

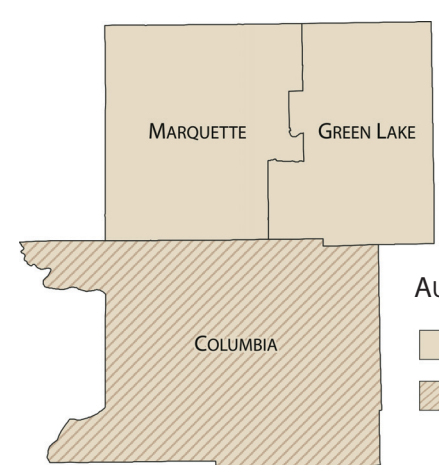
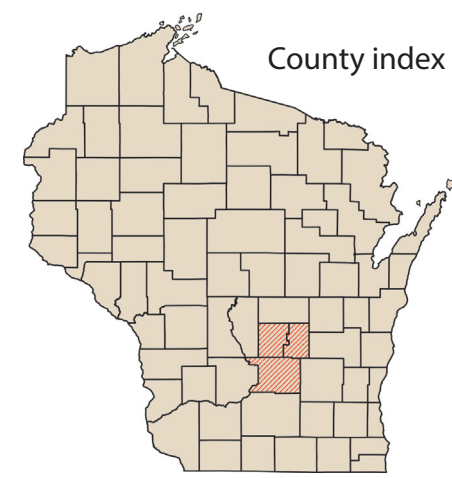
Quaternary Geology of Columbia, Green Lake, and Marquette Counties, Wisconsin

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and Lee Clayton

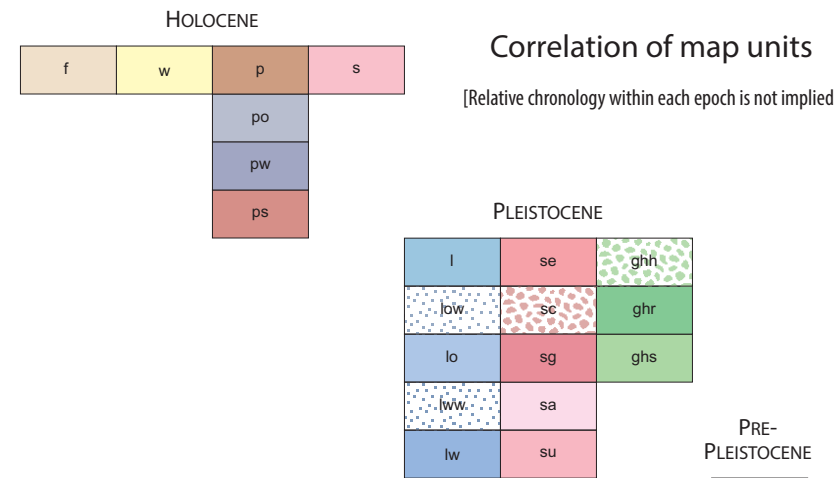
with contributions by John W. Attig

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Explanation

Postglacial deposits

- 1** Fill. Consists of various materials including gravel, sand, silt and clay.
- 2** Windblown sand. Well sorted, generally vegetated. Dunes between 2 and 7 m thick, generally no more than 5 m high. Active blowouts and dunes exist in some places. Deposited immediately following deglaciation. Distribution is obscure in most places and is more widespread than indicated on map.
- 3** Peat. Unit **pr**: Peat occupying low-lying, flat to low-relief surfaces; thickness varies, but is typically between 1 and 5 m thick. Unit **pw**: Peat over silty and clayey lake sediment (or over sandy beach sediment near margins of wetlands) of glacial Lake Oshkosh; usually occurs in areas that are less than 234 m above sea level in elevation (may be beach sediment near margins of wetland). Unit **ps**: Peat over lake sediment of glacial Lake Wisconsin; usually occurs in areas that are between 234 and 296 m above sea level in elevation. Unit **pt**: Peat overlying postglacial or meltwater stream sediment consisting of silty and sandy sediment with some channel sand and silt.
- 4** Stream sediment. Commonly consists of silty and sandy sediment with some channel sand and silt; typically between 1 and 15 m thick. Deposited in flood plains adjacent to post-glacial streams; most of this sediment was probably deposited during the recent past.

