



Gulf Hypoxia and Clean Water Act Implementation in Louisiana

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presenting to the

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The (Louisiana) Department of Environmental Quality ... shall be the primary agency in the state concerned with environmental protection and regulation.

- Louisiana Environmental Quality Act,
LRS 30:2011.A.(1)



Louisiana Clean Waters Initiative

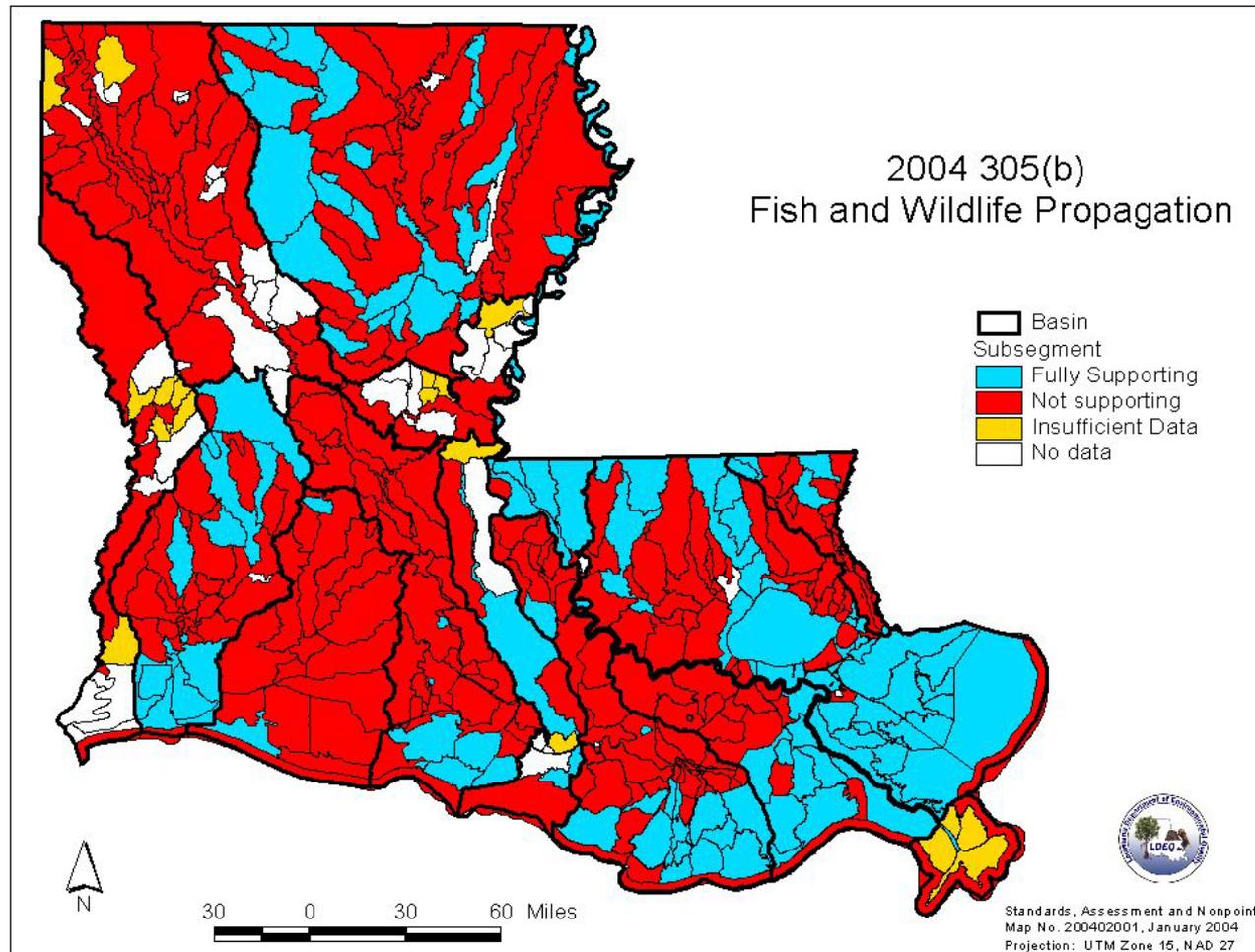
In 2004, approximately 77% (358 out of 465) of Louisiana's water bodies were assessed as impaired for one or more uses.

CAUSES OF IMPAIRMENT

- Low Dissolved Oxygen/**Nutrients**
- Fecal Coliform Bacteria
- Sediment/Turbidity
- Elevated Chlorides, Sulfates
- Mercury, other metals
- Pesticides/Herbicides



