

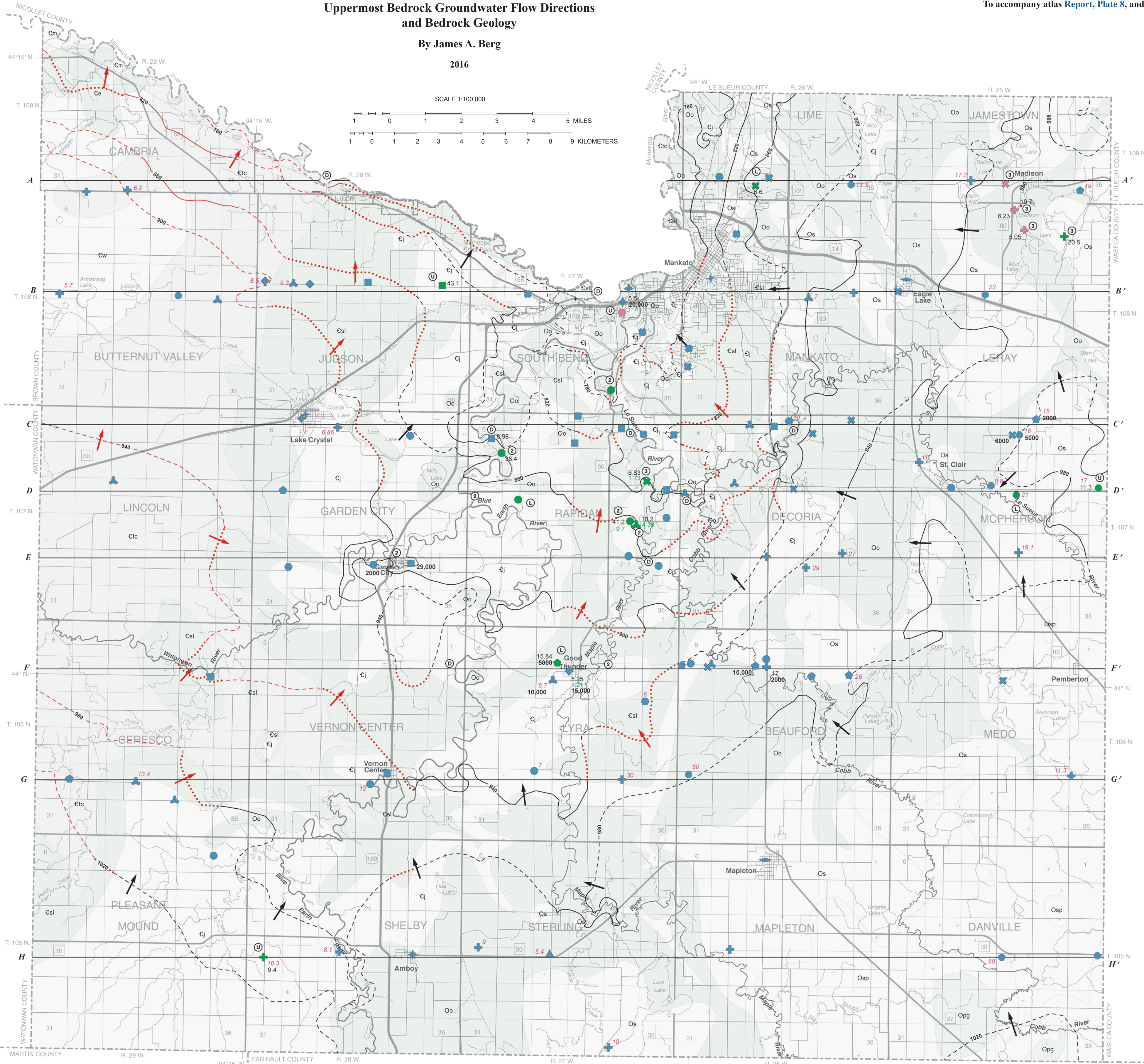
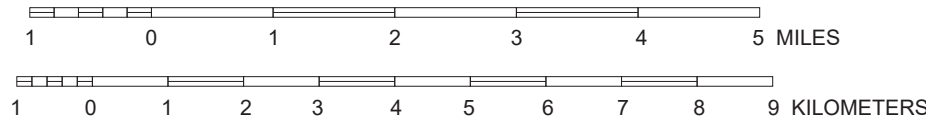
To accompany atlas Report, Plate 8, and Plate 9.

