

Client

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Location

Ottawa, Ontario

Services

- Fire Demand Estimation
- Hydraulic Modelling
- Water Age Modelling
- Cost-Benefit Analysis

Date

2004

Key Personnel

Chris Rogers, P.Eng.
John Bougadis, E.I.T.



Ottawa Water Requirements for Fire Protection

Scope of Services

The City of Ottawa commissioned Delcan to provide a cost and benefit analysis of applying a new method for calculating the water requirements of fire fighting. The new method, called the Ottawa Method, uses fundamental principles of water flow to develop formulae. The results are lower water demands than those calculated by the current Fire Underwriters Survey (FUS) but higher than the Ontario Building Code of that period.

Project Description

Four representative pilot areas were selected, and the FUS and Ottawa Methods were used to calculate the demands for each area. Guidelines were established to consistently calculate demands consistently, using available property data. Hydraulic modelling of each area was performed to resize the existing watermains based on both demand methods.



A cost-benefit analysis compared the capital costs, considering both greenfield and rehabilitation applications and water quality impacts. An assessment of the risk of potential differences in property insurance rates was also carried out. Potential city-wide annual savings were estimated based on recent annual changes in watermain inventories.

The Ottawa Method demands showed that significant downsizing of existing water mains was possible in all areas. For older areas that require rehabilitation, it was concluded that using the Ottawa Method increases the potential application of no-dig technologies. The study results suggest that significant water quality benefits could also be achieved, particularly along dead ends and crescents. Reducing the need for extensive flushing programs would reduce operational costs

Results

The annual cost savings to the development community in Ottawa is estimated at \$750,000. Annual savings to the City as a result of rehabilitation program benefits are estimated at between \$275,000 and \$515,000, depending on no-dig technology opportunities.