FISH AND WILDLIFE IMPAIRED WATERS

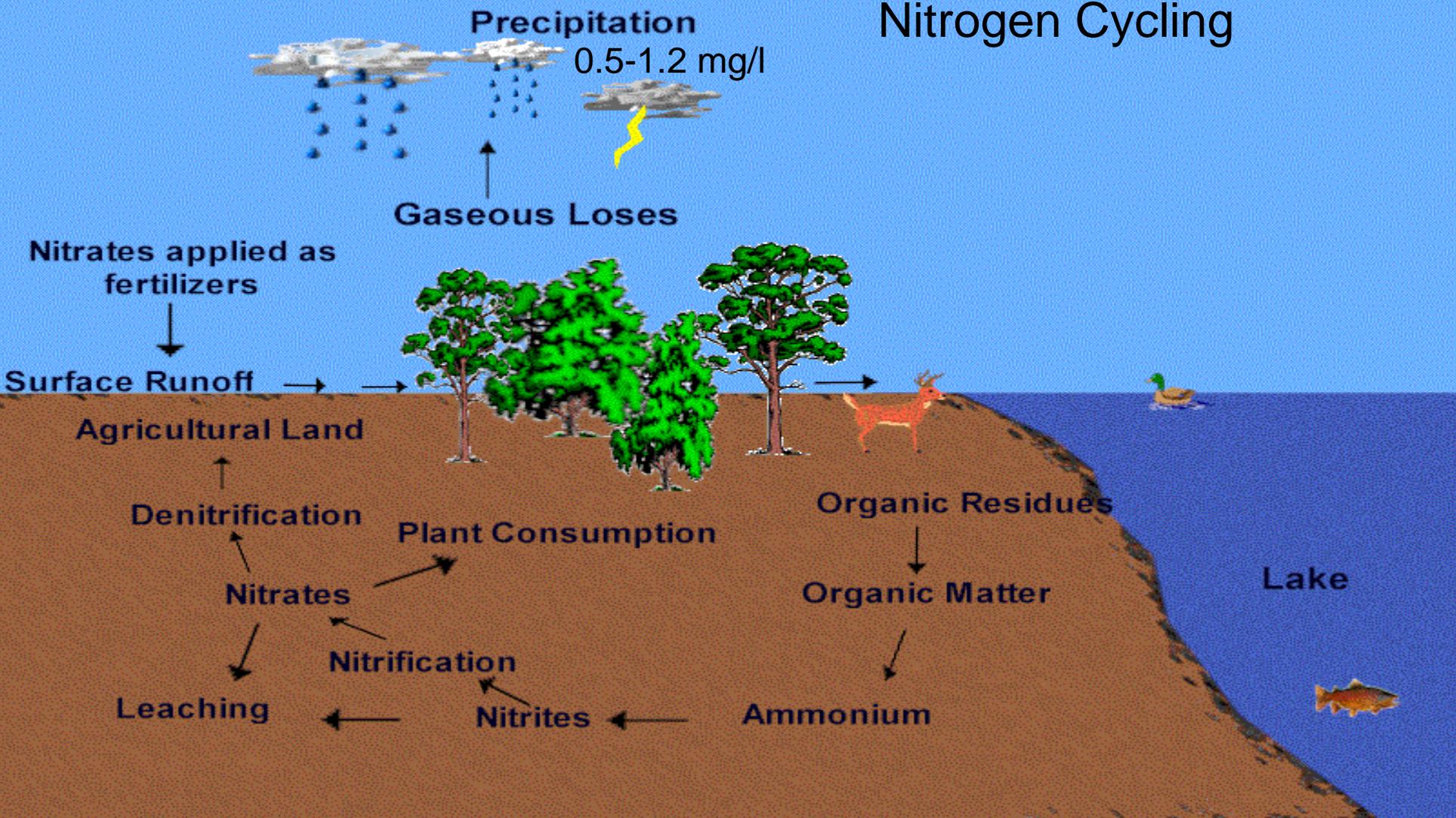




Nutrients: Good vs. Evil

- Basic building blocks of life
- Readily available for managing farms, gardens, and ponds
- 14,000 nutrient-related impairments in 49 States
- 168 hypoxic zones in U.S. waters
- 78% of Assessed Continental U.S. Coastal Waters exhibit eutrophication
- Drinking water disinfection by-products
- Rising Nitrate MCL Violation Rate (from 500 to over 1100 annually in 7 years)

Nitrogen Cycling



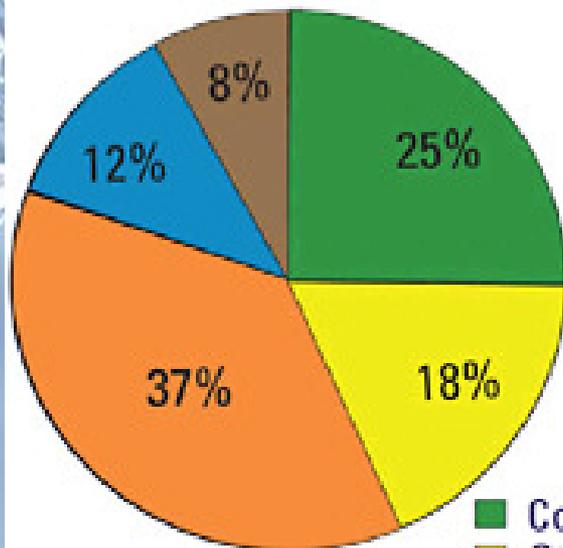
Modified from Michigan Water Research Center, Central Michigan University

mwrc.bio.cmich.edu/nitrogen.htm

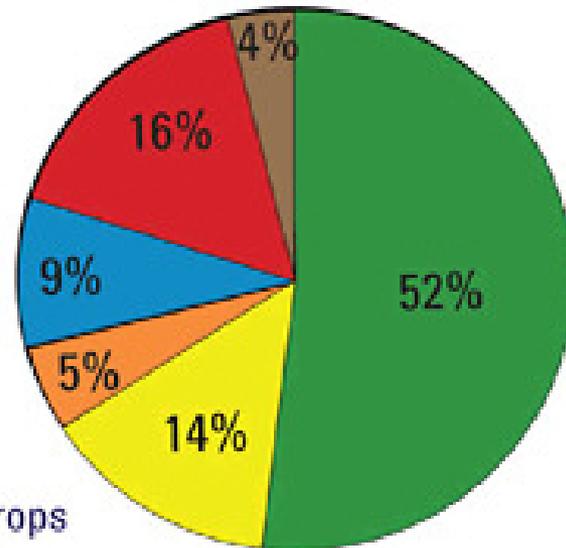


Relative Nutrient Contributions

PHOSPHORUS



NITROGEN



Sources

- Corn and soybean crops
- Other crops
- Pasture and range
- Urban and population-related sources
- Atmospheric deposition
- Natural land

