



Survey Said! Future Water Research Agenda for Minnesota

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Today, you will hear....

- Why now?
- Process!
- Who participated?
- What we learned.
- Lessons learned!



Background

- 2008
- Value of symposium
- Why now?
- Planning team
 - U of M
 - Science Museum of MN
 - Natural Resources Research Institute
 - Storm water Coalition
 - MPCA, MDA, BWSR, DNR



Process

2008

- 2 days
 - 4 topics:
 - Standards/monitoring
 - Total Max. Daily Load
 - Implementation
 - Effectiveness Monit.
 - Speaker
 - Breakouts
- Final Report

2013

- 1 day
 - Multiple topics
 - Kick-off panel
 - 3 breakouts
 - First two – 6 topics
 - Last – 6 different topics
- Final report - survey

Survey Results Example

<i>Implementation</i>		
Answer Options	Rating Average	Response Count
Development of tools to predict cumulative effects of multiple BMP implementations in a watershed.	4.08	50
Effectiveness of BMPs that address source issues directly, including hydrologic retention, use of perennial plant cover, and soil health management in Minnesota's soils and climate.	3.90	50
Cost/benefit analysis for targeting vs. not targeting BMPs within a watershed.	3.78	50
Selection of BMPs to reduce multiple impairments, accounting for conflicting outcomes for different pollutants of some BMPs.	3.78	51
Development of protocols for standardization of monitoring of BMP effectiveness	3.70	50
BMP effectiveness using expected climate change impacts (changing precipitation patterns, freeze thaw cycles, etc.).	3.65	49
Understanding intractable pollutants (chloride & bacteria)	3.59	49
Economic analysis of protection vs. remediation.	3.56	50
	<i>Answered</i>	52
	<i>Skipped</i>	2

Participants

- Suggested participants
- “Word of mouth”
- Focus on policy makers, implementers and researchers



Research Themes and Needs

- Standards & Assessment
 - Tools, methodologies, data
 - Contaminants of emerging concern, climate impacts
- Watershed Processes
 - Natural background, evaluate existing standards
 - Build on new methodologies
- Implementation
 - Best Management Practices
 - Baseline: social & physical



Research Themes and Needs

- Effectiveness
 - Evaluate cost/benefit of TMDLs
 - Practices at various scales
- Stakeholder Engagement
 - How to do engagement
 - Understand barriers and motivation
- Ecosystem Services
 - New concept
 - Assessment of ES



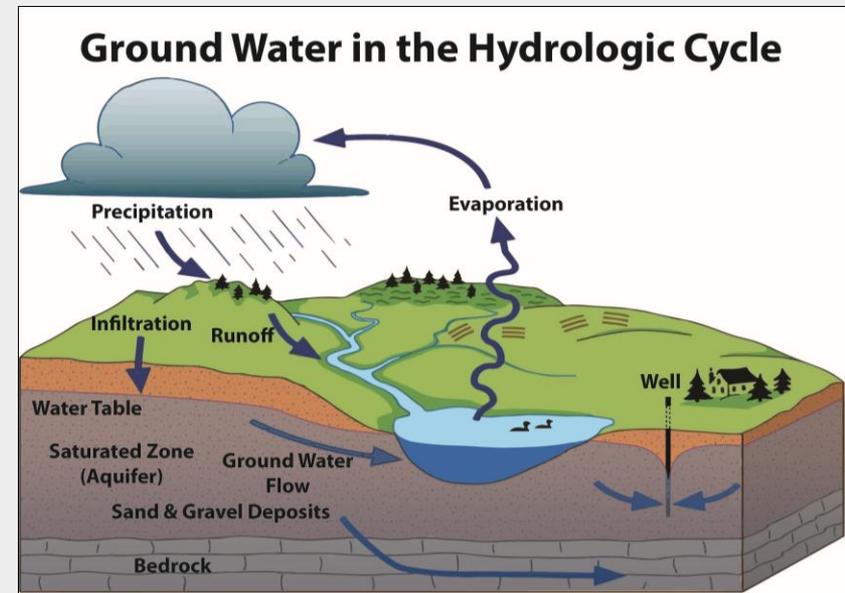
Research Themes and Needs

- Agriculture/Forestry
 - Understand current system
 - Research new practices
- Mining
 - Groundwater
 - WQ standards – sulfates
- Storm water
 - Current practices
 - Reuse



