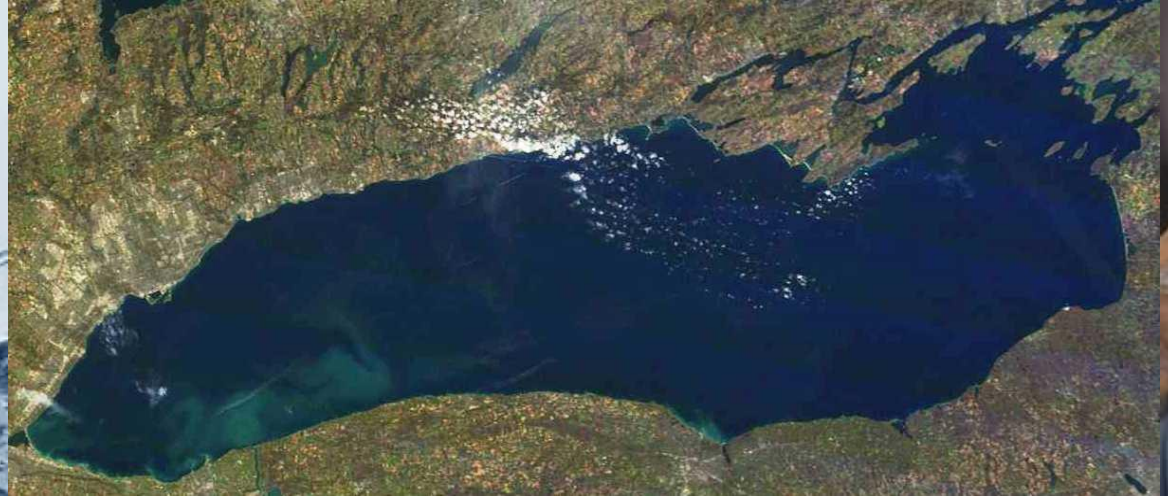




Toronto's Urban Water Systems: Policy Initiatives

Patrick Cheung P Eng & Dr Bill Snodgrass, Toronto Water

Urban Water Use & Demand Session

January 20 2020

Ryerson University

CTC SOURCE PROTECTION REGION

DRINKING WATER SOURCE PROTECTION
ACT FOR CLEAN WATER

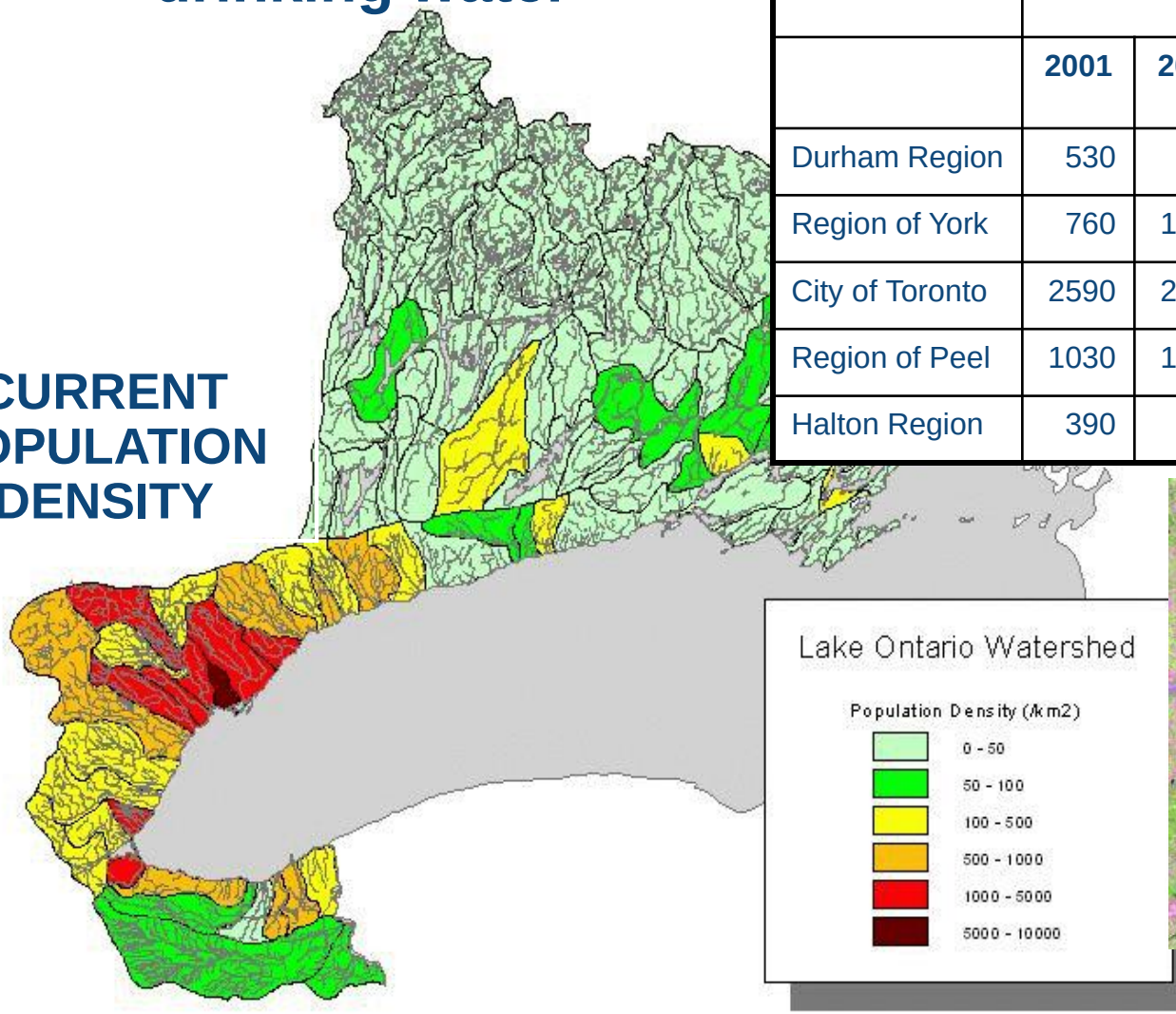
TORONTO Water

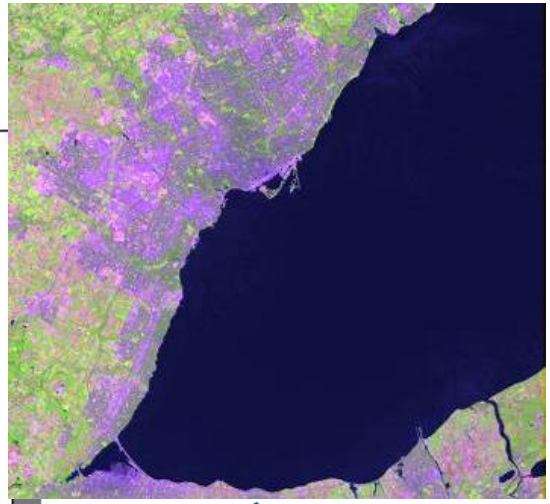
Growing Population, Growing Demands

Increasing population = Increasing demand for drinking water

Places to Grow - Population Targets 2001-2031 (figures in 000's)					
	POPULATION				
	2001	2011	2021	2031	Increase 2001 -2031
Durham Region	530	660	810	960	**81%**
Region of York	760	1060	1300	1500	**97%**
City of Toronto	2590	2760	2930	3080	**19%**
Region of Peel	1030	1320	1490	1640	**59%**
Halton Region	390	520	650	780	**100%**

