

Nutrient Loadings in the Mississippi River Basin and Trading Opportunities

Ellen Gilinsky, Senior Advisor for Water

U.S. EPA Office of Water

~~~~~

**Mississippi River Basin & Gulf Coast Regional Forum  
EPA-USDA National Workshop on Water Quality Markets  
September 16, 2015**

# National Scope of Nutrient Problem

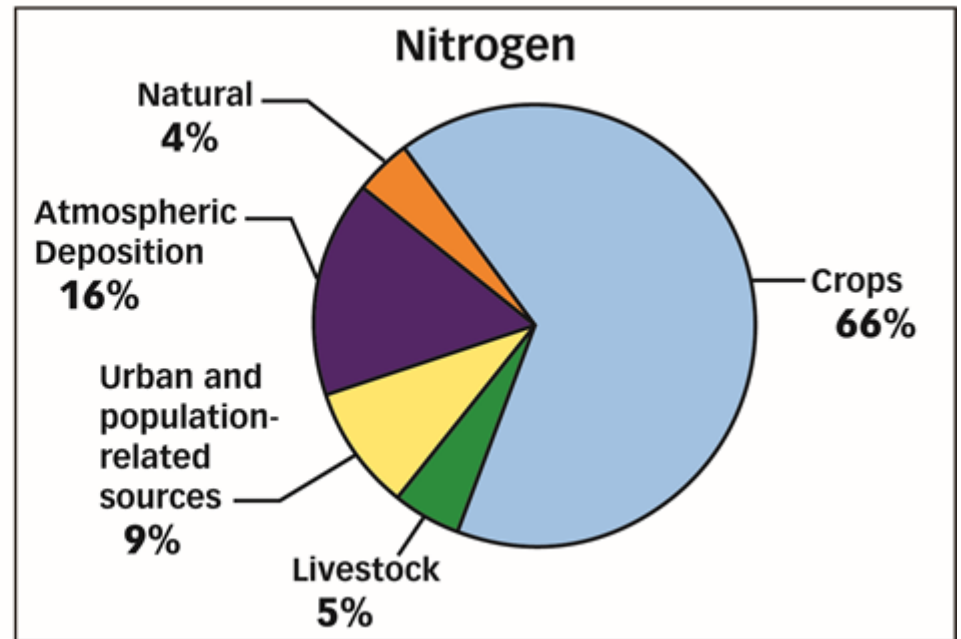
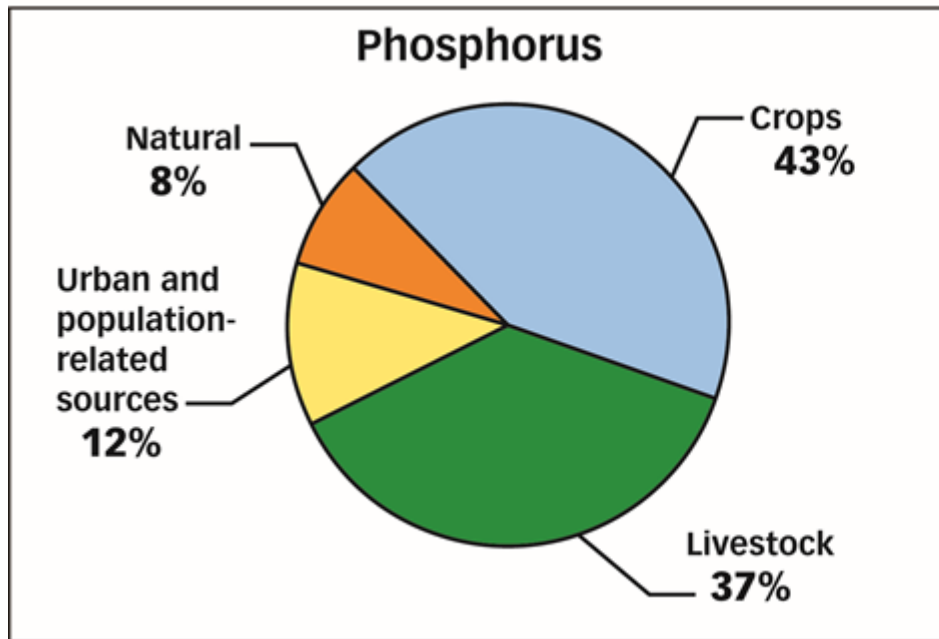
- **Well Documented Problem and Impacts, e.g.:**
  - EPA: Science Advisory Board (2007), Wadeable Streams and Lakes Assessments (2004, 2007)
  - National Research Council: Mississippi River Water Quality (2008), Urban Stormwater (2008)
  - USGS: Impact of Nutrients on Groundwater (2010), SPARROW Loadings (multiple years)
  - Many published articles, State and university reports
  - State EPA Nutrient Innovations Task Group (NITG) *Call to Action* Report
- **15,000+ Nutrient-related Impairment Listings in 49 States...an underestimate**
  - 2.5 Million Acres of Lakes and Reservoirs & 80,000 Miles of Rivers and Streams
  - >47% of Streams have Med to High Phosphorus; >53% have Med to High Nitrogen
- **78% of Assessed Continental U.S. Coastal Area Impacted by Eutrophication**
- **168 Hypoxic Zones in U.S. Waters, including immense zone in Northern Gulf of Mexico**
- **Public Health Risks – Contaminated Drinking Water is Significant & Costly**
