

Duffin Creek WPCP



Georgina Water Treatment Supply



Waste Management Centre



2009 State of Infrastructure Report



**The Regional Municipality of York
Environmental Services Department**
Newmarket, Ontario

February 2010
Ref. No. 057434-03



1195 Stellar Drive, Unit 1, Newmarket, Ontario L3Y 7B8
Phone: 905 830-5656 fax: 905 830-0176 www.CRAworld.com

2009 State of Infrastructure Report

The Regional Municipality of York
Environmental Services Department



2009 STATE OF INFRASTRUCTURE REPORT	1
BACKGROUND	2
WATER FOR TOMORROW	3
SUSTAINABILITY	4
WATER & WASTEWATER MASTER PLAN UPDATE	4
SCADA INFORMATION PORTAL (SIP)	4
ELECTRICITY PROCUREMENT STRATEGY	4
CAPITAL CONSTRUCTION PROGRAM	5
ENVIRONMENTAL PROTECTION MEASURES	5
INFRASTRUCTURE IMPROVEMENT BUDGETS	5
WHY MEASURE THE STATE OF INFRASTRUCTURE?	5
ASSET MANAGEMENT	6
INDUSTRY PRACTICES	6
HOW IS THE STATE OF INFRASTRUCTURE MEASURED?	6
INDUSTRY PRACTICES	7
HOW ENVIRONMENTAL SERVICES DEPARTMENT MEASURES STATE OF INFRASTRUCTURE	8
GRADING SYSTEM	9
HOW DOES YORK MEASURE UP?	10
INFRASTRUCTURE SERVICES GRADES	11
WATER	11
WASTEWATER	13
WASTE MANAGEMENT	15
DUFFIN CREEK WPCP	17
FINANCIAL	18
DATA MANAGEMENT	19
WHAT'S IN STORE FOR THE FUTURE?	20

YORK REGION ENVIRONMENTAL SERVICES DEPARTMENT

2009 STATE OF INFRASTRUCTURE REPORT

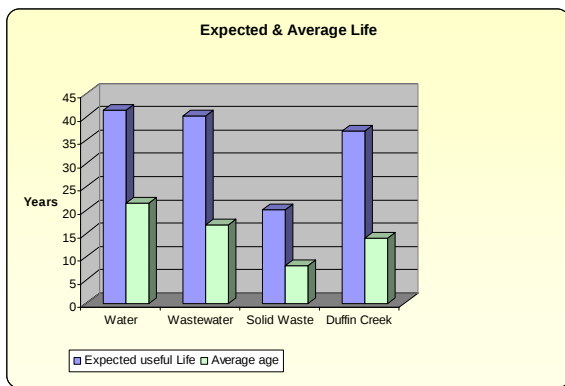
Infrastructure assets in York Region are key to the quality of life enjoyed by our residents. Water, wastewater, and waste management infrastructure protect public health and the environment as well as help sustain a growing community.

Most of York Region's Water & Wastewater assets were constructed in the 1970s and 80s with many assets being upgraded in the last several years as a response to the rapid growth in York Region. Some of the linear assets date back to the 1950s having been transferred from local municipalities when the Region was incorporated.

The majority of the Waste Management assets were built to serve the needs of the Region in the last decade.

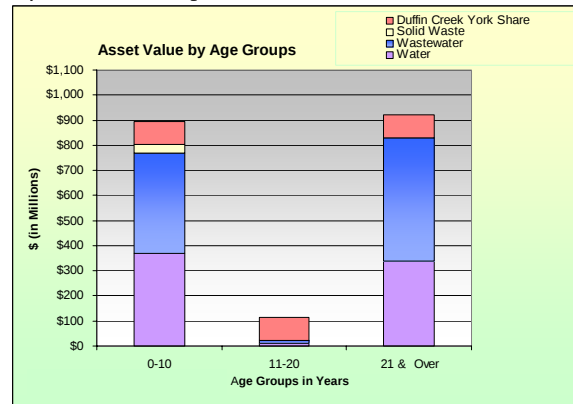
The expected useful life of these assets varies considerably from several years to several decades and reflects the varied nature of the assets themselves. This really depends on the lifecycle category these assets fall into. For example instrumentation and controls are expected to last in the 15 year range, process mechanics in the 30 year range and structural components in the 60 year range.

The following graph compares the average age with the average expected useful life of the environmental services assets.

