

Upper York Sewage Solutions Environmental Assessment

Public Information Forums

June 27th & 28th 2011

Why You're Here!



- ❑ Project Overview
- ❑ Sewage Servicing Alternatives
- ❑ The Tentatively Recommended Alternative
- ❑ Next Steps

**Taking care of our
irreplaceable water resources...**

Servicing Tomorrow's Communities

EAST GWILLIMBURY

Population & Employment 91,500
Sewage Flow 28 MLD

NEWMARKET

Population & Employment 27,000
Sewage Flow 8 MLD

AURORA

Population & Employment 34,500
Sewage Flow 11 MLD



Purpose / Opportunity Statement:

To develop a sustainable sewage servicing solution to accommodate forecasted growth in the UYSS service area to 2031

47 million litres per day (MLD) additional capacity required to 2031

Sustainability

What does it mean?

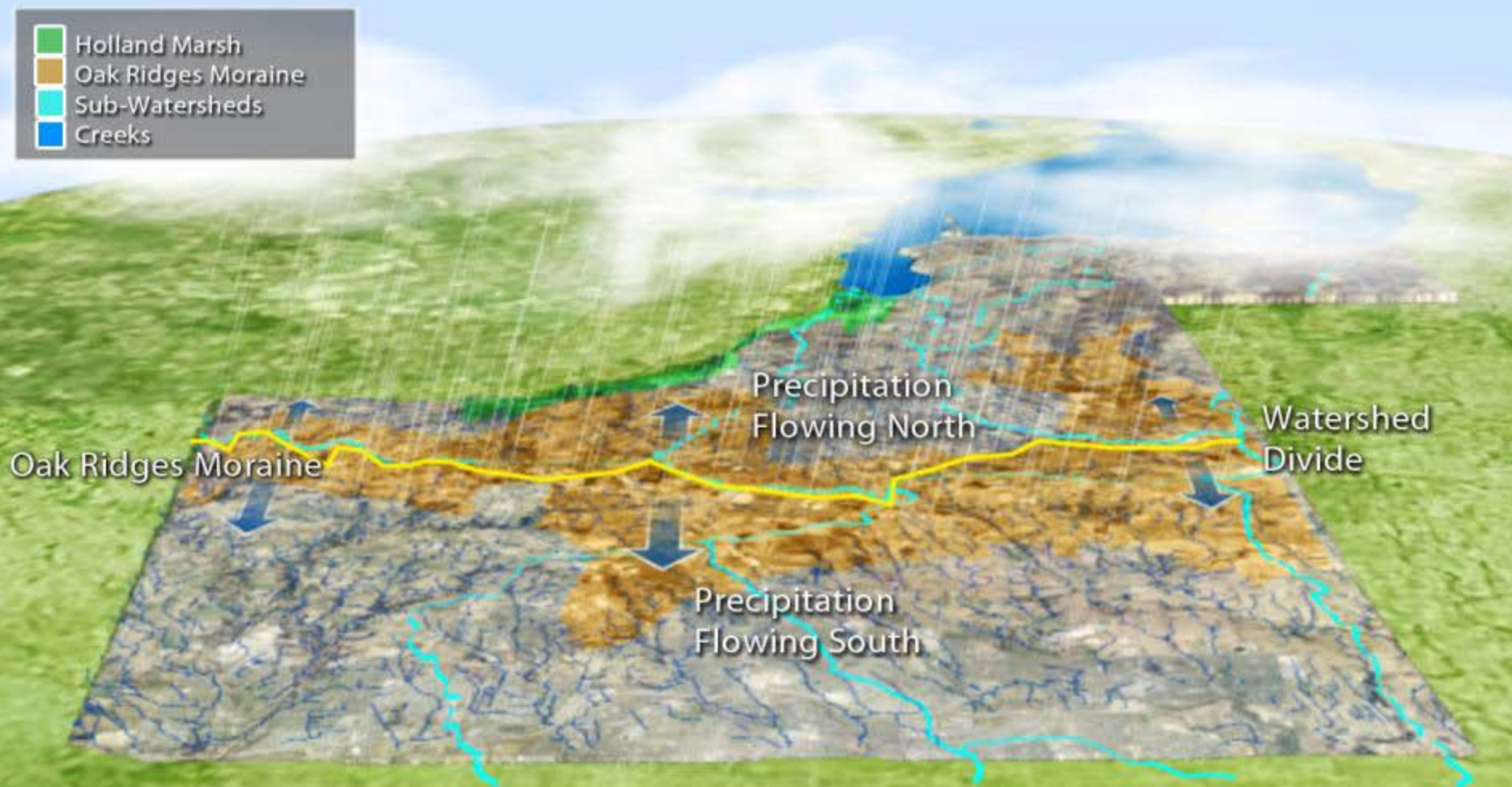
- Making smarter decisions about our lifestyle, community design, infrastructure and finances
- Thinking differently, being more innovative, proactive and collaborative
- Leaving our communities and our water resources in a healthy state for our children and grandchildren



***“Sustainability means living within the Earth’s limits...
doing things better – not doing without.”***

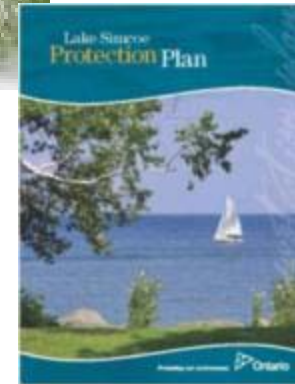
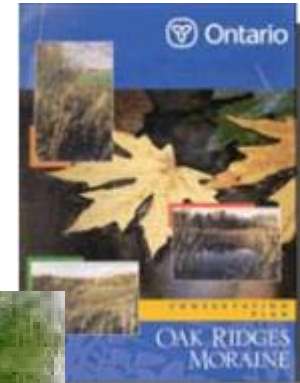
**David Suzuki,
Foreword to Sustainability within a Generation, 2004**

- Holland Marsh
- Oak Ridges Moraine
- Sub-Watersheds
- Creeks



Legislation in place with the goal to...

