Executive Summary

Eutrophication, or nutrient enrichment of waters, is a concern in many areas of the United States as well as around the world. Nutrients are an essential part of the water system for plant and animal life, however when there is an excess of nutrients, it can cause water quality impairments. When excess nutrients like nitrogen and phosphorus, which can come from many sources including waste water treatment plants (WWTPs), agricultural runoff, urban stormwater runoff, failed septic systems, etc., enter our waterbodies, it stimulates excessive plant or algal growth, often called an algal bloom, which can lead to low oxygen levels in the water as the algae die, sink, and decompose. These areas of very low oxygen cannot support aquatic life and are often called "dead zones", also referred to as hypoxia.

The Gulf of Mexico has been for many years experiencing a large hypoxia zone, so the Mississippi River/Gulf of Mexico Hypoxia Task Force (HTF) in 2008 created a priority action plan that calls for each of the major states that drain in the Mississippi River basin to develop a state nutrient reduction strategy to address the issue of excess nitrogen and phosphorus entering their rivers, lakes, streams, aquifers, wetlands, and drinking water supplies. In 2011, the U.S. Environmental Protection Agency (USEPA) released a memo outlining eight (8) *Recommended Elements of a State Framework for Managing Nitrogen and Phosphorus Pollution*, which gave guidance to the 12 states that are a part of the Gulf of Mexico HTF. Indiana is one of those 12 states.
The HTF goal is to reduce the areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by the year 2035, with an agreed upon interim target of a 20% nitrogen and phosphorus load reduction by the year 2025 as a milestone toward reducing the hypoxic zone to less than 5,000 square kilometers by the year 2035.

The Indiana State Nutrient Reduction Strategy represents the state's commitment to reduce nutrient runoff into Indiana's waters from point sources and non-point sources alike. The overall guiding principles of this strategy are:

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

More specifically, the main objectives of this strategy include:

- Acknowledgment of the challenges facing the improvement of Indiana's impaired waters;

- Involvement and engaging of stakeholders and partners in the state's efforts to reduce nutrient loads;
- Prioritization of HUC 8 watersheds within Indiana, and further prioritization of smaller HUC 12 watersheds within Indiana's ten major river and lake basins;
- Discussion of the importance of water quality monitoring and regulatory control of point sources;
- The inventory and utilization of resources and practices to achieve their highest impact on nutrient reduction;
- Encouragement of voluntary incentive based conservation through the many local, state and federal water quality related programs;
- Measuring the impacts of urban and rural conservation best management practices and tracking nutrient load reductions; and
- Serve as a strategic document for addressing milestones and action items, and seeking continued funding sources for current and future efforts concerning water quality in Indiana.

The Indiana State Nutrient Reduction Strategy serves as a renewed effort to encourage outreach and education to conservation partnerships and the public regarding stewardship of Indiana's waters. This strategy acknowledges that while the potential to reduce nitrogen and phosphorus entering our waters is great, the achievement of these objectives is dependent upon the cooperation of state, federal and local organizations and initiatives, positively changing individuals' behavior via understanding their motivations, as well as many other complex factors, including the location and nature of conservation practices on productive agricultural ground and other rural best management practices (BMPs) such as filter strips, buffers, nutrient management and managed drainage. Septic system management, appropriate residential fertilizer applications, erosion control at construction sites, and urban BMPs such as green infrastructure will be key to controlling nutrient runoff. As such, there will always be a need for continued efforts in conservation, education, outreach and research in order to maintain progress.

Although the Indiana strategy was originally developed as a result of the HTF 2008 Action Plan for the Gulf of Mexico, this strategy encompasses all waters of the state of Indiana that drain to the Mississippi River and the Gulf of Mexico as well as to the Great Lakes, being Lake Michigan and Lake Erie.

Indiana will continue to evaluate the efficacy of the nutrient reduction policies, programs, and practices outlined in this Strategy. Based on that evaluation and new information/data arising from research and monitoring data, Indiana will modify this Strategy as necessary.