

Water Research, Inventory & Monitoring in Montana

Presentation to the Legislative
Water Policy Interim Committee

September 13, 2011



WPIC
September 13, 2011
Exhibit 1

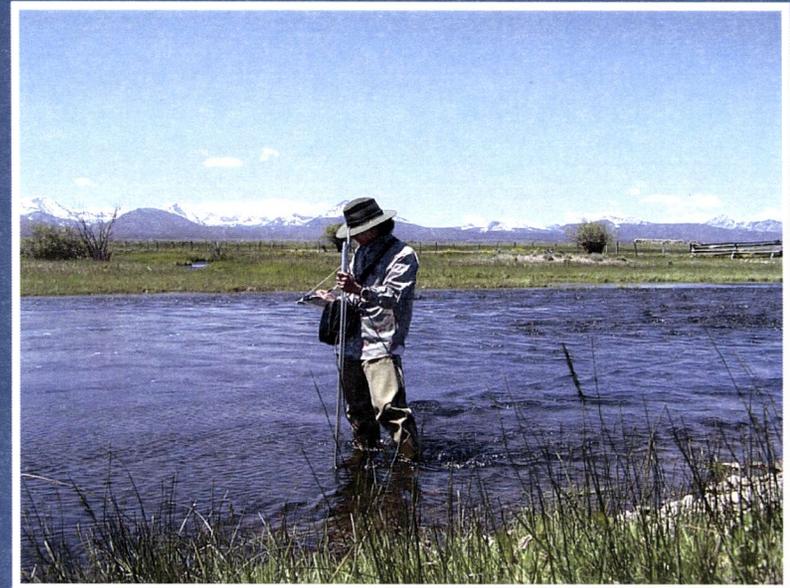
Purpose of the Presentation

- Summarize water research and data gathering activities
- Identify involved organizations
- Serve as springboard for committee deliberations



Research

Activity that generates new knowledge about the way the world works. Research results are published in peer-reviewed literature and applied both within and outside the boundaries of the state.



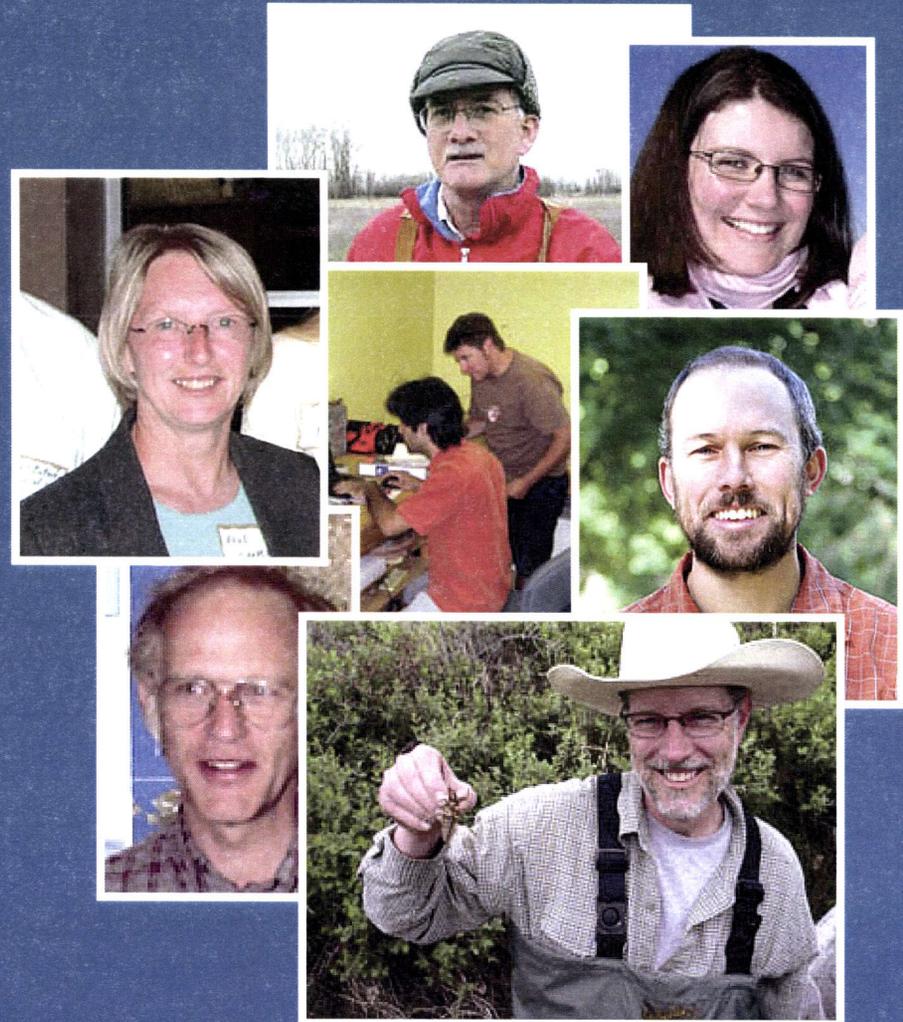
Principal Water Research Organizations: UM & MSU



