

ISU professor speaks to Rotary about area aquifer

BY JOHN BULGER

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POCATELLO — Asked if Pocatello's water is safe to drink, Glenn Thackray smiled, reached for a glass of water and took a sip.

"We're essentially drinking snow here," he told the audience at the Rotary Club of Pocatello Thursday. "All of the water were drinking today ... comes from beneath our feet in the geologic units beneath the ground."

Thackray, a professor of geosciences at Idaho State University, gave the audience a taste of just how the Portneuf Valley developed such a unique aquifer and what is being done to protect it.

Thackray explained that when ancient Lake Bonneville was breached some 17,000 years ago, its floodwaters roared through the Portneuf Gap on their way to the Snake River Plain. The monstrous flume deposited "thick piles of gravel," Thackray said. A sediment layer cap now neatly contains a remarkable highway of water.

While the movement of water through many aquifer systems is measured in feet per year, water in the Portneuf Valley aquifer is a veritable steam roller, Thackray said, moving at a breakneck 5 or 6 miles per year. Billions of gallons of water per year do a fast-paced percolation through the gravels right below our feet.

"It's an incredible aquifer system in terms of pumping performance," Thackray noted.

However, such mobility — along with only a relatively thin silt layer capping it — makes it vulnerable to the effects of contaminants, he noted. Once a contaminant



Thackray

leaches into the water, it is very quickly borne along the fast-moving stream.

The problem with pollutants getting into the water source became a grave concern in the early 1990s when trichloroethylene, a common solvent used in dry-cleaning and for degreasing equipment, was found to have invaded the aquifer, having percolated through the soil of the old dump site at Fort Hall Mine Road. Eight of the city's 24 wells were affected by the TCE plume, and four were taken off-line. "It was a very messy thing," Thackray noted.

The EPA developed standards regarding allowable levels of TCE, mandating remediation if levels spiked at or above 5 parts per million. Thackray noted that equates to about a teaspoonful of the liquid diluted in a water source about the size of the big pool at Lava Hot Springs.

Remediation is being done at the old dump site and will continue for a likely 50 years, Thackray said. Thus far, approximately \$4.6 million has been spent addressing the problem. The new dump site is properly lined, eliminating the problem with leaching that occurred at the old site.

Another contaminant which has found its way into the aquifer is nitrate, a product primarily of the nearly 600 septic systems in the valley. If nitrate levels reach 10 PPM, the EPA mandates treatment or shutting down the affected wells. Many are currently hovering around 5 PPM, but others are higher, particularly wells near the Johnny Creek, Gibson Jack, Mink Creek and South Fifth Street areas, where more septic systems are being used.

"If the numbers step up just a little bit, we will be in violation of federal limits," Thackray said. He noted the cost of treatment per well can be in the \$500,000 range. Multiply that by several wells, and city water users will definitely feel the pinch when their water bills arrive.

Another issue that bears scrutiny is the amount of water we use locally. Approximately 80 percent of our water comes from snowpack that percolates into the aquifer from the surrounding hills, which receive more than 30 inches of annual precipitation. While a good deal of the snowmelt runs off in the creek system, much of it finds its way through ground and over 20 to 30 years — nobody is quite sure how long the process takes, Thackray notes — filters into the aquifer. Another 20 percent comes from Marsh Valley. Almost none, however, comes from water that is carried in the Portneuf River.

"In the Portneuf Valley, groundwater and surface water are really two separate issues," he said. "We hear a lot about surface water — the river water quality is very apparent, so we hear a lot about that. Those are separate issues, separate processes."

In all, the aquifer is recharged annually with about 7 billion gallons of water, while approximately 7.8 billion gallons are pumped out of it.

"That is not a very good balance," Thackray said.

There are those who disdain local drinking water for its somewhat alkaline taste, a product of the calcium and magnesium picked up by the water as it sieves its way through the ground. The minerals are not harmful. Quite the opposite, Thackray notes.

"As the water slowly moves through the rocks, through the limestones and so forth, it's dissolving them a little bit and picking up a chemical load," he said. "We can drink eight 8-ounce cups a day and get a third of our adult recommended intake of calcium."

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