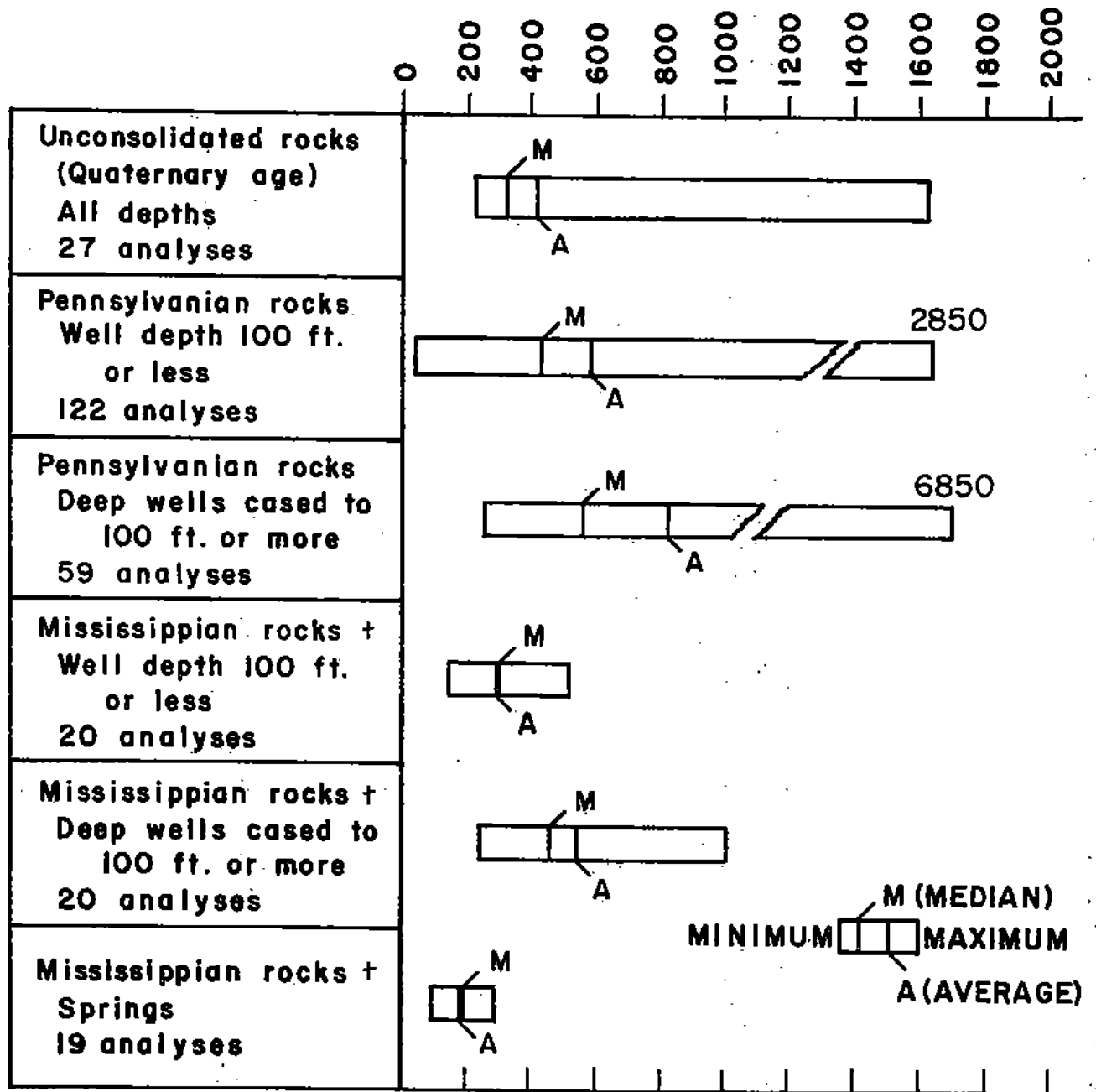


**ESTIMATED TOTAL DISSOLVED SOLIDS,
IN PARTS PER MILLION**



† Green County only

**FIGURE 8. -- Estimated total dissolved solids concentrations
in ground water of Sullivan and Greene Counties.**

The figure indicates that dissolved solids concentrations are greater in water from shallow Pennsylvanian rocks than in water from the unconsolidated rocks. In both the Pennsylvanian and Mississippian rocks, concentrations increase with depth.

