

# County Geologic Atlas Program



Legislative Water Commission  
December 4, 2015



Dale Setterholm  
Minnesota Geological Survey  
University of Minnesota



Jan Falteisek  
Ecological and Water Resources Division  
MNDNR

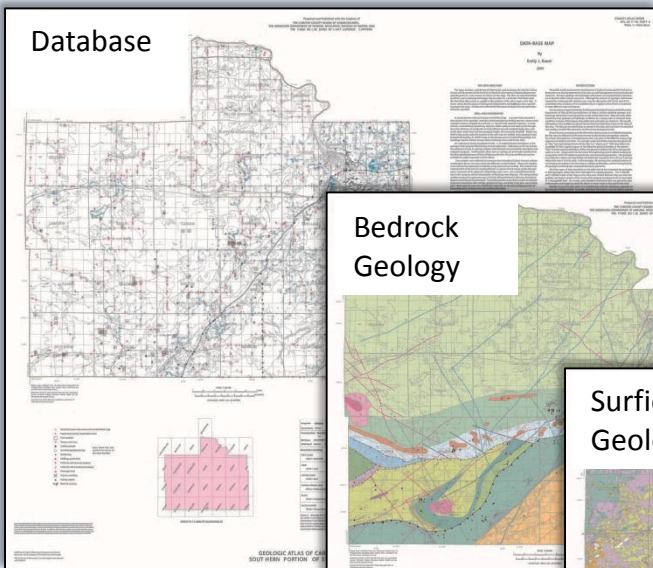


# Comprehensive Geologic and Hydrologic Mapping to Support Management of Water and Minerals

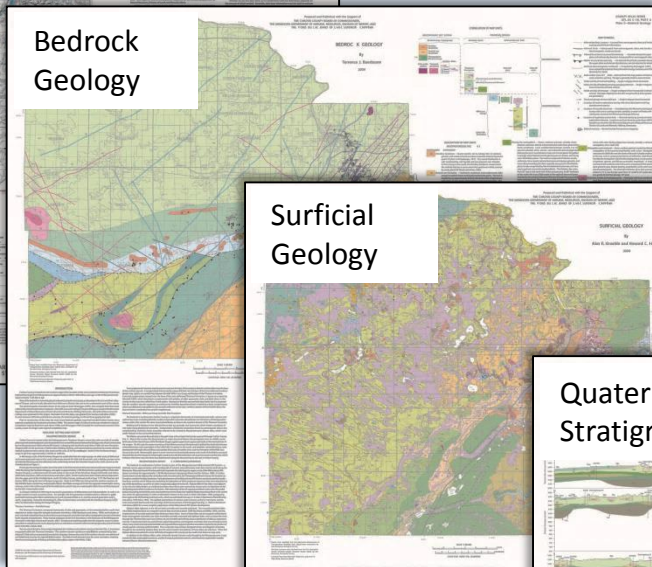
- How does the geology (container) control groundwater flow, quality and availability?
- What is the current status of groundwater? (water levels, chemistry, age)
- What is the sensitivity of groundwater to land surface activities?



