Groundwater Quality Monitoring In Minnesota

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MDA – Monitoring Unit
November 9, 2010

Today's Presentation

- Statutory requirements
- Overall monitoring goals and objectives
- Historical and current monitoring
- Program design
- How to Obtain Results
- Questions?

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Why Does MDA Monitor Water Quality ?

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Monitoring & the Law

- *Pesticide Control Law*
  - MDA responsible for determining impact on environment and development of a Pesticide Management Plan

- *Groundwater Protection Act*
  - Determine common detection
  - Develop, promote and evaluate BMPs
  - Consider regulation if ineffective

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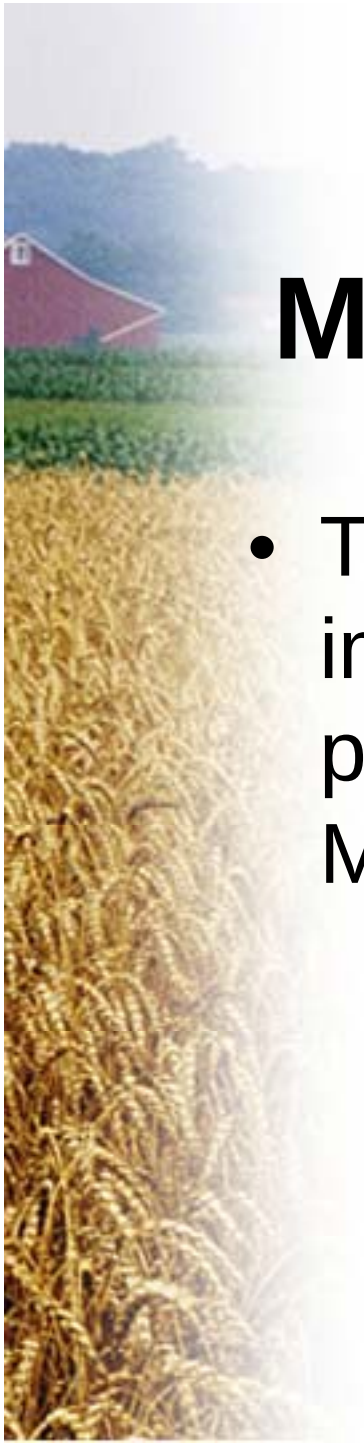

Monitoring Program Goal

- To provide information on the impacts of the routine use of pesticides on the quality of Minnesota's water resources.

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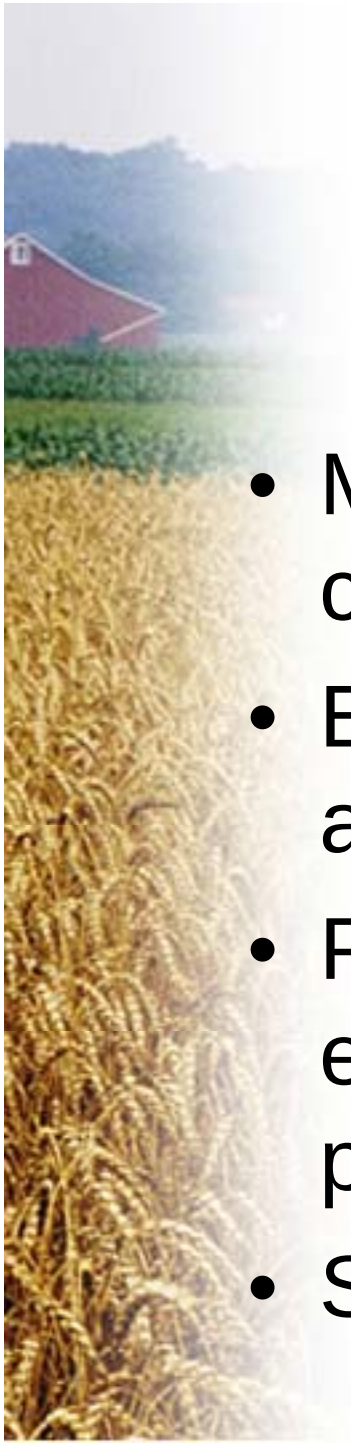

Monitoring Program Objectives

- Measure occurrence and concentration of pesticides.
- Evaluate land use, pesticide use, and hydrologic characteristics.
- Provide information on effectiveness of management practices.
- Share the information.

