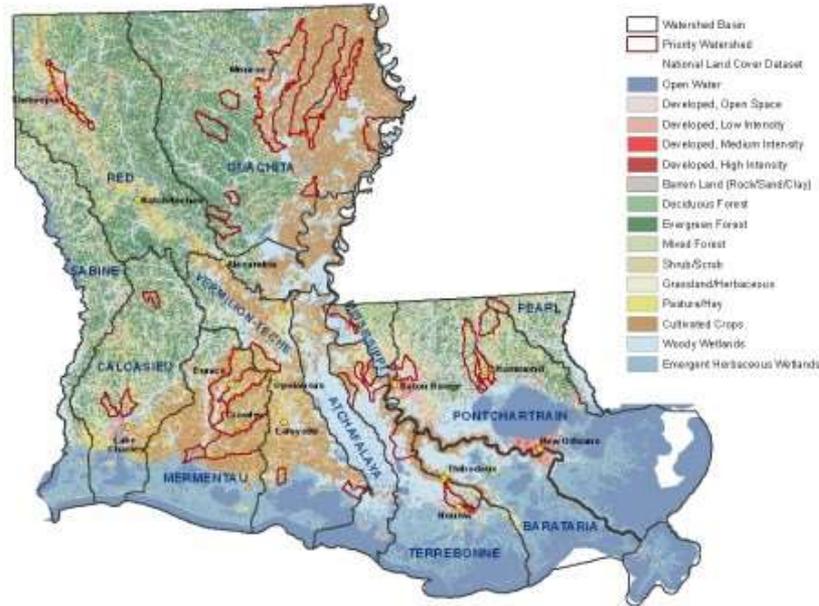


Louisiana Statewide Nutrient Management Strategy



Dr. Charles Killebrew
Coastal Protection and Restoration Authority

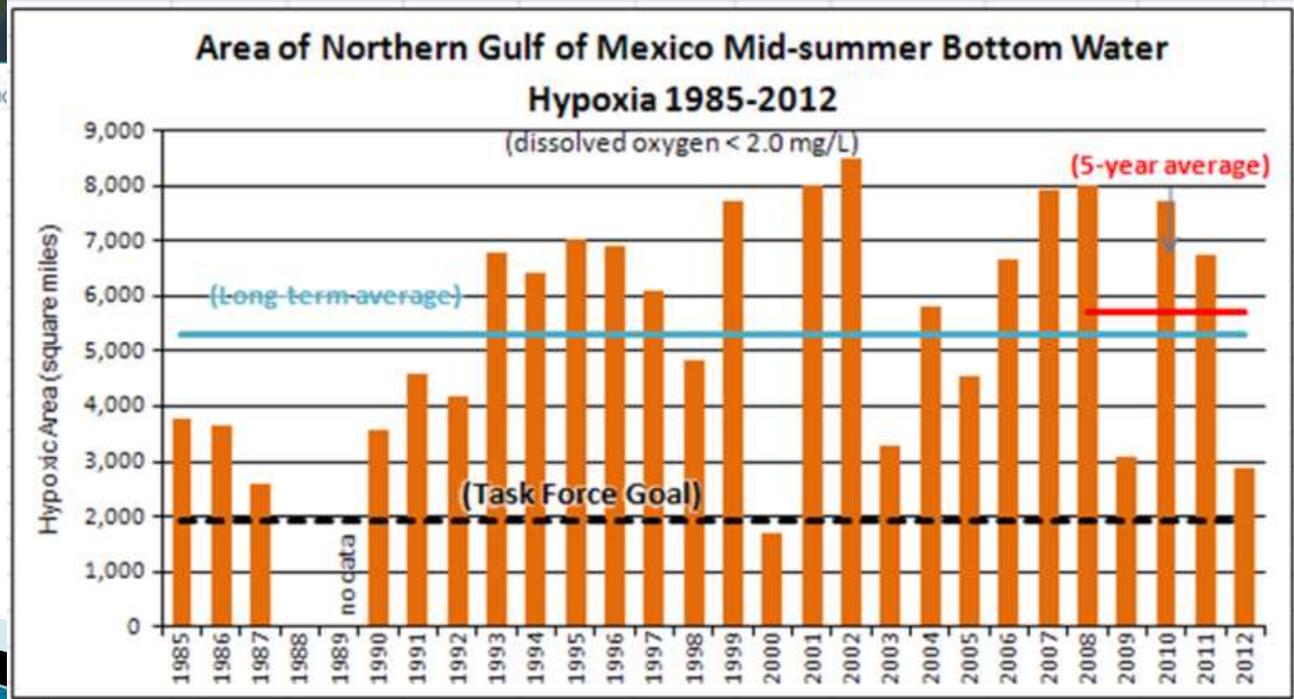




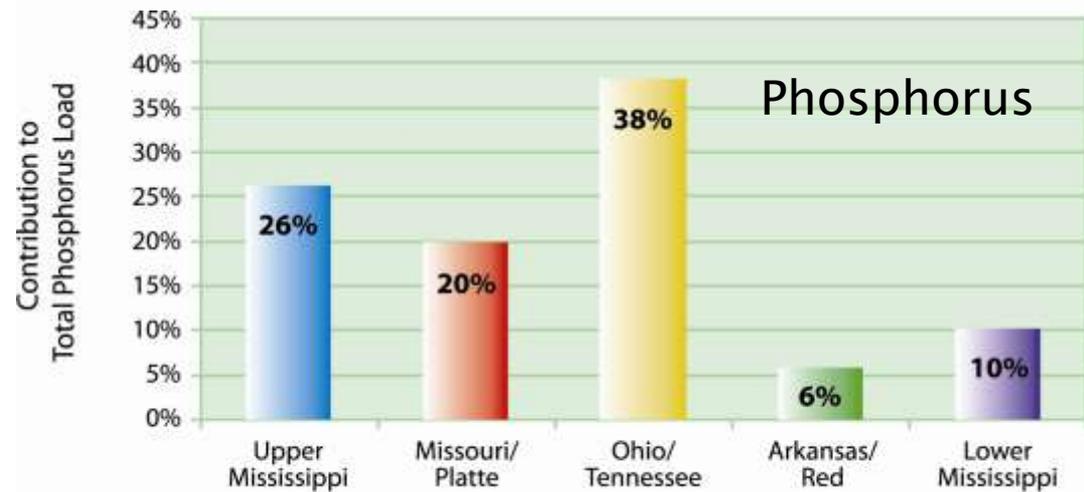
