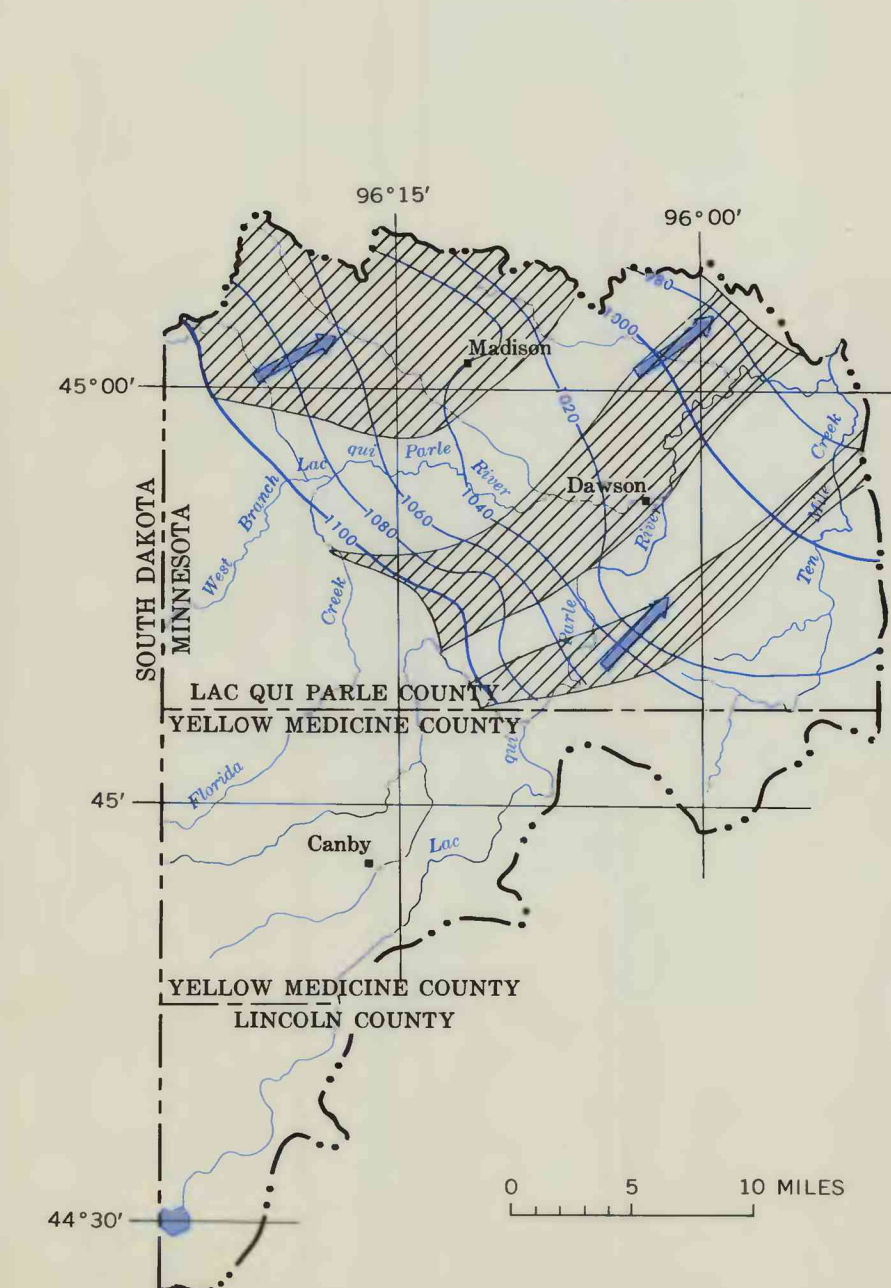