- ❑ Protect the Oak Ridges Moraine
- ❑ Respect our Great Lakes
- ❑ Revitalize the Lake Simcoe Watershed





Selecting the Recommended Alternative

Task A: Confirmation of the Proposed Screening Criteria

Task B: Application of the Confirmed Screening Criteria

Task C: Selection of the Recommended Alternative(s)

Task D: Identification of the Preferred Alternative(s)



Assessing the Alternatives

4 Alternatives To the Undertaking

1. Do Nothing
2. Discharge to Lake Ontario
3. Discharge to Lake Simcoe
4. Innovative Wastewater Treatment Technologies (Lake Simcoe Water Reclamation Centre)



15 Criteria Used to Assess the Alternatives

- ❑ Each criterion was framed as a question to arrive at a yes/no response with supporting rationale
- ❑ Criteria were grouped under the following topics:
 - Problem / Opportunity Statement
 - Provincial Growth, Environmental Policies & Legislation
 - Regional Official Plan, Master Plans, Strategies & Programs
 - Proven Technology / Feasibility
 - Ability to Implement / Financial Viability
- ❑ Public input was received on the four alternatives and the 15 criteria at a workshop held in June 2010.



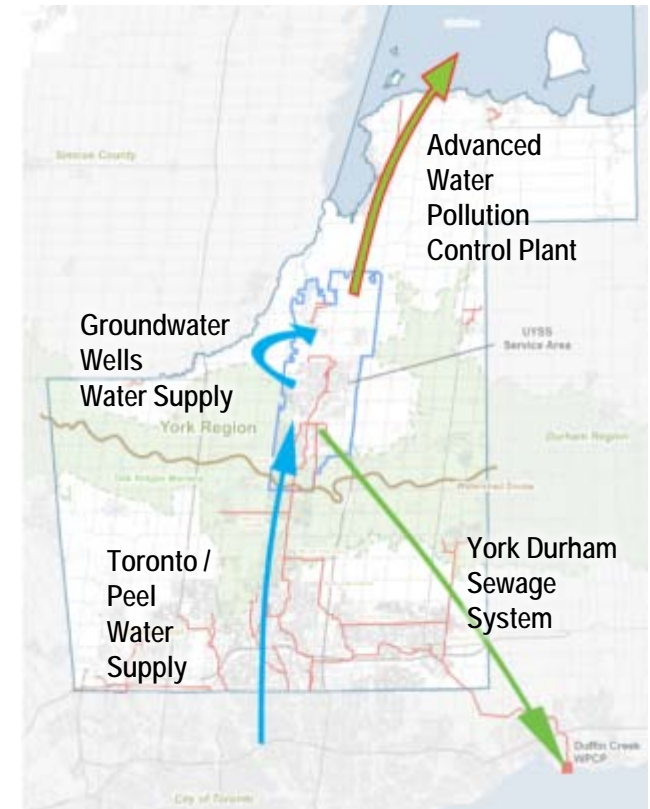
Do Nothing & Discharge to Lake Simcoe

Do Nothing

- ❑ Benchmark alternative with no new infrastructure to be built

Discharge to Lake Simcoe

- ❑ A wastewater conveyance system and treatment facility, located within the Lake Simcoe watershed
 - Must comply with WPCP phosphorus limits established under the Phosphorus Reduction Strategy
- ❑ Wastewater from growth in Newmarket and Aurora would continue to be conveyed to the existing York Durham Sewage System



