By Elmer Ronnebaum, KRWA General Manager

Barber County RWD Working to Replace Their "Drip" Water System

I want to use this article to introduce a "rural water technology" that many people may not be familiar with. This is an example of how things have changed.

Because little to no funding was available in the earliest years of rural water system development (late 1950s and 1960s) in Kansas, several systems were constructed in a manner that would be considered highly impractical today. Such systems are known as "drip systems" or "constant flow" systems.

This photo shows the installation of a typical public water system, where a meter and maybe a pressure regulator would be installed. Instead, with the "drip system", Barber RWD 1 only has an inlet and outlet with water flowing through a restrictor.

What's a "Drip System"?

So, what is a "drip system"? A "drip system" was a design that used small diameter pipelines to provide a continuous flow to customers. KRWA is presently aware of only two such distribution systems remaining in Kansas. One is located in Mitchell County, and the other is in Barber County.

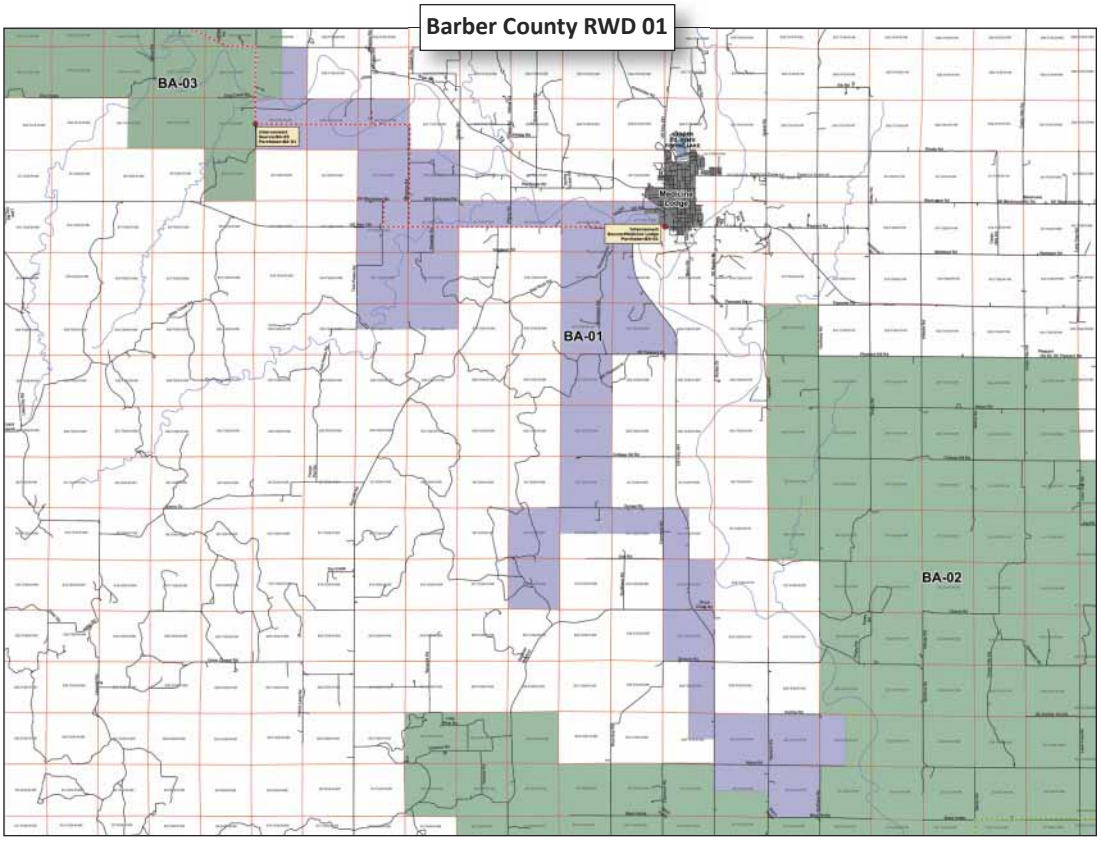
The drip system in Barber County RWD No. 1 has been in service since 1967. The district purchases water from the city of Medicine Lodge and also has an interconnection with Barber RWD 3. The district's distribution system consists of very small-diameter pipelines, ranging from 2.5 inches down to 1-inch. Yes, those are the district's main waterlines! The system drips water into a storage tank of the benefit unit holder (RWD member). The drip system in Barber County provides any user flow rates of one, two, four, eight and sixteen pints per minute. The flow rate is controlled by the orifice size in the district's control valve. From there, the customer needs to repump the water for use at their residence or farmstead.