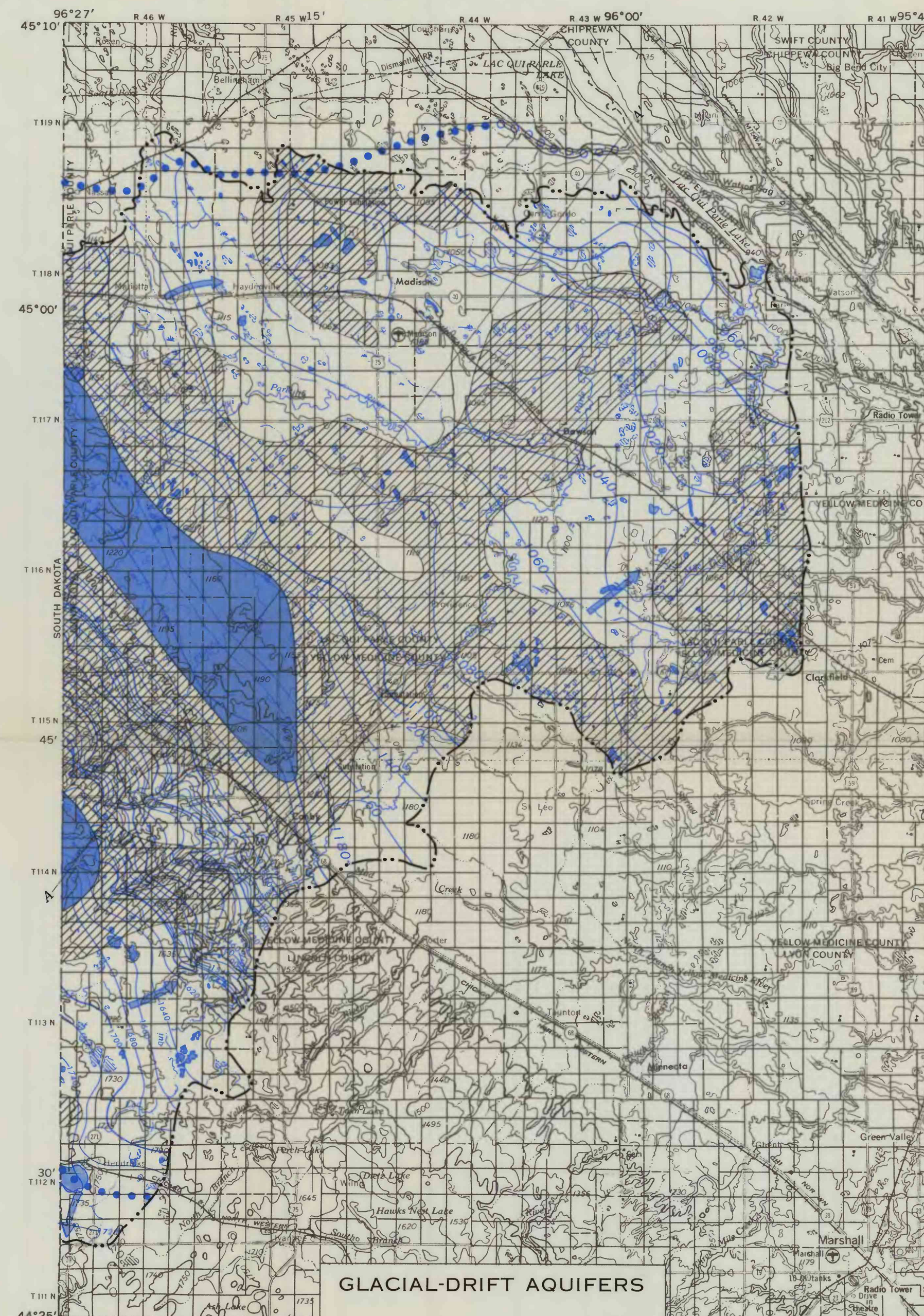
