

# **Operations, Maintenance and Monitoring Branch Status Update**

**Presentation to  
Committee of the Whole**

**Brett Bloxam  
Director, Operations, Maintenance and Monitoring  
March 20, 2014**

# Agenda

1

**Overview**



2

**Standard of Care**



3

**Compliance**



4

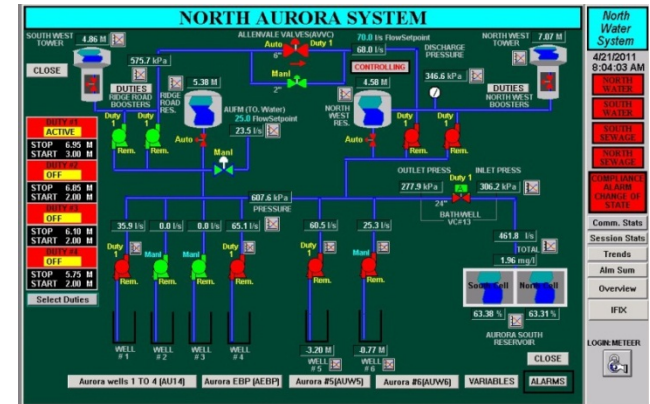
**Operational Excellence**



# 1 Overview

# Proactively Managing Risk and Compliance

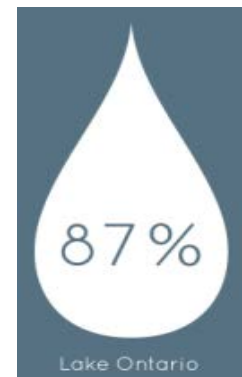
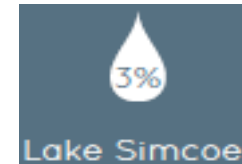
- ❑ Efficient and cost effective 24/7 delivery of water and wastewater services
- ❑ Compliance with legislation and Integrated Management System
- ❑ Operate, maintain and inspect our assets
- ❑ Support Capital Delivery Program
- ❑ Communicate with local municipalities, stakeholders, research partners and provincial regulators
- ❑ Provide a safe working environment



Operations, Maintenance & Monitoring is responsible for operating, maintaining and protecting assets valued at over \$3 billion