The two universities host water research projects with a total value exceeding \$15 million each (in a combined \$170 M research portfolio). The great majority of the funding is federal.

Water People at UM, MSU

About 100 faculty members & research associates conduct water research; 200 students at the undergraduate & graduate levels acquire direct research experience



Subjects of Research



- Water engineering
- Hydrology
- Snow and ice behavior
- Climate
- Aquatic biology and fisheries

Water research

Flathead Lake Biological Station

Understanding Floodplain Dynamics



Water research

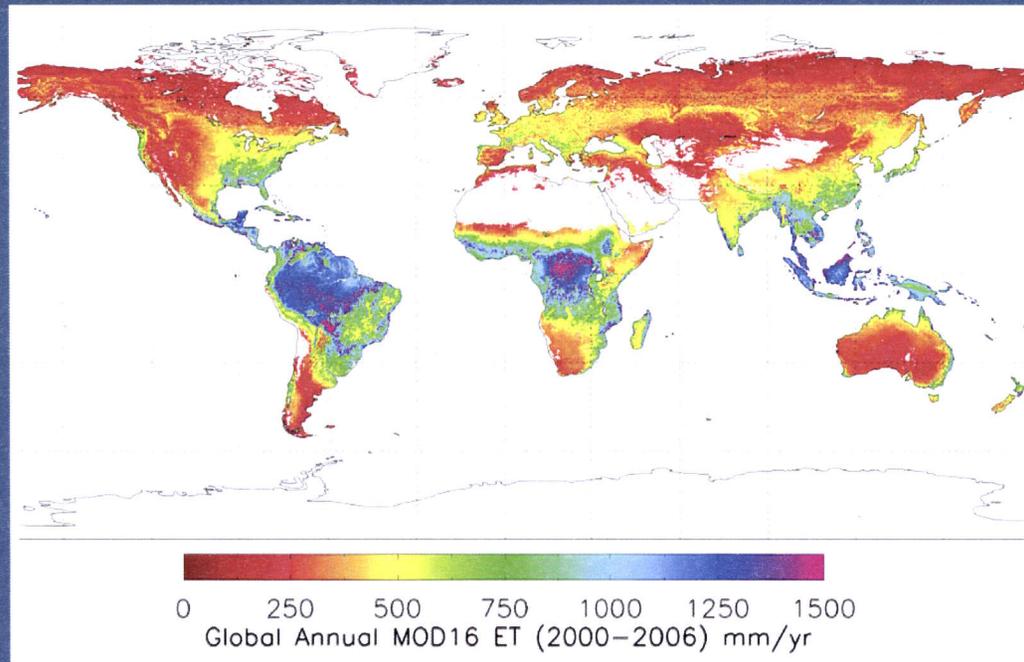
MSU Thermal Biology Institute

Applying the Tools of Thermophiles



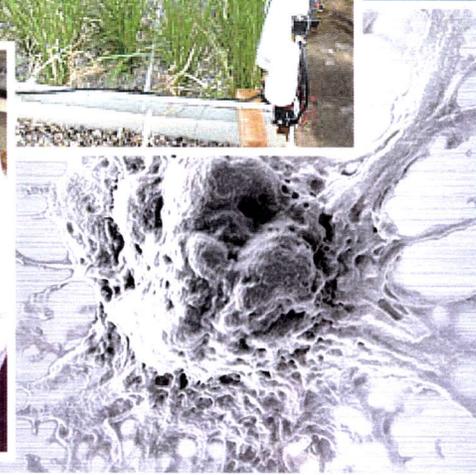
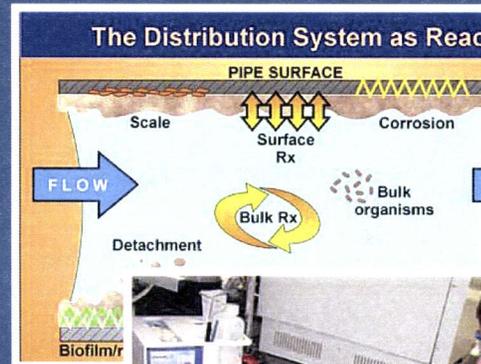
UM Numerical Terradynamic Simulation Group