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MDA Pilot Project

- State-wide groundwater monitoring
- Approximately 10 yrs. of data
- Compounds analyzed for:
  - Atrazine plus degradates
  - Alachlor
  - Cyanazine
  - Metolachlor
  - Metribuzin
  - Acetochlor

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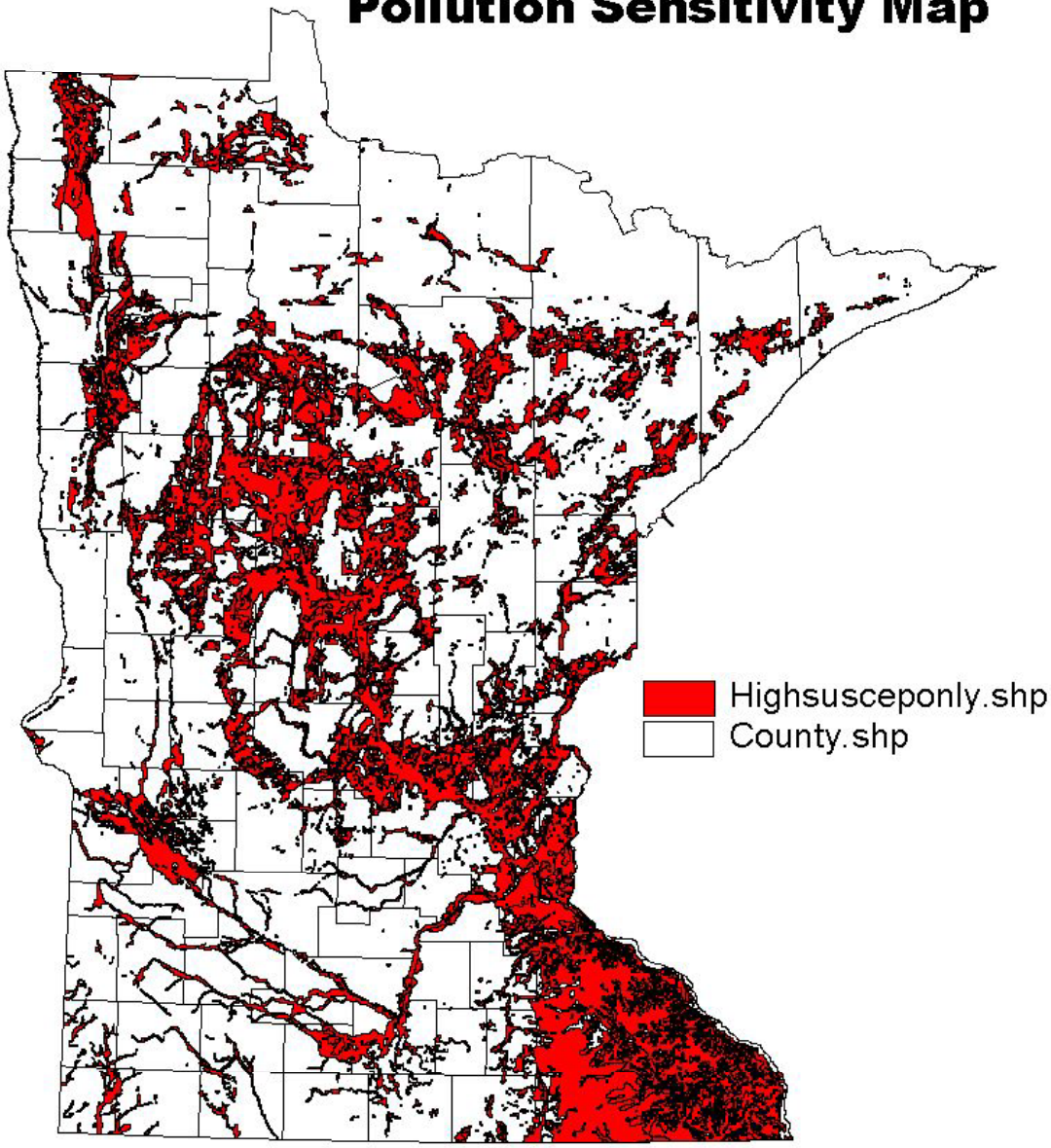
PCA/DNR High and Highest Pollution Sensitivity Map



