



Association of American
State Geologists



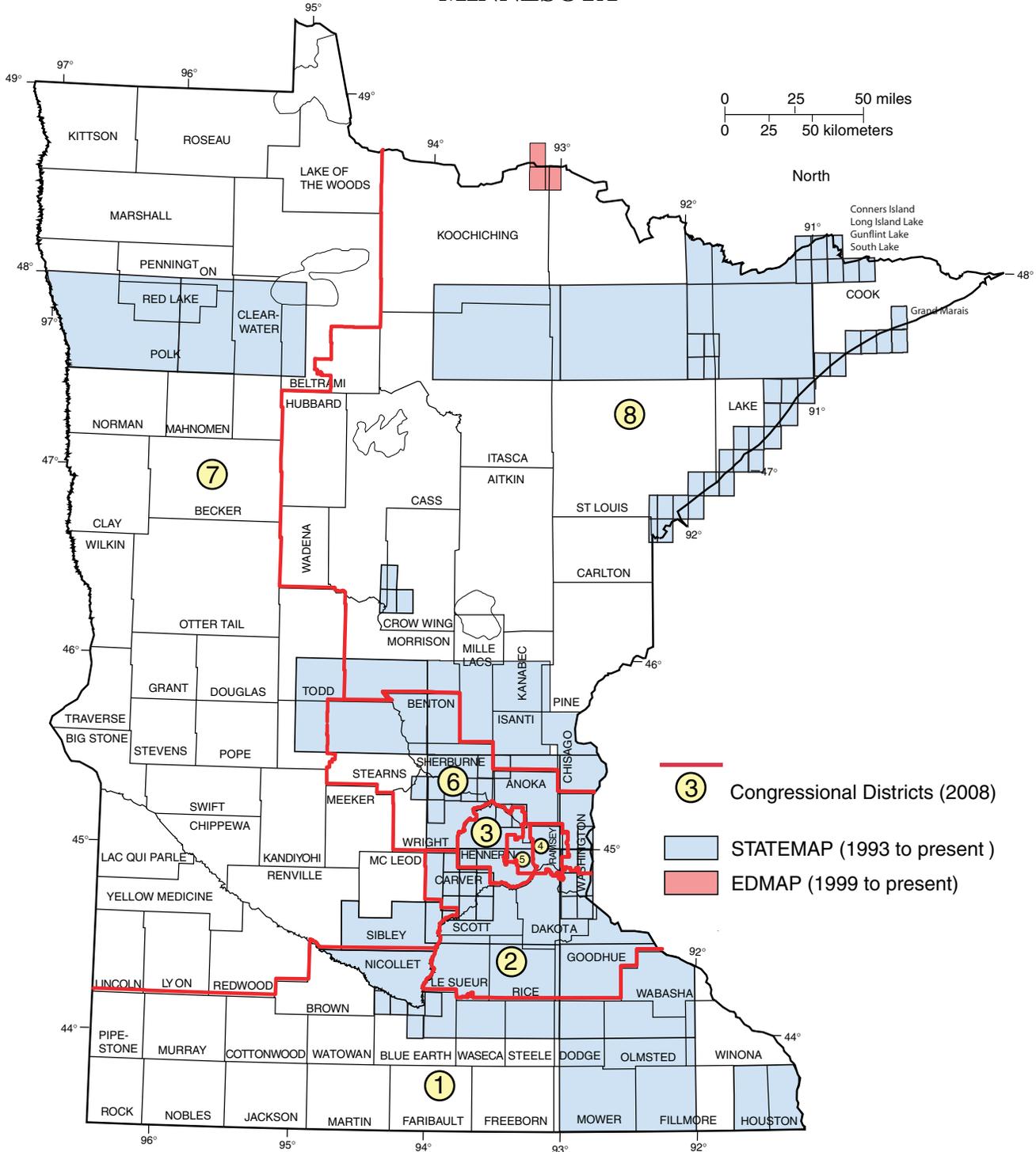
United States
Geological Survey



National Cooperative Geologic Mapping Program

STATEMAP/EDMAP Component: States compete for federal matching funds for geologic mapping

MINNESOTA



Contact information

Minnesota Geological Survey

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U.S.G.S. Geologic Mapping Program Office