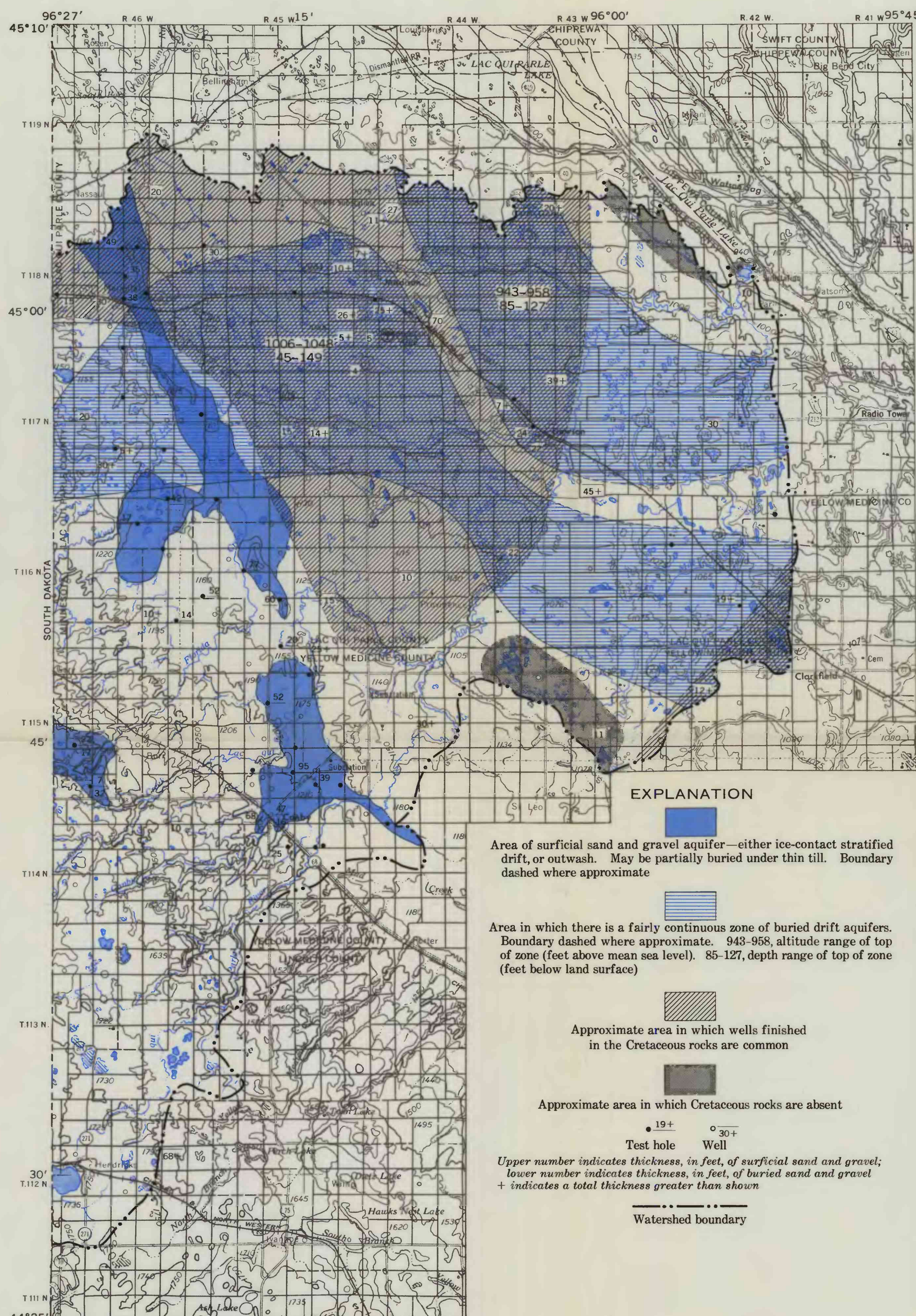