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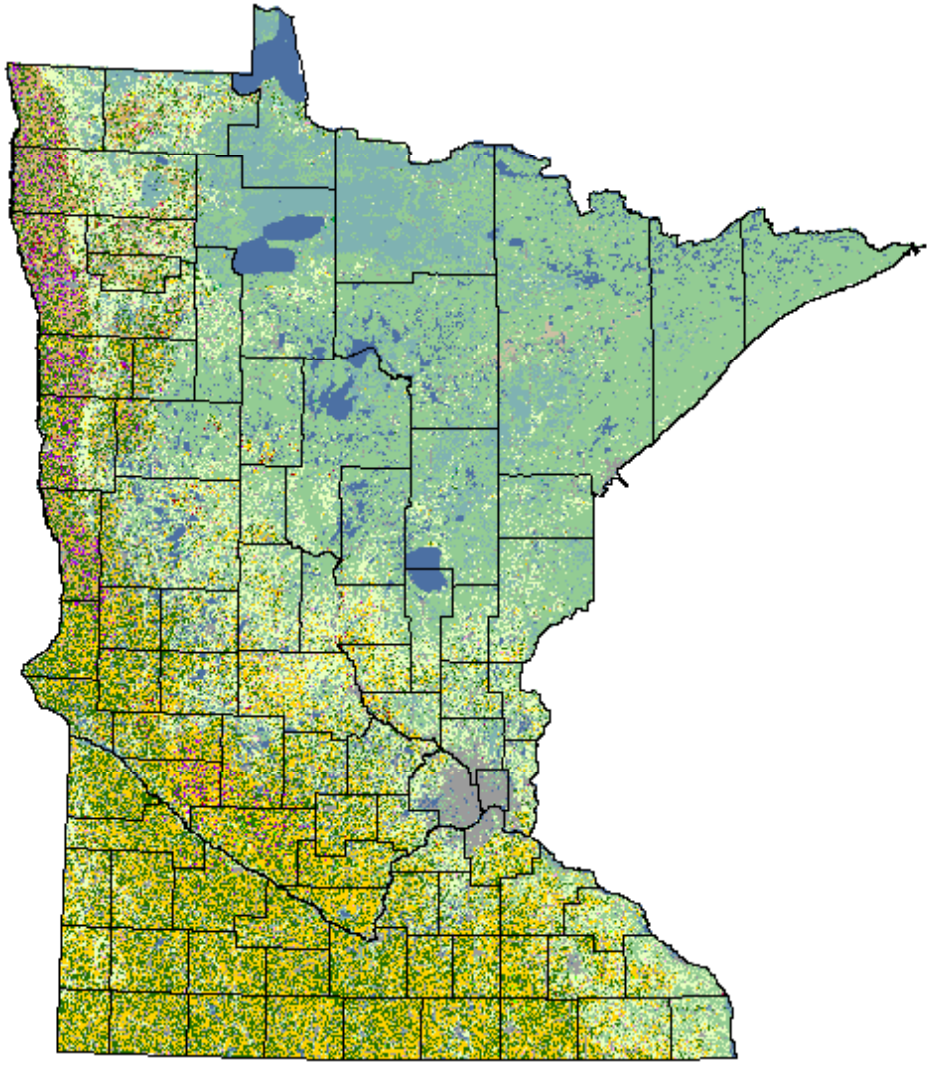
USDA, National Agricultural Statistics Service, 2008 Minnesota Cropland Data Layer



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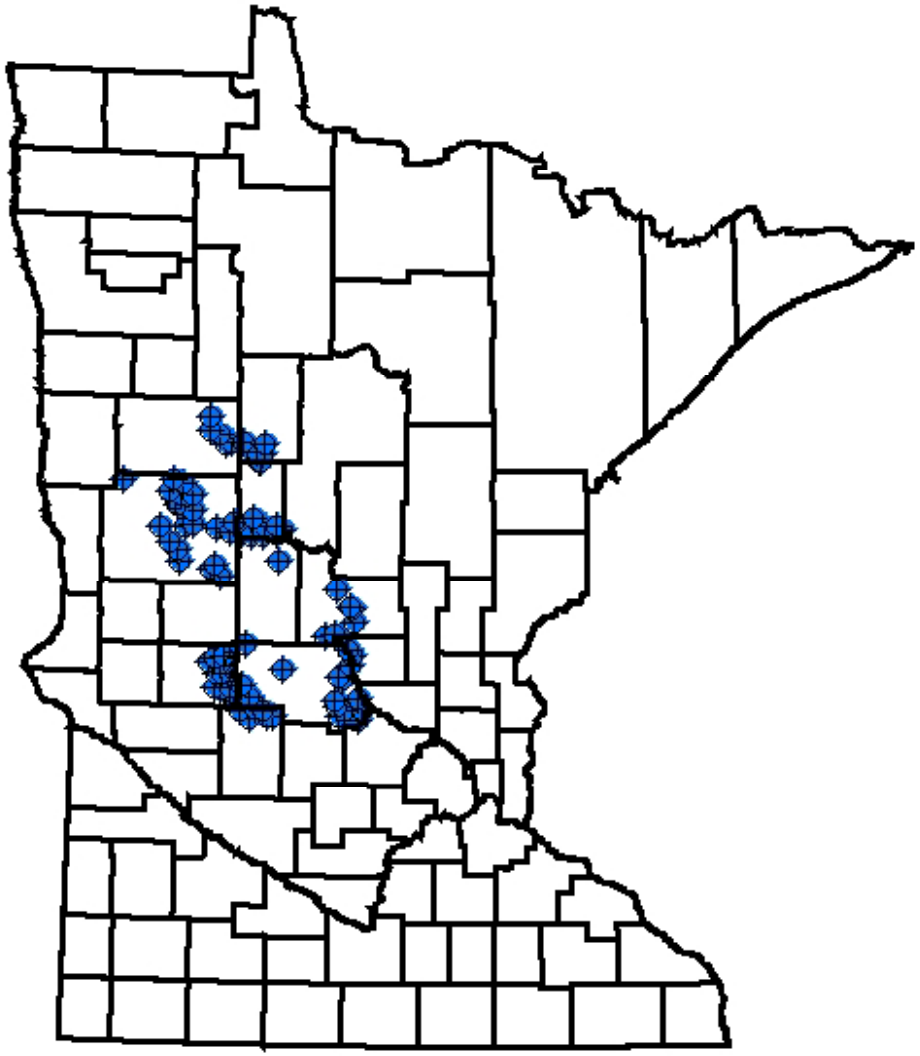
Central Sand Plains



