

The Geology and Ground-Water Resources in Wabasha County

The Wabasha County Geologic Atlas is a systematic study of the county's geology and ground water. Geologic studies (Part A) published by the Minnesota Geological Survey (MGS) in 2001 included mapping of both glacial deposits and bedrock. Ground-water studies (Part B) by the Minnesota Department of Natural Resources, Division of Waters (DNR Waters), include ground-water systems, chemistry, age dating, and sensitivity to pollution. Data collection for Part B is complete and the report will be published in summer 2005. Part A of the atlas (paper or CD) can be ordered from the MGS (see ordering information below).

What Are the Results in Wabasha County?

Sedimentary rock units and glacial deposits are the framework of Wabasha County's ground-water environment. The county is endowed with generally abundant ground-water resources from several bedrock aquifers and locally thick alluvium. Water sample data from 84 wells and four springs were analyzed for general chemistry and tritium. Twelve samples were also analyzed for carbon-14. The chemistry and tritium data indicate that in many places in the county aquifers are readily recharged and may also show evidence of anthropogenic contaminants such as nitrate.

In most places, the county lacks protective glacial sediment and bedrock layers; therefore, the uppermost bedrock aquifers that are used by many residents for water supply are relatively sensitive to pollution.

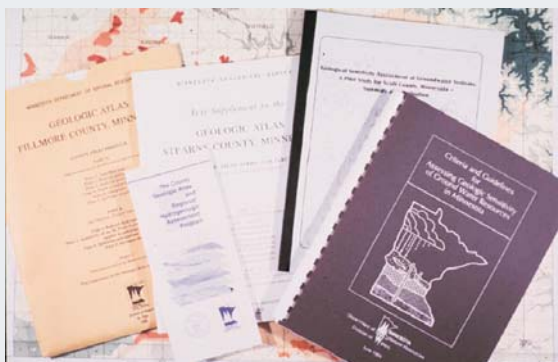
What Is the Purpose of the Program?

Atlas and regional assessment information is used in planning and environmental protection efforts at all levels of government. Source water protection and well-sealing programs are examples of local programs that need geologic and ground-water information. Other typical uses include providing information for permit applications, land management planning, and emergency response to contaminant releases. The information is also used by businesses and the public.

Where Can I Obtain a Copy of the Report or More Information?

Minnesota Geological Survey
2642 University Avenue
St. Paul, MN 55114-1057
(612) 627-4782
<http://www.geo.umn.edu/mgs>

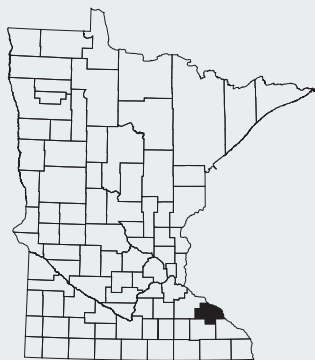
DNR Waters
500 Lafayette Road
St. Paul, MN 55155-4032
(651) 296-4800
<http://www.dnr.state.mn.us/waters>



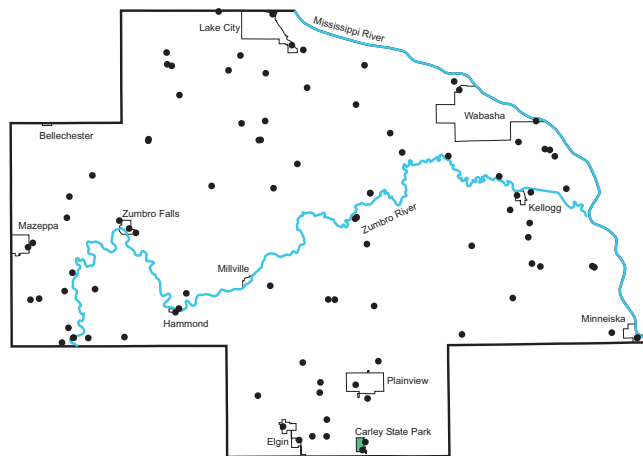
The Minnesota Geological Survey and DNR Waters prepare regional assessments, county atlases, and other reports.



DNR Waters conducts some tests on water samples in the field after drawing a ground-water sample from a well. This hydrologist is testing water from a well near Plainview.



Location diagram



The dots represent water samples collected for chemical analysis from 84 wells and four springs across Wabasha County (map scale 1:600,000).

UPDATE
Wabasha County Geologic Atlas
Part B—Hydrogeology and Sensitivity to Pollution
Minnesota Department of Natural Resources
April 2005

SUMMARY

Minnesota Department of Natural Resources staff began work in August 2003 to prepare Part B, Hydrogeology and Pollution Sensitivity, of the Wabasha County Geologic Atlas. Collection of water samples from wells and springs has been completed. The report will be published in 2005.

WORK PROGRESS

Water samples were collected from 88 sites (84 wells and four springs) for general chemistry and 76 sites for tritium analysis. Twelve wells (mostly in deep aquifers) were sampled for carbon-14 analysis to determine the age of older water. All chemistry analyses are complete. Well owners were mailed a report of the laboratory results. The three plates of the report are currently in review.

Sedimentary rock units and glacial deposits are the framework of Wabasha County's ground-water environment. The county is endowed with generally abundant ground-water resources from several bedrock aquifers and locally thick sand and gravel deposits in the major river valleys. Ground water is recharged in the uplands of the county and then moves to the Zumbro and Mississippi rivers, where it discharges. Similar to other areas in southeast Minnesota with karst landscape, the water table may be quite deep. Perched ground-water zones above the water table are not uncommon.

The chemistry and tritium data indicate that in many places in the county aquifers are readily recharged and may also show evidence of anthropogenic contaminants such as nitrate or chloride. Deeper aquifers may contain water that is thousands of years old. The deeper bedrock aquifers are less sensitive to surface contamination than the uppermost bedrock aquifers.

WORK REMAINING

TENTATIVE SCHEDULE

Data Collection

Complete sampling from all wells	Completed
Water-level measurements in wells	Completed

Report: three map sheets compiled at 1:100,000 scale	Summer 2005
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Including water-table hydrogeology,
bedrock hydrogeology,
and sensitivity to pollution

Publication

1800 copies, 1000 copies to county	Summer 2005
Data CD	Summer 2005
Map and data files to county	Fall 2005

Training Workshop

Spring 2006 (tentative)