

Why Portneuf Valley residents need to pay attention to our drinking water source

BY SHANNON ANSLEY
AND JOHN WELHAN
For The Journal

Because of the unique geologic history of the Lower Portneuf Valley Aquifer, our only source of drinking water for Pocatello and Chubbuck, our community faces two significant issues: water quality is degraded by human activities and in drought years the aquifer is drained faster than it fills.

Currently, Bannock County and the cities of Pocatello and Chubbuck are working together to establish a ground water protection overlay district for the Portneuf Valley. By institutionalizing protection measures that are effective and meaningful, we can maintain and improve the quality of our drinking water.

As part of this effort, Dr. Glenn Thackray will present "Hydrology and Vulnerability of the Lower Portneuf Valley Aquifer: Our Source of Drinking Water" on Wednesday, May 19, at 5:30 p.m. in Pocatello City Hall Council Chambers. The talk is free and open to the public.

Ground water from the Lower Portneuf Valley Aquifer, our sole drinking water source, is highly vulnerable to contamination for several geologic and land use reasons. Water and contaminants can move quickly from the ground surface to the water table due to a very thin soil layer a short distance above the water table and the highly permeable gravels deposited by the Bonneville Flood.

In addition, as ground water flows through residential developments with many septic systems, it picks up contamination and, in some cases, additional water volume from septic waste as it drains toward the aquifer. Other uses of urban, residential, industrial, and agricultural land on top of the aquifer are also a potential threat to our water quality.

Ground water quality in both Pocatello and Chubbuck public water wells already shows negative effects from human activities. Gradual deterioration in our ground water quality can be attributed to several sources — septic systems, hazardous chemical spills and leaks (including motor fuels), and stormwater that finds its way into the ground.

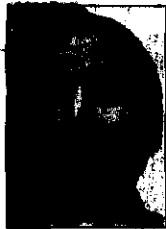
WANT TO LEARN MORE?

A presentation titled "Hydrology and Vulnerability of the Lower Portneuf Valley Aquifer: Our Source of Drinking Water" will be held on Wednesday, May 19, at 5:30 p.m. in the Pocatello City Hall council chambers. The talk is free and open to the public.

ONLINE

To comment on this article, visit the Community Blog at idahostatejournal.com.

ABOUT THE AUTHORS



■ Dr. John Welhan is a research geologist with the Idaho Geological Survey who has studied the Portneuf and eastern Snake Plain aquifers for 20 years. He regularly interacts with and advises state, tribal and city governments about ground water and water-resource problems in eastern Idaho.



■ Shannon Ansley is a geologist with 21 years of experience in environmental work at the Idaho National Laboratory. She is currently a ground water protection specialist for the state Department of Environmental Quality and has lived in Idaho for 28 years.

Several examples of contaminated drinking water in our community include the trichloroethylene solvent plume, perchloroethylene (another solvent), diesel and other fuels, ethylene dibromide (a fumigant and formerly an additive in leaded gasoline), and nitrate from septic systems. Some of our public water wells are no longer used due to concerns over potential contamination or are treated using expensive remediation systems. Many private wells show nitrate levels above the safe drinking water levels.

Nitrate contamination is a result of human waste, animal waste, or fertilizer that leaches through the soil and into ground water. A septic system consists of a holding tank and a drain field, a series of perforated pipes buried beneath the ground surface that drains the liquid part of septic waste into the ground.

Septic systems, regardless of whether they are functioning properly or not, will always add nitrogen and other chemicals to ground water. Ammonia and urea, seeping into the ground, undergo a chemical reaction that converts these forms of nitrogen to nitrate. When nitrate is present in ground water in excess of about three parts per million or milligrams per liter, it is an indication that there are human sources of contamination.

In Pocatello's and Chubbuck's municipal wells, there is clear evidence that human activities are the cause of increased nitrate levels. Studies conducted by the Idaho Geological Survey, ISU, and the IDEQ point to septic systems as the culprit. Nitrate levels in the aquifer increase along the direction of flow from the Portneuf Gap and Red Hill (Figure 3), a direct result of the more than 600 septic systems located on and near this part of the aquifer.

Recharging, or refilling, the aquifer occurs by precipitation falling in the South Bannock Range from Scout Mountain to Kinport Peak. This water seeps into the bedrock and flows toward the valley beneath the drainages between Mink Creek and City Creek. The Portneuf River contributes a very small volume of water to the aquifer.

Unfortunately, our aquifer stores a limited amount of water and each year we use more than what is replenished by rain and snow. Therefore, to support continued development in the valley without depleting our water supply, we need to improve our water use and conservation practices.

It is important to understand that all of our drinking water is pumped from the aquifer beneath our homes, streets, businesses, and industries. It does not come from the Portneuf River or

the Snake River. Municipal and private wells located along the valley floor and on the benches supply all of the drinking water for our communities.

Water from Pocatello's municipal wells is treated with chlorine at each well to kill harmful bacteria then goes directly into the distribution system and comes out at the tap; there is no other treatment to remove harmful chemicals that may be present. Wastewater from homes and businesses is disposed of either to the municipal sewer system, where it travels to the wastewater treatment plant to remove solids and bacteria before being discharged to the Portneuf River, or to private septic systems.

Removing contamination from water is very expensive for public and private water users, possibly on the order of millions per year for municipal wells that exceed the safe drinking water limits.

Preventing ground water contamination through sound management practices is always a cheaper solution. Moreover, prevention has to be an effort that is planned and supported by all affected parties such as the citizens, businesses, agencies, and industries that rely on the water supply. Protecting our drinking water is an investment in our community, our economic future, and our children.