*Cutting-edge Computation to Understand
Global-scale Processes*



MSU Center for Biofilm Engineering

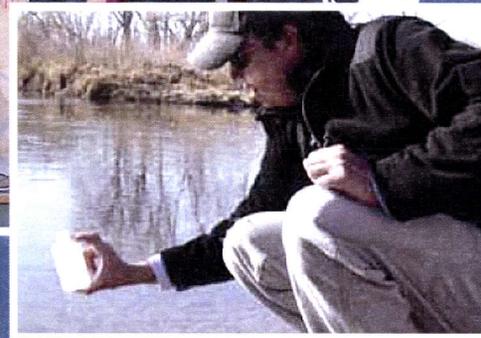
How Microbes Colonize Surfaces



Water research

NSF EPSCoR

Building Montana's Research Capacity

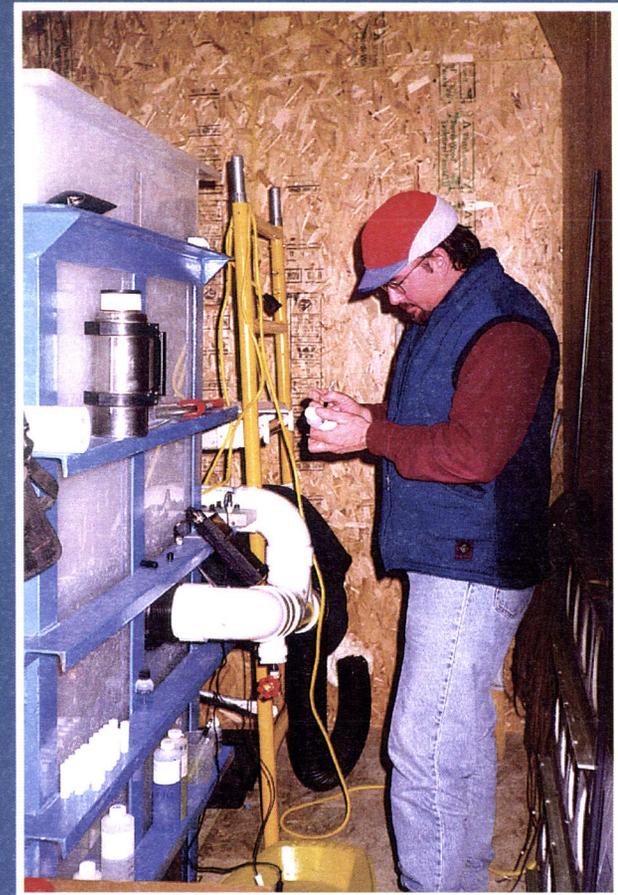


VOEIS

The Virtual Observatory and Ecological Informatics System

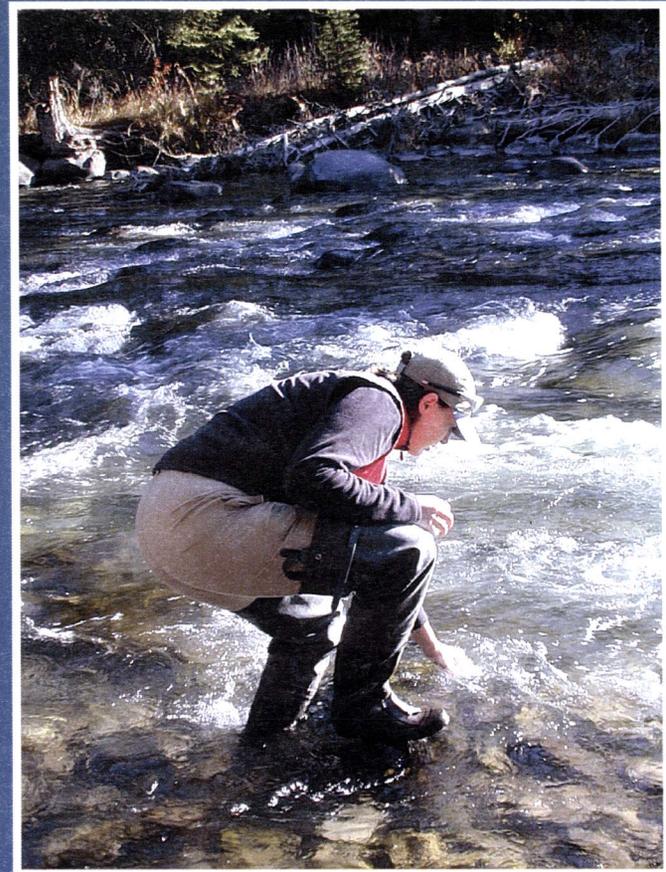
Additional Research

- Montana Tech – hydrology, water quality, remediation
- USGS – salinity, SAR methods development
- USGS – how do wetlands respond when land goes out of CRP?
- Montana DEQ – projects to support rule-making



Water Inventory & Monitoring

- Conducted by state and federal agencies
- To answer immediate questions
- To serve long-term forecasting and research data needs
- To characterize particular water resources or situations

