

GLACIAL DEPOSITS OF WISCONSIN

SAND AND GRAVEL RESOURCE POTENTIAL

LAND RESOURCES ANALYSIS PROGRAM

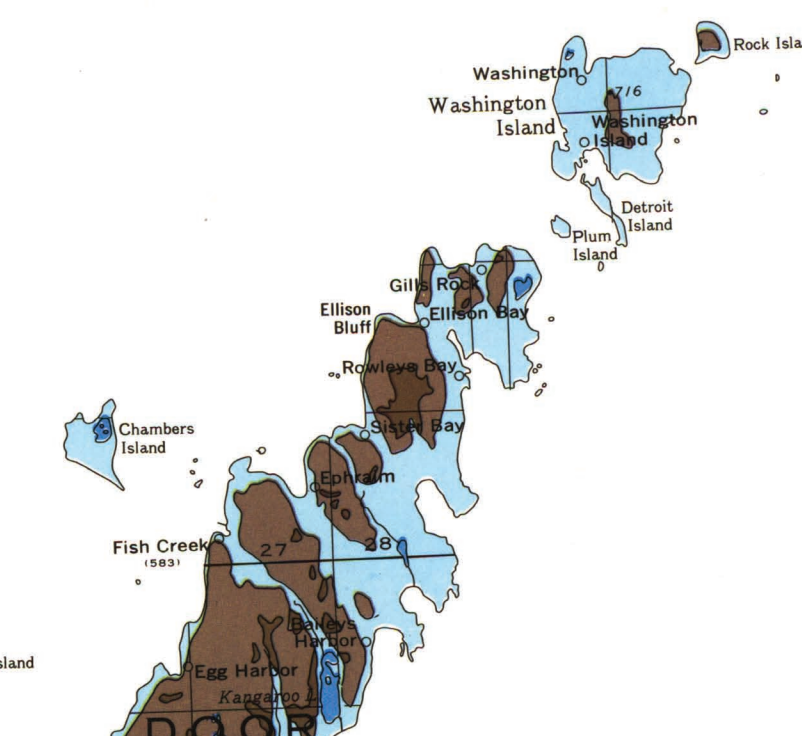
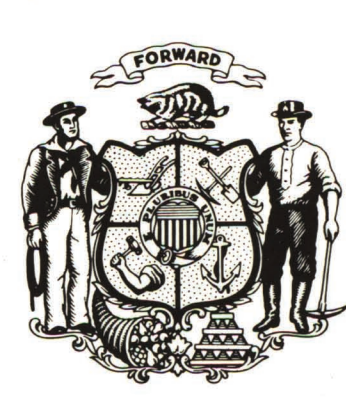
WISCONSIN GEOLOGICAL AND NATURAL HISTORY SURVEY

