

**DESCRIPTION OF MAP UNITS**  
 The map emphasizes the origin of surficial materials in the area of the Jordan West 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 Scott (Harms, 1955) and Carver (Edwards, 1968) 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).

**SEDIMENTARY ROCKS**  
**Cj** **Jordan Sandstone (Cambrian)**—Tan, fine- to coarse-grained quartzose sandstone. Mapped where within 10 feet (3 meters) of surface.  
**Cs** **St. Lawrence Formation (Cambrian)**—Silty dolostone; may be interbedded with siltstone, shale, and sandstone. Mapped where within 10 feet (3 meters) of surface.

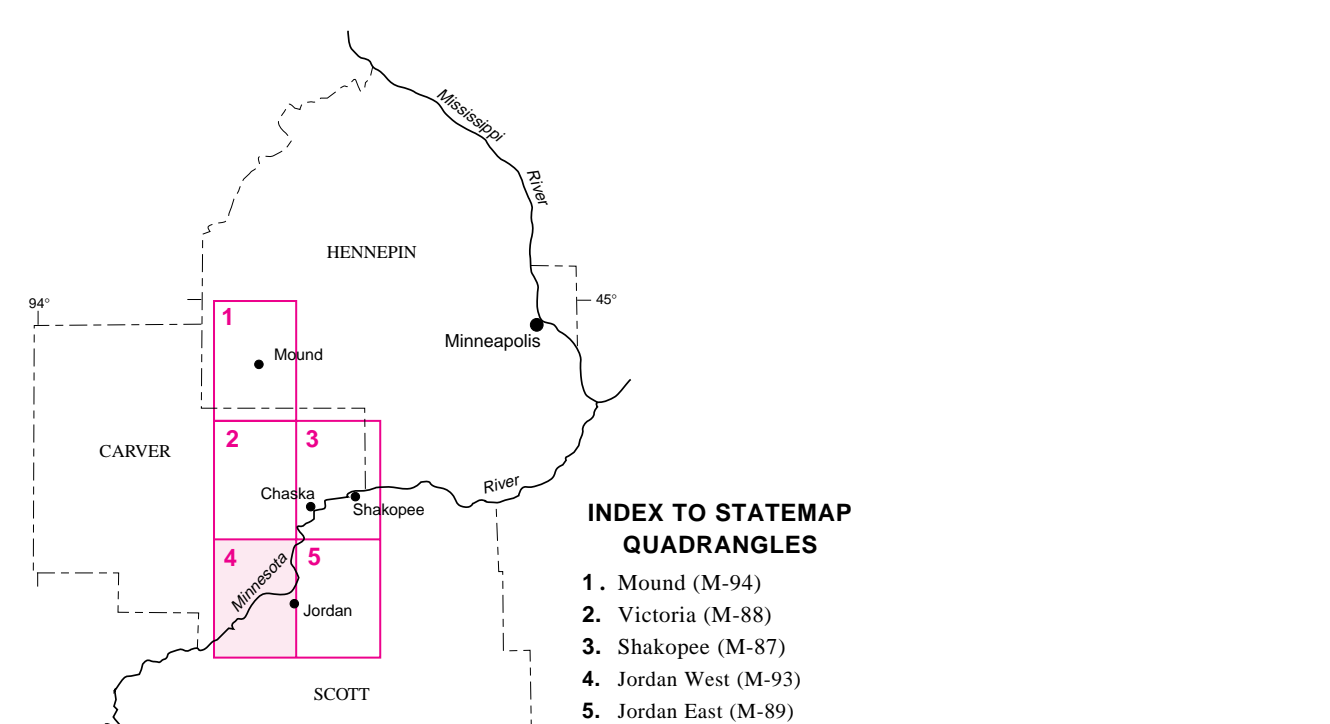
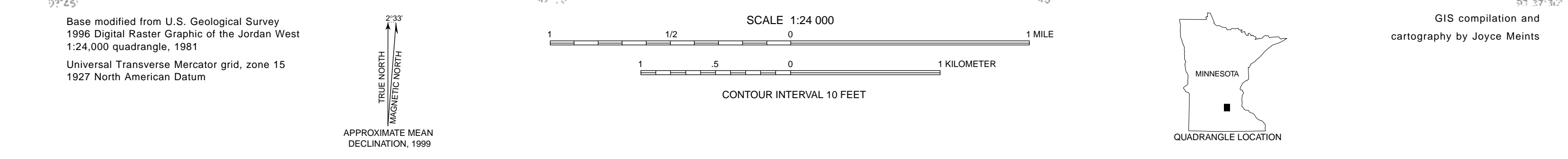
**DESCRIPTION OF MAP SYMBOLS**  
**Contact**—Dashed where approximate or gradational. Established from aerial photographs, geomorphology, soils maps, and examination of surficial material.  
**Scarp**—Ticks point down scarp; dashed where discontinuous or obscure. Marks former channel.  
**Alluvial fan**—Indicates area where fan morphology is distinct.  
**Scroll bars**—Indicates migration of river channel; may be slightly elevated; surface composed of loam to fine to medium sand. Symbol is schematic representation; individual bars not mapped.  
**Soil boring**—Auger depths, 6–32 feet (2–10 meters).  
**Sample location**—Includes outcrops and artificial exposures (construction sites and gravel pits).  
**Plateau**—Broad, relatively level area in a zone of hummocky topography. The plateau is about 40 acres in area (0.16 square kilometers) and has low relief (10–20 feet or 3–6 meters). Predominantly till; capped in places by lake sediment. The plateau is interpreted to represent saturated debris that was deposited in lows on stagnant ice; the deposits now stand as topographic highs on the landscape.  
**Record of water-well construction**—Location of a water well for which there is a descriptive 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 152 well records for the Jordan West quadrangle.

