (0.53 mg/L) and DO (0.86 mg/L) both outside target thresholds during a single sampling event.

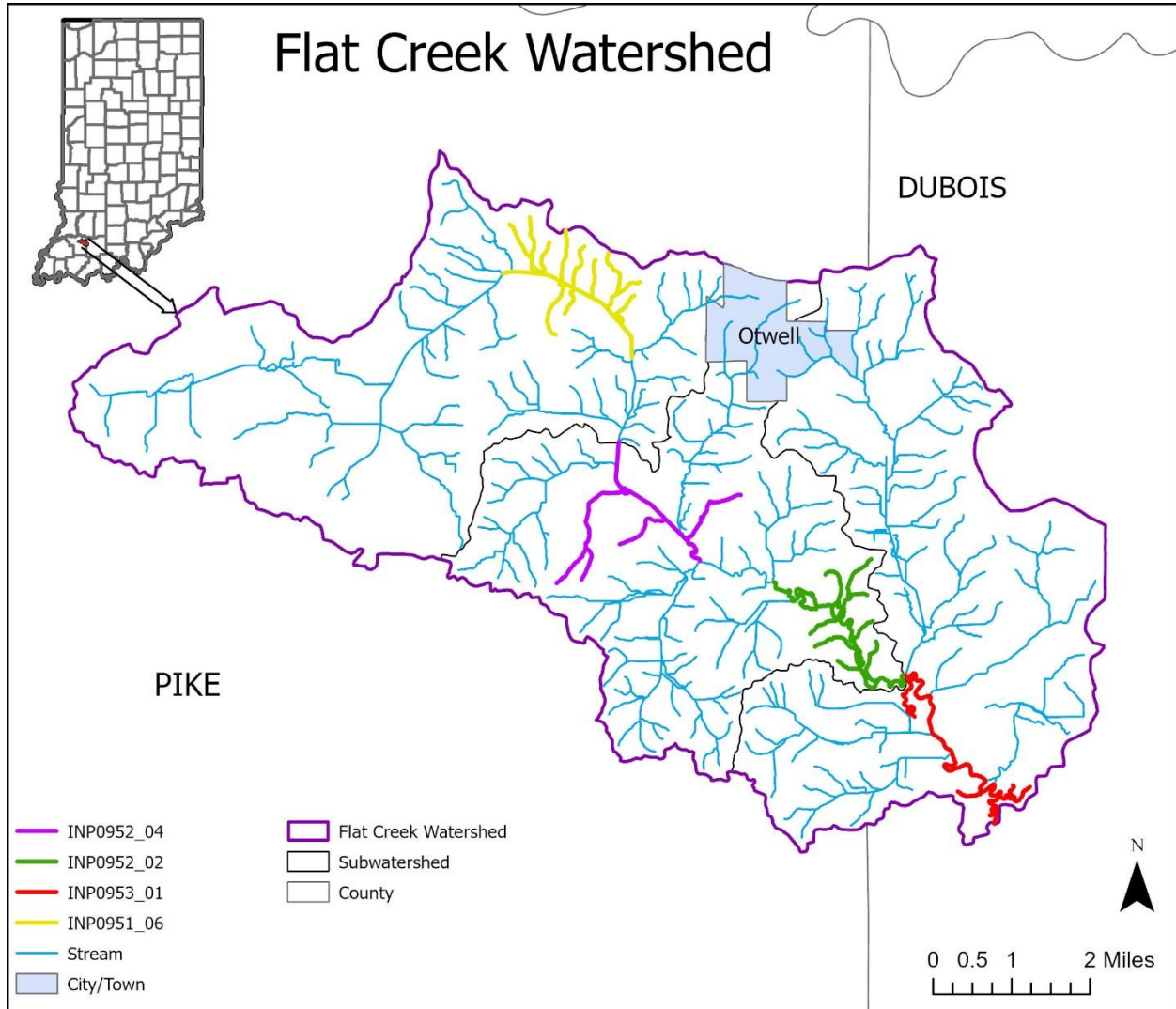
Several restoration efforts followed. The Alliance of Indiana Rural Water (AIRW) developed an EPA-approved source water protection plan in 2012 and implemented CWA Section 319-funded projects from 2013 to 2016, including BMP installations and a targeted outreach program. This phase achieved nearly 50 percent of the sediment-reduction goal and 20 percent of the phosphorus-reduction goal. A second implementation phase (2017–2021), led by the Pike County SWCD, resulted in nearly 10,000 acres of cover crop adoption across the Middle Patoka River watershed. In 2022, the Patoka Lake Regional Water and Sewer District received Section 319 funding for an innovative project supporting the long-running Patoka Clean Sweep effort, which has involved over 2,000 volunteers since 2008.

IDEM conducted follow-up monitoring in 2019. The headwaters segment (INP0951_06) showed improved fish and macroinvertebrate IBI scores and was delisted for impaired biotic communities (IBC) in 2022. Middle segments demonstrated improvement as well: the upper middle segment (INP0952_02) showed improved DO levels (averaging 8.4 mg/L), though macroinvertebrate IBI scores remained failing, while the lower middle segment (INP0952_04) attained passing IBI scores and improved DO levels. IBC and DO impairments were removed for these segments in 2022. In the tailwaters (INP0953_01), 2019 monitoring showed passing IBI scores, increased DO, and reduced phosphorus, leading to delisting for IBC, DO, and nutrients.

2026 Indiana Integrated Water Monitoring and Assessment Report

Additional monitoring conducted in 2024 for the middle segment (INP0952_02) found passing IBI scores for both fish and macroinvertebrates. IDEM intends to propose delisting this segment for IBC in 2026.

Figure 5: Location of restored stream segments in the Flat Creek Watershed, Indiana.



Indian-Kentuck Best Management Practices Improves Fish Community Scores

The Indian-Kentuck watershed spans roughly 152.8 square miles across Jefferson and Ripley counties (Figure 6). It includes the 15-mile Kentuck Creek segment (INN0125_01), which flows into the 9-mile Indian-Kentuck Creek segment (INN0125_04) through the Brushy Fork subwatershed. The area is predominantly forested and agricultural, including the community of Canaan.

IDEM's 2012 monitoring identified biological impairments in INN0125_01, with macroinvertebrate and fish Index of Biotic Integrity (IBI) scores of 32 and 52, respectively (scores below 36 are considered non-supporting). INN0125_04 exhibited nutrient-related impairments, including elevated pH (9.11) and high dissolved oxygen levels (14.7 mg/L, 177.9% saturation), both exceeding Indiana's water quality criteria and indicating stress likely linked to excessive nutrients, particularly phosphorus. These findings highlighted the need for nutrient reduction and habitat restoration.

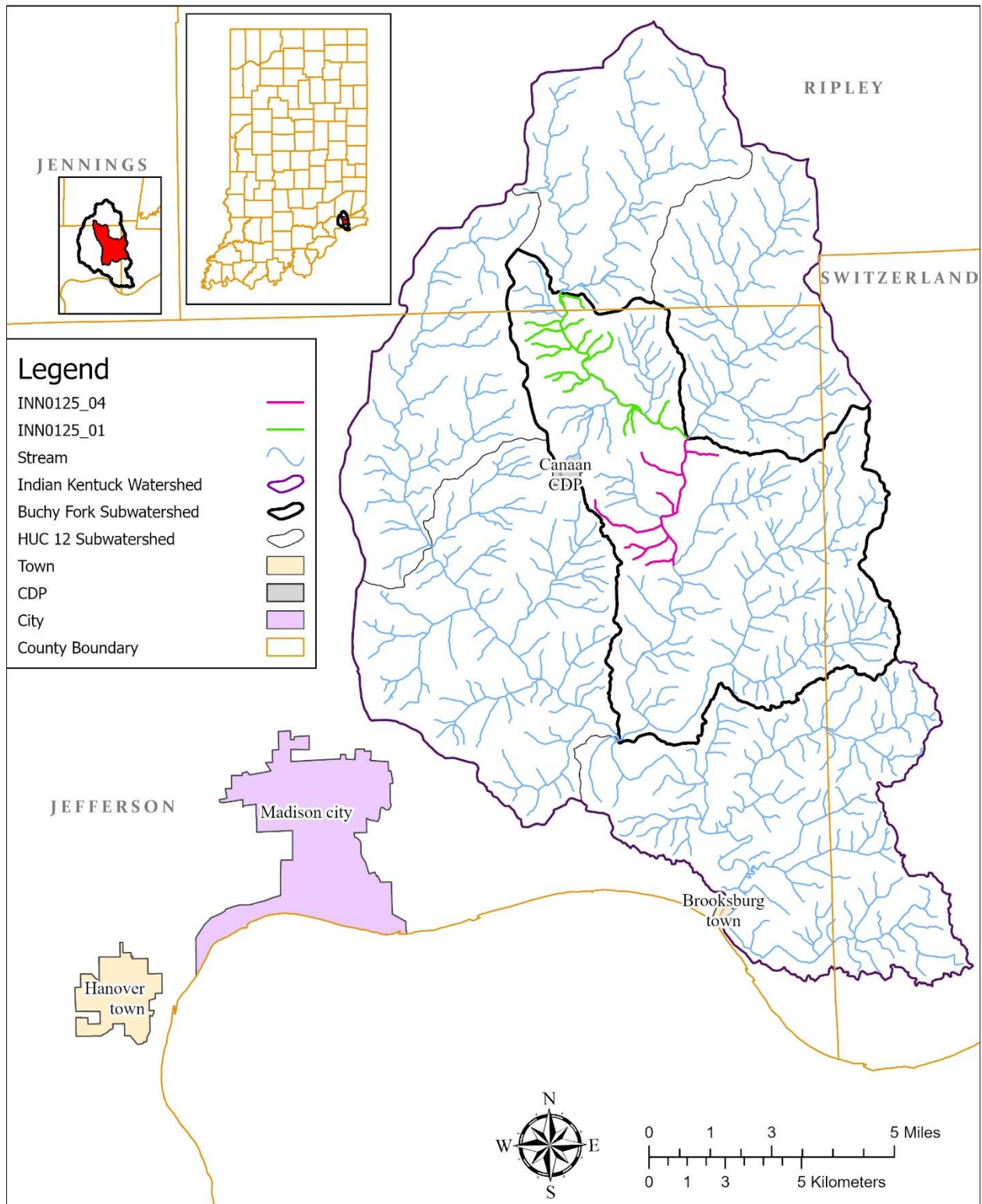
Restoration began when the Jefferson County SWCD obtained a CWA Section 205(j) grant in 2012 to develop a watershed management plan, completed in 2014. From 2015 to 2024, Section 319 funds—administered through Historic Hoosier Hills RC&D—supported targeted best management practices (BMPs) and education. Strong partnerships among SWCDs, nonprofit organizations, landowners, local officials, and state agencies were key to project success.

Implementation efforts focused on nutrient and sediment reduction using conservation tillage, riparian buffers, cover crops, grazing rotation, fencing, heavy-use area protections, and alternate watering facilities. Outreach and education accompanied these efforts. A total of 56 BMPs were installed across Jefferson, Ripley, and Switzerland counties, involving 25 landowners. In the Brushy Fork subwatershed, practices included 347 acres of pasture/hayland planting, 25 acres of seeding, and 2,944 acres of cover crops. These actions strengthened long-term community stewardship.

The project yielded measurable improvements. Estimated annual load reductions included 81,259 pounds of total nitrogen and 40,267 pounds of total phosphorus. Biological conditions improved as well: INN0125_01's macroinvertebrate IBI increased from 32 to 40 in IDEM's 2024 monitoring, and fish IBI scores remained within the supporting range. In INN0125_04, pH and dissolved oxygen saturation decreased (pH 8.59; DO saturation 129.2%), eliminating the co-occurrence that previously triggered nutrient impairment. These improvements support proposals to delist both biotic and nutrient impairments and demonstrate the value of sustained, community-based watershed restoration.

Figure 6: Location of restored stream segments in the Indian-Kentuck Watershed, Indiana.

Indian-Kentuck Watershed



Healthy Streams Start with Covered Fields: 33 Miles Back to Life in Turman Creek

Turman Creek drains an agricultural landscape in Sullivan and Vigo counties before flowing into the Wabash River (Figure 7). Intensive row-crop production, livestock activity, and reduced riparian buffers historically contributed to nutrient and sediment loading, degrading stream habitat. IDEM's 2009 monitoring identified impairments in three stream segments (INB11C3_02, INB11C3_03, and INB11C1_05), all failing to meet Indiana's biotic integrity thresholds for supporting warmwater aquatic life. While fish communities in two segments met criteria, all three showed poor macroinvertebrate scores, prompting their inclusion on Indiana's 2010 CWA Section 303(d) list.

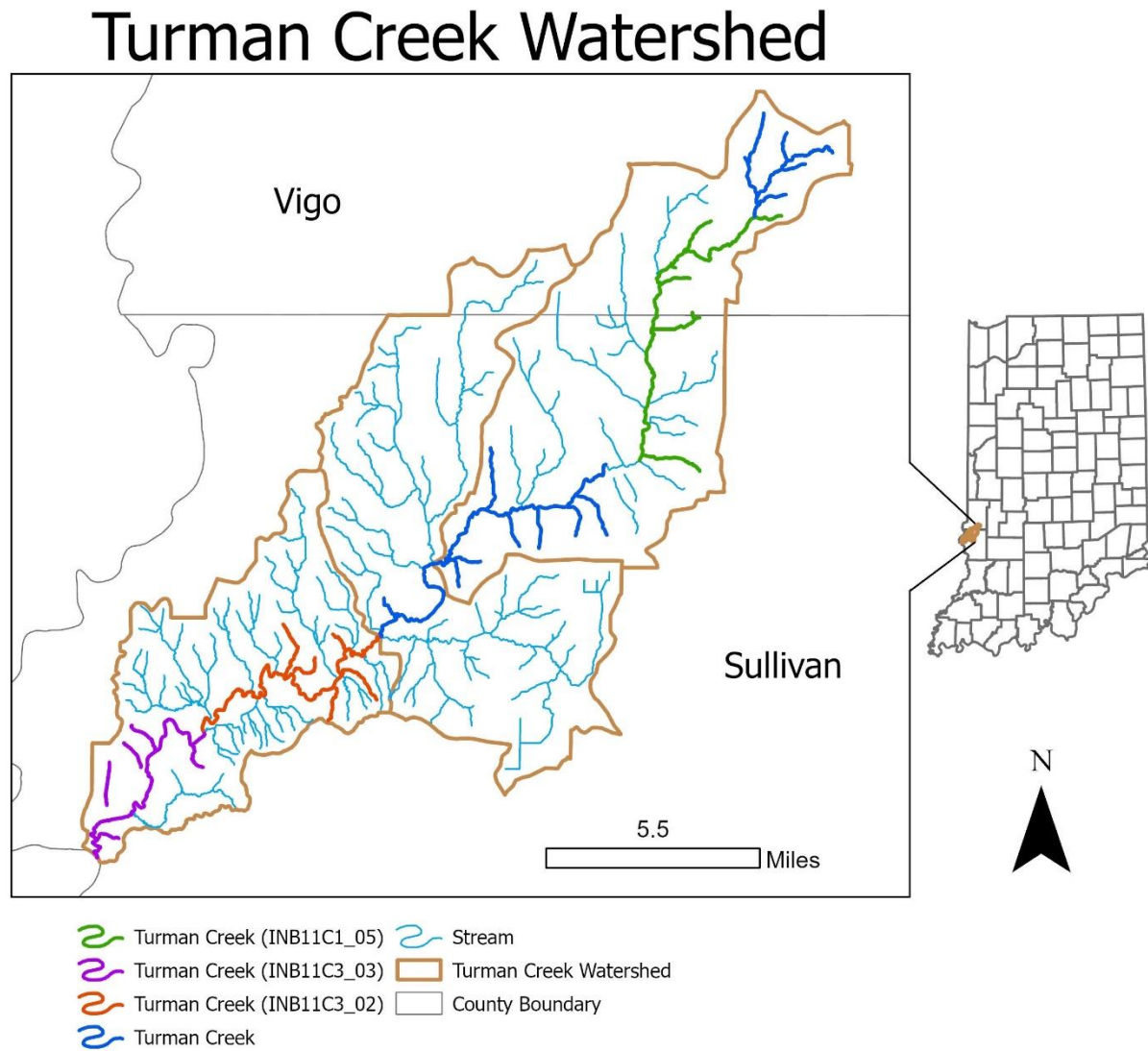
A 2016 watershed management plan identified nutrients, sedimentation, and habitat degradation as priority issues. The Sullivan County SWCD, with support from multiple partners and funding from CWA Section 319, the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) programs, and the Conservation Reserve Enhancement Program, implemented a broad range of best management practices (BMPs), including:

- Over 3,000 acres of cover crops and conservation tillage
- Precision nutrient and pest management
- Livestock exclusion fencing and heavy-use area protections
- Prescribed grazing and pasture plantings
- Drainage water management systems, sediment basins, and grade stabilization structures
- Constructed wetlands and filter strips to treat runoff

Public engagement campaigns amplified participation. Outreach included roadside signs with messaging such as "Don't Farm Naked—Plant Cover Crops!" messaging and "TTK Watershed: Conservation in Action" which reinforced local stewardship, supported landowner engagement, and built public awareness throughout the watershed.

IDEM's 2021 performance monitoring showed all three segments meeting aquatic life use criteria, with fish and macroinvertebrate IBI scores improving across the board. IDEM proposed delisting the segments in 2024, reclassifying 33 miles of Turman Creek as fully supporting aquatic life. Between 2016 and 2024, the Turman Creek watershed initiative achieved estimated annual reductions of 231,584 lbs of nitrogen, 35,183 lbs of phosphorus, and 22,193 tons of sediment. These results highlight the effectiveness of sustained, collaborative watershed restoration in agricultural settings.

Figure 7 Location of restored stream segments in the Turman Creek Watershed, Indiana.



Reclaiming Vestal Branch and Indian-Kentuck Creek Through Local Action

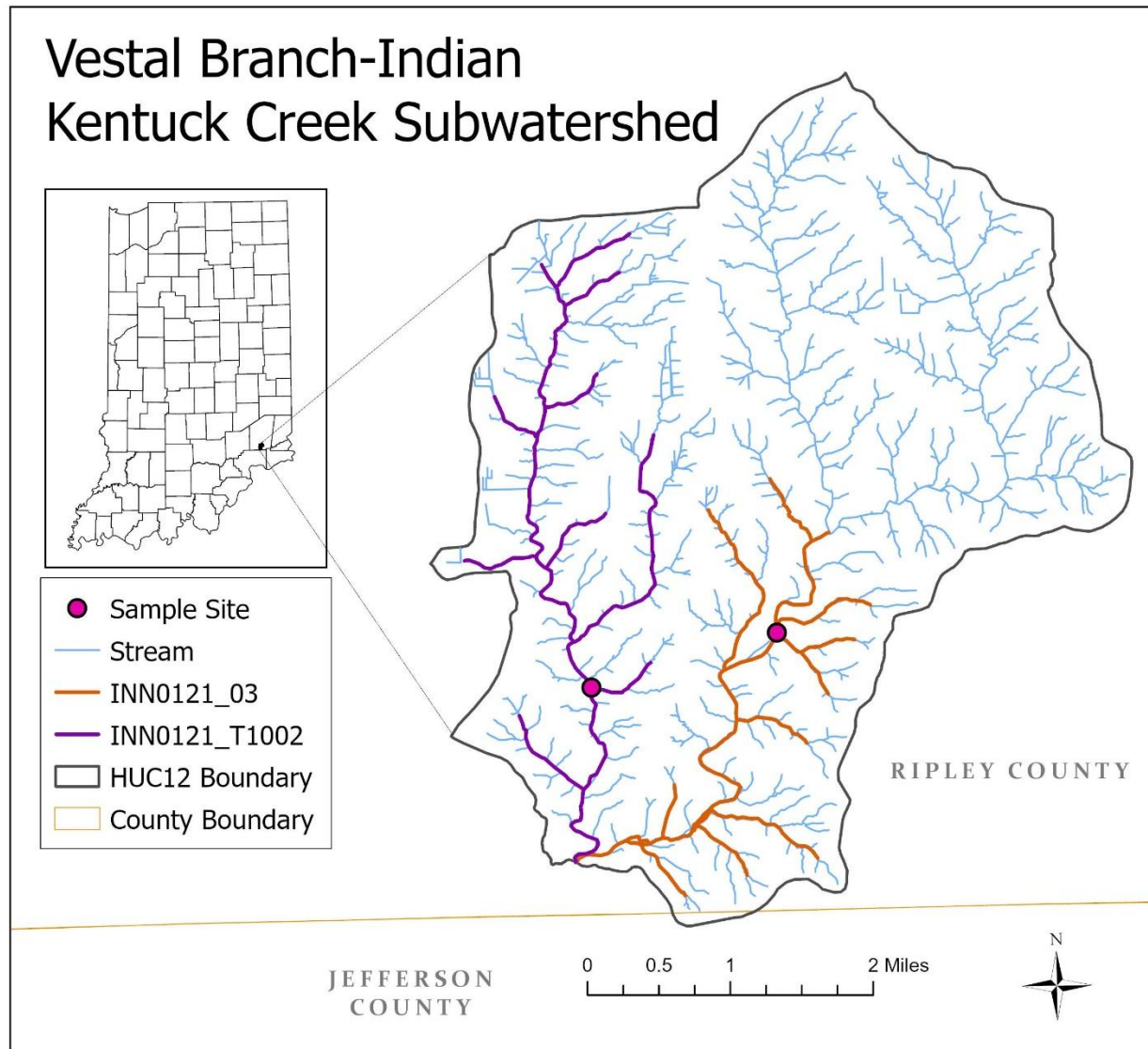
The Vestal Branch–Indian Kentuck Creek subwatershed encompasses 10,992 acres in southeastern Ripley County (Figure 8). In 2012, macroinvertebrate sampling at Vestal Branch (INN0121_T1002) failed to meet Indiana’s warmwater aquatic life criteria (IBI = 32; mIBI = 32), resulting in its 2014 303(d) listing for impaired biotic communities. Elevated pH (9.21) and dissolved oxygen (13.85 mg/L) recorded the same year triggered a nutrient impairment listing, as DO values exceeding Indiana’s 12.0 mg/L maximum can negatively impact aquatic life.