Tom Bedwell, District Board Chairman, has served on the district's board since the system was installed in the 60s. Bedwell says that there is no denying that the system is outdated in many ways. The district presently serves only 50 users and has no capacity to add customers.

This view of a flow restrictor shows the size of the orifice in a one (1) gpm flow rate.

The district is pursuing funding to install an entirely new "pressure system". Chairman Bedwell states that a new pressure system is necessary to provide better service for existing customers and to expand the district's service area. Recent surveys by the district have shown that nearly 85 additional landowners are interested in joining the district if a new system can be installed. The projected cost of that project is high at $6.3 million. "That's a lot of money for a small group of people," Chairman Bedwell says. The concern is that the project be affordable.

The district has applied to USDA Rural Development for loan and grant funding. A preliminary engineering report, some archaeological reviews, and a geological study have been completed. Bedwell says that the district has gone through all the preliminary issues that USDA requires. Approval was received for a loan and grant combination, with the loan amount being $3.5 million. The district qualified for a 45 percent grant and 55 percent loan. A loan of $3.5 million would result in a water rate of $160 for 5,000 gallons. Chairman Bedwell says that the district cannot justify that level of rates and so is seeking an additional $2 million in grant funding.



Barber RWD 1 has a somewhat unique district boundary. To serve it's 50 existing customers.

The district received two installments of ARPA funding from Barber County, totaling $220,000. Last year, the district was awarded $324,000 from the Kansas Water Office HB2302 grants for engineering services.

The proposed new system would continue to purchase water from the city of Medicine Lodge. The challenge of having a "drip system" is that, because there are no meters, the district lacks credible information on the amount of water being lost due to leaks. The district only knows the amount of water purchased by the size of the orifices that customers subscribed to and how much customers can fill in their on-site storage tanks.

"The disappointing issue at the time we developed the water district in the 1960s was that it was a challenge to get people to sign up," Bedwell says. Without a sufficient density of customers, the district had no choice but to install the drip system rather than a pressure-type rural water system. He adds that areas west and south of Medicine Lodge had a serious need for a water supply, as the groundwater in those areas is of very poor quality and hardly available.

Allison Foulkrod at the office of Sarah Meador, Acting Board Secretary, reports that the charges paid by district members are based on the flow rate, which is determined by the size of the orifice in the control valve. The present rates are as follows: for one (1) pint per minute, or approximately 5,000 gallons per month, the charge is $45. For one quart per minute, or 10,000 gallons, the charge is $61. Two quarts or 20,000 costs $95. One gallon per minute, or 40,000 gallons, costs $161, and two gallons per minute, or 80,000 gallons, is $297. Chairman Bedwell says that most customers originally had cisterns to hold the water supply, but as years passed, many have installed poly tanks.

I thought it was important to showcase the situation in Barber RWD 1 in this magazine to explain a drip water system to readers. Few readers are likely familiar with such installations. As mentioned, the only other remaining drip system KRWA is aware of is Mitchell RWD 1 near Beloit. Ironically, the project consultant for Barber RWD 1, Stuart Porter with Schwab – Eaton, P.A., is himself a user on the Mitchell RWD 1 system.

I know that a drip system was originally considered for the St. Benedict community in Nemaha County, around 1964, due to concerns about the water quality at the parish church and school. Like Tom Bedwell's experience, people were reluctant to join the effort to form the district and so it was dropped. Looking back, no one would consider installing a drip system today. However, people deal with the situations and circumstances that are available at the time. It's easy to second-guess decisions, but when there was little to no funding to install a water system or "make the pipes bigger", the "drip system" was at least a method to provide water to rural residents who had virtually no access to water or extremely poor-quality water. Tom Bedwell and other board members are showing leadership and dedication to improving their community and rural area.

Elmer Ronnebaum is KRWA General Manager; he has been employed by KRWA since 1983. He served seven years on the KRWA board of directors prior to that. He also helped develop a large RWD and served for fourteen years on a water district board of directors. He has testified on many legislative issues in Kansas and three times in Washington.