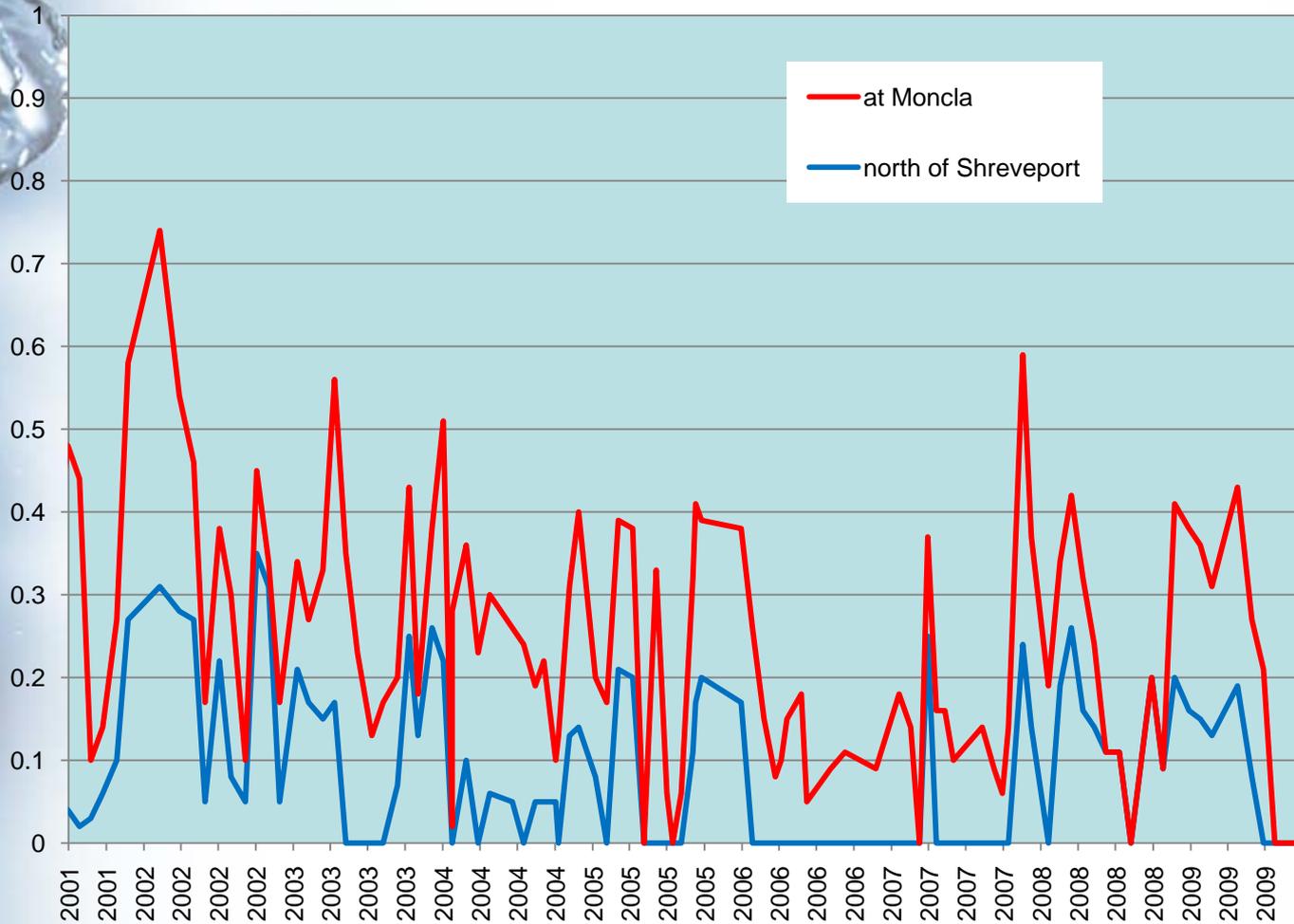
U.S. Department of the Interior
U.S. Geological Survey

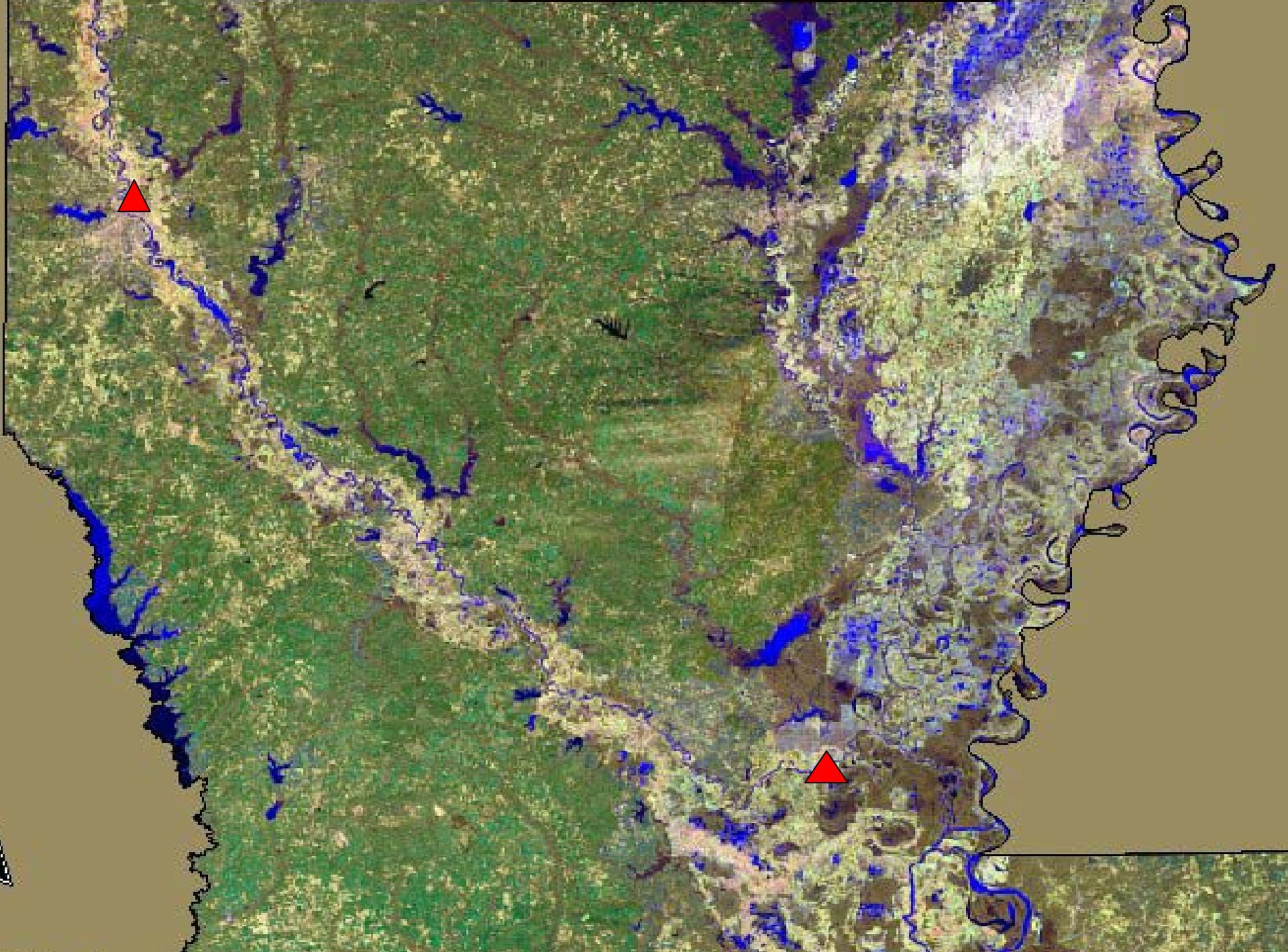
from Alexander et al. (2008). © by the American Chemical Society,
[In Nutrient Control Actions for Improving Water Quality in the Mississippi River Basin and Northern Gulf of Mexico](#) (2009), Water Science and Technology Board.