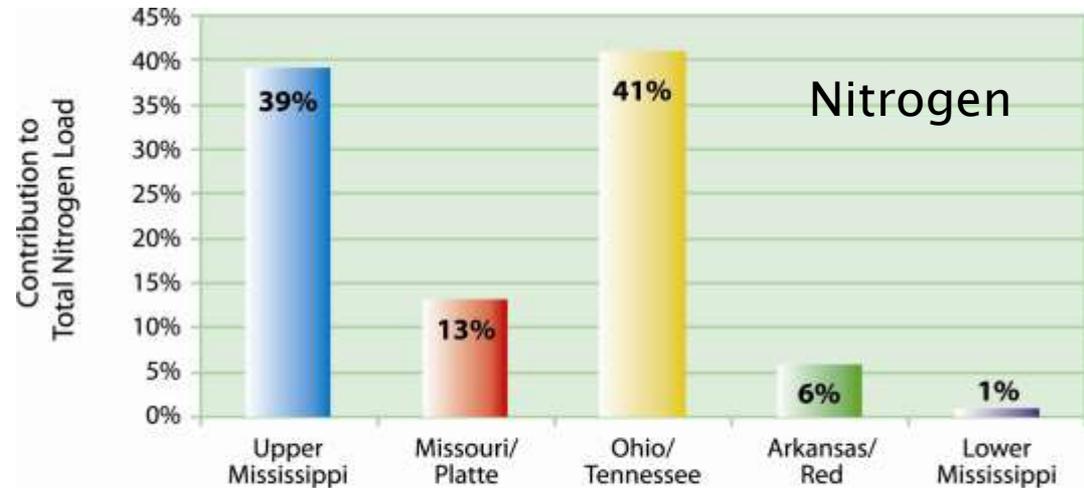
Hypoxia in the Gulf of Mexico

USGS / The COMET Program

GOAL:
 5,000 sq km
 (1,930 sq mi)
 by 2015



Sub-basin Contribution to MARB Nitrogen and Phosphorus



Major Mississippi River Sub-basins
Data courtesy USGS Open-File Report 2007-1080.