Indian Kentuck Creek (INN0121_03) also showed impairments. While fish IBI passed (38), macroinvertebrate IBI failed (20), leading to an IBC impairment listing in 2012. A 2019 sampling event documented high pH (9.17) and DO (14.29 mg/L), resulting in a nutrient impairment listing. Row-crop agriculture dominates the watershed (45 percent), with agricultural runoff, moderate streambank erosion, and limited riparian buffers identified as the primary contributors to these impairments.

Watershed planning began in 2011, when Jefferson County received Section 205(j) funding from IDEM to develop a watershed management plan. Local stakeholders and technical experts collaborated to identify pollutant sources, prioritize subwatersheds, and determine measurable goals for water quality improvement, resulting in the plan being approved in 2014. Building on this foundation, Historic Hoosier Hills RC&D secured Section 319 funding in 2015 and 2019 to implement best management practices (BMPs) and deliver education and outreach. Efforts included field demonstrations, classroom-style workshops, and cost-share incentives for conservation practices such as cover crops, riparian buffers, and soil-stabilizing measures. Additional support from Natural Resource Conservation Service (NRCS) and Farm Service Agency (FSA) programs expanded BMP adoption across farms and private lands.

Follow-up monitoring in 2021–2022 documented significant improvements in stream habitat and biological condition in both Vestal Branch and Indian-Kentuck Creek. Visual assessments found reduced bank erosion, improved riffle-pool structure, and fewer signs of nonpoint source pollution, suggesting that the cumulative effects of BMP adoption significantly reduced sediment and nutrient loads into the stream. At Vestal Branch, fish IBI improved from 32 to 42, and macroinvertebrate IBI increased from 32 to 38, supporting delisting for both IBC (2022) and nutrient impairments (2024). Indian-Kentuck Creek also rebounded: macroinvertebrate IBI improved from 20 to 44, supporting delisting for IBC in 2022, though the stream remains impaired for nutrients.

Figure 8: Location of restored stream segments in the Vestal Branch–Indian Kentucky Creek watershed.



Grand Calumet River Area of Concern Remedial Action Plan

The [Grand Calumet River and Indiana Harbor Ship Canal \(IHSC\)](#) in northern Lake County form a highly engineered waterway system that has been heavily impacted by more than 150 years of industrial activity and urbanization. The Grand Calumet consists of two east–west branches that join at the southern end of the IHSC, which then flows north to Indiana Harbor and into Lake Michigan.

Prior to the adoption of strict environmental regulations under the federal CWA, industries and municipal sanitary districts often discharged chemicals and contaminants directly into the Grand Calumet River and the IHSC. This pollution, largely consisting of human waste, petroleum-related compounds, heavy metals, and other industrial chemicals, accumulated in the river sediments and adjacent wetlands and in the bodies of fish and other aquatic organisms. This accumulated pollution significantly harmed the ecosystem and reduced the ability of the river to provide beneficial services, such as clean drinking water, healthy fish and wildlife; recreational uses, and aesthetically pleasing environments.

New regulatory requirements in the 1970s and 1980s changed the operation of municipalities and industries could operate, resulting in significantly reduced pollutant discharges. However, legacy contamination continued to impair the system and posed risks to Lake Michigan. The broader watershed—including Wolf Lake, Lake George, Marquette Park Lagoons, and shoreline habitat—also suffered from fragmentation and invasive species. These conditions led the International Joint Commission, a binational organization of United States and Canadian representatives, to designate the area as one of [43 Great Lakes Areas of Concern \(AOCs\)](#).

Under the 1987 Great Lakes Water Quality Agreement (GLWQA), all AOCs require [Remedial Action Plans \(RAPs\)](#) to guide restoration of critical ecosystem services. IDEM leads the Grand Calumet River AOC RAP effort with regional stakeholder input from the Citizens Advisory for the Remediation of the Environment (CARE) Committee. IDEM's goal with the RAP is to identify the actions needed to remove the [14 designated Beneficial Use Impairments \(BUIs\)](#) from the Grand Calumet River AOC.

Key actions identified in the RAP include contaminated sediment management throughout the river, restoration of more than 1,000 acres of native dune, swale, and wetland habitat, and reductions in *E. coli* sources contributing to beach closures within the AOC. Funding has been provided through the Great Lakes Legacy Act (GLLA), Great Lakes Restoration Initiative (GLRI), Natural Resource Damage settlements, and other federal, state, and local partners.

These partnerships have resulted in significant progress. Since 2002, approximately 3.3 million cubic yards of sediment contaminated with heavy metals, oil and grease, polycyclic aromatic hydrocarbons (PAHs), and polychlorinated biphenyls (PCBs) have been removed, and 1.3 million cubic yards have been contained with sediment caps. Additional GLLA projects are underway, including a [major \\$200 million cleanup agreement](#) targeting more than 240,000 cubic yards of contaminated sediment, with work beginning in 2026.

Habitat restoration is another major focus with GLLA projects restoring 84 acres of wetland and riverine habitat, including Roxana Marsh in East Chicago and Seidner Dune and Swale Nature Preserve in Hammond. GLRI funding is supporting intensive restoration and monitoring efforts across more than 1,000 acres of state and locally managed lands in the AOC. These areas—including Pine Station Nature Preserve, DuPont Natural Area, and Gibson Woods—

contain globally rare dune and swale ecosystems and critical habitat for threatened and endangered species.

A multi-year project managed by the U.S. Fish and Wildlife Service and state and federal partners aims to reduce excess nutrients in the West Branch and restore populations of native giant floater mussels. The first tranche of 325 mussels were deployed in 2025, with another 2,300 individuals to be deployed in 2026.

Infrastructure improvements are also advancing restoration. In 2025, the Northern Indiana Public Service Corporation (NIPSCO) relocated a natural gas pipeline from the long-closed Cline Avenue bridge, paving the way for bridge removal in 2028. This will improve aesthetics and future recreational access.

IDEM is also addressing elevated *E. coli* levels at beaches within the AOC. Routine monitoring conducted through the BeachAlert program indicated that seven of ten monitored beaches located within a [Lake Michigan shoreline assessment unit](#) meet full-body contact recreational water quality standards. The three beaches not meeting these standards are located in an artificial embayment that inhibits water circulation, resulting in increased levels of *E. coli*. Microbial source tracking has identified waste from ring-billed gulls, Canada geese, and dogs — not human sewage—as the primary source of contamination of these beaches.

Two BUIs—Added Costs to Agriculture and Industry (#12) and Restrictions on Drinking Water (Taste and Odor) (#9)—were removed in 2011 and 2012. IDEM and partners continue working to identify and implement the remaining management actions necessary to eliminate the remaining BUIs and ultimately delist the Grand Calumet River AOC.

Beyond [projects taking place through the RAP framework](#), the cities of Hammond, Gary, and East Chicago are implementing long-term control plans to reduce combined sewer overflow discharges into the Grand Calumet and IHSC, which will further improve water quality and aesthetics.

SPECIAL STATE CONCERNS AND RECOMMENDATIONS

Reductions in federal and state resources for data collection and analysis—combined with increasing federal directives and competing program priorities—continue to challenge IDEM's ability to effectively monitor Indiana's waters in support of OWQ programs and emerging statewide needs. Recognizing that fiscal limitations may require adjustments to funding and staffing levels, IDEM recommends the following actions:

- Increase state flexibility in allocating federal funds to better leverage and optimize available funding sources.
- Allow states to combine supplemental and base Clean Water Act Section 106 funds so that maintaining existing monitoring programs is considered an appropriate use of supplemental funds during periods of reduced resources.
- Recognize progress indicators beyond direct water quality improvements, such as social or behavioral indicators, to better capture the trajectory of long-term watershed restoration efforts.

SURFACE WATER MONITORING AND ASSESSMENT

IDEM conducts most of its surface water monitoring through programs within the Watershed Assessment and Planning Branch (WAPB). This section outlines IDEM's monitoring strategy, describes the assessment methods used to classify surface waters according to how well they support their designated uses, and summarizes the most current assessment results. It also includes an analysis of surface water quality trends and related public health considerations.

IDEM'S SURFACE WATER MONITORING STRATEGY

The mission of IDEM's Office of Water Quality (OWQ) is to monitor, protect, and improve Indiana's water quality so it can continue to serve as a source of drinking water, habitat, recreation, and economic value. To support this mission, OWQ has developed a comprehensive Water Quality Monitoring Strategy (WQMS) that uses an adaptive management framework to ensure monitoring programs provide the data needed to meet program priorities and emerging issues. The U.S. EPA recommends ten core elements for state monitoring strategies under CWA Section 106, and Indiana's updated [2022–2026 Water Quality Monitoring Strategy](#) (IDEM, 2023a) incorporates several refinements, including:

- Collecting dissolved metals and dissolved organic carbon at selected Fixed Station sites.
- Using a total-metals “converter” as a screening tool for determining when dissolved metals sampling is needed.
- Adding dissolved reactive phosphorus (DRP) monitoring at 12 Western Lake Erie Basin sites per Indiana's [Domestic Action Plan](#).
- Adding PFAS and reducing pesticide analytes in the fish tissue program.
- Discontinuing continuous dissolved oxygen and DRP monitoring at selected probabilistic sites.
- Developing new biotic indices for evaluating macroinvertebrate and fish communities in coolwater streams.
- Investigating a diatom-based Index of Biotic Integrity for aquatic life assessments.
- Adding three new sites to EPA's [Stream Regional Monitoring Network](#).

An interdisciplinary OWQ workgroup refined the strategy to cover the full range of OWQ monitoring activities, including:

- Probabilistic monitoring in one basin per year on a nine-year rotating cycle.
- Fixed Station monitoring at 165 statewide sites.
- Reference site monitoring to support biological criteria and aquatic life assessments.
- Fish tissue contaminants monitoring on a five-year rotating basin cycle.
- Targeted watershed monitoring for TMDL work, baseline planning, and performance measures.
- Cyanobacteria monitoring at IDNR-managed recreational lakes.
- Special studies such as remediation follow-ups, coolwater monitoring, and thermal plume assessments.
- The Hoosier Riverwatch volunteer monitoring program.

OWQ partners with Indiana University's O'Neil School of Public and Environmental Affairs to administer the [Indiana Clean Lakes Program](#), which provides most of the lake monitoring data used across OWQ programs.

2026 Indiana Integrated Water Monitoring and Assessment Report

Data collected through these monitoring programs support several key objectives (Table 7), including:

- Fulfilling CWA Sections 305(b), 303(d), and 314 assessment and reporting requirements.
- Supporting water quality standards development, NPDES permitting, and compliance activities.
- Informing public health advisories and addressing emerging water quality issues.
- Supporting watershed planning and restoration projects.
- Assessing water quality trends and evaluating program performance.
- Supporting and engaging citizen science through volunteer monitoring.

IDEM prioritizes monitoring activities that address EPA requirements and protect public health, with all other activities ranked as secondary based on available resources and their relevance to OWQ's mission.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 7: OWQ’s primary and secondary water quality monitoring objectives and the types of monitoring approaches – Targeted (T), Probabilistic (P), and/or Fixed Station (F) – needed to meet them.

Key	Monitoring Objective	Priority	Monitoring Approach			Priority Rationale
			P	T	F	
A	Conduct water quality assessments pursuant to CWA Section 305(b) to support the development of Indiana's Integrated Report to U.S. EPA	Primary	X	X	X	Required for CWA Section 106 funding
B	Development of Indiana’s CWA Section 303(d) List of Impaired Waters for Indiana's Integrated Report	Primary	X	X	X	Required for CWA Section 106 funding
C	Develop Total Maximum Daily Loads to address impairments identified on Indiana’s 303(d) list	Primary	X	X	X	Required for CWA Section 106 funding
D	Determine trends and trophic status of Indiana’s lakes and reservoirs under CWA Section 314	Primary	X	X		Required for CWA Section 106 funding
E	Develop water quality criteria, including nutrient criteria for lakes and reservoirs, rivers and streams	Primary	X	X		Required for CWA Section 106 funding
F	Support watershed planning and restoration efforts	Primary	X	X	X	Required for CWA Section 319 funding and to meet performance measures in U.S. EPA’s Strategic Plan
G	Identify water quality improvements accomplished by watershed restoration efforts funded through CWA programs	Primary		X		Required to meet performance measures in U.S. EPA’s Strategic Plan
H	Support the development of public health advisories related to the use of Indiana’s water resources, including fish consumption advisories and recreational use advisories	Primary		X		Supports protection of human health
I	Determine ambient groundwater quality and extent of contaminated areas	Primary		X		Supports protection of human health

DATA QUALITY ASSURANCE AND QUALITY CONTROL

To ensure the quality of data used in IDEM's Clean Water Act Section 305(b) assessments, all surface water monitoring is conducted in accordance with IDEM's Quality Assurance Project Plan (QAPP) for surface water monitoring programs. The QAPP is part of IDEM's EPA-approved Quality Management Plan and complies with U.S. EPA guidance (U.S. EPA, 2002). The most recent revision was completed in July 2023 (IDEM, 2023b).

The QAPP establishes data quality objectives and guides the planning and collection of environmental data to meet Office of Water Quality needs. It also defines the process for assessing data quality and categorizing analytical results into four quality levels. IDEM uses these levels to evaluate data usability for water quality assessments and related decisions.

DATA MANAGEMENT

Management of Water Quality Monitoring Data

The Watershed Assessment and Planning Branch (WAPB) within IDEM's Office of Water Quality (OWQ) manages surface water quality data in the Assessment Information Management System (AIMS). AIMS stores water chemistry results, biological community data (fish, macroinvertebrates, diatoms), habitat assessments, algal monitoring data, and fish tissue and sediment contaminant data.

IDEM has uploaded chemistry and fish community data collected prior to 2017 to the U.S. EPA [EnviroFacts Data Warehouse](#) through the [Water Quality Exchange \(WQX\)](#). Ongoing improvements to AIMS enhance quality control, usability, data upload efficiency, and search capabilities. AIMS also supports storage of water quality data from Nonpoint Source (NPS) projects and external datasets for potential use in Integrated Report assessments. IDEM has established procedures for receiving, evaluating, and importing external data.

Load reduction estimates from NPS project sponsors (Table 4) are maintained in AIMS and reported to EPA through the [Grants Reporting and Tracking System \(GRTS\)](#). These modeled reductions support the evaluation of sampling data collected by project sponsors and WAPB staff.

Management of Water Quality Assessment Information

Water quality assessment information is maintained in EPA's [Assessment, Total Maximum Daily Load \(TMDL\) Tracking and Implementation System](#) (ATTAINS) database. Section 305(b) assessments are based on monitoring data stored in AIMS.

In ATTAINS, water quality assessment decisions are linked to specific waterbody Assessment Units (AUs), each with a unique identifier (AUID). IDEM defines AU boundaries using reach indexing, which applies geographical information system (GIS)-based tools to map waterbody segments to their corresponding Hydrologic Unit Codes (HUCs) and to the [National Hydrography Dataset \(NHD\)](#). This Reach Index enables accurate geographic display and tracking of assessment results.

Indiana's stream Reach Index uses the NHD high-resolution dataset (1:24,000), while lakes are mapped at medium resolution (1:100,000). Each lake and Lake Michigan segment receives an AUID based on its watershed. Lake Michigan's shoreline is divided into six AUs assigned by the 8-digit HUC in which it is located.

2026 Indiana Integrated Water Monitoring and Assessment Report

Stream reaches vary in size. Larger rivers, such as the Ohio or Wabash rivers, are divided into multiple AUs, with each segment typically covering several miles of the river mainstem. Smaller streams may be grouped into a “catchment” AU based on hydrology and other factors affecting water quality. For reporting purposes, IDEM expresses lake assessments in acres, Lake Michigan in acres and shoreline miles, and stream assessments in miles.

WATER QUALITY ASSESSMENTS

Indiana’s water quality standards (WQS) form the foundation for IDEM’s Clean Water Act Section 305(b) assessments. These standards are designed to protect the designated uses of Indiana’s waters, such as aquatic life, recreational use, and fish consumption. For surface waters that serve as public water supplies—or influence groundwater used for drinking—IDEM also assesses drinking water use support. Although state WQS identify additional designated uses, IDEM focuses on these four because the criteria protecting them are the most stringent and inherently safeguard other uses, including agricultural and industrial purposes.

Water Quality Data Used to Make Designated Use Assessments

IDEM considers all existing and readily available data in its Clean Water Act (CWA) Section 305(b) assessments, including data from IDEM’s own monitoring programs and, when possible, from external sources. Internal data come from the following monitoring programs:

- Probabilistic Monitoring
- Fixed Station Monitoring
- Contaminants Monitoring
- Performance Measures Monitoring
- Special Studies
- Watershed Characterization

IDEM also evaluates water quality data collected by partner state and federal agencies and by organizations participating in IDEM’s Nonpoint Source (NPS) Program, including the Indiana Clean Lakes Program (CLP). The agency is committed to increasing the use of external data across its Office of Water Quality (OWQ) programs. The [External Data Framework](#) (EDF) provides a systematic, voluntary, and transparent process for organizations to share their data for potential use in CWA assessments and other OWQ efforts.

To support this effort, IDEM is developing a new Quality Assurance Project Plan (QAPP) Tool designed to simplify preparation of QAPPs by external organizations. The tool will use online forms to generate a complete QAPP suitable for IDEM’s data quality review. Its features will include:

- A linked library of instructional materials for each QAPP section
- An automated messaging system for section-specific questions
- A user-friendly interface with save capabilities and one-click submission for IDEM review

By simplifying QAPP development, IDEM expects this tool to encourage greater participation in the EDF and increase the availability of water quality data for CWA 305(b) assessments. When finalized, the tool will be freely available on IDEM’s website.

2026 Indiana Integrated Water Monitoring and Assessment Report

Most data collected by IDEM and external partners are reach-specific and therefore apply only to the sampled waterbodies. However, IDEM's Probabilistic Monitoring Program provides data suitable for both reach-specific and basin-wide river and stream assessments.

Reach-specific Use Support Assessments

IDEM uses data from the Probabilistic Monitoring Program to assess use support for the sampled stream or stream reach, as well as other reaches where the results are representative. These assessments compare sampling results to applicable water quality criteria to determine whether the assessed reaches support their designated uses. The "Rivers and Streams Water Quality Assessment" section of this report summarizes the results of IDEM's reach-specific assessments. IDEM also incorporates data from its other monitoring programs and may use external data when those data meet required quality standards.

Comprehensive Use Support Assessments

Comprehensive assessments are statistical evaluations that estimate the percentage of rivers and streams within a given area that are supporting or impairing their designated uses (Table 8). These assessments rely exclusively on reach-specific results from IDEM's Probabilistic Monitoring Program, which uses a probability-based sampling design necessary for statistically valid calculations.

IDEM's comprehensive use support assessments and its reach-specific assessments of designated use support provide water quality information in two very different ways, and IDEM uses both types of assessments to meet CWA requirements. The agency's comprehensive assessments provide statistically valid statements about the overall water quality throughout Indiana on a basin level, which allows IDEM to meet the CWA requirement to assess all the waters of the state.

Comprehensive assessments and reach-specific assessments provide two distinct types of water quality information. Comprehensive assessments offer statistically valid basin-level summaries of statewide water quality, enabling IDEM to meet Clean Water Act (CWA) requirements to assess all state waters. However, because the results are expressed as percentages of total stream miles meeting or not meeting designated uses, they cannot be applied to individual streams or reaches and therefore cannot identify specific impairments. Reach-specific assessments fill this gap by pinpointing the locations of impairments, as required under CWA Section 303(d).

This integrated report includes comprehensive assessments for watersheds in Indiana's major basins, summaries of reach-specific assessments consistent with CWA Section 305(b), and the finalized 2024 Section 303(d) List of Impaired Waters (Appendix H). The report expands upon the findings of the 2024 Indiana Integrated Water Monitoring and Assessment Report and incorporates updated assessments for the Great Miami River Basin (2023) and the Upper Wabash River Basin (2024). It also includes assessment information from targeted monitoring for TMDLs, watershed characterization studies, performance measures, and special studies conducted in other basins.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 8: Comprehensive basin attainment results for aquatic life and recreational uses are calculated using data from IDEM's Probabilistic Monitoring Program. Aquatic life use support is determined through site-specific biological assessments; a site is considered attaining if fish and macroinvertebrate index scores (IBI and mIBI) exceed 35 and no chemical criteria are violated. Recreational use support is based on E. coli results, with attainment defined as a geometric mean below 125 colony-forming units per 100 milliliters. Percent attainment and non-attainment values are generated using scripts developed by the U.S. EPA National Health and Environmental Effects Research Laboratory and the R Development Core Team (R Core Team. 2023).