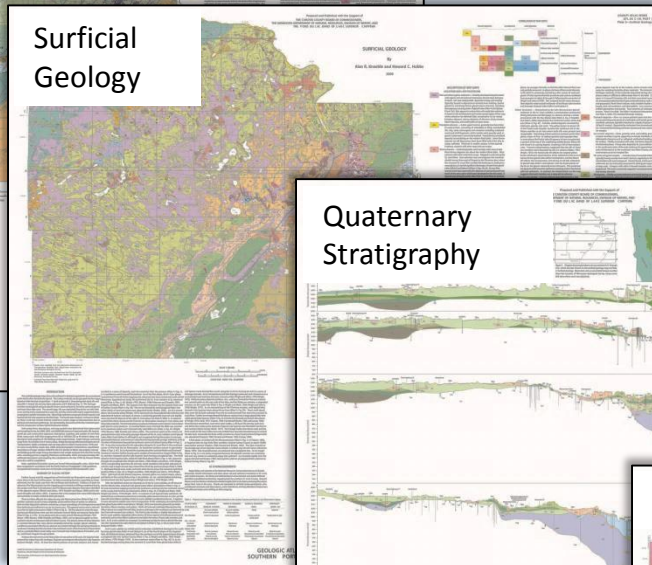
Database



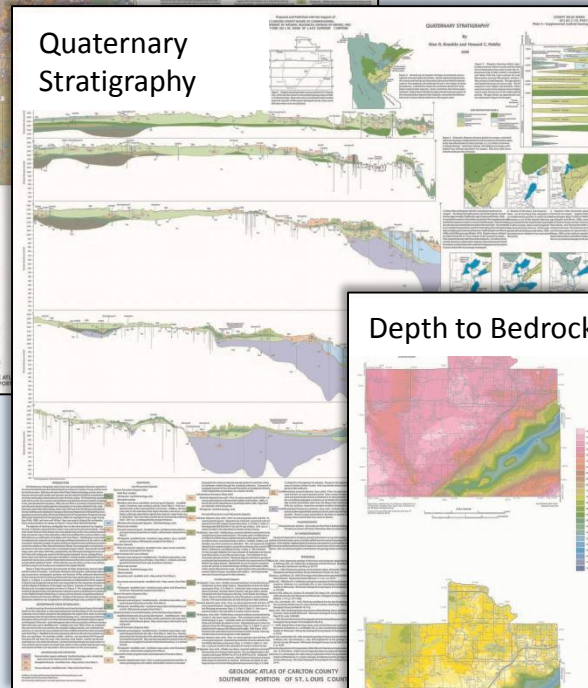
Bedrock  
Geology



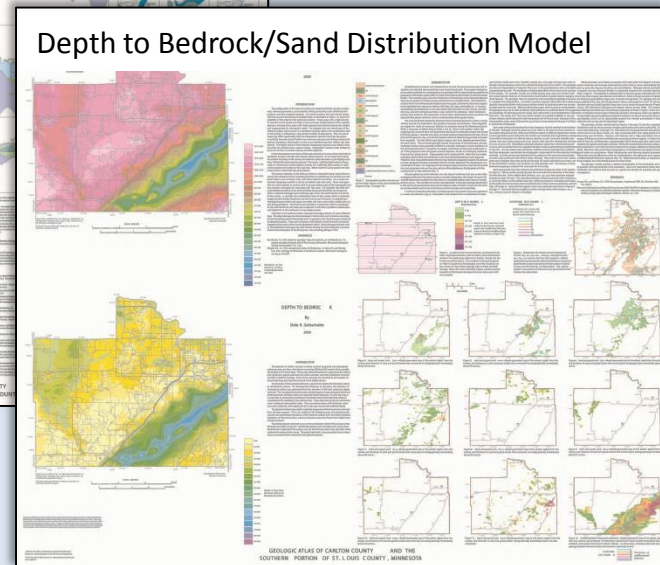
Surficial  
Geology



Quaternary  
Stratigraphy



Depth to Bedrock/Sand Distribution Model



Available for ~ half of  
Minnesota's 87 counties via:

<http://www.mngs.umn.edu>

UNIVERSITY OF MINNESOTA  
Driven to Discover™

Search U of M web sites

Minnesota Geological Survey

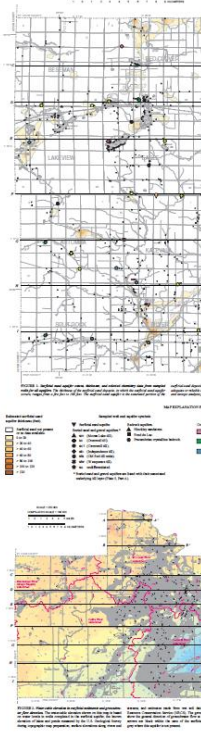
Welcome to the Minnesota Geological Survey

