

# Preliminary Geology of the Buried Bedrock Surface, Pierce County, Wisconsin

Thomas J. Evans, William S. Cordua, and David L. LePain

The bedrock surface in Pierce County is typically overlain by Quaternary sediment, including 0 to several tens of feet of glacial sediment over much of the upland areas; several tens of feet to 100 ft of alluvium, colluvium, and glaciofluvial sediment in smaller stream and river valleys; and more than 300 ft of glaciofluvial sediment in the Mississippi River Valley and its larger tributaries.

## EXPLANATION

- Os** **Sinnipee Group (Middle Ordovician)**  
(Platteville and Decorah Formations; undivided)  
Includes up to 80 ft of Decorah Formation in Pierce County. Gray to gray-green shale, thinly laminated. Platteville Formation varies from light brown to buff dolomite, is thin- to medium-bedded, and can be up to 20 ft in thickness.
- Oa** **Ancell Group (Middle Ordovician)**  
(Glenwood and St. Peter Formations; undivided)  
St. Peter Formation is up to 150 ft thick; Glenwood Formation ranges from 0 to 5 ft in thickness. St. Peter Formation is a white to light gray to pale yellow-brown quartzose sandstone; Glenwood Formation is dark gray to medium brown shale, siltstone, and fine-grained argillaceous sandstone.
- Owr** **Washington Road sandstone (informal, Middle Ordovician)**  
Includes just over 40 ft of medium-bedded, very fine-grained feldspathic sandstone with thin clay layers along bedding planes, a friable, white, massive feldspathic arenite, and a medium-bedded, ferruginous feldspathic sandstone. Lower contact with Rock Elm shale is gradational over several feet.
- Ore** **Rock Elm shale (informal, Middle Ordovician)**  
Over 90 ft of gray, green, and brown noncalcareous shale interbedded with fine-grained, silty feldspathic sandstone. Thin beds of sandstone range from thinly laminated to massive.
- Op** **Prairie du Chien Group (Early Ordovician)**  
(Shakopee and Oneota Formations; undivided)  
Light brown, gray-brown, and yellow dolomite, sandy dolomite, and dolomitic sandstone. Oneota Formation is approximately 140 ft thick, and Shakopee Formation varies from 45 to 80 ft thick. Locally silicified and commonly vuggy; larger solution cavities partially filled with brown, fine-grained sediment are common. Generally flat-lying strata, except where highly disrupted in area of Rock Elm Complex (unit **Opd**).
- Opd**
- Ct** **Trempealeau Group (Late Cambrian)**  
(Jordan and St. Lawrence Formations; undivided)  
Yellow-brown to white sandstone, gray siltstone, and minor gray shale. Friable to well cemented, very fine- to coarse-grained quartzose sandstone and siltstone. Gradational lower contact with Tunnel City Group and sharp upper contact with Prairie du Chien Group. St. Lawrence Formation (Lodi Member): dolomitic siltstone and very fine-grained sandstone approximately 30 ft thick. Jordan Formation (Norwalk and Van Oser Members): 80 to 90 ft thick, fine- to coarse-grained sandstone. Finer grained sandstones are commonly micaceous.
- Ctc** **Tunnel City Group; Lone Rock Formation (Late Cambrian)**  
Yellow-brown, buff, and green sandstone, gray siltstone, and pale green claystone. Sandstone is friable to well cemented, very fine- to medium-grained, and quartzose. Lone Rock Formation is very-fine- to fine-grained sandstone, siltstone, and thin interbeds of gray-green claystone, at least 40 to 50 ft thick. Lone Rock sandstone is slightly glauconitic (up to a few percent glauconite) to highly glauconitic (greater than 20 percent glauconite), locally feldspathic, and locally includes sandstone intraclasts and sparse to abundant worm burrows.
- Cms** **Elk Mound Group; Mount Simon Formation (Late Cambrian)**  
Occurs as outcrops of coarse quartz sandstone, dipping up to 20° radially outward from a central area (Rock Elm Complex), and includes scattered, discontinuous blocks, some of which show evidence of intense deformation. Includes discontinuous strings and lenses of quartz pebbles, coarse and fine breccia composed of fragments of quartzite, metamorphic textures, and prophyritic and nonprophyritic felsites. Undeformed strata present in subsurface in Pierce County outside of Rock Elm Complex.
- Cu** **Undifferentiated Cambrian bedrock**  
Some or all of the Late Cambrian rock units beneath several tens to a few hundred feet of Pleistocene glaciofluvial sediment. Position of contacts are not shown due to extremely limited data.

## SYMBOLS

- Outcrop Data Point**
- Subsurface Data Point**

## Geologic Contacts

- Definite**  
Position confident to +/- 10 ft elevation on base map.
- Approximate**  
Position confident to +/- 20 ft elevation on base map.
- Inferred**  
Position less confident due to limited data. Position of line based on geologic inference and judgement of the authors.
- Concealed**  
Position least confident due to very limited data and burial under several to many tens of feet of younger geologic material.

