



# Rural Water Training & Tech Assistance Program For SDWA Compliance

## Small Water System Case Study



★ Lakeside Village at Lake Perry

**Lakeside Village, Kansas**  
Jefferson County  
Populations Served: 180

**Water System Operations  
Maintenance and Treatment**

### Lakeside Village Improvement District

#### Background

Lakeside Village Improvement District (Lakeside) is a housing area that surrounds Lake Perry near the city of Ozawie in northeast Kansas. Lakeside owns its own public water system and serves water to approximately 75 customers. The source of water for Lakeside is two ground water wells which pump into a single pump house where the water is disinfected prior to entering the clearwell. For many years, the system used chlorine gas as a disinfectant, but recently the system changed to a liquid sodium hypochlorite solution. In recent months, Lakeside has been struggling with frequent operator turn-over. Lakeside currently has a contract operator from a nearby rural water district.

#### Technical Assistance

In March 2016, Kansas Rural Water Association (KRW) Technical Assistant Lonnie Boller traveled to Lakeside at the request of the system's operator, Patrick Barnes. Operator Barnes informed Lonnie that one of the system's well pumps would not operate and that one of the high service pumps



Humid conditions and chlorine gas exposure has caused piping to rust.

would also not start. Boller looked inside the system's pump house and observed several problems. First, the pipes and the electrical panels are rusted due to many of exposure to humid conditions and chlorine gas fumes. Lonnie recommended that the system contract an electrician to figure out why one of the well pumps would not function and also why one of the high service pumps would not work. Lonnie also recommended requesting a cost estimate from the electrician for moving the chemical feed pump to the opposite side of the building. He explained that if the chlorine were moved to the opposite side of the building, it would be contained in a small room and isolated from the rest of the building. The chlorine room could have a separate, outside entrance with an exhaust fan and light switch outside the building. Lonnie also recommended that the rusted pipe be cleaned and painted with an enamel paint, which should be color-coded to indicate raw water pipes and finished water pipes. He also recommended placing a dehumidifier in the pump house to help with the moisture problem when the pipes sweat in the summer. This may also help prevent rusting the electrical controls.

Another problem that he observed was that the system had several months' worth of sodium hypochlorite on hand. Lonnie explained that liquid chlorine solution loses its strength over time. He recommended only keeping one month's supply of chlorine on hand. He assisted Operator Barnes with ordering a new chemical feed pump and tank. He recommended adjusting the system's chlorine dosage at 1.0 mg/L in the winter months and 1.5 mg/L in the summer months to maintain compliance with the state required minimum residual at 0.2 mg/L at every tap.

Lonnie and Operator Barnes also discussed controls for the system's storage tank. Lonnie recommended adding new pressure gauges at the pump house and at the tank. This should help identify how much water is in the storage tank.

He also recommended that the system's storage tank controls be upgraded from a phone line system to a radio system sometime in the future.

Finally, operator Barnes informed Lonnie that the system has had a water leak for several months. Because the operator is contracted, he is not authorized to arrange for outside services. Lonnie recommended that operator Barnes impress on the governing board the need to obtain a contractor with an excavator to repair the leak as soon as possible.

Over the next few months, KRWA staff plan to visit the Lakeside water system and assist them with much needed improvements. An update on Lakeside's progress will be provided in the next quarter's report.



**The system had several months' worth of sodium hypochlorite on hand.**



**The system's chemical feed set up.**



**The electrical panels are rusted after years of exposure to moisture and chlorine gas vapor.**