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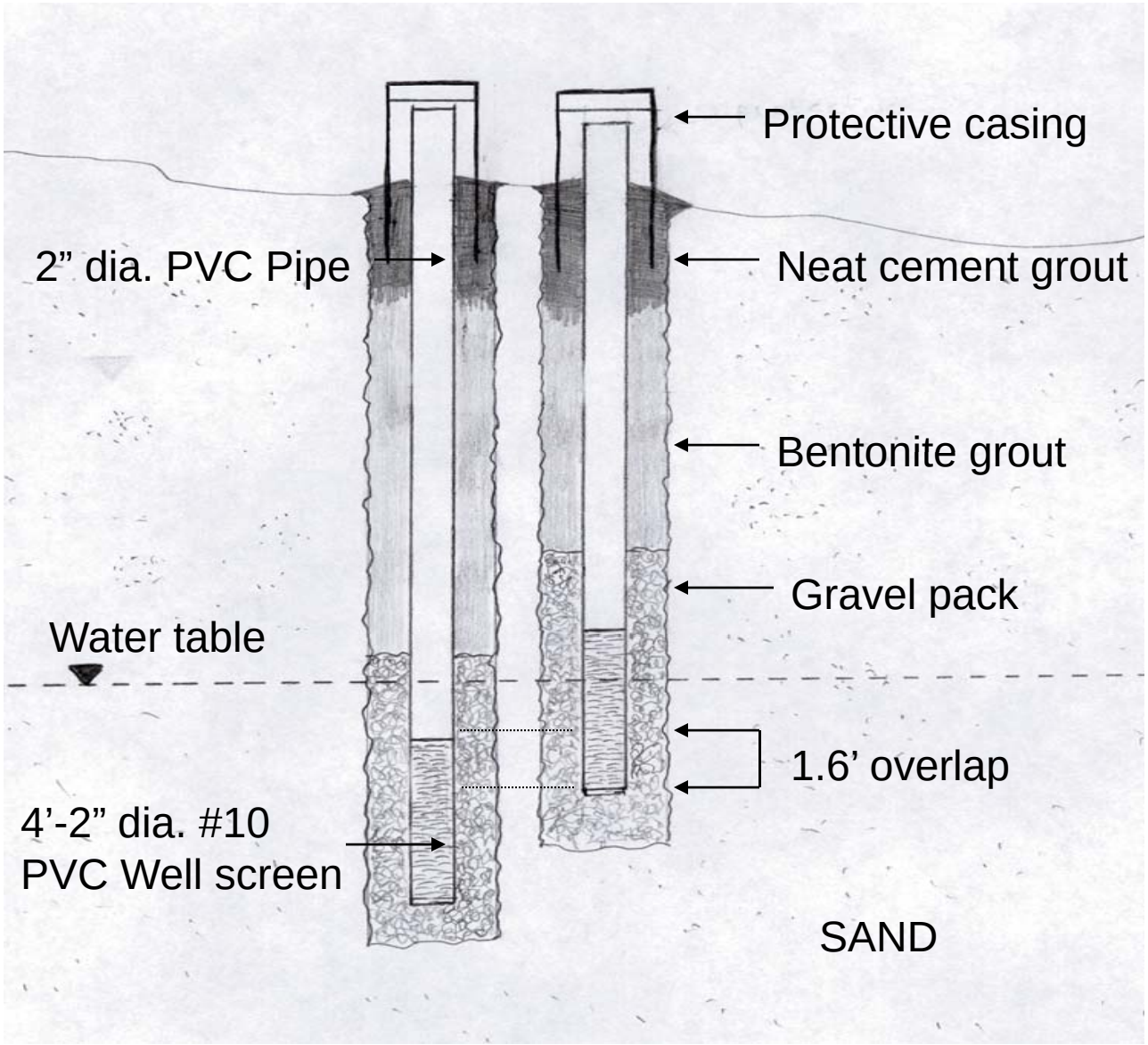
Typical Monitoring Site Installation