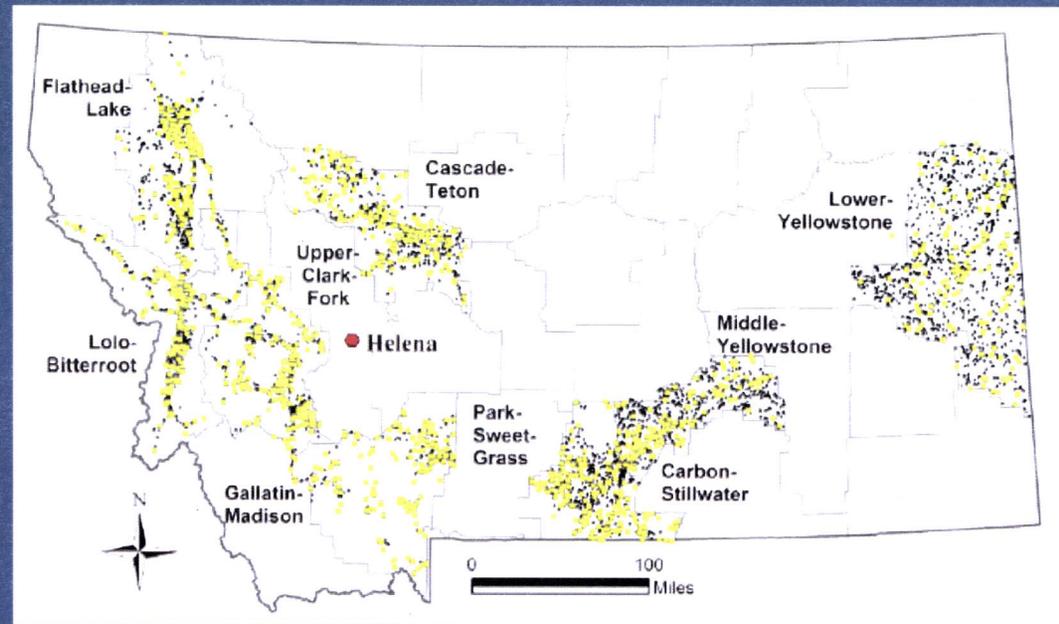


Ground Water Assessment Program

- Created by the 1991 Legislature
- Operated by the MT Bureau of Mines & Geology
- Maps the distribution and documents the water quality and physical properties of Montana's major aquifers
- To date, 42 maps have been published

Ground Water Assessment Program

- Nearly 9000 wells have been visited
