

Minnesota County Geologic Atlases for Water Resource Management

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Minnesota Geological Survey



Ecological and Water Resources Division



County Geologic Atlases are a set of maps and reports that show the distribution of rock, sediment and groundwater in a county

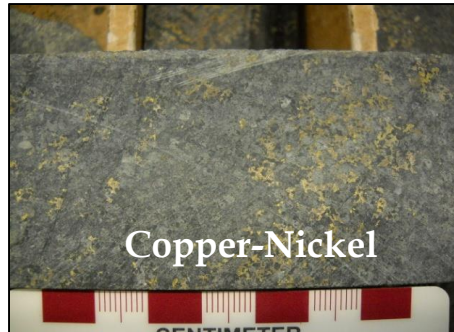
This information is

CRITICAL to

- Predict
- Plan
- Protect

Minnesota's natural resources including:

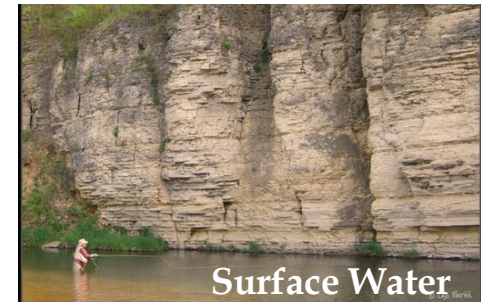
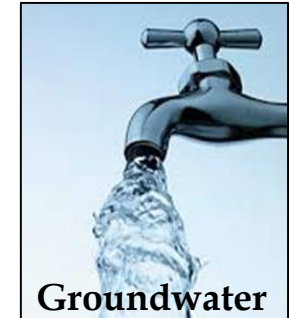
Minerals



Aggregate

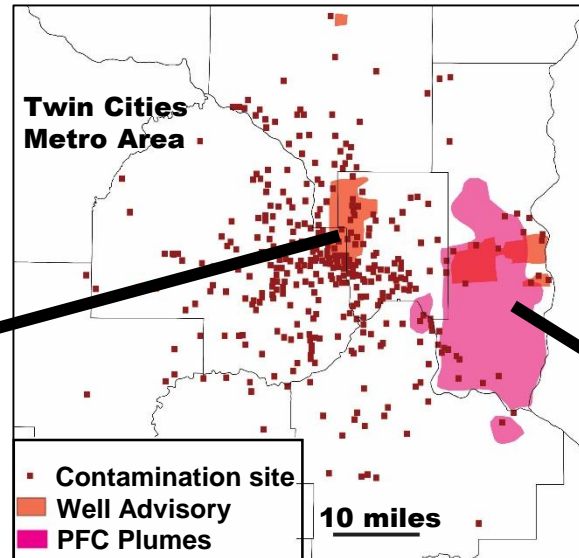


Water



Groundwater Quality Issues

Urban



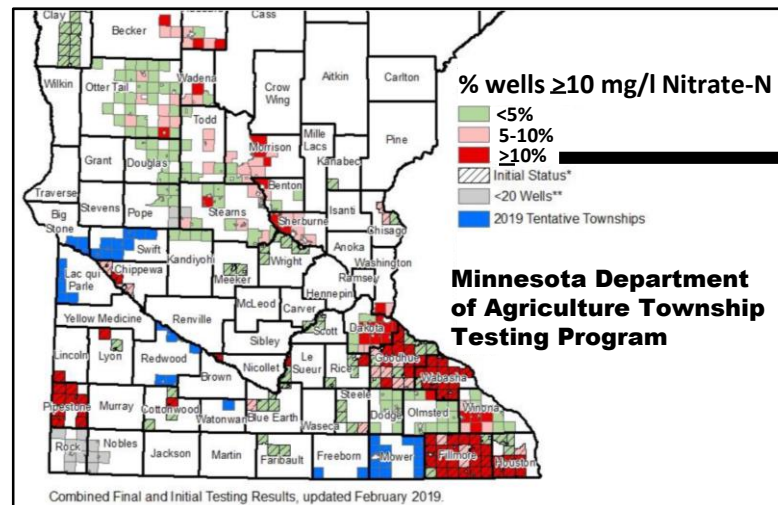
Twin Cities Army Ammunition Solvents (e.g. TCE)