Basin	Basin Size (miles)	Year Sampled/Year Assessed	Designated Use	% Attaining	% Not Attaining	Confidence Level (%)	Confidence Interval (%)
West Fork White River Basin (HUCs 05120201, 05120202, 05120203)	3775	2020/ 2021	Aquatic Life	63.79%	36.21%	95% n=38	+/-15.25%
			Recreational	25.59%	74.41%	95% n=38	+/-13.87%
Patoka River Basin (HUC 05120209)	714	2021/ 2022	Aquatic Life	29.02%	70.98%	95% n=39	+/-11.24%
			Recreational	18.50%	81.50%	95% n=38	+/-12.35%
East Fork White River Basin (HUCs 05120204, 05120205, 05120206, 05120207, 05120208)	4325	2022/ 2023	Aquatic Life	41.37%	58.63%	95% n=39	+/-14.03%
			Recreational	13.66%	86.34%	95% n=38	+/-10.92%
Great Miami River Basin (HUCs 05080001, 05080002, 05080003)	1621	2023/ 2024	Aquatic Life	54.29%	45.71%	95% n=37	+/-15.51%
			Recreational	519.80%	80.20%	95% n=38	+/-12.67%
Upper Wabash River Basin	6632	2024/ 2025	Aquatic Life	41.05%	58.95%	95% n=37	+/-13.08%

2026 Indiana Integrated Water Monitoring and Assessment Report

Basin	Basin Size (miles)	Year Sampled/ Year Assessed	Designated Use	% Attaining	% Not Attaining	Confidence Level (%)	Confidence Interval (%)
(HUCs 05120101, 05120102, 05120103, 05120104, 05120105, 05120106, 05120107)			Recreational	15.52%	84.48%	95% n=38	+/-11.51%
Lower Wabash River Basin (HUCs 05120108, 05120109, 05120110, 05120111, 05120112, 05120113)	5306	2016/ 2017	Aquatic Life	43.15%	56.85%	95% n=37	+/-14.01%
			Recreational	12.57%	87.43%	95% n=38	+/-10.54%
Upper Illinois River Basin (HUCs 07120001, 07120002, 07120003)	3958	2017/ 2018	Aquatic Life	40.61%	59.39%	95% n=38	+/-14.32%
			Recreational	52.12%	47.88%	95% n=38	+/-15.88%
Great Lakes Basin (HUCs 04040001, 04050001, 04100003, 04100004, 04100005, 04100007)	3535	2018/ 2019	Aquatic Life	20.32%	79.68%	95% n=37	+/-11.32%
			Recreational	28.07%	71.93%	95% n=38	+/-14.29%
Ohio River Tributaries (HUCs 05090203, 05140101, 05140104, 05140201, 05140202)	3333	2019/ 2020	Aquatic Life	46.44%	53.56%	95% n=38	+/-15.13%
			Recreational	21.49%	78.51%	95% n=38	+/-13.06%

2026 Indiana Integrated Water Monitoring and Assessment Report

Water Quality Assessment Methodology

IDEM conducts its Clean Water Act (CWA) Section 305(b) water quality assessments in accordance with its Consolidated Assessment and Listing Methodology (CALM) (Appendix D). For each designated use and waterbody type, IDEM compares available data to applicable water quality standards using the procedures described in the CALM. Assessment results are entered into EPA's ATTAINS database and are used to develop Indiana's 303(d) List of Impaired Waters (Appendix H) and the Consolidated List (Appendix I).

Assessment Methods for the Ohio River

IDEM collaborates with the [Ohio River Valley Water Sanitation Commission](#) (ORSANCO), an interstate water pollution control agency established by congressional compact in 1948, to assess water quality along Indiana's segments of the Ohio River. ORSANCO collects most of the data used in these assessments and, in cooperation with member states, determines whether the river meets its designated uses. ORSANCO publishes a [CWA Section 305\(b\) assessment report](#) for the Ohio River every two years, and each state incorporates the results into its 303(d) list in accordance with its own listing procedures. IDEM's CALM (Appendix D) provides additional detail on how Indiana's and ORSANCO's criteria are applied in these assessments.

Assessment Methods for Public Water Supply

IDEM finalized assessment methods for evaluating source waters used by public water supply facilities in 2018. However, few assessments have been completed due to limited available data. Although IDEM anticipated this limitation, the agency expected that additional data might become available through the External Data Framework (EDF). IDEM currently lacks resources to operate a dedicated source water monitoring program but continues to explore options to expand available data, including potential partnerships with drinking water facilities. IDEM expects that the combination of its assessment methods and increased data availability will enhance protection of Indiana's surface waters used as public drinking water sources.

REPORTING WATER QUALITY ASSESSMENT RESULTS

Indiana's Consolidated List

For Clean Water Act (CWA) Section 305(b) reporting, IDEM uses a multi-category system that assigns every waterbody to one of five categories (or subcategories) for each designated use: aquatic life, recreation, fish consumption, and public water supply. The state's Consolidated List (Appendix I) provides a complete inventory of Indiana waters and indicates the extent to which each waterbody supports its designated uses. The Section 303(d) List of Impaired Waters (Appendix H) is a subset of the Consolidated List and includes only Category 5 waters, which require a TMDL. The list is subject to U.S. EPA approval.

A waterbody is assessed as fully supporting a designated use when it meets all applicable water quality standards for that use. If it fails to meet one or more standards, the waterbody is considered not supporting or impaired. Figure 8 summarizes IDEM's decision-making process for determining the appropriate category. IDEM's CALM (Appendix D) provides detailed explanations of the five categories, summarized below:

2026 Indiana Integrated Water Monitoring and Assessment Report

Category 1 The available data and/or information indicate that the waterbody is supporting all its designated uses and that no use is threatened.

Category 2 The available data and/or information indicate that the waterbody is supporting the individual designated use under consideration.

Category 3 The available data and/or other information are insufficient to determine if the waterbody is supporting the individual designated use under consideration.

Category 4 The available data and/or information indicate that the waterbody is not supporting the individual designated use (that the use is impaired or threatened), but a TMDL is not required or has already been completed for the waterbody.

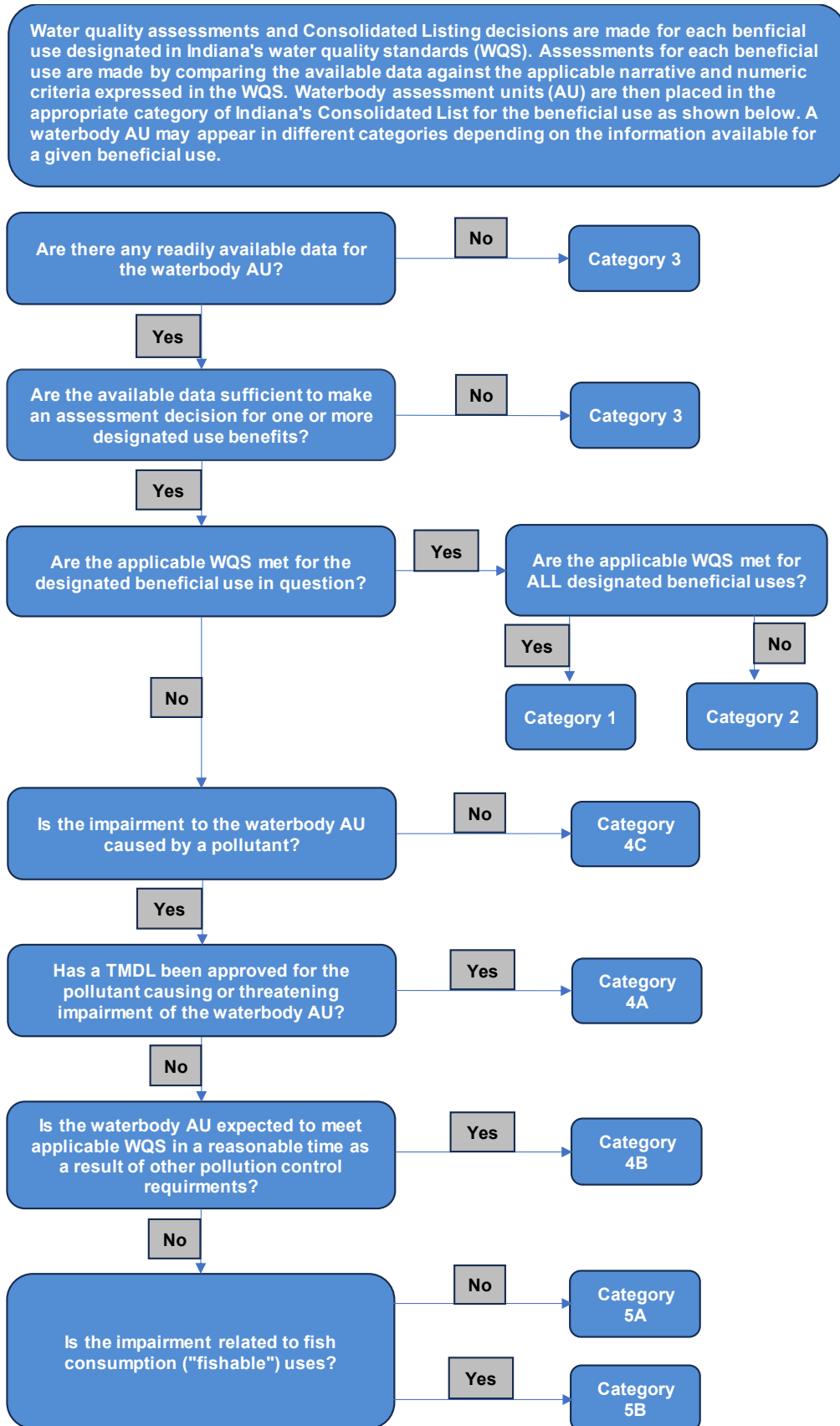
Category 5 The available data and/or information indicate the waterbody is not supporting the individual designated use (that the use is impaired or threatened), and a TMDL is required.

On May 8, 2013, the U.S. EPA partially approved Indiana's 2010 Section 303(d) List of Impaired Waters, citing concerns with IDEM's methods for evaluating metals data. On May 9, 2019, EPA informed IDEM that it had consolidated its review of Indiana's 2012, 2014, 2016, and 2018 lists. EPA concluded that IDEM met all Section 303(d) and regulatory requirements for the waters submitted to date, but deferred action on certain waters involving unresolved metals-related issues. On May 17, 2024, EPA issued a partial approval and partial disapproval of Indiana's 2024 list for the same reason.

Although these issues remain unresolved, IDEM continues to conduct water quality assessments and remains committed to providing timely public reporting. Each new 303(d) list builds on the previous cycle to ensure the most current assessment information is included; therefore, the 2026 list reflects the cumulative results of IDEM's assessments to date.

The draft 2026 303(d) list was posted on the IDEM OWQ Section 303(d) webpage for a 45-day public comment period from February 5, 2026, through March 21, 2026. Public notice was published in the [Indiana Register](#). Appendix E contains the narrative portion of the public notice, and Appendix F includes IDEM's responses to public and EPA comments.

Figure 8: Decision-making process for determining Consolidated list categories for Indiana waters.



CLEAN WATER ACT SECTION 305(B) ASSESSMENTS

The following sections summarize designated use support for Indiana waters by waterbody type. Each section contains tables that report the total stream miles and lake acres supporting or not supporting each designated use. These values are not additive because a single waterbody may have multiple designated uses and may exhibit more than one impairment for a single use. For example, adding mileage for two impairments affecting the same stream reach would inaccurately double its length.

These sections also summarize the parameters causing or indicating impairments and the potential sources for each waterbody type. As with designated-use summary tables, these values are not additive. Causes of impairment represent pollutants or stressors contributing to use impairment. In some cases, only symptoms—such as impaired biological communities—can be identified when available data are insufficient to determine the specific pollutant or stressor responsible.

Attributing impairments to specific sources is challenging without more intensive sampling and analysis, which IDEM typically reserves for TMDL development, where source identification is required to recommend restoration loadings. In routine assessments, IDEM identifies the most likely—but not confirmed—sources based on factors such as:

- Land use information from field observations and published datasets (e.g., USGS GAP, aerial imagery)
- Field observations of potential sources, such as straight pipes, stream-edge tillage, or livestock access
- Nearby permitted facilities when impairments could reasonably be linked to their discharges
- Naturally occurring conditions that could contribute to impairment

Using best professional judgment, IDEM identifies the most likely sources of impairment to inform TMDL development, watershed planning, and other restoration efforts.

2026 Indiana Integrated Water Monitoring and Assessment Report

Rivers and Streams Water Quality Assessment

IDEM assesses Indiana’s rivers and streams for aquatic life use, recreational use, and fish consumption. When sufficient data are available, IDEM also evaluates whether rivers and streams support use as a source water for public water supply.

Table 9 presents the total miles of streams IDEM has assessed, including the number of miles fully supporting each use and the number impaired. Table 10 summarizes the total stream miles affected by each identified cause or stressor. These tables include known causes of impairment as well as symptoms—such as impaired biotic communities or low dissolved oxygen—where the specific pollutant or stressor remains unknown.

Table 9: Individual use support summary for Indiana streams. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Designated Uses					
Designated Use	Total Size (Miles)	Size Assessed (Miles)	Percent Assessed	Size Fully Supporting (Miles)	Size Not Supporting (Miles)
Full Body Contact (Recreational Use)	62,692	33,994	54.2%	8,971	25,023
Human Health and Wildlife (Fishable Use)	62,692	8,916	14.2%	3,361	5,555
Public Water Supply	96	39	40.9%	32	8
Warm Water Aquatic Life (Aquatic Life Use)	62,692	36,675	58.1%	24,690	11,985

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 10: Summary of parameters causing or indicating impairment of Indiana streams. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Parameter Causing/Indicating Impairment	Total Size (Miles)
Escherichia coli (E. coli)	25,023
Biological Integrity	8,957
PCBs in Fish Tissue	4,877
Dissolved Oxygen	3,356
Nutrients	3,111
Mercury in Fish Tissue	597
Polychlorinated biphenyls (PCBs)	364
Dioxin (including 2,3,7,8-tcdd)	364
pH	250
Mercury, Total	216
Chloride	156
Ammonia, Un-ionized	108
Habitat Alterations	69
Sulfate	68
Sedimentation/Siltation	66
Zinc (D)	40
Oil and Grease	29
Cyanide (free)	23
Temperature	16
Zinc (T)	16
Cadmium (D)	16
Cadmium (T)	10
Copper (D)	10

2026 Indiana Integrated Water Monitoring and Assessment Report

Parameter Causing/Indicating Impairment	Total Size (Miles)
Fluoride	9
Nitrite	8
Nitrate/Nitrite as Nitrogen	8
Nitrogen, Ammonia	8
Pesticides	7
Nickel (D)	6
Nickel (T)	6
Copper (T)	6

2026 Indiana Integrated Water Monitoring and Assessment Report

Great Lakes Shoreline Water Quality Assessment

IDEM has assessed all 67 miles of Indiana’s Lake Michigan shoreline as fully supporting aquatic life use and as fully supporting the 41 miles designated for public water supply. All 67 miles are assessed as impaired for fish consumption due to observed levels of PCBs and mercury. In September 2004, EPA approved an IDEM TMDL to address recreational-use impairments caused by *E. coli*. Recent assessment of *E. coli* collected on Lake Michigan beaches through the [IDEM BeachAlert program](#) indicates that the recreational use is likely being met in 5 of the 6 shoreline assessment units, leaving one 28-mile segment still impaired and placed in Category 4 of Indiana’s Consolidated List.

Table 11 summarizes IDEM’s assessment results for the Lake Michigan shoreline, and Table 12 identifies the specific causes of impairment.

Table 11: Individual use support summary for Indiana’s Lake Michigan shoreline. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Designated Uses					
Designated Use	Total Size (Miles)	Size Assessed (Miles)	Percent Assessed	Size Fully Supporting (Miles)	Size Not Supporting (Miles)
Full Body Contact (Recreational Use)	67	67	100%	39	28
Human Health and Wildlife (Fishable Use)	67	67	100%	0	67
Public Water Supply	41	41	100%	41	0
Warm Water Aquatic Life (Aquatic Life Use)	67	67	100%	67	0

Table 12: Summary of parameters causing or indicating impairment of Indiana’s Lake Michigan shoreline. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Parameter Causing/Indicating Impairment	Total Size (Miles)
Mercury in Fish Tissue	67
PCBs in Fish Tissue	67
Escherichia coli (<i>E. coli</i>)	28

2026 Indiana Integrated Water Monitoring and Assessment Report

Lake Michigan Water Quality Assessment

To date, fish consumption is the only designated use for which IDEM has sufficient data to assess Lake Michigan. For this purpose, IDEM treats Lake Michigan as a single assessment unit, meaning that any impairment identified in any portion of the lake applies to all 154,176 acres within Indiana’s jurisdiction. Current assessments indicate impairments for mercury and PCBs in fish tissue. Tables 13 and 14 present the results of these assessments.

Table 13: Individual use support summary for Lake Michigan. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Designated Uses					
Designated Use	Total Size (Acres)	Size Assessed (Acres)	Percent Assessed	Size Fully Supporting (Acres)	Size Not Supporting (Acres)
Human Health and Wildlife (Fishable Use)	154,176	154,176	100%	0	154,176

Table 14: Summary of parameters causing or indicating an impairment of Lake Michigan. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Parameter Causing/Indicating Impairment	Total Size (Acres)
Mercury in Fish Tissue	154,176
PCBs in Fish Tissue	154,176

Water Quality Assessments of Other Lakes

IDEM conducts two primary types of lake assessments. Under CWA Section 314, states must report the trophic status and trends of all publicly owned lakes. Under CWA Section 305(b), states must evaluate the extent to which lakes and reservoirs support their designated uses. IDEM's Consolidated Assessment and Listing Methodology (CALM) provides detailed descriptions of the methods used for both assessment types (Appendix D).

For 305(b) assessments, IDEM evaluates lakes primarily for recreational use and fish consumption. While IDEM conducts some fish tissue monitoring, other forms of lake monitoring for determining designated use support are limited. Consequently, IDEM relies heavily on external data from the Indiana Clean Lakes Program (CLP) to meet CWA Section 314 reporting requirements.

CLP monitoring provides the full set of parameters required to calculate Carlson's Trophic State Index (TSI) (Carlson, 1977), which IDEM uses to make trophic state assessments under Section 314 and to support some recreational-use assessments under Section 305(b). However, IDEM does not consider these parameters or their TSI scores sufficient to evaluate biological condition for aquatic life use support.

Assessments related to public water supply use are also limited because they apply only to the relatively small number of lakes and reservoirs used as direct or indirect drinking water sources.

Additional details on IDEM's assessment methods for lakes and reservoirs are provided in the CALM (Appendix D), and summary results for the 2026 cycle are shown in Tables 15 and 16.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 15: Individual use support summary for Indiana lakes. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Designated Uses					
Designated Use	Total Size (Acres)	Size Assessed (Acres)	Percent Assessed	Size Fully Supporting (Acres)	Size Not Supporting (Acres)
Full Body Contact (Recreational Use)	129,529	40,559	31.4%	30,539	10,560
Human Health and Wildlife (Fishable Use)	129,644	81,336	62.7%	42,215	39,120
Public Water Supply ¹	22,851	12,471	55.8%	0	12,471
Warm Water Aquatic Life (Aquatic Life Use)	129,529	17,890	13.8%	5,049	12,841

¹ While all waterbodies in Indiana are designated for aquatic life and recreational uses, not all are designated for use as a public water supply. There are a total of 22,851 lake acres, 96 stream miles, and 41 miles of Lake Michigan shoreline designated for use as a public water supply in Indiana.

Table 16: Summary of parameters causing or indicating an impairment of one or more Indiana lakes. Source: U.S. EPA Assessment, Total Maximum Daily Load (TMDL) Tracking and Implementation System (ATTAINS) Indiana data for the 2026 Integrated Report Cycle (Version: Organization Public Comment (In Progress)).

Parameter Causing/Indicating Impairment	Total Size (Acres)
PCBs in Fish Tissue	38,120
Algae	16,157
Taste	12,471
Phosphorus, Total	7,023
Biological Integrity	6,520
Mercury in Fish Tissue	6,038
Escherichia coli (E. coli)	3,676
Temperature	1,556
Nutrients	1,285

CWA SECTION 314 ASSESSMENTS

Section 314 of the Clean Water Act requires states to report on the trophic status and trends of all publicly owned lakes. The trophic state of a lake refers to the amount of vegetative biomass present when a measurement is taken. IDEM evaluates trophic state using Carlson's Trophic State Index (TSI), which can be calculated using measurements of Secchi depth, total phosphorus (TP), or chlorophyll-a (CHL). Each parameter provides an independent indicator of lake condition, but IDEM relies on TSI (CHL) for official assessments because CHL more directly reflects phytoplankton abundance.