SUMMARY

Consolidated rocks of Mississippian, Pennsylvanian ages, and unconsolidated rocks of Quaternary age underlie Sullivan and Greene Counties. Both the consolidated and unconsolidated rocks contain significant sources of ground water.

The unconsolidated sand and gravel deposits of the Wabash and White River valleys are the best potential sources of large supplies of potable ground water. Yields of as much as 1,000 gpm have been reported from wells in these areas. Properly constructed wells in the thickest parts of these deposits should yield water in quantities adequate for large industrial and large municipal requirements. However, test drilling is necessary in order to determine the most suitable location in these deposits for the development of large-capacity wells.

The water from the unconsolidated rock is usually a very hard, calcium bicarbonate water; however, it is generally potable.

Based on their water-bearing properties the consolidated rocks may be subdivided into three major units. These hydrologic units are numbered one, two, and three in accordance with their stratigraphic position. Unit 1 includes all rocks of Mississippian age plus the basal Pennsylvanian Mansfield Formation. These rocks are characterized by relatively thick-bedded limestones and sandstones which contain significant water-bearing zones. The average yield of wells in the unit is 10 gpm, however, properly constructed wells should easily yield 20 to 30 gpm.

Unit 2 includes all rocks between the base of the Brazil Formation and the top of the Shelburn Formation. The rocks of this unit are characterized by the cyclic repetition of a set sequence of lithologic members known as a cyclothem. The basal sandstone members of the cyclothem form the principal aquifers in these rocks. The average yield from water wells in this unit is about 5 gpm.

Unit 3 includes all consolidated rocks in the Sullivan-Greene County area above the Shelburn Formation. As in the underlying unit, sandstone is the best source of potable water. However, the sandstone bodies of this unit are more discontinuous and lenslike than those of unit 2 and their occurrence is less frequent. There are more dry holes reported in unit 3.

The best aquifers of the consolidated rock of Sullivan and Greene Counties are the limestone and sandstone bodies of hydrologic unit 1. With proper well construction yields sufficient for moderately large industrial or moderately large municipal supplies may be obtained. The potential production from the water-bearing rock of units 2 and 3 is