- > \$150 million for remediation and ongoing treatment

PFC plume(s)

- ~140,000 citizens impacted
- tens of millions spent
- \$720 million acquired to provide clean drinking water

Rural

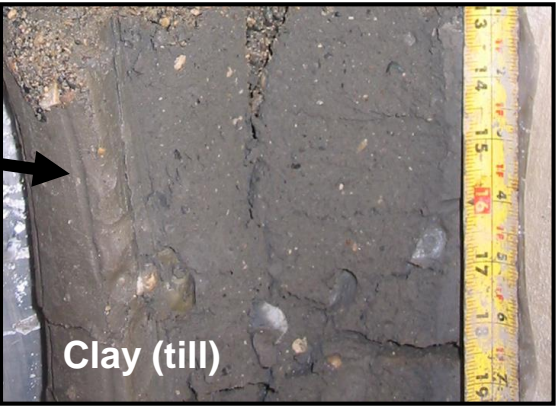
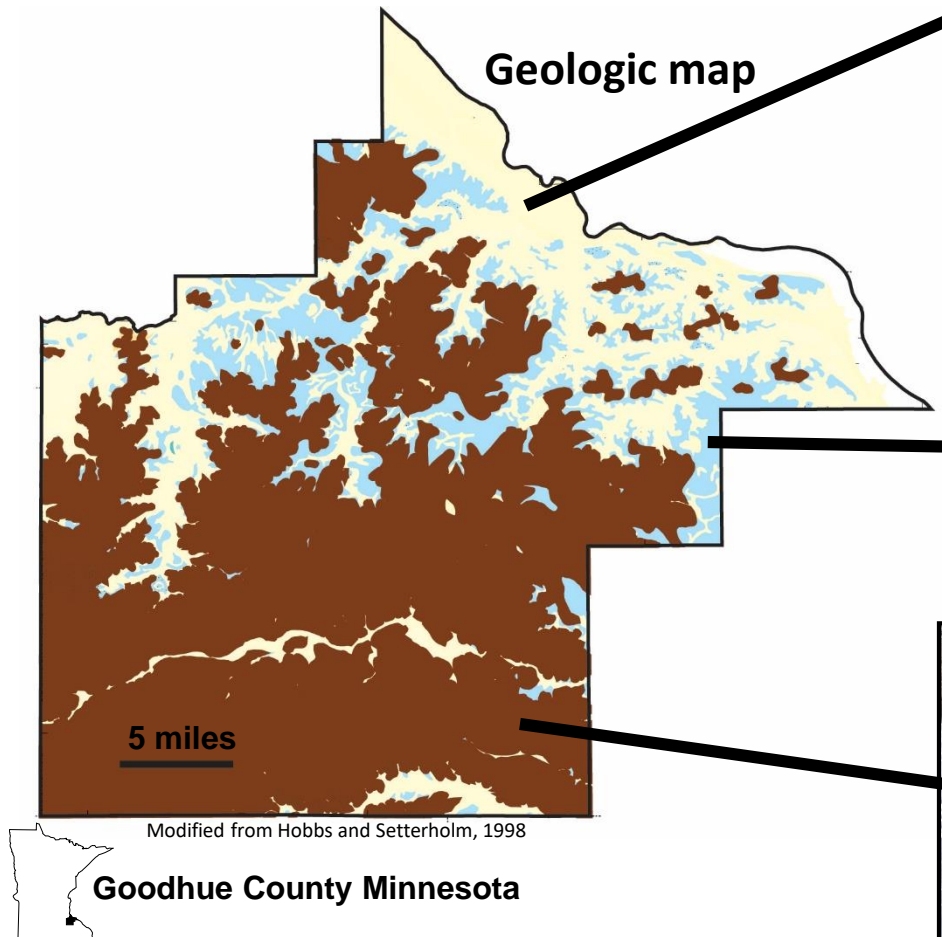


