

How Can Universities Support State Nutrient Reduction Efforts?

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In two separately funded surveys, we asked state impaired waters program leaders and local water quality project managers how Universities in Region 5 could support efforts to reduce nutrient loading.

Survey 1: State Impaired Waters Specialists

Format: Online survey, fall 2011

Respondents: 19 state agency employees (TMDL program leaders), 10 university faculty. From IL, IN, MI, MN, OH, WI.

Questions: Open ended questions about what was working well, what was not working well, and what roles the Universities could play in relation to the four components of the Impaired Waters process:

- setting standards and criteria,
- monitoring and assessment,
- development of TMDLs, and
- implementation of restoration activities.

Three components of targeting, or focusing for effect, were identified. All three need more research.
(1) identifying critical sites of pollutant delivery.
(2) predicting the site-specific impact and efficiency of various practices and combinations of practices, and
(3) strategically implementing the right practices in the right places in the right order. This is a social science and a physical science challenge.

Agencies need to get the maximum information possible from limited monitoring budgets. This means developing effective monitoring designs and lower-cost efficient technology.

Consider the needs of agency standards when designing pollutant research; help refine and understand the impacts of agency standards. Integrate multiple criteria to achieve better impairment assessments

Training local staff in project management and watershed planning.

Evaluate and improve college curricula to better match the needs of water resource management.

State specialists noted that University staff sometimes need a better understanding of the Clean Water Act.

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Stakeholders told us University projects should focus on seven themes related to research and outreach:

Research

Targeting

Monitoring and Assessment

Pollutant Dynamics

Agricultural Systems

Outreach, Education, and Training

Train Local Staff

Train Students

Building Bridges

Respondents to both surveys emphasized the important role of Universities in facilitating bridge-building among diverse stakeholders.

Photo courtesy of the Natural Resources Conservation Service

Survey 2: Local Watershed Planners

Format: Phone interviews, winter 2012

Respondents: 20 watershed planners from IL, IN, MN, OH, and WI

Questions:

- Describe a successful nutrient load reduction project.
- What drove the success? Was it:
 - Watershed planning,
 - Incentive programs,
 - Economic forces, or
 - Rules and regulations.
- What was the impact of TMDL activity?
- What models and tools were used to estimate impacts?
- How can Universities help?

Local planners were particularly interested in measuring impacts of BMPs and developing methods for identifying the right places, practices, sequencing of activities to achieve results.
Local planners valued practical decision-making tools (e.g., P Index, WI's Manure Advisory System).

Understand and measure the influences on farmers' land management decisions. Use this information to design more effective programs and policies.

Hydrology of pollution

- What's the contribution of large floods vs. base flow?
- Sediment delivery processes from field to stream.
- Why don't P levels decline when practices change? (lag time issues, thresholds, targeting, other sources?)
- Understand the contribution of in-stream sediment sources and how to address.
- Solutions to hydrologic challenges

A significant need for many local planners was ag systems research:

- Generate creative ideas and develop practical, effective, profitable, region-specific solutions to the agronomic challenges of conservation cropping systems.
- Define a best managed landscape, e.g., how many acres need to be perennials and non-cropped land?

Give local staff more guidance in principles of behavior change, building community capacity, and other social science skills.

Local planners were interested in increasing the consistency of messages from the various sources. They also wanted researchers to be sure to include them in their research and use the insights of local experience.

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