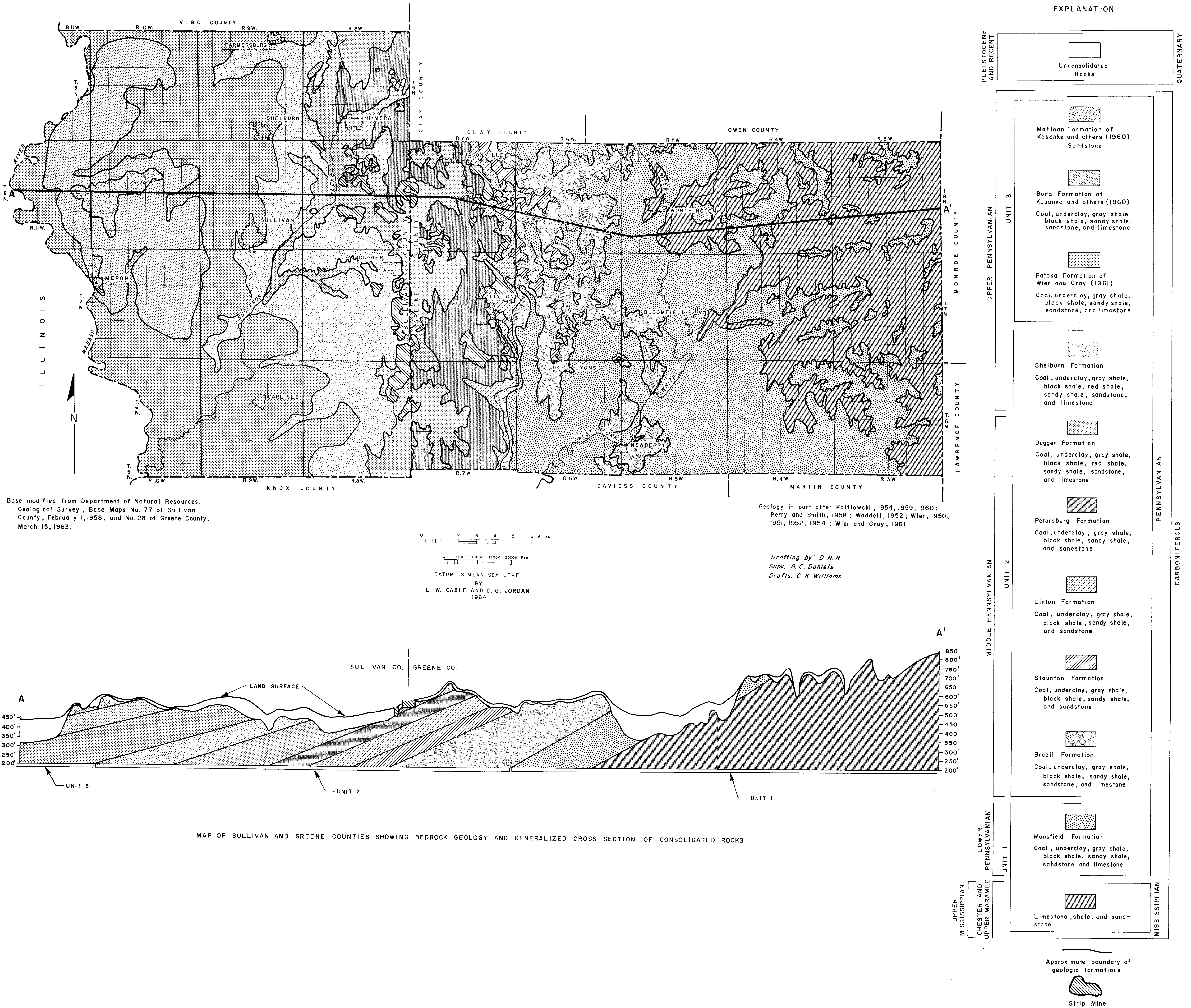
substantially less than that of unit 1. The amount of water normally produced from wells in units 2 and 3 is adequate for farm, domestic, small industrial, and, in some cases, small municipal requirements.