http://www.nap.edu/openbook.php?record_id=12544&page=7



Red River Nitrate/Nitrite Concentrations (mg/l)

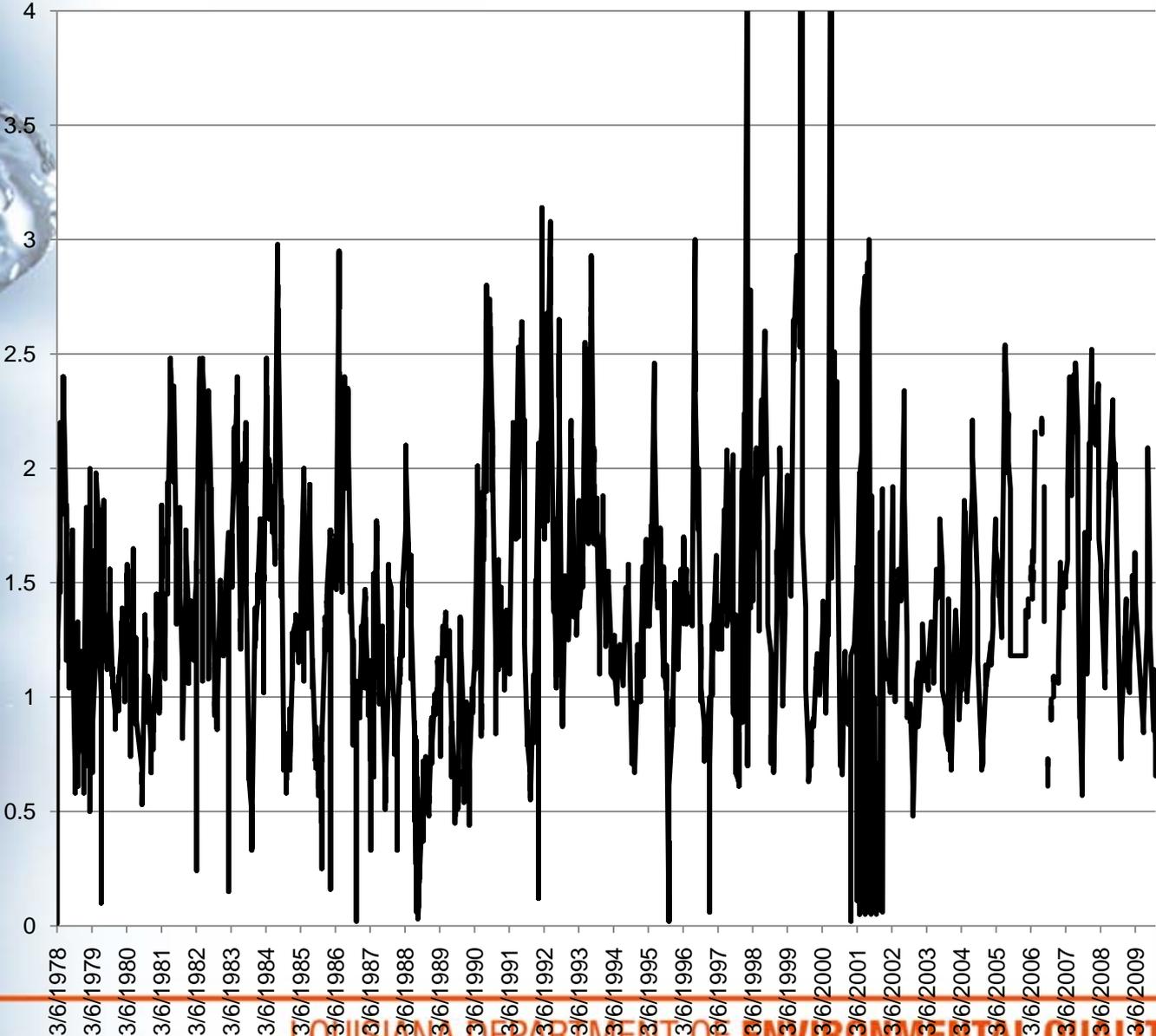