## Faults

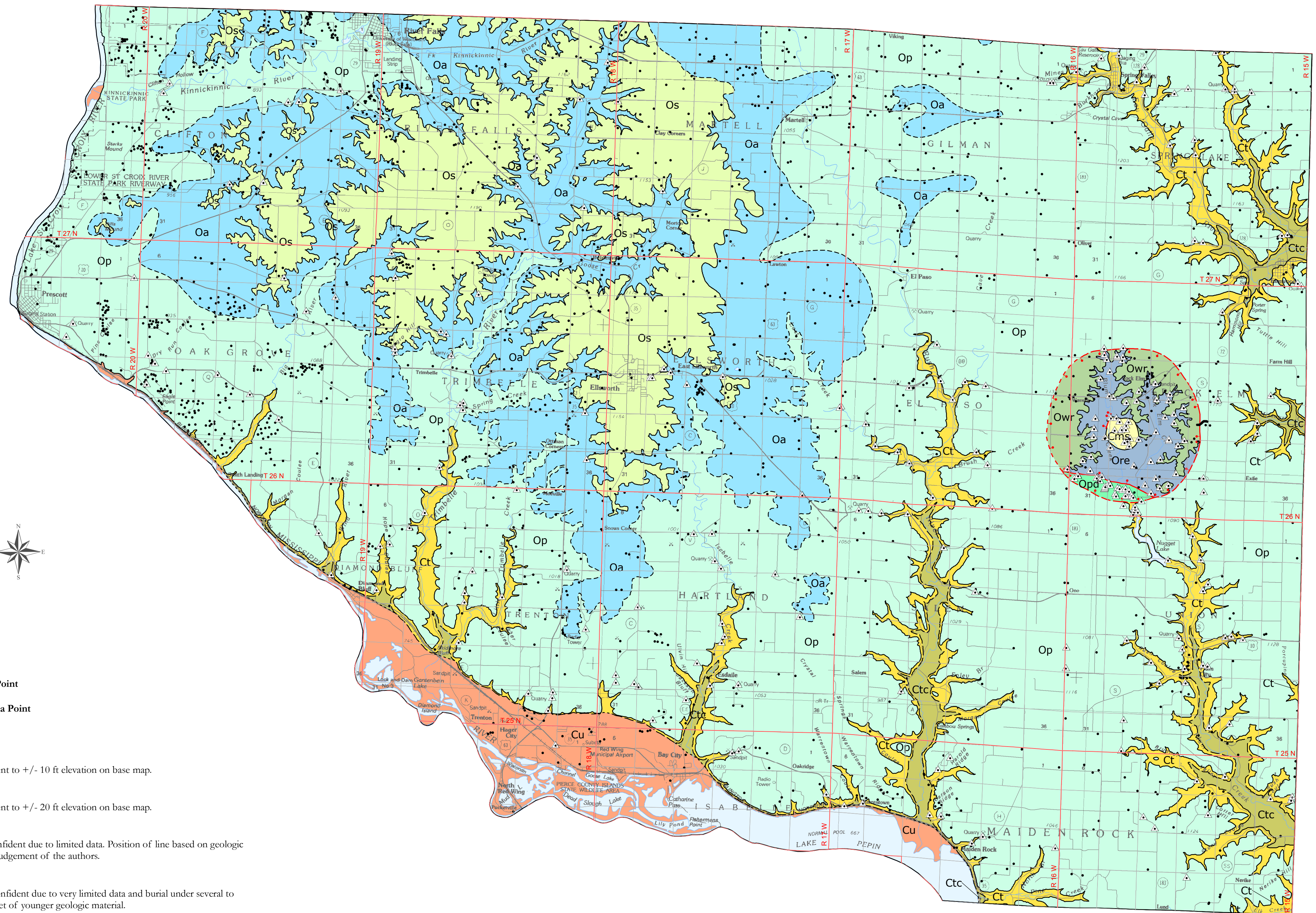
Ball and bar symbol on downthrown side of fault.

- Definite**  
Position confident to +/- 100 ft horizontal distance on base map.
- Approximate**  
Position confident to +/- 250 ft horizontal distance on base map.
- Inferred**  
Limited data. Lower positional and geologic confidence. Position of line based on geologic inference and judgement of the authors.

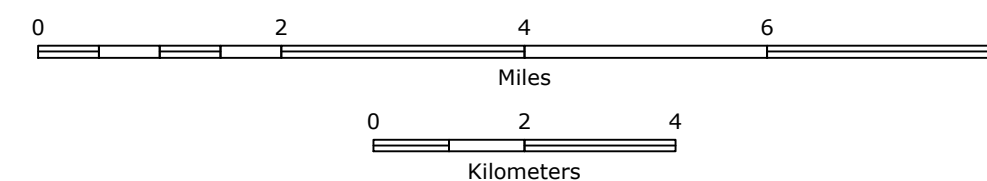
## Wisconsin Geological and Natural History Survey Open-File Report 2007-08

This map is part of an ongoing project funded by STATEMAP, the state component of the National Cooperative Geologic Mapping Program of the U.S. Geological Survey.

This map represents work performed by the Wisconsin Geological and Natural History Survey and is released to the open files in the interest of making the information readily available. This map has not been edited or reviewed for conformity with Wisconsin Geological and Natural History Survey standards and nomenclature.



SCALE 1:100,000



Wisconsin Transverse Mercator Projection  
1991 Adjustment to the North American Datum of 1983 (NAD 83/91)

Base map from U.S. Geological Survey Digital Line Graph files (1990, scale 1:100,000-), modified by Wisconsin Department of Natural Resources (1992) and Wisconsin Geological and Natural History Survey (2000).

**UW Extension**

Wisconsin Geological and Natural History Survey

3817 Mineral Point Road, Madison WI 53705-5100  
608/263.7389 fax 608/262.8086  
www.uwex.edu/wgnhs

James M. Robertson, Director and State Geologist

