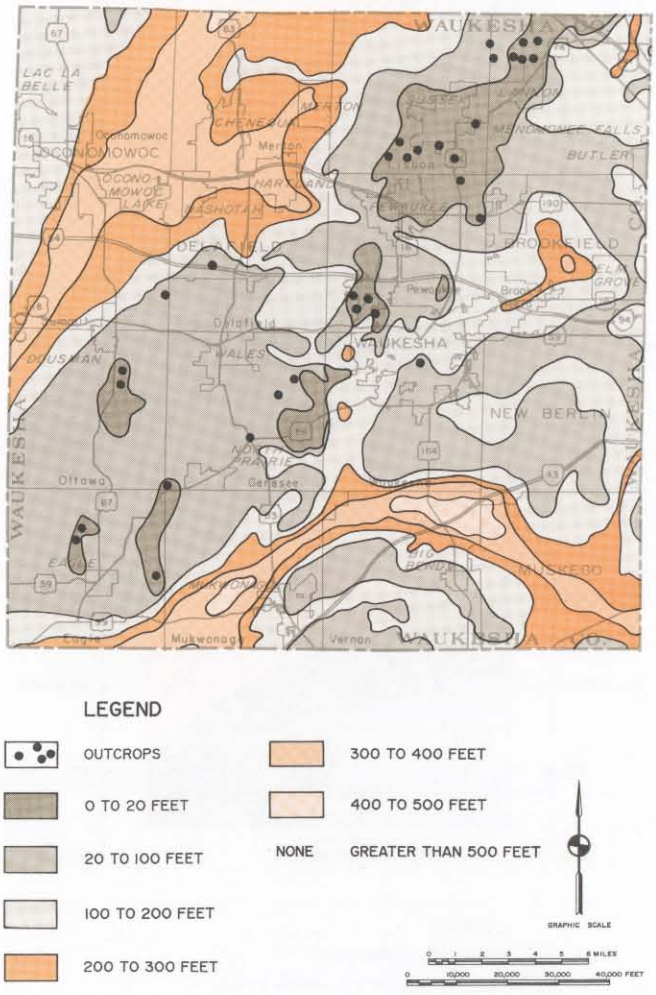
Map 9

THICKNESS OF GLACIAL DEPOSITS AND LOCATION OF BEDROCK OUTCROPS IN WAUKESHA COUNTY



Source: SEWRPC.

The combined thickness of unconsolidated glacial deposits, alluvium, and marsh deposits overlying bedrock exceeds 100 feet throughout most of the County. Thicknesses are greatest where glacial materials fill the bedrock valleys and in areas of topographic highs formed by end moraines. Map 9 shows the thickness of the unconsolidated glacial deposits overlying the bedrock in Waukesha County. As indicated on Map 9, the most substantial glacial deposits, from 300 to 500 feet thick, are located in the northwestern part of the County in the lakes area and in portions of the Towns of Mukwonago and Vernon. The thinnest glacial deposits, 20 feet thick or less, are found along an approximately six-mile-wide band traversing the County in a northeasterly direction from the Village of Eagle to the Villages of Lannon and Menomonee Falls.

Bedrock Geology

The bedrock formations underlying the unconsolidated surficial deposits of Waukesha County consist of Precambrian crystalline rocks; Cambrian sandstone; Ordovician dolomite, sandstone, and shale; and Silurian dolomite. Map 10 shows a map and cross-section of the bedrock geology of Waukesha County. The uppermost bedrock unit throughout most of the County is Silurian dolomite, primarily Niagara dolomite, underlaid by a relatively impervious layer of Maquoketa shale. In some of the pre-Pleistocene valleys in the southwestern and central portions of the County, however, the Niagara dolomite is absent and the uppermost bedrock unit is the Maquoketa shale.

Bedrock topography was shaped by preglacial and glacial erosion of the exposed bedrock. The consolidated bedrock underlying Waukesha County generally dips eastward at a rate of about 10 feet per mile. The bedrock surface ranges in elevation from about 900 feet above mean sea level, at Lapham Peak, to approximately 500 feet above mean sea level in the eastern portion of the County, as shown on Map 10. As indicated on Map 9, bedrock lies within 20 feet of the ground surface in portions of the County and a few localized areas exist where bedrock is exposed to the surface. These shallow drift areas and rock outcrops tend to occur in the County along a northeasterly-southwesterly alignment parallel to, and east of, the interlobate Kettle Moraine, reflecting the presence of a preglacial ridge.

TOPOGRAPHY

Topographic elevation in Waukesha County, shown on Map 11, ranges from approximately 730 feet above mean sea level in the extreme eastern portions of the County along tributaries of the Menomonee River in Brookfield, Elm Grove, and Menomonee Falls, to 1,233 feet at Lapham Peak in the Town of Delafield, a variation of over 500 feet. Most of the high points in the County are located along the Kettle Moraine in three distinct areas: the southern half of the Town of Delafield near Lapham Peak, the southwestern quarter of the Town of Lisbon, and between State Highways 59 and 67 in the Towns of Genesee and Ottawa.