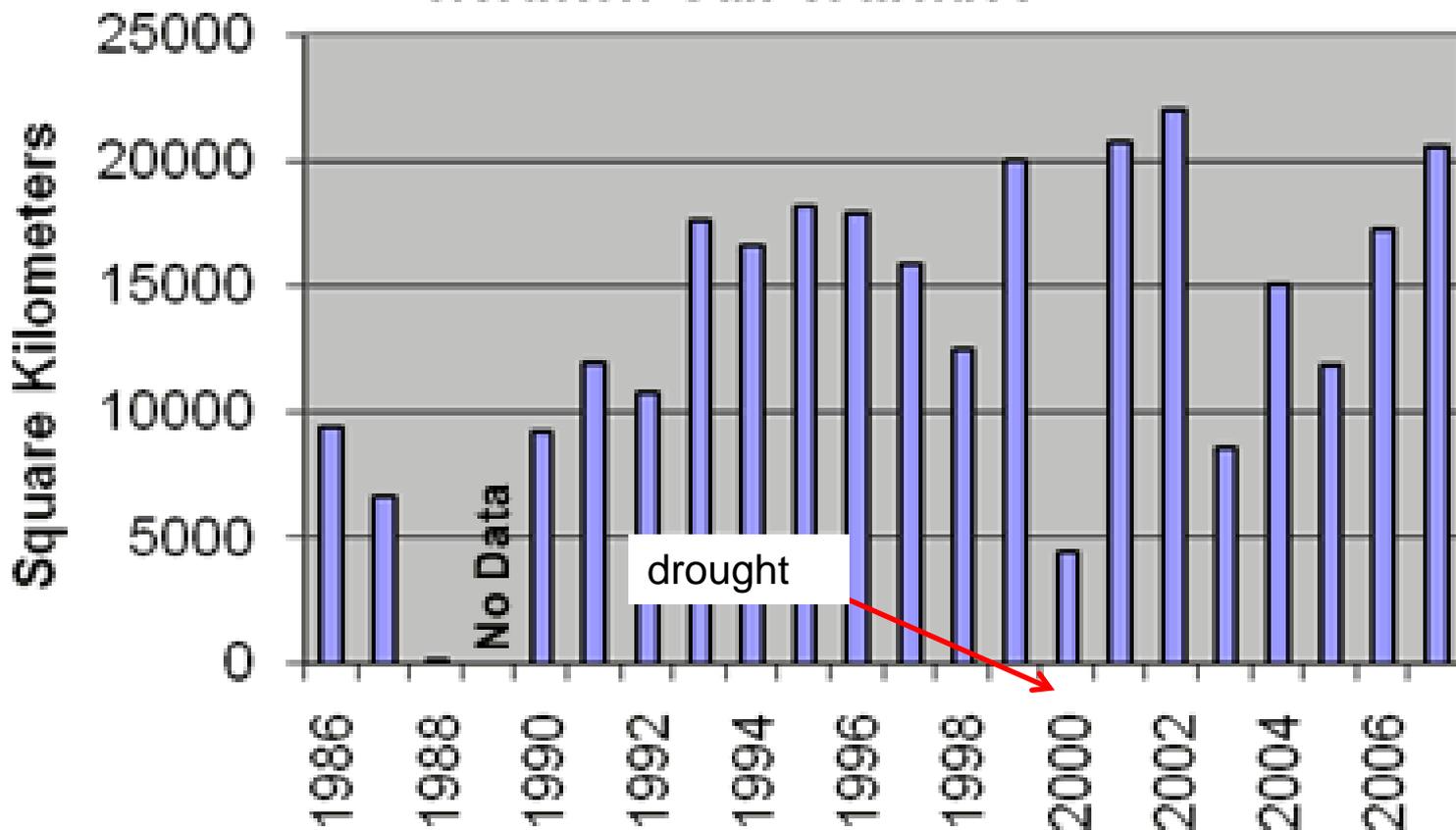


Mississippi River Nitrate Nitrite Concentrations (mg/l)





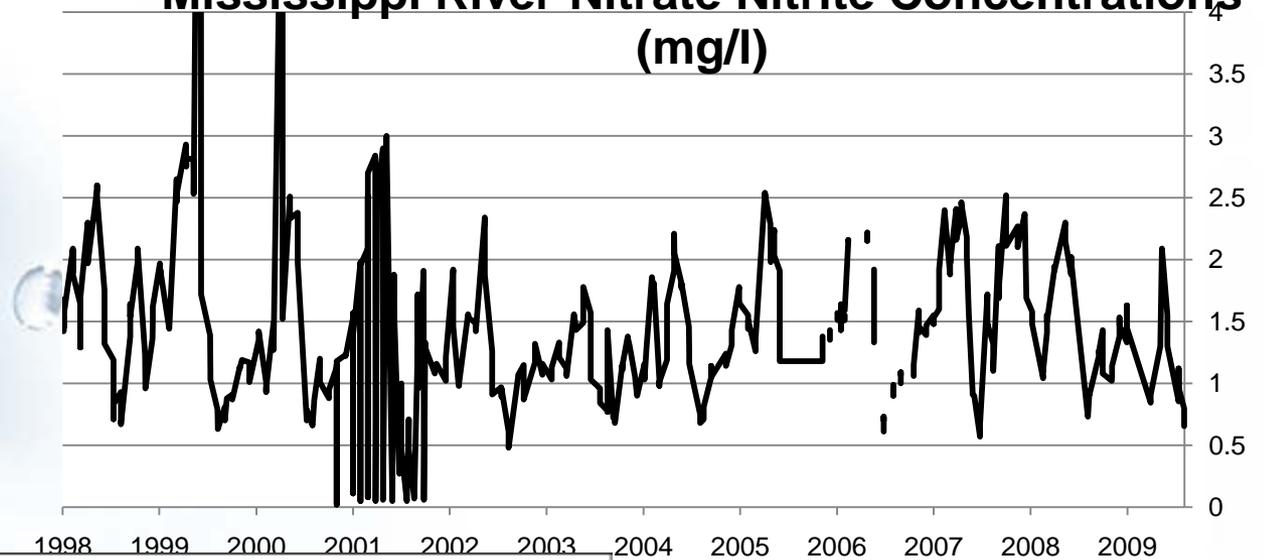
Hypoxic Zone Size Northern Gulf of Mexico