Glacial deposits, undifferentiated

- 1** Lake sediment. Unit **l**: Sand, silt, and clay. Unit **lo**: Glacial Lake Oshkosh sediment covered with thin patches of windblown sand generally less than 2 m thick. Unit **ls**: Sediment deposited in glacial Lake Oshkosh, usually at elevations below 234 m above sea level; largely silt and clay where deposited in deeper water grading to sand near the shoreline; typically between 1 and 80 m thick; material deposited near the shoreline may include windblown sediment, washed hillside sediment, and patches of peat that could not be mapped separately. Unit **lw**: Glacial Lake Wisconsin sediment covered with thin patches of windblown sand generally less than 2 m thick. Unit **lw**: Sand, silt, or clay deposited in glacial Lake Wisconsin usually at elevations above 234 m above sea level; largely silty sand where deposited in deeper water grading to sand near the shoreline.
- 2** Meltwater-stream sediment. Sand and gravel deposited directly by streams originating from the margin of the Green Bay Lobe; commonly between 1 and 30 m thick. Unit **sc**: Eroded meltwater-stream sediment; gullied topography resulting from erosion in postglacial time. Unit **sc**: Collapsed (kettled) meltwater-stream sediment deposited in alluvial fans, deltas, and proglacial river channels. Unit **sg**: Subaqueous morainal bank deposited adjacent to the former margin of the Green Bay Lobe; commonly flat on top. Unit **sa**: Meltwater-stream sediment deposited in an alluvial fan or delta immediately adjacent to a moraine or ice-contact face. Unit **su**: Meltwater-stream sediment deposited in proglacial river channels or in tunnel channels beneath the margin of the Green Bay Lobe.