- Well information is available via GWIC, the Ground Water Information Center



Ground Water Investigation Program

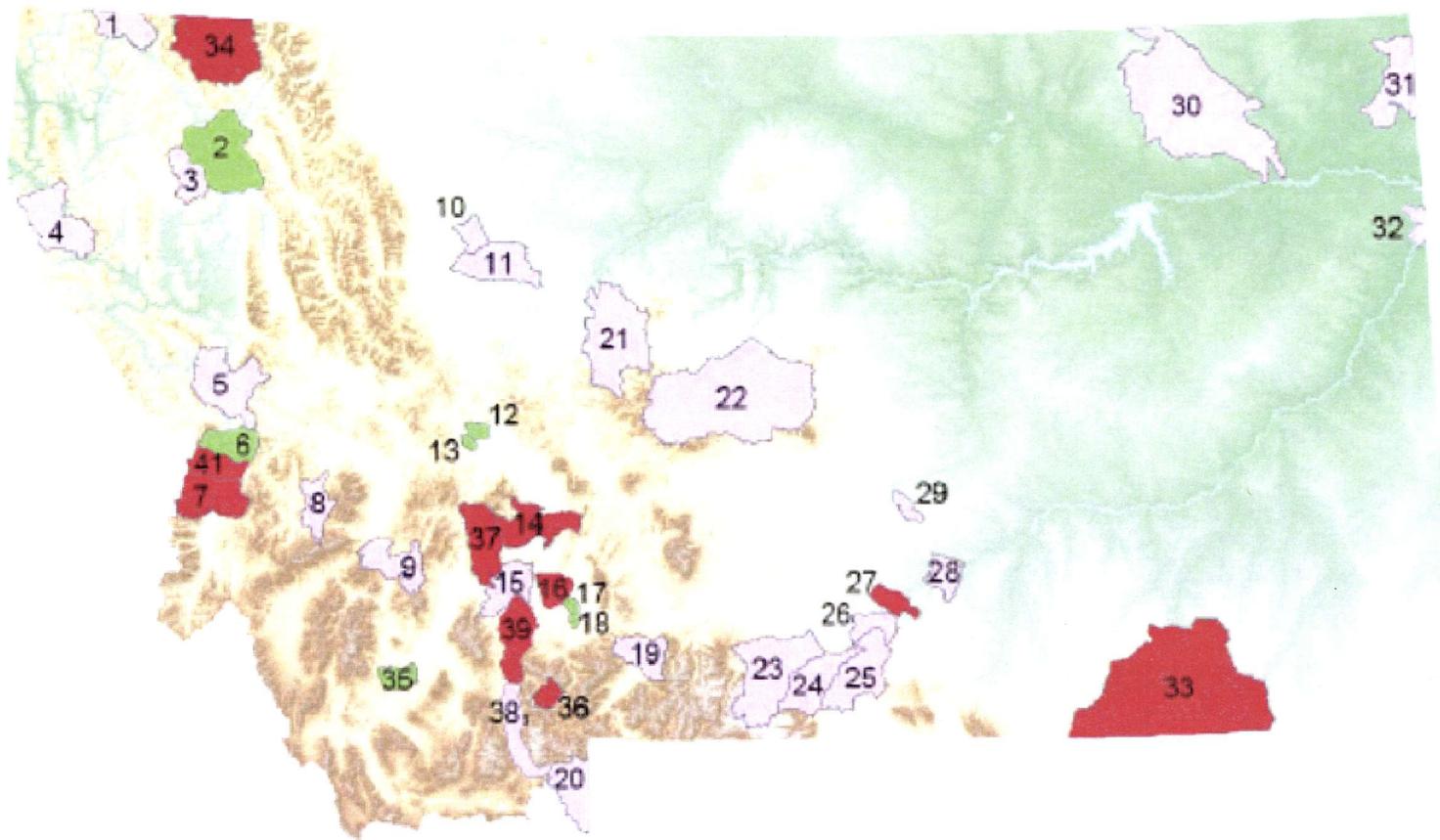
- Established by 2009 Legislative action
- Detailed studies focusing on problem areas
- Areas deserving study can be nominated by any citizen
- Seven studies completed 2009-2011, nine more nominated for 2011-2013

