UNIVERSITY OF MINNESOTA
MINNESOTA GEOLOGICAL SURVEY
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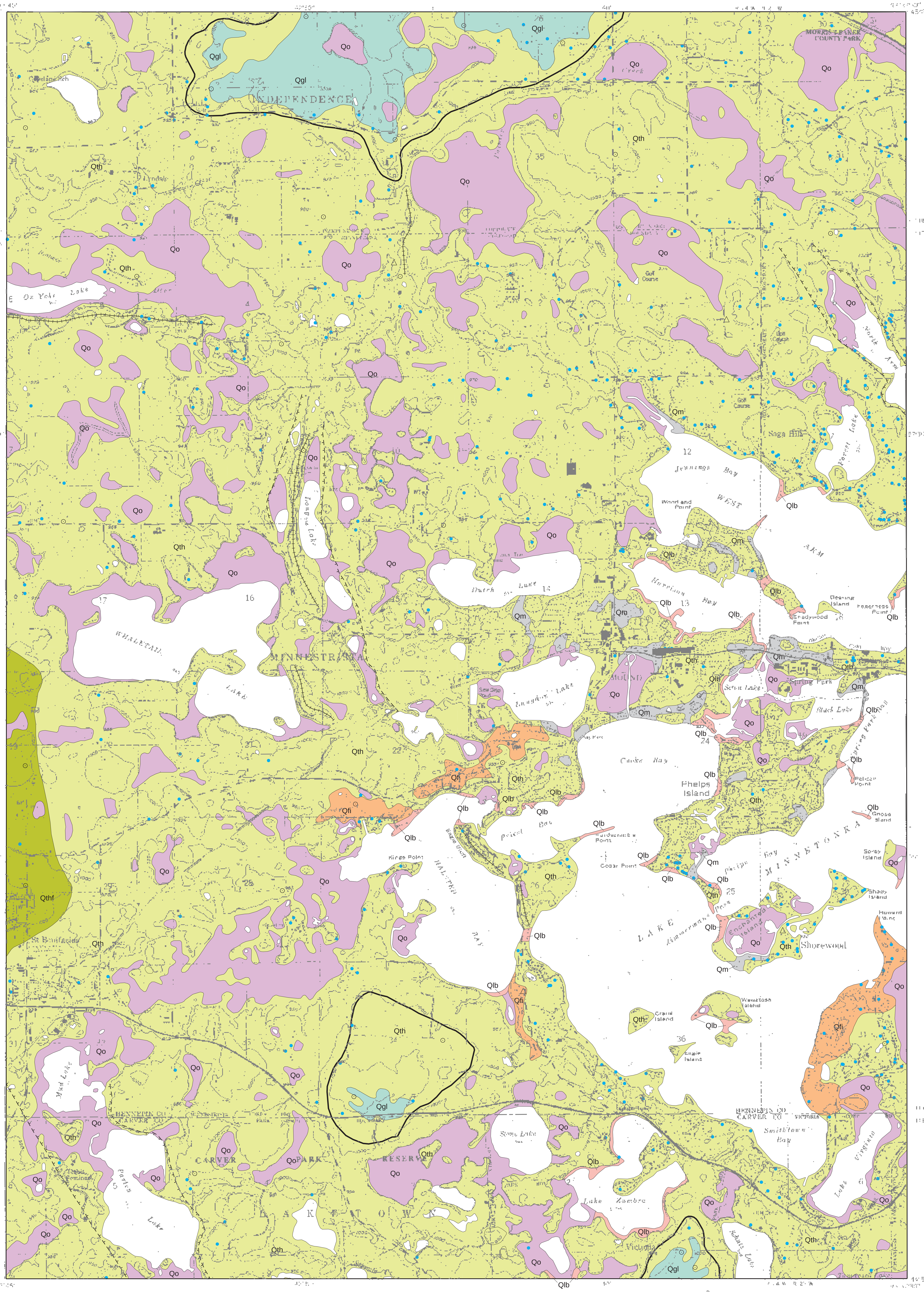
1998 STATE GEOLOGIC MAPPING PROGRAM ELEMENT (STATEMAP) OF THE NATIONAL GEOLOGIC MAPPING PROGRAM