Lakes are classified into four trophic categories based on their TSI (CHL) scores (Table 17). Higher scores indicate greater nutrient enrichment, which can result from natural processes or human activities. Additional details on calculation methods are provided in IDEM's Consolidated Assessment and Listing Methodology (CALM) (Appendix D).

For CWA Section 314 reporting, IDEM only classifies lakes for which data have been collected and assessed. Table 18 summarizes the trophic status information for all lakes assessed to date and Table 19 summarizes trends in the trophic condition for Indiana lakes. About 20% of assessed lakes (representing 20% of assessed acres) show improving conditions, reflected by decreasing trophic scores. 44% of lakes (24% of acres) exhibit stable trophic conditions. 4% of lakes (4% of acres) show increasing trophic scores, indicating degradation. 53% of lakes (40% of acres) show fluctuating or inconclusive trends, likely due to seasonal variability or changing watershed activities. When data are insufficient to determine a trend, the status is reported as unknown. Appendix G includes all lake-specific trophic classifications and trend results for Indiana's lakes and reservoirs.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 17: Lake classification scheme for Indiana.

TSI (CHL)	TSI (CHL)	Corresponding CHL values (µg/L)	Characteristics of Trophic State
Oligotrophic	Greater than 40	Less than 0.95-2.6	Low biological productivity High transparency (clear water) Low levels of nutrients Low algal production and little/no aquatic vegetation Well oxygenated hypolimnion year-round; hypolimnion of shallower lakes may become anoxic at TSI scores >30
Mesotrophic	40-50 ¹	2.6-7.3	Moderate biological productivity Moderate transparency (moderately clear water) Moderate levels of nutrients Beds of submerged aquatic plants Increasing possibility of anoxia in the hypolimnion during summer
Eutrophic	50-70	7.3-56	High biological productivity Water has low transparency High levels of nutrients Large amounts of aquatic plants or algae At TSI scores >60, blue-green algae dominate and algal scums and excessive macrophytes possible Hypolimnion commonly anoxic; fish kills possible
Hypereutrophic	Greater than 70	56-155	Very high biological productivity Very low transparency, usually <3 feet Very high levels of nutrients Dense algae and aquatic vegetation; algal scums and few aquatic plants at TSI scores >80 Hypolimnion persistently anoxic; fish kills and/or “dead zones” below the surface common

¹ Lakes with a TSI score of 50, which is on the boundary between mesotrophic and eutrophic conditions are evaluated with their corresponding TSI scores for TP and SD along with any other available information and classified in accordance with the best professional judgment of IDEM scientists.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 18: Trophic status of lakes assessed with Carlson Trophic State Index scores for Chlorophyll a 1990-2015. Actual values are higher for Total Size as these results do not reflect acres for non-indexed lakes for which size is currently unknown. Source: IDEM Assessment Database (2018).

Trophic Status	Number of Lakes	Total Size (Acres)
Oligotrophic	95	19,000
Mesotrophic	130	24,061
Eutrophic	202	50,205
Hypereutrophic	28	5,267
Unknown	17	2,404

Table 19: Trends in the trophic status of lakes assessed 1990-2015. Actual values are higher for Total Size as these results do not reflect acres for non-indexed lakes for which size is currently unknown. Source: IDEM Assessment Database (2018).

Trend	Number of Lakes	Total Size (Acres)
Improving	46	13,773
Stable	100	16,070
Fluctuating	89	36,314
Degrading	10	2,408
Unknown	227	32,372

PUBLIC HEALTH/AQUATIC LIFE CONCERNS

Toxic substances—both legacy contaminants and chemicals still in use—are found in surface waters across the United States. Some toxins occur naturally, while others enter waterways through human activities. Regardless of their origin, these substances can threaten public health and aquatic ecosystems by contaminating drinking water supplies, fish and shellfish, and recreational waters. Their impacts include:

- Acutely toxic concentrations that can directly kill fish and other aquatic organisms.
- Chronic exposure at lower concentrations that can suppress growth, reduce population densities, or accumulate in the tissues of aquatic life.
- Human exposure through consumption of contaminated fish or shellfish, potentially leading to adverse health effects.
- Risks to public health when toxic materials contaminate drinking water sources.

Fish Consumption

Advances in analytical methods over the past several decades have improved the detection of chemical contaminants in aquatic environments, raising concerns about their effects on human health and aquatic ecosystems. Many pollutants occur at higher concentrations in fish tissue and sediments than in the water column. IDEM collects and analyzes these data through its Fish Tissue Contaminants and Sediment Contaminants Monitoring Programs.

IDEM has monitored organochlorine pesticides (OCPs) in fish tissue since the 1980s. Because most OCPs were banned or phased out more than 30 years ago, IDEM evaluated 40 years of OCP data in 2021 and found declining trends and current concentrations below FDA action levels and advisory benchmarks. Given these results, OCP sampling has been reduced to a long-term trend network of 23 sites, allowing resources to be redirected toward emerging contaminants such as per- and polyfluoroalkyl substances (PFAS).

IDEM also monitors selenium in fish tissue. EPA's 2016 national chronic aquatic life criterion reflects scientific consensus that selenium toxicity to aquatic life (particularly fish) is driven primarily by dietary exposure rather than water column concentrations (U.S. EPA, 2021b). IDEM has collected selenium data since 2007 and maintains more than 3,500 records. Comparisons with EPA's criterion indicate that selenium levels in most Indiana fish are not of concern, though elevated levels occur in isolated waterbodies.

Studies nationwide have documented increasing detection of emerging contaminants—including pharmaceuticals, personal care products, household chemicals, lawn and agricultural products, and PFAS—at low levels in surface waters. Although scientists do not yet fully understand the risk that emerging contaminants pose to human health and the environment, there is growing concern about the potential negative impacts that these compounds might have on aquatic life. PFAS are of particular concern due to their persistence in the environment. IDEM began analyzing fish tissue samples for PFAS in 2017, expanding from 13 compounds initially to 35 in 2021 and 39 in 2024. Perfluorooctane sulfonate (PFOS) is the predominant PFAS found in Indiana fish tissue, detected in 100 percent of analyzed samples and representing 91 percent of total PFAS concentrations. IDEM will continue monitoring to establish statewide baseline conditions, identify potential sources, and better understand risks to human and ecological health. A 2020 Great Lakes Restoration Initiative (GLRI) grant supports expanded PFAS and contaminant monitoring in Indiana's portions of the Lake Michigan and Lake Erie basins,

increasing spatial coverage and informing updates to the Indiana [Fish Consumption Guidelines](#) (FCG).

IDEM plays a key role in the Indiana Interagency FCG Work Group to ensure guidance is based on sound science, protects public health, and is easy for the public to understand. The monitoring program targets major rivers, known contaminated sites, public waterbodies, major reservoirs, natural lakes, and a set of long-term monitoring stations sampled since 1979. The Indiana Department of Health maintains the FCG, which provides fish consumption advice, contaminant information, recipes, and identification guides.

Citizens seeking information about safe fish consumption should always consult the official [Fish Consumption Guidelines](#). This report and the 303(d) list are not intended to provide public health advice, and the FCG remains the most reliable resource for determining safe consumption levels for specific waterbodies.

Cyanobacteria and Algal Toxins

Blue-green algae (cyanobacteria) continue to pose concerns for recreation and drinking water supplies in Indiana lakes and reservoirs. Although cyanobacteria naturally occur in lake ecosystems, favorable conditions can lead to “blooms” that form surface scums or algal mats. Many bloom-forming species produce cyanotoxins, which can affect human and animal health as neurotoxins, hepatotoxins, or skin irritants. In 2015, U.S. EPA developed drinking water Health Advisories for [Cylindrospermopsin](#) and [Microcystins](#) and in 2019, issued recommended recreational water quality criteria or swimming advisories for [Microcystins and Cylindrospermopsin](#). As more scientific information becomes available, including the development of federal water quality criteria for algal toxins, it may be possible to develop water quality assessment methods that will allow IDEM to determine the impact that algal toxins may be having on the designated uses of Indiana waters.

IDEM launched a pilot monitoring effort in 2010 to support an interagency process for issuing public health advisories for blue green algae and algal toxins. Monthly sampling was conducted at 14 Indiana Department of Natural Resources (IDNR) managed swimming areas, with more frequent sampling at lakes exceeding 100,000 cells/mL of cyanobacteria, consistent with WHO recommendations. After the two-year pilot period, IDEM incorporated blue-green algae monitoring into its long-term water monitoring strategy.

IDEM now monitors 21 state-owned recreational sites weekly from May through August and conducts additional seasonal sampling at Fort Harrison Dog Park Lake. Samples are analyzed for cyanobacterial cell counts and the cyanotoxins Microcystins, Cylindrospermopsin, Anatoxin-a, and Saxitoxin. Results inform the issuance of [toxin-based recreational advisories and beach closures](#) based on thresholds from WHO, U.S. EPA, Ohio EPA, and California EPA (Table 20). IDEM’s [Blue-Green Algae Dashboard](#) and IDNR’s [Blue Green Algae Blooms](#) webpages, test results posted to social media pages, and signage posted at each swimming area help to keep the public informed of the status of the swimming areas sampled at each property.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 20 Cyanotoxin Exposure Thresholds. The reporting limits for anatoxin-a and saxitoxin are the same as the respective closure thresholds.

Advisory Type	Exposure Reference Values (µg/l)			
	Microcystin	Cylindrospermopsin	Anatoxin-a *	Saxitoxin *
Human Recreation Advisory	8	6	8	0.8
Dog Recreation Advisory	0.4	0.5	-	-
Dog Recreation Prohibited	0.8	1.0	0.4	0.05

2026 Indiana Integrated Water Monitoring and Assessment Report

Fish Kills and Chemical or Other Spills

A diverse and healthy fish community is a key indicator of good water quality. When dead or dying fish appear in large numbers, it raises public concern and often signals a significant water quality issue. Depending on the cause and severity, fish kills can impair a waterbody's designated uses in both the short and long term. Fish kills may result from:

- Accidental or intentional spills involving toxic or oxygen-depleting substances.
- Industrial or municipal system upsets that release atypical or elevated pollutant concentrations.
- Natural events, such as disease outbreaks, severe drought, or weather-driven dissolved oxygen depletion.

IDEM's Office of Land Quality tracks spills and reported fish kills, including those reported by the public or observed by agency staff. Table 21 summarizes the number of calls received from 2006 through 2025 regarding potential environmental emergencies, chemical spills, and fish kills. Suspected fish kills should be reported promptly to [IDEM's Spill Line](#), which ensures timely investigation and appropriate response.

Table 21: Calls, spills and fish kills reported from 2016 to 2025. Source: IDEM Tools for Environmental Management and Protection Organizations (TEMPO) database.

Year	Calls	Spills	Fish Kills
2016	1,632	631	0
2017	1,714	543	14
2018	2,096	946	18
2019	1,626	717	22
2020	1,314	646	12
2021	1,462	724	25
2022	1,458	664	31
2023	1,412	645	13
2024	1,410	536	72
2025	1,558	601	64

GROUND WATER ASSESSMENT

To remain eligible for CWA Section 106 grant funding, Indiana must maintain the capability to monitor water quality, update its data annually, and include results in its biennial Integrated Report (IR) to U.S. EPA. Although federal reporting requirements focus primarily on surface waters, U.S. EPA guidance recommends including groundwater information where feasible. This section summarizes Indiana's groundwater monitoring and protection programs, groundwater-surface water interactions, groundwater quality, and major contamination sources.

Groundwater is an essential resource for households, agriculture, and industry across Indiana, with a significant portion of the population relying on it for drinking water and domestic use. IDEM publishes an [Annual Compliance Report](#) summarizing violations of national primary drinking water regulations for public water systems.

MAJOR SOURCES OF GROUND WATER CONTAMINATION

Table 22 lists the primary sources of groundwater contamination in Indiana, grouped by general activity type. All listed sources have the potential to impact groundwater, with the magnitude of risk depending heavily on hydrogeologic sensitivity. Additional factors influencing risk include the source's proximity to drinking water supplies, contaminant toxicity, and the size of the population exposed.

These risk factors were used to identify ten priority contaminant sources, along with the contaminant classes commonly associated with each. Although IDEM has not updated this information since the 2000 305(b) report due to resource limitations, anecdotal evidence suggests that the same major sources continue to affect Indiana groundwater.

Sources of Nitrate

Nitrate is a highly mobile and soluble groundwater contaminant in Indiana and can originate from several sources, including commercial fertilizer applications, animal manure on farmland, and septic systems. These activities are considered high-priority sources of potential groundwater contamination, especially in rural areas. However, identifying the specific source of nitrate contamination can be challenging and expensive.

Fertilizers

When commercial fertilizer is applied at the appropriate rate and time, the risk of groundwater contamination is minimal. Staff from Purdue University Cooperative Extension, the Natural Resources Conservation Service, and private consulting firms assist producers in developing nutrient management plans designed to meet crop needs while avoiding unnecessary fertilizer use.

A state rule that became effective on July 28, 2010 ([355 IAC 7-1-1](#)), requires certification for individuals who distribute or use fertilizer materials, and the Office of the Indiana State Chemist administers this requirement. The rule received broad support from agricultural organizations and other stakeholders, who viewed it as an opportunity for applicators and distributors to demonstrate their competence in the safe and effective handling of fertilizer materials. It also establishes consistent statewide standards for applicator certification and training.

Under this rule, "fertilizer material" includes both commercial fertilizer and manure from confined feeding operations. Individuals hired to apply, handle, or transport fertilizer materials for agricultural production must be certified and licensed by the Office of the Indiana State Chemist, or must work under the supervision of a certified applicator within a licensed fertilizer business.

2026 Indiana Integrated Water Monitoring and Assessment Report

Individuals applying more than minimal quantities of manure from a confined feeding operation to their own land are also required to hold private fertilizer applicator certification. Businesses that distribute fertilizer material, even if they do not apply it, must obtain a fertilizer distributor license.

Confined Feeding Operations

Livestock and poultry confined feeding operations (CFOs) are located throughout Indiana and represent a significant component of the state's agricultural economy. The primary concerns associated with CFOs involve the proper storage and land application of the substantial volumes of manure generated by these operations. When applied to farmland, manure recycles nutrients that support crop production. However, manure contains ammonia-nitrogen, which is converted to nitrate in the soil through biological processes.

As a result, manure application rates are a critical consideration, particularly when the amount applied exceeds the nitrogen needs of crops. Excess nitrogen can move below the root zone and potentially reach underlying aquifers. To address these risks, Indiana's CFO regulations require that manure storage structures be properly designed and constructed, and that land-application practices protect both ground and surface water quality. Because manure nutrients are released more slowly than those in commercial fertilizers, applying manure at appropriate agronomic rates minimizes the risk of groundwater contamination.

Septic Systems

Properly constructed and maintained septic systems provide effective on-site treatment of domestic wastewater in rural and unsewered suburban areas of Indiana. However, poorly constructed or maintained systems and those located in areas with high seasonal water tables or other sensitive hydrogeologic conditions can contribute to nitrate contamination in groundwater

Landfills and Underground Storage Tanks

Landfills and underground storage tanks (USTs) continue to pose groundwater risks, particularly older facilities built before modern construction standards were implemented. Since 1988, newly constructed landfills must meet stringent design requirements, and IDEM's Office of Land Quality now closely oversees UST registrations, upgrades, closures, and site assessments. IDEM inspects all regulated USTs at least once every three years to ensure proper design, corrosion protection, spill and overflow prevention, and leak detection. The agency also oversees closures of inactive USTs and ensures cleanup of confirmed petroleum and hazardous substance releases to ensure protection of human health.

Underground Injection Wells

Class V underground injection wells are common throughout Indiana, including in areas highly vulnerable to groundwater contamination. These shallow wells are typically used to dispose of non-hazardous fluids. Prior to strengthened U.S. EPA regulations adopted in 2000, some Class V wells received potentially hazardous waste, creating a risk of contamination if those fluids migrate into drinking water aquifers. The U.S. EPA directly regulates these wells under the Class V Underground Injection Control Program, focusing on wells with the highest environmental risk

Industrial Activities

Groundwater contamination from industrial activities has been documented in Indiana, often stemming from practices predating modern regulations, but occasionally due to accidents

and intentional dumping of waste. Indiana adopted secondary containment requirements in 1998 for above-ground tanks storing hazardous materials, with stricter thresholds for facilities located within delineated wellhead protection areas ([327 IAC 2-10](#)). While these requirements and IDEM's education efforts have reduced contamination risks, industrial activities remain a potential source of groundwater impacts.

Road Salts

Road salt storage and winter road-treatment activities have also affected groundwater quality in Indiana. The Indiana Department of Transportation (INDOT) now constructs new salt storage facilities only in areas where ground water is not sensitive to contamination and has upgraded many existing sites with protective structures and on-site runoff containment. Improved forecasting and roadway temperature technologies have enabled INDOT and local agencies to reduce salt usage in recent years.

Spills

Groundwater contamination from spills can often be prevented or minimized when incidents are promptly reported to [IDEM's Spill Line](#). Indiana rule [327 IAC 2-6.1](#) establishes reporting and response requirements to ensure that spills with the potential to affect groundwater are managed quickly and effectively

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 22: Major sources of groundwater contamination. Sources: U.S. EPA 2008

Contaminant Source	Highest Priority	Risk Factors ¹	Type of Contaminant ²
Agricultural Activities			
Agricultural chemical facilities		A, C, H, I	5
Commercial fertilizer applications	X	A, C, D, E	5
Confined animal feeding operations	X	A, D, E	5, 9
Farmstead agricultural mixing and loading procedures			
Irrigation practices		A, C, H, I	1,2,5,8,9
Animal manure applications	X	A, C, H, I	5, 9
Pesticide applications		A, C, H, I	1,2
Storage and Treatment Activities			
Land application		A, C, H, I	5,9
Domestic and industrial residual applications		A, C, H, I	5,9
Material stockpiles		A, C, H, I	5,9
Storage tanks (above ground)		A, C, H, I	
Storage tanks (underground)	X	A, B, C, D, E, F	2, 3, 4
Surface impoundments			
Waste piles		A, C, H, I	5,9
Disposal Activities			
Deep injection wells			
Landfills (constructed prior to 1989)	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 6, 7, 8, 9
Permitted landfills (constructed 1989- present)			
Septic systems	X	A, C, D, E, F, G	1, 2, 3, 4, 5, 7, 9
Shallow (Class V) injection wells	X	A, B, C, D, E, I	1, 2, 3, 4, 5, 7, 9

2026 Indiana Integrated Water Monitoring and Assessment Report

Contaminant Source	Highest Priority	Risk Factors ¹	Type of Contaminant ²
Other			
Hazardous waste generators		A	
Hazardous waste sites		A	
Industrial facilities	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 7, 8, 9
Liquid transport pipelines (including sewer)		A	8
Materials spills (including during transport)	X	A, B, C, D, E, F	1, 2, 3, 4, 5, 7, 8, 9
Material transfer operations		A	
Small-scale manufacturing and repair shops		A, I	8
Mining and mine drainage		A	7,8
Salt storage (state and nonstate facilities) and road salting	X	A, C, D, E, F	6
Urban runoff		A, C, H, I	1, 2, 4, 5, 7, 8, 9

¹ Factors considered in selecting the contaminant source: (A) human health and/or environmental risk (toxicity); (B) size of the population at risk; (C) location of source relative to drinking water source; (D) number and/or size of contaminant sources; (E) hydrogeologic sensitivity; (F) documented state findings, other findings; (G) high to very high priority in localized areas, but not over majority of Indiana; (H) geographic distribution/occurrence; and, (I) lack of information.

² Classes of contaminants associated with contamination source: (1) Inorganic pesticides; (2) Organic pesticides; (3) Halogenated solvents; (4) Petroleum compounds; (5) Nitrate; (6) Salinity/brine; (7) Metals; (8) Radionuclides; and (9) Bacteria, protozoa and viruses.

GROUND WATER PROTECTION PROGRAMS

Groundwater monitoring and protection activities in Indiana are conducted at all levels of government. Several state-level programs have been implemented or are under development to support groundwater protection. Table A-26 outlines these programs, their development status, and the agencies responsible for implementing or enforcing them.

Classification of Indiana's Ground Water Resources

Indiana's groundwater quality standards took effect in March 2002. The rule includes numeric criteria to protect wells and provides a framework for classifying groundwater. By default, all groundwater is designated as drinking water class unless IDEM classifies it as limited or impaired. Groundwater may be classified as limited if it yields less than 200 gallons per day, contains more than 10,000 ppm total dissolved solids, or is located in areas such as crop root zones, coal mined areas, or injection zones of permitted injection or gas storage wells. Groundwater may be classified as impaired when it meets conditions such as:

- It is outside an approved wellhead protection area established through [327 IAC 8-4.1](#).
- One or more contaminants exceed numeric criteria for groundwater in [327 IAC 2-11](#).
- The commissioner-approved groundwater remediation or cleanup plan documents contamination above regulatory thresholds.