State aeromagnetic map  
aeromagnetic survey aircraft

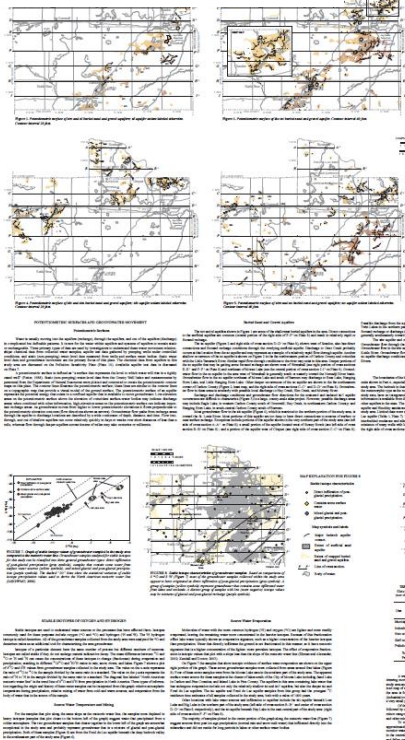
The Minnesota Geological Survey is a research and extension of the Minnesota Morris Mitchell School of Earth Sciences at



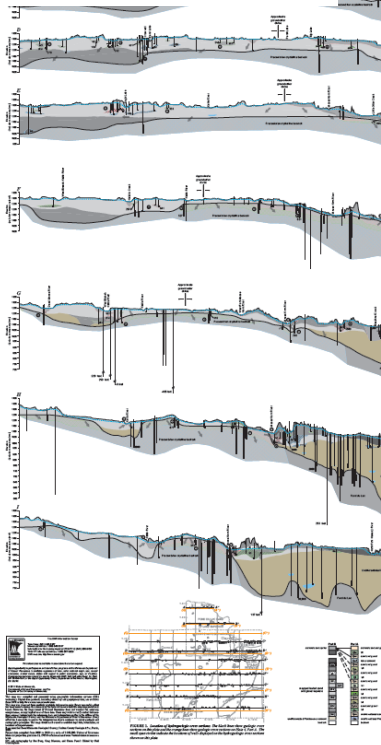
# Surficial Aquifers



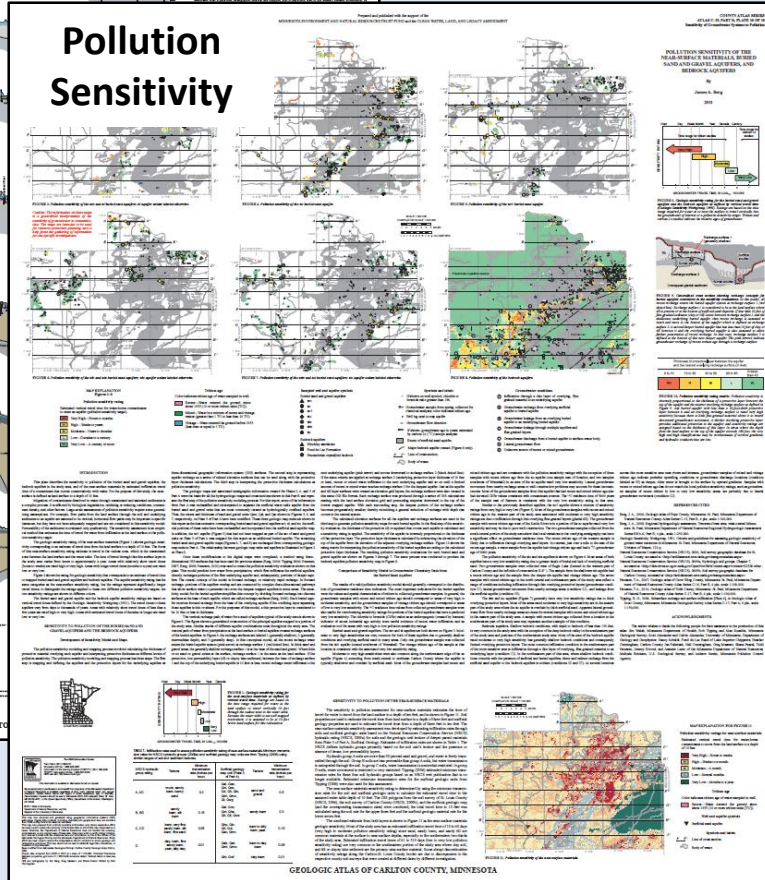