These Alternatives Are Not Recommended

Do Nothing

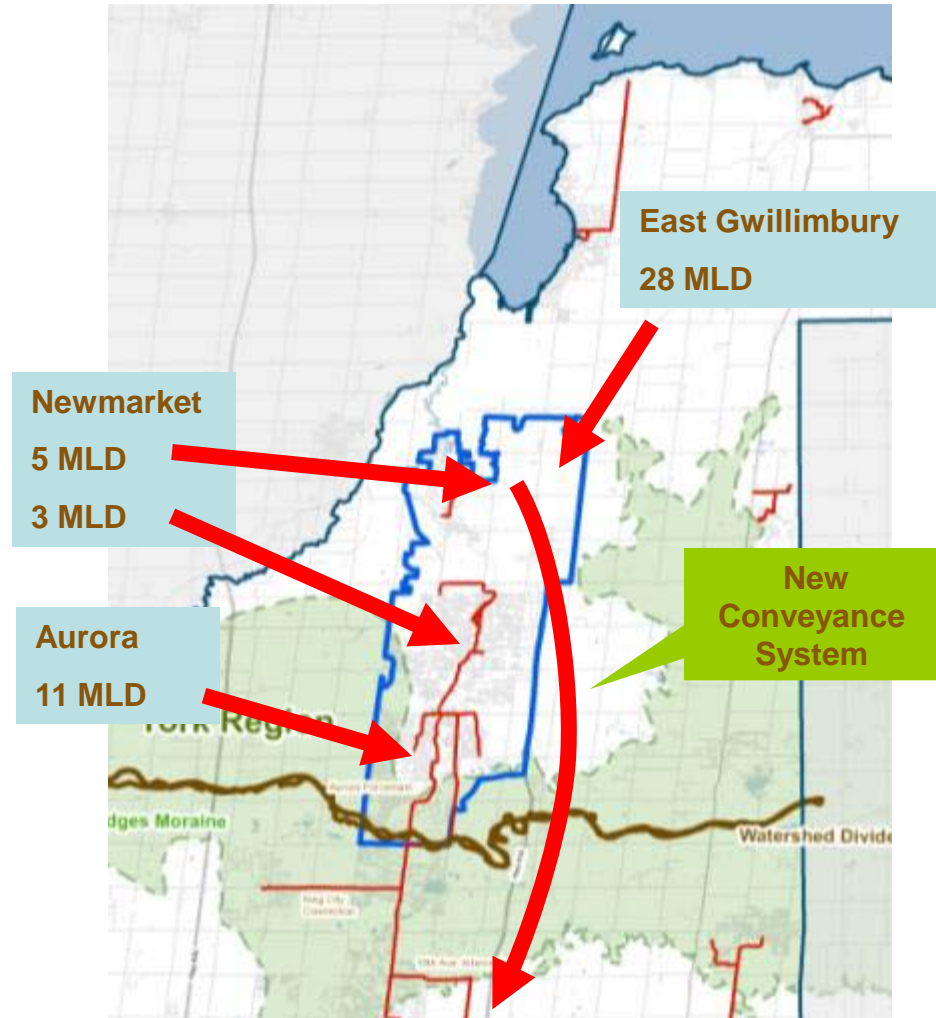
- ✘ Does not satisfy the problem/opportunity statement; will not accommodate prescribed growth

Discharge to Lake Simcoe

- ✘ Would not meet WPCP phosphorus limits established under the Phosphorus Reduction Strategy

Discharge to Lake Ontario

- ❑ A new wastewater conveyance system, connecting to an appropriate point in the existing York Durham Sewage System
- ❑ Conveyance through some combination of tunnel, gravity sewer, pumping station(s) and forcemain(s)
- ❑ Wastewater from growth conveyed to Duffin Creek WPCP for treatment and discharge to Lake Ontario

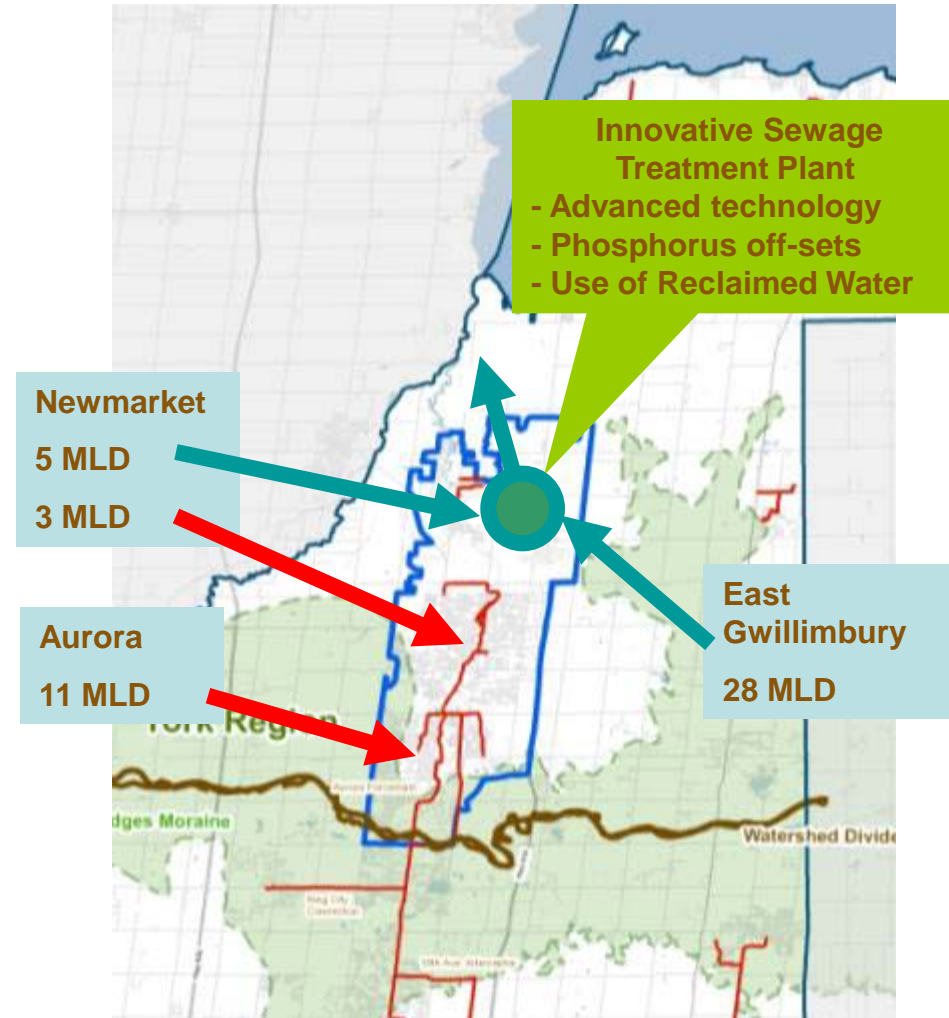


- ❑ Considered conveyance concepts with combination of:
 - Forcemains and pumping stations
 - Full gravity flow (deep tunnel)
- ❑ Conceptual sewer alignments and associated profiles
- ❑ 20 km of new infrastructure; over 60 km total conveyance to Duffin Creek Water Pollution Control Plant