Source Water Assessment Program

U.S. EPA approved Indiana's Source Water Assessment Program (SWAP) in 2000. IDEM has prepared source water protection plans for all public water systems that primarily utilize surface water. For systems relying on groundwater, the Indiana Wellhead Protection Rule ([327 IAC 8-4.1](#)) requires wellhead protection plans for each well or well field. Since 2000, IDEM has delineated source water areas for more than 3,600 public water systems and inventoried potential contamination sources. By 2008, all susceptibility determinations had been distributed, and Indiana's SWAP was fully implemented. As of March 2020, nearly 96 percent of community water systems using groundwater have an approved phase-1 wellhead protection plan, indicating that the community has developed strategies to prevent contamination to their water supplies.

Other Programs Working to Protect Indiana's Ground Water Resources

Several educational programs complement regulatory groundwater protection efforts listed in Table 23. Purdue University's Extension Service manages the [Safe Water for the Future](#) program, which includes:

- [Farm*A*Syst](#) and [Home*A*Syst](#) programs—wellhead protection guidance for rural and private wells.
- Publications and brochures that support community wellhead protection efforts.
- [Watershed Connections](#), which helps communities produce localized water-resource protection materials.

General water education programs such as the Indiana Department of Natural Resources' [Project WET](#) (Water Education for Teachers) and Purdue's [Water Riches](#) program also promote groundwater protection awareness.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 23: Groundwater protection programs and activities currently established or under development in Indiana. *Indicates lead agency involved in enforcement or implementation. “Pending” describes programs with a written draft policy; “under development” describes programs being planned.

Program or Activity	Status	State Agency/Organization
Active SARA Title III Program	Fully established	IDEM-Office of Land Quality (OLQ)
Ambient groundwater monitoring program	Fully established	IDEM-Office of Water Quality (OWQ)
Aquifer sensitivity assessment	Fully established	OWQ, Indiana Department of Natural Resources (IDNR), Indiana Geological Survey (IGS), Office of the Indiana State Chemist
Aquifer mapping/basin studies	Under development	IDNR, OWQ
Aquifer/ hydrogeologic setting characterization	Fully established	IGS, OWQ, IDNR
Bulk storage program for agricultural chemicals	Fully established	OISC
Comprehensive data management system	Under development	OWQ
Complaint response program for private wells	Fully established	OWQ
Confined animal feeding program	Fully established	OWQ
Groundwater discharge permits for constructed wetlands	Under development	OWQ
Groundwater Best Management Practices	Under development	OISC *, OWQ
Groundwater legislation	Fully established	IDEM, IDNR, OISC, ISDH
Groundwater classification	Fully established	OWQ
Groundwater quality standards	Fully established	OWQ
Land application of domestic and industrial residuals	Fully established	OLQ
Nonpoint source controls	Under development	OWQ
Oil and Gas	Fully established	IDNR
Pesticide State Management Plan	Pending	OISC *, OWQ, IDNR, IGS

2026 Indiana Integrated Water Monitoring and Assessment Report

Program or Activity	Status	State Agency/Organization
Pollution Prevention Program	Fully established	IDEM- Office of Pollution Prevention and Technical Assistance (OPPTA)
Reclamation	Fully established	IDNR
Resource Conservation and Recovery Act (RCRA) Primacy	Fully established	OLQ
Sensitivity assessment for drinking water/ wellhead protection	Fully established	IGS, OWQ
Spill Monitoring	Fully established	OWQ
State Superfund	Fully established	OLQ
State RCRA Program with requirements more stringent than RCRA primacy	Fully established	OLQ
State septic system regulations	Fully established	ISDH
Underground storage tank installation requirements	Fully established	OLQ
Underground Storage Tank Remediation Fund	Fully established	OLQ
Underground Storage Tank Permit Program	Fully established	OLQ
Underground Injection Control Program	Fully established for Class II wells	IDNR
Well abandonment regulations	Fully established	IDNR
Wellhead Protection Program	Fully established	OWQ
Well installation regulations	Fully established	IDNR

GROUND WATER MONITORING FOR PUBLIC WATER SUPPLIES

The Compliance Section of IDEM's Drinking Water Branch receives groundwater compliance monitoring results reported by public water systems for volatile organic compounds (VOCs), synthetic organic compounds (SOCs), inorganic compounds (IOCs), nitrates, and radionuclides. Public water systems collect treated-water samples from points after treatment and before entering the distribution system. Samples may represent a single well or a blend of multiple wells. Monitoring requirements differ by system type:

- Community Water Systems (CWSs) serve water to at least 15 service connections used by year-round residents or at least 25 year-round residents. Examples include municipal systems, mobile home parks, nursing homes, and homeowners' associations. In addition to routine bacteria sampling, CWSs must monitor 30 SOCs, 21 VOCs, 12 IOCs, sodium, and radionuclides. Sampling frequency is at least once every three years, depending on contaminant levels. As of February 2024, Indiana has 770 CWSs.
- Non-Transient Non-Community Water Systems (NTNCWSs) regularly serve at least 25 of the same individuals six months per year but are not community systems. Examples include restaurants, factories, daycares, and schools. Along with bacteria monitoring, they must test for 30 SOCs, 21 VOCs, 11 IOCs (excluding fluoride), and radionuclides at least once every three years. As of February 2024, Indiana has 596 NTNCWSs.
- Transient Non-Community Water Systems (TNCWSs) serve an average of 25 individuals at least 60 days per year. Examples include restaurants, rest areas, and gas stations. These systems test for bacteria and radionuclides. As of February 2024, Indiana has 2,550 TNCWSs.

Compliance monitoring data reported to IDEM reflect treated water rather than raw source water. The public may access these data through the [Safe Drinking Water Information System](#).

PFAS Sampling at Community Public Water Systems

In February 2021, IDEM began statewide monitoring for per- and polyfluoroalkyl substances (PFAS) at all community water systems (CWSs). The program evaluates the occurrence of PFAS compounds in raw water (wells and intakes) and treated drinking water, as well as the effectiveness of conventional treatment processes. Sampling is ongoing and has consisted of five phases. Results for the first four phases are discussed below and available on the [IDEM PFAS webpage](#).

Phase 1 included medium-sized systems serving 3,300–10,000 people which were sampled between March and October 2021 (Figure 8). PFAS compounds were detected in 39 systems, 22 of which were attributable to water purchased from larger suppliers. Common detections included PFBS, PFOS, PFOA, and PFHxA. These thirty-nine systems were resampled; 13 showed PFOS or PFOA above the interim Health Advisory Level (HAL), and six exceeded the proposed Maximum Contaminant Level (MCL), for PFOA in finished drinking water.

Phase 2 focused on small systems serving fewer than 3,300 people which were sampled between November 2021 and December 2022 (Figure 9). PFAS were detected in 27 systems, with PFOS or PFOA above the HAL in 10 systems. Only one of the 324 systems exceeded the proposed MCL for PFOS or PFOA in finished drinking water. Resampling at the 27 systems

2026 Indiana Integrated Water Monitoring and Assessment Report

confirmed PFOS or PFOA detections in 14 systems, with only one exceeding the proposed MCL for PFOS.

Phase 3 examined 76 large systems serving more than 10,000 people which were sampled between January and May 2023 (Figure 10). PFAS were detected in finished water in 29 systems, with PFOS or PFOA above the HAL in 19 systems and PFOA above the proposed MCL in four systems. Resampling at 20 systems confirmed detections at 13 systems, with nine systems exceeding the PFOS/PFOA HAL and three systems exceeding the proposed MCL for PFOS/PFOA.

Phase 4, conducted between May and September 2024, examined 34 systems which utilize surface water sources (Figure 11). PFAS levels were above proposed MCLs in the finished water at three systems and was confirmed with a replicate sample at one system.

Phase 5 sampling was conducted in Spring 2025 at NTNCWSs, primarily schools and daycares (Figure 12). Results for this round of sampling are currently being analyzed but will be made available on the [IDEM PFAS webpage](#).

Figure 8: Location of medium-sized systems (3,300 – 10,000 population served) sampled by IDEM during Phase 1 PFAS sampling.

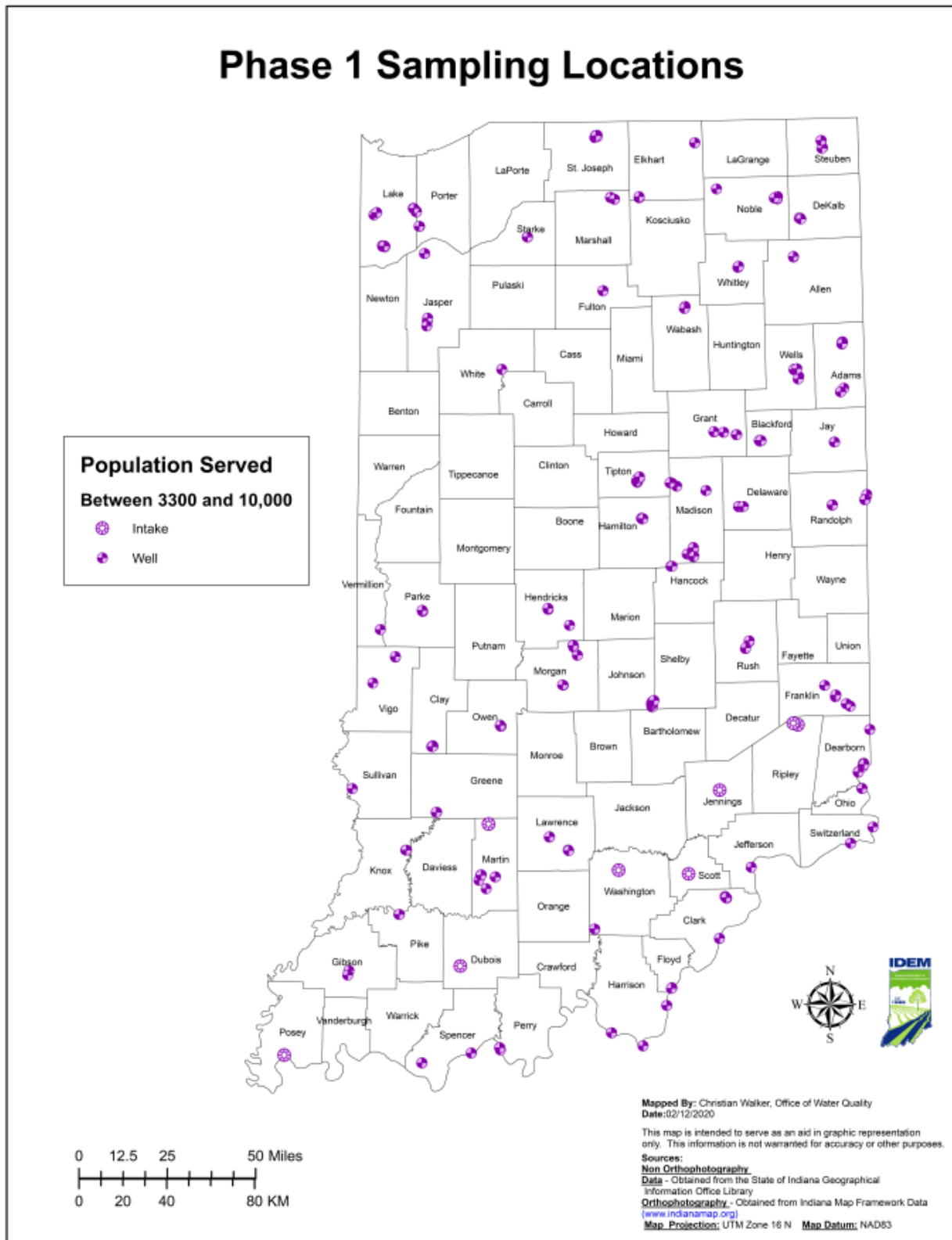


Figure 9: Location of small-sized systems (< 3,300 population served) sampled by IDEM during Phase 2 PFAS sampling.

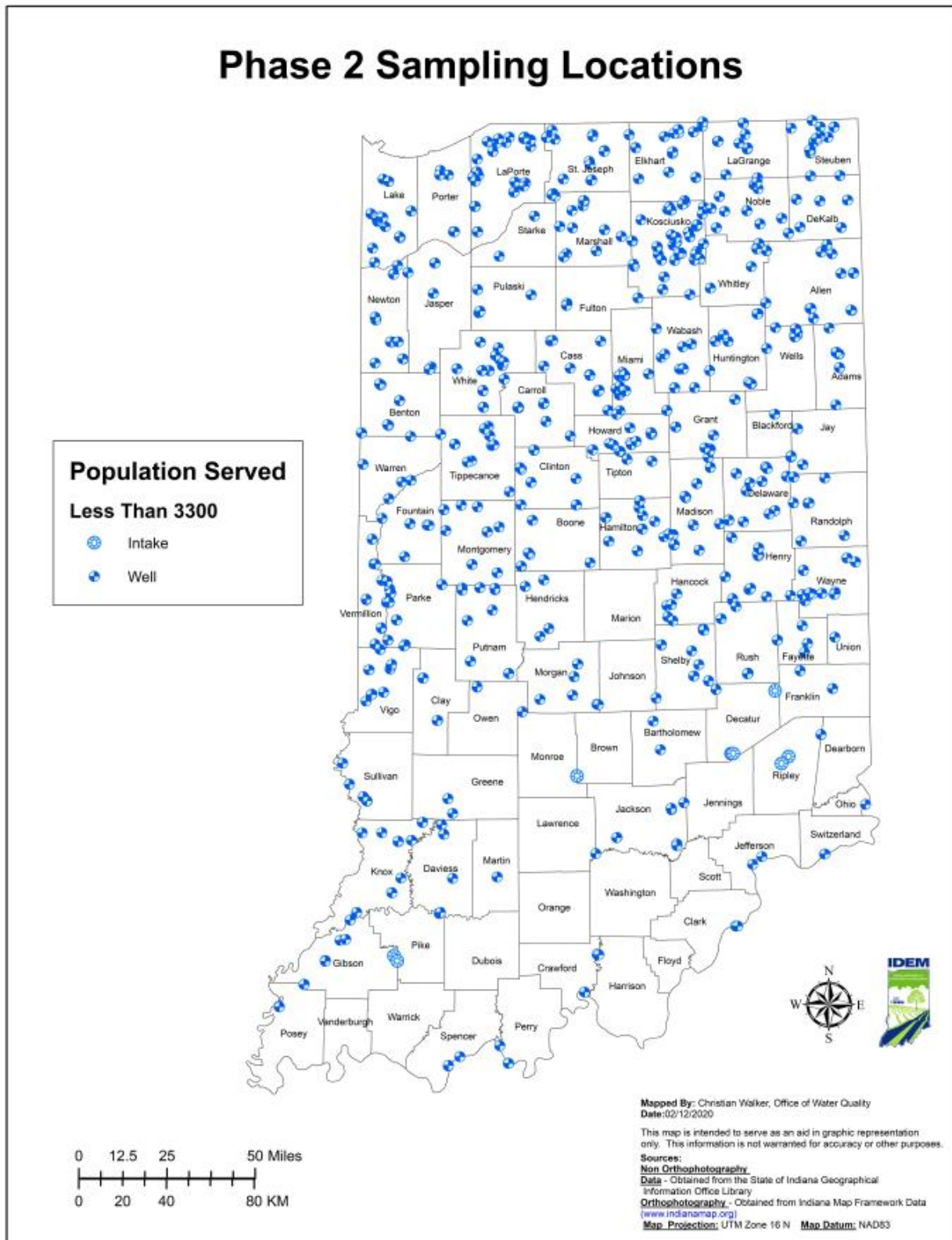


Figure 10: Location of large-sized systems (> 10,000 population served) sampled by IDEM during Phase 3 PFAS sampling.

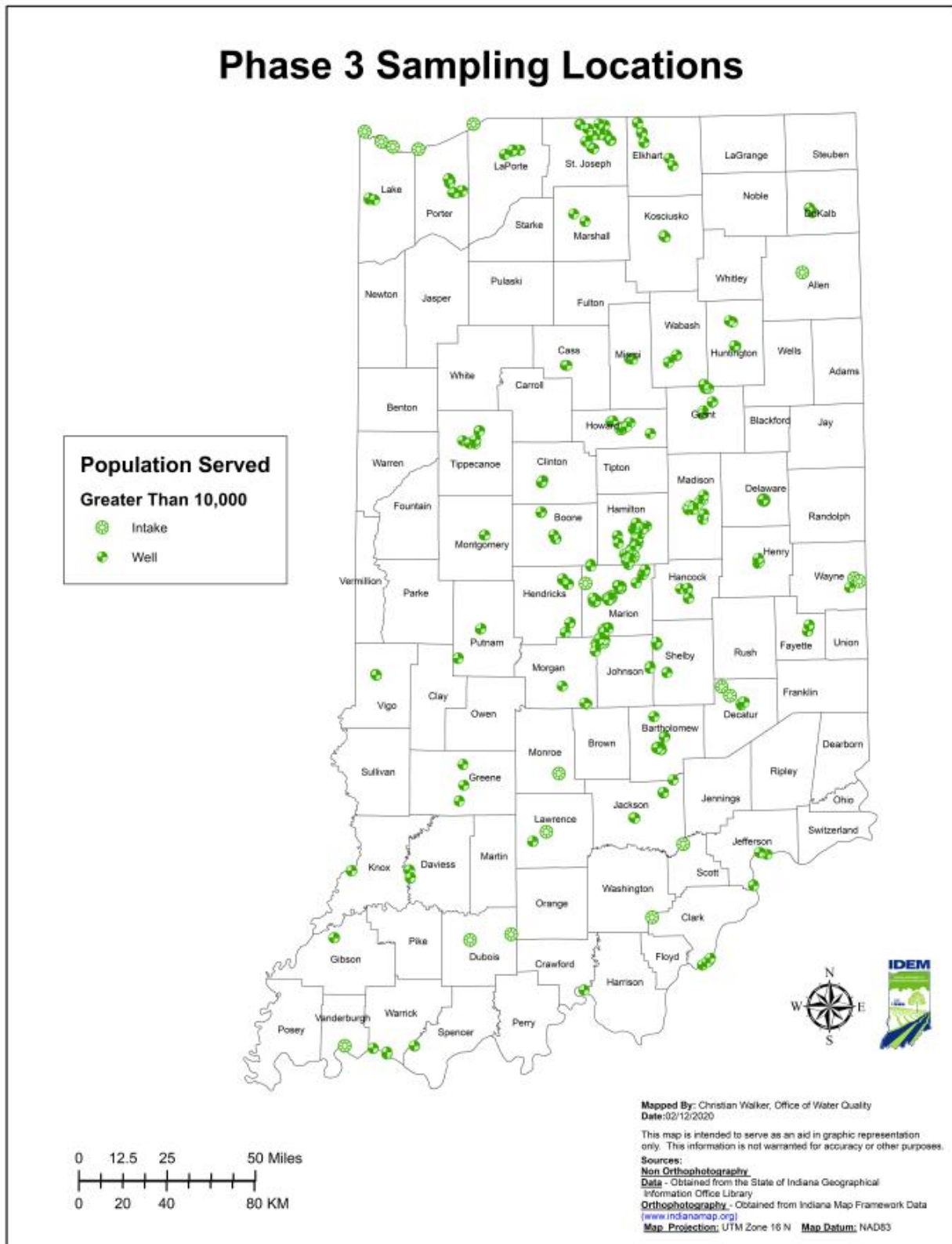


Figure 11: Location of surface waterbodies utilized for drinking water sampled by IDEM during Phase 4 PFAS sampling.