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**Qo** **Organic deposits (Holocene)**—Pond and shallow water sediments consisting of dark-brown to black, drained and undrained peat and muck. Typically found in small closed depressions and surrounding modern lakes. In the floodplain this unit may also contain overbank and slackwater sediments.  
**Qc** **Colluvial deposits (Holocene)**—Sediments reworked by gravity consisting of a friable mixture of sand, silt, clay, and pebbles; resembles till and sand and gravel from which it is derived; may contain disseminated organic debris. Unit includes the till that forms steep bluffs, sediment that accumulates at the base of steep slopes, and sediment that is deposited along small streams in deep gullies.  
**Qa** **Alluvial fan deposits (Holocene)**—Slopewash sediments consisting of loam to loamy sand; beds of silt loam to silty clay loam, fine sand, and gravel; and disseminated organic debris. Deposited at the base of steep slopes and at the mouths of deep gullies. Forms apron of sediment as thick as 30 feet (9 meters) over terrace and floodplain deposits.  
**Qf** **Alluvium of the Minnesota River (Holocene)**—River-channel, overbank, and slackwater sediments consisting of dark-brown to gray silt loam to sandy loam. Amount of sand increases adjacent to river channel and in areas of channel migration (scroll bars). Organic debris is both disseminated in the sediments and forms discrete peat beds in places.  
**Qfs** **Alluvium along small streams (Holocene)**—Creek-channel, overbank, and slackwater sediments consisting of dark grayish brown to olive-brown sandy loam to loamy sand. May contain organic debris, both disseminated in the sediments and in discrete peat beds in places. The irregular courses of Bevens Creek and Carver Creek near the north edge of the map are interpreted to be inherited from a previous glacial drainage. In places, these streams flow almost due south, against the regional flow to the northeast. The channels do not appear to be related to bedrock structure (Runkel, 1993).  
**Qft1** **Alluvium of terrace 1 (Holocene and Pleistocene)**—Variable thickness of predominantly medium to coarse sand; contains less than 30 percent gravel; very coarse sand fraction contains less than 10 percent shale. Terrace elevation is approximately 750 feet, 50 feet (12 meters) above present floodplain. Pattern indicates region of high relief (30–40 feet; 9–12 meters) interpreted to be eolian dunes.  
**Qft2** **Alluvium of terrace 2 (Pleistocene)**—Sand to sandy loam; contains less than 30 percent gravel; very coarse sand fraction contains less than 10 percent shale. Terrace elevation is 770–810 feet, 70–110 feet (21–34 meters) above present floodplain.  
**Qft3** **Alluvium of terrace 3 (Pleistocene)**—Sand to sandy loam; contains as much as 30 percent gravel; very coarse sand fraction contains less than 10 percent shale. Terrace elevation is 840–870 feet, 140–170 feet (43–52 meters) above present floodplain. Covered in places by 3–28 feet (1.9 meters) of fine silty sediments interpreted to be slackwater deposits. Pattern indicates where sand is thicker than 70 feet (21 meters), an area interpreted to be cut and filled. The terrace sediments adjacent to the patterned area are only 20–50 feet (6–15 m) thick over glacial till.  