USGS Regional Assessments

Regional assessments funded through the USGS NAWQA Program

Task 1 – Trend Report; published in 2007; USGS SIR 2007-5090

Task 2 – SPARROW models; began in 2008; published in 2011

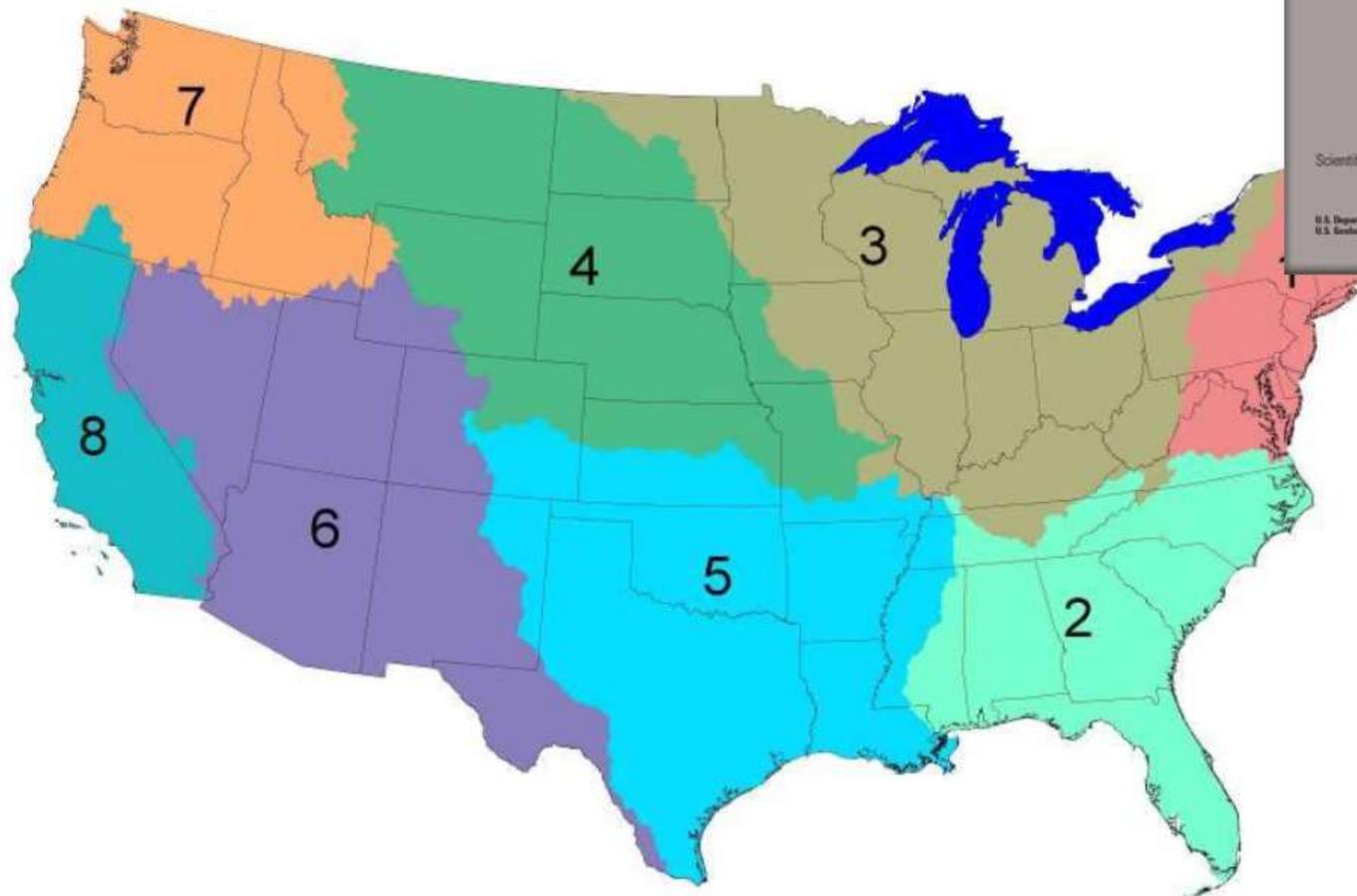


National Water Quality Assessment Program

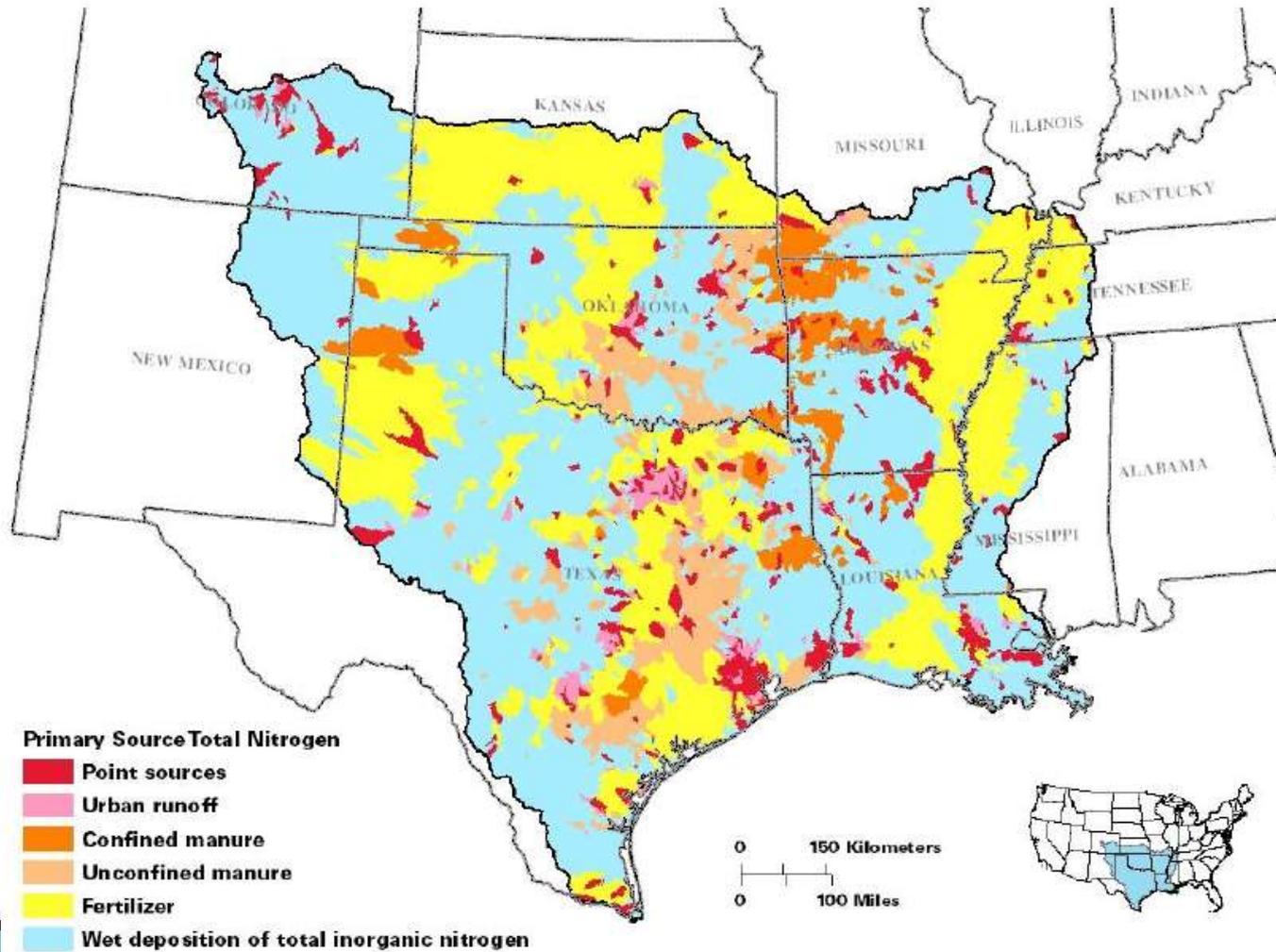
Trends In Nutrient and Sediment Concentrations and Loads
In Major River Basins of the South-Central United States,
1993-2004