Phase 4 Sampling Locations

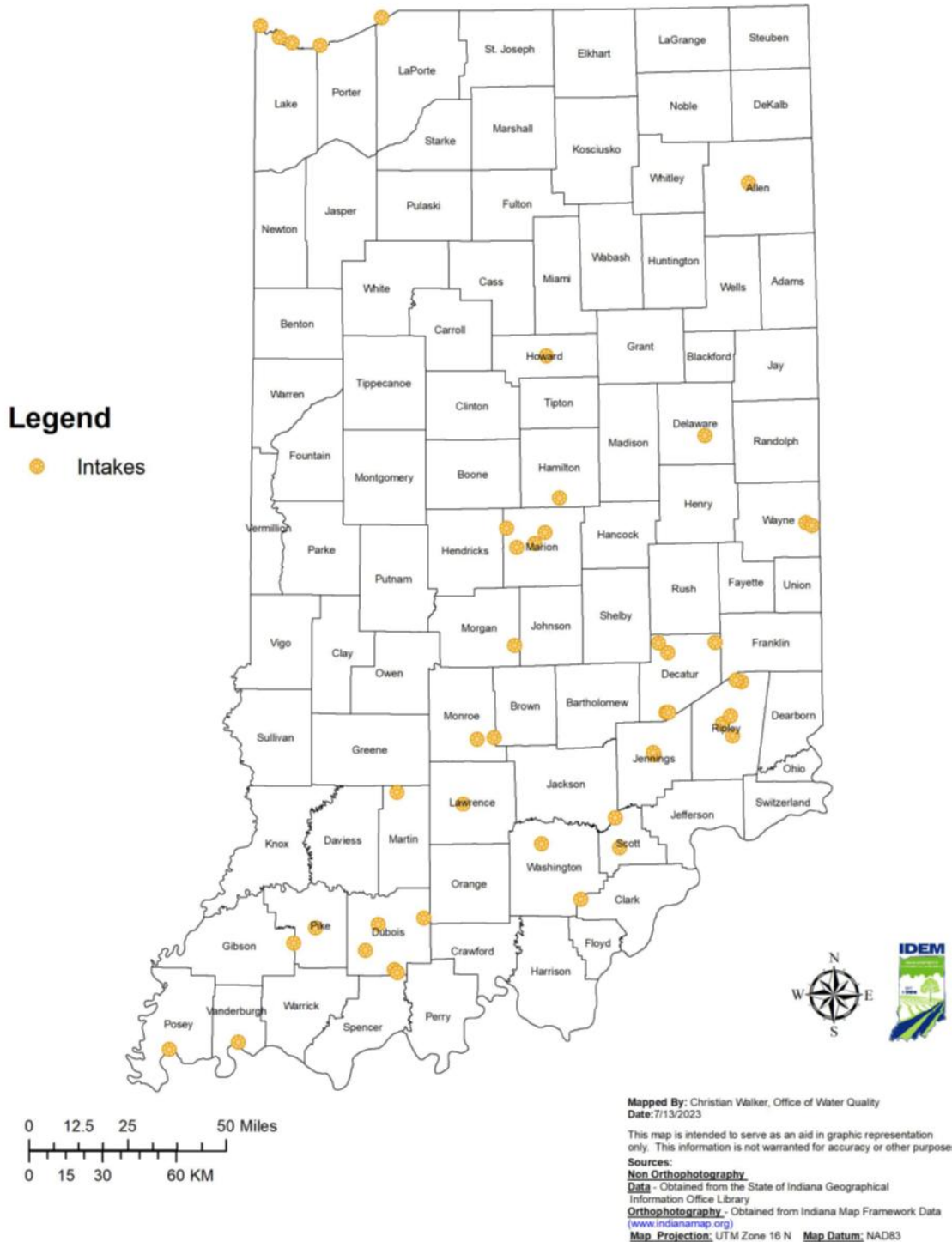
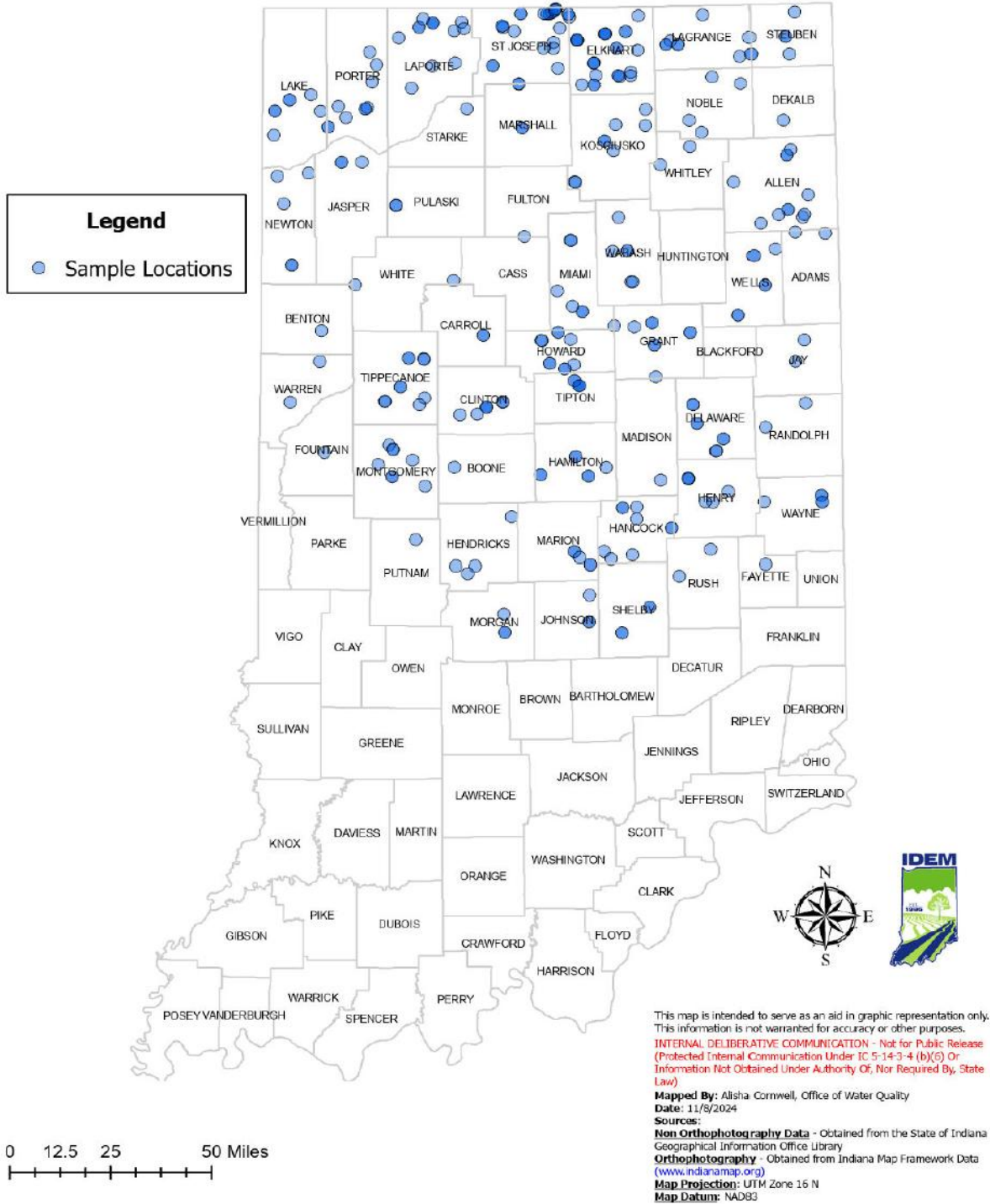


Figure 12: Location of NTCWS sampled by IDEM during Phase 5 PFAS sampling.

Phase 5 Sampling Locations



Statewide Ground Water Monitoring Network

The Ground Water Section of IDEM's Drinking Water Branch manages Indiana's statewide Ground Water Monitoring Network (GWMN). The purpose of the GWMN is to develop a statistical understanding of ambient groundwater quality across Indiana, evaluate groundwater–surface water interactions, and support the protection of drinking water sources. To achieve these objectives, the GWMN:

- Collects groundwater samples from public water supply wells and private residential wells in distinct hydrogeologic areas.
- Expands sampling in areas with known or emerging contamination.
- Continuously refines the network design to address resource needs and data gaps.

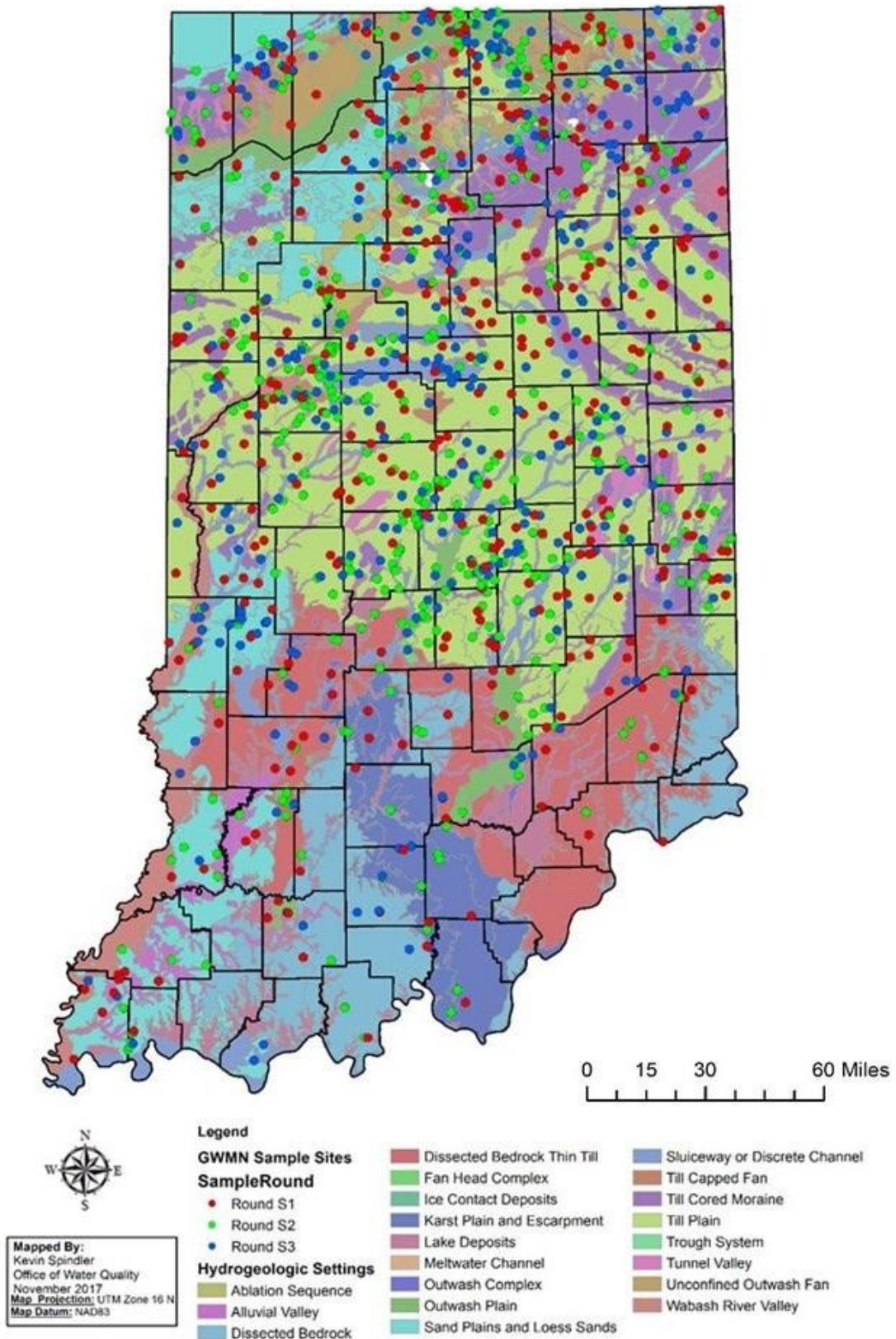
IDEM has conducted annual sampling since the GWMN was established in 2006. Site selection varies each year based on site suitability, participant willingness, resource availability, and previous sampling results. In 2013, IDEM redesigned the GWMN using a statistically robust, randomly selected, proportional sampling approach based on hydrogeologic settings defined by the Indiana Geological and Water Survey (IGWS). IGWS has identified more than 240 hydrogeologic settings statewide, which IDEM consolidated into 20 generalized settings for network design.

Using these 20 hydrogeologic settings, IDEM determined that approximately 398 samples are needed per sampling round to represent statewide ambient groundwater quality. Sample allocation across settings followed a stratified weighting approach based on the number of wells within each setting. This design guided three sampling rounds conducted between May 2013 and November 2016. Figure 13 shows the sampling locations from these rounds. As part of GWMN implementation, IDEM staff:

- Randomly selected sampling sites in each general hydrogeologic setting from a pool of residential well owners that volunteered to participate in the GWMN.
- Collected ground water samples from drinking water wells for analysis at IDEM's contract laboratories
- Analyzed samples for more than 200 parameters, including alkalinity, major ions, metals, nutrients, VOCs, SOCs, and pesticide degradates.
- Reviewed and shared analytical results with participants.
- Developed summary reports.

Table 24 summarizes analytical parameters detected during the three sampling rounds of groundwater sampling. Arsenic and nitrate-nitrite (nitrogen) exceeded Maximum Contaminant Levels (MCLs) most frequently. Parameters exceeding Secondary Maximum Contaminant Levels (SMCLs) or EPA recommended levels included iron, manganese, sodium, sulfate, and strontium. VOC contamination was detected in several samples, including petroleum constituents in seven wells and chlorinated solvents in three wells; VOC detections are summarized in Table 25.

Figure 13: IDEM's statewide groundwater monitoring network sites shown within Indiana's various hydrogeologic settings.



2026 Indiana Integrated Water Monitoring and Assessment Report

Table 24: Indiana Groundwater Monitoring Network analytical results, 2013-2016. Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act. Secondary Maximum Contaminant Levels (SMCLs) are non-enforceable, secondary standards set to provide threshold limits for the levels of other substances that do not pose a risk to public health but can cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in public water supplies.

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Min.*	Max.	Standard Deviation	EPA MCL **	EPA SMCL or Recommended	N > MCL or SMCL	% > MCL or SMCL
Anions/Cations													
Calcium (mg/L)	1163	1148	98.7	0.5	81.00	78.79	ND	320	35.28	NA	NA	NA	NA
Chloride (mg/L)	1162	1159	99.7	0.25	10.90	30.84	ND	1500	91.23	NA	NA	NA	NA
Magnesium (mg/L)	1163	1103	94.8	0.5	29.00	29.43	ND	290	17.85	NA	NA	NA	NA
Manganese (mg/L)	510	388	76.1	0.005	0.03	0.06	ND	0.91	0.09	NA	0.05 mg/L	165	32.4
Potassium (mg/L)	1163	1069	91.9	0.5	1.40	1.84	ND	75	2.78	NA	NA	NA	NA
Sodium (mg/L)	1163	1163	100.0	0.1	16.00	41.03	1.5	1400	81.83	NA	200 mg/L (recommended)	43	3.7
Sulfate (mg/L)	1162	1043	89.8	0.25	32.00	55.59	ND	1400	114.04	NA	250 mg/L	43	3.7
Metals and Minerals													
Antimony (ug/L)	1163	31	2.7	0.25	0.13	0.30	ND	2.1	0.20	NA	NA	NA	NA
Arsenic (ug/L)	1162	517	44.5	1	1.00	4.31	ND	130	8.52	10 ug/L	--	127	10.9

2026 Indiana Integrated Water Monitoring and Assessment Report

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Min.*	Max.	Standard Deviation	EPA MCL **	EPA SMCL or Recommended	N > MCL or SMCL	% > MCL or SMCL
Barium (ug/L)	1163	1129	97.1	0.25	130.0 0	184.4 0	ND	1800	193.02	2000 ug/L	--	0	0.0
Beryllium (ug/L)	1163	30	2.6	0.2	0.15	0.21	ND	89.1	2.61	NA	NA	NA	NA
Boron (ug/L)	1163	913	78.5	50	52.00	137.5 3	ND	3350	268.34	NA	NA	NA	NA
Bromide (mg/L)	1162	356	30.6	0.05	0.03	0.07	ND	5.5	0.23	NA	NA	NA	NA
Cadmium (ug/L)	1163	33	2.8	0.2	0.25	0.19	ND	2.5	0.11	5 ug/L	--	0	0.0
Chromium (ug/L)	1163	12	1.0	2	1.00	1.03	ND	8	0.34	100 ug/L	--	0	0.0
Copper (ug/L)	1163	634	54.5	1	1.10	3.27	ND	110	7.15	1300 ug/L	--	0	0.0
Iron (mg/L)	1163	920	79.1	0.02	1.10	1.27	ND	14	1.39	0.3 mg/L	--	797	68.5
Lead (ug/L)	1163	21	1.8	1	0.50	0.52	ND	6.9	0.27	15 ug/L	--	0	0.0
Nickel (ug/L)	1163	862	74.1	0.5	1.20	1.89	ND	160	5.23	NA	NA	NA	NA
Silicon (mg/L)	1163	1163	100.0	0.2	7.80	7.72	1.2	20	2.14	NA	NA	NA	NA
Strontium (mg/L)	1163	1109	95.4	0.005	0.38	1.46	ND	22.1	2.85	NA	4 mg/L (recommended)	113	9.7

2026 Indiana Integrated Water Monitoring and Assessment Report

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Min.*	Max.	Standard Deviation	EPA MCL **	EPA SMCL or Recommended	N > MCL or SMCL	% > MCL or SMCL
Zinc (ug/L)	1163	910	78.2	4	7.60	19.40	ND	620	44.26	NA	5000 ug/L	0	0.0
Nitrogen, Nitrate-Nitrite													
Nitrogen, Ammonia (mg/L)	249	177	71.1	0.1	0.26	0.45	ND	9.5	0.96	NA	NA	NA	NA
Nitrogen, Nitrate-Nitrite (mg/L)	1163	330	28.4	0.01	0.05	0.72	ND	22	2.26	10 mg/L	--	19	1.6
Pesticides and Breakdown Products													
Acetochlor Ethanesulfonic Acid (ug/L)	1143	27	2.4	0.1	0.05	0.06	0.05	2.1	0.09	NA	NA	NA	NA
Acetochlor Oxanilic Acid (ug/L)	1143	16	1.4	0.1	0.05	0.05	0.05	2.2	0.07	NA	NA	NA	NA
Alachlor	1152	1	0.1	0.1	0.05	0.05	0.05	0.3	0.01	2 ug/L	--	0	--
Alachlor Ethanesulfonic Acid (ug/L)	1143	113	9.9	0.1	0.05	0.11	0.05	6.4	0.35	NA	NA	NA	NA
Alachlor Oxanilic Acid (ug/L)	1143	26	2.3	0.1	0.05	0.07	0.05	6.4	0.25	NA	NA	NA	NA
Atrazine	1152	4	0.3	0.1	0.05	0.05	0.05	0.1	0.00	NA	NA	NA	NA

2026 Indiana Integrated Water Monitoring and Assessment Report

Analyte	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Detection Limit	Median	Mean	Min.*	Max.	Standard Deviation	EPA MCL**	EPA SMCL or Recommended	N > MCL or SMCL	% > MCL or SMCL
Endrin (ug/L)	1152	1	0.1	0.01	0.01	0.01	0.005	0.02	0.00	2 ug/L	--	0	0.0
gamma-BHC (Lindane)	1152	2	0.2	0.02	0.01	0.01	0.01	0.03	0.00	NA	NA	NA	NA
Metolochlor Ethanesulfonic Acid (ug/L)	1143	143	12.5	0.1	0.05	0.14	0.05	7.8	0.48	NA	NA	NA	NA
Metolochlor Oxanilic Acid (ug/L)	1143	57	5.0	0.1	0.05	0.07	0.05	2.9	0.16	NA	NA	NA	NA
Simazine (ug/L)	1152	2	0.2	0.07	0.04	0.04	0.035	0.15	0.00	4 ug/L	--	0	0.0

Notes: Summary statistics were not calculated for volatile organic compounds (VOCs) detected during this study because they are associated with point sources and few were detected. A complete list of VOCs detected during sampling shown in Table 28. Disinfection Byproducts and plasticizers have been omitted from this list until further analysis and sampling can be conducted to determine their sources.

¹ ND = Non-detect, meaning the result was below the detection limit of the analytical method. For analytes that were non-detect, a value of one half the detection limit was substituted for calculation of the summary statistics.

² NA = No MCL has been set for this substance.

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 25: Detected volatile organic compounds in all Groundwater Monitoring Network samples. Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act.

