Tri-County Conservancy District

WATER PRESSURE ANALYSIS

In response to some customer inquiries, Tri-County Conservancy District (TCCD) has recently investigated low water pressure complaints within the TCCD water system. TCCD hired a private contractor, Dean's Plumbing, and met with several homeowners and performed pressure checks for six residents throughout the system. We collected static and residual pressure data at the service connection and at the outside spigots. (Static pressure is pressure with no running water and residual pressure is measured with the water turned on.) Indiana Department of Environmental Management (IDEM) requires a minimum of 20 psi as a compliance standard.

Results were similar at each of the six (6) residences. At TCCD's service connection, the pressure maintained 55-59 psi for static, and residual pressure built back up to the static pressure within a 10 second time frame. Customers' static pressure had an average of 54 psi and residual pressure dropping to 44-50 psi with two faucets turned on and the pressure slowly building back up to 54 psi.

Dean noted that the homes plumbed with PEX (plastic pipe) had the most significant drop in residual pressure. The PEX fittings have a smaller inside diameter, which reduces the volume down one pipe size. For example, a ¾" PEX fitting has a ½" inside diameter and ½" PEX fitting has a 3/8" inside diameter opening. This is likely the reason why customers are having low volume issues inside their homes, and why the residual pressure drops and restores more slowly. The customer with copper lines did not lose water volume and the residual pressure only dropped 2 or 3 pounds with a faster rate of restoration pressure.

The water pressure that TCCD has been receiving from Citizens Water has averaged between 55-60 psi. TCCD hydrant flushing confirms the pressure ranges between 50-55 psi. This information is from TCCD's pressure data collected 2 or 3 times a year with 24-hour data loggers recording pressure simultaneously on each system. TCCD has contacted Citizens Water to investigate their pressure data on their supply line closest to TCCD's connection. The response from Citizens Water stated that they maintain the pressure consistently around 60-70 psi at Paddock and County Line Roads. Citizens reported that the pressure can drop for a few minutes when Morgan County Rural takes water and before the South Well Field can adjust to this variable frequency demand. This occurrence could be the reason TCCD customers are noticing drops in their pressure, but that would be for short periods of time. Also, the average 55 psi registering at TCCD's connection would be expected because the connection is slightly higher in elevation than the elevation at Paddock and County Line Roads.

In conclusion, the recorded pressure data has been within the compliance guidelines (minimum of 20 psi) required by IDEM. TCCD and Citizens Water plan to continue collecting pressure data and investigate the timing of pressure loss. If we can identify average timing of the pressure losses, we can consider some possible solutions to prevent the decline in pressure. The low pressure and volume loss experienced <u>after</u> TCCD connection on homes with PEX piping appears to be caused from plumbing design.