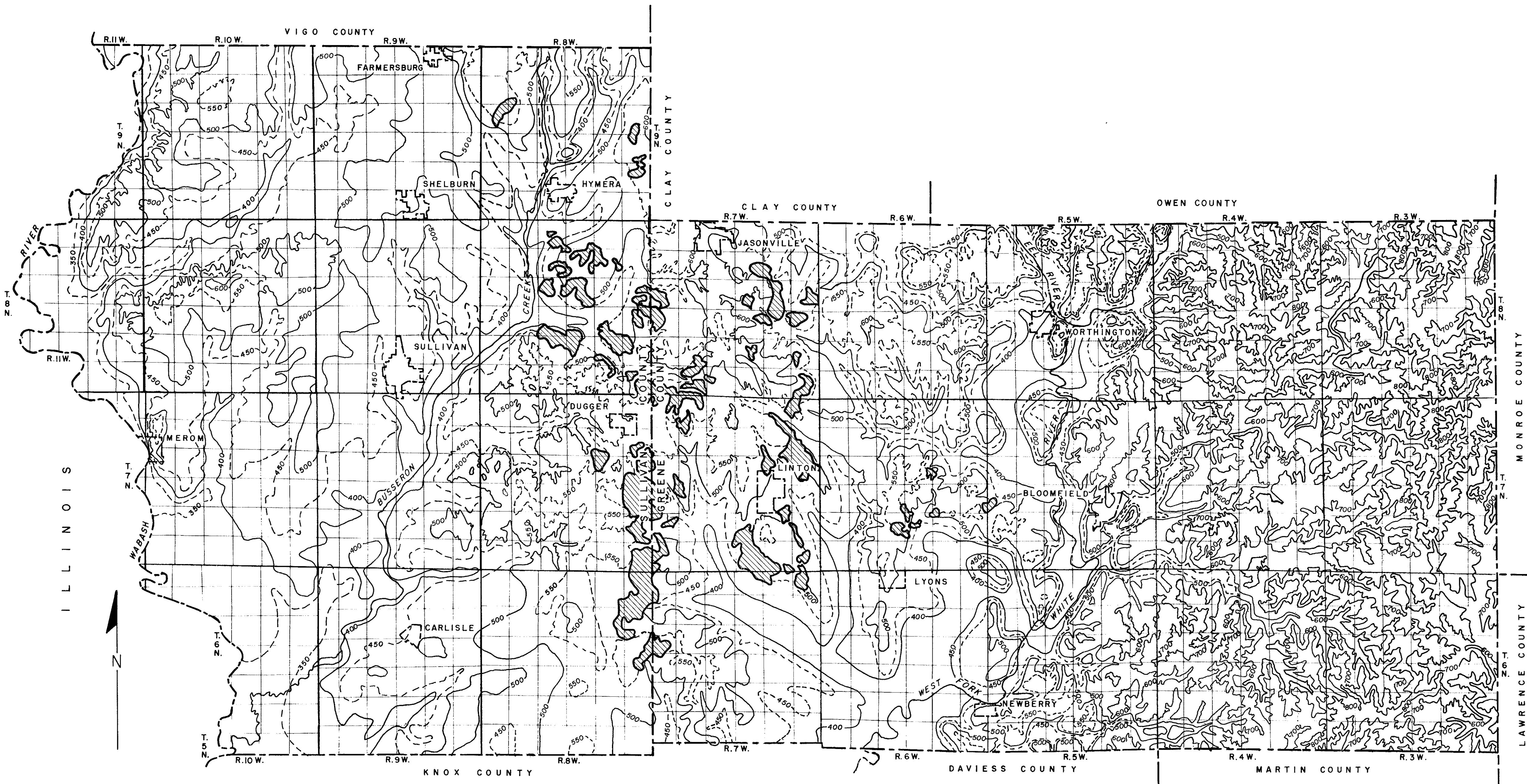
The water from the shallow consolidated rocks is usually a very hard, calcium bicarbonate water, whereas the water from deep wells in the consolidated rocks is generally a soft, sodium bicarbonate water. The mineral content of water in the consolidated rocks generally increases with depth. In the Pennsylvanian rocks, water containing excessive sodium chloride may be encountered at relatively shallow depth. Excessive fluoride concentrations are common in wells which yield very soft water.

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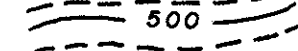
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EXPLANATION

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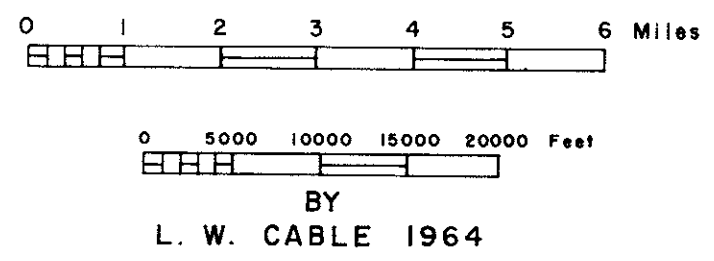
Bedrock Contour
 Contour interval 100
 feet; dashed line shows
 Intermediate 50 feet contour
 Datum is mean sea level