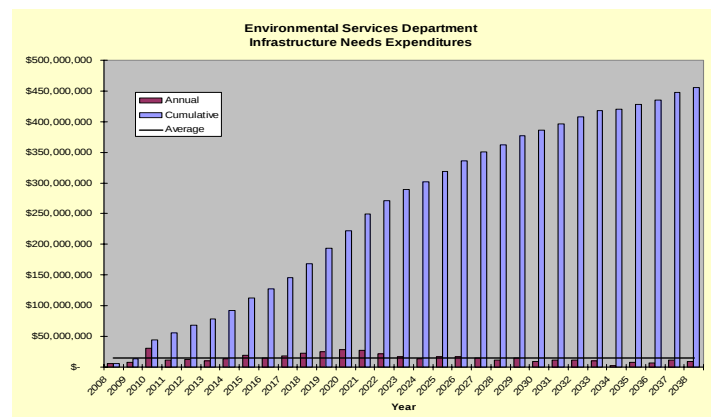


Aging infrastructure and the middle aged nature of York's assets presents challenges for the provision of continued reliable service and represents a financial demand to maintain and replace assets. As the infrastructure ages the financial demand to maintain the same level of reliable service increases.

Infrastructure Replacement Values



More than half the value of the water, wastewater and waste management infrastructure has reached the midway point of the expected useful life which demonstrates the significance of future expenditures needed for asset replacement. The estimated rehabilitation and replacement cost for York Region's existing assets are illustrated below and shows a required investment of over \$450 Million over the next 30 years.



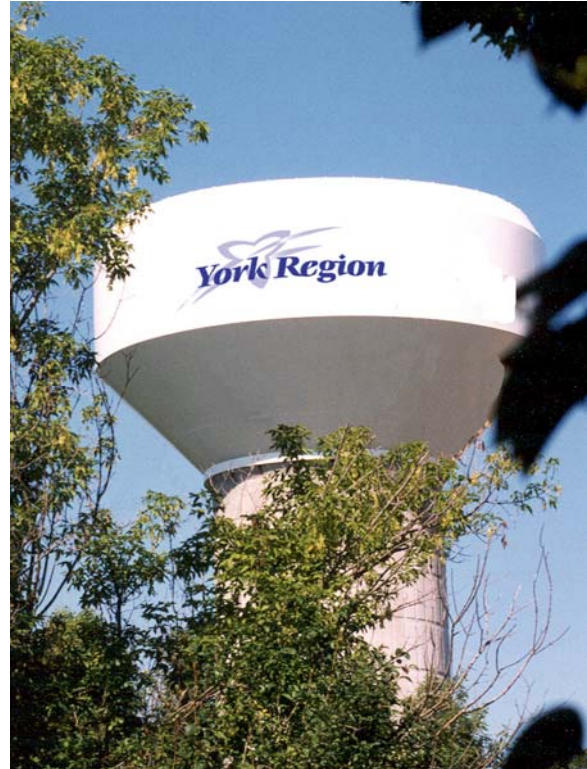
CONESTOGA-ROVERS
& ASSOCIATES

Many cities and municipalities in North America have adapted or are developing Asset Management programs to deal with infrastructure management issues that are a result of the growth phenomena that took place throughout the continent. The period from 1950 to the 1980's represented significant growth by building infrastructure that was supported by funding at all levels of government. The current period reflects the need to rehabilitate and replace this infrastructure, often without the financial support that existed initially.

Asset Management presents an opportunity and the means of proactive service management. It is a program, a process or a series of business processes whose goal is to provide a transparent, consistent framework for decision making that balances services, risk and costs. The challenge to provide and maintain a service can be met through the management of infrastructure assets in a comprehensive fashion.

York Region has the opportunity to develop asset management programs at a time when the infrastructure is still relatively young.

This report is presented to outline the background of the Environmental Services Department, explain why measuring the state of the infrastructure is significant to the Department and describe how it should be measured, including the financial state of the infrastructure and plans for the future.



BACKGROUND

York Region's Environmental Services Department owns and operates over \$2 billion worth of infrastructure, and is responsible for delivering water, wastewater and waste management services to over one million residents.

The Environmental Services Department delivers wholesale supply of drinking water to York Region's nine local area municipalities. The Department is also responsible for the collection and treatment of wastewater. Water and wastewater functions include the operation and maintenance of transmission watermains and major sanitary sewers, pumping stations, water storage facilities, production wells and water/wastewater treatment plants.





