Development of a Kentucky Nutrient Strategy

Kentucky Division of Water

Frankfort, KY

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Why Nutrient Reduction?

- Eutrophication resulting in:
  - Stream Impairments
    - 2800 stream miles in Kentucky
  - Harmful algal bloom (HABs) advisories
    - Summer 2013: 5 Corp-owned lakes, 4 other Kentucky lakes
  - Hypoxic zone in Gulf of Mexico
- Nutrients and sediment top causes for Kentucky and Mississippi River Basin concerns.
- EPA also dealing with nutrients in Chesapeake Bay

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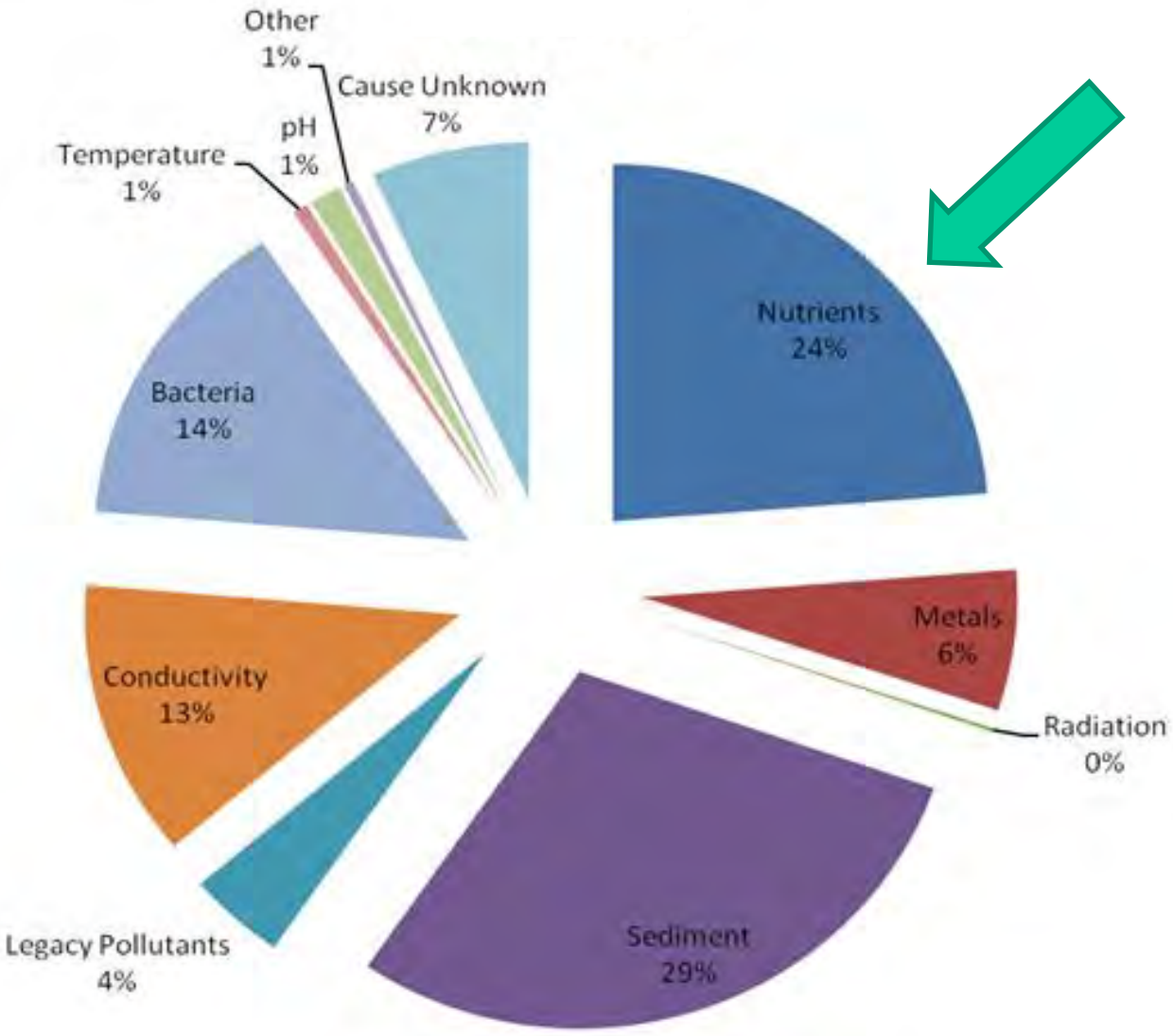
Kentucky TMDL Obligations



Hypoxia Task Force Background

- Task Force created in 1997 to address concerns with nutrients
- Kentucky joined Mississippi River Gulf of Mexico Hypoxia Task Force in 2010.
- 12 states with most contribution and 5 federal agencies
- The goal of the Hypoxia Task Force is to improve water quality in the states, reduce loading to the Mississippi River and reduce the size of the hypoxic zone in the gulf.