# Water and Wastewater System Overview

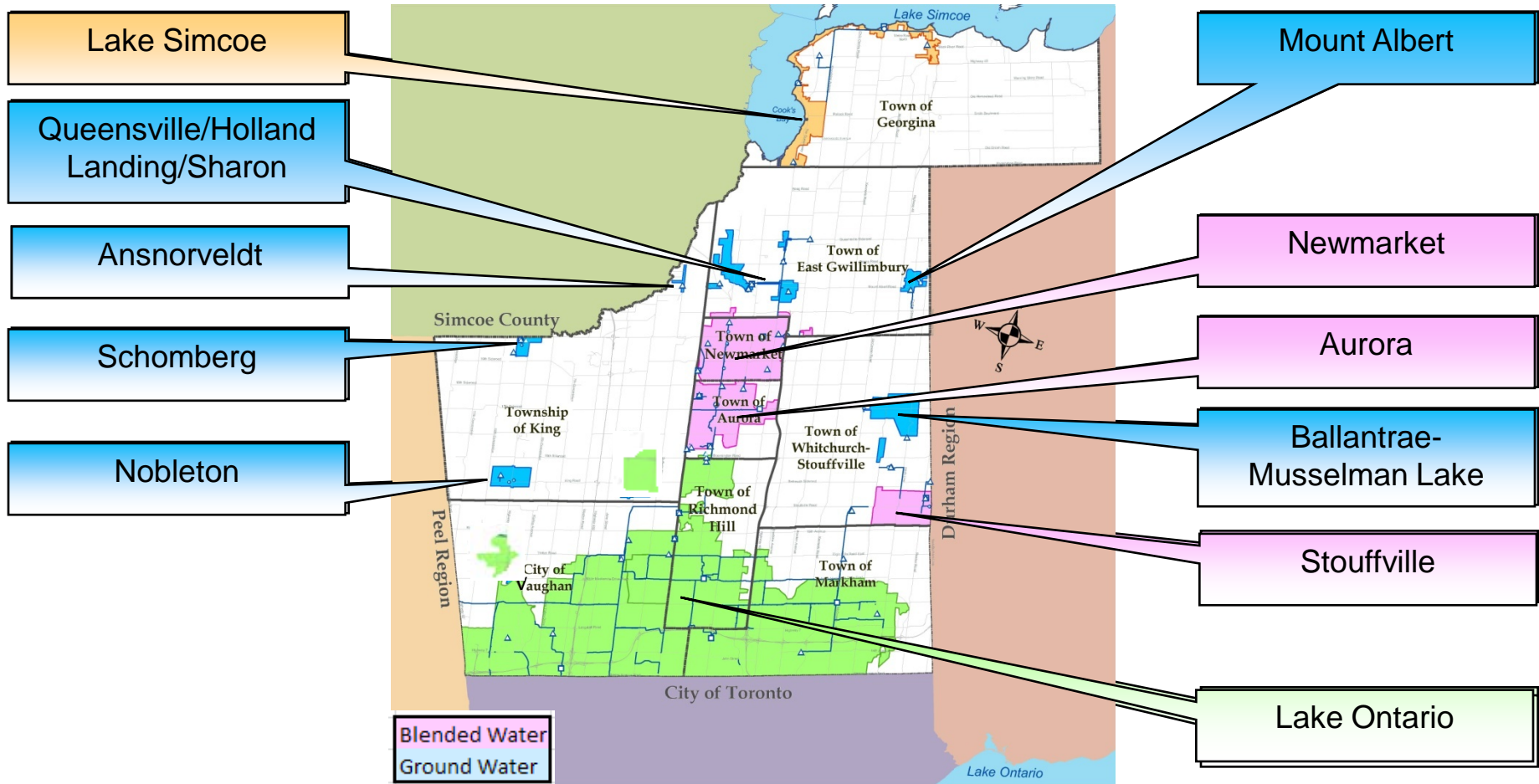
- ❑ Complex water system: 3 treatment plants, 42 wells, 41 storage facilities and 339 kilometres of watermain
- ❑ Wastewater system: York Durham Sewage System, 8 wastewater treatment plants and 283 kilometres of sewermain
- ❑ Inter-Municipal agreements with Toronto, Peel and Durham and partnerships with local municipalities
- ❑ Enhanced treatment technology to meet regulatory needs
- ❑ Robust Supervisory Control and Data Acquisition (SCADA) system to continuously monitor facilities



Complex and integrated water and wastewater systems serving over 1 million residents

