YOUR DAILY DOSE OF WATER

THE EDWARDS AQUIFER, CONSIDERED TO BE ONE OF THE GREATEST NATURAL RESOURCES AND MOST DIVERSE GROUNDWATER ECOSYSTEMS ON EARTH, IS ROUTINELY ON THE TIPS OF CENTRAL TEXANS' TONGUES. BUT WHAT IS IT EXACTLY, AND WHY SHOULD PEOPLE CARE?

The Edwards Aquifer is an artesian aquifer containing groundwater that rises under pressure. It is extremely permeable and responds quickly to change.

Under the weight of water entering the aquifer, pressure is put on the water already deep down in the formation. For example, the San Marcos Springs, a collection of more than 200 springs that flow from rock openings, exist when this pressure is sufficient enough to force water up through the faults to the surface.

It's the Stephen King of aquifers -- prolific and sometimes misunderstood by the general populace -- but even this ubiquitous source of water, which serves the agricultural, industrial, recreational and domestic needs of millions in south central Texas, may have a shelf life.

Where there's no water, there's no people -- or business. The bottom line is affected when the aquifer hits rock bottom.

Hence the close monitoring of aquifer levels, or the amount of water in designated wells measured in feet above mean sea level. "The higher the water level in the aquifer, the more spring flow occurs," said Glenn Longley, founder and longtime director of Texas State University's Edwards Aquifer Research and Data Center.

"It's a very dynamic system, very responsive to rain," said Longley. "A lot of that water recharges into the aquifer."

The Edwards Aquifer Authority reports that the demand for water in this region has increased well beyond the aquifer's capacity to provide.

In 1955, the first presidential news conference was filmed for television, Russia ended its state of war with Germany and, according to Longley, the annual discharge from the wells and springs in the San Antonio segment of the Edwards Aquifer was 388.8 thousand acre feet -- the lowest on record.(An acre foot covers one acre of land one foot deep, or 325,851 gallons.)

Conversely, in 1992 the discharge from wells and springs in this segment of the

| By Jordan Gass-Poore |

aquifer was 1,130 thousand acre feet, Longley said, nearly a threefold increase from 37 years earlier.

The aquifer, which covers an area 180 miles long, extends through parts of Kinney, Uvalde, Medina, Atascosa, Bexar, Comal and Hays counties.

For water utility companies in these areas, when rain is plentiful and aquifer levels are high, it's like skimming the cream off the top of milk. But during times of drought, conversations about water conservation and preservation ebb and flow with no clear answer.

Educational workshops, programs, and events may help sift through the murkiness.

The Edwards Aquifer Research and Data Center, housed in Texas State's College of Science & Engineering, provides opportunities for elementary, middle and high school students to learn about freshwater ecosystems in the region.

What started in 1988 as a Gifted and Talented program has flourished into annual one week and two-day Aquatic Sciences Adventure Camp sessions throughout the summer. Thousands of campers have collected and tested San Marcos water and specimen samples. Some have continued these studies as Texas State students.

Longley's story is similar. Born in Del Rio in 1948, he moved with his family to Central Texas, later graduating from then Southwest Texas State University. After attending graduate school at the University of Utah, Longley returned to the university in 1969 as a biology professor.

The Edwards Aquifer, and the animals its waters contain, continues to fascinate him. Deep underground lies a layer of thick porous rock that's home to cave-dwelling animals, which don't have eyes.

Sometime in the mid-70s, Longley constructed a net out of his wife's pantyhose and a coat hanger and used it to collect these "aquatic subterranean fauna" from the artesian well on the university's campus.