# Buried Sand and Gravel Aquifers



# Hydrogeologic Cross Sections



# Pollution Sensitivity



# COUNTY GEOLOGIC ATLAS Part B



# Applications - Sustainable management of water quantity and quality

## MINNESOTA WATER SUSTAINABILITY FRAMEWORK



JANUARY 15, 2011



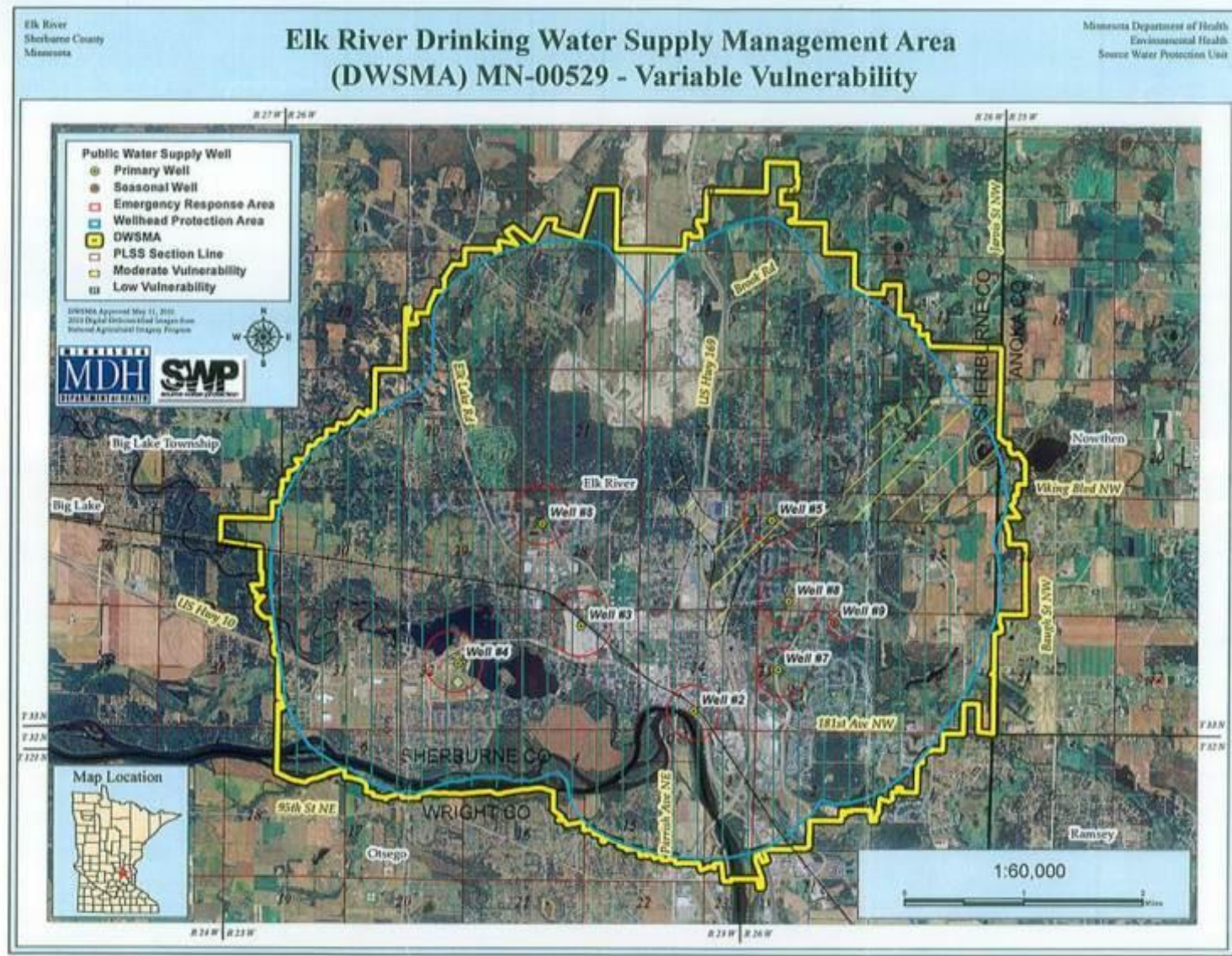