CURRENT POPULATION DENSITY

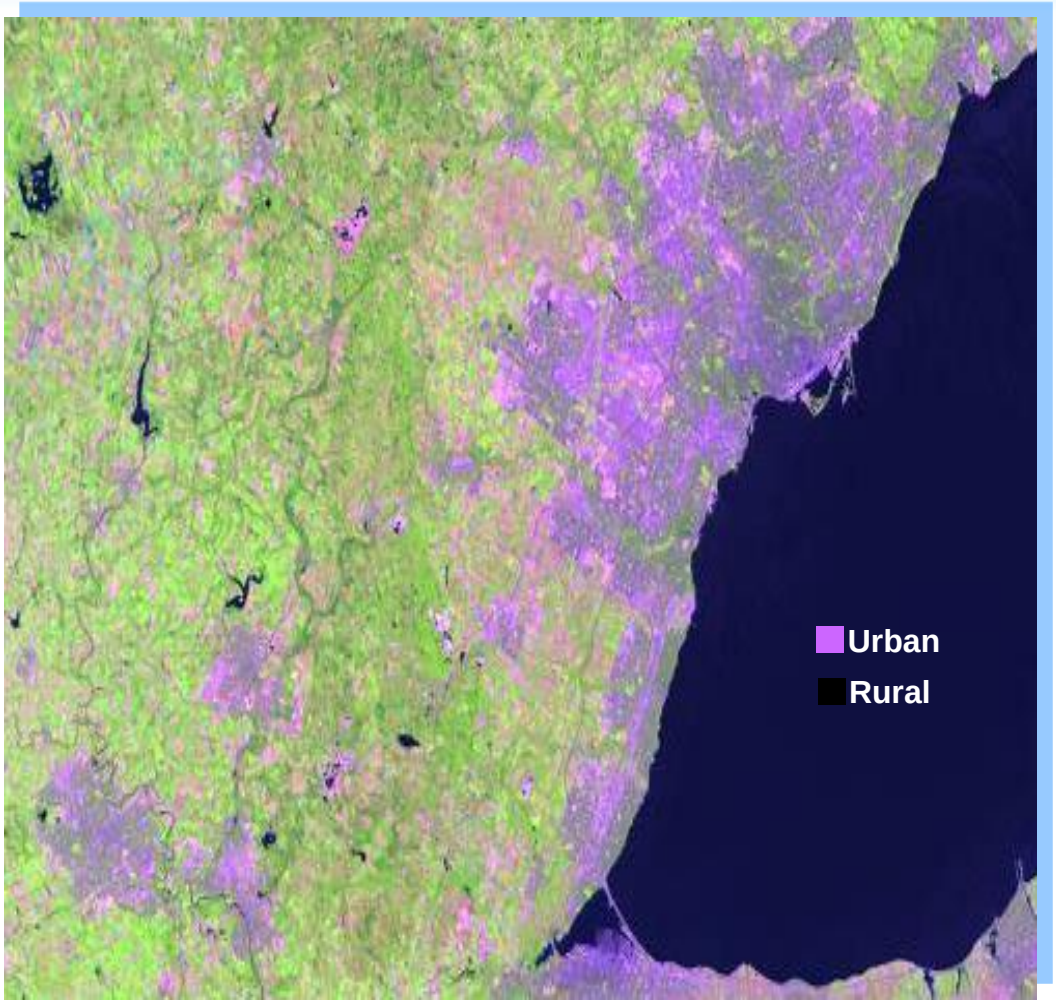




LANDSAT

TORONTO Water

SCALE OF URBANIZATION IMPACTS LAKE ONTARIO'S COASTAL ZONE

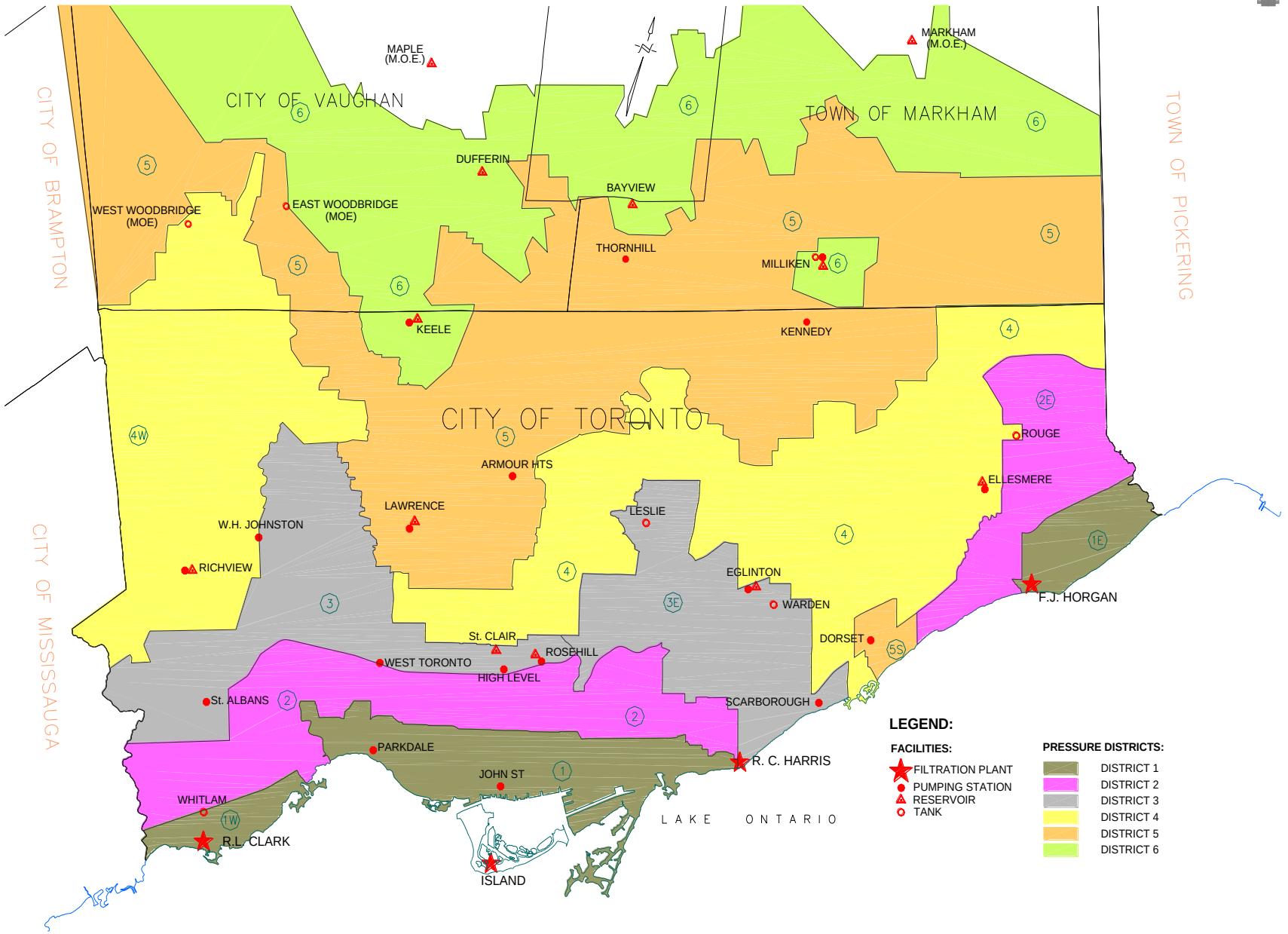