**Qfi** **Ice-contact deposits (Pleistocene)**—Mixed sediments, the overall texture of which is predominantly sand to sandy loam; in places consists of layers of sorted sediments (silt, sand, and gravel) and unsorted sediments (till, cobbles, boulders); very coarse sand fraction contains on average 17 percent shale. Collapsed, hummocky topography. Deposited by meltwater streams on top of stagnant 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 is variable but is typically yellow-brown to gray-brown where oxidized. All till units are interpreted to be stagnation deposits. Distinctions among till units are in part based on the degree of collapse or changes in topographic relief. The change in topography from low to high relief is gradational. The distinction between units may not be shown on adjacent map sheets.  
**Qth** **Till (Pleistocene)**—Unsorted sediment consisting of abundant pebbles, common cobbles, and rare boulders in a matrix of loam to silt loam; pockets of silt, sand, and gravel in places. Average composition of the very coarse sand fraction includes crystalline rocks (42 ± 5 percent), carbonate rocks (26 ± 3 percent), and shale fragments (32 ± 6 percent).  
**Qtm** **High-relief deposits**—Till as above; hummocky, irregular topography; forms poorly developed circular flat-topped hills; overall relief is 60–100 feet (18–30 meters). Topography in part reflects underlying St. Croix moraine.  
**Qt** **Moderate-relief deposits**—Till as above; unit forms coalescing round or elliptical hills; overall relief about 40–70 feet (12–22 meters). Equivalent to map unit Qtm on adjoining Jordan East quadrangle (Lusardi, 1998a).  
**Qtp** **Till-plain deposits**—Till as above; undulating topography having widely spaced, circular flat-topped hills; low relief (10–30 feet; 3–9 meters). Unit extends less than one mile north to adjoining Victoria quadrangle (Lusardi, 1998b).

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 Alan R. Knaeble drilled the Giddings holes and described over 200 samples collected in the Mound and Jordan West quadrangles.  
 The views and conclusions contained in this document are those of the author and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. This map is submitted for publication with the understanding that the United States Government is authorized to reproduce and distribute reprints for governmental use. Supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, under assistance Award No. 98HQAG2061.  
 Every reasonable effort has been made to ensure the accuracy of the factual data on which this map interpretation is based; however, the Minnesota Geological Survey does not warrant or guarantee that there are no errors. Users may wish to verify critical information; sources include both the references listed here and information on file at the offices of the Minnesota Geological Survey in St. Paul. In addition, effort has been made to ensure that the interpretation conforms to sound geologic and cartographic principles. No claim is made that the interpretation shown is rigorously correct, however, and it should not be used to guide engineering-scale decisions without site-specific verification.



**SURFICIAL GEOLOGIC MAP OF THE JORDAN WEST QUADRANGLE,  
 CARVER AND SCOTT COUNTIES, MINNESOTA**

By  
 Barbara A. Lusardi  
 1999