

# KRWA Constructs Chlorine Analyzer and Flush Station To Save Miles and Time for Systems

Since I began work with KRWA in 2009, there is one problem that troubles many water systems. The problem is especially troublesome for some rural water districts and other systems that have long expanses of pipeline, sometimes which seems oversized for the use that takes place. The problem is loss of chlorine residuals.

How does a system address this problem? Generally, by going to the end of the pipeline in the problem area and opening a hydrant and flushing it. In cases, that location is 40 miles from the district's center of operations. In other cases, it's a problem because it takes extra manpower and monitoring. How many times has someone opened a flush hydrant and then forgotten to turn it back off? Yes, many. I know because operators have admitted that has happened.

In order to try to help water systems better address this problem, the Kansas Rural Water Association recently constructed a chlorine flush building. This facility is primarily used to monitor chlorine residuals. This is accomplished by using a Hach CL-17 chlorine analyzer. The analyzer is designed to capture and analyze a portion of the water flowing through that location every 2.5 minutes. The sample portion is captured in the colorimeter measuring cell where the blank absorbance is measured. Measurement of the sample blank absorbance allows compensation for any turbidity or natural color in the sample, and provides an automatic zero reference point. Reagents are added at this point to develop the magenta color, which is measured and compared to the reference.

The building is also equipped with a flush valve. This flush valve is connected directly to the analyzer. The

analyzer is set to show low and high chlorine levels (e.g., a low of 1 mg/L and high of 4 mg/L). When the analyzer indicates low or high levels, the flush valve opens to flush until the desired chlorine level is met. The unit then directs the solenoid valve to close.

With the analyzer measuring every 2.5 minutes, it tremendously reduces the amount of water that may otherwise be wasted to flush until adequate chlorine residuals are attained. For example, an operator opens a flush out and leaves it to flush for a set amount of time. I've known some operators to open a flush out in the morning and not return until the evening to turn it off. Or in other cases, as I mentioned before, forget to shut it off for days. The flush valve can be set on automatic or it can be placed on "hand" to flush manually.

The building is also equipped with a water meter. The meter measures the amount of water that is flushed; this helps in monitoring water loss.

## Remote monitoring/control

A Hobolink data logger is also the technology installed in the building. The Hobolink is used to record and send information to a laptop, smartphone, or an email. This is a major advantage to an operator. The station can be accessed by a cell phone or the Internet to check chlorine residuals, if the station is flushing, water pressure in the system or temperature in the building can also be reviewed. Having remote control will save a lot of miles and time – and money for a water system. The Hobolink also sends an alert when the chlorine levels are out of the set range. The flush station can be installed on any water system, but is a major

advantage to large water districts where a lot of traveling is required to flush. Also RV parks and campgrounds would be ideal areas to have a flush building. These areas are often just occupied on weekends and very little water is used during the week. In parks and campgrounds, the flushed water can be connected to sprinkler systems to water the grass. This will also be helpful in taking daily chlorine residuals, as required by the Kansas Department of Health and Environment.

The unit is designed to be placed on a concrete pad and then bolted down to keep it secure. There will have to be electricity supplied to the building. And a ¾-inch water line will need to be connected to the water meter. A garden hose can be connected to the flush valve to direct the water away from the building. The building is made of 1-inch tubing for a frame. All the tubing is welded. The building is insulated with 1-inch polyfoam. The inside and the outside are lined with 29 gauge metal. It has a 110 volt electric heater for winter use. It is also equipped with lighting.

This unit is a tool for water systems that have problems with chlorine residuals. If anyone is interested, contact KRWA at 785-336-3760 or call me directly on my cell at 913-370-0097. See the next page for a read out and a summary of the KRWA Chlorine Monitoring Building.

*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 many*

*rechlorination stations and ongoing monitoring of water quality issues.*



## Chlorine Analyzer and Flush Station – Saves Miles, Time and Water!

Chlorine is the most widely used chemical for disinfection of drinking water and is the only disinfectant used as a maintenance residual in distribution systems. Whether using free or combined chlorine, monitoring is essential to help maintain an adequate chlorine residual throughout the distribution system at all times. It is very difficult to control anything that can't or isn't effectively monitored.