MISCELLANEOUS MAP SERIES
MAP M-94
Mound Quadrangle



Base modified from U.S. Geological Survey 1996 Digital Raster Graphic of the Mound 1:24,000 quadrangle, 1958, revised 1993

Universal Transverse Mercator grid, zone 15
1927 North American Datum

Revisions of 1993 compiled in cooperation with State of Minnesota agencies from photographs taken in 1991 and other sources. Contours were not revised. This information has not been field checked.

TRUE NORTH
MAGNETIC NORTH
2°31'
APPROXIMATE MEAN DECLINATION, 1999

SCALE 1:24 000

1 1/2 0 1 MILE

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET

QUADRANGLE LOCATION

GIS compilation and cartography by Joyce Meints

CORRELATION OF MAP UNITS

Artificial	Palustrine	Lacustrine	Fluvial	Glacial			
Qm	Qo	Qlb				Holocene	QUATERNARY
		Qgl	Qfi	Qth	Qthf	Late Wisconsin; Pleistocene	

DESCRIPTION OF MAP UNITS

The map emphasizes the origin of surficial materials in the area of the Mound 7.5-minute quadrangle. It was constructed in part using aerial photographs taken in 1968 and 1977 (1:80,000 scale) and U.S. Soil Conservation Service soil-survey maps for Carver (Edwards, 1968) and Hennepin (Lueth, 1974) Counties.

Field work was conducted during the summer and fall of 1998. Most exposures consisted of excavations, including construction sites, road cuts, and gravel pits. Surface samples were supplemented with soil borings drilled to a depth of about 20 feet (6 meters).

ARTIFICIAL DEPOSITS

Qm **Fill (Holocene)**—Mixed sediments consisting predominantly of pebbly loam scraped from surrounding highs into low areas. Typically underlain by organic deposits. Subject to settling and compaction.

PALUSTRINE DEPOSITS

Qo **Organic deposits (Holocene)**—Ponded and shallow-water sediments consisting of dark-brown to black, drained and undrained peat and muck. Typically found in depressions and surrounding lakes; may include sandy beach sediments.

LACUSTRINE DEPOSITS

Qlb **Lake beach sediment (Holocene)**—Wave-washed sediments consisting predominantly of fine to coarse sand. Unit is derived from underlying till and ice-contact deposits; may be interbedded with organic deposits. Width of exposure varies depending on water level in lake.

Qgl **Glacial lake deposits (Pleistocene)**—Lacustrine sediment consisting of generally homogeneous silt loam to silty clay loam; interbedded in places with thin layers of fine sand and pebbles; patchy distribution on broad plateaus; variable thickness (as much as 7 feet; 2 meters).

FLUVIAL DEPOSITS

Qfi **Ice-contact deposits (Pleistocene)**—Mixed sediments, the overall texture of which is predominantly loamy sand to sandy loam. Unit consists of layers of sorted sediments (silt, sand, and gravel) and unsorted sediments (till, cobbles, boulders); very coarse sand fraction contains 4–17 percent shale. Collapsed, hummocky topography. Deposited by meltwater streams on top of ice. Mined in places for sand and gravel or construction fill.

GLACIAL DEPOSITS

Sediment deposited by the northwest-source Des Moines–lobe ice. Deposits contain abundant gray siliceous shale fragments. Color of till varies but typically is yellow-brown to gray-brown where oxidized. Interpreted as supraglacial in origin. Distinctions are made in part on the basis of the degree of collapse.