GROUND WATER



CRETACEOUS ROCKS

Base from U.S. Geological Survey 1:250,000 series; Milbank, S. Dak., Minn., N. Dak.; New Ulm, Minn.; St. Cloud, Minn.; and Watertown, S. Dak., Minn.

SCALE 1:250,000

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

Base from U.S. Geological Survey 1:250,000 series; Milbank, S. Dak., Minn., N. Dak.; New Ulm, Minn.; St. Cloud, Minn.; and Watertown, S. Dak., Minn.

SCALE 1:250,000

CONTOUR INTERVAL 50 FEET
DATUM IS MEAN SEA LEVEL

THE THREE PRINCIPAL AQUIFERS ARE SURFICIAL SAND AND GRAVEL, BURIED SAND AND GRAVEL, AND CRETACEOUS SANDSTONE AND SAND

Domestic water supplies are available from buried sand and gravel throughout most of the watershed. Large supplies are available from surficial sand and gravel in restricted areas, but these supplies are subject to contamination. Small supplies are available from Cretaceous sandstone and sand in most of the area. Precambrian rocks underlie the entire watershed but yield little water.

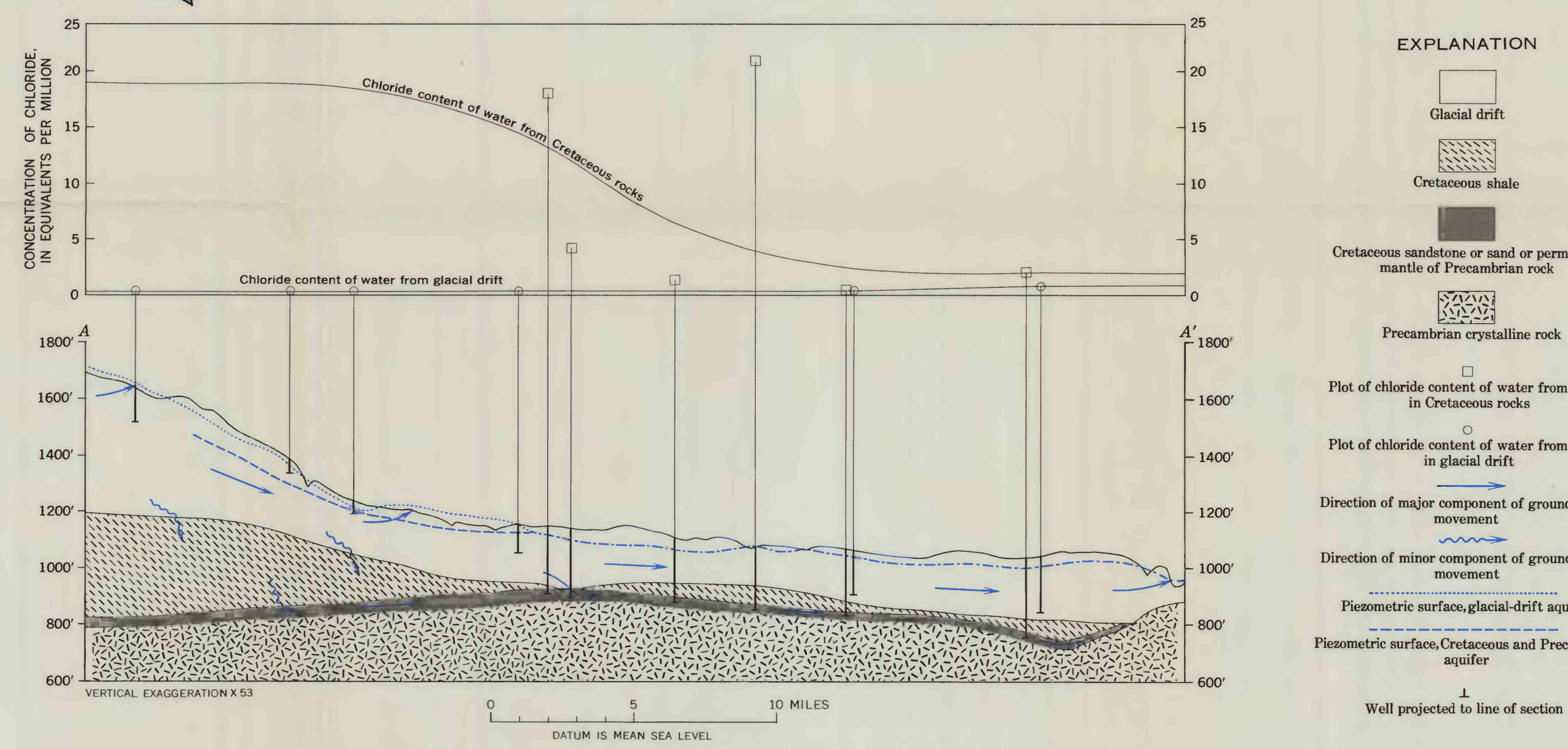
GROUND-WATER MOVEMENT IN THE WATERSHED IS TO THE NORTHEAST

Many flowing wells are located near the base of the Coteau des Prairies where the piezometric surface of the glacial-drift aquifers intersects the land surface. The ground-water divide within the glacial drift approximates the watershed boundary. In the northern part of the watershed, the piezometric surface for the Cretaceous rocks is at about the same altitude as that for the glacial drift. The evapotranspiration rate is highest where the water is near the land surface.

