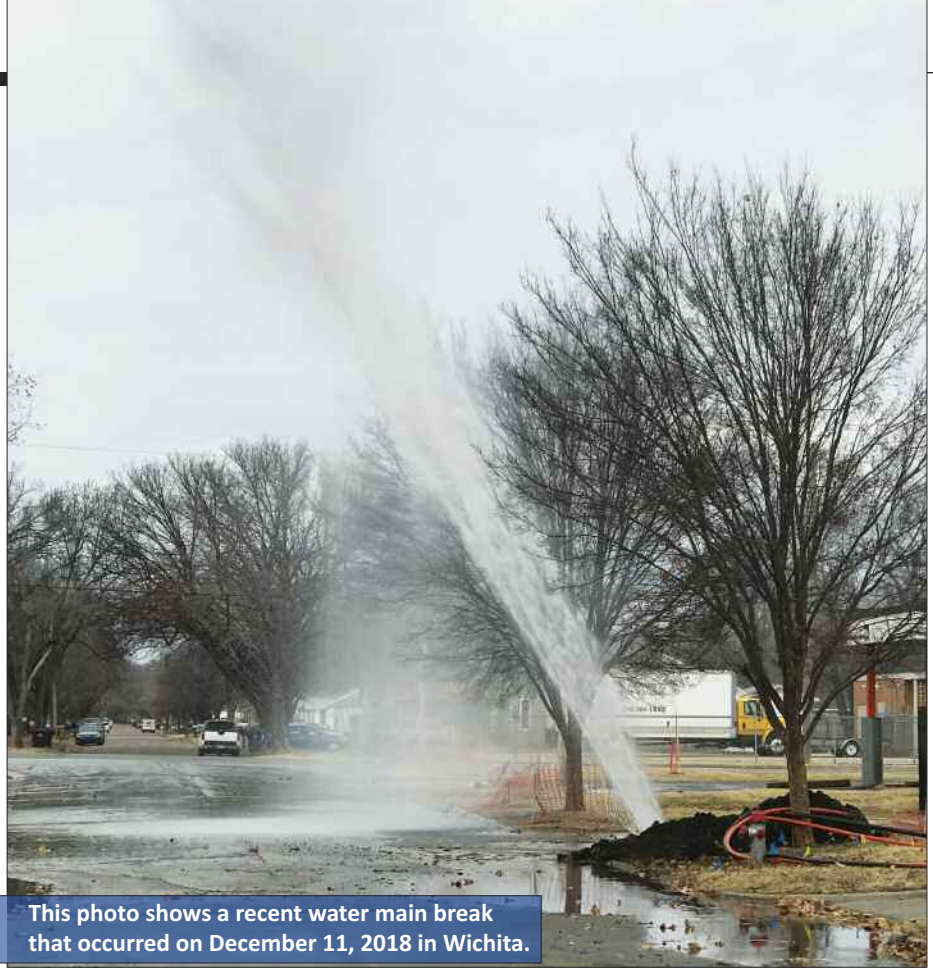
By Tony Kimmi, Technical Assistant

Kansas Winter Weather Effects on Leak Detection



This photo shows a recent water main break that occurred on December 11, 2018 in Wichita.

Winter weather in Kansas can sure put the chills on the task of finding and correcting water leaks. First, the extreme cold weather is not pleasant to be working in. Large amounts of snow, the wind, and resulting drifts four or more feet deep make it difficult to travel some of the roads that rural water lines are located along. In many rural districts, valves are also next to impossible to locate under heavy snow cover. Unless valve risers extend above ground they are extremely difficult to find. I suggest flagging the valves, or using smaller PVC pipe extended up near the valve to have a general location of the valve. Or better yet, buy appropriate signs, attach them to steels stakes and mark the valves.

While no one is very anxious for another snowstorm, having snow cover can provide some advantage to locating leaking water lines. There should be melting of snow above the leak. Finding leaks on groundwater supplied systems is sometimes easier during winter weather. The water coming out of the ground is usually 50 degrees or more. In some situations, the leaking water even creates steam during extremely cold weather.

In cities, a thermo-scanner can be helpful in the cold temps to locate leaks. This is a device that is pointed at the ground and it records the temperature in the direction you're pointing it. An operator can scan the temperature of the asphalt or street to detect temperature change; it sometimes

can show if the leaking water is causing it. It's not a definite indication of a leak, but can be a helpful tool! This tool is also very helpful in the hot summer to indicate cooler temps on the asphalt, showing a possible leak as well.

Kansas Rural Water Association has many tools to help in leak detection. The most useful tool I use is the sub-surface leak detector. It is the most effective tool to use to try to detect leakage under concrete or asphalt. It is not all that useful in grassy areas or bare ground. Snow and ice also make it difficult to detect possible leaks when using a sonic detector. The snow and ice keep the ground mic elevated from the surface of the asphalt or pavement. That prevents good transfer of underground noise from a water line leak. Wind is also a challenge for the sonic detector. And traffic on streets also adds to the complications because of the additional noise.

On a recent water loss survey, I was trying to locate a leak on a 24-inch ductile iron pipe. There was snow and ice on all the roads. It was almost impossible to hear anything showing a leak. But, using the sub-surface leak detector, there was no doubt a leak on a fire hydrant. This was causing the new pipeline from passing a pressure test and being accepted by the utility. The fire hydrant was repaired and the new line was approved after it held pressure. The inspector on the project really expressed his gratitude for Kansas Rural Water assisting in finding the leak.

I have assisted on many leaks in very cold weather. The operators are always appreciative of the help provided to them. Hats off to all those who work above and beyond to keep customers in water, especially during severe winter weather. Fixing a leak involves many aspects – from finding parts, shutting valves, informing customers. Next comes the excavation, then cleaning the pipe and preparing it for repair. Your hands, feet, and face are numb from the cold. And in muddy situations it's just not a lot of fun.

Also, I always suggest that during cold temperatures, water system operators should inspect meters that are not active. Many communities and RWDs have meters that are locked because of nonpayment or residences that are not occupied. With no flow through the meter, the extreme temperatures can cause the meter to freeze and break. It is a good idea to make sure there is a foam, or insulation barrier, between the meter and the meter pit lid.

KRWA conducted more than 100 water loss surveys in 2018. That service comes at no cost to the systems, generally as a benefit of the Clean Drinking Water Fee and through a contract administered by the Kansas Water Office. If your system needs help with correcting water loss issues, give KRWA a call at 785.336.3760 or email me directly too at tony@krwa.net.

Tony Kimmi has worked as a Tech Assistance for KRWA since October 2009. He has extensive experience in the operation of construction equipment. He has assisted in the construction of several rechlorination stations and ongoing monitoring of water quality issues. Tony enjoys providing assistance to public water systems.