Lake Simcoe Water Reclamation Centre

- ❑ Wastewater from growth in East Gwillimbury and a portion of Newmarket would be conveyed to an Innovative Sewage Treatment Plant (Water Reclamation Centre)
- ❑ Wastewater from growth in Aurora and a portion of Newmarket would be conveyed to the existing York Durham Sewage System for discharge to Lake Ontario



York Region is recommending the

**Lake Simcoe
Water Reclamation Centre
Alternative**

**...a Water Reclamation Centre &
associated conveyance
infrastructure**



Both the Lake Ontario Discharge & Lake Simcoe Water Reclamation Centre alternatives are viable

So why is the Lake Simcoe Water Reclamation Centre Alternative being recommended?



Lake Simcoe Water Reclamation Centre Recommended

Lake Simcoe Water Reclamation Centre

Discharge to Lake Ontario



Enhances Water Efficiency and Conservation Program by using reclaimed water to reduce the demand for water resources.

Consistent with the Region's Water Efficiency and Conservation Program, but does not enhance water efficiency by including water reclamation technologies.



Maintains a water balance within the Lake Simcoe watershed.



Consistent with the intra-basin transfer provisions of the *Ontario Water Resources Act (OWRA)*, but does not maintain a water balance within the Lake Simcoe watershed.






Lake Simcoe Water Reclamation Centre Recommended


Lake Simcoe Water Reclamation Centre



Discharge to Lake Ontario


  Improves both the quality and quantity of water flowing into Lake Simcoe.

Improves the quality, but will not positively affect the quantity of water in Lake Simcoe. 

  Financially viable and construction can be phased over time resulting in lower initial capital costs.

Financially viable, but the majority of the infrastructure components must be built at the outset, resulting in higher initial capital costs. 

  No new wastewater infrastructure would be required within the Oak Ridges Moraine.

Wastewater infrastructure would be required within the Oak Ridges Moraine. 

Confirming Viability of Lake Simcoe Water Reclamation Centre

- ❑ Regular meetings with MOE staff facilitated a clear mutual understanding of the Lake Simcoe Water Reclamation Centre Alternative and associated approval requirements
- ❑ Lake Simcoe Water Reclamation Centre Alternative is aligned with and responsive to:
 - Lake Simcoe Protection Plan
 - Phosphorus Reduction Strategy
 - *Water Opportunities Act 2010*
 - Minister's direction to consider innovative local solution
- ❑ December 2010 MOE confirmed support for Water Reclamation Centre Alternative through written commitments on provincial approval requirements that would allow a Lake Simcoe servicing solution

Lake Simcoe Water Reclamation Centre

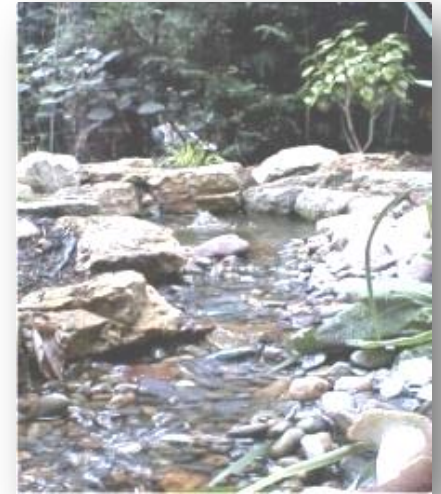
What it is and How it Works

**Potential Benefits to the Lake Simcoe
Watershed (East Holland River)**

Use of Reclaimed Water

What is a Water Reclamation Centre?