YIELDS OF MORE THAN ONE HUNDRED GALLONS PER MINUTE CAN BE OBTAINED FROM BOTH TYPES OF GLACIAL-DRIFT AQUIFERS

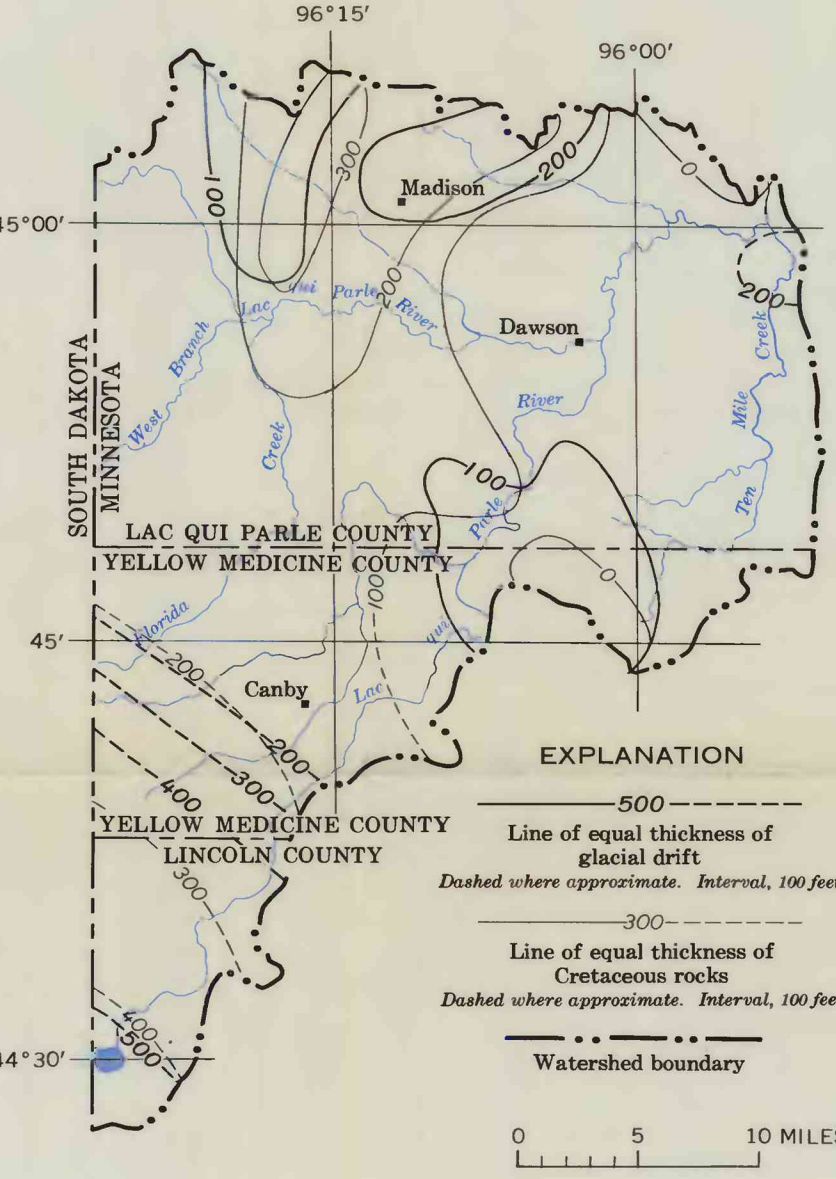
Specific capacities of wells completed in Precambrian and Cretaceous rocks are commonly less than one gallon per minute per foot of drawdown, and these rocks should not be considered as sources for large municipal or industrial supplies.

Geologic age	Aquifer	Number of wells for which data were obtained					Yields (gallons per minute)			Specific capacity (gallons per minute per foot of drawdown)			Relative water-yielding potential		
		Number of wells less than 100 feet deep	Number of wells 100 to 150 feet deep	Number of wells 150 to 200 feet deep	Number of wells 200 to 300 feet deep	Number of wells over 300 feet deep	Average	Median	Maximum	Average	Median	Maximum			
Quaternary	Surficial glacial sand and gravel	22	19	3	0	0	16	98	15	500	14	6	3	101	Good
	Buried glacial sand and gravel	228	101	118	12	2	128	37	7	600	80	4	1	20	Good
Cretaceous	Sandstone and sand	45	1	15	20	9	23	8	5	60	19	>1	>1	2	Fair
Precambrian	Crystalline rocks	6	0	2	2	2	3	—	—	12	2	—	—	1	Poor
Totals		301	121	133	34	13	165	—	—	—	115	—	—	—	



