



Groundwater susceptibility

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What is groundwater susceptibility?

Groundwater susceptibility is an estimate of the likelihood that contamination at the ground surface will reach the water table. All groundwater resources are vulnerable to contamination to some degree, but it can be useful to compare the relative susceptibility of areas within a large region.

Potential sources of groundwater contamination include underground storage tanks, septic systems, manure storage facilities, landfills, road salt, fertilizers, and pesticides.

How the map was made

Groundwater susceptibility is based on characteristics of the soil, geology, and hydrogeology that affect transport of contaminants. This susceptibility map combines four such features of the landscape in Iowa County:

- 1. Type of bedrock**—Bedrock that is commonly fractured, such as shallow dolomite or limestone, is highly susceptible to contamination. The fractures provide direct and rapid pathways for contaminants to reach the water table. Groundwater within sandstone formations is less susceptible because sandstone contains fewer well-connected fractures.
- 2. Depth to bedrock**—Soil and sediment overlying bedrock slows down seepage to the water table. A greater depth to bedrock increases groundwater protection.
- 3. Depth to the water table**—The greater the distance from ground surface to the water table, the longer it takes for contaminants to reach the groundwater. This allows some contaminants to degrade before arriving at the water table.
- 4. Groundwater recharge**—Precipitation that percolates to the water table is called groundwater recharge. In general, areas receiving more recharge are more susceptible because contaminants may be transported with recharge. Recharge is affected by the type of soil, the amount of water used by plants, the land cover (such as forest, cropland, or pavement), and weather patterns (for example, if the ground is completely frozen on days when snow melts).

Not all factors that influence the transport of contaminants were considered in this evaluation of groundwater susceptibility. Such factors are independent of the natural groundwater system and may change over time. For example, sources of contamination are likely to vary as land use and development alter the landscape. An additional caution related to this map is that groundwater susceptibility cannot be directly measured; it is estimated from the four variables listed above.

What the map shows

This map shows the relative susceptibility of groundwater to contamination in Iowa County. Areas that are most susceptible include those with the potential for rapid contaminant transport from the land surface to shallow groundwater. These are areas where dolomite bedrock is close to the ground surface and where the Wisconsin River valley contains sandy soil overlying sand and gravel.

Most of Iowa County's groundwater is moderately to highly susceptible to contamination. Compared to the most susceptible areas, these regions have lower recharge, a greater depth to the water table, and bedrock with few fractures. Areas mapped as least susceptible to contamination are primarily wetlands adjacent to streams and rivers. Wetland soil limits infiltration, and these are areas where groundwater discharges to nearby surface water. Although contamination can reach the water table in this setting, extensive groundwater contamination is unlikely.

Using the map

This map may be used in discussions about land use and drinking-water quality. In areas with high groundwater susceptibility, activities that can release contaminants may warrant increased planning, safeguards, and monitoring. For example, land spreading of waste and placement of septic systems located within susceptible areas are likely to impair groundwater quality.

This map is available at a more detailed scale (1:100,000) from the Wisconsin Geological and Natural History Survey.

Groundwater susceptibility in Iowa County, Wisconsin