UNIVERSITY OF WISCONSIN-EXTENSION

AND
STATE PLANNING OFFICE
WISCONSIN DEPARTMENT OF ADMINISTRATION

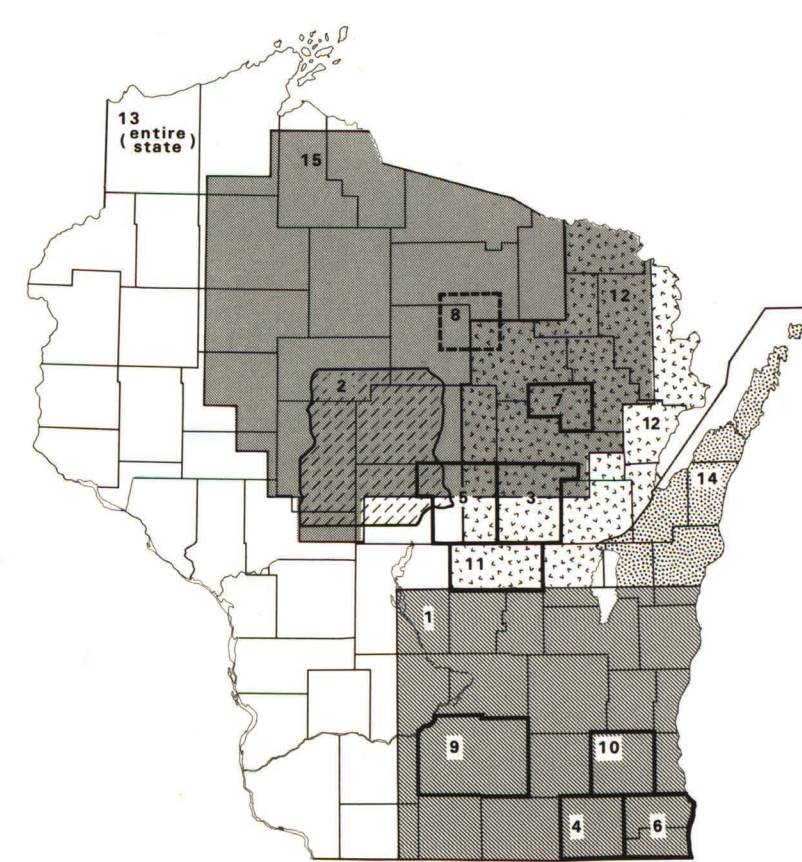
1976

Scale 1:500,000
1 inch equals approximately 8 miles
0 10 20 30 40 Miles
0 10 20 30 40 Kilometers



COMPILED SOURCES

The summary map was compiled by David W. Hadley and James H. Pelham from the following published and unpublished sources:



1. Alden, William C. 1918. Quaternary geology of southeastern Wisconsin. U.S. Geol. Survey Prof. Paper 106, 58 p. scale 1:250,000.
2. Bell, E.A., and Sherrill, M.G. 1974. Water availability in central Wisconsin: an area of near surface crystalline rock. U.S. Geol. Survey, Water-Supply Paper 2022, 32 p. scale 1:125,000.
3. Bownester, C.F., Jr. 1964. Ground-water resources of Winnebago County, Wisconsin. U.S. Geol. Survey, Water-Supply Paper 1669-U, 38 p. scale 1:125,000.
4. Hadley, D.W. 1974. Surficial deposits of Walworth County, Wisconsin. Wis. Geol. and Nat. Hist. Survey, open-file map, scale 1:62,500.
5. Holt, C.L., Jr. 1965. Geology and water resources of Portage County, Wisconsin. U.S. Geol. Survey, Water-Supply Paper 1796, 77 p. scale 1:62,500.
6. Hutchinson, R.D. 1973. Water resources of Racine and Kenosha Counties, southeastern Wisconsin. U.S. Geol. Survey, Water-Supply Paper 1878, 63 p. scale 1:125,000.
7. Mifflin, C.J., Olson, G.W., and F.D. 1967. Soil resources and forest ecology of Menominee County, Wisconsin. Wis. Geol. and Nat. Hist. Survey, Bull. 85, 32 p. scale 1:62,500.
8. Nelson, A.H. 1973. Age relationships of the deposits of the Wisconsin Valley and adjacent glacial lakes of north-central Wisconsin. Unpublished M.S. thesis, Univ. Wis.-Madison, plate 1, scale 1:140,000.
9. Ochoa, P.G. 1973. Surficial materials of Dane County, Wisconsin. Wis. Geol. and Nat. Hist. Survey, open-file map, scale 1:62,500.
10. Olmstead, R.J. 1973. Surficial materials of Waushara County, Wisconsin. Wis. Geol. and Nat. Hist. Survey, open-file map, scale 1:62,500.
11. Summers, W.K. 1965. Geology and ground-water resources of Waushara County, Wisconsin. U.S. Geol. Survey, Water-Supply Paper 1659-B, 32 p. scale 1:125,000.
12. Thwaites, F.T. 1943. Pleistocene of part of northeastern Wisconsin. Geol. Soc. Amer. Bull., v. 54, pp. 87-144, plate 10, scale 1:250,000.
13. Thwaites, F.T. 1946. Glacial features of Wisconsin. Wis. Geol. and Nat. Hist. Survey, open-file map, scale 1:125,000.
14. Thwaites, F.T., and Bertrand, K. 1957. Pleistocene geology of the Door Peninsula, Wisconsin. Geol. Soc. Amer. Bull., v. 68, pp. 631-660, plate 8, scale 1:250,000.
15. U.S. Army Cold Regions Research and Engineering Laboratory. 1969. An aphanite analysis of a portion of Wisconsin and Michigan for Project SANDLINE: 125 p. 5 appendices, 99 maps, scale 1:48,000.