Sample ID	Site ID	Analyte	Result	Detection Limit	Unit	MCL	> MCL?
DK30772	15680RS	Tetrachloroethylene	0.6	0.5	ug/L	5	No
DK30892	56639RS	Methyl-t-butyl ether (MTBE)	2	0.5	ug/L	NA	No
DK31082	40923RS	Toluene	9.1	0.5	ug/L	1000	No
DK31298	491125RS	1,1,1-Trichloroethane	0.5	0.5	ug/L	200	No
DK31476	191320RS	Toluene	3.1	0.5	ug/L	1000	No
DK31513	041480RS	1,2,4-Trimethylbenzene	33	0.5	ug/L	NA	No
		1,2-Dichloroethane	0.7	0.5	ug/L	5	No
		1,2-Xylene	37	0.5	ug/L	10,000	No
		1,3 + 1,4-Xylene	61	0.5	ug/L	10,000	No
		1,3,5-Trimethylbenzene	3.1	0.5	ug/L	NA	No
		Benzene	0.5	0.5	ug/L	5	No
		Ethylbenzene	0.5	0.5	ug/L	700	No
		Isopropylbenzene	4.4	0.5	ug/L	NA	No
		Naphthalene	3.8	0.5	ug/L	NA	No
		n-Propylbenzene	5.6	0.5	ug/L	NA	No
		Toluene	30	0.5	ug/L	1000	No

2026 Indiana Integrated Water Monitoring and Assessment Report

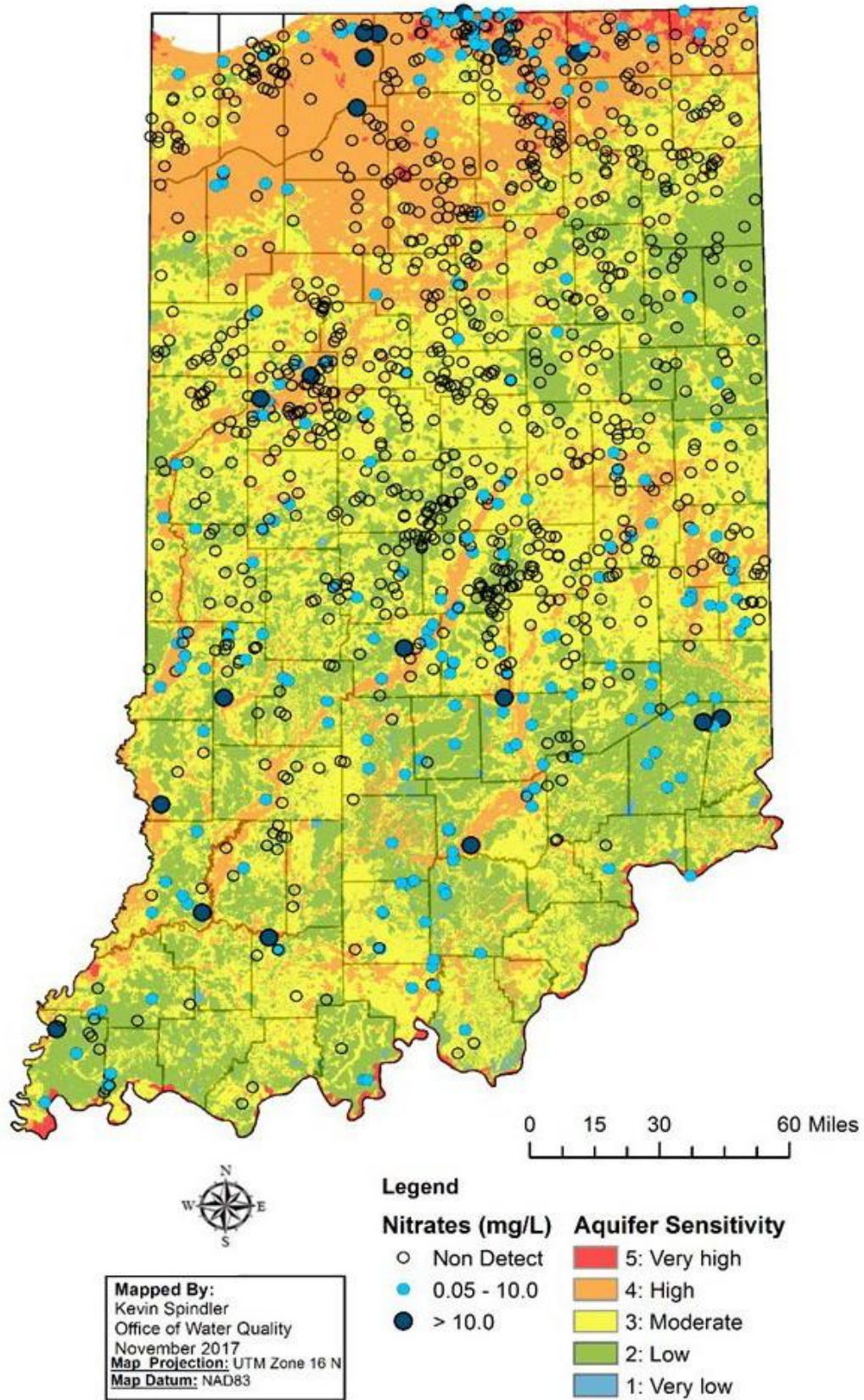
Sample ID	Site ID	Analyte	Result	Detection Limit	Unit	MCL	> MCL?
DK31627	081398RS	Trichloroethylene	3.5	0.5	ug/L	5	No
DK31695	321496RS	Methyl-t-butyl ether (MTBE)	0.6	0.5	ug/L	NA	No
DK31803 ¹	041480RS	1,2,4-Trimethylbenzene	23	0.5	ug/L	NA	No
		1,2-Xylene	20	0.5	ug/L	10,000	No
		1,3 + 1,4-Xylene	32	0.5	ug/L	10,000	No
		1,3,5-Trimethylbenzene	1.6	0.5	ug/L	NA	No
		Benzene	53	0.5	ug/L	5	Yes
		Ethylbenzene	37	0.5	ug/L	700	No
		Isopropylbenzene	2.7	0.5	ug/L	NA	No
		Naphthalene	2.4	0.5	ug/L	NA	No
		n-Propylbenzene	2.9	0.5	ug/L	NA	No
		Toluene	14	0.5	ug/L	1000	No
DK31815	601564RS	Benzene	0.8	0.5	ug/L	5	No
		Toluene	0.5	0.5	ug/L	1000	No
DK31907	731624RS	Toluene	0.7	0.5	ug/L	1000	No

¹ Sample DK31803 is a resample of site 041480RS to confirm the petroleum contamination observed in sample DK31513.

Summary Results for Nitrogen as Nitrate-Nitrite

During GWMN sampling, nitrogen was detected in 330 samples (approximately 28 percent), with 19 samples exceeding the MCL of 10 mg/L. The highest concentration reported was 22 mg/L. Nitrogen results are shown on an aquifer sensitivity map developed by Letsinger (2015) (Figure 13). Higher nitrogen levels were typically found in shallow, unconsolidated wells and in aquifers classified as having “High” or “Very High” sensitivity. In these areas, surficial infiltration rapidly recharges ground water, allowing potential contaminants (including nitrates and pesticides) found at the ground or shallow subsurface to be transported into the aquifer. Oxidizing aquifers also exhibited higher nitrogen concentrations than reducing aquifers, consistent with previous research on redox influences in groundwater (Freeze & Cherry, 1979). Table 26 and Table 27 summarize nitrogen concentrations across hydrogeologic settings, well depth, aquifer type, and sensitivity categories.

Figure 13: Groundwater monitoring results for nitrogen (as nitrate-nitrite), shown within areas of aquifer sensitivity identified by Letsinger (2015).



2026 Indiana Integrated Water Monitoring and Assessment Report

Table 26: Nitrogen, Nitrate-Nitrite Summary Statistics by Generalized Hydrogeologic Setting (mg/L). Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act.

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Min.	Max.	Standard Deviation
Ablation Sequence	12	0	0	0	0	0.05	0.05	ND	0.1	0.00
Alluvial Valley	12	4	33	1	8	0.05	1.96	ND	13.8	4.23
Dissected Bedrock	13	5	38	0	0	0.05	0.10	ND	0.3	0.08
Dissected Bedrock Thin Till	50	29	58	2	4	0.11	1.44	ND	13.0	2.68
Fan Head Complex	16	4	25	0	0	0.05	0.06	ND	0.4	0.09
Ice Contact Deposits	3	1	33	1	33	0.05	4.70	ND	14.0	8.05
Karst Plain and Escarpment	23	19	83	0	0	0.53	2.04	ND	7.9	2.49
Lake Deposits	11	3	27	0	0	0.05	0.77	ND	7.7	2.30
Meltwater Channel	3	0	0	0	0	0.05	0.05	ND	0.1	0.00
Outwash Complex	20	5	25	0	0	0.05	0.33	ND	2.7	0.74
Outwash Plain	64	27	42	5	8	0.05	2.15	ND	22.0	4.17
Sand Plains and Loess Sands	93	36	39	1	1	0.05	0.89	ND	16.0	2.44
Sluiceway or Discrete Channel	101	27	27	1	1	0.05	0.78	ND	15.0	2.32
Till Capped Fan	32	11	34	0	0	0.05	0.88	ND	8.0	2.05

2026 Indiana Integrated Water Monitoring and Assessment Report

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Min.	Max.	Standard Deviation
Till Cored Moraine	131	13	10	0	0	0.05	0.20	ND	8.6	0.89
Till Plain	457	97	21	0	0	0.05	0.23	ND	9.3	0.84
Trough System	13	2	15	0	0	0.05	0.23	ND	1.5	0.46
Tunnel Valley	25	7	28	0	0	0.05	0.48	ND	4.3	1.12
Unconfined Outwash Fan	51	20	39	4	8	0.05	1.71	ND	15.0	3.88
Wabash River Valley	33	20	61	4	12	0.05	3.42	ND	17.0	5.02

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 27: Average nitrogen concentrations measured as milligrams per liter (mg/L) nitrate-nitrite for each hydrogeologic setting calculated for different well type and depth, aquifer conditions and aquifer sensitivity. Maximum Contaminant Levels (MCL) are standards that represent a legally enforceable threshold limit on the amount of a substance allowed in public water systems under the Safe Drinking Water Act.

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Min.	Max.	Standard Deviation
Ablation Sequence	12	0	0	0	0	0.05	0.05	ND	0.1	0.00
Alluvial Valley	12	4	33	1	8	0.05	1.96	ND	13.8	4.23
Dissected Bedrock	13	5	38	0	0	0.05	0.10	ND	0.3	0.08
Dissected Bedrock Thin Till	50	29	58	2	4	0.11	1.44	ND	13.0	2.68
Fan Head Complex	16	4	25	0	0	0.05	0.06	ND	0.4	0.09
Ice Contact Deposits	3	1	33	1	33	0.05	4.70	ND	14.0	8.05
Karst Plain and Escarpment	23	19	83	0	0	0.53	2.04	ND	7.9	2.49
Lake Deposits	11	3	27	0	0	0.05	0.77	ND	7.7	2.30
Meltwater Channel	3	0	0	0	0	0.05	0.05	ND	0.1	0.00
Outwash Complex	20	5	25	0	0	0.05	0.33	ND	2.7	0.74
Outwash Plain	64	27	42	5	8	0.05	2.15	ND	22.0	4.17
Sand Plains and Loess Sands	93	36	39	1	1	0.05	0.89	ND	16.0	2.44
Sluiceway or Discrete Channel	101	27	27	1	1	0.05	0.78	ND	15.0	2.32
Till Capped Fan	32	11	34	0	0	0.05	0.88	ND	8.0	2.05

2026 Indiana Integrated Water Monitoring and Assessment Report

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Min.	Max.	Standard Deviation
Till Cored Moraine	131	13	10	0	0	0.05	0.20	ND	8.6	0.89
Till Plain	457	97	21	0	0	0.05	0.23	ND	9.3	0.84
Trough System	13	2	15	0	0	0.05	0.23	ND	1.5	0.46
Tunnel Valley	25	7	28	0	0	0.05	0.48	ND	4.3	1.12
Unconfined Outwash Fan	51	20	39	4	8	0.05	1.71	ND	15.0	3.88
Wabash River Valley	33	20	61	4	12	0.05	3.42	ND	17.0	5.02

Summary Results for Arsenic

Arsenic occurs naturally in Indiana's geology and can enter groundwater through mineral dissolution, erosion, or industrial sources such as wood treatment and smelting (IDEM, 2015). In the most recent GWMN sampling round, 517 samples (44 percent) contained detectable levels of arsenic. One hundred twenty-seven samples (11 percent) exceeded the MCL of 10 µg/L, with the highest concentration measured at 130 µg/L. Figure 14 maps arsenic results by hydrogeologic setting, while Table 28 and Table 29 summarize concentrations across settings.

Arsenic detections were more common in unconsolidated wells (48 percent) than in bedrock wells (36 percent). Unconsolidated wells also exceeded the MCL more frequently (13 percent compared to 7 percent for bedrock wells) and had higher average concentrations (4.77 µg/L vs. 3.2 µg/L). Wells screened at depths between 50–100 feet and 100–150 feet showed the highest average arsenic levels and highest percent of MCL exceedances. Reducing aquifers (those with negative values for oxidation-reduction potential) had significantly higher average concentrations (5.31 µg/L) than oxidizing aquifers (1.60 µg/L) with 123 of the 127 MCL exceedances (97%) occurred in reducing aquifers—consistent with regional studies of glacial aquifers (Thomas, 2007).

Additional Arsenic Studies

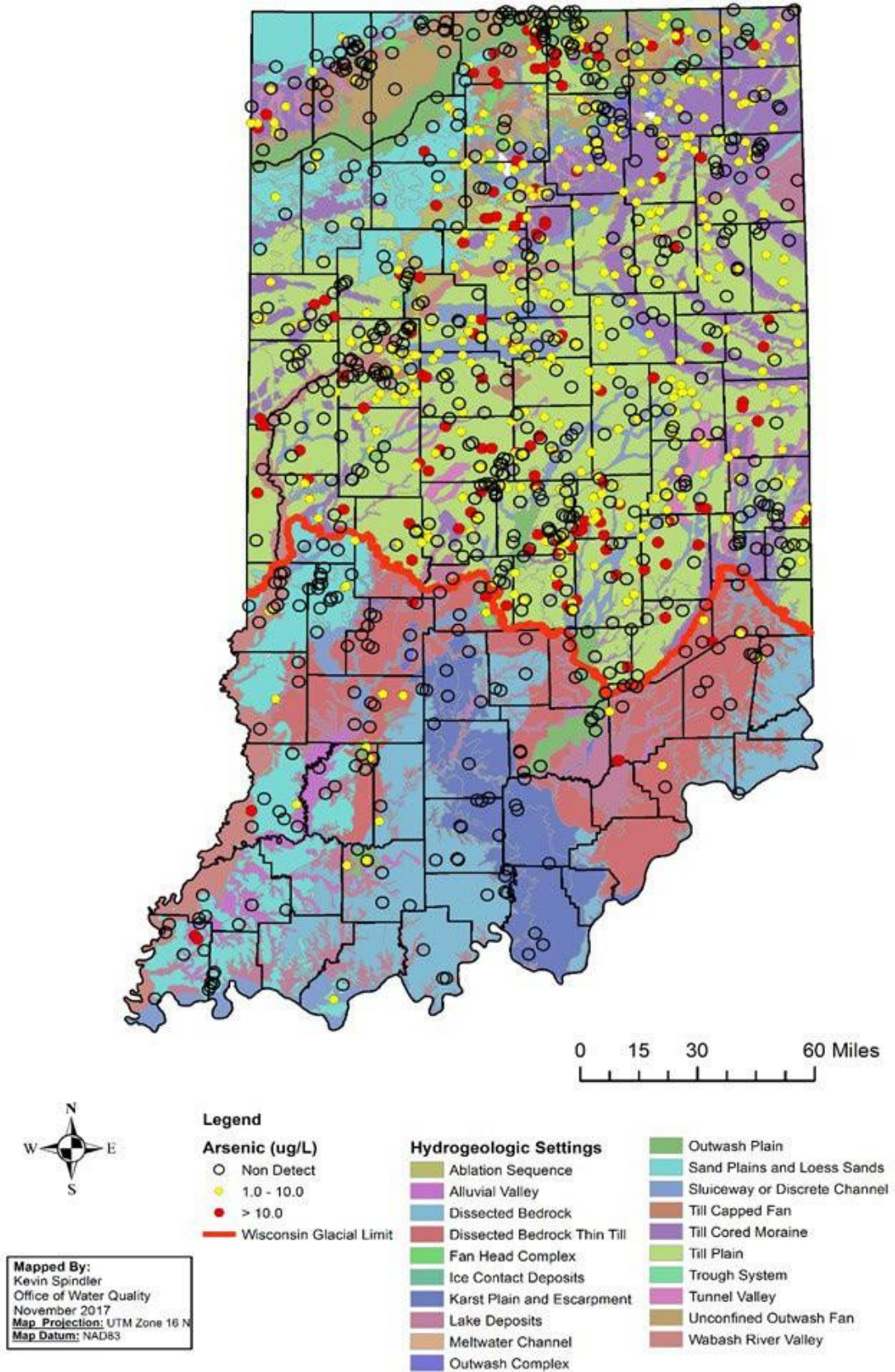
IDEM conducted further arsenic investigations beginning in 2018. Groundwater samples from 215 sites showing prior arsenic concentrations ≥ 5 µg/L were analyzed to determine arsenic speciation. Approximately 80 percent of dissolved arsenic was present as trivalent arsenic (As III), which is more mobile, more toxic, and more difficult to remove via treatment than pentavalent arsenic (As V). Over half (56 percent) of sites showed increased arsenic concentrations compared to previous sampling

In 2019, IDEM completed a pilot study in Nappanee (Elkhart County), an area with known groundwater arsenic issues. Arsenic concentrations ranged from 13 to 140 µg/L within a 30-acre neighborhood, demonstrating significant spatial variability even at small scales.

Between 2023 and 2024, IDEM intensively sampled four neighborhoods in Hancock County—Schildmeier Woods and, Countryside/Deer Run in New Palestine; and Bomar Drive and Cranberry Drive in Greenfield—followed by expanded sampling in 2025 at Heritage Lake in Putnam County. Across all six study areas, arsenic concentrations ranged from non-detect to 87 µg/L, with numerous samples exceeding the MCL. Homeowners received results and recommendations for reducing exposure. Statistical analysis showed higher arsenic levels in reducing aquifers, in samples with dissolved or total organic carbon (DOC or TOC) above 1 mg/L, and in waters with sulfate levels below 3 mg/L. Variability across sites reflects differing geochemical redox conditions across Indiana.

2026 Indiana Integrated Water Monitoring and Assessment Report

Figure 14: Groundwater monitoring results for arsenic, shown within Indiana's various hydrogeologic settings.



2026 Indiana Integrated Water Monitoring and Assessment Report

Table 28: Summary statistics calculated from arsenic concentrations in micrograms per liter (µg/L) for Indiana’s generalized hydrogeologic settings.

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Min.	Max.	Standard Deviation
Ablation Sequence	12	7	58	2	17	3.0	4.4	1	16	4.8
Alluvial Valley	12	4	33	3	25	1.0	15.1	0.5	130	37.2
Dissected Bedrock	14	1	7	0	0	0.5	0.9	0.5	4.2	1.0
Dissected Bedrock Thin Till	50	10	20	1	2	1.0	1.7	0.5	32.6	4.6
Fan Head Complex	16	5	31	1	6	1.0	2.2	0.5	10.9	2.8
Ice Contact Deposits	3	2	67	1	33	6.2	6.4	1	12	5.5
Karst Plain and Escarpment	23	0	0	0	0	0.5	0.7	0.5	1	0.3
Lake Deposits	11	5	45	3	27	1.0	12.7	0.5	87.3	25.9
Meltwater Channel	3	3	100	0	0	5.1	3.7	0	6.1	3.3
Outwash Complex	20	9	45	0	0	1.0	2.3	0.5	8	2.4
Outwash Plain	64	20	31	6	9	1.0	3.1	0.5	46	6.7
Sand Plains and Loess Sands	93	26	28	4	4	1.0	2.6	0	63	7.0
Sluiceway or Discrete Channel	101	49	49	6	6	1.0	4.2	0.5	68	8.7
Till Capped Fan	32	10	31	2	6	1.0	3.4	0.5	33	7.3
Till Cored Moraine	130	81	62	14	11	3.2	5.0	0.5	59.8	7.1

2026 Indiana Integrated Water Monitoring and Assessment Report

Hydrogeologic Setting	Number of Samples	Number Above Detection Limit (ADL)	% ADL	Number Above MCL	% Above MCL	Median	Mean	Min.	Max.	Standard Deviation
Till Plain	456	239	52	78	17	1.4	5.3	0.5	72	8.2
Trough System	13	6	46	0	0	1.0	4.28	0.5	6.3	8.6
Tunnel Valley	25	15	60	2	8	2.3	3.8	0.5	21	4.7
Unconfined Outwash Fan	51	18	35	3	6	1.0	3.1	0.5	22	4.5
Wabash River Valley	33	7	21	1	3	1.0	2.5	0.5	38	10.65

2026 Indiana Integrated Water Monitoring and Assessment Report

Table 29: Average arsenic concentrations in micrograms per liter (µg/L) for each hydrogeologic setting calculated from well type and depth, aquifer conditions and aquifer sensitivity.