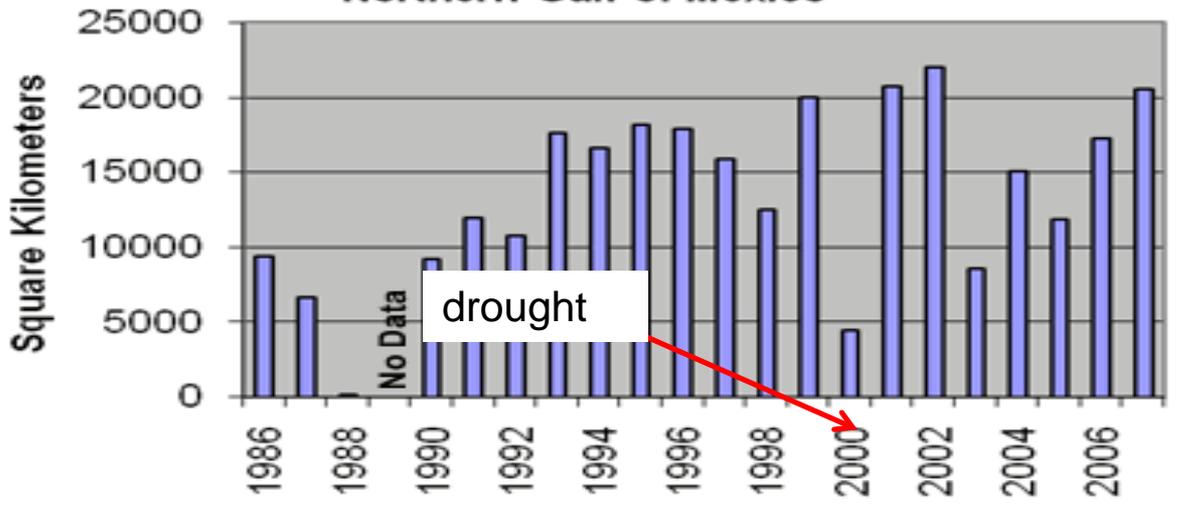
Source: Dr. Nancy Rabalais, LUMCON. Available at website:
http://toxics.usgs.gov/hypoxia/hypoxic_zone.html



Mississippi River Nitrate Nitrite Concentrations (mg/l)



Hypoxic Zone Size Northern Gulf of Mexico





Managing Water Quality in Louisiana

- Enhancements to Point Source Management
- Local coordination of NPS Programs within the “watershed community”
- Integrate WQ-related actions by watershed
- Ensure expectations are valid and Water Quality Standards are accurately descriptive
- Establish numerical criteria for nutrients





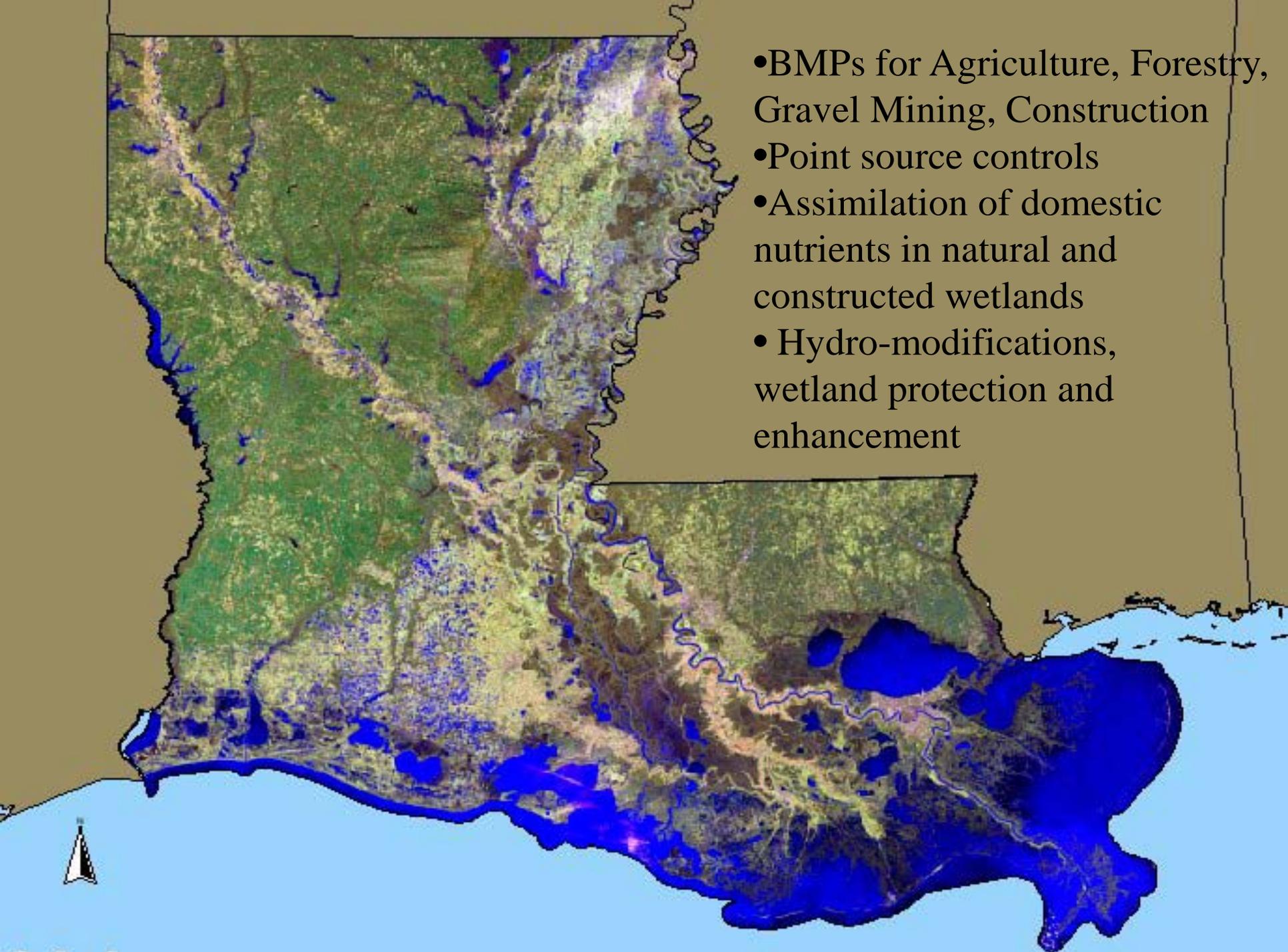
Louisiana Water Quality Management Features:

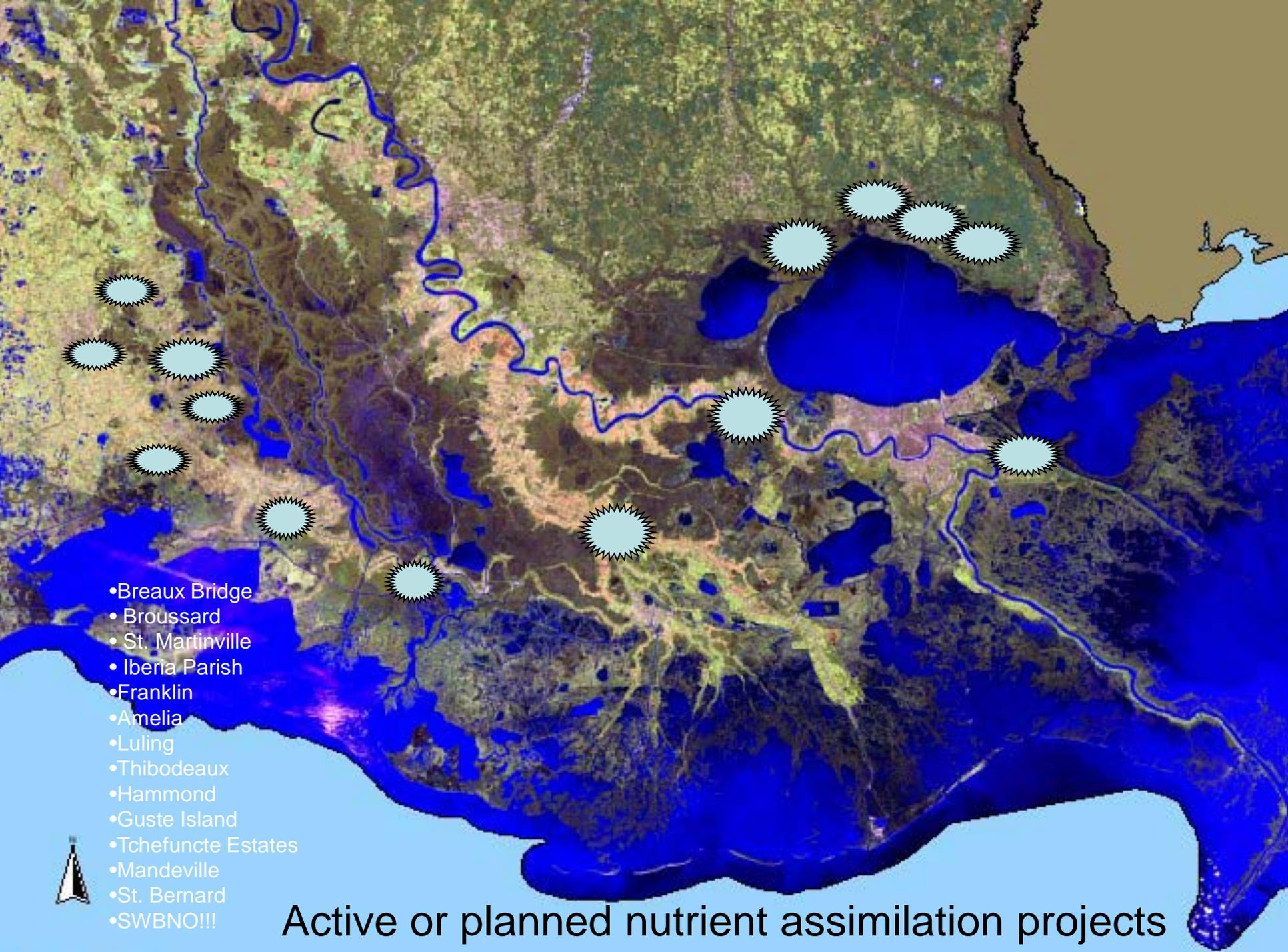
- **Goal oriented** (25% reduction in 303d listings by 2012)
- **Measurable environmental outcomes (i.e., water quality)**
- **Watershed approach**
- Watershed teams/champions focal points for resource agency involvement
- **Broadly collaborative**
- Comprehensive statewide water quality improvement projects tracking
- Employ **all available tools** in the toolbox
- Leverage **new technologies**
- Strategic planning/micro-watershed approach
- **Progress** monitoring and reporting



Water Quality Management Tools in Use

- Watershed inspection strategy
- BMPs for Agriculture, Forestry, Gravel Mining, Construction
- NRCS, LSU AgCenter projects
- Urban Storm Water Planning and Assistance
- Attention to decentralized sewage
- Monitoring data, TMDLs
- Hydro-modifications, wetland protection and enhancement

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- A map of the Mississippi River basin, showing the river and its tributaries. The map uses a color scale to indicate water quality, with green representing good quality and blue representing poor quality. The river and its tributaries are shown in blue, indicating poor water quality. The surrounding land is shown in green and yellow, indicating good and moderate water quality respectively. The map is oriented vertically, with the river flowing from north to south. A north arrow is located in the bottom left corner.
- BMPs for Agriculture, Forestry, Gravel Mining, Construction
 - Point source controls
 - Assimilation of domestic nutrients in natural and constructed wetlands
 - Hydro-modifications, wetland protection and enhancement