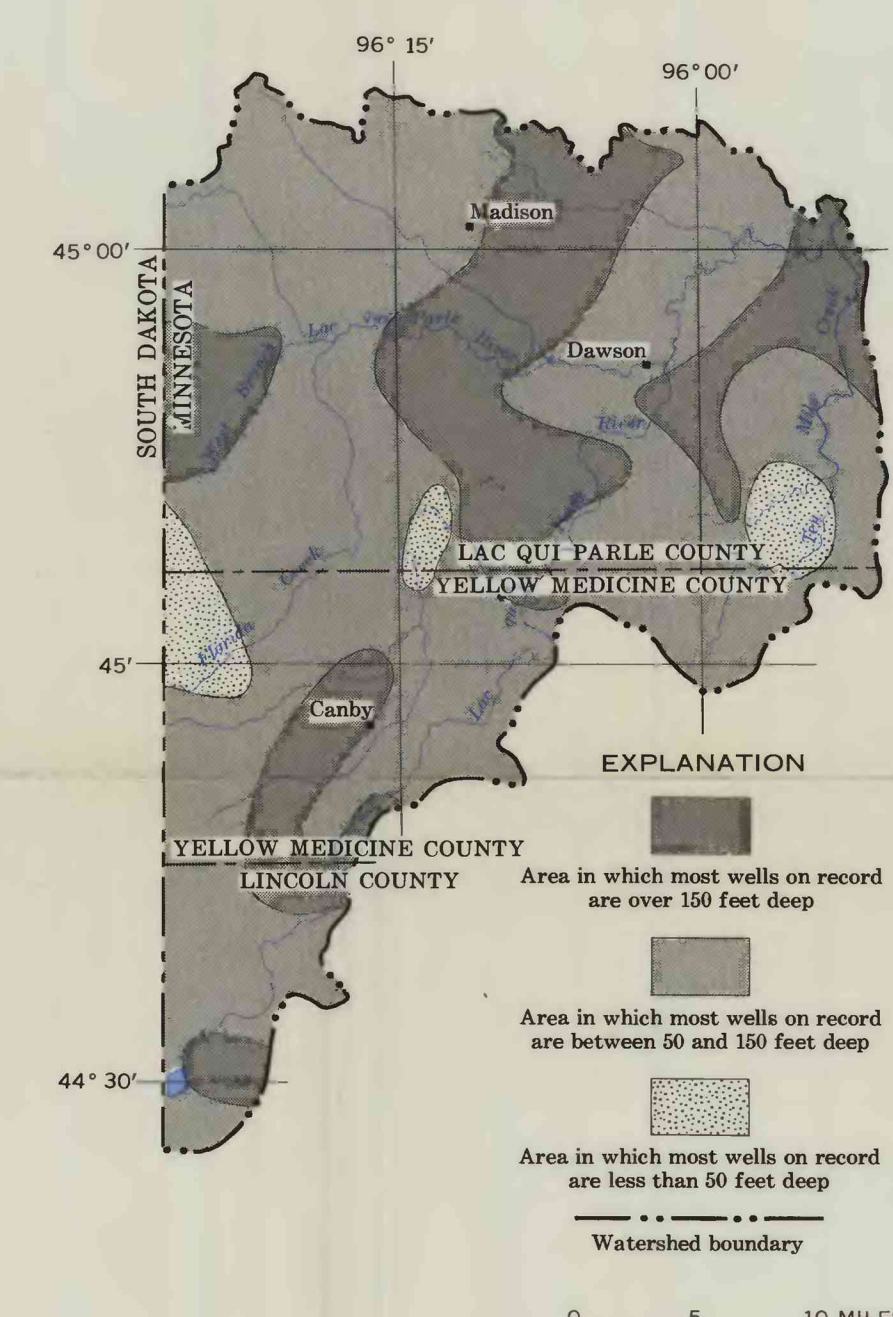
HIGH CHLORIDE WATER FROM CRETACEOUS ROCKS IS DILUTED BY LOW CHLORIDE WATER FROM THE GLACIAL DRIFT IN THE EASTERN PART OF THE WATERSHED

The geology in section A-A' has been generalized to show water movement. The chloride content of water in the Cretaceous sandstone and sand decreases northeastward from the point where the absence of shale permits a hydraulic connection between aquifers. In the northeastern part of the watershed the chloride content of the water in the two aquifers is nearly equal.