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EPA and Nutrient Issues

- Litigation against EPA due to delay in implementation of numeric criteria and nutrient reduction strategies.
- EPA responded that the most effective mechanism for nutrient reduction is state-level strategies.
- States represented on the Task Force committed to development of strategies in 2013.
- EPA issued a framework memo in 2011 with flexible guidance on elements of an effective state nutrient reduction strategy.
- The Stoner Memo provides for flexibility to develop state-specific implementation of nutrient reduction and increase the likelihood of success.

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Recommended Elements of a State Framework for Managing Nutrient Pollution (Stoner Memo)

1. Prioritize Watersheds
2. Establish Watershed Load Reduction Goals
3. Ensure effectiveness of Point Source Permits
4. Agricultural Areas
5. Storm Water Runoff and On-site (Septic) Systems
6. Accountability and Verification Measures
7. Annual Reporting of Implementation Activities and Biannual Reporting of Load Reductions and Environmental Impacts
8. Develop Work Plan and Schedule for Numeric Criteria Development

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Kentucky Nutrient Strategy Goals

- Build on and consolidate existing tools and efforts under one overarching strategy
- Capitalizing on existing relationships
- Identifying knowledge and resource gaps
- Implement efforts to address gaps and needs
- Identify areas in need of improvement or additional effort
- Develop a comprehensive document that guides reduction of nutrient loading and develop watershed-specific efforts to address nutrient management.

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Nutrient Reduction Strategy Overview

- Divided into 2 chapters –
  - Background information (setting the stage)
  - Implementation
- Sections are arranged to correspond with sections in the Stoner memo
- Strategy

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Chapter 1 – Setting the Stage

1) Background\Introduction\Define the Problem.

Focus on developing state-specific strategies. Local reductions that will improve water quality in Kentucky watersheds, added benefit of improving downstream loading, Focus on an iterative approach.

Chapter 1 – Setting the Stage

2) Identify sources in Kentucky –

a. KPDES outfalls

- Municipal Wastewater Treatment Plants (WWTP)
- Industry
- Power plants
- Municipal separate storm sewer system (MS4)
- Stormwater construction
- Industrial stormwater
- Privately owned wastewater treatment plants

Chapter 1 – Setting the Stage

b. NPS

- Atmospheric deposition
- Urban non-MS4
- Lawn maintenance (including golf courses)
- Failing septic tanks
- Crop agriculture
- Livestock and pasture agriculture

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Chapter 1 – Setting the Stage

3) Kentucky Stakeholders:

a. Introduction - Describe categories of stakeholders, Division approach to engagement, background of areas where have been engaged

b. Center of Excellence
http://www.uky.edu/WaterResources/KCEWM/

c. Land Grant universities

- Kentucky State University
http://www.kysu.edu/landGrant/
- University of Kentucky
http://administration.ca.uky.edu/landgrants

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Chapter 1 – Setting the Stage

4) Current and Other Methods of Addressing Nutrients

a. Discharge limits

b. Planning process –

- Facility plans
- Watershed Based Plans
- Continuous Planning Process – 303E

c. Priority points for funding –

- State Revolving Fund
- Priority waters – state cost-share

d. Ag Water Quality Act

e. Education – will be important. Include variety from individuals, website, Conservation officers, and all sectors. Raise public awareness and technical assistance to technical staff.