LANDSAT, 2002

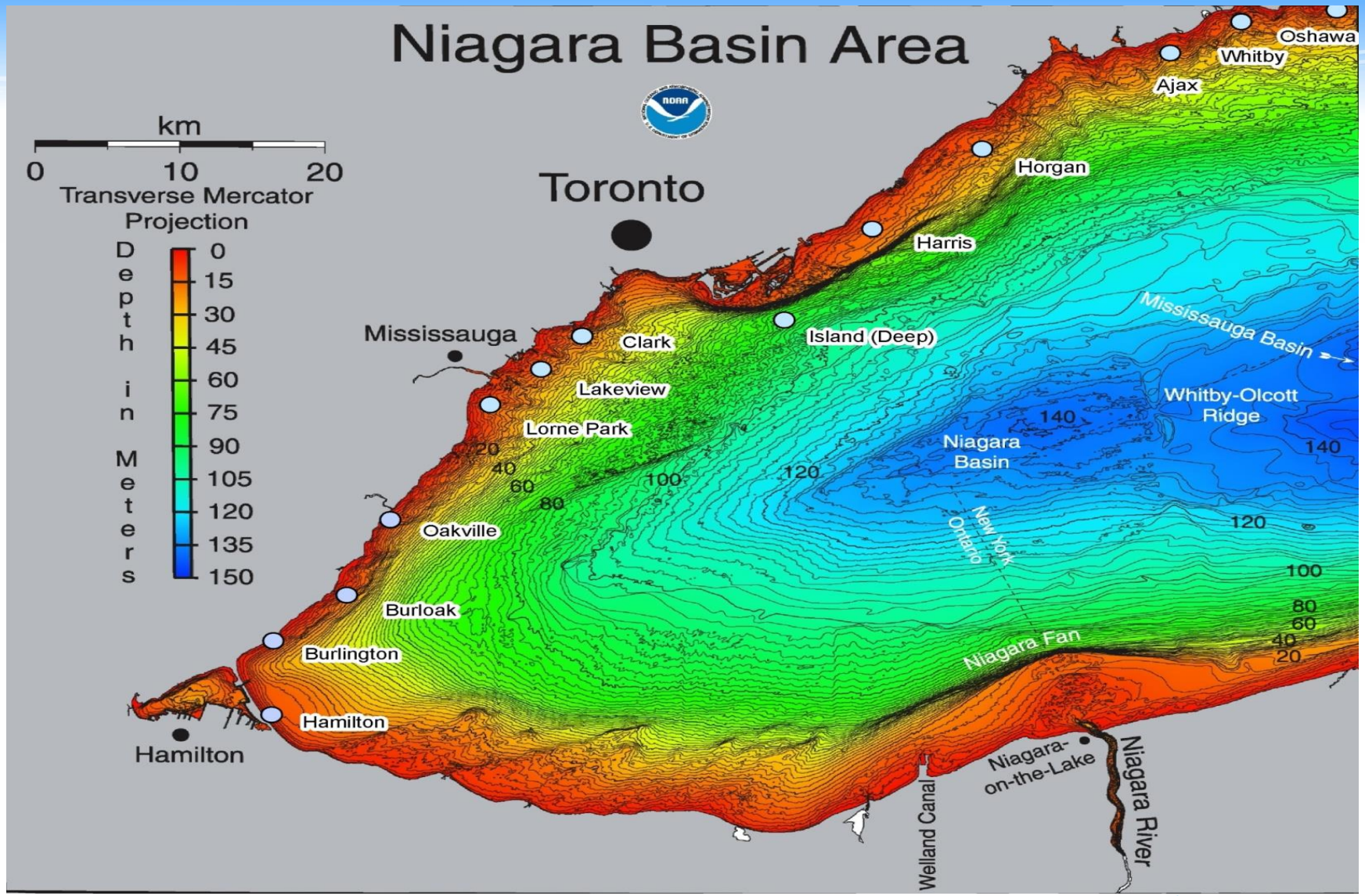
- Our Source water
  - Nearshore Zone
  - Watershed runoff diluted with mainlake water
- Protecting all intake pipes along the Great Lakes is important
- Intake pipes located along near-shore (0.5 – 5 Km)
- Expanding urbanization is a dominant threat
- An estimated population growth of 20% in five years