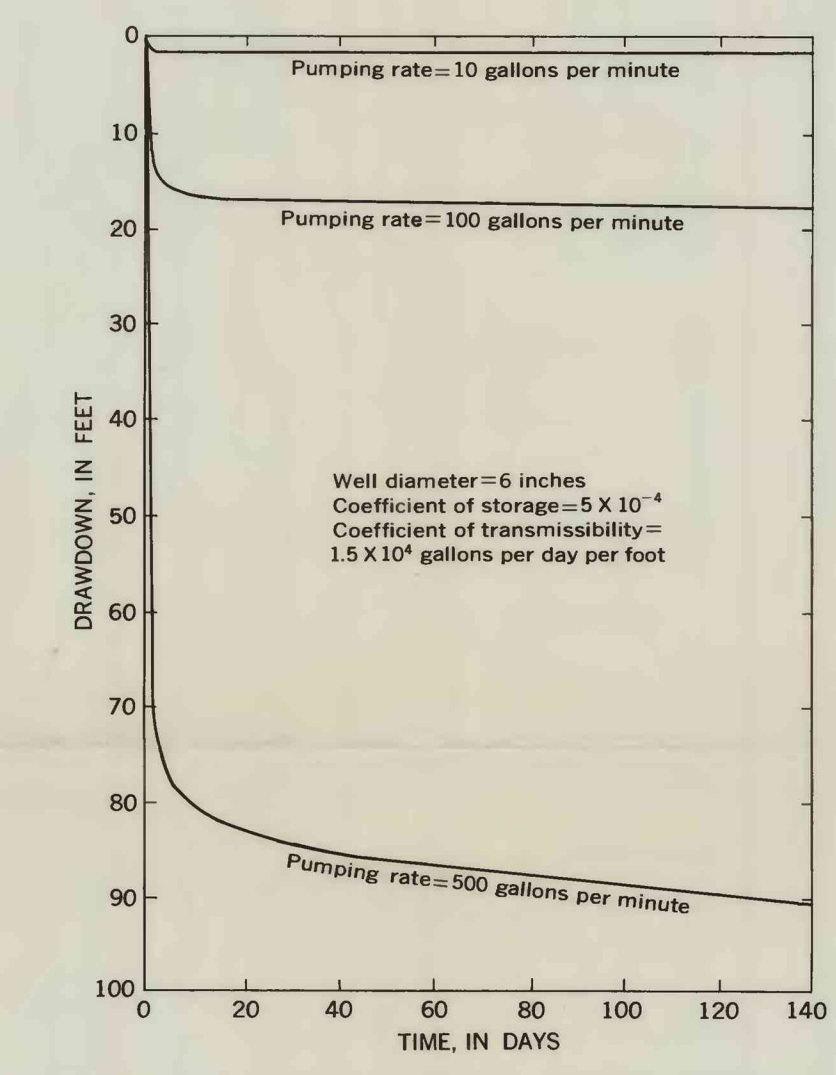
THE THINNEST GLACIAL DRIFT OCCURS IN A NORTHWESTWARD-TRENDING BAND ACROSS THE CENTRAL PART OF THE WATERSHED.

Cretaceous rocks are absent in the south-central and the northeastern parts.



MOST WELLS IN THE WATERSHED ARE BETWEEN 50 AND 150 FEET DEEP.

Most wells completed in the Cretaceous rocks are deeper than 150 feet.



THE TIME REQUIRED FOR WATER LEVELS IN WELLS IN BURIED SAND AND GRAVEL AQUIFERS TO STABILIZE IS DEPENDENT ON THE RATE OF PUMPING.

Water levels will stabilize after a few days of pumping at rates of 100 gallons per minute or less. At higher pumping rates, the change in drawdowns will be relatively small after a few days. The drawdown shown will be decreased by leaky-aquifer conditions, and will be increased by eroded screens, partial penetration, incomplete development, and low-permeability boundaries near the pumping wells.