>10% private wells with nitrate above HRL

https://www.mda.state.mn.us/sites/default/files/inline-files/allctyresults_1.pdf

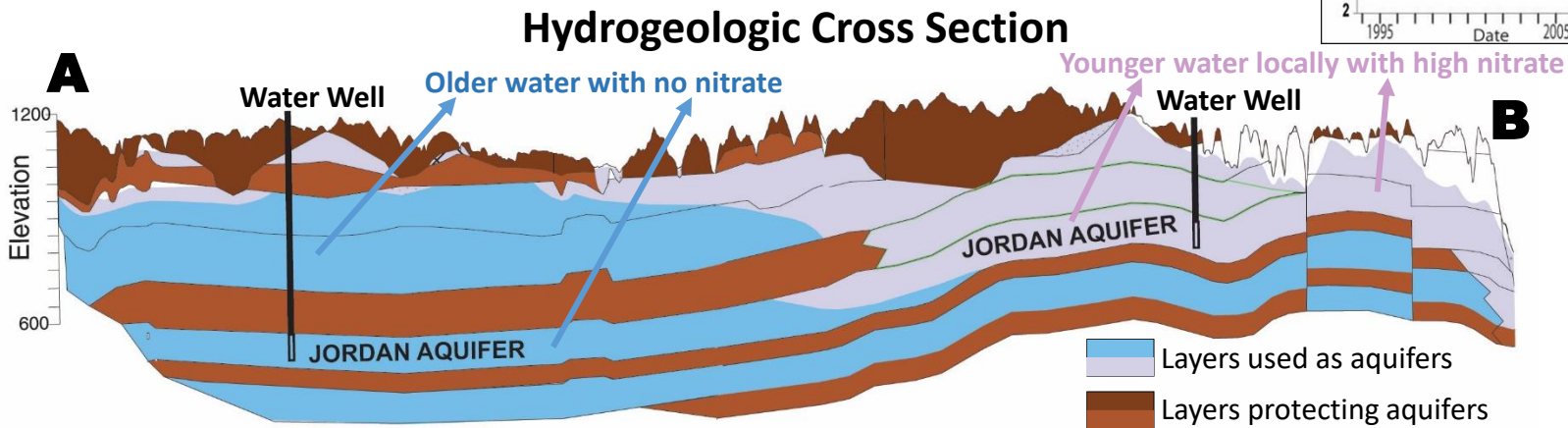
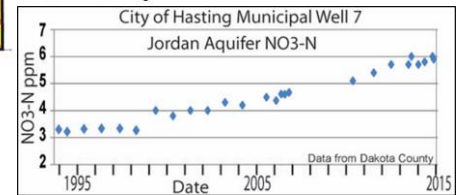
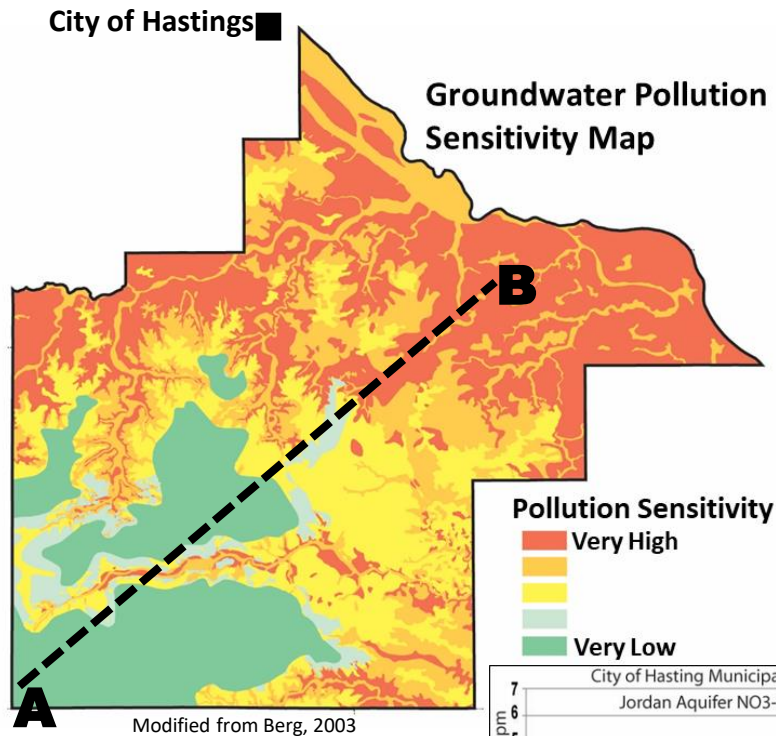
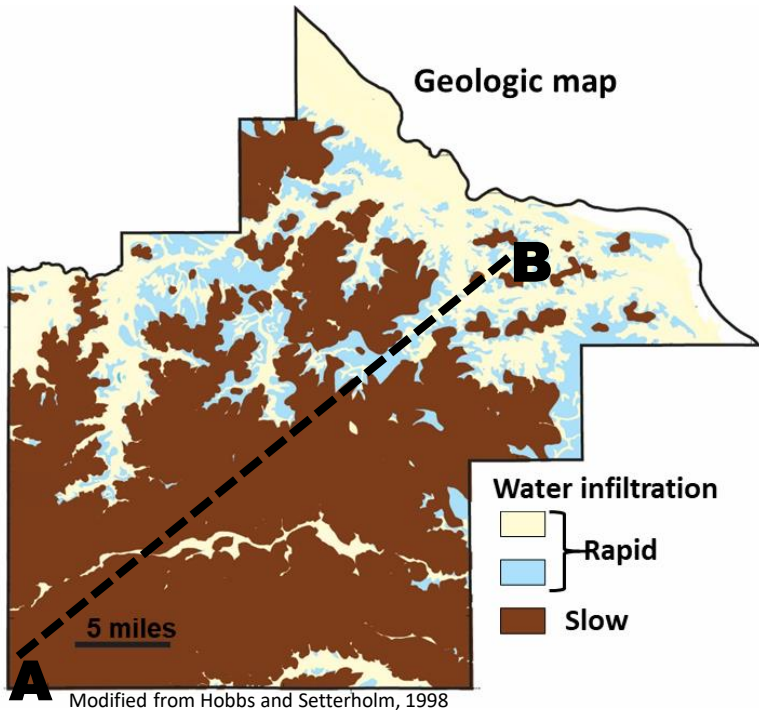
How do County Geologic Atlases help us understand water quality problems?

