

Unconsolidated Aquifer Systems of DeKalb County, Indiana

by
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The following is a summary of the availability of ground water in DeKalb County and was derived from the Indiana Department of Natural Resources 1987 publication Water Resource Availability in the St. Joseph River Basin, Indiana, and the Indiana Department of Natural Resources 1996 publication Water Resource Availability in the Maumee River Basin, Indiana. The full report describes the availability, distribution, quality, and use of ground and surface water in the St. Joseph River Basin, and the Maumee River Basin and can be viewed and downloaded at <http://www.in.gov/dnr/water>.

Unconsolidated deposits of glacial sands and gravels are the principle source of ground water in DeKalb County. Three unconsolidated aquifer systems have been mapped and defined on the basis of geologic environments and aquifer characteristics. Due to the availability of prolific unconsolidated aquifer systems and the extreme limitations of shale materials, the underlying bedrock is generally not used as an aquifer resource.

Kendallville Aquifer System

The Kendallville Aquifer System contains discontinuous sand and gravel outwash lenses that occur at various depths within a till and mixed drift complex. Individual sand and gravel aquifers within the system commonly range from 5 to 30 feet in thickness; but there is a general increase in outwash thickness northward where local accumulations approach 95 feet. Large diameter, high-capacity wells in DeKalb County commonly yield from 70 to 1000 gallons per minute (gpm). The susceptibility of this aquifer system to surface contamination varies from low to moderate. Susceptibility is low for much of the aquifer system overlain by clay-rich, protective Erie Lobe tills. However, the system in DeKalb County, where these tills are missing and permeable sediments occur at the surface, are significantly more susceptible to surface contamination than other parts of the system.

Cedarville Aquifer System

The Cedarville Aquifer System is comprised primarily of surficial valley train sediments and deeper outwash deposits in the St. Joseph River valley region. Although a thin till cap may be present locally, the valley train deposits commonly extend from the ground surface to depths of 10 to 30 feet. Most wells developed in this aquifer system penetrate the deeper outwash deposits, which commonly range from 20 to 40 feet in thickness. In DeKalb County, valley train sediments typically coalesce with underlying outwash deposits to form total aquifer thickness up to 96 feet. Yields from domestic wells range

from 10 to 60 gpm in DeKalb County; no known high-capacity wells are completed in the system. The overall susceptibility of this system to surface contamination is considered high; but the unconfined portions of the Cedarville are even more susceptible than the rest of the system because the surficial valley train sediments are highly permeable.

Eel River-Cedar Creek Aquifer System

The Eel River-Cedar Creek Aquifer System consists of surficial valley train sediments and deeper outwash plain deposits occurring beneath a major river valley. The surficial sediments consist of sand and gravel deposits which occur from the ground surface to various depths and are either underlain by tills, or coalesce with older outwash deposits. In areas where intervening layers of till are present, most wells are completed in the deeper outwash deposits. Outwash deposits in this aquifer system commonly range from 20 to 30 feet in thickness. Yields from domestic wells range from 10 to 60 gpm, and high-capacity wells in DeKalb County yield from 250 to 1500 gpm. The unconfined portions of the aquifer system are highly susceptible to contamination from surface sources because the surficial valley train sediments of the system are highly permeable. Susceptibility is slightly lowered for the confined outwash deposits by the presence of overlying till.

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