

## Peaks Mill Water District

### Water Quality Improvement plan

September 2019

Peaks Mill Water District (PMWD) has had a water quality failure within a portion of the distribution system. That portion of the system was unable to maintain a residual chlorine level at or above the 0.5 ppm required by KY DOW. The District attempted to rectify the situation by flushing the lines in the affected portion of the system. The residual would increase during the day and then drop to near zero when flushing stopped for the evening.

For the last few years the Public Service Commission has been adamant about reducing the amount of unaccounted water. Peaks Mill has been aggressively seeking to eliminate leaks in the system. The water loss has been reduced from more than 30% to about 18%. This has an unintended consequence on water quality in that the water is not flowing through, but rather is staying in the system for a longer time.

The problem has been identified as both too much water in the system and a bio-film causing nitrification in the water supply. The nitrification is being addressed by the addition of a chemical (Ora-Cle) to disrupt the biofilm and then flush it out of the system. The system started using Ora-Cle last year at the master meter. It was very effective in the front of the system (Zone 1). The injection point was repositioned into Zone 2 to continue combating the bio-film. However, this was not soon enough to rid the system of the bio-film before adverse effects were encountered. The injection of Ora-Cle continues at this time.

In addition, Peaks Mill has added a chloramine booster station to the system (Zone 3) to raise the residual chlorine. This went on line the second week of August. Chlorine residuals have been going up in the immediate area of the booster station and about 7 miles around.

#### **SHORT TERM ACTIONS**

Peaks Mill is making an application to the Division of Water to make one temporary and one permanent connection to Kentucky American's (KYAM) 42-inch transmission main through the Peaks Mill area. Kentucky American tells Peaks Mill that the chlorine level at those connection points will be approximately 3.5 ppm. This will provide higher chlorine residual levels and fresher water than is currently being purchased from the Frankfort Plant Board.

The first connection will be made at the fire hydrant on Indian Gap Road. The connection will consist of a meter and a pressure reducing valve installed on top of the ground along with other

necessary appurtenances. Peaks Mill will be required to install a tapping valve in their water main.

The permanent connection will be made at the control valve near the rear of the old Peaks Mill School building on KY 1262. This connection will consist of a meter and pressure reducing valve installed below grade along with other necessary appurtenances. Peaks Mill will connect to an installed 6-inch tapping valve.

A hydraulic model with water quality modeling is being prepared to confirm the actions being proposed and help with the long term planning.

Two additional trailers with metering pumps are being procured for adding additional chloramines to the system at Harmony Road and Kays Branch Road. Electricity will have to be installed at each location along with a security fence.

### **LONG TERM ACTIONS**

Peaks Mill will be looking at the possibility of making additional connections to Kentucky American at the ends of Harmony Road and Teresita Road. Both of these connections will entail the construction of several thousand feet of new water main. Studies about the chlorine levels on US 227 will have to be made along with hydraulic analysis to ascertain the advisability of these connections.

Peaks Mill will also look at the possibility of using the temporary connection to supply the entire system with Kentucky American (KYAM) water during March when KYAM does a "burnout" with breakpoint chlorine. The three weeks of the burnout will be enhanced with aggressive flushing throughout the system to rid the system of nitrification.

The PMWD will be examining the potential use of sodium chlorite as an additive to disrupt the nitrification. This could reduce the effects of chloramine degradation over the entire system. This process would begin in the spring of 2020 or beyond.

Other connections, chlorine boosting, chlorine stabilizing and processes will be examined as information becomes available.

Submitted this 27<sup>th</sup> day of September, 2019

Church Quarles, Chairman  
Peaks Mill Water District