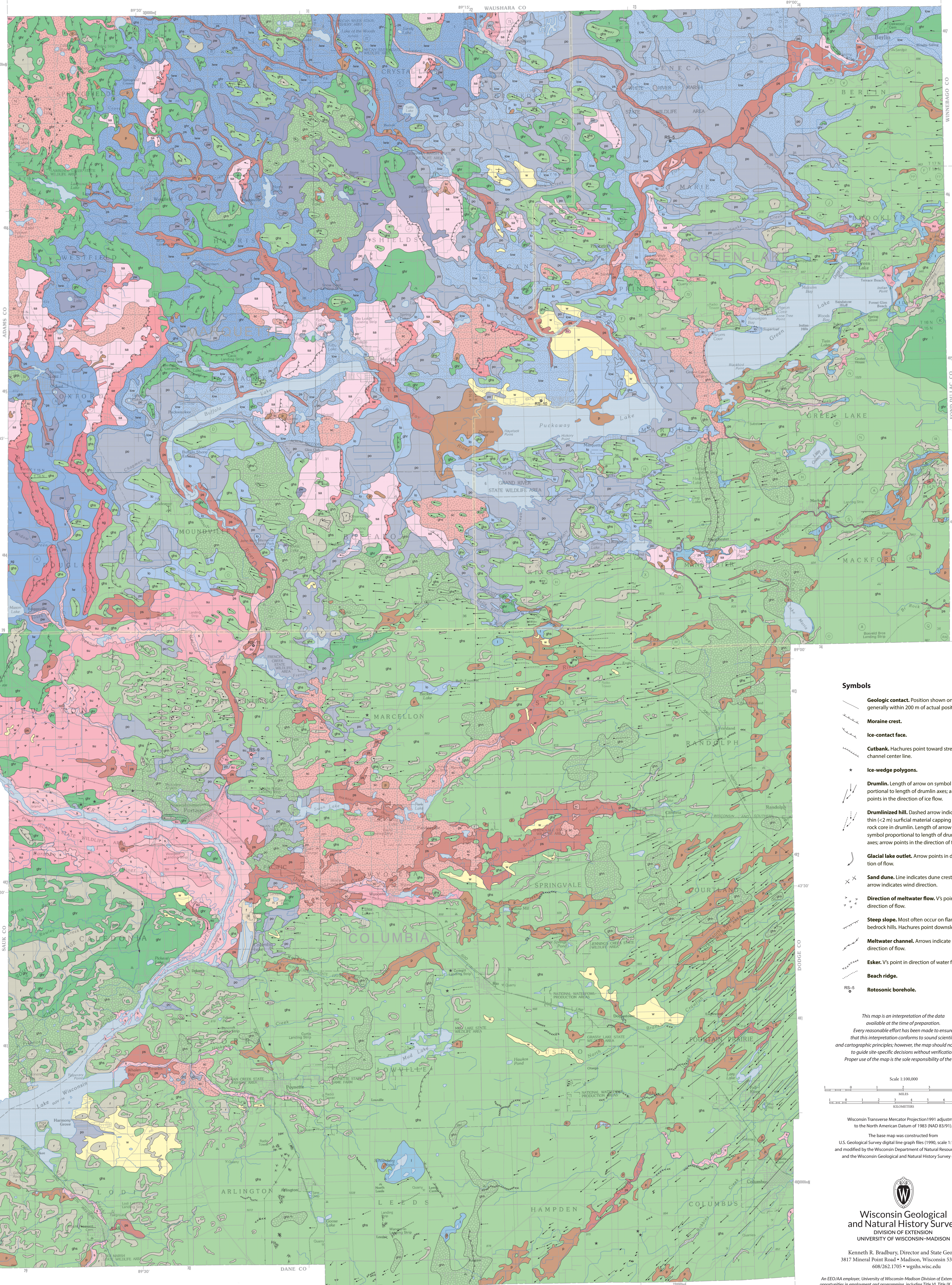
Holy Hill Formation, Horicon Member

- 1** Till. Brown to reddish-brown, gravelly, clayey, silty sand deposited by the Green Bay Lobe; generally at least 3 m thick; includes many small to large inclusions of windblown sediment, hillside sediment, and glacial lake sediment that could not be mapped separately. In some areas, the modern surface reflects the landscape that was present before the last part of the Wisconsin glaciation. Unit **ghb**: Mostly low-relief, nondescript, hummocky topography; includes many areas of enclosed depressions. Unit **ghr**: Generally rolling topography in areas lacking drumlins. Unit **ghs**: Rolling topography that was subglacially molded; contains streamlined landforms including drumlins and flutes; many drumlins in the western part of the study area are composed of stratified sand and gravel rather than till of the Horicon Member.

Bedrock

- 1** Bedrock. In glaciated areas, includes dolomite, sandstone, quartzite, rhyolite, or granite; in the Driftless Area, includes Paleozoic limestone and sandstone. Glacially-scoured bedrocks covered by less than 2 m of sediment (sandy till of the Holy Hill Formation or windblown sediment), which is too thin to map.

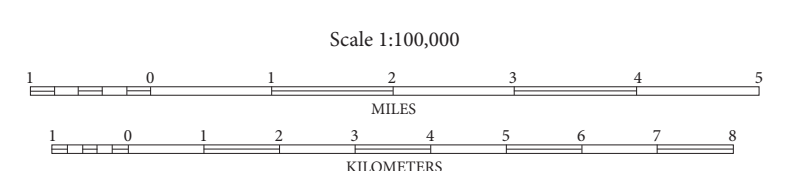
This geologic map was funded in part by the U.S. Geological Survey National Cooperative Geologic Mapping Program under award numbers 03HQAG0057 and 04HQAG0030. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.



Symbols

- Geologic contact.** Position shown on map generally within 200 m of actual position.
- Moraine crest.**
- Ice-contact face.**
- Cutbank.** Hachures point toward stream channel center line.
- Ice-wedge polygons.**
- Drumlin.** Length of arrow on symbol proportional to length of drumlin axes; arrow points in the direction of ice flow.
- Drumlined hill.** Dashed arrow indicates thin (<2 m) surficial material capping bedrock core in drumlin. Length of arrow on symbol proportional to length of drumlin axes; arrow points in the direction of flow.
- Glacial lake outlet.** Arrow points in direction of flow.
- Sand dune.** Line indicates dune crest, arrow indicates wind direction.
- Direction of meltwater flow.** Vs point in direction of flow.
- Steep slope.** Most often occur on flanks of bedrock hills. Hachures point downslope.
- Meltwater channel.** Arrows indicate direction of flow.
- Esker.** Vs point in direction of water flow.
- Beach ridge.**
- Rotosonic borehole.**

This map is an interpretation of the data available at the time of preparation. Every reasonable effort has been made to ensure that this interpretation conforms to sound scientific and cartographic principles; however, the map should not be used to guide site-specific decisions without verification. Proper use of the map is the sole responsibility of the user.



Wisconsin Transverse Mercator Projection 1991 adjustment to the North American Datum of 1983 (NAD 83/91).
The base map was constructed from U.S. Geological Survey digital line graph files (1990, scale 1:100,000) and modified by the Wisconsin Department of Natural Resources (1992) and the Wisconsin Geological and Natural History Survey (2012).



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