Scientific Investigations Report 2007-5090

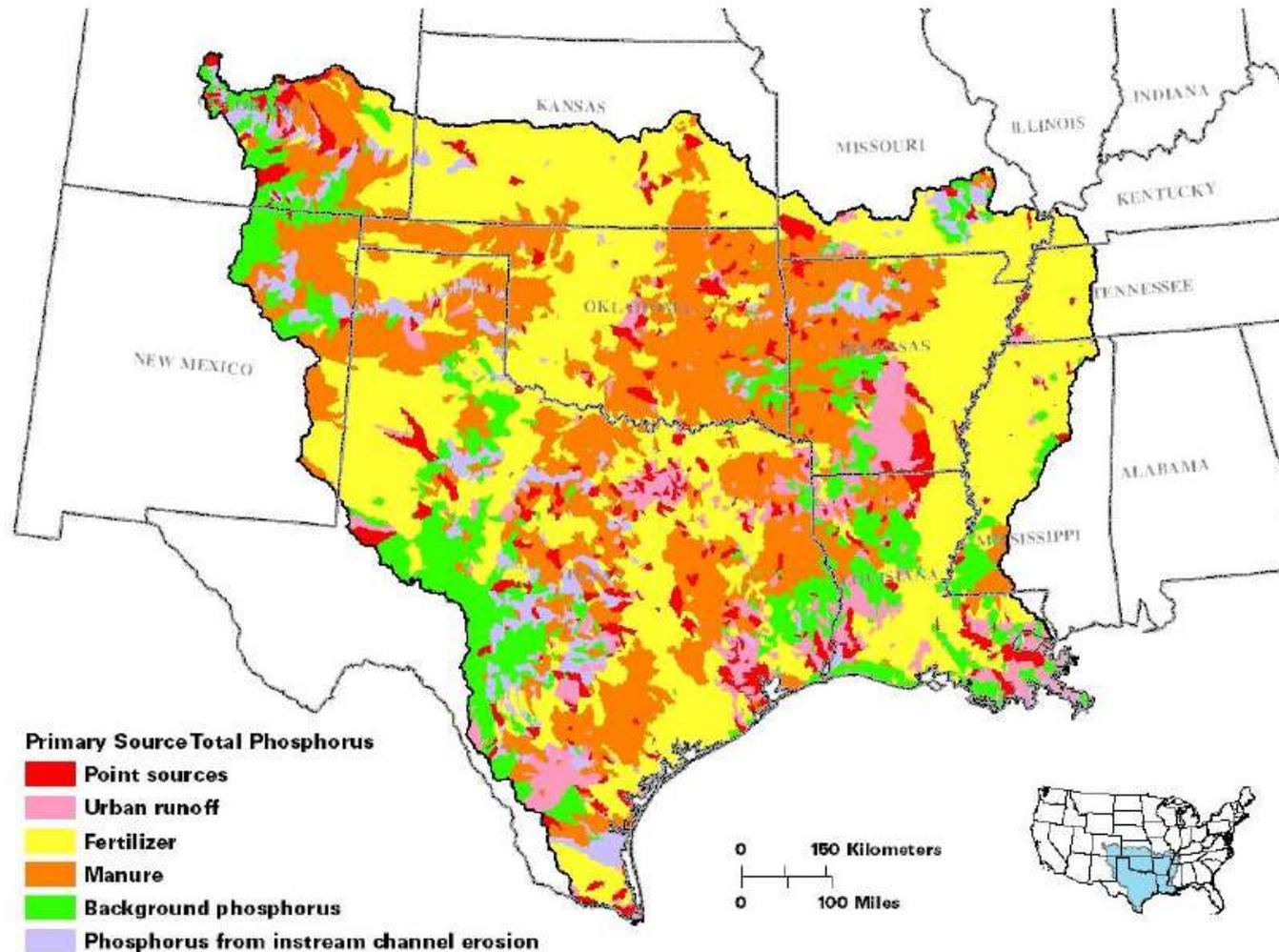
U.S. Department of the Interior
U.S. Geological Survey



