UNCONSOLIDATED AQUIFER SYSTEMS

VALPARAISO MORAINE AQUIFER SYSTEM

The Valparaiso Moraine is a till-capped deposit cored with fine- to medium-grained sand having some gravel lenses. The thickness of the morainal deposits decreases westward in the lower basin, and the moraine stratigraphy is most complex in Lake County. Aquifer thickness ranges from 18 to 100 feet in the lower basin, but is greater in the upper basin. Expected high-capacity yields are 100 to 600 gpm, although yields up to 800 gpm are reported. Where overlain by thick till, this aquifer system is only slightly susceptible to surface contamination.

VALPARAISO OUTWASH APRON AQUIFER SYSTEM

This aquifer system, which forms the southern slope of the Valparaiso Moraine, is a deposit of fine- to medium-grained sand having some gravel-rich zones and clay lenses. The gravel commonly is shale-rich. The outwash apron thins southward from the crest of the moraine toward the Kankakee River and the proportion of clay-rich zones increases westward. Expected high-capacity yields range from 150 to 600 gpm, although yields up to 1100 gpm are reported in some areas. The absence of a clay-rich surface deposit makes this aquifer system highly susceptible to surface contamination.

KANKAKEE AQUIFER SYSTEM

The Kankakee Aquifer System is an unconfined deposit composed of fine- to medium-grained sand, which is interbedded with gravel lenses in the tributary valleys. The aquifer system thickness ranges from less than 20 feet where the unit overlies bedrock highs to as much as 65 feet in tributary valleys. The average thickness is about 30 feet. The aquifer system in the lower basin may yield 100 to 500 gpm to high-capacity wells, but yields are higher in the upper basin. This aquifer system is highly susceptible to surface contamination because of the absence of clay-rich deposits.

IROQUOIS MORAINE AQUIFER SYSTEM

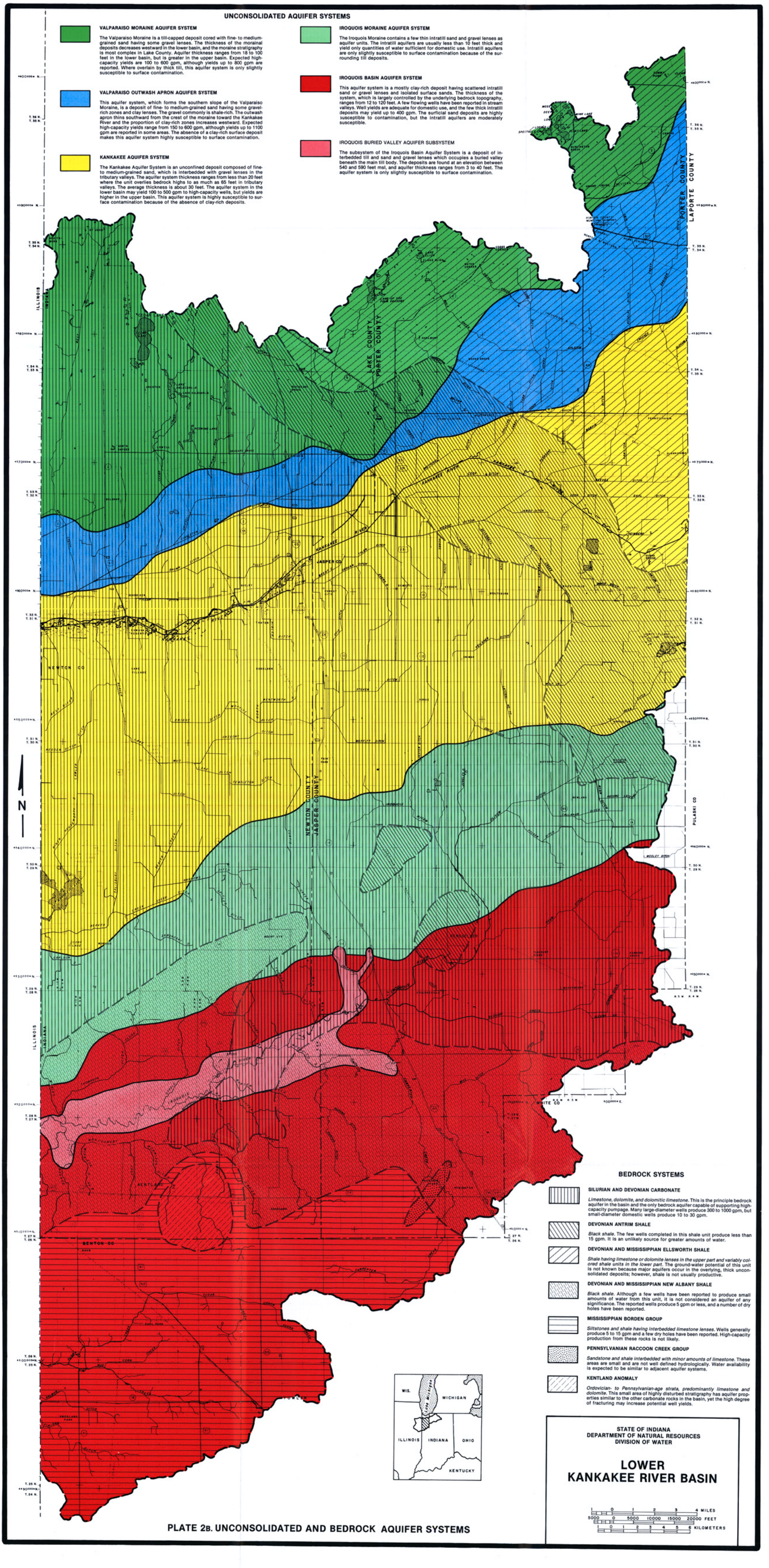
The Iroquois Moraine contains a few thin intratill sand and gravel lenses as aquifer units. The intratill aquifers are usually less than 10 feet thick and yield only quantities of water sufficient for domestic use. Intratill aquifers are only slightly susceptible to surface contamination because of the surrounding till deposits.