Strip mine

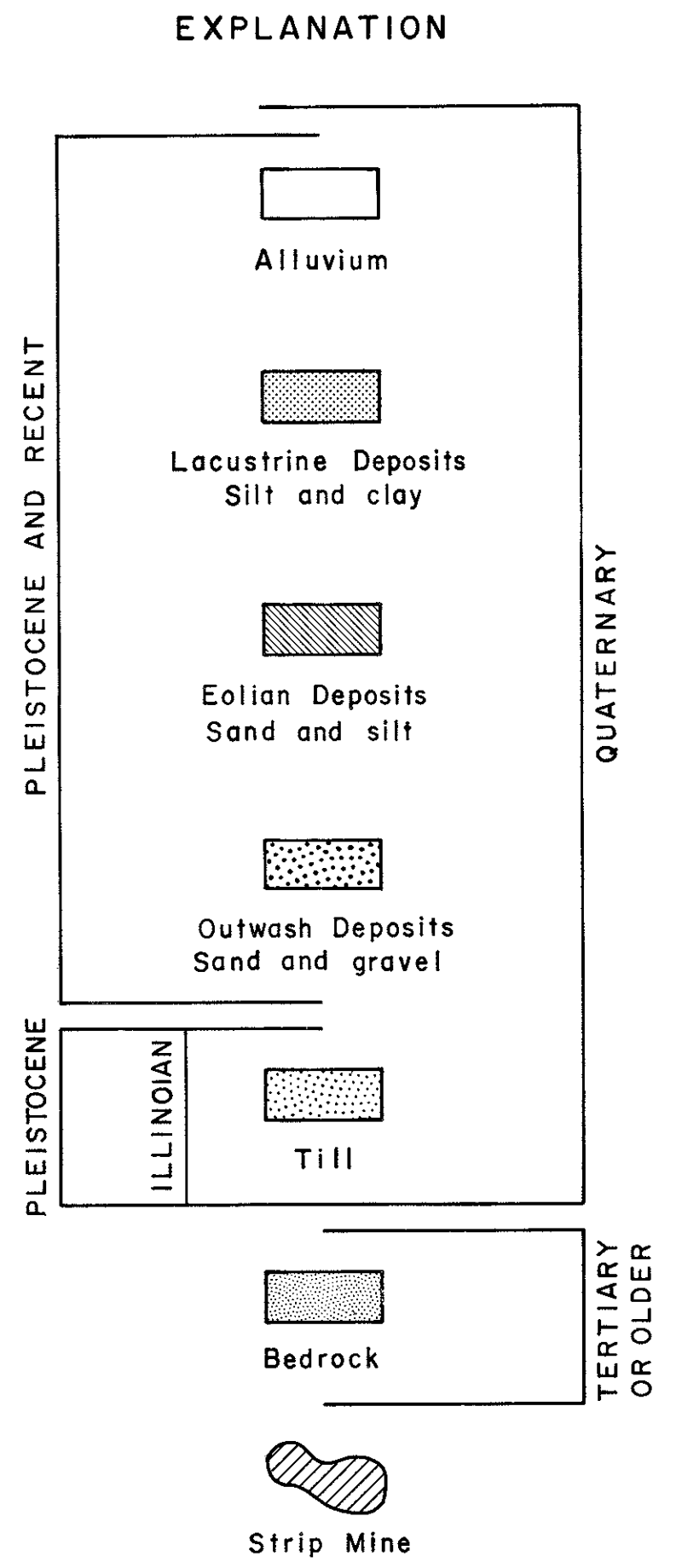
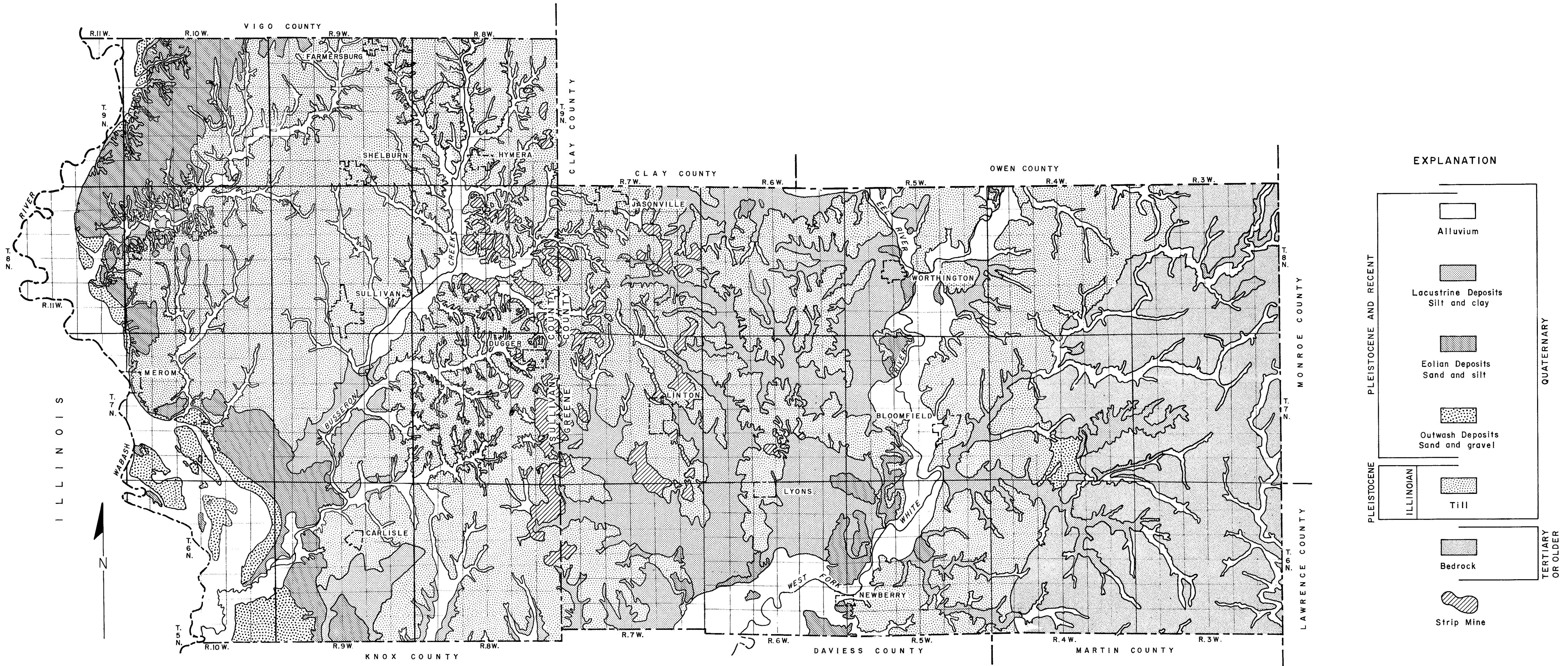
Base modified from Department of Natural Resources,
 Geological Survey, Base Maps No. 77 of Sullivan
 County, February 1, 1958, and No. 28 of Greene County,
 March 15, 1963.

Geology in part after Kottlowski, 1954, 1959, 1960;
 Perry and Smith, 1958; Waddell, 1952; Wier, 1950,
 1951, 1952, 1954; Wier and Gray, 1961.



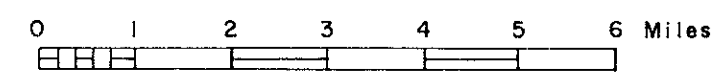
Drafting by: D. N. R.
 Supv. B. C. Daniels
 Drafts. C. K. Williams

BEDROCK CONTOUR MAP OF SULLIVAN AND GREENE COUNTIES



Base modified from Department of Natural Resources,
Geological Survey, Base Maps No. 77 of Sullivan
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1951, 1952, 1954; Wier and Gray, 1961.



0 5000 10000 15000 20000 Feet
DATUM IS MEAN SEA LEVEL
BY
D. G. JORDAN AND L. W. CABLE
1964

Drafting by: D. N. R.
Supv. B. C. Daniels
Drafts. C. K. Williams

MAP OF SULLIVAN AND GREENE COUNTIES SHOWING GEOLOGY OF UNCONSOLIDATED ROCKS AND PRINCIPAL BEDROCK OUTCROPS