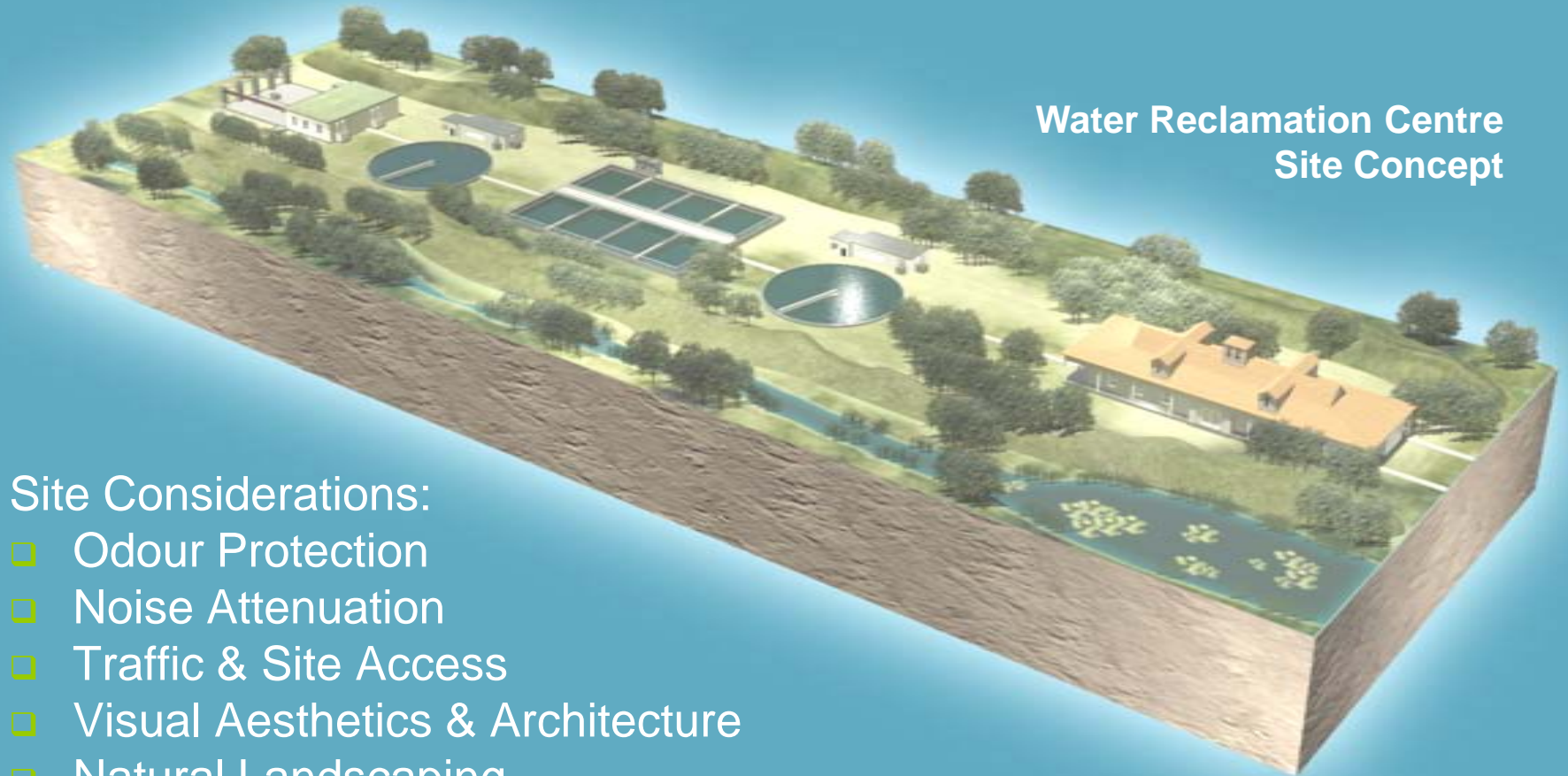
- It is a sustainable sewage treatment facility that uses proven, leading-edge, advanced wastewater purification and water reclamation technologies to produce:
 - High quality nutrient-rich water for potential applications such as irrigation (e.g., golf courses, sod farms, tree farms, etc.) and industrial uses
 - High purity phosphorus-reduced water for discharge to Lake Simcoe watercourse(s) to benefit both water quality and quantity



- ❑ Approximately 100 kg/yr of new phosphorus would be discharged to the Lake Simcoe watershed by the Water Reclamation Centre
- ❑ A project specific phosphorus off-setting program would address this increase through a minimum 2:1 reduction of other sources of phosphorus (minimum 200 kg/yr)
- ❑ Result would be a minimum net reduction of 100 kg/yr of total phosphorus in the Lake Simcoe watershed

Water Reclamation Centre Site Concept

Water Reclamation Centre Site Concept



Site Considerations:

- ❑ Odour Protection
- ❑ Noise Attenuation
- ❑ Traffic & Site Access
- ❑ Visual Aesthetics & Architecture
- ❑ Natural Landscaping
- ❑ Education and Research

What Does Reclaimed Water Look Like?