Qth **High-relief till (Pleistocene)**—Unsorted sediment consisting of abundant pebbles, common cobbles, and rare boulders in a loamy matrix; pockets of silt, sand, and gravel are present in places. Average composition of the very coarse sand fraction includes crystalline rocks (46 ± 7 percent), carbonate rocks (25 ± 4 percent), and shale fragments (29 ± 7 percent). Hummocky, irregular topography includes poorly developed circular flat-topped hills and many collapsed channels. Overall relief 40–90 feet (12–27 meters). Interpreted to have been deposited in an unstable stagnant-ice environment. Irregular topography inherited in part from the collapse of debris and buried ice deposited during multiple ice events.

Qthf **Stagnation deposits (Pleistocene)**—Till as above; unit forms well-developed, circular and coalescing hills; overall relief ± 80 feet (24 meters). Deposited in a more stable stagnant-ice environment.

DESCRIPTION OF MAP SYMBOLS

Contact—Established from aerial photographs, geomorphology, soil maps, and examination of surficial material.

Obscure scarp—Ticks point downscarp. Marks former channel or ice-contact position. Complex pattern of parallel and cross-cutting channels (some of the channels filled by esker ridges) suggests a history of overlapping drainage systems, i.e., drainage along the ice margin (Superior lobe and/or Des Moines lobe) and drainage perpendicular to the ice margin. These superimposed drainage systems are visible through a mantle of 50–100 feet of Des Moines–lobe till deposited during the final glacial advance in this area.

Elongate ridge—Interpreted to be an esker; may be broken or discontinuous. Esker sand and gravel is buried by as much as 70 feet (21 meters) of glacial till.

Soil boring—Auger depth, 10–19 feet (3–6 meters).

Sample location—Includes outcrops and artificial exposures (construction sites and gravel pits).

Plateau—Broad, relatively level area in a zone of hummocky topography. Plateaus range from 40 to more than 640 acres (.16–2.59 square kilometers) and have low relief (10–20 feet or 3–6 meters) across the top. Predominantly till; capped in places by as much as 7 feet (2 meters) of lake sediment. The plateaus are interpreted to represent saturated debris that was deposited in lows on stagnant ice; the deposits now stand as topographic highs on the landscape. Sorted sediment in the center of the plateau was deposited in standing water.

Record of water-well construction—Location of a water well for which there is a log prepared by a well driller. The information on the log is interpreted by a geologist and the location of the well verified. There are 455 well records for the Mound quadrangle.

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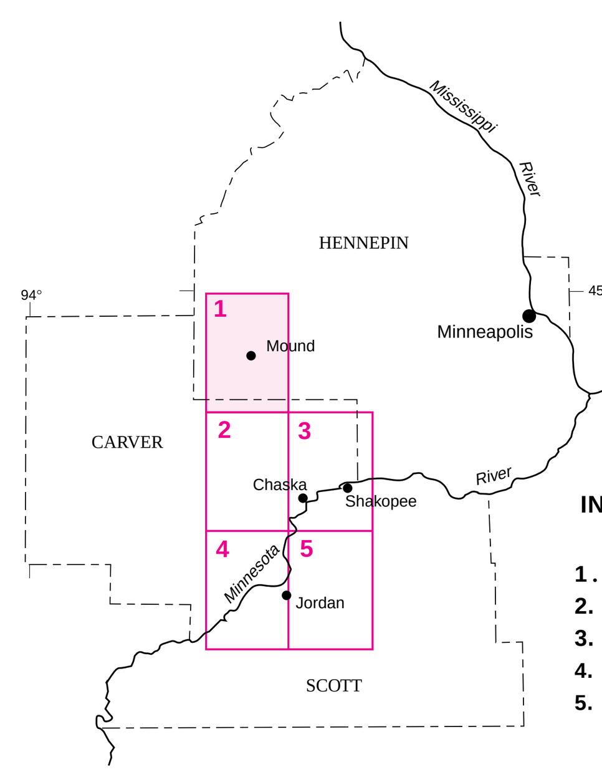

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4. Jordan West (M-93)
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SURFICIAL GEOLOGIC MAP OF THE MOUND QUADRANGLE, CARVER AND HENNEPIN COUNTIES, MINNESOTA

By
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1999