

AgriLife Extension expert: Water well owners advised to practice conservation during historic drought

By Blair Fannin Texas AgriLife Extension Service

In Texas, you have either a checking or savings account when it comes to water reserves, according to a Texas AgriLife Extension Service program specialist.

Rural water well owners should be mindful of conservation and management so that either type of reserves don't go dry during the ongoing drought, said Kristine Uhlman, who coordinates AgriLife Extension's Texas Well Owner Network program.

The dry conditions have not only taken a toll on state agriculture, but also rural water wells which in some instances have begun 'sucking air' due to low water tables, Uhlman said. Though problem reports have been few, properly managing well pumps and practicing conservation will help prevent costly equipment problems and possibly running out of water.

"When listening to the pump, you need to make sure that it's not turning on and then off repeatedly," said Uhlman. "If the well is sucking air, you need to immediately turn the pump off and let it rest a while, allowing water levels to rebound. If the pump is cycling on and off, that's going to be doing more damage to both your well equipment and water quality."

Uhlman said there are two types of water — young water and fossil water.

Young water (the checking account) is rainfall captured underneath the ground over the past 60 years, while fossil water (the savings account) entered the ground several thousand years ago.

“Water moves through the subsurface and the deeper it goes, the older it gets,” she said. “Depending on where your water well is located, it could be tapping fossil water from the beginning.”

The quality of the water is dependent on how long it has been in contact with the underground geology, she said.

“For example, the U.S. Geological Survey has reported that groundwater in the Hueco Bolson aquifer near El Paso is up to 25,000 years old,” Uhlman said. “In the Ogallala, in the northwestern portion of our state, groundwater has been measured as being 2,000 to 6,000 years-old.

“What that means is water is being taken out that last fell as recharge several thousands of years ago. Many of the aquifers across the state are more closely connected to our climate, with the water level going up when it rains, and drawing down during drought, then recharging whenever it rains.”

Uhlman said aquifers containing younger water are “extremely vulnerable” to variation in climate, going dry during drought.

“Whereas fossil water, it’s a resource that when you have so many people pumping it out at one time, the water levels continue to go down drastically,” she said. “It won’t be recharged. You either have a savings account (fossil water) or a checking account (young water).”

There are conservation practices individuals can implement to avoid problems, Uhlman said.

When you have multiple individuals pumping high volumes of water at one time, the combination of pumping will make the water levels drop down into the ‘drawdown’ cone of pumping centers, she explained.

“To avoid this, you could change pumping schedules,” she said. “For example, let’s say everybody does laundry on Saturday and has their own well.

The water level goes down and nobody has water on Sunday. But if you managed it with neighbors, say you did laundry on Saturday and some on Wednesday, it’s less likely the wells would go dry, but you would have low-pressure levels.”

Uhlman said automatic levelers regulate when the pump turns on and off depending on the water level beneath the ground. However, if the water level begins to run low due to increased volume, it can create “turbulent flow”

“That’s a bad situation since this turbulent flow of water into the well will cause the pump to turn on and off, on and off,” she said. “This will cause the pump to suck air. If it is repeatedly turning on and off, you need to turn the pump off for a while and wait for water levels to rebound. If the pump is cycling on and off, that’s going to be more damaging to your pump and pull sand into the well. This commonly happens to folks with low-yielding wells.”

There are variations in the type of geology that store water throughout Texas, she said.

“In the Austin area, they have the Edwards — Trinity limestone aquifer,” she said. “Here in Brazos Valley, it’s a combination of layered sand, silt, and sometimes clay. Some people have aquifers that are low yielding,

meaning no matter how much water they have in it, it takes a while for it to move to your well.

“When you have a combination of a low-yielding aquifer and drought, you pump your well and it takes forever to rebound up to a static level. That’s a low-yielding well. Only thing you can do there is have storage. The minute you turn the well on, the water level goes way down. However, a high-yielding well when drawn down will rise rapidly when the pump is turned off.”

Once the drought is over, Uhlman said well owners that have had wells sucking air should have the water sampled for contaminants, such as arsenic.

“There could be aquifers, such as the Ogallala, where arsenic is released into the groundwater in response to low water tables,” she said. “As you bring the water table down that has never been exposed to oxygen, it changes the geochemical makeup of water. This could be a very serious situation to humans, livestock or anything consuming this water. This is why it is highly encouraged to have the water tested before consumption.”

For more information about the Texas Well Owner Network, visit <http://twon.tamu.edu/> .

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