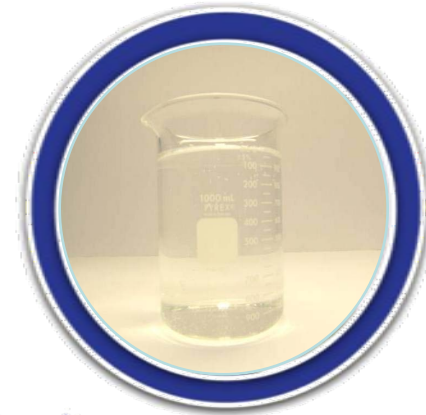
Low Pressure Membrane



Reverse Osmosis Membrane



Ultra-violet Disinfection

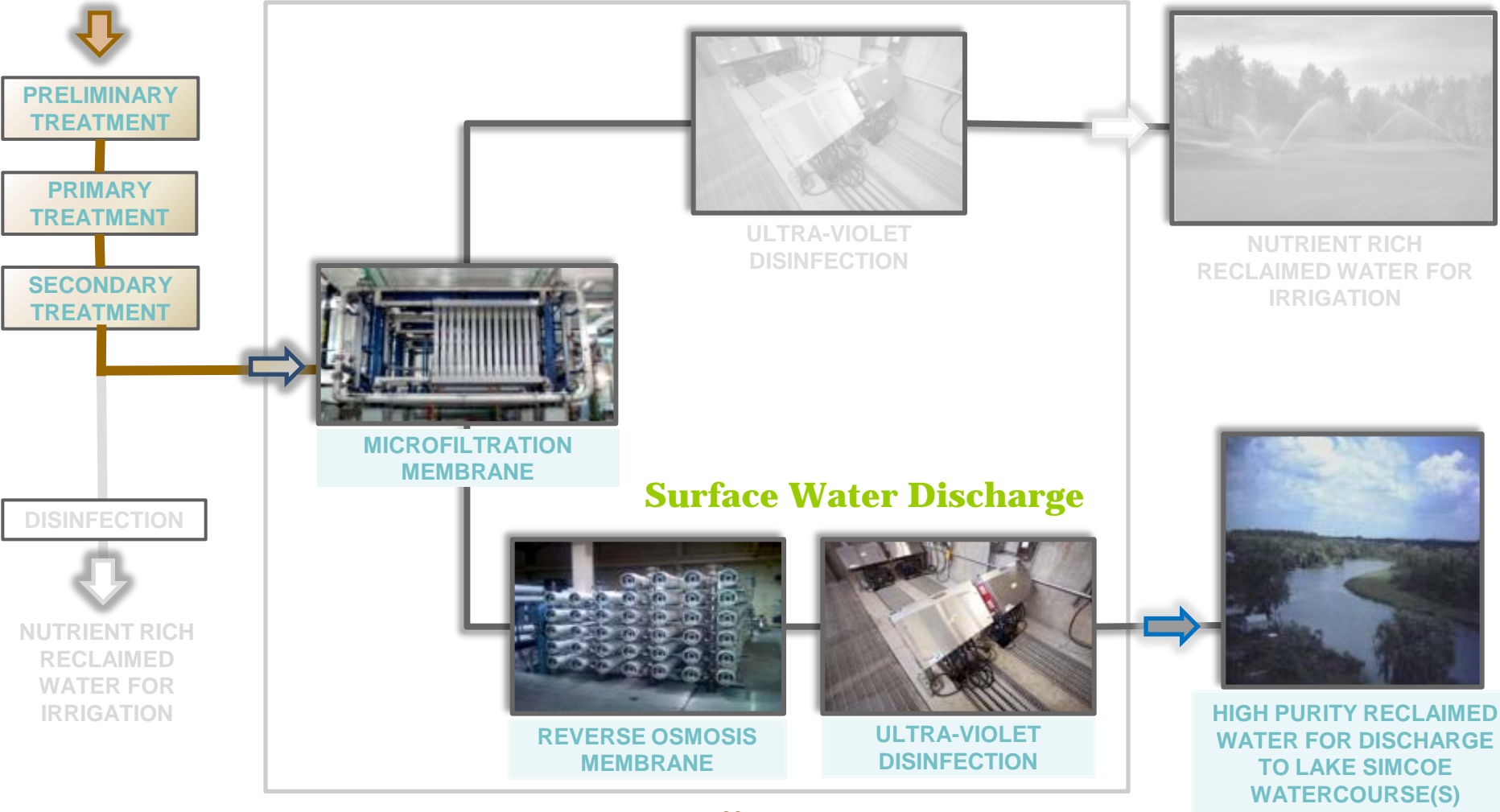


**Before and After
Advanced Treatment...**

Water Reclamation Centre Process Concept

RAW SEWAGE

ADVANCED TREATMENT



Potential Benefits to the East Holland River

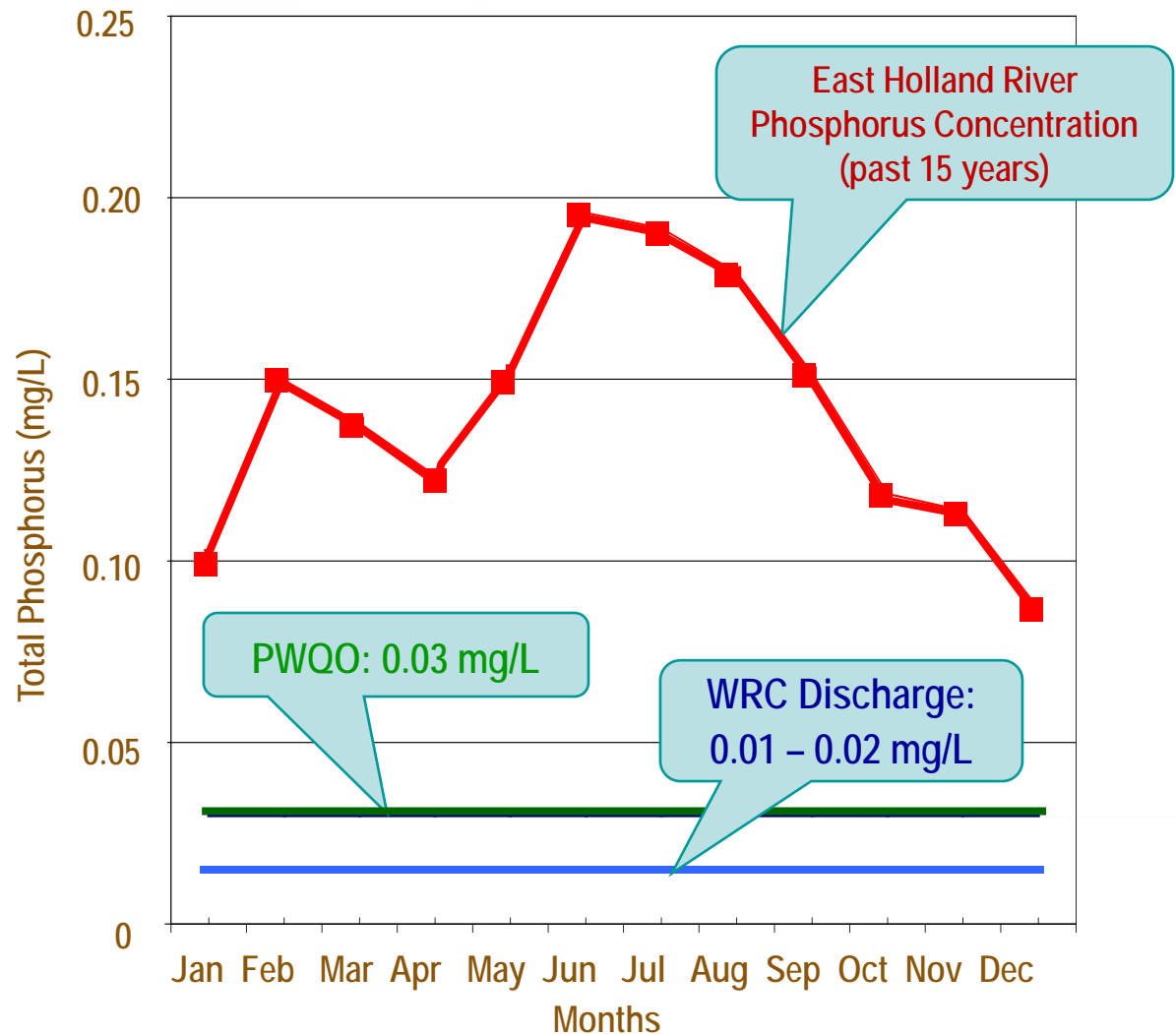
- Hydrodynamic and water quality modeling used to predict performance of Water Reclamation Centre (WRC):
 - Reduced Total Phosphorus concentration in East Holland River
 - Base flow supplemented with high quality WRC discharge
 - Less algae growth, resulting in increased water clarity and increased aquatic plant growth



