

May 2021
Issue 28

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Aqua Safeguards Your Security

From cyber threats to unexpected weather systems, utilities need to be on guard. This fact has been reinforced by recent news about a water treatment plant in Oldsmar, Florida, being breached by cyber hackers, as well as the Colonial oil pipeline falling victim to a ransomware attack.

Government intelligence agencies have confirmed that foreign governments and criminal groups pose a direct threat to our nation's water and wastewater sys-

tems through cyber attacks on utilities. Similar to other critical infrastructure, Aqua Water Supply faces these potential threats, both in our corporate offices and out in the field.

In response, Aqua has invested heavily in software, digital infrastructure and technical staff to protect customer information and safeguard critical systems. Aqua encrypts all data transmitted on its systems, filters possible compromising messages that enter messaging systems,

provides security training for employees, and deploys new equipment on a very aggressive schedule to protect against security threats.

As more is learned about the evolving methods used to compromise information systems, rest assured that we will continue to develop and maintain defensive strategies to protect our water and wastewater systems – and the cooperative members who rely on our services.

Spotlight on Scholarship

Aqua is pleased to announce that Amanda Branecky, a past recipient of the Aqua Scholarship Program, was recently awarded the Dwayne Jekel Scholarship from the Texas Rural Water Foundation. Amanda is currently pursuing a degree in

Management Information Systems from The McCombs School of Business at the University of Texas at Austin.

Applications are now being accepted for the 2021 Ernest W. Bracewell, Sr. Memorial Scholarship Program from Aqua. The

scholarship application and guidelines can be obtained through Aqua's website, www.aquawsc.com, or from the business office located at 415 Old Austin Highway in Bastrop. The application deadline is May 28, 2021. Best of luck to all our scholarship applicants!

Office Hours:
MONDAY - FRIDAY
8:30 a.m. - 4:30 p.m.

Drive-Thru Window:
8:00 a.m. - 4:30 p.m.

Getting to the Bottom of Texas Aquifers

There are 31 underground aquifers in Texas, supplying roughly 62 percent of the water used throughout the state. About 76 percent of this water is used for irrigation, with the rest used for households, manufacturing and livestock production.

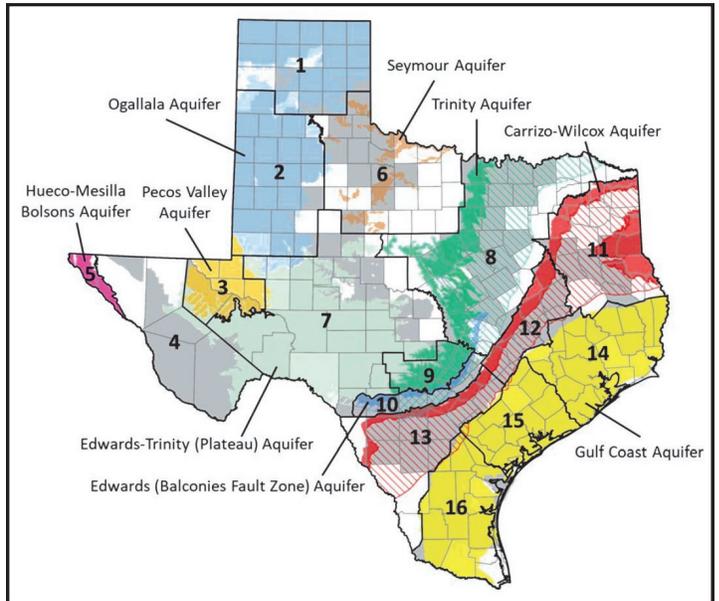
Here in Central Texas, the Carrizo-Wilcox aquifer makes up the sole source of the water supply for Aqua cooperative members, supplied by 30 wells maintained by Aqua.

The Carrizo-Wilcox aquifer is a major aquifer extending in a wide band from the Louisiana border all the way to Mexico. The aquifer is primarily composed of sand locally mixed with gravel, silt, clay and lignite.

Although the Carrizo-Wilcox aquifer reaches 3,000 feet in thickness, the freshwater depth of the sands averages 670 feet. The aquifer has isolated areas of slightly to moderately salty groundwater, with total dissolved solids typically less than 1,000 milligrams per liter.

Groundwater naturally contains dissolved solids made up of mineral ions, which slowly dissolve from sediment and rocks as the water travels through the ground. These elements occur in such low amounts that they are not a threat to human health. In fact, many of the trace elements found in groundwater are considered essential for human metabolism.