  - Rate of nitrate violations in community water systems doubled over past 7 years
  - *Harmful Algal Blooms an emerging concern*, including 2014 Toledo, OH crisis

# What are the N & P Sources?



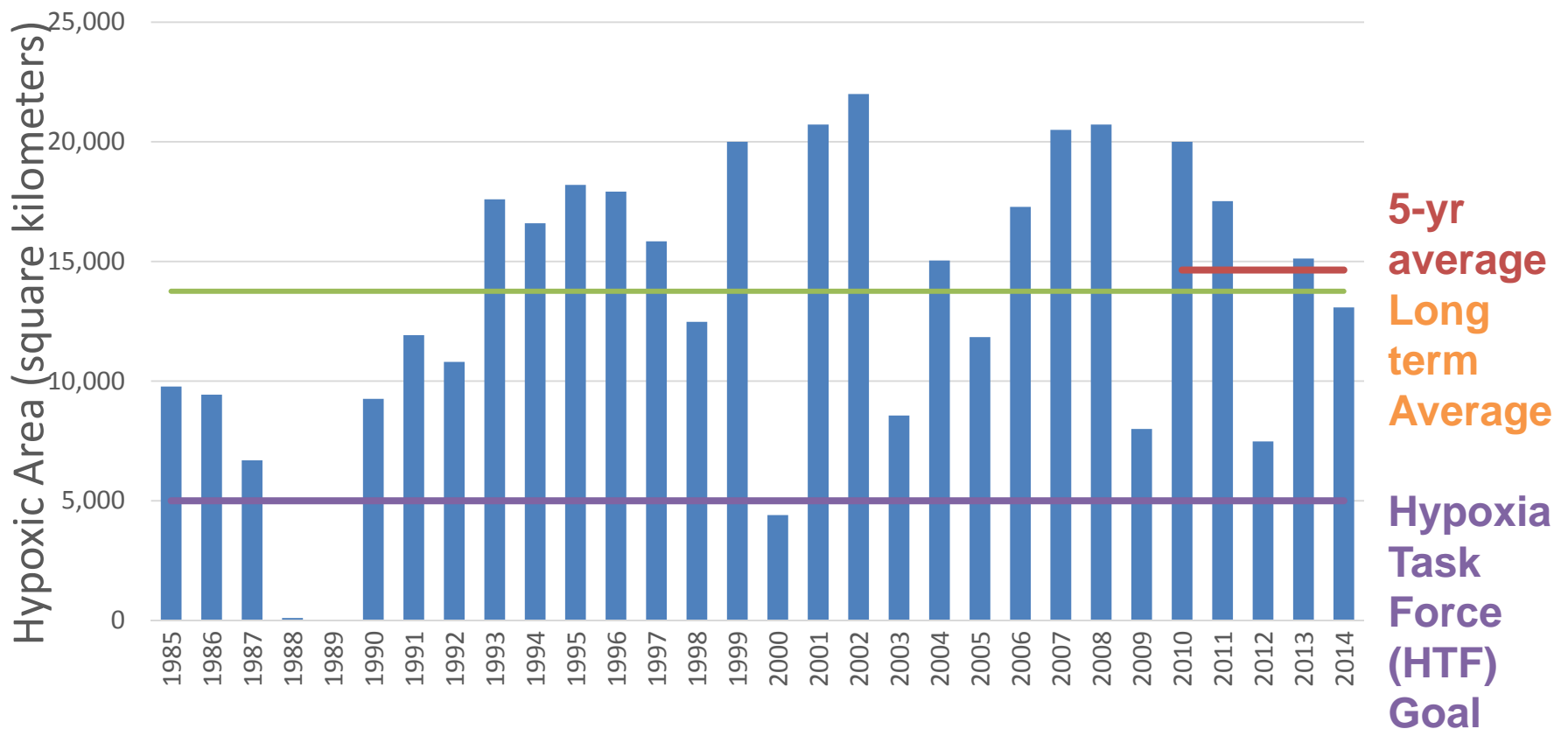
- **Municipal Wastewater Treatment**
  - Treats >18 million tons of human waste annually
  - >16,500 municipal treatment system permitted, some treat to remove Nitrogen (N) or Phosphorus (P) but many do not yet monitor for or comply with N or P limits
- **Atmospheric Nitrogen Deposition**
  - Regulations in place, more underway
  - Loadings can be significant, e.g., 21% in Chesapeake Bay, 16% in Gulf of Mexico
- **Urban Stormwater (SW)**
  - 80% of U.S. population lives on 10% of land, 50% pop. near coastal areas
  - 50% of urban landscape will be redeveloped by 2030, additional undeveloped land will be developed
- **Agricultural Livestock**
  - \$130 Billion Industry , >1 billion tons of manure produced annually, largely unregulated at federal level, variable state controls
- **Agricultural Row Crops**
  - \$120 Billion Industry, in many areas a significant source of N&P
  - Ag SW Runoff and Irrigation Return Flows Exempt from CWA, variable State controls

# Where do Nutrients to the Northern Gulf of Mexico Come From?



# Environmental Impact of Nutrient Loadings to the Northern Gulf of Mexico

## Annual Hypoxic Zone Size



Source: N. Rabalais

# Hypoxia Task Force (HTF)

- Group of 12 States and five federal agencies established in 1997 to:
  - Understand causes and effects of hypoxia in the Northern Gulf of Mexico
  - Coordinate activities to reduce the size, severity and duration of Gulf hypoxia
- HTF Goal (revised 2015):
  - Reduce the five-year running average areal extent of the Gulf of Mexico hypoxic zone to less than 5,000 square kilometers by 2035.
- HTF Interim Target:
  - Reduce nitrogen and phosphorus loading to the Gulf by 20% by 2025
  - 45% reduction of both N and P ultimately needed
- HTF commitment to develop point and nonpoint source measures of progress
  - First point source measure: N and P monitoring and limits for major sewage treatment plants; exploring load reduction measures
  - Nonpoint source measures under development
- All 12 HTF States now have draft or final nutrient reduction strategies

# How Do We Reach the HTF's Goal/Opportunities for Trading?

- State nutrient reduction strategies are key to reaching HTF goals
- State strategies recognize the need for significant reductions from ALL source sectors
- Need to reduce point source loads will create trading opportunities
  - All 12 state strategies consider trading as a tool for reaching reduction goals