MAP OF PROJECT AREAS:

Green, projects for 2009–2011

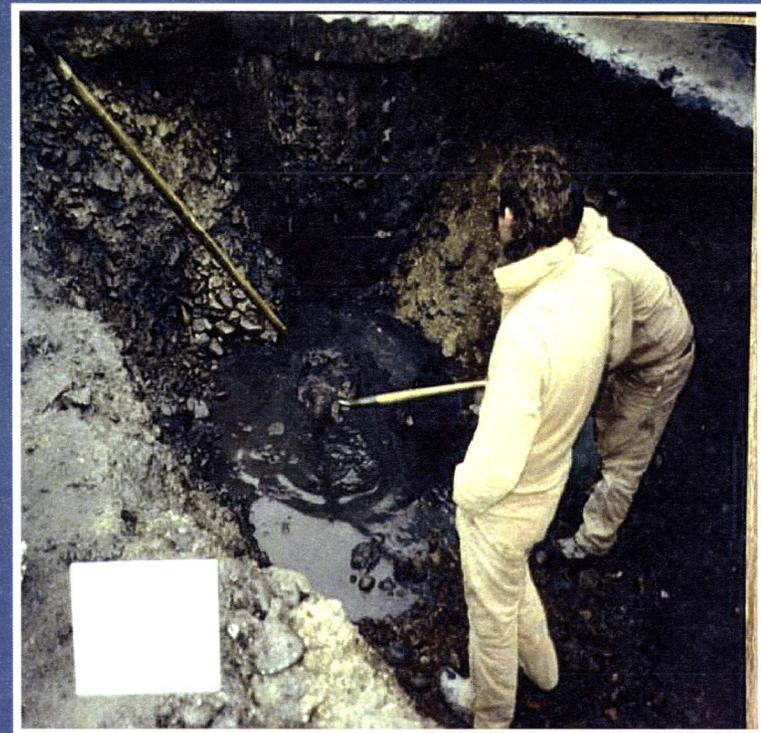
Red, planned projects for 2011–2013;

Pink, proposed future GWIP projects.