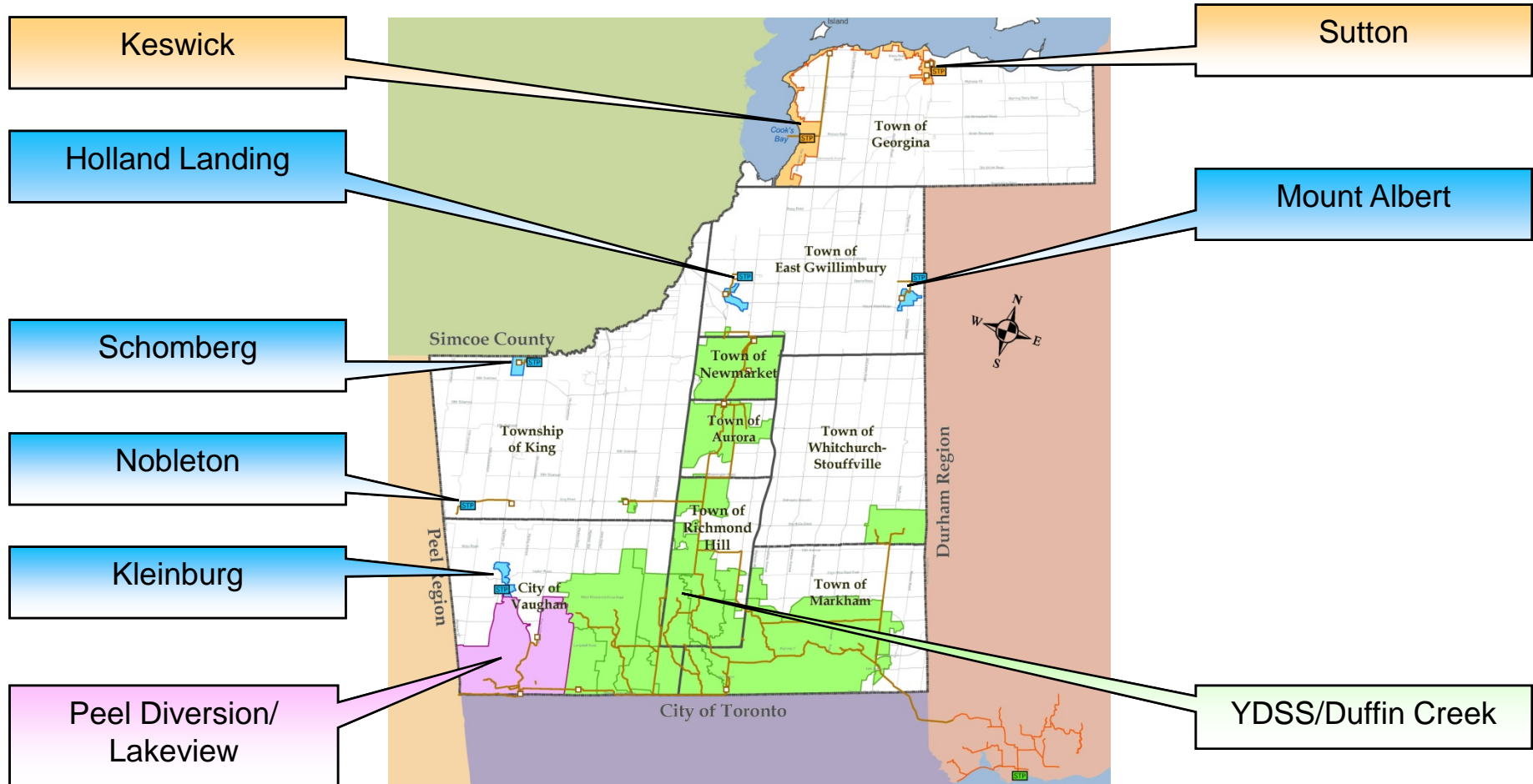
# Sustainable drinking water supply

## Where does it come from...



# State-of-the-art sanitary sewage servicing

## Where does it all go...

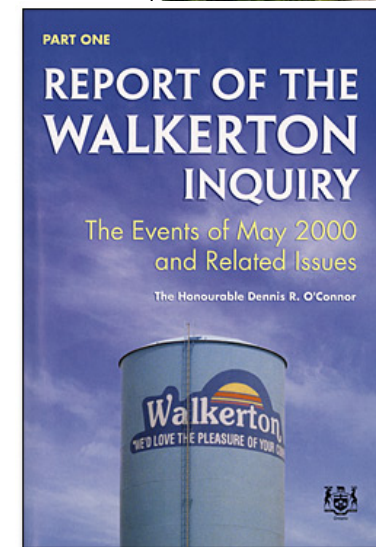
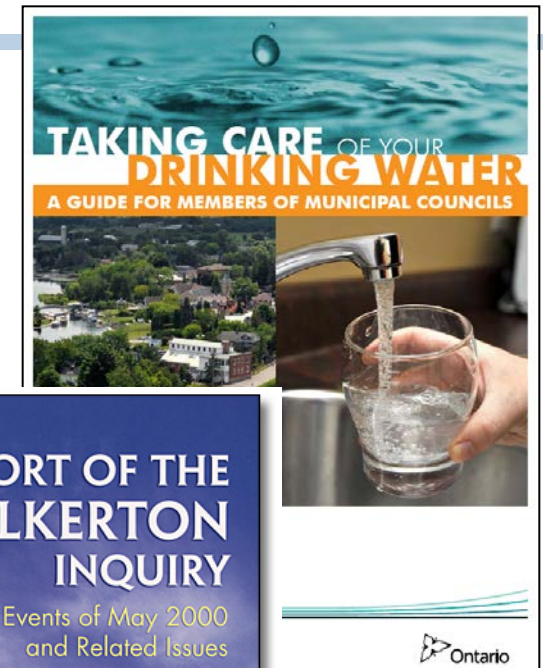