# Applications - Placement of public water supply wells





# Applications - Wellhead Protection Areas





# Applications - Sensitivity of groundwater from surface contamination





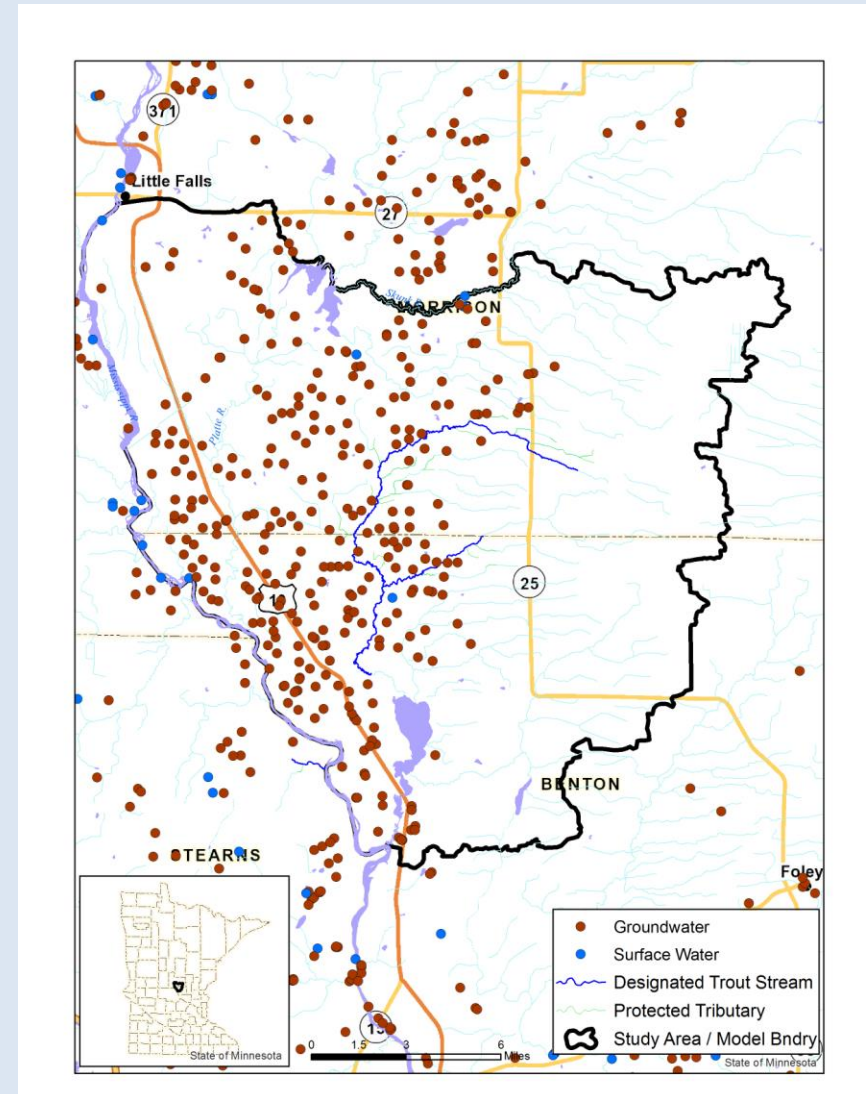
# Applications - Remediation of groundwater contamination