The rate of groundwater movement in an aquifer is normally very slow, ranging from a few feet to a few hundred



Groundwater management areas covering 9 major Texas aquifers

feet per year, particularly in a sandstone aquifer such as the Carrizo-Wilcox. Pumping of water from many of the aquifers in Texas has resulted in a significant lowering of the water table.

Considering that the population of Texas is expected to nearly double over the next fifty years, a potential water shortage is the most serious natural resource issue facing Texans. At Aqua, we remain committed to sustainable management of precious resources to ensure a reliable water supply for our members, today and tomorrow.

Community Happenings

Bastrop VFW Post 12104

New Meeting Day and Time — Meetings are held the third Wednesday of the month at 7:00 p.m. New meeting location is 1349 FM 1441, Bastrop.

***Please Note:** To submit Community Announcements for publication in an upcoming quarterly issue, please send your news in writing to the main Aqua office or via email to info@aquawsc.com by the fifth day of January, April, July or October.



A Look Back at the 2021 Texas Winter Storm

It's safe to say that Texans will not quickly forget the unprecedented cold weather that arrived in central Texas on Sunday February 14, 2021. It was not just the very low temperatures, but also the fact that it continued for several days before barely peaking above freezing.

Early in the morning on Monday February 15, Aqua's field personnel began to see evidence of the low temperature's effects on system performance. Aqua's system had survived very cold weather before, and our field personnel were very experienced in successfully dealing with any problems related to winter weather.

We had spent the previous week preparing for the predicted cold weather by checking and repairing insulation on exposed piping, placing electric heaters inside pump and treatment facilities, and coordinating on-call personnel and response plans. Unfortunately, these efforts did not fully prepare the system for what was to come.

The Friday leading up to the storm, we learned that the Electric Reliability Council of Texas may have to exercise rolling electrical blackouts if demand placed too much load on the system. We were not informed of the timing or how long the power would be off. The blackouts began early Monday morning, and the effects were immediate.

Aqua's water system is really quite simple. Pumps pull water from an underground aquifer and supply it to a treatment facility. The treatment facility removes impurities to make the water drinkable, and adds chlorine to prevent bacterial growth. Water is pumped to storage tanks and then out into the lines that supply elevated tanks.

The height of the water in an elevated storage tank provides the capacity and pressure to supply water when you turn on the faucet in your home. In essence, once the pumps provide water to the proper height in the storage tanks, the supply of water to homes and businesses is made possible by maintaining the water level in the elevated tanks. Yet, the rolling blackouts prevented utilities like Aqua from meeting demands for water.

The electronic control systems and pumps used by

Aqua require time to complete system checks and spin-up to the necessary speed before they can begin moving water into the system. With the initial duration of electricity during the rolling blackouts in the range of 10-20 minutes, there was not enough power to even begin supplying the quantity of water needed. As a result, customer demand quickly drained all elevated storage tanks and pipelines.

This situation was made worse by leaks caused by the low temperatures. Large supply lines began to freeze for the first time in our 50-year history. These lines are not insulated since water is always flowing through them.

During and after this event, Aqua heard concerns that we should have been better prepared. In a total system power failure, Aqua would require 20 or more generators to maintain minimum operations, and still many customers would not have water. Aqua has four generators for use in emergencies, and during the past 12 years, we have used an emergency generator only five times. This is remarkable when you consider Aqua has weathered five declared national emergencies in the last ten years.

As for the time it took to restore service – after you complete leak repairs, equipment repairs and restoration of power, refilling a water system is a matter of physics. The goal is to fill elevated storage tanks to return pressure and capacity for customer use. But before you can fill the tanks, you must first fill pipelines in the ground, which hold far more water than elevated storage tanks.

Aqua has approximately 2,000 miles of water lines in the ground, covering 1,100 square miles. These lines hold about 27.5 million gallons of water. To fill Aqua's elevated storage requires an additional 15 million gallons, for a total of 42.5 million gallons of water. You can see the quantity of water needed to fill a water system and the enormous task faced by utilities to return to normal operations.

Certainly, there are lessons to be learned from this once in a generation event. But was the lack of preparedness a "failure of imagination"... or simply a logical result of following best practices learned from the past 50 years?

AQUA

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CALL AQUA BEFORE YOU DIG:

Aqua Water will locate the Aqua water lines for you. Calling for a line locate before any type of excavation is a good idea. Water loss and service interruptions from damaged lines are avoidable, please call the Aqua office: (512) 303-3943.