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Chapter 1 – Setting the Stage

5) Policy
- Update of KY Nonpoint Source Management Plan to meet current standards
- New MS4 permit in 2015
- Nutrient limits in point sources
- Nutrient Criteria Development/Nutrient Criteria Development Plan
- Revision of 401KAR10:031, Section 1, Nutrient Narrative Criteria with revision to definition of “eutrophication” in 401KAR10:001 effective 5/31/13
- Development of Nutrient Target methodology
- Agriculture Water Quality Plan and compliance

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Chapter 1 – Setting the Stage

6) Partnerships

a. Participation on Hypoxia Task Force

b. Lower Mississippi Basin River Conservation Committee –

c. Natural Resources Conservation Service (NRCS)–

- Mississippi River Basin Initiative - Kentucky Basins are the Lower Green, Licking, Red and Bayou De Chien-Mayfield
- National Water Quality Initiative – Kentucky Basins are Bennettstown-Little River, Headwaters Hinkston Creek and Clarks Run
- State Technical Committee

d. Division of Conservation – state cost share

e. US Geological Survey (USGS)

f. Agriculture Water Quality Authority

g. Governor's Office of Agriculture Policy – innovative approaches and funding

h. Kentucky Agriculture Science Monitoring Committee (KASMC)

i. ORSANCO

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Chapter 1 – Setting the Stage

7) On the ground installations –

- Ky Nutrient Management Plan/NRCS 590
- 319 Projects – load reduction reporting, demo sites for Agriculture and Low Impact Design, stormwater
- State Revolving Fund – enhanced treatment to remove nutrients.
- Ohio River Water Quality Pilot Trading
- Ag through NRCS and State Cost share, US Department of Agriculture programs

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Chapter 2 - Implementation

8) Assess and Prioritize Watersheds

a. Monitoring

- Elements of a State Monitoring and Assessment Strategy
- Integrated Report
- Pennyroyal Nutrient Study (2010)
- Inner Bluegrass Nutrient Study (2013)
- Outer Bluegrass (2014)
- Analysis of WWTP Discharge Monitoring Report data
- Little River Monitoring Project (USGS)
- Harmful Algal Bloom protocol
- KASMC statewide Nutrient Monitoring project
- USGS National Stream Quality Accounting Network and National Water-Quality Assessment
- USGS additional nutrient info page
- ORSANCO

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Chapter 2 - Implementation

b. Targeting - Identify watersheds that are most likely to contribute to nitrogen and phosphorus loading (HUC 8 with HUC 12 targeted within)

- Update of KY Watershed Management Framework
- Recovery Potential
- SPARROW

c. Identify categorical sources in those

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Chapter 2 - Implementation

9) Develop Source-Specific Strategy for Nutrient Reduction

a. Some tools and approaches are statewide and others are specific to targeted watersheds or watersheds with nutrient impaired reaches.

b. Point source Kentucky Pollution Discharge Elimination System permits

- Municipal and industrial WWTP
  - » Filtration
  - » Chemical addition
  - » Retrofit of existing plant
  - » Biological Nutrient Removal
  - » Examples
- Privately owned package plants
- Regionalization
- Kentucky No Discharge Operation Permits
- MS4/Urban

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Chapter 2 - Implementation

c. Agriculture

- Agriculture Water Quality Authority (AWQA), Agriculture Water Quality Plans (AWQP) and inspections, corrective measures protocols, complaint response. Inspection of permitted facility.
- Stakeholder involvement (landowners, farmers, academia) – would need to meet with the farmers in watershed. Work with land grant university to help educate. Outreach during implementation and help with development of AWQP and nutrient management plans.
- Nutrient Management Planning info
- Nutrient Management Plan assistance
- Watershed specific Best Management Practices for funding by state cost share under AWQA.

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Chapter 2 - Implementation

d. Trading

e. Other NPS

- On-site\septic systems and other stormwater http://www2.ca.uky.edu/agc/pubs/agr/agr166/agr166.htm
- Forestry
- Legacy – mostly sediments already in the system. Attached to these sediments is Phosphorus and gets remobilized.

f. Education

- NRCS
- Land Grant Universities, Extension offices
- Conservation Districts
- Demonstration projects –
  - Low Impact Design
  - Agriculture
  - WWTP

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Chapter 2 - Implementation

10) Document and Verify Progress

- Document baselines
- Success Monitoring
- Reporting – EPA strategic reporting measures
  - SP10, 11 and 12
  - WQ 10
  - WQ 26
  - Annual reporting of progress

Chapter 2 - Implementation

11) Public Outreach and Stakeholder Involvement
  - Stakeholder meetings
  - Media campaign

Appendices

Logistics

- Timeline goals
- Feedback opportunities
- Website for materials:
  http://water.ky.gov/Pages/NutrientStrategy.aspx

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Feedback

- What are your comments and concerns?
- What is missing?
- How would this affect your constituents or group positives/negatives?