Topographic features, particularly slope steepness, have a direct bearing on the potential for soil erosion and the sedimentation of surface waters. Slope steepness affects the velocity and, accordingly, the erosive potential of runoff. As a result, steep slopes place moderate to severe limitations on urban development and agricultural activities, especially in areas with highly erodible soil types such as the Kettle Moraine. Map 12 indicates that significant portions of Waukesha County have slopes exceeding 12 percent, with many such areas located along the Kettle Moraine in the southwestern quarter of the County. Over 57 square miles, or about 10 percent of the total land area in the County, have slopes of 20 percent or greater; while 64 square miles, or about 11 percent of the total land area of the County, have slopes from 12 to 20 percent. Poorly planned hillside development in these areas can lead to high costs for public infrastructure development and maintenance and to severe construction and postconstruction erosion problems. Steeply sloped agricultural lands may make the operation of agricultural equipment difficult or even hazardous. Development or cultivation of steeply sloped lands is also likely to impact surface water quality negatively through related erosion and sedimentation.

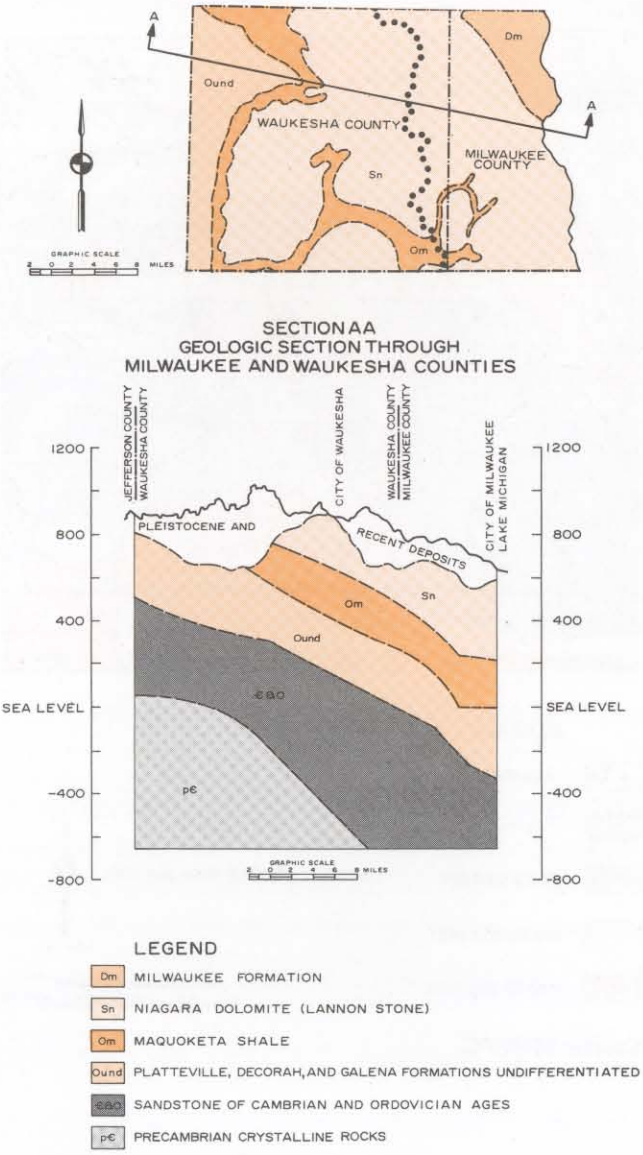
SOILS

Soil properties exert a strong influence on the manner in which land is used, since they affect the costs and feasibility of building site development and provision of public facilities. In the case of productive agricultural lands and potential mineral extraction areas, soils are a valuable and irreplaceable resource. A need, therefore, exists in any planning program to examine not only how land and soils are currently used, but how they can best be used and managed. Soil suitability interpretations for specific types of urban and rural land uses are therefore important aids to physical development planning and for determining the best use of soils within an area.

In 1963, to assess the significance of the diverse soils found in Southeastern Wisconsin, the Southeastern Wisconsin Regional Planning Commission negotiated a cooperative agreement with the U. S. Department of Agriculture, Soil Conservation Service (SCS), under which detailed operational soil surveys were completed for the entire Region. The results of the soil surveys have been published in

Map 10

MAP AND CROSS-SECTION OF BEDROCK GEOLOGY IN WAUKESHA COUNTY



Source: SEWRPC.

SEWRPC Planning Report No. 8, Soils of Southeastern Wisconsin. These soil surveys have resulted in the mapping of the soils within the Region in great detail. At the same time, the surveys have provided definitive data on the physical, chemical, and biological properties of the soils and, more importantly, have provided interpretations of the soil properties for planning, engineering, agricultural, and resource conservation purposes.