# 2 Standard of Care



# Safe Drinking Water Act, 2002 – Standard of Care

- ❑ *Safe Drinking Water Act* requires people with decision making authority to exercise a level of care, diligence and skill that a reasonably prudent person would be expected to hold and act competently
- ❑ Standard of Care came into effect on December 31<sup>st</sup>, 2012
- ❑ Environmental Services staff implement Council approved direction to meet Standard of Care through budget approval including required resources



Environmental Services continues to meet key Standard of Care requirements by complying with applicable Acts and Regulations

# Key Activities Related to Standard of Care

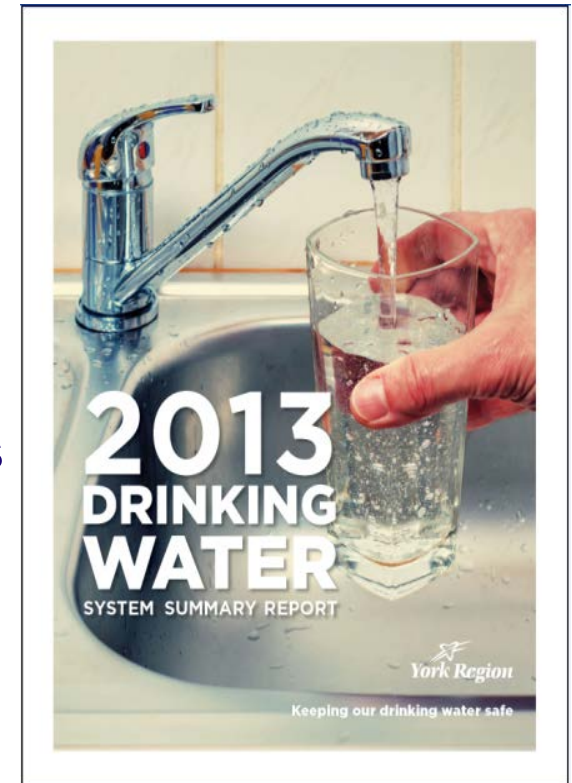
- ❑ Designated Overall Responsible Operator (ORO) in accordance with O.Reg. 170/03
- ❑ Drinking Water Quality Management Standard includes an Operating Plan and risk assessment review
- ❑ Regulatory Excellence Action Plan creates department wide culture of accountability
- ❑ Infrastructure Improvement Plan identifies critical infrastructure for rehabilitation and replacement
- ❑ Annual Water Quality Report and Schedule 22 Report provided to Council and made available to public



Established culture of accountability holds staff responsible for maintaining compliance

# Schedule 22 and Annual Drinking Water Quality Report

- ❑ York Region's 2013 Annual Drinking Water Summary Report provides an overview of our ongoing commitment to providing high quality drinking water to our communities through programs designed to meet Ontario's regulatory requirements for drinking water
- ❑ This report outlines how York Region safeguards its communities' water supplies and details drinking water quality results for 2013
- ❑ Responds to Council direction to consolidate water quality and quantity reporting



York Region proactively manages risk to support regulatory compliance and provide clean, safe drinking water

# 3 COMPLIANCE

# Ontario Chief Drinking Water Inspector's Annual Report 2011-2012

Municipality	Inspection Rating (%)		Water Quality (% Tests Meeting Standards)	
	2010 - 2011	2011 - 2012	2010 - 2011	2011 - 2012
<b>York</b>	<b>99.82</b>	<b>100.00</b>	<b>99.98</b>	<b>100.00</b>
<b>Durham</b>	99.70	99.82	99.95	99.90
<b>Halton</b>	100.00	98.78	99.98	99.95
<b>Peel</b>	96.15	99.59	99.98	99.97
<b>Toronto</b>	99.15	99.42	99.88	99.89

York Region is top performer in 2011 – 2012 Ontario Chief Drinking Water Inspector's report