Well Nest

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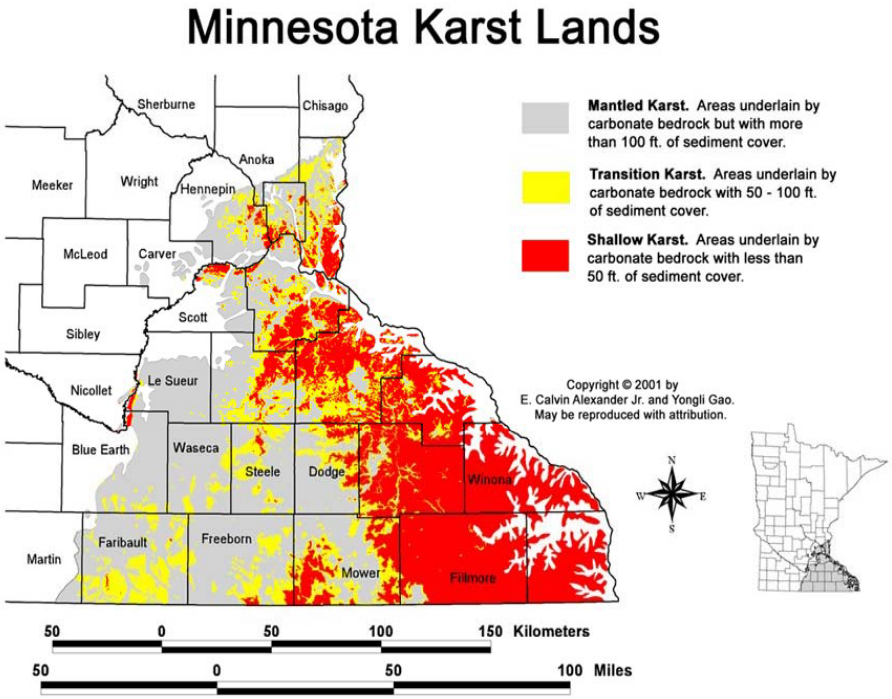
2006/10/05

Monitoring Groundwater in Southeast Minnesota's Karst

- **New monitoring wells are expensive**
- **Sampling springs is the most appropriate option**
- **2009 began sampling private drinking water wells**



Sinkholes, disappearing streams, caves, and springs

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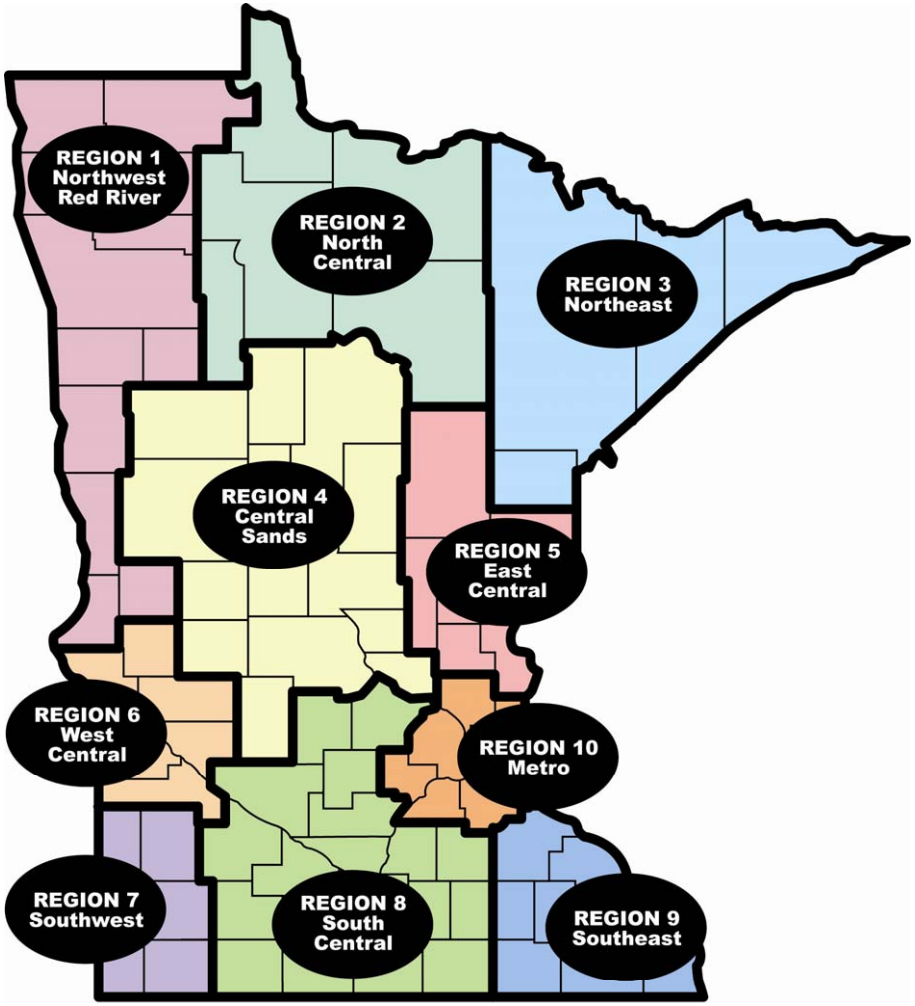
Pesticide Monitoring Regions