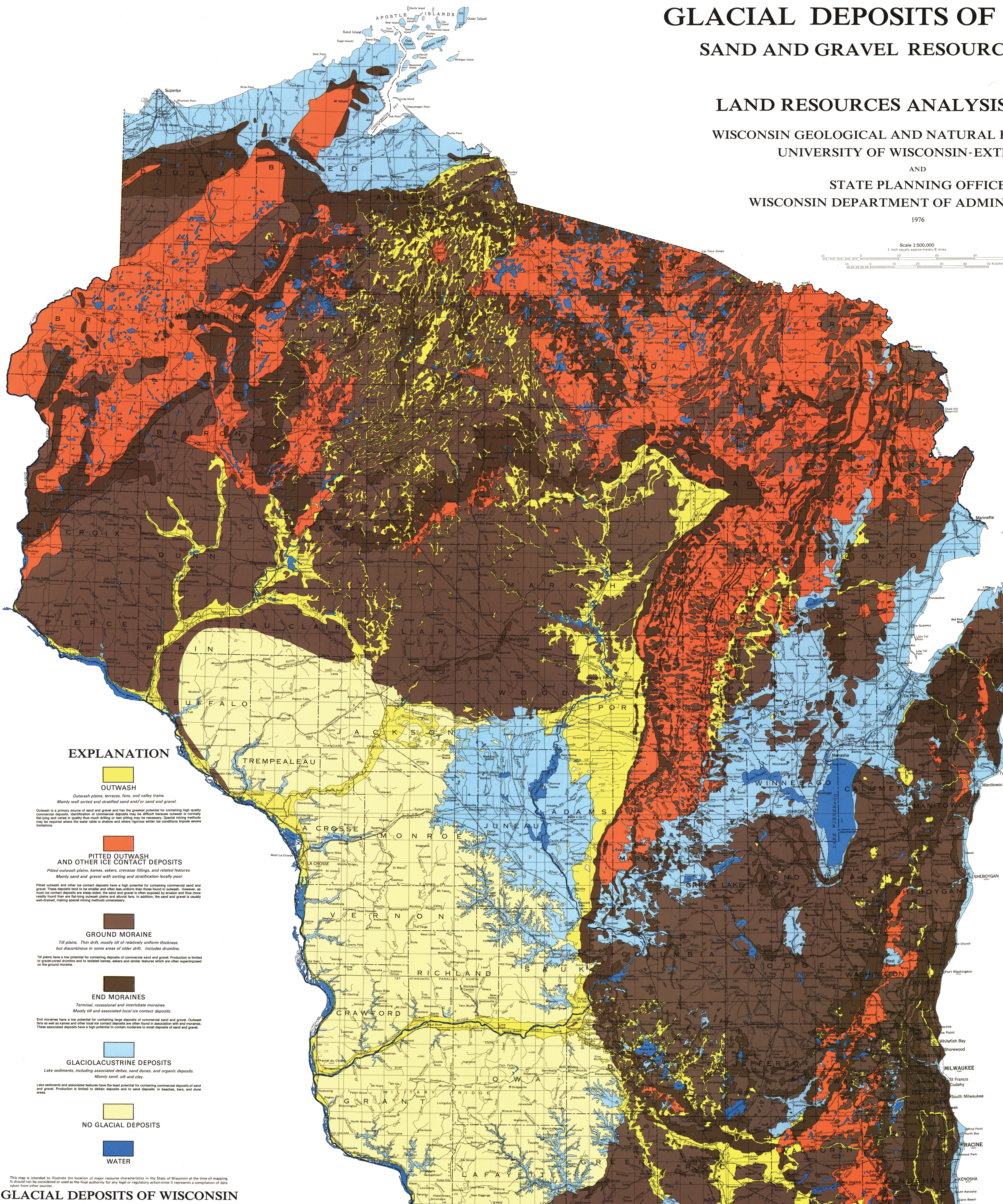
FUNDING SOURCES

The preparation of this map was financed in part by the Wisconsin Geological and Natural History Survey, University of Wisconsin - Extension and the Wisconsin Department of Administration, and in part through a comprehensive planning grant from the U.S. Department of Housing and Urban Development.