Uppermost Bedrock Groundwater Flow Directions
and Bedrock Geology

By James A. Berg

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SCALE 1:100 000



Tritium age

Symbol color indicates tritium age of water sampled.

- Recent: water entered the ground since about 1953 (8 to 15 tritium units [TU]).
- Mixed: water is a mixture of recent and vintage waters (greater than 1 TU to less than 8 TU).
- Vintage: water entered the ground before 1953 (less than or equal to 1 TU).
- Well was not sampled for tritium.

Groundwater conditions

(Some conditions shown are interpreted and do not correspond to tritium data locations.)

- Groundwater moves from an overlying surficial aquifer to a buried aquifer
- Groundwater moves from an overlying buried aquifer to an underlying buried aquifer
- Groundwater discharge from a buried aquifer to surface water
- Groundwater flows laterally
- Groundwater flowpath is unknown (deep groundwater with recent or mixed tritium age)

Sampled well and aquifer symbols

- sm
- st
- s2
- se
- su
- Prairie du Chien
- Prairie du Chien-Jordan
- Jordan
- St. Lawrence
- St. Lawrence and Upper Tunnel City
- St. Lawrence, Upper Tunnel City, and Woneoc
- Upper Tunnel City
- Upper Tunnel City and Woneoc
- Upper Tunnel City, Woneoc, and Mt. Simon
- Mt. Simon

Bedrock aquifers and aquitards

- Opg Platteville-Glenwood formations¹
- Osp St. Peter
- Os Shakopee (Prairie du Chien)
- Oo Oneota Dolomite (Prairie du Chien)*
- Cj Jordan
- Csl St. Lawrence Formation*
- Ctcl Tunnel City
- Cw Woneoc
- Ce Eau Claire Formation*
- Cm Mt. Simon

¹The Glenwood Formation acts as an aquitard but the overlying Platteville Formation is a thin aquifer. Combined, these units are shown as an aquitard.

*aquitard

Symbols and labels

- 10.3 If shown, arsenic concentration equals or exceeds 5 parts per billion.
- 9.4 If shown, chloride concentration equals or exceeds 5 parts per million.
- 9.7 If shown, nitrate-nitrogen concentration equals or exceeds 1 part per million.
- 29,000 If shown, groundwater residence time in years, estimated by carbon-14 (¹⁴C) isotope analysis
- Surface-water sample
- Static water level data
- F—F' Line of cross section

Potentiometric surface contour

- (dashed where approximate)
- 940- Upper geologic units (St. Peter Sandstone, Prairie du Chien Group, and Jordan Sandstone)
- 940- Fractured aquitard (St. Lawrence Formation and Eau Claire Formation)
- 940- Lower geologic unit (Tunnel City Group, Woneoc Sandstone, Eau Claire Formation, and Mt. Simon Sandstone)

Groundwater flow direction

- Upper geologic units (St. Peter Sandstone, Prairie du Chien Group, and Jordan Sandstone)
- Lower geologic units (St. Lawrence Formation, Tunnel City Group, Woneoc Sandstone, Eau Claire Formation, and Mt. Simon Sandstone)

This map was compiled and generated in a geographic information system (GIS). Digital data products, including chemistry and geophysical data, are available from the DNR Ecological and Water Resources Division [page](http://mndnr.gov/groundwatermapping) (mndnr.gov/groundwatermapping).

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Base modified from Minnesota Geological Survey, Blue Earth County Geologic Atlas, Part A, 2012.

Universal Transverse Mercator projection, zone 15N, North American Datum of 1983. North American Vertical Datum of 1988.

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