



This 50,000-gallon tank serves the small town of Barnes in Washington County. It stands in a city park at the north end of the main street.

Inexpensive Control Update Provides Big Improvement for Small Kansas Town

This article focuses on one small town that I recently helped to allow the city to have more efficient operations. The town is Barnes, KS. Barnes is located in southeastern Washington County in north-central Kansas. The city serves 104 water service connections that provide service to the town's 140 residents.

High unaccounted for water loss had become an issue for the city. That unaccounted for loss has been increasing in recent years. The Kansas Water Office identified Barnes as a Special Focus Project. Special Focus Projects are systems that are identified as having 30 percent or greater unaccounted for water loss. It is KRWA's challenge to work with the respective city or RWD to identify and correct the contributors to the high loss.

I met with Delvin Oentrich, part-time operator for the city. Delvin also owns and operates his own plumbing business and he also has a farming operation. The small town of Barnes does not have the customer base nor

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financial capacity to employ a full-time operator without raising rates significantly.

While reviewing the system with Delvin, we soon discovered several contributors to the water loss problem. First, the city had some leaks in the distribution system. Second, the water tower had a history of overflowing. The reason the tank overflowed was due to well

pumps being operated manually. Delvin had to start the well pumps each morning and then attempt to estimate the time required to refill the town's 50,000-gallon elevated storage tank. It is very easy for part-time operators who have other jobs to get side-tracked and forget that the well pumps are still operating. Delvin also mixed a chlorine solution in a bucket because he had to prime the chlorine pumps at least every other day.

Barnes had previously installed timers that would turn on the pumps at specific times and then shut them off after a certain amount of running time. The system did not work

well; daily water usage is not consistent. Estimating the time to refill storage was not all that accurate.

The city had also investigated the option of purchasing an automatic control system to activate the pumps at the wells. However, the prices quoted were more than the city considered to be affordable for them.

During my initial work with Delvin, he mentioned the city would still be interested in an automatic control system, but price would be the main factor of any decision made. Basically the city needed to turn on the well pumps and chlorinator and then shut them off when the tower was full.

Delvin and I studied possible use of a pressure control switch to perform this function. The decision was made to purchase a pressure control switch for \$324 from USABlueBook. A local electrician properly installed the switch. With a little technical support, we had the unit operating. Delvin also changed from using granular chlorine to using 12 percent liquid chlorine in 55-gallon drums. He no longer needs to mix the solution daily and as a result, chlorine residuals have been more consistent throughout the distribution system.

Although Delvin still goes to the wells daily to take readings and check on equipment at the well houses, the control switch makes controlling tank levels a lot less demanding on him. He no longer worries about the tower being empty or over-flowing and having to mix chlorine solution. This also allows Delvin to be a little more flexible with his other jobs and still maintain the water system. In fact the city was so satisfied with the operation of the unit that they purchased a second unit to operate their No. 2 well.



This photo shows one of the two new control units installed for the city of Barnes.

Another benefit for the city is that it allows Delvin to train another person very quickly to check on the system in his absence. In the past, even attending training sessions to maintain his certification was difficult because of the need to check the tower level and either turn the pumps on or shut them off.

By installing the pressure switch units, the city will be able to reduce the unaccounted for water loss, eliminate mixing chlorine for disinfection and also, have more consistent water pressure because of timely refilling of storage.

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Inexpensive control update

The fire department is also affected. If there is need for additional water for fire fighting, the department no longer needs to locate Delvin to activate the well pumps. The well pumps now start automatically when the tower reaches a certain level. Trying to find the operator while he is farming can be difficult, even with cell phones.

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For less than \$1,600 the small town of Barnes, KS has corrected what was a rather significant challenge to the daily operation of its water system. Even with the new controls, the city still retains the capability to operate the wells manually. While this may seem somewhat simple to systems that use a SCADA system to control and monitor the overall operation of their

system, the city of Barnes is very pleased with their new controls.

Many small towns across Kansas have challenges similar to those that Barnes faced. If any other small water system wants to address such issues, I encourage them to call KRWA at 785-336-3760 or email me at gmetz@krwa.net.



This small park in Barnes was originally developed by three men who were members of the International Order of Odd Fellows. The park was given to the city in 1936 to qualify for the WPA Bandshell Project. According to the city's Web site, the bandshell is the smallest of such in Kansas. Volunteers maintain the park.

Greg Metz joined KRWA as a Technical Assistant in July 2009. He previously worked at the city of Washington for 13 years where he was involved in city utilities including the power plant, streets, water and wastewater. He also served as purchasing agent for those utilities.



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