Program Coordinators: Peter T. Lyttle (703/648-6943)
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Federal Fiscal Year	Project Title, Scale	State Dollars	Federal Dollars	Total Project Dollars
1993	Digitization of data from COGEOGMAP projects (1987-92)	\$14,461	\$11,980	\$26,441
1994	Bedrock Geology of Houston County (eastern half) 1:100,000	\$18,000	\$18,000	\$36,000
1995	Bedrock Geology of Houston County (western half) 1:100,000	\$15,000	\$15,000	\$30,000
1996	Surficial Geology of the Shakopee (1:24,000) & Anoka (1:100,000) quadrangles	\$33,529	\$33,529	\$67,058
1997	Surficial Geology of the Jordan East & Victoria quadrangles, 1:24,000	\$36,734	\$36,733	\$73,467
1998	Surficial Geology of the Jordan West and Mound quadrangles, 1:24,000 Surficial Geology of the Stillwater and Hastings quadrangles, 1:100,000	\$41,515	\$41,515	\$83,030
1999	Surficial Geology of the Waconia quadrangle, 1:24,000 Surficial Geology of the St. Paul and Rochester quadrangles, 1:100,000	\$65,867	\$65,867	\$131,734
2000	Surficial Geology of the Watertown & Belle Plaine North quadrangles, 1:24,000 Surficial Geology of the Gull Lake, Baxter & Brainerd quadrangles, 1:24,000 Surficial Geology of the St. Cloud quadrangle, 1:100,000	\$76,942	\$76,912	\$153,854
2001	Surficial Geology of the Faribault quadrangle, 1:100,000 Surficial Geology of the Elk River & Big Lake quadrangles, 1:24,000 Surficial and Bedrock Geology of the French River & Lakewood quadrangles, 1:24,000 Bedrock Geology of the Babbitt NE & Knife River quadrangles, 1:24,000	\$156,081	\$156,081	\$312,162
2002	Surficial Geology of the Crown, Lake Fremon & Knife River quadrangles, 1:24,000 Surficial and Bedrock Geology of the Two Harbors quadrangle, 1:24,000 Bedrock Geology of the Mankato East/West & Castle Danger quadrangles, 1:24,000 Bedrock Geology of the Vermilion Lake quadrangle, 1:100,000	\$135,147	\$135,141	\$270,288
2003	Surficial Geology of the Monticello & Silver Creek quadrangles, 1:24,000 Surficial Geology of the Castle Danger quadrangle, 1:24,000 Bedrock Geology of the Split Rock Point quadrangle, 1:24,000 Bedrock Geology of the Judson & Good Thunder quadrangles, 1:24,000 Bedrock Geology of the Ely quadrangle, 1:100,000	\$125,987	\$125,987	\$251,974
2004	Surficial Geology of the Annandale & Buffalo West quadrangles, 1:24,000 Surficial Geology of the Austin quadrangle, 1:100,000 Bedrock Geology of the Two Harbors NE & Babbitt quadrangles, 1:24,000 Bedrock Geology of the Babbitt SE/SW, Courtland & Cambria quadrangles, 1:24,000 Bedrock Geology of the Stillwater & Hudson quadrangles, 1:24,000	\$149,554	\$149,554	\$299,108
2005	Geology of the Crookston (surficial) & Hastings (bedrock) quadrangles, 1:100,000 Bedrock Geology of the Schroeder, Tofte & Little Marais quadrangles, 1:24,000 Bedrock Geology of the St. Paul Park, Prescott & Vermillion quadrangles, 1:24,000	\$149,562	\$149,562	\$299,124
2006	Geology of the Fosston (surficial) & Big Fork (bedrock) quadrangles, 1:100,000 Bedrock Geology of the Lutsen & Coon Rapids quadrangles 1:24,000	\$140,030	\$140,032	\$280,062
2007	Surficial Geology of the Mora quadrangle 1:100,000 Bedrock Geology, topography and subsurface database of Duluth, Duluth Heights & West Duluth quadrangles 1:24,000 Bedrock Geology of Deer Yard Lake & Good Harbor Bay quadrangles, 1:24,000 Bedrock Geology of the Cavity Lake Fire area, 1:24,000	\$158,804	\$158,804	\$317,608
2008	Surficial Geology of the Duluth, Duluth Heights & West Duluth quadrangles, 1:24,000 Bedrock Geology of the Anoka & Lake Elmo quadrangles, 1:24,000 Bedrock Geology of Chisago County , 1:100,000	\$148,830	\$148,830	\$297,660
2009	Bedrock Geology of the Ham Lake area & Grand Marais quadrangle, 1:24,000 Bedrock and Surficial Geology of Sibley County , 1:100,000 Bedrock Geology of Nicollet County , 1:100,000	\$162,349	\$162,349	\$324,698
5/22/09	TOTALS	\$1,628,392	\$1,625,876	\$3,254,268

STATEMAP STATEMENT OF OUTCOME

In 2004, perfluorochemicals (PFCs) were first detected in the groundwater in south Washington County. Subsequent investigations have discovered that PFCs have contaminated the groundwater in an area of nearly 100 square miles, affecting the drinking water supply of eleven communities and over 100,000 people. The availability of detailed maps of the bedrock and surficial geology of the area (cited below), that provided not just the basic information regarding the bedrock units, but detailed information regarding faults, bedrock valleys, karst development, and groundwater flow in this area allowed the Minnesota Health Department and the Minnesota Pollution Control Agency to: quickly identify potential areas of particular groundwater sensitivity; tailor our investigation to quickly locate the most highly contaminated wells and provide alternative water supplies to residents; and understand what would otherwise have been considered anomalous contaminant migration pathways.

Without the mapping work of the MGS, and the tremendous technical support from MGS staff, this investigation would have taken far longer resulting in delayed public health response and inefficient use of state resources.

Maps used:

- M-95 Surficial Geology of the Stillwater 30 x 60 quadrangle, G.N. Meyer, 1999, 1:100,000
- M-96 Surficial Geology of the Hastings 30 x 60 quadrangle, H.C. Hobbs, 1999, 1:100,000
- M-153 Bedrock Geology of the Stillwater 7.5' quadrangle, J.H. Mossler, 2005, 1:24,000
- M-154 Bedrock Geology of the Hudson 7.5' quadrangle, J.H. Mossler, 2005, 1:24,000
- M-166 Bedrock Geology of the St. Paul Park 7.5' quadrangle, J.H. Mossler, 2006, 1:24,000
- M-167 Bedrock Geology of the Prescott 7.5' quadrangle, J.H. Mossler, 2006, 1:24,000
- M-168 Bedrock Geology of the Vermillion 7.5' quadrangle, J.H. Mossler, 2006, 1:24,000

Excerpts from a letter to MGS from Virginia Yingling, Environmental Health Division, Minnesota Department of Health