TORONTO Water

Toronto's Water Supply Infrastructure



Drinking Water Intake Locations



TORONTO Water

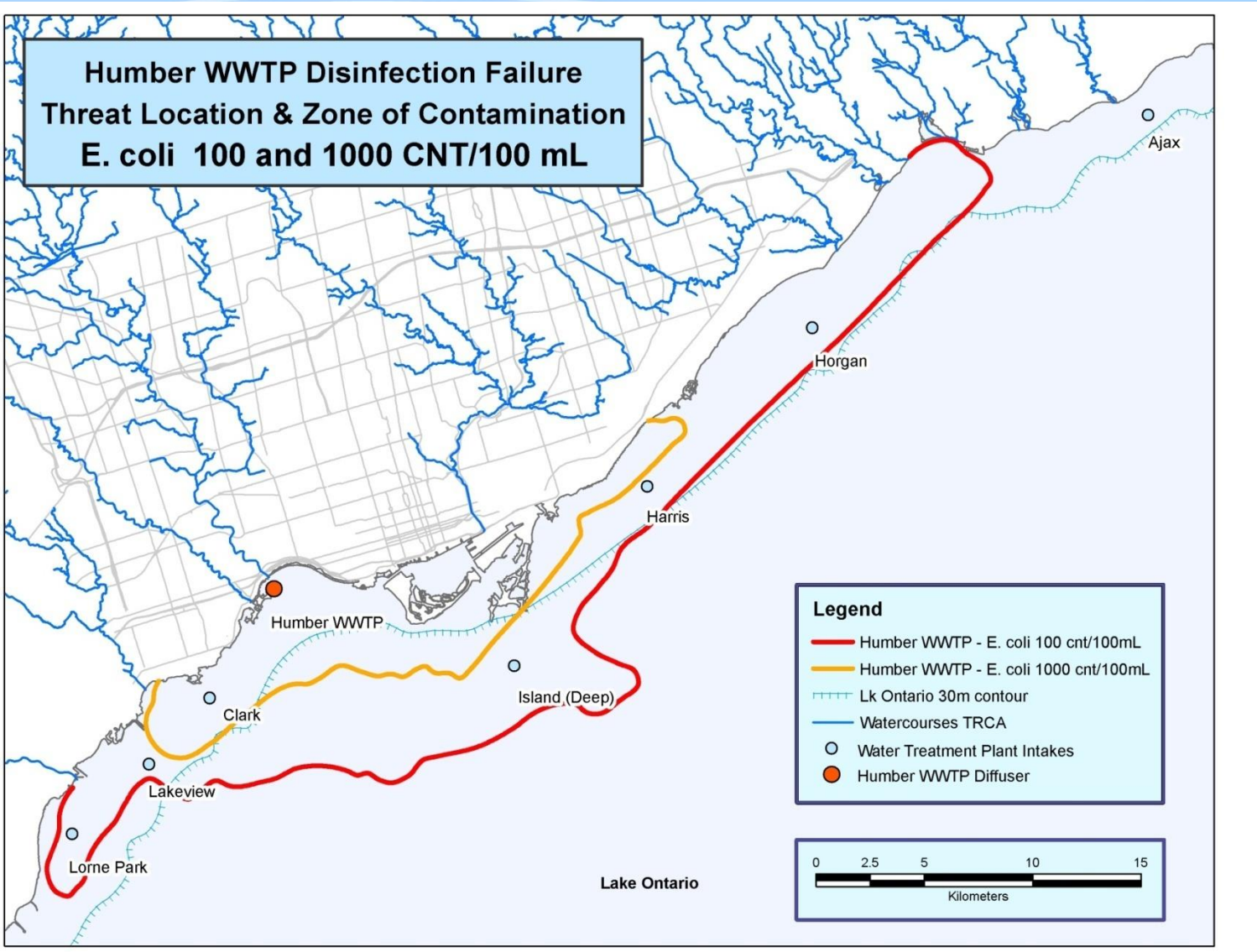
Source Water Protection Policy Initiative
Summary of Threats Considered

- **Nuclear Power Stations –** Tritium Spill*
- **Petrochemical facilities**
  - **Bulk Fuel Storage Facilities (Tank) Failure*** – benzene spill
  - **Pipeline Failure*** - Spill of petroleum products
- **Wastewater Treatment Plants –** Disinfection failure*
- **Sanitary Trunk Sewer Failures***
- **Combined Sewer Overflows**