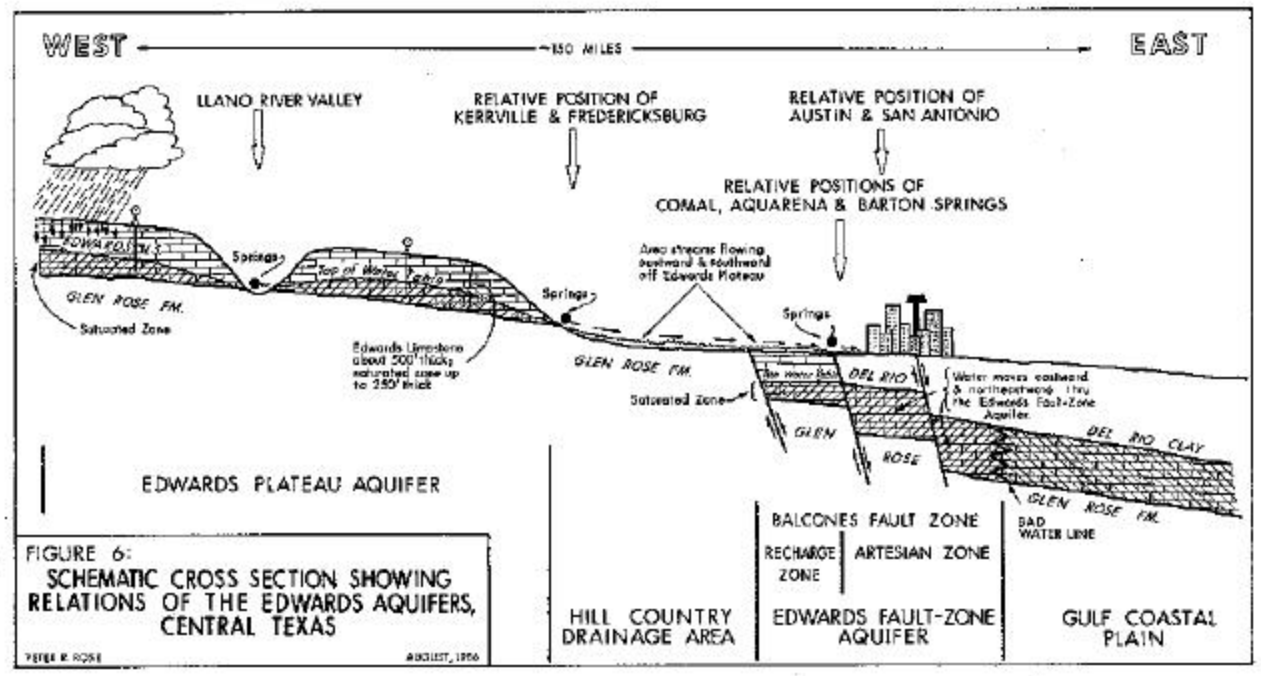

FIGURE 6:
SCHEMATIC CROSS SECTION SHOWING RELATIONS OF THE EDWARDS AQUIFERS, CENTRAL TEXAS

Shortly thereafter, Longley helped establish the university's Edwards Aquifer Research and Data Center in an effort to educate, research and provide technical services. The center now includes a water lab whose services currently extend to the City of San Marcos and the university water entities, as well as the public in the region.

Because education is important to the survival of the Edwards Aquifer, the San Antonio-based Edwards Aquifer Authority has helped provide funding for both the center's camps and Aquatic Studies Field Days, where students spend the day learning about the San Marcos River and aquifer.

"We always did this with the idea that they'd be future voters," said Longley of the center's educational programs and free ninth-grade workbook distributed through the Edwards Aquifer Authority. Anyone can order free copies of this and other educational workbooks by contacting the Edwards Aquifer Authority directly at 1-800-292-1047.

Penelope Speier, 04Arts Foundation president, has utilized visual thinking strategies created by Museum of Modern Art employees into a new educational workbook called "Discover the Edwards Aquifer."

Speier said the Edwards Aquifer Authority contacted her about five years ago to create a free workbook series based on her prototype about the San Antonio River. Free multidisciplinary lesson plans, like "Listening to the River," can be found on the 04Arts Foundation website, 04Arts.org.

These workbooks help students create personal relationships with the watershed area, she said, adding that when children feel a sense of ownership in nature they want to protect it. "Their eyes have been opened," she said. "All they need is some education."

The delicate, sometimes contentious relationship between the Edwards Aquifer and San Marcos is the stuff of history. Archaeologists believe the San Marcos Springs is the oldest continuously inhabited site in North America and has never stopped flowing in recorded history.

But that may not always be the case.

The effects of urbanization are being studied by Texas State's Edwards Aquifer Research & Data Center, and the City of San Marcos is working with various agencies to protect the aquifer's recharge zone (where water enters), which lies under the western portion of the city.

With every drip and sip from a faucet, the importance of water -- clean water -- can be sensed. "It's really a big deal that we teach people about our resources and learn how to protect them," Speier said.