**KRWA's Chlorine Analyzer and Flush Station** allows for remote monitoring of chlorine residual, system pressure, and temperature with notification by email. Plus, all data can be charted. Automatic flushing can be enabled based on the chlorine residual setting. **This analyzer allows monitoring and flushing without the cost of time and travel to remote areas.**

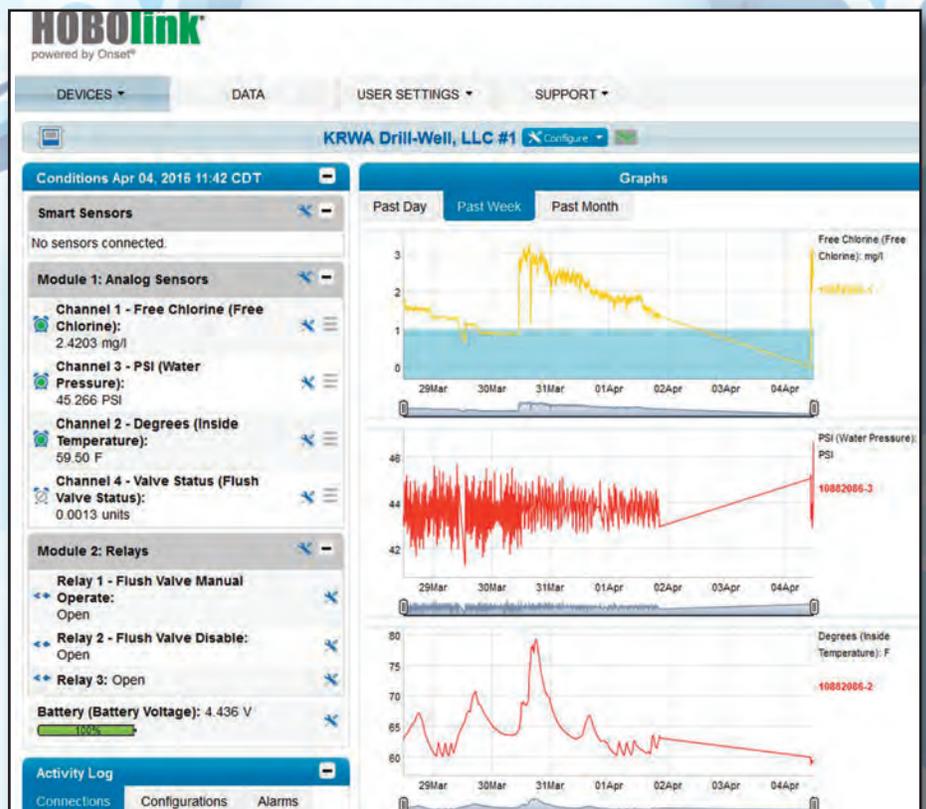
Application and uses include:

- ◆ Distribution system dead ends and low flow areas
- ◆ Large lines with users long distances from wells or the treatment plant
- ◆ Long detention times where systems were designed for future growth or fire protection
- ◆ Prior to water storage to ensure an adequate chlorine residual going into the storage tank
- ◆ To resolve chronic customer complaint areas such as, taste and odor or discolored water, etc.

Remain in compliance with Kansas Department of Health and Environment requirements. In Kansas, the minimum chlorine residual when using free chlorine is 0.2 mg/L and the minimum residual when using combined chlorine is 1.0 mg/L. The maximum chlorine residual is 4.0 mg/L.

This unit includes a Hach CL 17 analyzer, water meter, flush valve with electronic solenoid, pressure transducer, pressure and temperature monitoring. It is Web-enabled and utilizes HOBOLink and includes remote control operation.

For a demonstration how this unit can help your water system, call KRWA at 785-336-3760 or email to [krwa@krwa.net](mailto:krwa@krwa.net). There is no charge for a demonstration.



**Above: This screenshot shows several of the parameters that are monitored. The flush valve is controlled with the setting of the chlorine residual or it can be over-ridden remotely through the Web-link connection.**