Primary Sources of Nitrogen



Primary Sources of Phosphorus



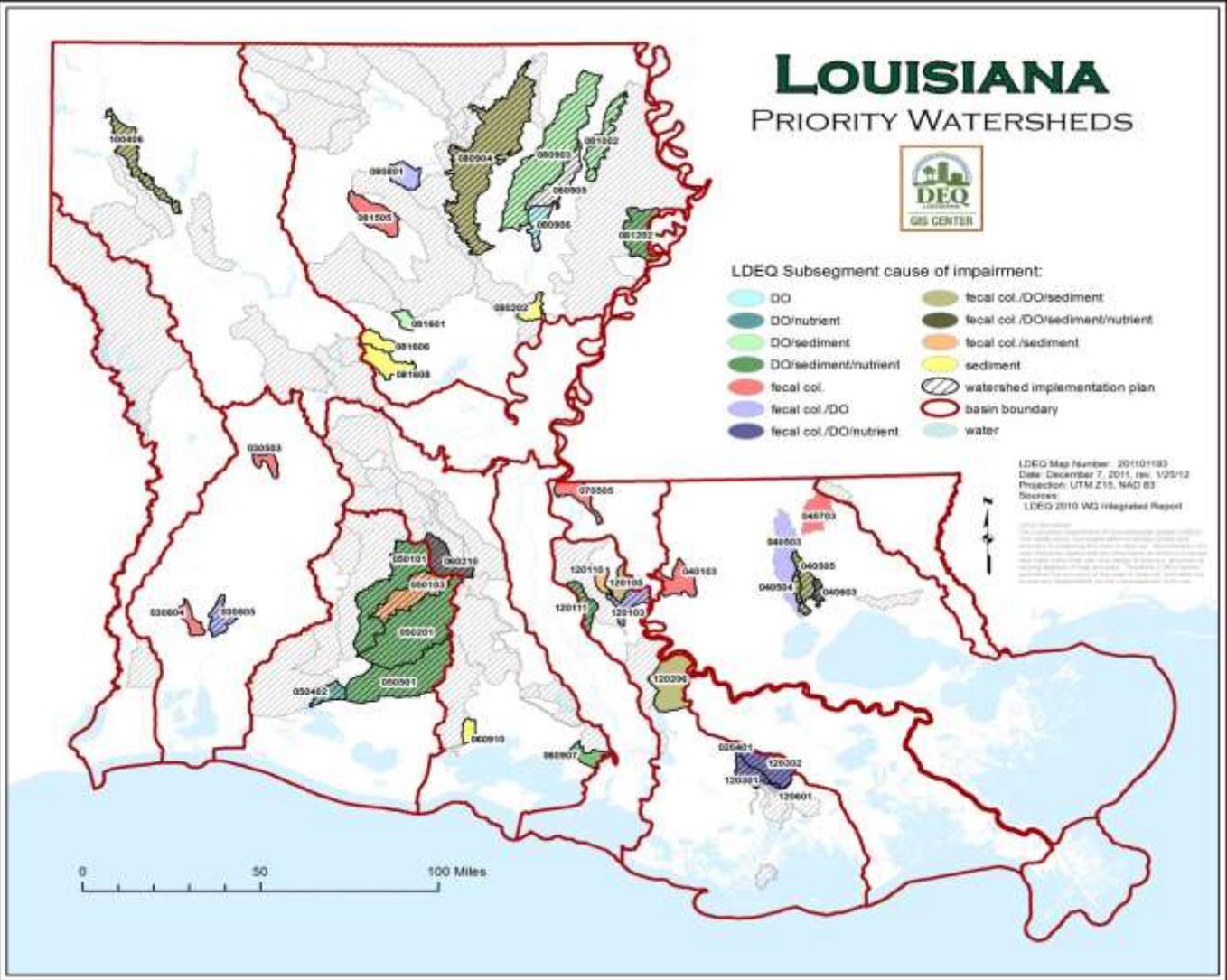
LOUISIANA

PRIORITY WATERSHEDS



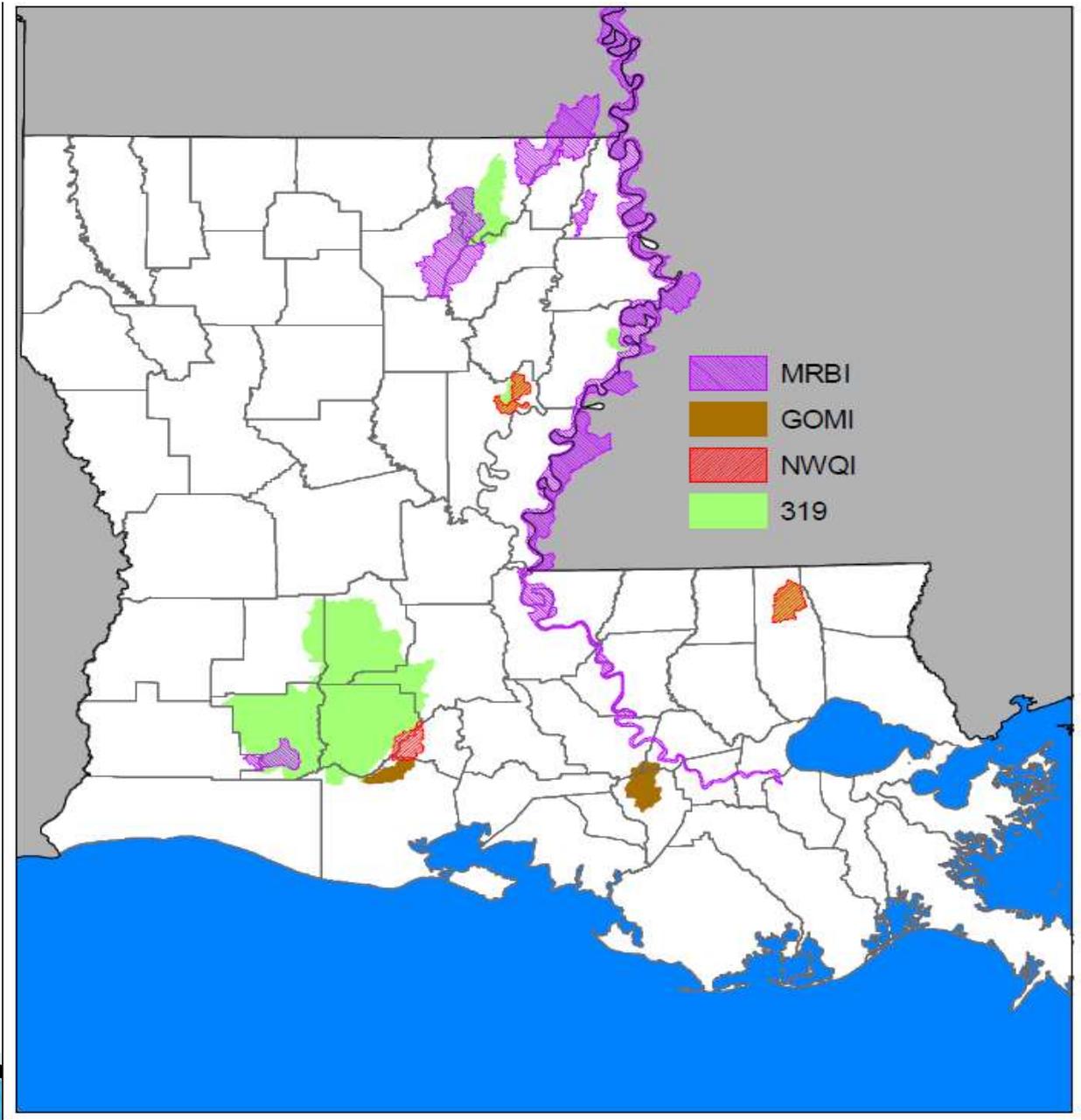
LDEQ Subsegment cause of impairment:

- DO
- DO/nutrient
- DO/sediment
- DO/sediment/nutrient
- fecal col.
- fecal col./DO
- fecal col./DO/nutrient
- fecal col./DO/sediment
- fecal col./DO/sediment/nutrient
- fecal col./sediment
- sediment
- watershed implementation plan
- basin boundary
- water



LDEQ Map Number: 20110193
 Date: December 7, 2011, rev. 1/25/12
 Projection: UTM Z15, NAD 83
 Sources:
 LDEQ 2010 WQ Integrated Report

This map was prepared using data from the Louisiana Department of Environmental Quality (LDEQ) and the United States Geological Survey (USGS). The map is for informational purposes only and does not constitute a warranty or representation of accuracy. The map is subject to change without notice. The map is not to be used for navigation or other purposes. The map is not to be used for any purpose other than that for which it was prepared. The map is not to be used for any purpose other than that for which it was prepared.



What Are We Doing Now?

- **LDAF:**
 - **Master Farmers Program**

Scientifically based best management practices (BMPs) are implemented to target reduction of pollutants into the air and waters of the state.
Firmly rooted in state law, is backed by sound science and is a critical component of Louisiana's overall water resource management programs.
