



Excessive Water Line Leaks Cause Hillsboro to Replace Pipelines

The city of Hillsboro is located in Marion County at the intersection of Highway 56 traveling east and west and Highway 15, north and south. The Hillsboro website describes the city's location as the "gateway to Marion Reservoir located at the edge of the picturesque Flint Hills. Hillsboro residents are in touch with nearly one million people in less than an hour's drive; Wichita to the South, Salina to the North, Hutchinson to the West and Emporia to the East".

Marion County is also the home of Marion Reservoir, a major flood control reservoir located on the Cottonwood River. The reservoir is operated by the Army Corps of Engineers and was constructed mostly as a result of the "Great Flood of 1951". Construction was completed in 1968. The cities of Hillsboro, Peabody which purchases from Hillsboro, and Marion all utilize the reservoir as the source of water, easily demonstrating the importance of this reservoir to the area.

Hillsboro's large elevated storage tank has a capacity of 500,000 gallons.



Water plant operator Todd Simmons demonstrates equipment to Larry Paine, City Administrator.



Water pipeline with valves is being installed along with tracer wire. Valve risers are shown in this photo also.

Hillsboro's water source for many years was groundwater. Groundwater quality was rather poor with high hardness and sulfate. The construction of the reservoir allowed the city to change from the poor quality groundwater and take advantage of the better quality surface water from the reservoir. As a result, the city began operating a new surface water treatment plant in 1982. Then in about 2006, a major upgrade was made to the plant along with elevated storage tank rehabilitation and replacement of some water mains. A detailed summary of these improvements was provided in a previous article by Pat McCool which can be viewed on line in the November 2006 issue of this magazine.

The following are a few statistics about the Hillsboro water department: 1) The water plant capacity is 1.5 MG; and, 2) Elevated storage is provided by two tanks, a large tank with 0.500 MG and a small tank with 0.080 MG. The small tank was built in 1928 and is on the National Register of Historic Places.

The current ongoing project includes replacing water lines and fire hydrants in an area of town where many leaks have occurred over the years along with the replacement of asbestos cement (AC) pipe in another part of town. Lastly, the city is installing radio read meters in these areas and plans to eventually replace all meters with radio read.

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This photo shows a section of old pipe with valve and valve box which was removed.



Hillsboro Water Plant Operator Todd Simmons logs locations of the water meters with using GPS technology.



Shown here are fittings and a fire hydrant still to be installed. All fittings used in this project were epoxy-coated to protect against corrosion.

Morgan Marler, Senior Water Treatment Technician, stated that the city has experienced many leaks in the cast iron water line that was installed on the east side of town. In fact, Morgan has a very detailed record of the leaks and has a reasonable estimate of the water lost due to these leaks. During the years from 2003 to 2016, there were 86 recorded leaks. Morgan records the location of each leak, the hours spent on the repair; the equipment used such as backhoe, dump truck, service truck, etc.; and supplies used. During the 13 years, Morgan estimates the city lost about 2.58 million gallons of water and \$172,000 dollars as a result of these leaks. Trenchless installation by boring in 6-inch PVC

pipe was used to replace the cast iron pipe which was originally installed in the 1950s and 1960s. Also, a number of new fire hydrants were installed in this area.

The project on the west side of town consists of the replacement of AC pipe. Larry Paine, City Administrator, comments they were realizing that AC pipe is no longer acceptable for new installations and they just wanted to remove any problems with asbestos that may be released when tapping AC pipe. He noted also that they are finding more AC pipe than originally thought.

New water lines were mostly bored-in but there was some open cut installation also. Most of the water lines were 6- and 8-inch PVC, but some 4-inch pipe was also used. A limited amount of 12-inch pipe was used when connecting to existing lines. New service lines are being installed in these areas as a part of this project.

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This photo shows the surface water treatment plant with two covered clarifiers and the building to the left housing filters, chemical room, laboratory, and office. Water from Marion Reservoir is treated by Hillsboro which also sells water to the city of Peabody.



This photo shows a typical fire hydrant installation.

Last, the project included the installation of radio read meters. The city selected Sensus Pro meters for this project. Plans are to eventually have radio read meters for all services. This entire package of improvements including the line replacements and new meters should result in a decrease in water loss and allow for improved accountability.

Funding and rates

The city utilized a Kansas Department of Health and Environment Revolving Loan to fund this project. The amount of the loan was \$3,107,750 and includes work to be done in the next phase of the overall water system project. The Phase I which is currently under construction is costing \$900,000. The remainder is to cover the cost of Phase II, which includes improvements to services with the installation of radio read meters. Water rates to customers were not affected as a result of this project and are currently at \$29.00, base charge plus \$4.92 per 1,000 gallons purchased.

The consulting engineer in charge of the project is Mike Younger with EBH Engineering with offices in Pratt, Kan. The onsite inspector is Jim Younger, also with EBH Engineering. The contractor is J. & K. Contracting, Junction City, Kan.

Annual Conference

I hope all readers will be able to attend the KRWA's 52nd Annual Conference and Exhibition which will again be held at Century II in Wichita on March 26-28, 2019. A host of very competent presenters will be discussing a wide variety of topics that will

be very beneficial to those in attendance. And there is sure to be something learned in EXPO Hall as it will again be filled with a wide array of products and services for the water and wastewater industries.

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.





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