# Comprehensive 2013 Audit Program

Audit Type	Standard/Regulation	Frequency	Facilities Audited in 2013
Internal Audits	ISO 9001 ISO 14001 DWQMS	Currently each facility is audited every 3 years	38 Water facilities 10 Wastewater
MOE Inspections	Ontario Water Resources Act  Safe Drinking Water Act, 2002	Frequency not regulated, typically inspected annually  Frequency is regulated. Inspected annually, in some cases twice a year. Approximately one third of inspections are unannounced	15 Water 1 Wastewater
Compliance Audits	ISO 14001	A minimum of once every 3 years	31 Water facilities 5 Wastewater
External Audits	ISO 9001 ISO 14001 DWQMS	Annually Annually Annually	8 Water 5 Wastewater

Integrated Management System, audit program and QA/QC  
in place to drive continuous improvement and operational excellence

# MOE Inspections – Water and Wastewater

System:	Year:	# MOE Inspections Completed	# Non-Compliance Findings	# Best Practice Recommendations
<b>Water</b>	<b>2013</b>	<b>15</b>	<b>2</b>	<b>5</b>
<b>Wastewater</b>	<b>2013</b>	<b>1</b>	<b>4</b>	<b>1</b>

- ❑ 100% of operators meet required training hours
- ❑ 37,332 treated water tests taken in 2013
- ❑ Two administrative non-compliances in 2013 water inspections
- ❑ Four non-compliances in 2013 wastewater inspections
- ❑ Corrective actions taken on 16 adverse water quality incidents reported to Ministry of the Environment and Medical Officer of Health



100% York Region's Drinking Water Systems operated within allowable flow and withdrawal limits imposed by MOE issued Permits to Take Water



# MOE Inspections - Water Quality Sample and Performance Results

Adverse System Performance	Location	Operational Objective	Event Date	Minimum	Maximum	Result	Corrective Action
	Newmarket Bathurst Tower	Chlorine Residual-Free	22-Feb	0.05 mg/L	4.0 mg/L	4.00mg/L	Free chlorine residual resamples
	Newmarket Bathurst Tower	Chlorine Residual-Free	24-Feb	0.05 mg/L	4.0 mg/L	4.00mg/L	Adjustment made to chlorine feed rate
	Newmarket Well 15	Chlorine Residual-Combined	21-May	0.25 mg/L	3.0 mg/L	3.04mg/L	Operator on site attending facility. Elevated chlorine residual was measured while operator made adjustments to system. Residual to normal operating levels while operator still on site
	South Maple Reservoir	Chlorine Residual-Combined	31-Jul	0.25 mg/L	3.0 mg/L	0.09 mg/L	Feeder line flushed
	Holland Landing Well 1	Chlorine Residual-Combined	28-Nov	0.25 mg/L	3.0 mg/L	3.08 mg/L	Operator on site attending facility. Elevated chlorine residual was measured while operator made adjustments to system. Residual to normal operating levels while operator still on site
	Newmarket Well 15	Chlorine Residual-Combined	18-Dec	0.25 mg/L	3.0 mg/L	0.013 mg/L	Operator on site attending facility to perform routine maintenance on chlorine residual analyser. Low residual reading was measured on the analyser which returned back to normal operating levels once maintenance completed
	Georgina Water Treatment Plant	Fluoride	29-Dec	N/A	1.5 mg/L	1.53 mg/L	Flushed line for 10 minutes until concentration was below 1.5 mg/L. Installed a pressure relief valve as a preventative measure

Adverse Sample Results	Number of Sodium	Location	Operational Objective	Event Date	Limit	Result	Corrective Action
	9	Various	Sodium	27-Feb to 29-Apr	20.0 mg/L	20.1-23.3 mg/L	Report to MOE as adverse. Resample taken

Note: Sodium Levels up to 200 mg/L are acceptable under the Ontario Drinking Water Standards. Sodium levels are required to be sampled once every five years. A sodium level above 20 mg/L is required to be reported to the MOE and York Region's MOH.

