Bedrock Aquifer Systems of Huntington County, Indiana

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The occurrence of bedrock aquifers depends on the original composition of the rocks and subsequent changes which influence the hydraulic properties. Post-depositional processes, which promote jointing, fracturing, and solution activity of exposed bedrock, generally increase the hydraulic conductivity (permeability) of the upper portion of bedrock aquifer systems. Because permeability in many places is greatest near the bedrock surface, bedrock units within the upper 100 feet are commonly the most productive aquifers. In Huntington County, rock types exposed at the bedrock surface include productive limestones and dolomites with small amounts of interbedded shales.

The Silurian and Devonian Carbonates Aquifer System is the only bedrock aquifer system identified for Huntington County. Unconsolidated deposits of varying thickness overlie the bedrock aquifer system in the county. In many places along the Wabash River and along the Little River, bedrock lies within 30 feet of the surface. Additionally, bedrock lies within 30 feet of the surface in some places along the Salamonie River southeast of Lancaster and in a few places near the Wells County line. However, the bedrock surface is buried beneath more than 250 feet of unconsolidated materials near the county line in the south-central and southwestern part of the county and in the northwest portion of Huntington County. Most of the bedrock aquifers in the county are under confined conditions. In other words, the potentiometric surface (water level) in most wells completed in bedrock rises above the top of the water-bearing zone.

The yield of a bedrock aquifer depends on its hydraulic characteristics and the nature of the overlying deposits. Shale and glacial till act as aquitards, restricting recharge to underlying bedrock aquifers. However, fracturing and/or jointing may occur in aquitards, which can increase recharge to the underlying aquifers. Hydraulic properties of the bedrock aquifers are highly variable. In Huntington County, about 80 percent of the reported water wells are completed in the Silurian and Devonian Carbonates Aquifer System.

The susceptibility of bedrock aquifer systems to surface contamination is largely dependent on the type and thickness of the overlying sediments. Because the bedrock aquifer systems have complex fracturing systems, once a contaminant has been introduced into a bedrock aquifer system, it will be difficult to track and remediate.

Silurian and Devonian Carbonates Aquifer System

The Silurian and Devonian Carbonates Aquifer System outcrops/subcrops throughout all of Huntington County. This aquifer system consists primarily of Silurian age carbonates and middle Devonian age carbonates of the Muscatatuck Group, which subcrops only along the

northern county line. Total thickness of this aquifer system ranges from about 150 feet to over 450 feet.

Wells completed in the Silurian and Devonian Carbonates Aquifer System are generally capable of meeting the needs of domestic and high-capacity users in this county. Reported domestic wells utilizing this system in Huntington County have depths ranging from 32 to 422 feet, but are typically 85 to 185 feet deep. The amount of rock penetrated in this system commonly ranges from 25 to 75 feet. Solution features (caves) are described on a few well records suggesting minor karst development. Typical yields for domestic wells range from 10 to 25 gallons per minute (gpm) and static water levels are generally 25 to 75 feet below land surface. There are 12 registered significant ground-water withdrawal facilities (25 wells). Reported yields from the individual wells are 15 to 1000 gpm. Uses for these facilities are primarily public supply and irrigation. Refer to the table for details on the wells and to the map for facility locations.

In most of Huntington County the Silurian and Devonian Carbonates Aquifer System has a low susceptibility to surface contamination because thick clay deposits overlie the system. However, areas where overlying clays are thin or absent are at moderate to high risk to contamination.

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