IROQUOIS BASIN AQUIFER SYSTEM

This aquifer system is a mostly clay-rich deposit having scattered intratill sand or gravel lenses and isolated surface sands. The thickness of the system, which is largely controlled by the underlying bedrock topography, ranges from 12 to 120 feet. A few flowing wells have been reported in stream valleys. Well yields are adequate for domestic use, and the few thick intratill deposits may yield up to 400 gpm. The surficial sand deposits are highly susceptible to contamination, but the intratill aquifers are moderately susceptible.

IROQUOIS BURIED VALLEY AQUIFER SUBSYSTEM

The subsystem of the Iroquois Basin Aquifer System is a deposit of interbedded till and sand and gravel lenses which occupies a buried valley beneath the main till body. The deposits are found at an elevation between 540 and 590 feet msl, and aquifer thickness ranges from 3 to 40 feet. The aquifer system is only slightly susceptible to surface contamination.



BEDROCK SYSTEMS

SILURIAN AND DEVONIAN CARBONATE

Limestone, dolomite, and dolomitic limestone. This is the principle bedrock aquifer in the basin and the only bedrock aquifer capable of supporting high-capacity pumpage. Many large-diameter wells produce 300 to 1000 gpm, but small-diameter domestic wells produce 10 to 30 gpm.

DEVONIAN ANTRIM SHALE

Black shale. The few wells completed in this shale unit produce less than 15 gpm. It is an unlikely source for greater amounts of water.

DEVONIAN AND MISSISSIPPIAN ELLSWORTH SHALE

Shale having limestone or dolomite lenses in the upper part and variably colored shale units in the lower part. The ground-water potential of this unit is not known because major aquifers occur in the overlying, thick unconsolidated deposits; however, shale is not usually productive.

DEVONIAN AND MISSISSIPPIAN NEW ALBANY SHALE

Black shale. Although a few wells have been reported to produce small amounts of water from this unit, it is not considered an aquifer of any significance. The reported wells produce 5 gpm or less, and a number of dry holes have been reported.

MISSISSIPPIAN BORDEN GROUP

Siltstones and shale having interbedded limestone lenses. Wells generally produce 5 to 15 gpm and a few dry holes have been reported. High-capacity production from these rocks is not likely.

PENNSYLVANIAN RACCOON CREEK GROUP

Sandstone and shale interbedded with minor amounts of limestone. These areas are small and are not well defined hydrologically. Water availability is expected to be similar to adjacent aquifer systems.

KENTLAND ANOMALY

Ordovician- to Pennsylvanian-age strata, predominantly limestone and dolomite. This small area of highly disturbed stratigraphy has aquifer properties similar to the other carbonate rocks in the basin, yet the high degree of fracturing may increase potential well yields.

STATE OF INDIANA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER

LOWER KANKAKEE RIVER BASIN

0 1 2 3 4 MILES
5000 0 5000 10000 15000 20000 FEET
0 1 2 3 4 5 6 KILOMETERS

PLATE 2B. UNCONSOLIDATED AND BEDROCK AQUIFER SYSTEMS