Council approved technology such as SCADA system reduces risk of adverse incidents and provides continuous monitoring of drinking water and wastewater systems



# 4 Operational Excellence

# Delivering Operational Excellence

- ❑ Organized to provide more engineering support and enhanced coordination of treatment process optimization, asset inspection and maintenance
- ❑ Create training opportunities which promote succession planning and increased skill sets
- ❑ Evaluate and analyze system monitoring, alarms and response protocols for efficiencies
- ❑ Using performance indicators to monitor key responsibilities to ensure resources, operations and assets are managed effectively
- ❑ Maintain strong partnerships with local municipalities, stakeholders and industry leaders



Maintaining quality and keeping downward pressure on costs through key efficiency initiatives

# Key Role in Capital Projects

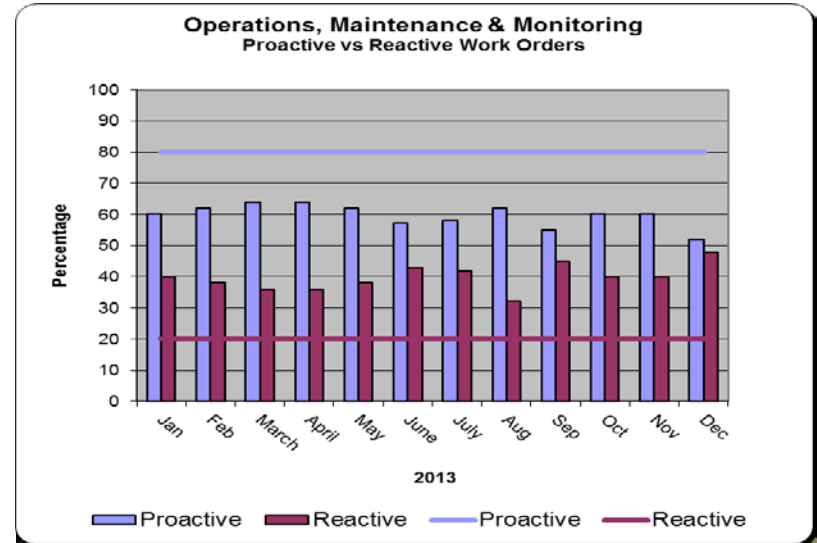
- ❑ Continue to maintain compliance while operating facilities during construction of complex capital projects
- ❑ Key operations involvement in all capital projects to ensure operability considerations incorporated into design
- ❑ Support for 149 capital projects, with over 40 in construction in 2013
- ❑ Integrated operating strategies required to support capital project needs



Cross branch collaboration to maintain compliance and facilitate complex project coordination

# Strong and Growing Asset Management and Inspection Program

- ❑ Inspected 129 stream bank sites near Regional infrastructure
- ❑ Completed 21,523 maintenance work orders
- ❑ Conducted 9,634 utility locates
- ❑ Inspected 15 km of trunk gravity sewers using advanced CCTV, laser and robotics technology



Proactive asset management increases service life, maintains level of service and contains costs

# Proactive Emergency Response Prevented Service Interruptions

- ❑ Major events in 2013 included
  - July 8 flooding
  - May 8 & November 18 power failures
  - December 20 ice storm
- ❑ Proactive response and partnership with Corporate Emergency Management
- ❑ No service interruptions with heavy reliance on SCADA technology
- ❑ Timely response to community needs in Mt. Albert supporting East Gwillimbury Fire Department



Staff trained and available to respond to emergencies taking a proactive and systematic approach supported by technology and resilient systems



