**WHAT IS AN AQUIFER?**

Ground water, in the same sense, is water found below the land surface in the spaces between and around soil, rocks, and other materials. Ground water can be considered a reservoir of water, and in this role it provides an important source of water for many uses. Ground water is stored in permeable materials such as sand and gravel, or in non-permeable materials such as clay. This water moves in response to the forces of gravity and is subject to the same laws of physics as water in lakes and rivers. Where permeable and non-permeable materials are adjacent to each other, the line of contact is called an aquiclude. If a general fracture system exists in the deposits, it acts as an aquitard, which is a reservoir of water.

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**GROUND-WATER FLOW AND CONTAMINATION**

Ground water is replenished or recharged where rainfall, snowmelt, and overflow from lakes enter the ground and move downward. The rate of recharge is determined by the amount of rainfall, the amount of water that evaporates or returns to the atmosphere, and the amount of water that is consumed by plants. The amount of water that is stored in the ground is determined by the amount of water that is added to the ground and the amount of water that is removed from the ground by evaporation, seepage, and discharge to streams.

**HOW ARE AQUIFERS MAPPED?**

When mapping and using ground water, geologists visit gravel pits, farms, and development sites to determine the presence and extent of ground water. They analyze pumping records and water samples to determine the characteristics of ground water and to define the location of potential contamination sites. They also review records of previous studies and use detailed maps and aerial photographs to identify areas with potential contamination problems. They may also test drill wells to determine the characteristics of ground water in areas where ground water is not easily observable.

**GROUND WATER CHARACTERISTICS**

Water in an aquifer is not always uniformly distributed. The amount of water in an aquifer depends on the porosity and permeability of the aquifer material. Porosity is the fraction of the volume of an aquifer that is occupied by water. Permeability is the ability of an aquifer to transmit water. The porosity of an aquifer is determined by the size of the pore spaces in the aquifer material. The permeability of an aquifer is determined by the size of the pore spaces and the amount of water that can flow through the aquifer material.

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** HOW TO USE THIS MAP**

Type of information shown on this map:
- **Sand and gravel aquifers** are mapped as to major category of aquifer, extent of the sand and gravel deposits, and other details about aquifers and their boundaries.
- **Depth to water** is shown, with color representing the depth to water table.
- **Well yield** is shown, with color representing the potential for ground-water production.
- **Drilled bedrock wells** are shown, with color representing the potential for ground-water production.
- **Cement blocks** are shown, with color representing the potential for ground-water production.
- **Silt and sandbar** are shown, with color representing the potential for ground-water production.
- **Hillside** is shown, with color representing the potential for ground-water production.
- **Drainage plan** is shown, with color representing the potential for ground-water production.
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