



**T**he effect on winters in the United States is predicated by the temperature of the water in the Pacific Ocean. Meteorologists pretty much agree that this is a La Niña year for winter 2017/2018. A La Niña year is when the water temperature in the Pacific Ocean is colder than normal. While the temperature difference is not very much it impacts the weather pattern greatly. The meteorologist in our area forecast that the winter will start off mild and then turn colder and also have more precipitation. While the precipitation has not greatly increased this winter, the cold has certainly impacted much of the U.S. in December, January and February.

Much of Kansas has certainly noticed this cold weather and problems have occurred with the operation of water systems. Problems included frozen meters, frozen storage

tanks, tower controls not operating correctly by either not filling the tank or causing the tank to overflow.

The time to prepare for winter is before it hits. Meter pits should have been inspected to make sure the lid and ring were on correctly and whether insulation was needed. If meters are located just below the lid, there is an increased likelihood that freezing will occur in extreme cold temperatures, especially during long periods of temperatures below 20 degrees Fahrenheit. Meters can be very expensive to replace depending on size and type.

System personnel should also inspect the tank controls. Make sure that the transducers are not vulnerable to freezing. In some instances insulation can be added to prevent freezing or heat tape may be required or simply wrapping pipe with insulation may help prevent freezing.

Kansas Rural Water Association staff have responded to numerous calls during cold weather and the most frequent problem found has been the transducers on tank control systems have frozen and become inoperable. Not only is it expensive to replace the transducer, the inoperable transducer may have allowed the storage tank to not fill causing low pressure or even allowed the pumps to not shut off, causing the tower to overflow. This can create an extremely dangerous situation with ice forming on the side of the storage tank, which can cause structural damage.

During winter, storage tanks are also likely to have ice inside them. Typically ice forms at the top. Few operators climb and inspect their tanks in winter, so the extent of ice formation inside of water storage tanks is often unknown. Ice inside a water storage tank moves up and

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## Tips for Winterizing A Public Water System

- First, create a checklist long before cold weather arrives
- Check on equipment that may be needed to work in cold weather conditions
- Check hydrants that do not drain properly
- Raise valve boxes; exercise valves to ensure they are operable
- Weatherproof pump stations by checking heaters and thermostats; make sure buildings are weather-tight
- Check control systems on storage tanks; know how to vary the water level to keep fresh water in the tank
- Determine how to have a backup heat source in well houses and pump stations
- Check meter or other pits for leaks, poor insulation, etc.
- Check pump stations and well houses to make sure there is an adequate heater with a thermostat to maintain enough heat in the building so the discharging piping and any sensing lines in the building will not freeze
- Check the operation of pumping equipment that would be needed during leak repair

down as a storage tank fills or empties with usage. However there are times when the controls may not work correctly which may create more ice buildup in the tank. Some systems have had the storage tank frozen to the point where water would no longer enter the tank or the tank is severely damaged.

### Cold Weather Help

One of the calls I received for assistance was from a small town. The main pump house had frozen and several feet of piping had split, the master meter had frozen along with the chlorine booster pump and piping. The repairs cost the system several thousand dollars. This could have been prevented if a backup heater had been installed. This building was heated by an electric heater. During the night the circuit breaker tripped and before the operator arrived the next day the problems had already occurred. If possible it would be good to have an alternate source of heat such as natural gas or propane heat. If not the electric heater should be correctly sized for the application with adequate circuit breakers installed.

It would benefit most systems in Kansas to install a notification system that would notify the operator if the

temperature in the building dropped below a certain level. The alert can either be sent to a cell phone or email. If you want information on economical ways to accomplish this, KRWA staff would be pleased to provide that information.

It is also important to have a backup power supply, especially for remote

areas. Most water systems in Kansas have some alternate power supply in the case of large scale power outages, such as those due to ice storms, tornadoes, severe storms, etc. While that can initially be a significant investment, being without water for several days more than outweighs the initial costs. Numerous water systems have installed backup generators or have contingency plans for portable units in case of power outage.

I encourage you to give KRWA a call for any assistance with water or wastewater systems. KRWA staff have the hands-on experience to help troubleshoot and recommend options for repairs or maintenance. KRWA is a partner that's ready, willing and able.

*Lonnie Boller is a Technical Assistant at KRWA. He has been employed by KRWA since 2001. Lonnie is a Class II certified operator; he previously was Water Plant Supervisor for the City of Horton. He has also attended and completed training at the University of Kansas Law Enforcement Training Center.*



**-LINE STOPPING**  
3/4" - 60"

**-LINE TAPPING**  
2" - 60"

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4" - 16"

**-VALVE TURNING**

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