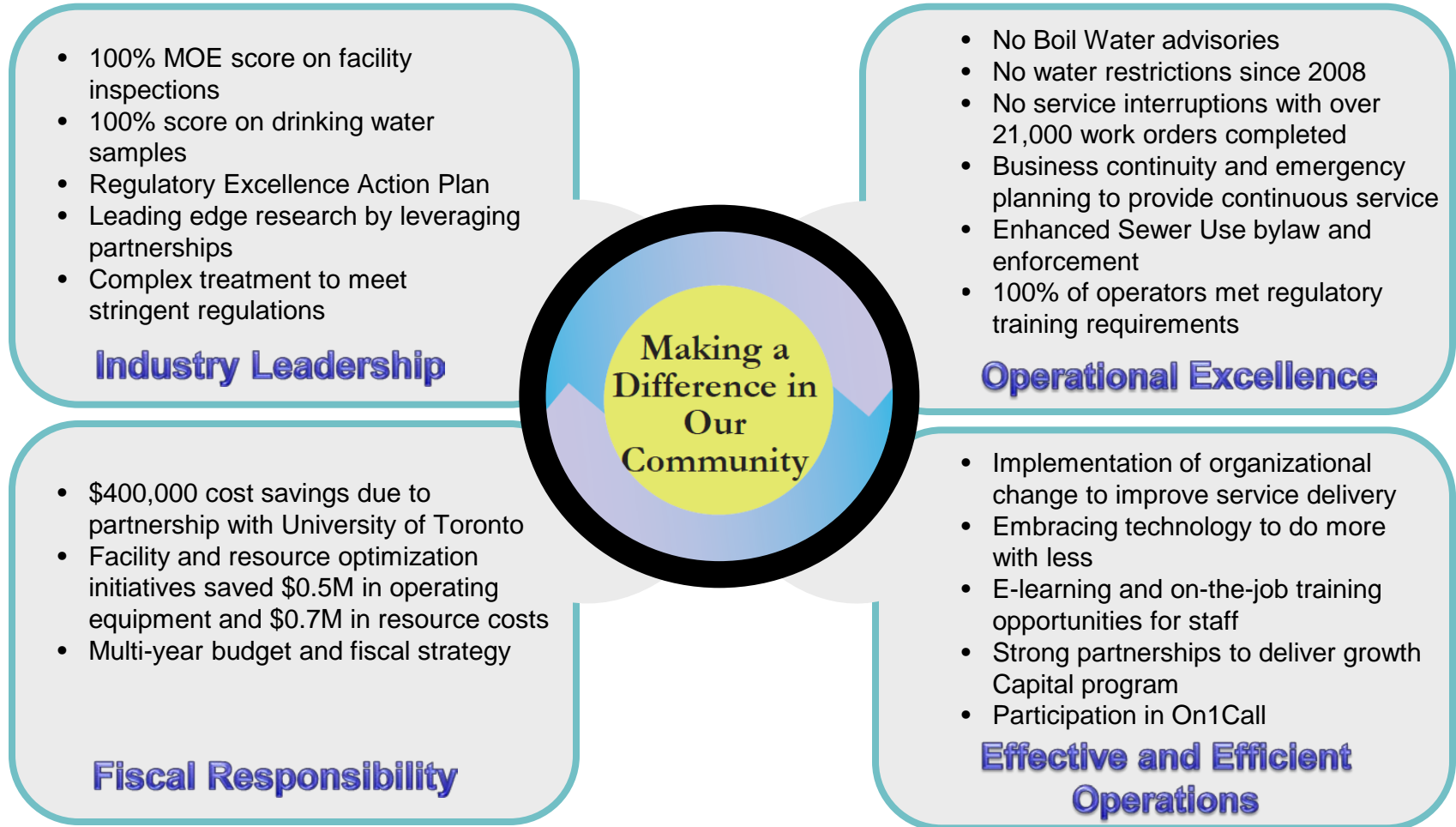
# Cost-Effectively Doing More by Enhancing Partnerships

- ❑ Leadership in research and innovation through partnerships with University of Toronto and Water Research Foundation
- ❑ Coordinated and collaborative partnership with local municipalities to develop comprehensive operating strategies, data sharing and service level agreements
- ❑ Participation on industry committees such as Regional Public Works Commissioners of Ontario, Ontario Water Works Association, Water Tap and Canadian Water Network to leverage industry knowledge and best practices



Leveraging partnerships, research, innovation and technology for evidence based decision making to achieve operational excellence

# Our Communities Rely on Dependable Water and Wastewater Services



# Addressing our Current Challenges

- ❑ New and changing regulations for health and safety
- ❑ Long term proactive asset maintenance and management to maintain state of good repair
- ❑ Retaining and attracting staff in competitive market
- ❑ Understanding future resource needs to operate and maintain a more complex and expanded asset base
- ❑ Working with local Municipalities to enhance overall system operation
- ❑ Operating facilities during capital expansion
- ❑ Maintaining compliance in complex regulatory framework
- ❑ New MOE approach to wastewater inspections reflecting rigorous water inspection methodology



Operations well positioned to successfully tackle these challenges