The Department's waste management responsibilities include the planning, financing and delivery of environmentally sound solid waste diversion and disposal that ensures public health and safety. This includes food waste and blue box processing, management of public drop-offs, and transportation and disposal of municipally-collected waste.

With the passing of Bill 175, the Sustainable Water & Sewage Systems Act, to ensure clean and safe drinking water for Ontario residents, the Department will be required to assess the cost of providing water and sewage services and to recover the amount of money needed to operate, maintain, and replace the system.

York Region has been actively adopting sustainable business management practices for the Region's water, wastewater, and waste management services. An introduction into some of the current initiatives of the Department is an important first-step in understanding the state of infrastructure and its meaning. These tangible and intangible programs and initiatives implemented by York Region contribute to the Department's success in managing infrastructure.

Water for Tomorrow

Water for Tomorrow is a program focused on water conservation that began in 1998 and is estimated to be saving approximately 20.33 million litres of water every day.



The program provides 1,500 free personalized lawn and garden visits annually, and offers 15 free water efficient garden design workshops in the spring of each year to promote water efficient maintenance practices.

The program has a specific focus on youth education and awareness. Curriculum and workbooks have been presented to over 50,000 Grade 7 students. The annual York Children's Water Festival has proved to be a great success as well, with over 22,000 grade 4 and 5 students having attended since its inception.

York Region also provides financial support by offering discounted products for sale and by providing free water efficiency audits coupled with financial incentives for switching to more water efficient practices.

Due to the efforts of the program more than 106,000 low-flow showerheads and 245,000 early-closing toilet flappers have been installed, over 1,800 km of municipal watermains have been tested for leakage, and the annual reduction in greenhouse gas emissions is estimated at 21,367 tonnes.

Promoting water conservation increases the population the Region can service with the existing water infrastructure. These efforts reduce current demand and decrease the probability of operating assets at or above capacity levels effectively extending the remaining life of the infrastructure.

Sustainability

The Leadership in Energy and Environmental Design (LEED) encourages and accelerates adoption of sustainable green building and development practices. LEED is an internationally accepted benchmark for the design, construction and operation of high performance green buildings.

In 2006 York Region adopted the requirement that all new Regional facilities be constructed to a minimum level of "LEED® Silver". The water savings goal is to achieve a 46 per cent reduction in indoor and outdoor water use. Measures include no water for landscaping, dual flush toilets, low flow showers and aerators to achieve an annual savings of 2,400 m³ of water.

The Stouffville Zone 2 Pumping Station is the first Regional water and wastewater facility that was designed and developed to LEED standards. The water efficiency measures at this site include drought resistant landscaping and the installation of ultra-low flow toilets and faucets.

The biosolids dewatering, storage and pumping building at the Duffin Creek Water Pollution Control Plant will be constructed using strict recycling methods, recycled materials for walls and floors, wall and roof insulation to minimize heating and cooling, high water efficiency facilities, a complex rainwater capture and treatment system, no water landscape features and high efficiency building heating methods.

Adhering to international standards and leading by example creates industry best practices in the Region, encouraging the efficient utilization of resources. This sustainability practice provides an increased service level while minimizing the impact to the environment.

Water & Wastewater Master Plan Update

The Water and Wastewater Master Plan Update is a 40-50 year planning blueprint for water and wastewater services in York Region. The goal is to ensure the creation and maintenance of

efficient facilities to service residents and businesses.



York Region incorporated water and wastewater Sustainability Principles to help guide servicing for sustainability. Wise use of water was identified as one of the 10 themes under which the guiding principles were established.

SCADA Information Portal (SIP) – Remote Access

York Region is continually looking for methods to improve communications and increase information sharing with the nine municipalities and its own operators. In 2008 water storage information was made available through a web based portal to better coordinate water conservation measures during the summer months.

The web based SCADA Information Portal (SIP) provides access to key water level information for elevated tanks and reservoirs. It integrates all water and wastewater data points and allows users to access a single unified view of key W&WW process information.

Accurate, consistent and available data are integral to operating at desired service levels. Data miscommunication is a common challenge in managing municipal infrastructure. Proper organization and availability of data helps the Department achieve service reliability.

Electricity Procurement Strategy

An Interim Electricity Procurement Strategy was approved by Council in May, 2007. The report recommended that York Region purchase electricity in a combination of the Regulated Price Plan, the Spot Market, and a Fixed Price Contract(s).