- Part A Mapping the sediment and bedrock



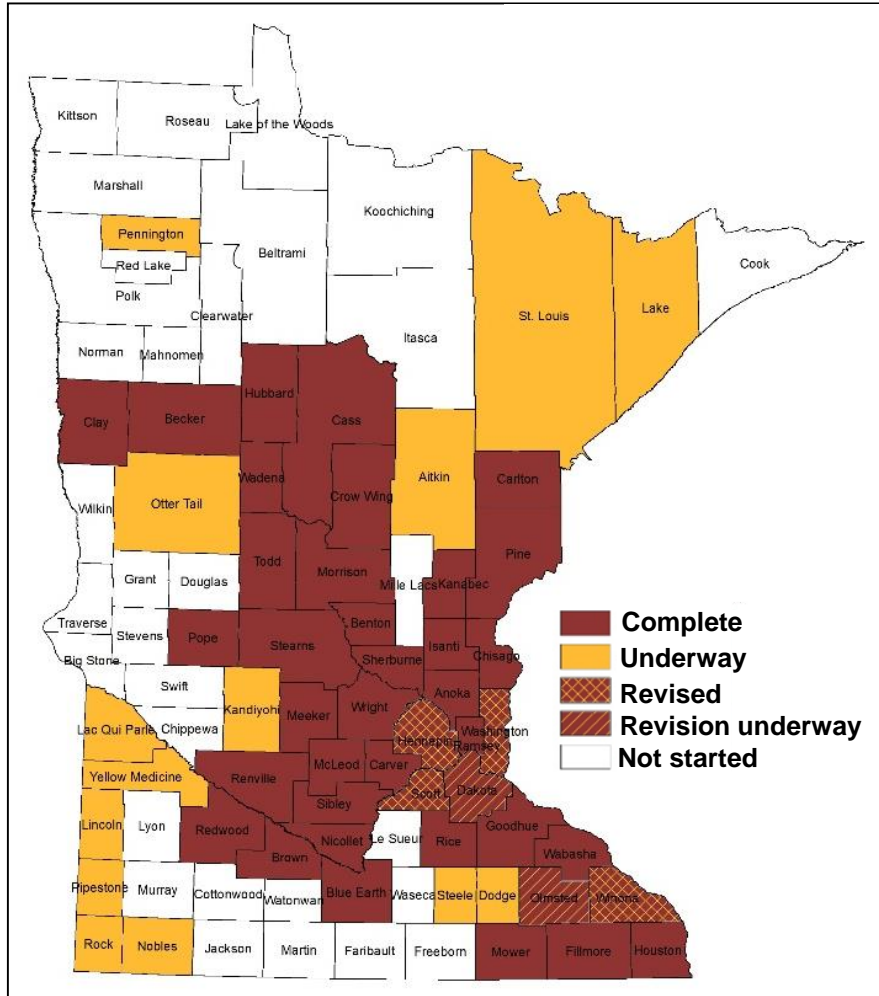
How do County Geologic Atlases help us understand water quality problems?