Other Special Studies

- Salinity monitoring in the Tongue River – USGS
- Site assessment prior to remediation – Natural Resource Damage Assessment Program, Montana Department of Justice
- Hazardous-waste site assessments – responsible parties, contractors and regulatory agencies



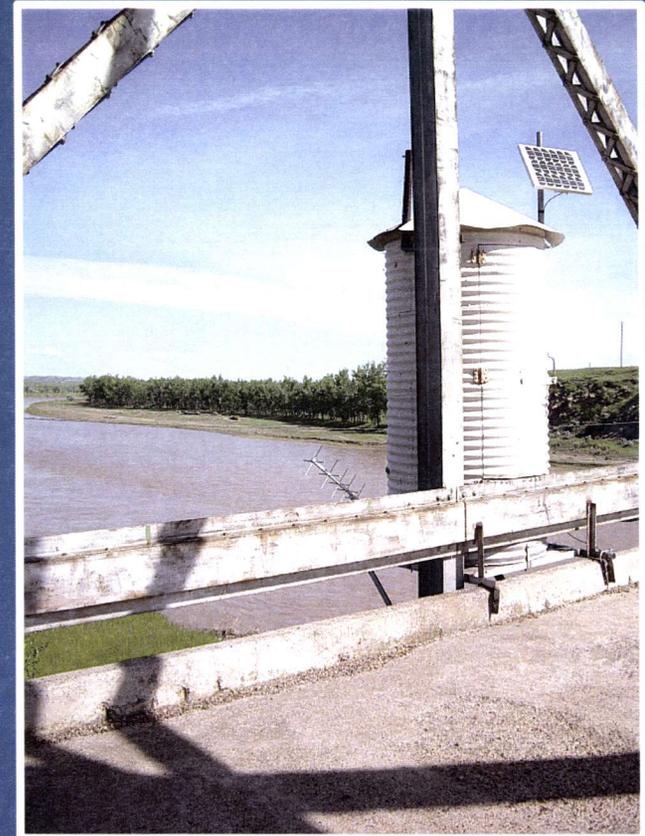
Other Special Studies

- Wetland mapping and amphibian surveys – Montana Natural Heritage Program
- Floodplain re-mapping – Federal Emergency Management Agency, with the DNRC
- Water quality characterization for establishing TMDLs and assessing Clean Water Act “use attainment” – Montana DEQ
- Groundwater pesticide testing – Montana Department of Agriculture

Long-Term Monitoring

USGS Stream Gaging

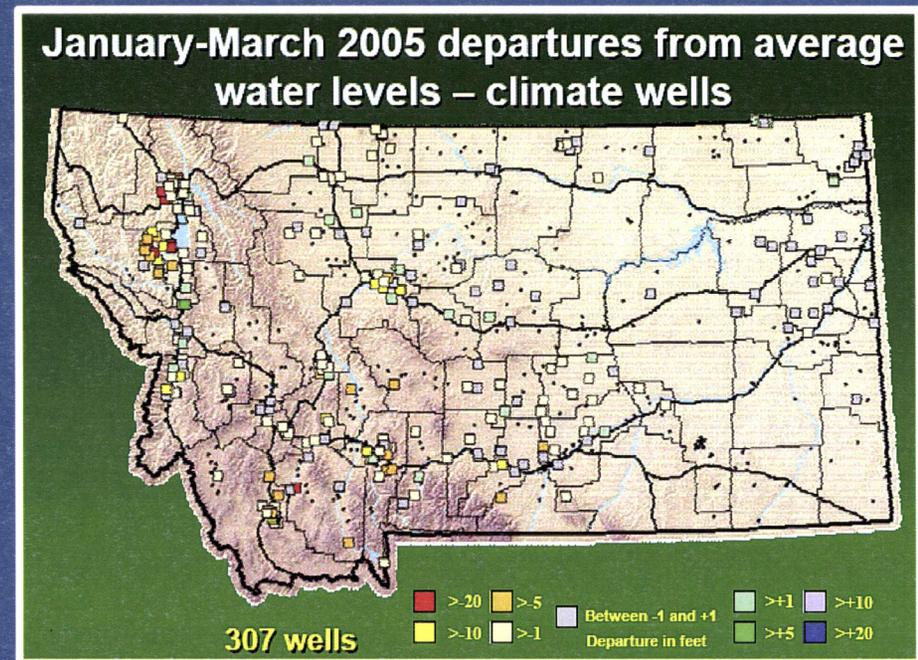
- 125 Montana sites report daily
- Data available online
- Small number of sites reporting continuously, in real time
- Very little water quality information