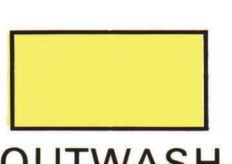
MAP AVAILABILITY

Maps are available through the Wisconsin Geological and Natural History Survey Map Sales Office, University of Wisconsin-Extension, Madison.

MAP 10

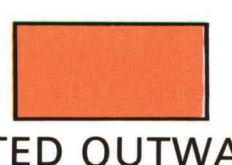


EXPLANATION



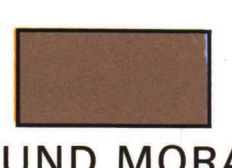
OUTWASH

Outwash plains, terraces, fans, and valley trains. Mainly well sorted and stratified sand and/or sand and gravel. Outwash is a primary source of sand and gravel and has the greatest potential for containing high quality commercial deposits. Identification of commercial deposits may be difficult because outwash is normally flat-lying and varies in quality thus much drilling or test pitting may be necessary. Special mining methods may be required where the water table is shallow and where rigorous winter ice conditions impose severe limitations.



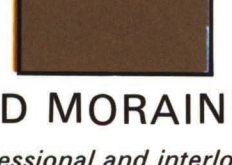
PITTED OUTWASH AND OTHER ICE CONTACT DEPOSITS

Pitted outwash plains, kames, eskers, crevasse fillings, and related features. Mainly sand and gravel with sorting and stratification locally poor. Pitted outwash and other ice contact deposits have a high potential for containing commercial sand and gravel. These deposits tend to be smaller and often less uniform than those found in outwash. However, as most ice contact deposits are steep-sided, the sand and gravel is often exposed to erosion and thus more readily found than are flat-lying outwash plains and alluvial fans. In addition, the sand and gravel is usually well-sorted, making special mining methods unnecessary.



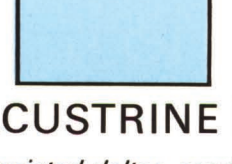
GROUND MORAINE

Till plains. Thin drift, mostly till of relatively uniform thickness but discontinuous in some areas of older drift. Includes drumlins. Till plains have a low potential for containing deposits of commercial sand and gravel. Production is limited to gravel-covered drumlins and to isolated kames, eskers and similar features which are often superimposed on the ground moraine.



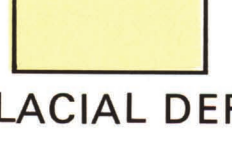
END MORAINES

Terminal, recessional and interlobate moraines. Mostly till and associated local ice contact deposits. End moraines have a low potential for containing large deposits of commercial sand and gravel. Outwash fans as well as kames and other local ice contact deposits are often found in association with end moraines. These associated deposits have a high potential to contain moderate to small deposits of sand and gravel.

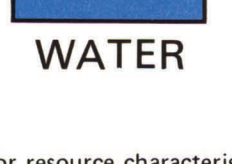


GLACIOLACUSTRINE DEPOSITS

Lake sediments, including associated deltas, sand dunes, and organic deposits. Mainly sand, silt and clay. Lake sediments and associated features have the least potential for containing commercial deposits of sand and gravel. Production is limited to deltaic deposits and to sand deposits in beaches, bars, and dune areas.



NO GLACIAL DEPOSITS



WATER

This map is intended to illustrate the location of major resource characteristics in the State of Wisconsin at the time of mapping. It should not be considered or used as the final authority for any legal or regulatory action since it represents a compilation of data taken from other sources.

GLACIAL DEPOSITS OF WISCONSIN

SAND AND GRAVEL RESOURCE POTENTIAL

MAP DESIGNED AND PREPARED BY
CARBONACE LABORATORY, UNIVERSITY OF WISCONSIN - MADISON