*** Significant Threat**

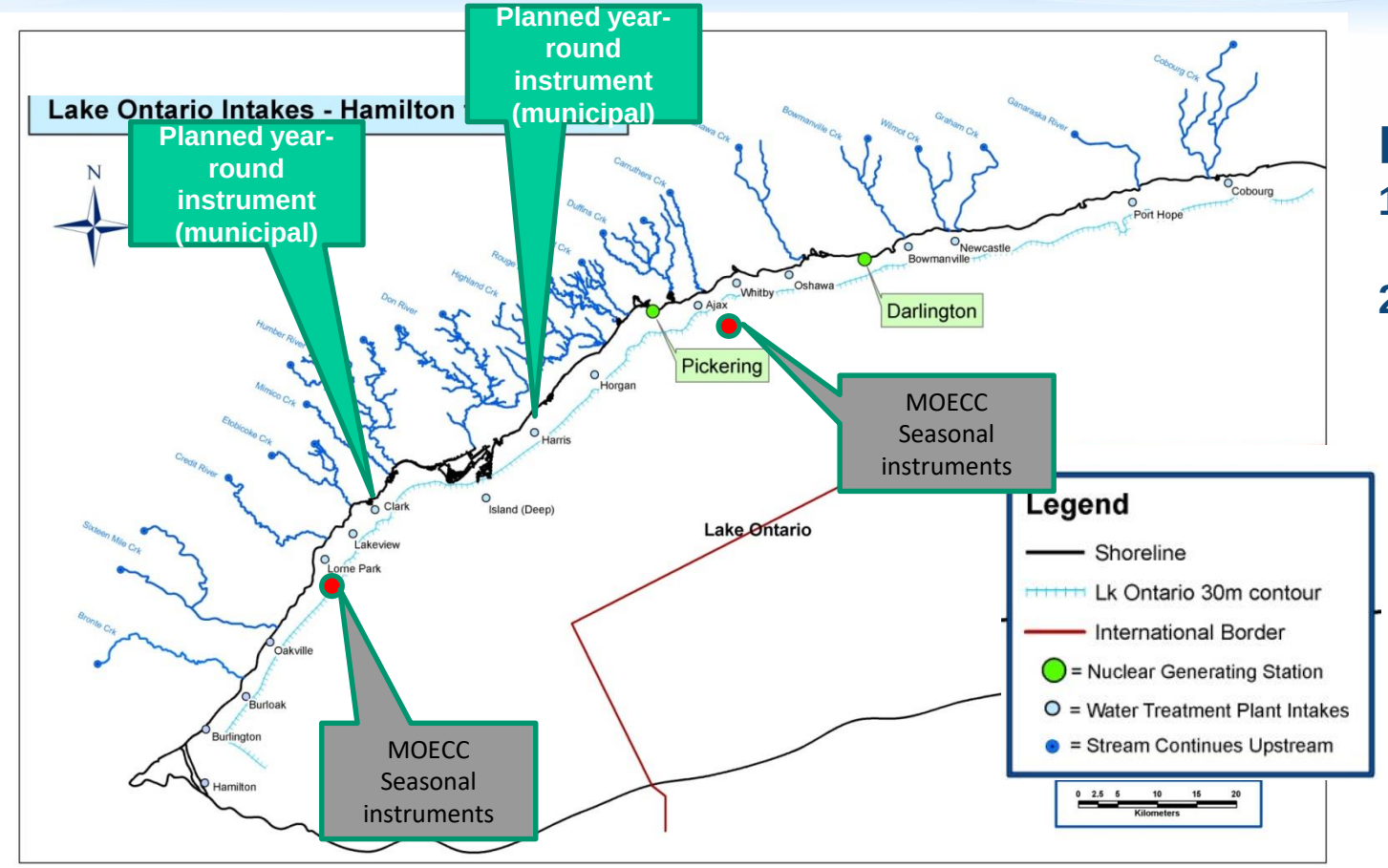
TORONTO Water

Humber WWTP Disinfection Failure: Zone of Contamination



NTO Water

Toronto's SPPlan – Lake Ontario Forecasting System to estimate where a spill will go, i



Existing:

1. **MECP Seasonal**
2. **OPG**

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

Wet Weather Flow Management Policy (WWFMP) (2003)

Principles

(1) Recognize rainwater and snowmelt as a valuable resource. Manage rainwater where it falls, on the lots and streets of our City, before it enters a sewer.

(2) Manage wet weather flow on a watershed basis using an Ecosystem Approach.

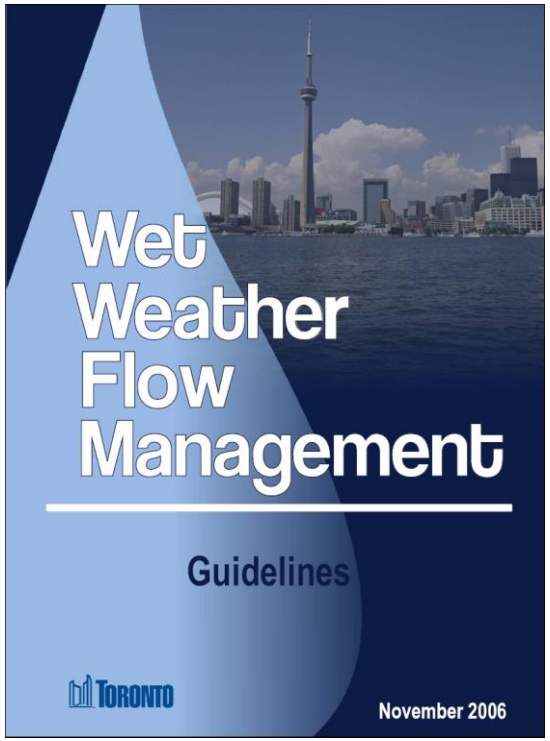
(3) Implement a hierarchy of Wet Weather Flow practices starting with "at source", then " conveyance", and finally "end-of-pipe" solutions.

(4) Inform and Educate Toronto's communities about Wet Weather Flow issues and involve the public in developing solutions.