- **LDEQ:**
 - **Louisiana Pollutant Discharge Elimination System (LPDES) Permits**
 - Industrial Water Permits
 - Municipal & General Water Permits
 - **Nonpoint Source Pollution (NPS) Program**
 - **Louisiana Environmental Leadership Pollution Prevention Program (LaELP)**
- **LDNR:**
 - **Coastal Non-Point Pollution Control program**

Works jointly with LDEQ's NPS Program to educate Louisiana coastal resource users about the available best management measures and to reduce pollutants that may impact coastal waters of Louisiana.
- **CPRA:**
 - **River Diversions**

Intercepting nutrients prior to reaching the Gulf



Louisiana Success Stories

➤ Point Source:

- BASF (Geismar) converted their wastewater treatment plant from aerobic to anoxic reactors and realized a 94% reduction in nitrates
- Awarded Environmental Leadership Award from DEQ

➤ Non Point Source:

- Ouachita Basin:
 - 15 Watershed Implementation Plans have been developed
 - 11 of those watersheds experienced decreases in nitrate/nitrite
 - 13 of those have experienced reductions in TKN
 - 12 of those have experienced reductions in TP

➤ River Diversions/Wetland Assimilation:

- Based on a study of the Louisiana Caernarvon diversion (Lane et al. 2004), diversions potentially remove:
 - 44 percent of Total Nitrogen (TN);
 - 50 percent of Dissolved Inorganic Nitrogen (DIN)
 - 62 percent reduction in Total Phosphorus (TP), and
 - 23 percent reduction in Dissolved Inorganic Phosphorus (DIP).