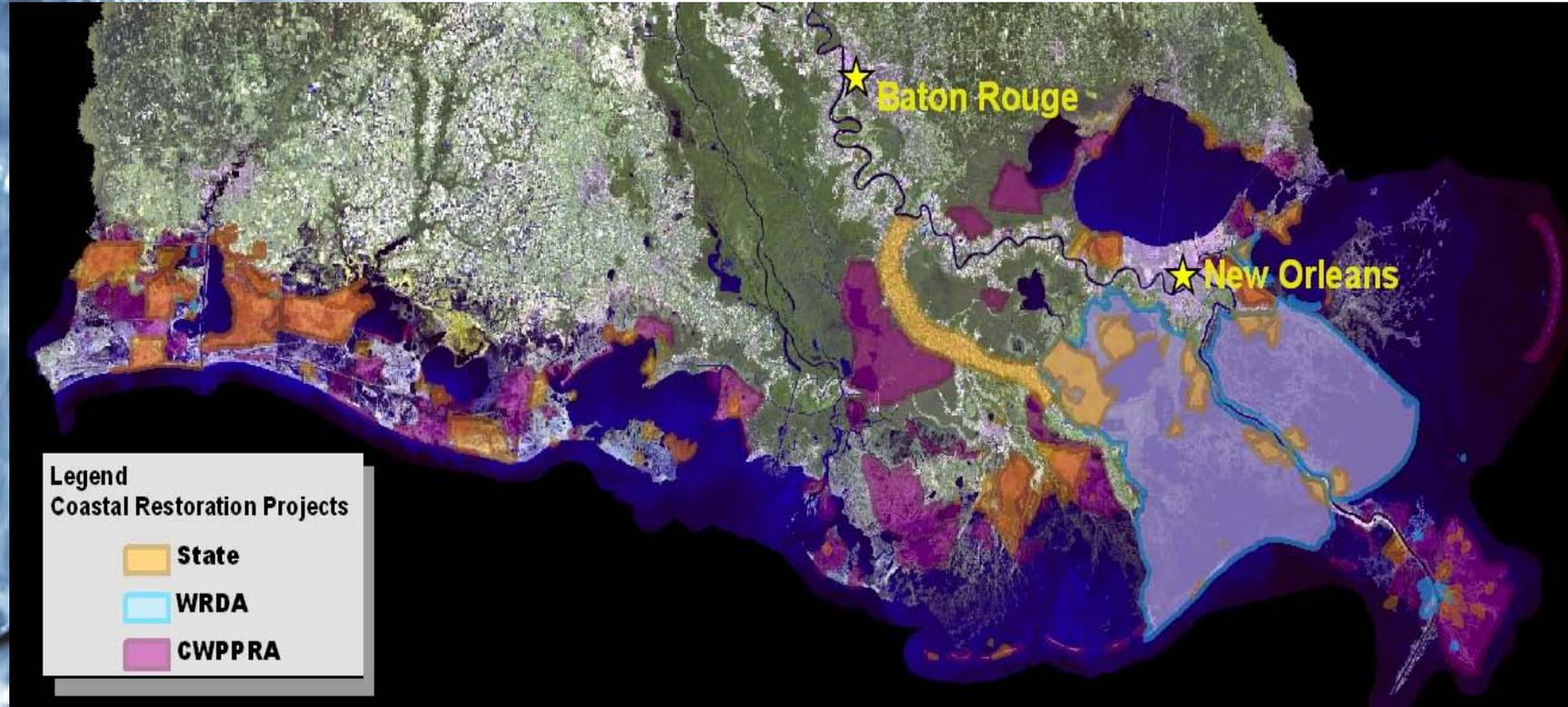
- Breaux Bridge
- Broussard
- St. Martinville
- Iberia Parish
- Franklin
- Amelia
- Luling
- Thibodeaux
- Hammond
- Guste Island
- Tchefuncte Estates
- Mandeville
- St. Bernard
- SWBNO!!!



Active or planned nutrient assimilation projects



Coastal Protection and Restoration



Louisiana Office of Coastal Protection and Restoration

<http://www.ocpr.louisiana.gov>



Managing Water Quality to affect Gulf Hypoxia

Watershed Management Plan in lieu of TMDL

- Based on 2006 Integrated Report Guidance, EPA recognizes that “*alternative pollution control measures may obviate the need for a TMDL.*”
 - Consistent with NPS Program Guidelines
 - Applied controls must be *required* (degree of assurance that goals will be reached)
 - Problem statement, strategy description, time frame/schedule, monitoring/tracking/reporting, commitment to adaptive management

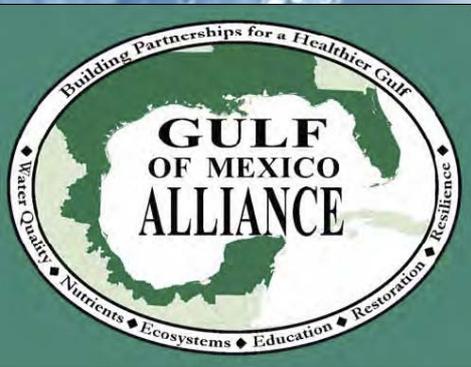




For the Mississippi Basin?

- Use TMDL-level modeling for assigning nutrient reduction goals from all sources commensurate with contributions (EPA, States, local governments and industry)
- Apply Non-point source strategies based on known programs, practices, technologies, innovative approaches (USDA, EPA, DOI?, States, industry, academia)
- Account for assimilative components (States, local governments and industry)
- Develop appropriate standards and criteria that provide valid expectations for the river and the Gulf of Mexico (EPA6, OST, States, academia, NGOs)

Watershed Management Plan Components



- Mississippi River/Gulf of Mexico Watershed Nutrient Task Force Action Plan 2008
- Gulf of Mexico Alliance (GOMA) Governor's Action Plan II for Healthy and Resilient Coasts
- Gulf of Mexico Program
- Mississippi River Basin Initiative (USDA/NRCS)
- Cooperative Watershed Management Program (USDOJ)
- State Nutrient Reduction Strategies
- Coastal Protection Programs





Shrimp and Corn Soup

Prep Time: 1 hr

Serves 12-16

INGREDIENTS:

½ cup dried shrimp

1 pound small (70-90) shrimp, peeled and deveined

5 cans (15 ounces) Whole Kernel Corn

5 cans (15 ounces) Cream Style Corn

1 stick butter

2 cups diced onion

1 cup diced celery

1 cup diced green bell pepper

¼ cup minced garlic

2 cans (15 ounce) Stewed Tomatoes

1 can (10 ounce) Rotel

2 cans (5 ounce) V-8 Juice

Season All to taste

granulated garlic to taste

black pepper to taste

METHOD:

In a large sauce pot, melt butter. Add onions, celery, bell pepper and garlic and sauté until onions are transparent, about 3-5 minutes.

Add raw shrimp and sauté until they are just pink. Add all canned ingredients and dried shrimp. Season to taste using Season All, granulated garlic and pepper. Bring to a boil, reduce to simmer and cook for approximately 45 minutes. Add additional seasonings or water if necessary.