Hydrogeologic Setting	Well Type		Aquifer Conditions		Hydrogeologic Sensitivity					Well Depth			
	Bedrock	Unconsolidated	Oxidizing	Reducing	Very High	High	Moderate	Low	Very Low	0-50	50-100	100-150	>150
Ablation Sequence	16	3.373	5.15	4.28	NA	4.271	4.64	NA	NA	0.05	0.05	0.05	
Alluvial Valley	7.783	22.467	21.1	6.76	NA	0.75	26.86	9.14	NA	6.95	0.44	0.05	0.28
Dissected Bedrock	0.862	1	0.625	2.35	NA	0.5	1.087	0.6	NA	0.07	0.18	0.11	0.07
Dissected Bedrock Thin Till	1.878	1.4	0.832	3.232	NA	0.75	1.262	2.133	NA	2.83	0.98	1.67	0.13
Fan Head Complex	1.475	2.4	1	2.247	1	1.09	4.56	NA	NA	0.05	0.10	0.04	0.03
Ice Contact Deposits	NA	6.4	NA	6.4	NA	6.4	NA	NA	NA		14.00	0.05	
Karst Plain and Escarpment	0.682	1	0.7	0.667	NA	0.6	0.812	0.667	0.5	3.65	3.68	1.49	0.87
Lake Deposits	22.68	6.943	7.275	15.743	NA	NA	21.617	1.92	NA	0.05	1.33	0.17	0.05
Meltwater Channel	5.1	3.05	NA	3.733	NA	3.05	NA	5.1	NA		0.05	0.05	
Outwash Complex	1	2.472	0.857	3.115	2.6	2.465	1	NA	NA	2.70	0.25	0.07	0.45

2026 Indiana Integrated Water Monitoring and Assessment Report

Hydrogeologic Setting	Well Type		Aquifer Conditions		Hydrogeologic Sensitivity					Well Depth			
	Bedrock	Unconsolidated	Oxidizing	Reducing	Very High	High	Moderate	Low	Very Low	0-50	50-100	100-150	>150
Outwash Plain	0.6	3.28	0.7	4.59	2.243	3.661	0.667	0.667	NA	2.68	1.91	0.86	0.49
Sand Plains and Loess Sands	1.156	3.646	1.061	3.667	2.1	3.977	2.075	1.068	NA	0.46	1.07	0.67	1.30
Sluiceway or Discrete Channel	2.348	4.814	1.217	5.396	1	2.714	5.547	4.12	NA	1.89	0.94	0.17	0.06
Till Capped Fan	NA	3.438	0.975	4.258	6.1	2.712	5.543	NA	NA	0.05	0.37	1.45	1.36
Till Cored Moraine	4.465	5.099	2.725	5.233	2.2	3.99	5.547	5.352	NA	0.97	0.31	0.06	0.05
Till Plain	4.052	5.967	1.221	6.097	NA	2.912	5.618	5.626	2.4	0.64	0.25	0.16	0.14
Trough System	NA	2.388	2.4	1.978	0.75	2.627	NA	NA	NA	0.05	0.27	0.05	
Tunnel Valley	1.667	4.05	0.833	4.689	NA	3.6	3.567	5.85	NA	0.18	0.67	0.74	0.05
Unconfined Outwash Fan	7.35	2.92	0.778	4.358	1.386	3.547	1.55	NA	NA	0.79	2.87	0.64	0.04
Wabash River Valley	1.888	2.648	0.822	4.433	1	2.892	1.167	1	NA	10.21	2.69	3.44	0.05

Summary Results for Pesticides and Pesticide Degradates

Several parent pesticides were detected in GWMN samples, including alachlor, atrazine, endrin, lindane, and simazine, though none approached or exceeded their respective MCLs. IDEM also analyzed samples for degradates of commonly used herbicides, such as acetochlor, alachlor, and metolachlor. These ethanesulfonic acid (ESA) and oxanilic acid (OA) degradates are more water-soluble and mobile than their parent compounds and therefore more likely to occur in groundwater (Shoemaker, 2003). Currently, there are no established MCLs or health recommendation for these pesticide degradates.

Pesticide degradates were detected in 205 samples (17.6 percent), with metolachlor ESA reaching a maximum concentration of 7.8 µg/L. Ninety-one (43 percent) of these samples contained more than one degradate, and 98 (48 percent) occurred in areas of high or very high hydrogeologic sensitivity. Only 36 samples with detections (18 percent) were in low-sensitivity areas. Figures 15–17 illustrate degradate detections for acetochlor, alachlor, and metolachlor compounds.

2026 Indiana Integrated Water Monitoring and Assessment Report

Figure 15: Groundwater monitoring results for pesticide degradedates acetochlor ESA and OA shown within areas of aquifer sensitivity identified by Letsinger (2015).

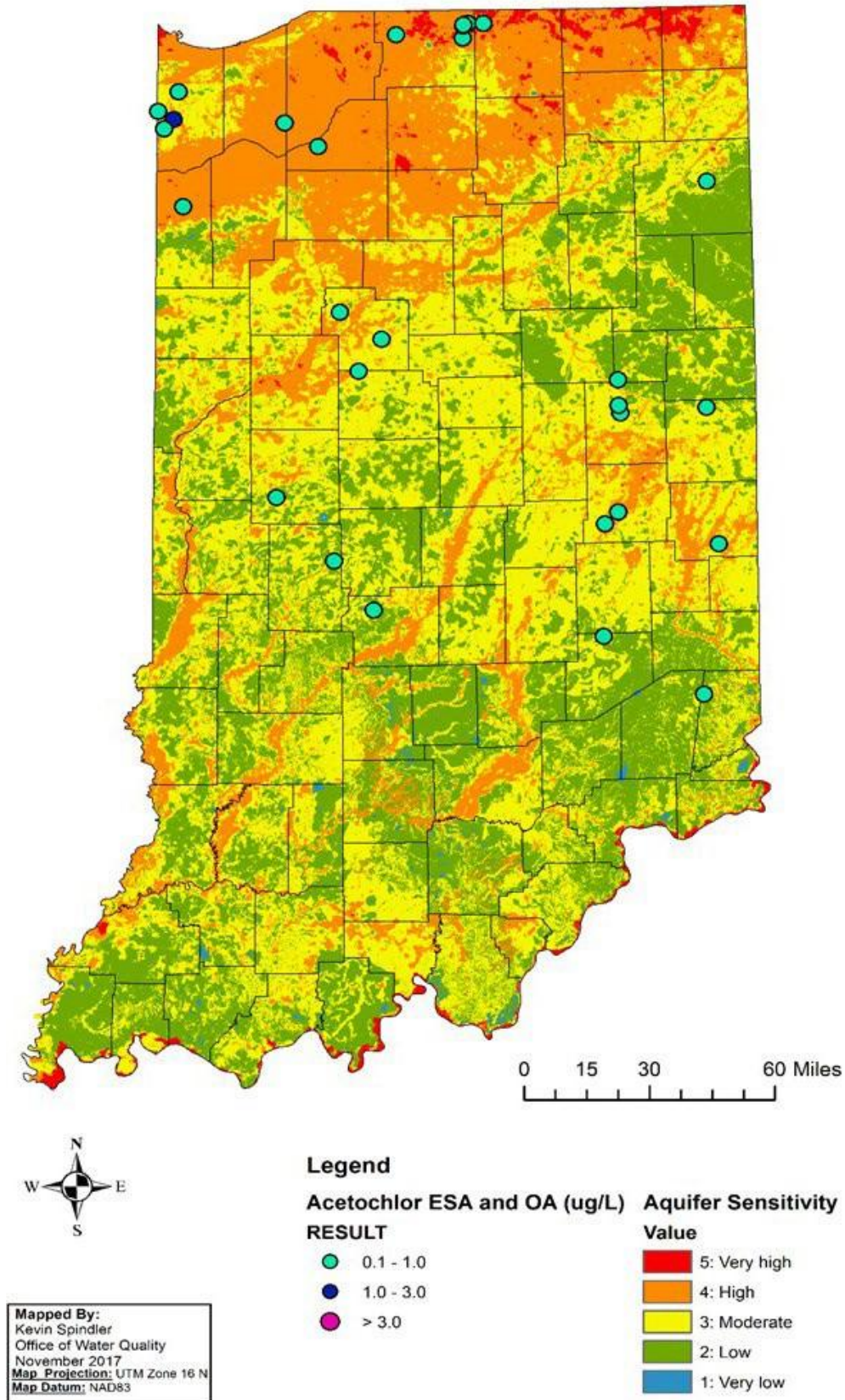


Figure 16: Groundwater monitoring results for pesticide degradatesalachlor ESA and OA shown within areas of aquifer sensitivity identified by Letsinger (2015).

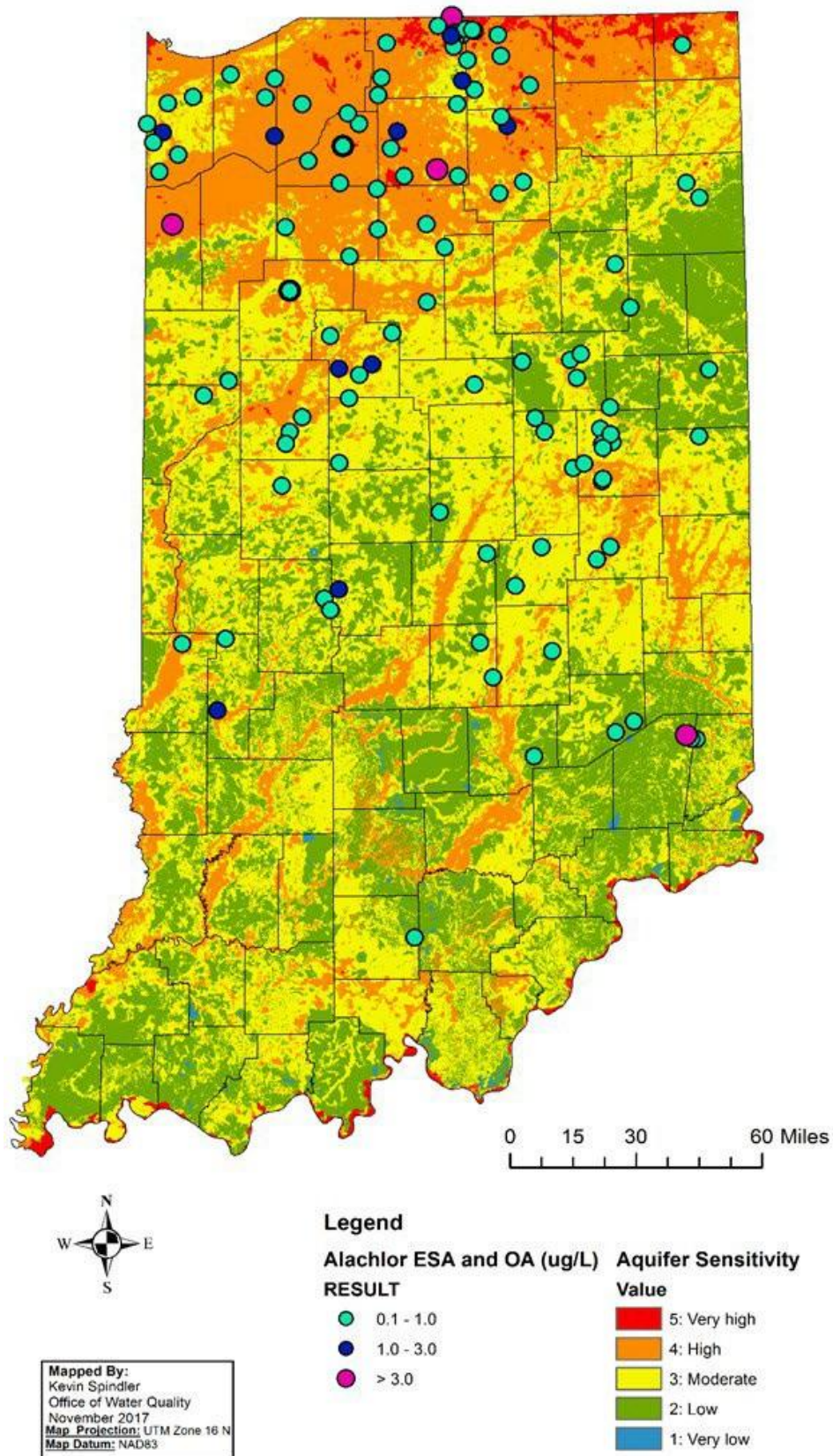
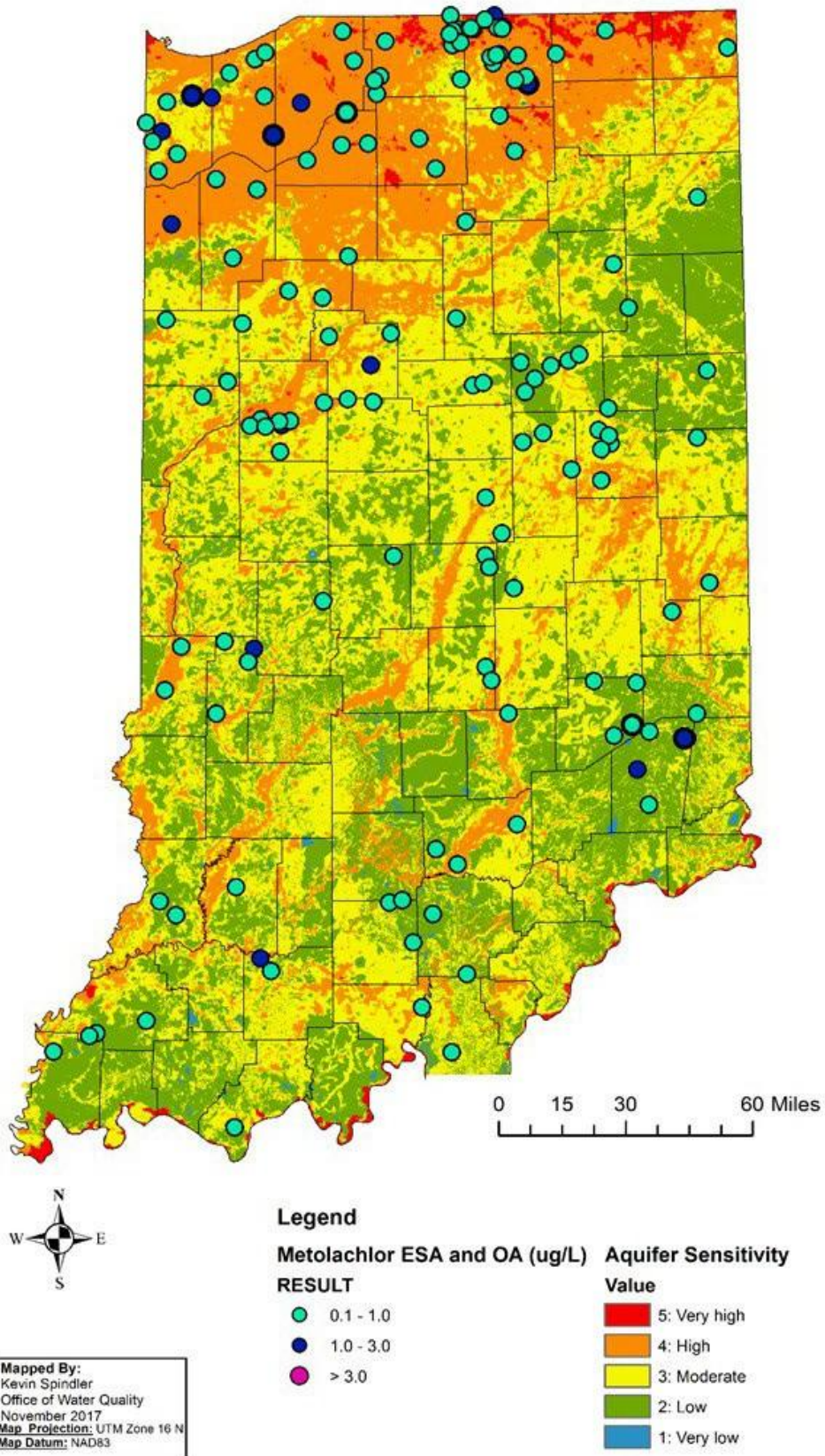


Figure 17: Groundwater monitoring results for pesticide degradedates metolachlor ESA and OA shown within areas of aquifer sensitivity identified by Letsinger (2015).



REFERENCES

- Carlson, R., 1977. [A Trophic State Index for Lakes](#). Association for the Sciences of Limnology and Oceanography, Inc. pp. 181-380.
- Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. [Classification of Wetlands and Deepwater Habitats of the United States](#). Washington, D.C.: U.S. Department of the Interior Fish and Wildlife Service.
- Freeze, R. A. and John A. Cherry. 1979. Groundwater. Englewood Cliffs, NJ: Prentice-Hall.
- Indiana Department of Environmental Management. 2015. IDEM. [Arsenic Fact Sheet](#). Indianapolis, Indiana: Indiana Department of Environmental Management.
- Indiana Department of Environmental Management. 2023a. [Indiana Water Quality Monitoring Strategy 2022-2026](#). Indianapolis, IN: Indiana Department of Environmental Management.
- Indiana Department of Environmental Management. 2023b. [WAPB Indiana Surface Water Programs Quality Assurance Program Plan \(QAPP\)](#). B-001-OWQ-WAP-XX-23-Q-R5. Indianapolis: Indiana Department of Environmental Management.
- Indiana Department of Natural Resources. 2024. [IDNR Low Head Dams Web Page](#). Indianapolis, IN.
- Letsinger, S.L., Clark, J.C., Olyphant, G.A., and T. Branam. 2015. IDEM Ground Water Monitoring Network – A Review and Evaluation. Center for Geospatial Data Analysis.
- Shoemaker, J.A. 2003. Acetanilide Herbicide Degradation Products by LC/MS. Presented at American Water Works Association Water Quality Technology Conference, Philadelphia, PA, November 2-6, 2003.
- Thomas, M.A. 2007. [The Association of Arsenic with Redox Conditions, Depth, and Ground-Water Age in the Glacial Aquifer System of the Northern United States](#). U.S. Geological Survey, Scientific Investigations Report 2007-5036, 26 p.
- U.S. Environmental Protection Agency. 1997a. [Guidelines for Preparation of the State Water Quality Assessments \(305\[b\] Reports\) and Electronic Updates: Report Contents](#). Washington, D.C.: U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency. 1997b. [Guidelines for Preparation of the State Water Quality Assessments \(305\[b\] Reports\) and Electronic Updates: Supplement](#). Washington, D.C.: U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency. 1998. [Announcement of the Drinking Water Contaminant Candidate List; Notice](#). Federal Register 63, no. 40 (March 2, 1998).
- U.S. Environmental Protection Agency. 2002. [Guidance for Quality Assurance Project Plans](#). Washington, D.C.: U.S. Environmental Protection Agency.
- U.S. Environmental Protection Agency. 2003a. [Guidance for 2004 Assessment, Listing and Reporting Requirements Pursuant to Sections 303\(d\) and 305\(b\) of the Clean Water Act](#). July 21, 2003 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors. Washington, D.C.: U.S. Environmental Protection Agency.

2026 Indiana Integrated Water Monitoring and Assessment Report

U.S. Environmental Protection Agency. 2003b. [Elements of a State Water Monitoring and Assessment Program](#). Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2005. [Guidance for 2006 Assessment, Listing and Reporting Requirements Pursuant to Sections 303\(d\), 305\(b\) and 314 of the Clean Water Act](#). July 29, 2005 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2006. [Information Concerning 2008 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). October 12, 2006 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors and Directors in U.S. EPA's Region 1 Office of Environmental Measurement and Evaluation, Region 2 Division of Environmental Science and Assessment, Region 7 Environmental Sciences Division, and Region 10 Office of Environmental Assessment. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2009a. [Information Concerning 2010 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). May 5, 2009 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors and Directors in U.S. EPA's Region 1 Office of Environmental Measurement and Evaluation, Region 2 Division of Environmental Science and Assessment, Region 7 Environmental Sciences Division, and Region 10 Office of Environmental Assessment. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2009b. [Drinking Water Contaminant Candidate List 3 - Final](#). Federal Register 74, no. 194 (October 8, 2009).

U.S. Environmental Protection Agency. 2011. [Information Concerning 2012 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). March 21, 2011 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors and Directors in U.S. EPA's Region 1 Office of Environmental Measurement and Evaluation, Region 2 Division of Environmental Science and Assessment, Region 7 Environmental Sciences Division, and Region 10 Office of Environmental Assessment. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2013. [Information Concerning 2014 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). September 3, 2013 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors and U.S. EPA Region 1 Office of Environmental Measurement and Evaluation. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2015. [Information Concerning 2016 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). August 13, 2015 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Regional Water Division Directors and U.S. EPA Region 1 Office of Environmental Measurement and Evaluation. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2016. [Drinking Water Contaminant Candidate List 4 – Final](#). Federal Register 81, no. 222 (November 17, 2016).

2026 Indiana Integrated Water Monitoring and Assessment Report

U.S. Environmental Protection Agency. 2017. [Information Concerning 2018 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). December 22, 2017 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Water Division Directors, Regions 1-10 and U.S. EPA Environmental Services Division Directors. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2018. [Final Aquatic Life Ambient Water Quality Criteria for Aluminum. 2018. EPA-822-R-18-001](#). December 2018. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

U.S. Environmental Protection Agency. 2021a. [Information Concerning 2022 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). March 31, 2021 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Water Division Directors, Regions 1-10 and U.S. EPA Environmental Services Division Directors. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2021b. [2021 Revision to: Aquatic Life Ambient Water Quality Criterion for Selenium – Freshwater 2016. EPA 822-R-21-006](#). U.S. Environmental Protection Agency, Office of Water, Washington, DC.

U.S. Environmental Protection Agency. 2023a. [Information Concerning 2024 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). March 29, 2023 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Water Division Directors, Regions 1-10 and U.S. EPA Environmental Services Division Directors. Washington, D.C.: U.S. Environmental Protection Agency.

U.S. Environmental Protection Agency. 2023b. [Drinking Water Contaminant Candidate List 6 - Nominations](#). Federal Register 88, no. 33 (February 17, 2023).

U.S. Environmental Protection Agency. 2025. [Information Concerning 2026 Clean Water Act Sections 303\(d\), 305\(b\), and 314 Integrated Reporting and Listing Decisions](#). January 14, 2025 Memorandum from U.S. EPA Office of Wetlands, Oceans and Watershed to U.S. EPA Water Division Directors, Regions 1-10 and U.S. EPA Environmental Services Division Directors. Washington, D.C.: U.S. Environmental Protection Agency.

United States Geological Survey. 2007-2014. High Resolution Dataset HUCs 0404, 0405, 0410, 0508, 0509, 0512, 0514, 0712. National Hydrography Dataset accessed March 2014 from: <https://www.usgs.gov/national-hydrography/national-hydrography-dataset>.

United States Geological Survey. 2021. [Hydrologic and ecological investigations in the School Branch watershed, Hendricks County, Indiana—Water years 2016–2018](#). U.S. Geological Survey Scientific Investigations Report 2021–5061.