# Applications - Protection of surface waters from over pumping of groundwater

## Little Rock Creek Watershed Benton and Morrison Co.





# Applications - Ethanol plant locations





# Applications - Frac sand mine impacts



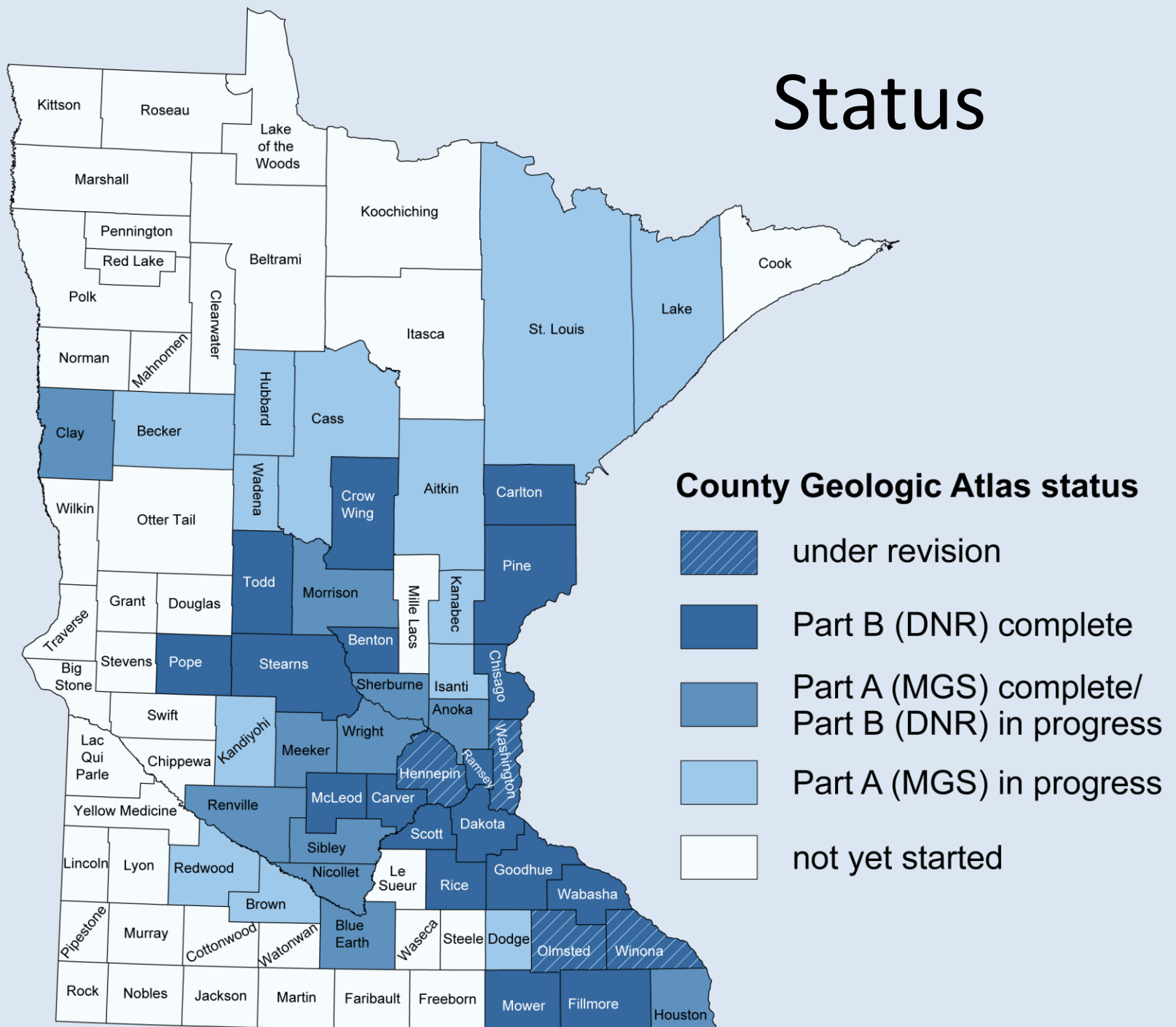


# Steering Factors

- Local participation
- Staffing
  - Geologists with specific areas of expertise
  - Working outward from current projects
- Areas of concern or information needs
  - Areas of population growth, irrigation, industry
  - Proposals for land use change



# Status





# Cost and Funding Sources

- MGS part A
  - Average cost: \$350,000
  - FY16 funding levels: \$1,750,000 per year (5 atlases)
  - FY16–17 contributing funding sources
    - ENRTF and Clean Water Funds (about \$1,365,000)
    - DNR contract (about \$275,000)
    - Federal matching funds (about \$145,000)
- DNR part B
  - Average cost: \$350,000
  - FY16 funding levels: \$1,620,000 per year (4 atlases)
  - FY16–17 contributing funding sources
    - ENRTF (\$2,000,000)
    - Clean Water Funds (\$500,000)
    - DNR general fund (\$740,000)