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

Wet Weather Flow Management Guidelines (WWFMG)
Completed in 2006 and released in 2007



3 Criteria
Water quality
Peak flow and
Volumetric (water balance) run-off retention

Sets performance objectives for site level Stormwater Management consistent with the Policy

Applies to all developments within the City

Harmonize pre-amalgamation municipalities practices and design criteria

Practical aid in the review and approval of Stormwater Management Plans

Not a manual of Best Management Practices

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

Success

Toronto Green Standards (TGS)

Mandatory in 2010 and up-dated in 2018

A mandatory environmental standard for new development includes WWFMG requirements. Developments that meet the higher requirements of Tier 2 receives a partial refund of Development Charge (a charge to pay for new or up-grade of infrastructure caused by growth from new developments)

2018 (May) - TGS Tier 2 changed to a mandatory retention of initial 10 mm of run-off.

2020 - We now have over 40 application and a few wanting to achieve Tier 3 with voluntary retention of the initial 25mm of run-off.

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

Wet Weather Flow Management Policy (WWFMP) (2003)

Challenges & Opportunities

Water quality – 80% TTS removal

- No room (cost) for ponds so Manufactured Treatment Devices (MTD) is chosen
- Green infrastructure as alternative solution?

Earle Bales Park

Green CiTTS Award: Innovation in Stormwater Management (SWM)

http://www.glslcities.org/greencities/Awards/Toronto_Innovation.pdf

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

Wet Weather Flow Management Policy (WWFMP) (2003)

Challenges & Opportunities

Peak flow – Maintain or reduce flows into the storm water conveyance systems (creeks, rivers, roads, ditches and sewers).

- Pressures of Urbanization
- Onsite disposal systems
- Products and new approaches

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

Wet Weather Flow Management Policy (WWFMP) (2003)

Challenges & Opportunities

Volumetric Control (Water Balance) - new requirement for Toronto.
It could be achieved through:

- Infiltration
- Re-use
- Evaporation or evapotranspiration

TORONTO Water

Wet Weather Flow Management
Success, Challenges and Opportunities

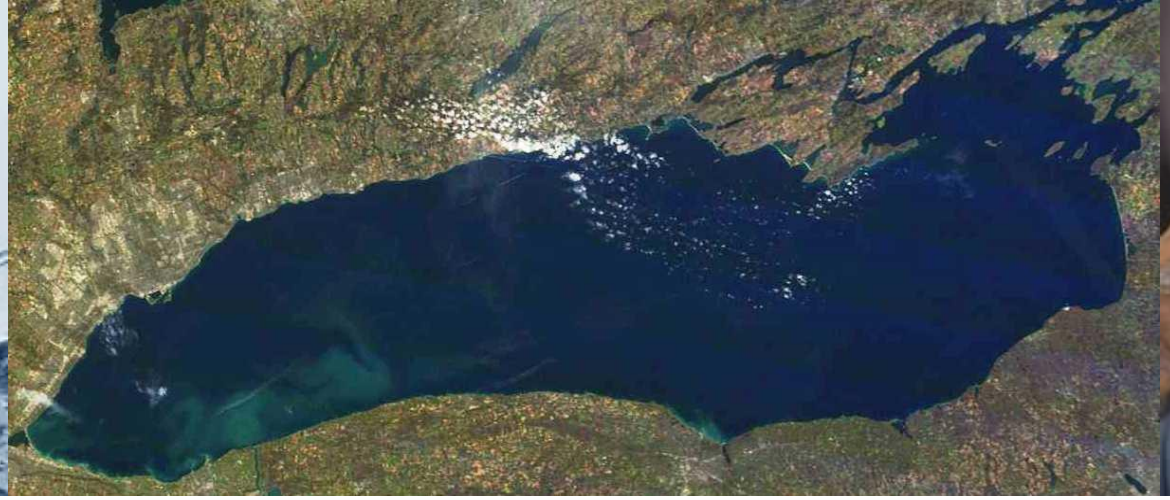
Wet Weather Flow Management Policy (WWFMP) (2003)

Summary

These new challenges forces us to re-evaluate traditional approaches to managing urban water. However, it also opens opportunities for new approaches and innovation.

SUCCESS	We are improving the way we manage urban water
CHALLEGES	Not that easy and we don't have all the answers
OPPORTUNITY	Intergradation with other solutions and generating innovation.

TORONTO Water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Thank You

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