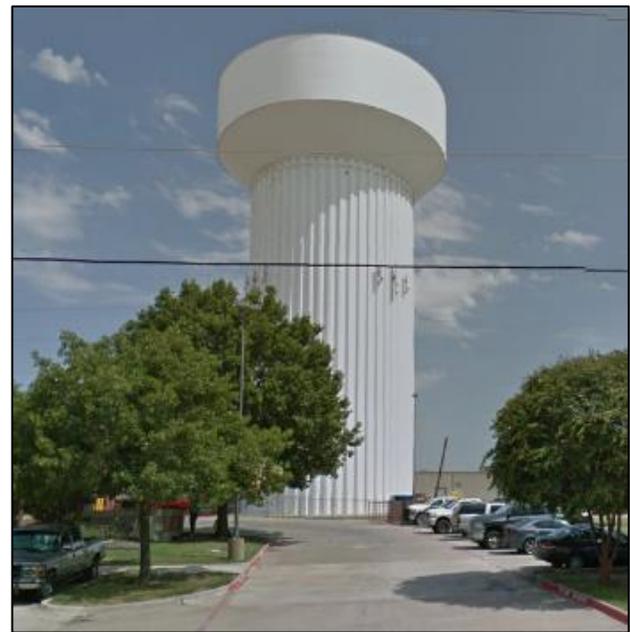


## Residual Control Technology Saves Millions of Gallons of Water While Maintaining Consistent Chloramine Residual Levels

Located in north central Texas, the City of Coppell is part of the Dallas-Fort Worth metroplex, an agglomeration of cities that make up the 10th most populous region in North America. Founded as a farming town by German and French immigrants in the 1830s, Coppell is now home to over 40,000 people. While the City of Coppell is responsible for the operations and maintenance of the water distribution and wastewater collection systems in a predominantly residential area with 16,000 connections, the City relies on purchased drinking water from Dallas Water Utilities with chloramine residual in the range of 3.0 mg/L to 3.5 mg/L.

Like many cities within the Dallas-Fort Worth metroplex, Coppell experienced water quality challenges at different periods throughout the year. In particular, the City had difficulty maintaining adequate chloramine residuals at the 1.5 MG Southwestern elevated storage tank during the warmer summer months when outdoor watering was restricted to conserve water. The reduced demand in that area of the system meant less turnover in the storage tanks, resulting in higher water age and chloramine residual decay. Ironically, the City experienced similar water quality problems during periods of rain, as customers curtailed their outdoor irrigation.



*1.5 MG Southwestern Tank – Tower 1*

To combat the effects of reduced demand, the City routinely drained the Southwestern storage tank and flushed the areas served by the tank. During the summer months, the combined draining and flushing added up to approximately 3.5 million gallons of potable water per week while the City's daily water demand is approximately 16 million gallons per day (MGD). The seasonal flushing program required two operators to spend a half day at least two to three times per week just to maintain residual levels.

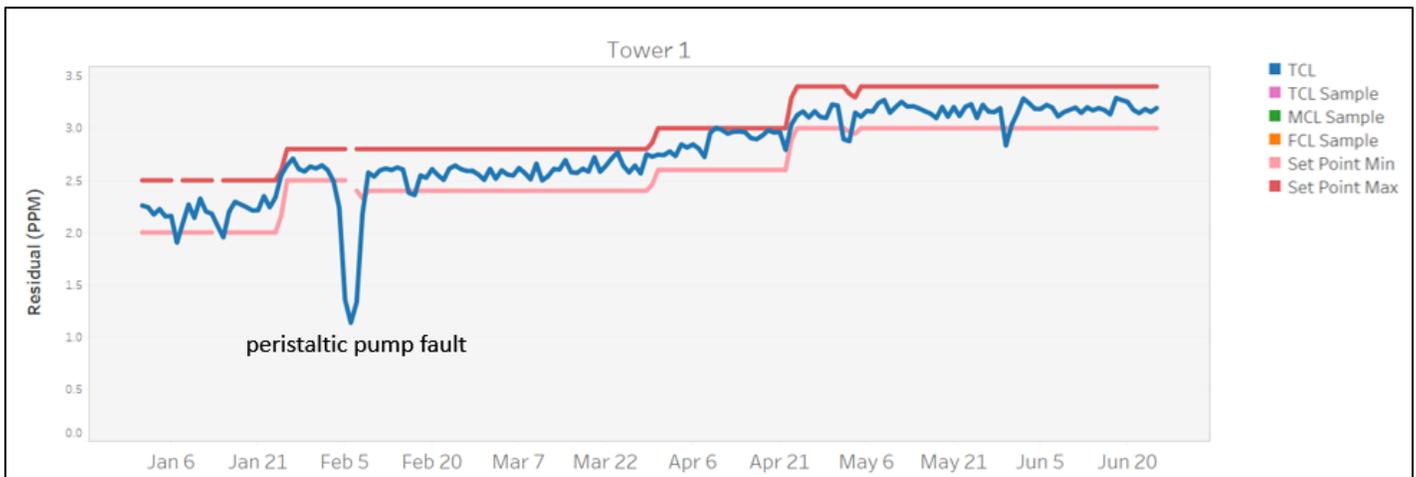
In late 2016, the city installed a Monoclor® RCS (Residual Control System) at their Southwestern tank. The system consisted of a PAX PWM500 Mixer, a Water Quality Station, Smart Controller, chlorine feed skid for bulk hypochlorite and an ammonia feed skid for liquid ammonium sulfate (LAS). Once the equipment was installed and calibrated, a desired residual set-point was programmed into the system. The Monoclor® RCS continually monitored the existing residual in the tank and automatically adjusted the dosing rate to maintain the desired residual set point.

The result has been dramatically more stable residual levels and improved water quality. Data from the City shows a



95% increase in Total Chlorine residual from 2016 to 2017 (on left). At the same time, the data shows a 76% decrease in Nitrite levels during the same time.

In the past, especially during the hot summer months of May, June, and July, the City of Coppell was challenged to maintain a 0.5 chlorine residual. Upon start up of the Monoclor® RCS, the steady residual levels enabled them to practically eliminate the need for flushing, conserving large quantities of water while reducing operator man hours that were once dedicated to these flushing exercises. Together, this contributed to making the Monoclor® RCS a cost-effective investment in a very short period of time. The City is expected to add another Monoclor® RCS to their network in 2018.



*Southwest Tank residual levels remains steady and controllable per 2018 six month audit*

“We now have more control over our water quality which has had an affect not only in our Elevated Storage Tank but out in the far reaches of our distribution system. We get less taste and odor complaints, have lower nitrite levels, and my operators can spend their time more productively now that we are not having to flush the water.”

*- Jerrv Davis - Water Operations Supervisor*