

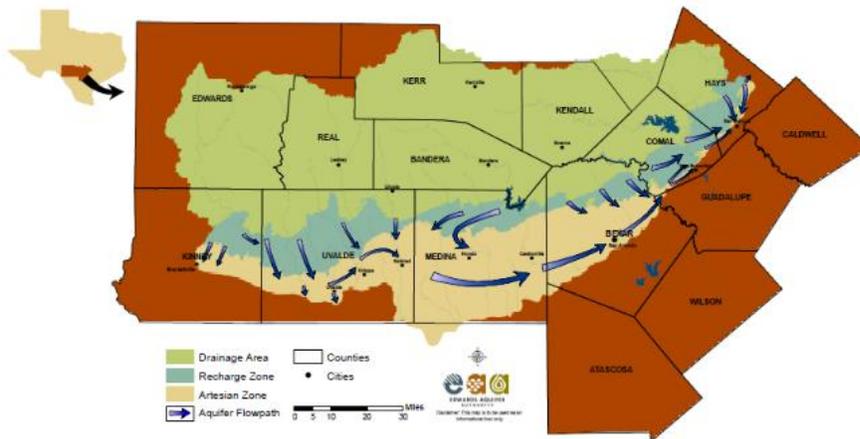


Aquifer Recharge Zones

By Dr. Larry Sunn

This month I'll leave rainwater catchment for a while to talk about area aquifers, recharge zones, contributory zones, and other cool stuff we see on roadway signage throughout the county. Several counties in and around Comal County that help recharge our two major aquifers. The map depicts the contributing zone (sometimes referred to drainage area) in the hill country for the Edwards aquifer. You are right in asking, "But

General Aquifer Flowpath



you're with the CTGCD, why are you writing about the Edwards?" Glad you asked.

In addition to replenishing our recreational surface water resources, the Trinity and Edwards aquifers are our county's major sources of drinking water. Because of the diverse geology of our hill country area, the depth of aquifers that lie beneath us varies from a few yards below the ground, to several hundred yards.

Aquifers are generally defined as naturally-occurring underground spaces capable of absorbing and storing water. Aquifers have storage capacity in the fractured spaces between rock, gravel, or sand grains that characterize its geologic layer. Here in central Texas, much of our aquifer storage is considered "karstic," a term that describes surface and subsurface areas dominated by limestone rock, typically heavily fractured with caves and sinkholes. Enter, the Edwards Aquifer.

The Edwards is the major drinking water source for the city of San Antonio and surrounding central Texas communities—including Comal's eastern side. It is a karst aquifer, so its fractures, caves, sinking streams, and sinkholes act as conduits to the aquifer from the surface and supply spring flow to major springs like Comal, Hueco, and San Marcos Springs. While this means that the aquifer recharges quickly after a rain event—so rapidly that the current aquifer level is reported in the evening news. But the rapid recharge also means that any surface pollution from stormwater runoff or spills directly impacts the water quality of the Edwards, possibly impairing drinking water and affecting its sensitive ecosystem. Over fifteen counties contribute water to the Edwards. The western half of Comal County, however, depends on water from the Trinity Aquifer.

Recharging these aquifers is dependent upon rainfall as well as surface water flow in streams that pass over surface outcrops of the aquifers. However, the two aquifers are not the same. The respective aquifer difference is in how it gets recharged and how the water is stored. The Edwards is pretty direct with runoff water "dumping" into its large cave-like features, whereas the Trinity recharge is via much slower percolation as rainfall slowly moves through the soils and rock below us. Some of today's rainfall will take up to three years to reach the pumpable water table in the Trinity.

Groundwater availability in Comal County is vulnerable to increased pumping, attributable to both continuing population growth and periodic drought conditions. As long as the amount of water that is pumped from the aquifers is less than the amount of water that is recharged into the aquifers, the level of the aquifers should remain the same. During wet times, they can even overflow, creating areas of seepage, springs, and the baseflow of rivers. If recharge is at a lower rate than pumping, the level of the aquifer (the water table) drops.

At the CTGCD we often hear of wells going dry or having to be drilled further into the water table. We monitor 10 wells throughout Comal County (in the Guadalupe and San Antonio river basins) and in the past 1½ years the Trinity has decreased in our monitoring wells by from 12 to 50 feet. A 50-foot drop is equivalent to receding at the height of a 5-story building! Folks, we are not being alarmists—you simply need to know so you can plan and help us conserve.

As our county becomes increasingly urbanized,

storm water destined to recharge our aquifers easily picks up pollutants as it flows across impervious areas and into the ground. Impervious surfaces also result in runoff moving faster, and that reduces or prevents natural percolation. Therefore, as our county transforms to more urban uses, it is critical that we are aware of water we use, what we dump on the ground, and what we spray. Not doing so can result in scarcity as well as elevated pollutant concentrations.

Area growth is lowering our water table, and, at the same time, it slows the rate of groundwater recharge. Water is increasingly becoming a scarce commodity. That brings us full circle as to why capturing and using rainwater—in any amount—is critical to your, and Texas', future.

Feel free to send rainwater capture questions to us at the Comal Trinity Groundwater Conservation District by emailing Dr. Sunn at comaltrinitygcdsecretary@gmail.com; our water well and rain catchment consulting services are offered to the public without charge.