Nutrient Management Strategy

- ▶ **Goal:** Reduce nutrient levels in inland and coastal waters, including the Gulf of Mexico hypoxic zone
- ▶ **Methods:**
 - 1) Pollution controls
 - Minimize point source and nonpoint source nutrients from entering state waters (avoiding and controlling nutrients)
 - Farm, Urban, Forestry Best Management Practices (BMPs)
 - New Technologies/Applications
 - 2) Nutrient capture
 - Large scale coastal riverine diversions
 - Wetland/overland Point Source assimilation
 - Irrigation of Agricultural areas
- ▶ **Incentives:**
 - 1) Grants/Loans/Cost-share programs
 - 2) Credit Trading
 - 3) Business Forces/Economics

Strategy Features

Goal = To manage nutrient levels in inland & coastal water bodies

- ▶ Goal-oriented
 - ▶ Measurable environmental outcomes
 - ▶ Watershed approach
 - ▶ Broadly collaborative
 - ▶ Strategic micro- and macro-watershed planning approaches
 - ▶ Leverage new technologies
 - ▶ Comprehensive statewide water quality improvements
 - ▶ Improvement projects tracked
 - ▶ Progress monitoring and reporting
- 

Strategy Development & Implementation

Stakeholder Engagement:

To identify, engage, and involve stakeholders within the watershed community.

- *Identify stakeholders with interest in the Louisiana Statewide Nutrient Management Strategy*
- *Engage stakeholders and determine stakeholder interests and values*
- *Compile stakeholder interests and values*
- *Identify stakeholder interest within appropriate scale (statewide, regional, watershed)*
- *Identify areas where stakeholder involvement may need to be enhanced*
- *Prepare summary of findings for use in subsequent components of the strategy*

1	• Stakeholder Engagement
2	• Decision Support Tools
3	• Regulations, Policies, and Programs
4	• Management Practices and Restoration Activities
5	• Status and Trends
6	• Watershed Characterization, Source Identification, and Prioritization
7	• Incentives, Funding, and Economic Impact Analysis
8	• Targets and Goals
9	• Monitoring
10	• Reporting

Louisiana's Nutrient Management Strategy Development & Implementation

- ▶ **Appropriate**
 - Regionally, temporally, etc.
 - ▶ **One Size Does NOT Fit All**
 - ▶ **Sustainable**
 - ▶ **Identify Real Issues ⇔ Implement Real Solutions**
- 

LOUISIANA NUTRIENT MANAGEMENT STRATEGY



It takes a watershed community to manage nutrients

Excess Nutrients Contribute to Low Dissolved Oxygen Levels

The Mississippi/Atchafalaya River Basin (MARB) drains approximately 41% of the contiguous United States. US Geological Survey (USGS) models show the majority of MARB nutrient loadings come from sources upstream of Louisiana (LA) and a significant portion is associated with nonpoint source (such as agricultural and urban runoff). Seasonal fluxes of increased nutrients associated with runoff impact local water bodies and are a factor in development of a summer hypoxic zone (low dissolved oxygen) in the northern Gulf of Mexico (GOM). Management of nitrogen and phosphorus is needed to improve the quality of local water bodies and to help reduce the size of the GOM hypoxic zone. Management must include collaborative actions for both nonpoint sources and for regulated point source dischargers.



What Are We Doing Now?

In Louisiana, the Coastal Protection & Restoration Authority (CPRA), LA Dept of Agriculture & Forestry (LDAF), LA Dept of Environmental Quality (LDEQ), and LA Dept of Natural Resources (LDNR) all work on aspects of nutrient management including water quality monitoring, point source wetland assimilation, coastal river diversions, and best management practices (BMPs). Current programs such as nonpoint source pollution prevention in inland and coastal waters (LDEQ and LDNR), Master Farmer certifications (LDAF), and coastal river diversions (CPRA) are effective management practices being collectively evaluated. Additionally, monitoring in association with these programs will provide valuable baseline information that will help to determine the appropriate levels of nutrients within LA water bodies and will help to identify priority areas where nutrient issues may be addressed for the most effective results.



Where Do We Want To Be?

The LA state agencies are working together to develop a comprehensive nutrient management strategy. The strategy will take into account nonpoint and point sources of nutrients into Louisiana's water bodies. Nutrient levels will be managed through meeting regulatory requirements and through development of incentive-based approaches. Participation of all stakeholders within the watershed community will be key throughout the strategy development and implementation processes.



CONTACT US:
<http://lanutrientmanagement.org/contact>
 Compiled Jan 18, 2013, Page 1 of 2

Louisiana's Plan: To manage nutrient levels in inland and coastal water bodies

A Louisiana Nutrient Management Strategy will employ methods for pollution control and nutrient capture. Incentives, such as grants or water quality credit trading, may facilitate voluntary participation in efforts to manage nutrients through realizing opportunities for both nutrient reduction and assimilation. Through LA participation in the Hypoxia Task Force (HTF) and the Gulf of Mexico Alliance (GOMA) and in consideration of guidance of the HTF, GOMA, and the US Environmental Protection Agency (EPA), the Louisiana state agency team has identified Ten Strategic Components for a Louisiana Nutrient Management Strategy. These components serve as the framework under which strategic actions will take place.