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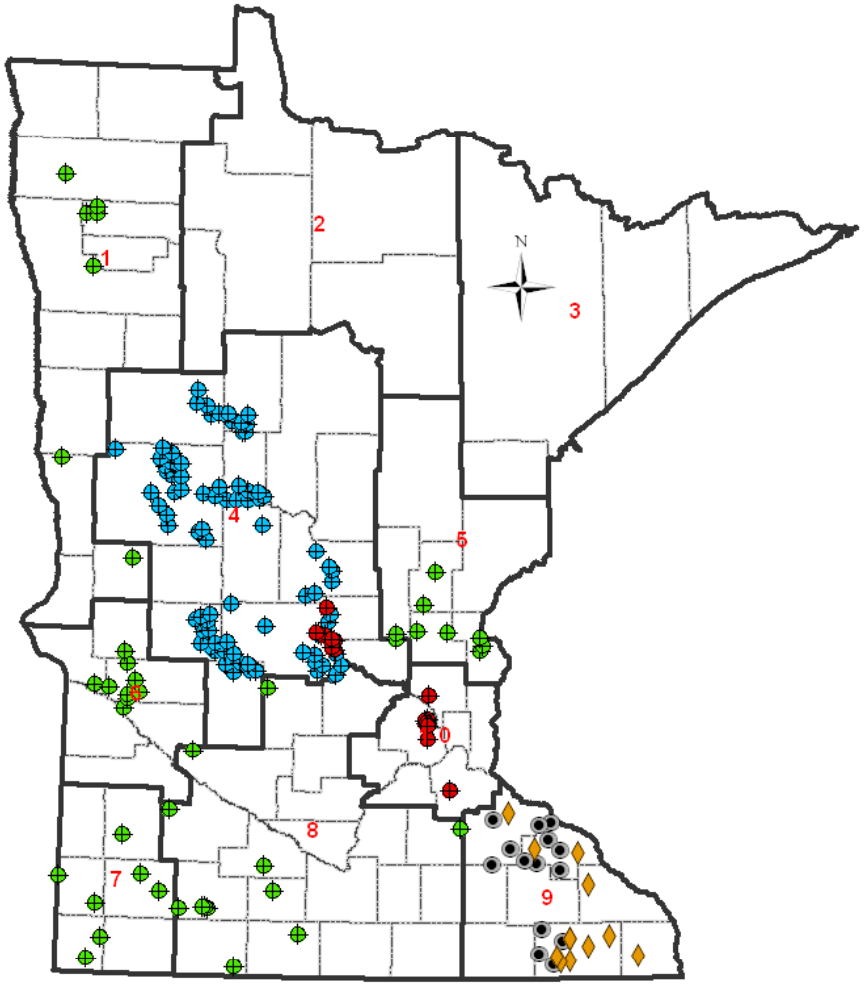
Groundwater Monitoring Sites



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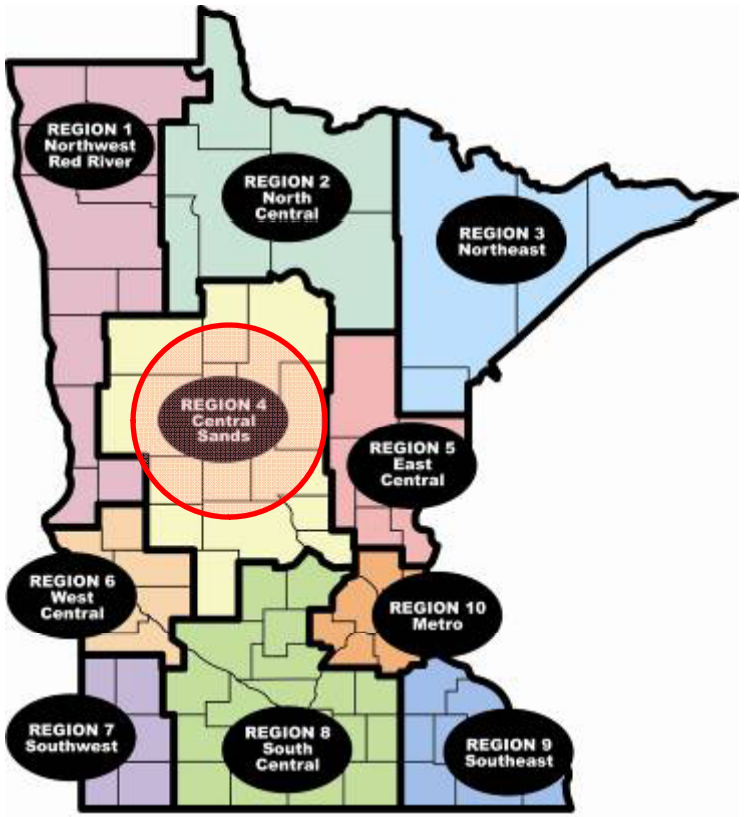
2010 Groundwater Work Plan

- Sampling of monitoring wells in PMRs 1, 4, 5, 6, 7 and 8
  - PMR 4 (85 sites sampled once a year) in May and November
  - Others (45 sites sampled twice a year) in April and October
- Sampling of 12 springs and 15 domestic drinking wells in PMR 9 (southeast karst)
  - 3 springs quarterly
  - 9 springs four times with oversampling in spring
  - 15 wells once a year
- Sample 20 urban wells in partnership with MPCA (PMRs 4, 9 and 10)
  - August and September



