

Sumner County RWD 5 System Improvements Include Wells, Storage and Plant

Sumner County was created in 1867 and was named in honor of Charles Sumner, a U.S. Senator from Massachusetts who was a strong advocate of Kansas becoming a free state. Sumner County is located in extreme south-central Kansas sharing a border with Oklahoma on the south. The county comprises 1,188 square miles and is located about 20 miles southwest of Wichita. In fact, Sumner County was designated within the greater Wichita Metropolitan Service Area in 2003.

Sumner County has a strong agricultural economy and as noted in their Web site, is considered the “wheat capital of the world”. Year after year, Sumner County continues to retain the title of the top wheat producing county in the state.

Sumner County RWD 5 was formed in the 1970’s and serves 370 customer meters in an area of about 400 square miles in the north-central part of the county. Also, the small community of Viola with 60 meters purchases water from the District. Until recently, the District purchased all of its water from the city of Conway Springs, but with the threat of rate increases, the District decided to pursue its own water source.

This decision resulted in several meetings being held to address the issue of rate increases. High nitrate levels were a concern also. In fact, elevated nitrate levels are an issue in several communities in the area, possibly due to nitrogen fertilizer use over the years. Meetings between the city and district, and various agency representatives were held in an attempt to negotiate new rates between Conway Springs and the District. Also discussed was the possibility of forming a wholesale water district to supply area systems, all of which

This 150,000-gallon elevated tank was constructed as a part of the improvements in Sumner RWD 5. The tank and an existing 85,000-gallon standpipe provides storage for the RWD.

have elevated nitrate levels in the water. Ultimately though, it was not possible to reach agreement on these issues and after all meetings and lawsuits that followed were exhausted, the District began searching for wells to serve its customers.

Ground Water Associates, Wichita, KS, was retained to conduct an exploration program to locate a groundwater source. The next step in the search for water was to contract Clark Well and Equipment, Inc., Great Bend, KS, to drill test wells. A total of twenty-two test wells were drilled in a 64-square mile area. Water from these wells along with 15 private wells was sampled and tested in the search for acceptable quality water.

This search for water eventually pointed to a site located about seven miles northwest of Conway Springs. Water from these test wells yielded very good quality water relative to hardness with levels from 120 mg/L to 150 mg/L and total dissolved solids at 329 mg/L. The water however, contained nitrate at an elevated level, a condition that seems to be common to the area. With a nitrate concentration of 13 mg/L, it was obvious that a nitrate removal plant would be needed to allow compliance with the maximum contaminate level (MCL) of 10 mg/L as set by the EPA. Water containing high nitrate has been known to cause a condition called methemoglobinemia, also referred to as infant cyanosis or blue baby poisoning in infants.

Stumbo Hanson, LLP, Topeka, KS, represented the District throughout the process of securing a new source of water. Fortunately, the District found a willing seller and was able to acquire the land needed for the project. Another fortunate fact was the availability of water rights in the area.

Bartlett & West, Inc., Topeka, KS, was the consulting engineer on the project. The scope of the project included two new wells, water treatment plant, elevated storage tank, and related piping. Layne Christensen, Wichita, KS, was retained to drill two new wells located south of the treatment plant. The wells are 92 feet deep with a static water level of 37.5 feet. Each well is capable of producing about 425 gpm.

Treatment of the water to reduce the nitrate level to an acceptable level is accomplished by an ion exchange unit provided by Hungerford & Terry, Inc., Clayton, NJ. The plant consists of two pressured vessels with nitrate selective anion exchange resin. During the treatment process, there is



Keith Leddy, Manager/Operator, points to a display screen that shows the status of operation. Keith can monitor operations remotely with mobile devices.

The water however, contained nitrate at an elevated level, a condition that seems to be common to the area.

an exchange of chloride for nitrate as the resin takes on nitrate and gives-up or releases chloride in the treated water. After a specified run time, the resin will need to be rinsed and regenerated with sodium chloride (brine). During this cycle, some of the water is captured and reused. This process of recycling some of the rinse water is very beneficial in that less water is

HDSUPPLY
WATERWORKS *Local Service, Nationwide*

Bob Westmoreland
AMR/AMI Product Specialist

11510 Strang Line Road
Olathe, KS 66062

t 913.469.5820
f 913.469.5825
m 913.660.8800

bob.westmoreland@hdsupply.com
www.hdswaterworks.com

GWA 316-550-6177
Cell 316-734-8567
VINCENTBRAD@HOTMAIL.COM

Ground Water Associates, Inc.
EXPERTISE IN WATER & WELLS

BRAD C. VINCENT, P.G.
GROUND WATER GEOLOGIST

109 W. 1st Avenue
P.O. Box 792
GODDARD, KANSAS 67052



This photos show a closer view of the plant units.



This is one of two new wells providing water for the Sumner RWD 5. Each well will provide 425 gpm to the system.



This display shows the level of nitrate (7.6 mg/L) being delivered to customers. The nitrate level can be controlled by the amount of raw well water being blended with treated water.

wasted during the regeneration process. Also, since the actual reject water from this process is accumulated in a storage tank and eventually hauled to Wichita for disposal, less water being hauled represents a financial benefit for the District. The plant can treat 400 gpm; however only enough water will be treated to lower the nitrate level to about 7.0 to 7.5 mg/L in the water being delivered to customers. Treated water is being blended with raw well water as needed to accomplish this goal. Disinfection of the treated water is accomplished utilizing two solution pumps to inject sodium hypochlorite into the line leaving the plant. Water usage during winter months averages about 50,000 to 60,000 gallons per day (gpd) but in summer months, water use can reach an average of 200,000 gpd.

Emergency power to both the plant units and the wells is supplied by a 230 KW diesel-powered generator. Also, the District and the city of Conway Springs distribution systems

continue to be interconnected. Utility Contractors, Inc. Wichita, KS, was the contractor on this project and was responsible for the building housing the treatment equipment.

Another major part of this project was elevated storage. A new 150,000-gallon elevated tank was erected near the plant site and the existing 85,000-gallon standpipe was completely rehabilitated. Caldwell Tanks, Louisville, KY, was the firm used to construct the new tank. All pipeline installed for this project was the responsibility of Ditch Diggers, LLC, Salina, KS.

Keith Leddy has spent time on the District Board and was Chairman in 1998. He is very familiar with the area and now, as Manager/Operator is very satisfied with the project and that customers will be receiving water meeting standards. Keith stated that once the project was approved, construction went

very well and that comments from customers have been positive.

This project was funded entirely by a loan of \$3.447 million from the USDA Rural Development. Co-Bank Federal provided interim financing. The minimum monthly rate to customers increased from \$19 to \$24 which includes 1,000 gallons. Rates thereafter went from \$7.50 to \$8.50 per 1,000 gallons. Customers using 5,000 gallons of water per month will see an increase from \$49.00 to \$58.00.

Bert Zerr is currently a consultant with KRWA. He has been with KRWA since 2005. Prior to that, Bert was a District Engineer with the KDHE in the Salina District Office for 32 years.





Quality On Tap!

Our Commitment  Our Profession

Providing training, technical assistance and other support to Kansas communities



A proud sponsor of the Kansas PRIDE Program

To learn more about KRWA, visit www.krwa.net

The mission of the Kansas Rural Water Association is to provide education, technical assistance and leadership to public water and wastewater utilities to enhance the public health and to sustain Kansas communities.