Ten Strategic Components of a Strategy for Louisiana

- 1 • Stakeholder Engagement
- 2 • Decision Support Tools
- 3 • Regulations, Policies, and Programs
- 4 • Management Practices and Restoration Activities
- 5 • Status and Trends
- 6 • Watershed Characterization, Source Identification, and Prioritization
- 7 • Incentives, Funding, and Economic Impact Analysis
- 8 • Targets and Goals
- 9 • Monitoring
- 10 • Reporting



STRATEGY FEATURES: goal-oriented • measurable environmental outcomes • watershed approach • broadly collaborative all available tools in the toolbox • strategic micro- & macro-watershed planning approaches • leverage new technologies comprehensive statewide water quality improvements • improvement projects tracked • progress monitoring & reporting

Getting Started: Stakeholder Engagement

Objective: To identify, engage, and involve stakeholders within the watershed community in the development of a Louisiana Nutrient Management Strategy



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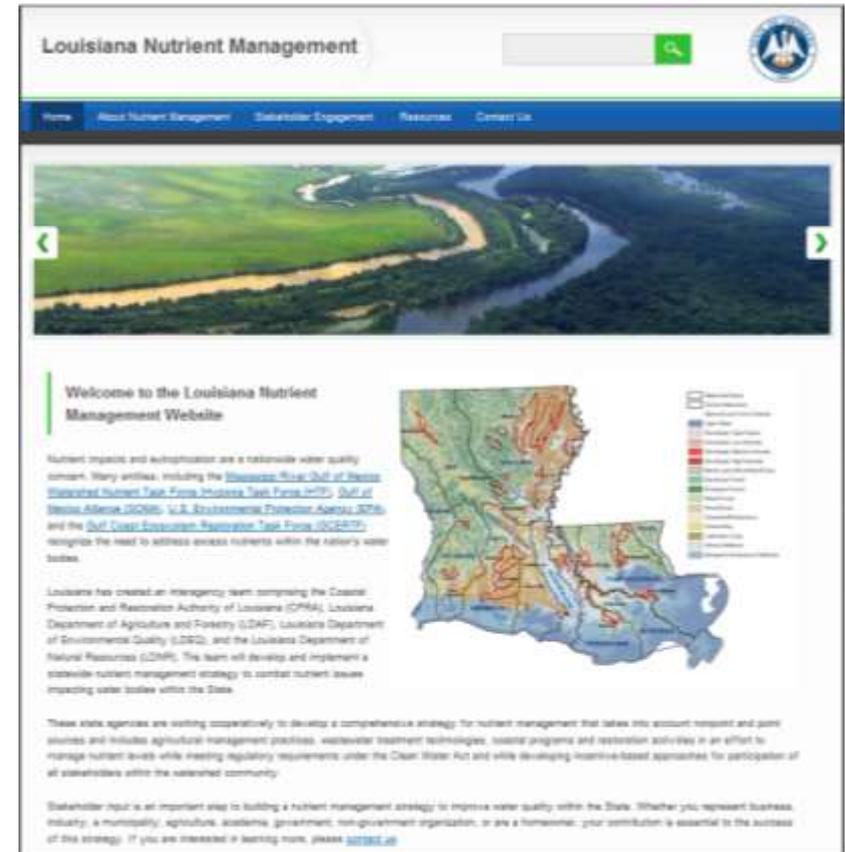


www.LANutrientManagement.org

▶ Stakeholder Surveys

▶ Contact Us

<http://LANutrientManagement.org/contact>



The screenshot shows the homepage of the Louisiana Nutrient Management website. At the top, there is a search bar and a logo for the Louisiana Department of Natural Resources. Below the search bar is a navigation menu with links for Home, About Nutrient Management, Stakeholder Engagement, Resources, and Contact Us. The main content area features a large aerial photograph of a river and wetlands. Below the photo is a section titled "Welcome to the Louisiana Nutrient Management Website" which includes a map of Louisiana and several paragraphs of text. The text discusses nutrient management, the role of various state agencies, and the importance of stakeholder input.

Louisiana Nutrient Management

Home About Nutrient Management Stakeholder Engagement Resources Contact Us

Welcome to the Louisiana Nutrient Management Website

Nutrient impacts and eutrophication are a nationwide water quality concern. Many entities, including the [Mississippi River Gulf of Mexico Integrated Nutrient Task Force](#), [Mississippi River Delta Task Force](#), [Gulf of Mexico Alliance](#), [NOAA](#), [U.S. Environmental Protection Agency](#), [EPA](#), and the [Gulf Coast Ecosystem Restoration Task Force](#) ([GCEERTF](#)), recognize the need to address excess nutrients within the nation's water bodies.

Louisiana has created an interagency team comprising the Coastal Protection and Restoration Authority of Louisiana (CPRA), Louisiana Department of Agriculture and Forestry (LDAF), Louisiana Department of Environmental Quality (DEQ), and the Louisiana Department of Natural Resources (DNR). The team will develop and implement a statewide nutrient management strategy to combat nutrient issues impacting water bodies within the State.

These state agencies are working cooperatively to develop a comprehensive strategy for nutrient management that takes into account nonpoint and point sources and includes agricultural management practices, wastewater treatment technologies, coastal programs and restoration activities in an effort to manage nutrient levels while meeting regulatory requirements under the Clean Water Act and while developing incentive-based approaches for participation of all stakeholders within the watershed community.

Stakeholder input is an important step to building a nutrient management strategy to improve water quality within the State. Whether you represent business, industry, a municipality, agriculture, academia, government, non-government organization, or are a homeowner, your contribution is essential to the success of this strategy. If you are interested in learning more, please [contact us](#).