WRC discharge will increase water quantity and improve water quality in one of the most degraded rivers in the watershed

Phosphorus in East Holland River

- Historical phosphorus concentration in East Holland River exceeds Provincial Water Quality Objectives (PWQO)
- Water Reclamation Centre (WRC) discharge would reduce phosphorus concentration in the East Holland River



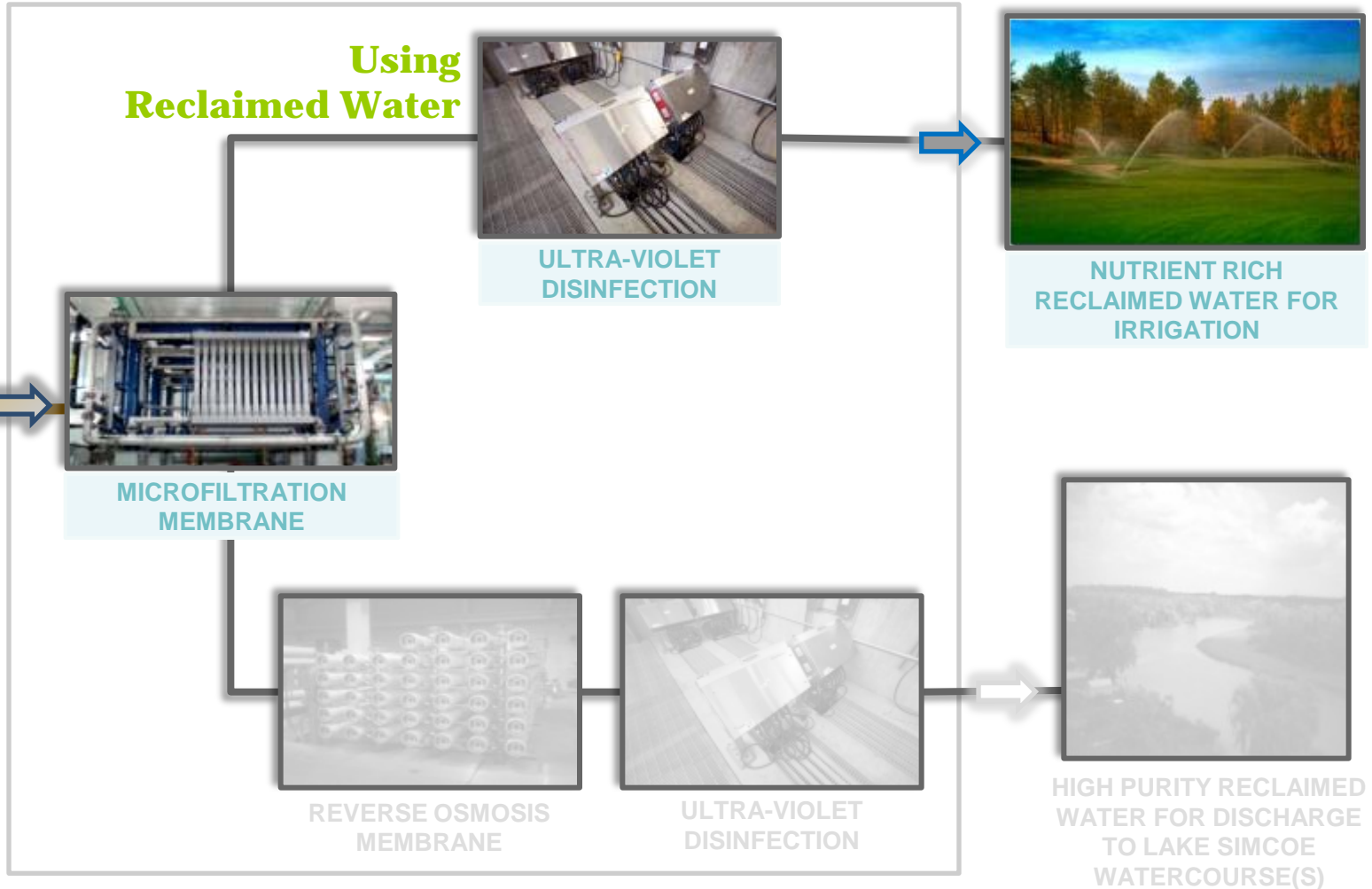
Water Reclamation Centre Process Concept