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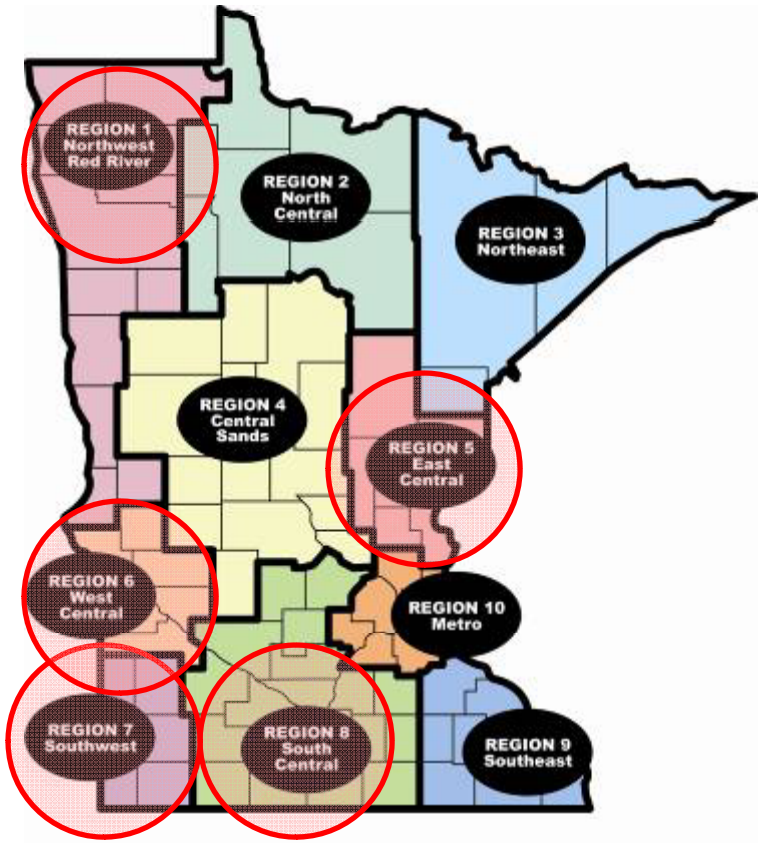

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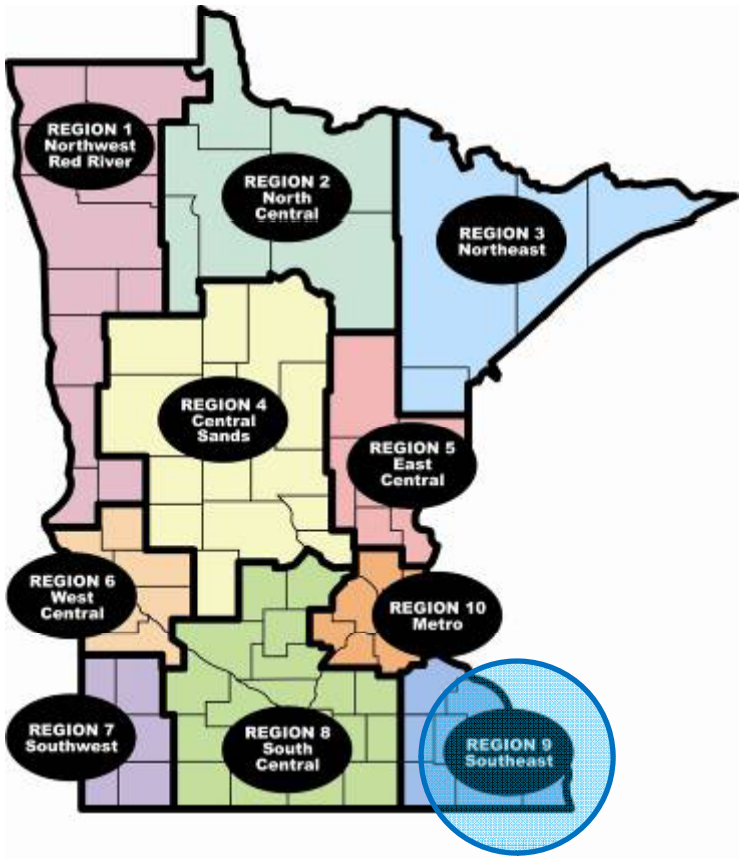

