

## Loss control programs

Leaks result in significant water loss and are often due to ageing infrastructure. The quantity of water lost between leaving the source and entering a customer’s property is an important indicator of water distribution efficiency. According to the Federation of Canadian Municipalities, the amount of unaccounted water can vary greatly from less than 10 percent in new, well-managed systems to more than 50 percent in older systems suffering from poor maintenance. Environment Canada estimates that an average of 13 percent of municipal water is unaccounted. Leak reduction and repair initiatives can be expensive, so conducting a water audit to calculate the ILI (Infrastructure Leak Index) is an important first step in determining the most effective and efficient course of action.

### Municipal examples

Municipality	Initiative
City of Calgary	<p><b>Active leakage control program</b></p> <p>The City of Calgary Water Services engages in active leakage control. One type of active leakage control is in the form of an annual leak survey. This survey is designed to locate and repair leaks in the areas where soils are gravel or sand based. Without a program dedicated to leak detection, leaks can go undetected in these soil types for long periods before they are noticed at the surface. Other leak surveys that The City undertakes involve areas that have had consistent problems in the past and require monitoring; for example, LRT tunnels, hillsides and parkades.</p> <p>In 2010, over 400 kilometres of pipe were surveyed and at least 42 confirmed leaks were repaired. An additional 16 leaks were found on copper services. The estimated volume of water that would have continued to be wasted to leakage in 2010 without this program is calculated to be over 20 million litres per day.</p> <p>Also new in 2010, The City installed some <b>pressure management</b> zones and <b>district metered areas</b> (DMA). These methods of both reducing pressure and monitoring flows also help actively manage water loss.</p> <p><b>Main replacement program</b></p> <p>The City of Calgary Water Services operates and maintains over 4600 kilometres of water mains and replaces 1–1.5% of these each year.</p> <p>There are many factors that must be considered when a decision to replace a section of main is made. If a section of water main has a history (especially a recent history) of breaks, is of a particular age or material, or is installed in particularly corrosive soil, it will be considered for replacement. Over 100,000 soil samples have been taken throughout the City over the last several years to determine <i>hot spots</i> for corrosive soil. The 1,300 kilometres of unprotected metallic mains are more prone to failure and will require replacement.</p>

	<p>An integral part of this program is selecting mains to be replaced prior to their failure. This helps prevent breaks, service interruptions and emergency repairs or replacements.</p>
<p>City of Edmonton</p>	<p><b>Water accounting and loss control</b>  EPCOR’s program includes meter maintenance, leak detection, uni-directional flushing of water mains, routine maintenance of hydrants and valves, an ongoing cast iron water main replacement program, and pressure management of the system.</p> <p>Each of Edmonton’s approximately 17,000 fire hydrants are inspected at least once a year ensuring that they operate properly. Additionally, uni-directional flushing is an efficient water main flushing program developed by EPCOR in the late ‘90’s which uses 40% less water compared to other flushing methods. This equates to saving more than 80 mega litres (ML) of water annually.</p> <p>EPCOR uses electronic leak detection methods which reduces the time required to locate leaks. Also, EPCOR has introduced a water main repair program and network rehabilitation strategy to minimize water losses. Cast iron water mains are more likely to leak or break than other types. Replacing cast iron mains reduced the number of main breaks from a high of 1600 in the 1980’s to a current ten year average of 473 breaks. Main breaks result in comparatively small volumes of water loss but, can be disruptive for customers. Main break rates are influenced by weather, soil type, pipe material, and maintenance programs.</p> <p><b>Pressure management</b>  Adequate water pressure is required to distribute water throughout the system and meet customer expectations but, lowering distribution system pressure can reduce leaks. In order to balance these two goals, EPCOR has installed pressure reducing valves to reduce pressure in areas where it is higher than necessary. EPCOR also has performance measures requiring it to maintain a minimum water pressure value to ensure customer needs are met. This balanced approach requires careful monitoring and management of the distribution system.</p>

City of Lethbridge	<p><b>Preventative maintenance and pipeline rehabilitation</b></p> <p>The City of Lethbridge has established a Water Utility Business Plan that outlines water loss control efforts. These efforts including preventative maintenance to minimize blockages and breaks, inspect water and wastewater systems, and perform water system maintenance to minimize leaks and disturbances.</p> <p>Click <a href="#">here</a> to read more about the water utility business plan.</p>
City of Lloydminster	<p><b>Water and sewer replacement program</b></p> <p>Beginning in 2012, the city launched an annual program that identifies sections of mains for replacement based on selection criteria that includes water main break history, past problems with sewage, and the age of the pipe. Upgrade projects are posted on the city website as they are announced.</p> <p><a href="#">Click here</a> for more information.</p>
City of Medicine Hat	<p><b>Water flushing program</b></p> <p>Annual flushing of accumulated silts and organic matter in water mains. Flushing occurs from Spring until the Fall of each year.</p> <p><b>Main replacement</b></p> <p>According to the 2012 <a href="#">Downtown Redevelopment plan</a>, water and sanitary main replacements are planned from 2010-2018.</p>
City of St. Albert	<p><b>Lead service pipe identification and replacement program</b></p> <p>Launched in 2008, the purpose of the program is to identify and potentially replace lead service pipes that lead to homes. This will lead to increased water quality in the affected residences.</p> <p><b>Water main flushing</b></p> <p>Unidirectional main line flushing program and water turbidity testing provided.</p>
Town of Canmore	<p><b>Reduce water distribution system losses</b></p> <p>The Town of Canmore has committed by 2035 to maintain water losses from the water distribution system at 10 per cent or less. The town has created a webpage that includes a comprehensive list of their current state, goals, strategies, actions, and monitoring/reporting information.</p> <p>Click <a href="#">here</a> to access the Town of Canmore’s water management webpage</p>

<p>Town of Okotoks</p>	<p><b>Leak detection system</b></p> <p>The Town of Okotoks passed a Water Conservation, Efficiency and Productivity Plan in 2014 that sets a goal of achieving a waterworks leak rate of 5 per cent or less. The town has created an aggressive infrastructure replacement strategy to meet this goal including advanced leak detection systems, water main replacement projects, automated system monitoring, upgrades to treatment facilities, and contract renewals with EPCOR water services. This strategy has helped Okotoks reach their goal of a 5 per cent leak rate, which is well ahead of the North American municipal average of 13 per cent.</p> <p>For more information, click <a href="#">here</a>.</p>
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