RAW SEWAGE

ADVANCED TREATMENT



Using Reclaimed Water



Reclaimed Water Use in York Region

- ❑ Reclaimed water use conserves our water resources
- ❑ Redirection of nutrients from receiving waters, such as East Holland River, to land irrigation resulting in beneficial reuse of nutrients
- ❑ Prime beneficiaries for the use of reclaimed water:
 - Sod farms
 - Tree farms
 - Golf courses



Reclaimed Water Experience Elsewhere

Scottsdale Water Campus, Arizona

- ❑ In operation since 1999 the facility treats approximately 72 million litres/day (nearly double the proposed UYSS Water Reclamation Centre)
- ❑ Reclaimed water is distributed to local golf courses for turf irrigation, and pumped back into the groundwater aquifer
- ❑ Water Campus blends in with the surrounding landscape, featuring native landscaping



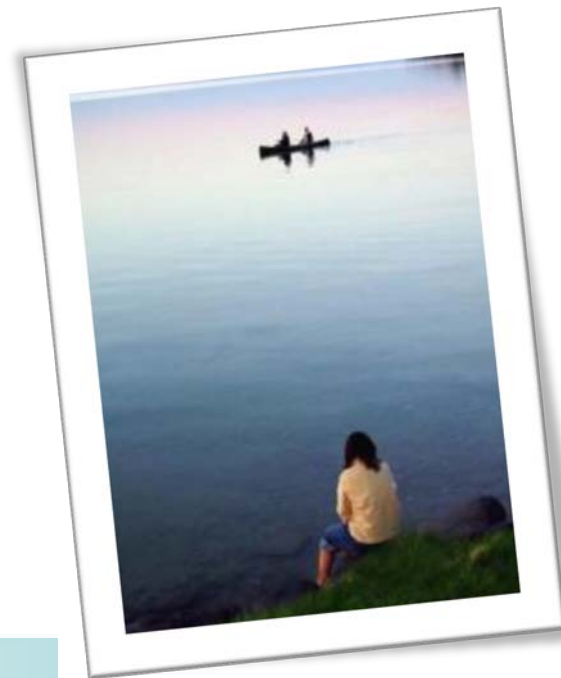
Groundwater Replenishment System, Orange County, California

- ❑ Started recycling water in 1976, one of the first in the world
- ❑ Currently treats 265 million litres/day and is expanding to treat an additional 110 million litres/day
- ❑ Located in an urban setting, well screened to surrounding commercial and residential neighbourhoods



Lake Simcoe the beneficiary of Innovative Wastewater Treatment Technologies

- ❑ Will improve water quality and increase quantity in the East Holland River that flows into Lake Simcoe
- ❑ Compliance with the spirit and intent of the Lake Simcoe Protection Plan



Supports Phosphorus Reduction Strategy's
Long Term Actions for Sewage Treatment Plants

Reclaimed water use is a sustainable way to conserve the Region's water resources ...

- ❑ Meets or exceeds York Region's 10 Water and Wastewater Sustainability Principles
- ❑ Provides a reliable water source that protects against climate change impacts (changes in rainfall intensity and frequency)
- ❑ Supports Ontario's position to showcase innovative wastewater treatment technology and water conservation (*Water Opportunities Act, 2010*)

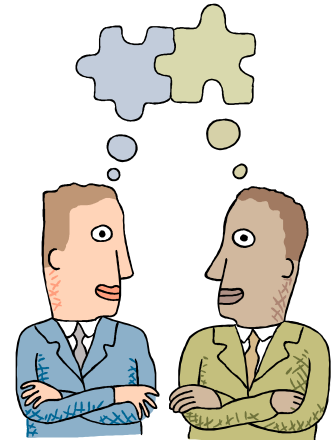


Next Steps & Questions

- ❑ York Region will confirm the preferred alternative to the undertaking (Fall 2011)
- ❑ If Lake Simcoe Water Reclamation Centre is confirmed as the preferred alternative, York Region will
 - Identify alternative sites for the Water Reclamation Centre
 - Identify collection and conveyance infrastructure
 - Establish a demonstration facility at York Region's Mount Albert Water Pollution Control Plant site
- ❑ Once we have confirmed the preferred alternative, please consider participating on the Community Liaison Forum
- ❑ York Region will continue to engage you in this project

What Are Your Thoughts?

- ❑ What do you think about the tentatively recommended alternative?
- ❑ What is the most important function the Water Reclamation Centre has to achieve?
- ❑ What else do you want to know about the tentatively recommended alternative and/or reclaimed water?
- ❑ Did you understand the treatment process for producing reclaimed water? What can we clarify?
- ❑ What one thought do you need the project team to take away?



Thank You!



Questions/ Comments

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