C3 WATER

Water Supply & Distribution System Optimization

Overview

The City of Guelph, Water Services Division was awarded a project under the Ontario Ministry of the Environment's (MOE) Showcasing Water Innovation (SWI) Program in February 2012. This program provided a matching funding through a competitive process up to $1 Million for projects that best exemplified the Provinces Program Objectives:

- Take an integrated and sustainable approach to solve water management challenges.
- Use new and innovative approaches and technologies.
- Produce results that can easily be used by other communities.
- Create partnerships that highlight the benefits of collaboration.

While there are many activities which have been undertaken through this project, the main goals of this project from the City's perspective were as follows:

- Implementation of a permanent distribution operational tool, which provides operations an easy to use tool based on the City's hydraulic model and utilizes real-time data to optimize system performance. The tool's main benefit is to provide a 24 hour forecast based on real system conditions while also providing the operator with the option of completing what if scenarios on historical data.
- Optimized power consumption in the supply and distribution of potable water with a specific target of 10% reduction, which is an equivalent of 1.3 million kWHr annually, or 337,000 kg of CO_2 emissions. Depending on how much off-peak load shifting can be achieved in conjunction with this initiative, this will be the equivalent of $100K to $200K of annual operational savings.
- Reduction of water loss in the distribution of potable water to the end user of 2%. This works out to an annual volume of 325 ML/Yr, or 55,000 kg of CO_2 emissions. Perhaps more important than the financial savings this relates to in terms of reduced supply and distribution costs, this quantity represents "found water" and defers the need for capital intensive implementation of new water supplies. This becomes critical for a City such as Guelph which has adopted a policy to grow responsibly, relying on a limited number of future potential water supply solutions which are available locally.

The SWI project goals are being realized through an assessment of capital improvements and operational practices which are first demonstrated using the City's well-calibrated hydraulic modelling software. Improvements are then implemented, and performance is measured. Field trials with respect to the main performance goals identified above are planned for 2014. The SWI project wraps up with final reporting in March of 2015.

We acknowledge our industry partners on this project, City of Guelph, Chatham Kent Public Utilities, Hydrant Network Solutions Inc., Eramosa Engineering and the Township of Centre Wellington,

Delivering Value Through the Water Cycle: Source to Tap, Tap to Source™

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