Red Cedar River Watershed Planning Project

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E. coli TMDL Developed for Portions of the Red Cedar and Middle Grand

• Listed on Michigan’s 303(d) list, as NOT attaining the partial and total body contact recreation designated uses

• A TMDL uses a formula for calculating allowable loads of a pollutant

• But, E. coli is concentration-based
Michigan Water Quality Standards for *E. coli*

- **Partial body contact – year-round**
  - 1000 *E. coli* per 100mL
- **Total body contact – May 1-October 31**
  - 300 *E. coli* per 100mL as a daily max
  - 130 *E. coli* per 100mL as a 30-day geometric mean

*Designed to protect human health*
Iterative Approach to Addressing *E. coli* Concerns

- Identification of critical sub-watersheds based on the 303(d) list and monitoring data
- Inventories and source identification
- Ranking of sources and recommended BMPs to address sources
- Implementation of actions to eliminate sources or reduce inputs to levels below water quality standards
- Ambient monitoring to assess progress
Red Cedar River Watershed
Land Cover

~ 460 sq. miles
~ 300,000 acres
Water Quality Concerns in the Red Cedar River

- *E. coli* levels
- Low dissolved oxygen
- Sedimentation
- Mercury and PCBs
- Others (e.g., nutrients)
Project Partners

- Sixteen local and regional organizations, agencies, interested citizens
- Led by MSU, Streamside Ecological Services and Tri-County Regional Planning Commission
Greater Lansing Stormwater Partners

- City of DeWitt
- City of East Lansing
- City of Grand Ledge
- City of Lansing
- City of Mason
- Delhi Charter Township
- Delta Charter Township
- DeWitt Charter Township
- Lansing Charter Township
- Meridian Charter Township
- Michigan State University
- DeWitt Public Schools
- Lansing Public Schools
- Clinton County
- Eaton County
- Ingham County

www.mywatersheds.org
TONS of Data/Information

• Ingham County surface water sampling 2005-2012
• DEQ *E. coli* monitoring 2009
• Livingston and Ingham County Drain Commissioners monitoring 2000-2001
• 10 years of watershed planning in the urbanized area
• Years and years of student research…

*Conflicting data and gaps*
Ranking Criteria for Planning

E. coli monitoring and TMDL Priorities (added new monitoring sites)
Windshield Surveys
HIT model and E. coli transport modeling
Other data sources (macroinvertebrates, historic monitoring)
Stakeholder input (e.g., ICHD septic systems)
Wetland Loss
Partner Interest
Red Cedar Watershed

E. coli TMDL

Legend
- TMDL Reach
- Drain / Ditch
- Stream / River
RED CEDAR RIVER WATERSHED

Potential Wetland Restoration Areas
Rapid Windshield Assessments

• Drive all roads in subwatersheds
• Record problem and high-quality areas
  • Livestock operations
  • Unstable stream reaches
  • Septic/sewage
  • Farming practices
  • Overland erosion
  • Improper riparian management
Detailed Walking Assessments

For priority subwatersheds, conduct an in-depth inventory:

• Erosion Assessment
• Biological Assessment
• Water Chemistry
EPA’s Nine Elements for Plans

- Identify causes & sources of pollution
- Estimate load reductions expected
- Describe mgmt measures & targeted critical areas
- Estimate technical and financial assistance needed
- Develop education component
- Develop project schedule
- Describe interim, measurable milestones
- Identify indicators to measure progress
- Develop a monitoring component

Source: US EPA, 2004 319 Supplemental Guidelines
Next Steps

- Using available data, models and stakeholder input, finalize high priority subwatersheds
- Detailed inventory in subwatersheds and collect additional monitoring data
- Agricultural Stakeholder Focus
- Information/Education in collaboration with various partners
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