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Watershed assessment modelling to identify critical sources of pollution and evaluate effectiveness of conservation management practices

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Goal:

Implement voluntary conservation practices to improve water quality in high-priority watersheds while maintaining agricultural productivity.
Tenmile Watershed was selected for 2017 Pilot Project

NRCS National Water Quality Initiative (NWQI)
FY2017 Watersheds and Pilot Projects
Why Tenmile Watershed?

- Focus on improving water quality in watershed
- Specific water quality targets
- Existing partnerships and opportunity to build new partnerships
- WCD actively working with landowners in watershed
- NRCS technical and financial assistance available
Watershed assessment
Identify water quality concerns

Phosphorus
Nitrogen
Suspended solids
Pathogens
Watershed Assessment
Land use, crop and livestock survey
NSPECT Model - What comes out?

Phosphorus

Nitrogen

Darker color = higher potential source contribution

We call these **critical source areas.**
Combined ranking based on all four water quality concerns

**Green** = low potential source contribution

**Yellow** = moderate

**Red** = highest potential source contribution
What Can We Do With Modeling Results?

- Focus planning efforts in critical source areas or specific land uses
- Determine the impact and potential effectiveness of NRCS programs in an area
- Evaluate the effectiveness of various BMPs by land use type and practice
- Focus cost-share priorities and funding
- Adapt outreach materials and efforts to meet the social considerations of the watershed landowners
Social Factors and Outreach

Effective management of water pollution must address both:

- **Environmental conditions**
- **and**
- **Choices people make that impact the environment**

Focus Groups  |  Land Owner Survey  |  Outreach Plan  |  Community Engagement
Greatest Threats to Water Quality

- Excessive use of fertilizers for crop production
- Improperly maintained septic systems
- Highway, road or bridge runoff
- Excessive use of residential lawn fertilizers or pesticides
- Land development or redevelopment
- Manure from farm animals
- Droppings from waterfowl and/or other wildlife
- Erosion from stream banks or ditches
- Soil erosion from farm fields
- Pet waste
- None of these

Percent of respondents

Rural Residential
Agricultural
Barriers to Implementation

- I don’t have enough information about it
- Personal, out of pocket expense
- Insufficient proof of water quality benefit
- Time required
- My own physical abilities
- I want to maximize the amount of land I can use
- Not having access to the equipment that I need
- Hard to use with my land management system
- Lack of government funds for assistance

Percent of respondents

- Collecting, covering & containing manure
- Follow recommended fertilizer timing
- Maintain a setback
Outcomes of Tenmile Watershed Assessment

- Characterize Tenmile Watershed (mapping, land use and livestock surveys)
- Understand social factors affecting BMP implementation (landowner focus groups and landowner survey)
- Outreach to landowners is targeted and based on the watershed and community
- Better, strategic allocation of resources informed by the watershed assessment

*Expand to other watersheds for better planning, outreach, and implementation*
QUESTIONS?

Thanks Project Team!

- NRCS
- Nichole Embertson, WCD
- Meg Harris, WCD
- Aneka Sweeney, WCD
- Andrew Phay, WCD
- Local Partners