

The Aquifer

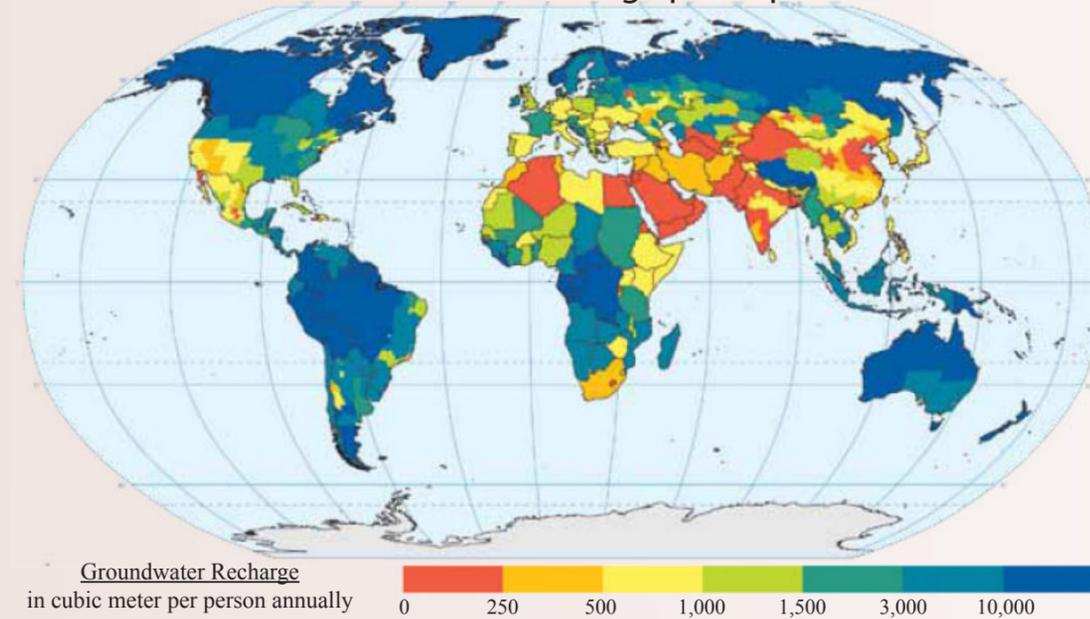
The sole source of water for most people in Spokane County, Washington and Kootenai County, Idaho, is a large underground rocky formation containing high-quality water called the Spokane Valley-Rathdrum Prairie Aquifer (Aquifer), and it is also commonly known as the "Rathdrum-Spokane Aquifer." Discovered in 1895, this Aquifer has become one of the most important resources in the region, supplying drinking water to more than 500,000 people. The Aquifer has been studied in considerable detail since 1977, and the results of these investigations have produced programs and regulations designed to ensure this aquifer will remain a valued and protected resource for future generations.

The Spokane Valley and Rathdrum Prairie are ancient geologic features that have, over millions of years, been formed by water flowing from the western slopes of the Rocky Mountains to the Pacific Ocean. During the last Glacial Age (18,000 to 12,000 years ago), and possibly in multiple previous Ice Ages, cataclysmic floods inundated North Idaho and Washington as a result of the rapid draining of Glacial Lake Missoula when ice dams broke (see pages 7 and 8). These floods deposited thick layers

of gravels, cobbles, and boulders. Water from adjacent lakes, mountain streams, the Spokane River, and precipitation flows through these flood deposits supplying the Aquifer.

In the 1970s area residents recognized that their unconfined aquifer could easily become contaminated. The highly permeable flood deposits, together with very thin topsoil layers in many locations, make the Aquifer highly susceptible to pollution. The Environmental Protection Agency (EPA) took the first important step to protect the Aquifer by designating the Spokane Valley-Rathdrum Prairie a "Sole Source Aquifer" in 1978. It was the second aquifer in the nation to receive this special designation. The sole source designation increased public awareness for Aquifer protection and supported the development of special management practices (such as eliminating septic tanks and pre-treating stormwater over the Aquifer) by local agencies. Presently, Aquifer protection efforts are managed cooperatively by Spokane County, local cities, agencies and utilities in Washington and by the Department of Environmental Quality and the Panhandle Health District, and local cities and counties in Idaho.

Groundwater Recharge per Capita



Groundwater Recharge in cubic meter per person annually 0 250 500 1,000 1,500 3,000 10,000

Earth's Water

Of all the Earth's water, only about 3% is fresh water. The majority of fresh water is found in icecaps and glaciers (68.7%) and groundwater (30.1%). A global view of groundwater is provided in the map above. The remaining 1.2% of freshwater is contained in lakes, rivers, swamps, the atmosphere and the soil. Our Aquifer with its ample quantity of fresh, potable groundwater is a rare feature in the world.



Climate Change

The Climate Impacts Group (CIG) located at the University of Washington (Seattle) is studying the impacts of natural climate variability and global climate change on the U.S. Pacific Northwest. The CIG used climate computer models to assess probable impacts associated with projected 21st century changes in climate that indicate three major changes for the Inland Northwest.

First, winter snow pack will be lower than normal. Second, while total annual precipitation will remain about the same, extreme high precipitation events will increase. Third, temperatures are projected to increase across all seasons with the largest temperature increases in summer.

As these changes occur, the Inland Northwest will likely experience peak stream flows earlier in the spring and with greater variability. How the impacts of climate change may affect Aquifer recharge deserves further study.

Aquifer Facts

Our Aquifer underlies about 370 square miles in two states. It has one of the fastest flow rates in the United States, flowing as much as 60 feet per day in some areas. In comparison, a typical aquifer has a flow rate between 1/4-inch and five feet per day. The volume of the entire Aquifer is about 10 trillion gallons, making it one of the most productive aquifers in the country.

SPOKANE'S WATER PUREST IN WORLD

City Bacteriologist Frank Rose Reports Results No Colon Bacilli Found

Showing the Spokane water supply purer than the average of American cities, Frank Rose, city bacteriologist, has made a report of tests from the city well made monthly since last October. The tests are simply counts of the number of bacteria found in a cubic centimeter of water.

The average count shows only seven or eight germs in that amount of water. The test was made from water taken from the drinking fountain at Howard street and Riverside avenue or from water from a faucet in the Rookery building. Speaking of his tests, Dr. Rose said:

"It can be said that there is no city in the world that has a better water supply than Spokane. Water which shows 100 germs in a cubic centimeter is considered comparatively pure and drinkable. I made from four to eight counts monthly since last October, and the counts in any one month was 17 bacteria, while the tests last month showed 15 bacteria in eight tests, less than two each.

"In April, 1908, I made tests of the river water from which Spokane got its drinking supply at that time. I took water from the place where the Coeur d'Alene sewer emptied into it and another sample from a place about 500 feet below the outlet of the sewer. In both cases the number of bacteria was so great as to be practically uncountable.

"In contrast to this is the practical purity of the water since last October. Special care was taken to make tests for colon bacilli, which show the presence of sewage, and in no case was there a single trace."

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