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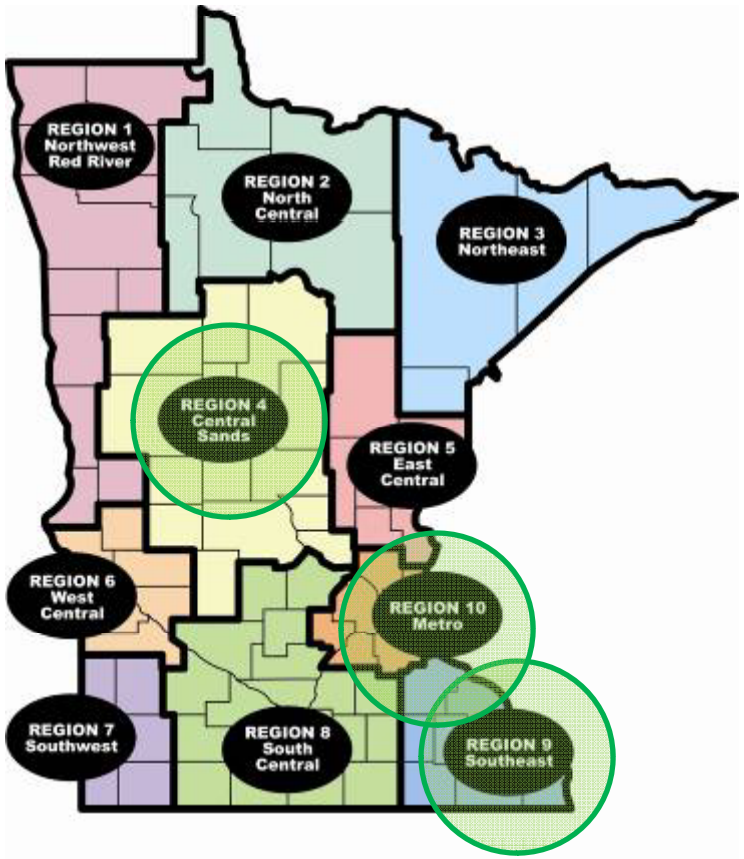

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What Do We Look For?

- Pesticide Use & Patterns of Use
- Environmental Fate and Transport Properties
- Analytical Method/ Laboratory Analysis
- Previous Pesticide Detections
- Costs

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Expanded Lab Capacity and New Methods

- Previous to 2010, three types of methods
  - Base Neutral Pesticides
  - Chloroacetanlide Degradates
  - Acid Herbicides
- Limited sample numbers
- Funding in 2008 – LCCMR
- Funding in 2009/10 – Clean Water Fund

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Expanded Lab Capacity and New Methods

- Approximately 100 analytes
- 1000 samples in 2009,1300 samples in 2010, anticipating 1600 samples in 2011
- GC/MS – contains the analytes from the Base Neutral scan in the past, along with new analytes.
- LC-MS/MS – contains the analytes from both the Degs and the Acids, along with new analytes.

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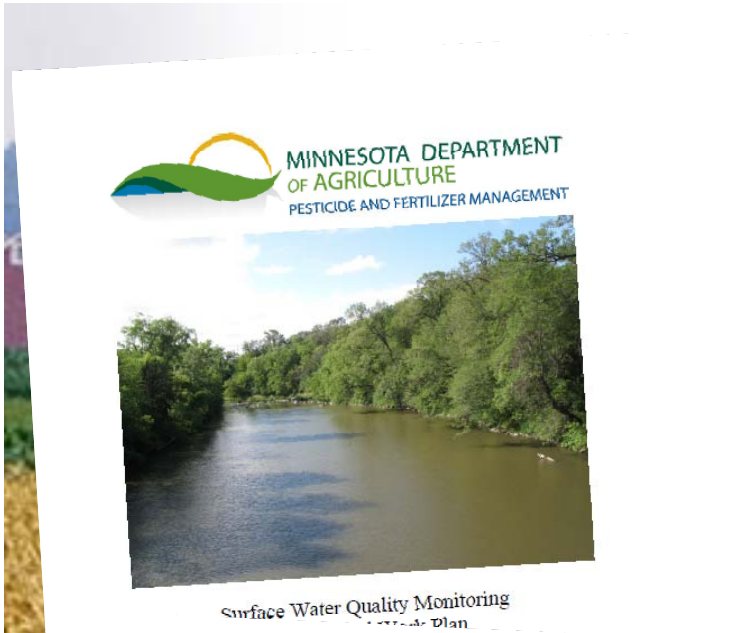
Groundwater monitoring results and Where to find them?



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PESTICIDE AND FERTILIZER MANAGEMENT

2009 Water Quality Monitoring Report

January – December 2009

Published May 2010

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MAU-10-100

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Web site contains PDF ments that require e Acrobat for viewing.

MPCA Home > MPCA Searchable Environmental Data > Environmental Data Access

Environmental Data Access

The MPCA's Environmental Data Access (EDA) system allows users to view and download environmental data that is collected and stored by the agency and its partner organizations. Users currently have access to:

- Surface water quality data
- Air quality data
- Ground water data

Additional Information

- Background on the EDA system
- Fact sheet about EDA
- Comments and questions
- Related Links
- Disclaimer

Background on EDA System

Easily and readily accessible monitoring data helps Minnesotans play an active role in protecting and improving their environment. Although the MPCA and other organizations collect large quantities of environmental data, much of it has been difficult to access in the past.

The Minnesota Legislature created the EDA initiative in 2001 to address those deficiencies in the availability of surface water quality data from MPCA and others. In 2003, EDA went online providing access to water quality data through a map-based system.

The final phase of the EDA project access to ground water data was completed in 2008.

Comments, Feedback and Questions

Internet

QUESTIONS?

http://www.mda.state.mn.us/monitoring

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(320)223-6600