Research Themes and Needs

- Wastewater
 - Contaminants of emerging concern (CECs); re-use
- Biology
 - Integrate existing research into TMDLs and WRAPs
 - Non-natural substances
- Groundwater
 - Baseline, recharge/withdrawal
 - Economics, climate



Lessons Learned

- Assess this methodology – determine value
- Clear facilitation instructions
- Non-university participants are important
- Survey?
- Broader invitation



Conclusions

- More holistic approaches
- Integrate social and natural sciences
- Contaminants of Emerging Concern
- Groundwater
- Ecosystem Services
- Climate impacts



Thank to our sponsors and planning team!!!

Co-Sponsors/Funders

- Board of Water and Soil Resources
- MN Department of Agriculture
- MN Department of Natural Resources
- MN Pollution Control Agency

Planning team

- Jim Almendinger
- Richard Axler
- John Baker
- Adam Birr
- Greg Eggers
- Leonard Ferrington
- John Gulliver
- Cheryel Konate
- Timothy Larson
- Chris Lenhart
- David Mulla
- Randy Neprash
- Don Pereira
- Faye Sleeper
- Joshua Stamper
- Mark Tomasek
- Steve Woods

Minnesota Water Research Digital Library

Problem



- Scattered research material
- Gray literature hard to find
- Existing water research databases differ in scope

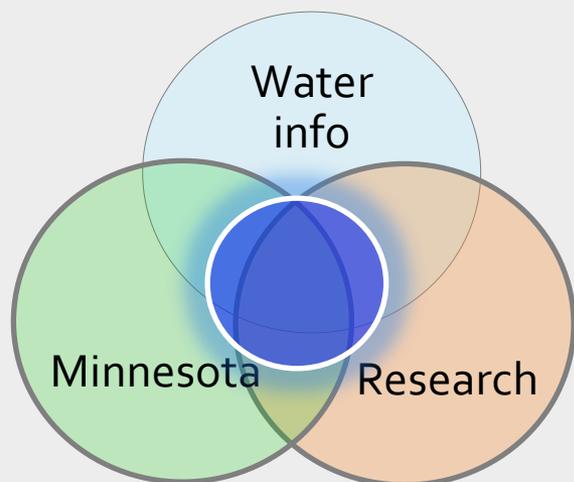
Solution



- Centralized inventory
- Searchable database
- Decentralized data entry

Minnesota Water Research Digital Library

What content to include?



- Water research – all topics
- Minnesota focused
- Recent (2000 forward)

What data for each record?

Fish community response to evolving channel complexity in an agricultural headwater system

T.D. Crail, J.F. Gottgens, and A.E. Krause

Abstract: Headwaters in many watersheds in the midwestern United States are often dominated by ditches that are dredged to drain farmland and are maintained as homogeneous channels. These ditches may provide important headwater habitat for fish but are managed as such. With reduced dredging, these ditches tend to stabilize their cross-section profile with patchy sediment deposits and plant growth. We tested the impact of such complexity on the structure of fish communities in agricultural ditches of the upper Ohio River (Ohio), a western Lake Erie tributary, by comparing twelve 20 m (66 ft) channels with and without such complexity (heterogeneous [Ht] and homogeneous [Ho] respectively). Fish communities were sampled at low water with block seines in each of eleven times between June 2005 and October 2006. Temperature, pH, turbidity, dissolved oxygen, conductivity, and discharge were comparable between Ht and Ho segments during each sampling event. A total of 10,843 fish representing 24 species were identified, assessed

- Data *from* the document
- Data *about* the document
- The document or a link to it



Thank you

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**Report at:
<http://z.umn.edu/waterresearch>**