Long-Term Monitoring

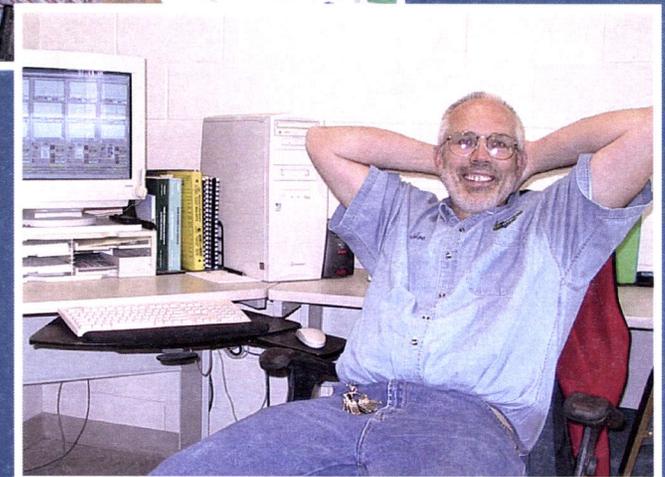
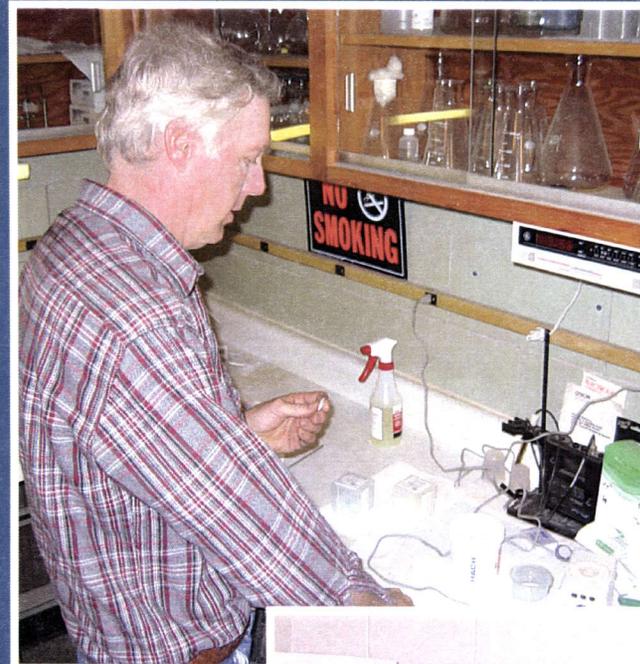
MBMG Ground Water Monitoring

- Water table elevations from 900 wells, visited on a 5-7 year rotation
- Some water quality data
- Available at no cost through Ground Water Information Center



Long-Term Monitoring

- Public water and wastewater utilities must monitor the characteristics of their treated water/ wastewater
- Public water systems (~2000) must report to their customers every year



Long-Term Monitoring

- National Weather Service – weather data and forecasting
- USDA Natural Resources Conservation Service – snowpack data, drought and streamflow forecasting
- USDI Bureau of Reclamation – AgriMet and reservoir data
- Montana DNRC – status of state-owned reservoirs
- Local water quality districts – monitoring of water-table elevations
- Northwest Power & Conservation Council – projection and analysis of water power resources in the Columbia Basin

Questions & Comments?



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