- Part B: Adding water-bearing properties

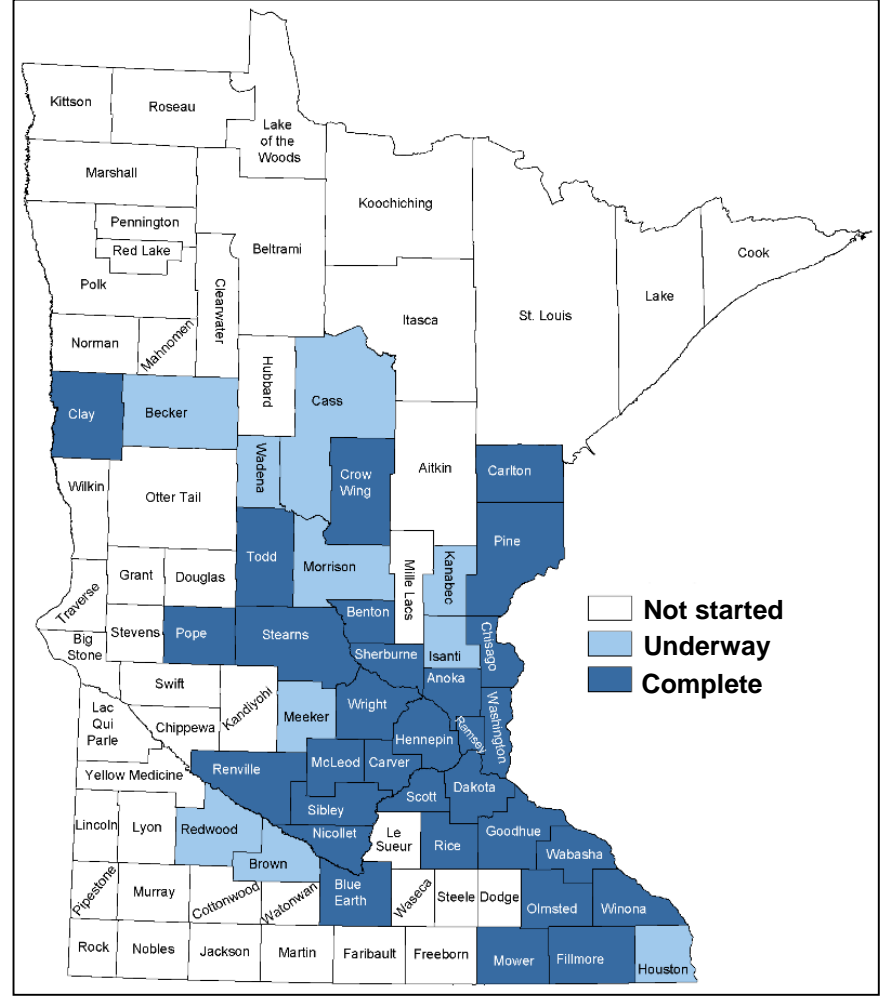


County Geologic Atlas Program: Progress

MGS Part A: Geology



MNDNR Part B: Hydrogeology



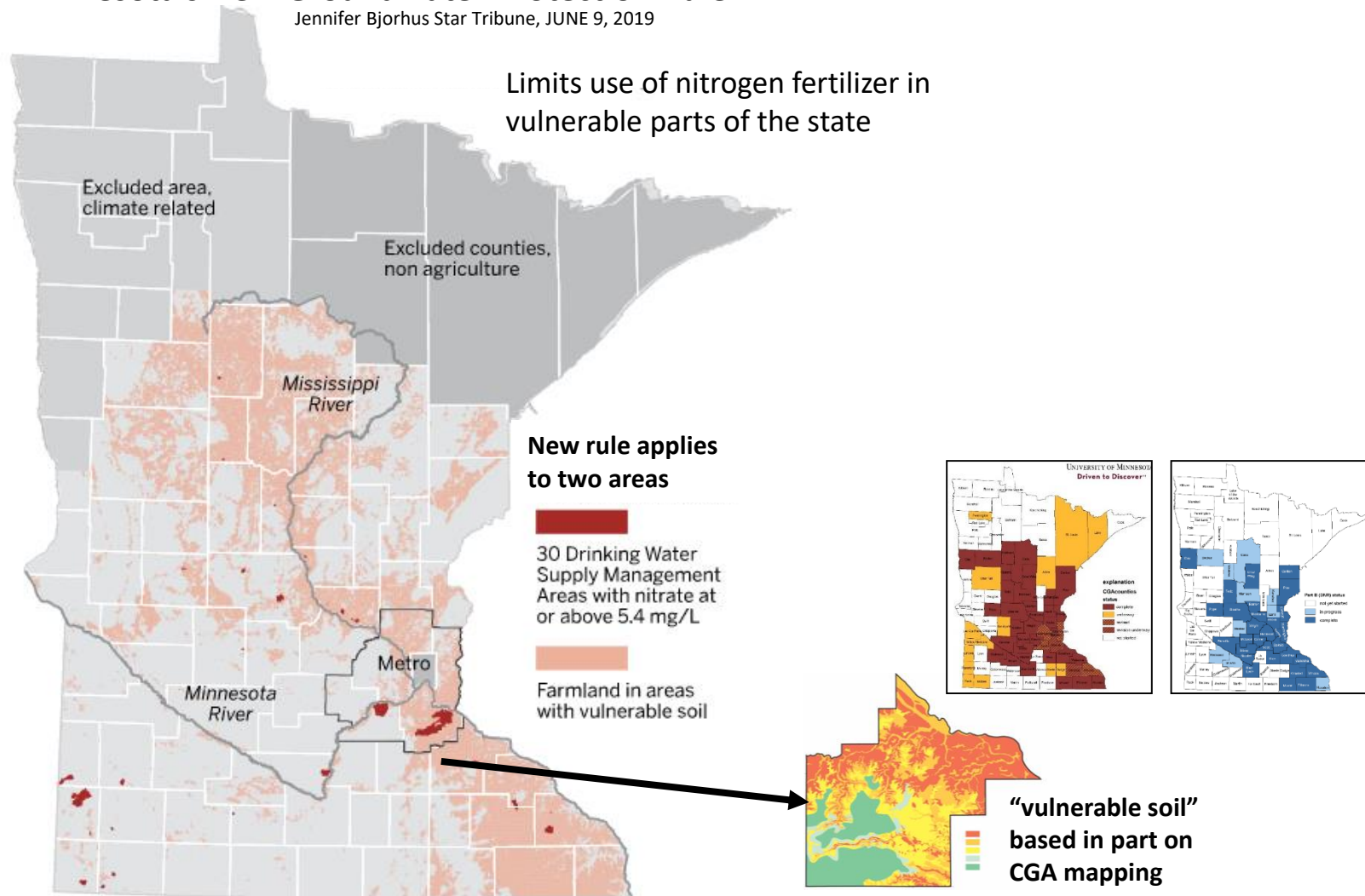
https://www.dnr.state.mn.us/waters/groundwater_section/mapping/status.html

How do County Geologic Atlases help with water quality management?

- Example: MGS/DNR mapping is a key part of new nitrogen fertilizer rules

Minnesota's New Groundwater Protection Rule

Jennifer Bjorhus Star Tribune, JUNE 9, 2019



County Geologic Atlas Program

Other water-related uses:

- Locating high-capacity wells
- Water budgets (e.g. predicting pumping impacts on streams and lakes)
- Monitoring water quality
- Siting landfills, human and animal waste storage.
- Geothermal projects
- Municipal water supply planning (aquifer capacity)

