Maintenance of pH in distribution system

Recommendation: The Task Force makes the following recommendations:

1. The City must take steps to address and correct low pH levels in the distribution system in order to ensure that orthophosphate treatment is effective and lead release is minimized.
2. The City must incorporate into its treatment system optimization plan optimal pH ranges for lead control and other performance objectives and manage the system to achieve those standards.

For the first of these requirements, the Task Force understands the City is planning to implement caustic feed treatment and recommends that the City work with the MDEQ to accomplish the additional treatment as expeditiously as possible. For the second, we believe this is an appropriate task for the contractor that the City intends to select for developing a distribution optimization plan.

Background/Analysis: It is well established that lead solubility increases as pH drops below neutral, 7.0. Similarly the effectiveness of orthophosphate to create a protective scale to reduce lead leaching is impacted by pH. In recognition of this, when considering the installation of orthophosphate boosting treatment in October 2015, the Task Force recommended that Michigan require testing to assure that pH was not impacted in a significant way by the phosphate dosage under consideration. The October 31, 2015 letter from MDEQ to the City on its corrosion control treatment operation requires that the City maintain a minimum pH level of 7.0 throughout the City's water distribution system. The general trend in pH of Detroit water at Flint's treatment plant, and Flint and EPA distribution system drinking water samples over recent months has been downward. Samples collected by EPA in the past month in the Flint distribution system had pH levels in the 6.6 to 6.9 range, consistently below 7.0, and not optimal for lead control using orthophosphate.