

Which Pipe First? Using Evidence-Based Condition Assessment with Desktop Modelling to Optimize Pipe Replacement Program

One of the primary concerns of water utility asset managers is prioritizing renewal of buried assets that require it the most. The Region of Peel found that using their current desktop model, they were replacing watermains in good condition. The desktop assessment model was missing a critical parameter: evidence-based condition information. This presentation presents the results of a pilot project that used acoustic propagation velocity testing to gain this missing piece of critical information allowing Peel to calibrate their desktop model and prioritize replacement decisions.

Peel is the third largest utility in Canada serving 1.38 million people. Peel maintains a network of over 3,500 kilometers of watermains with approximately 540 kilometers of metallic mains which are expected to exceed their theoretical service life in the next 10-15 years.

Peel is currently utilizing industry best practices, via a desktop model, focused on watermain break history with additional parameters such as hydraulic capacity, criticality and surrounding infrastructure to set the renewal priority. Peel has embraced sustainability as a core value and is shifting its decision-making process regarding water infrastructure renewal to one based on physical evidence rather than theoretical factors alone. Physical condition assessment measurements will be used to guide future capital expenditure requirements.

After extensive market research, acoustic propagation velocity testing was determined to be the best tool available to measure the remaining average pipe wall thickness. Peel engaged Echologics in a pilot study to gain condition assessment measurements on metallic watermains in Mississauga and Brampton. Wall thickness was measured on 15.6 kilometers of buried watermain assets with no interruption to service, costly excavations, or extensive support from utility crews at a cost of less than 1.4 percent of watermain replacement. Three non-surfacing leaks were located during the study reducing Peel's non-revenue water. Watermains identified to be in poor condition were brought forward in the replacement schedule while watermains in good condition were deferred. This presentation discusses the results of the pilot and how condition information was used to target spending on assets that only truly required replacement. fish passage. A final inspection of this work was completed on September 19, 2012, and the road was re-opened on September 26, 2012.