



Upper York Sewage Solutions Environmental Assessment

Public Information Meeting

November 16th, 2011



Presentation Agenda



- ❑ A Lake Simcoe Perspective & Project Overview
- ❑ Sewage Servicing Alternatives
- ❑ The Preferred Alternative
- ❑ Relationship to Lake Simcoe
- ❑ Next Steps

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





A Lake Simcoe Perspective & Project Overview

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History of Lake Simcoe

- ❑ Remnant of Ice Age Glacial Lake Algonquin
- ❑ Formerly known as Lake Toronto, renamed by John Graves Simcoe, the first Lieutenant-Governor of Upper Canada
- ❑ Largest lake in southern Ontario after the Great Lakes, surface area of 725 km²
- ❑ Popular with cottagers, anglers, campers, boaters and ice fishers
- ❑ Bordered by Simcoe County, York Region and Durham Region



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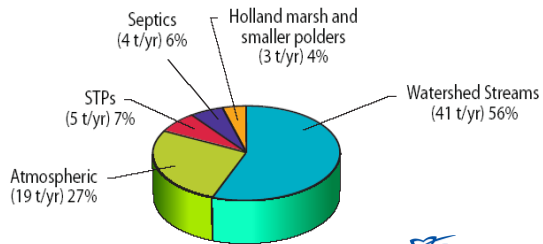




Phosphorus Sources

Different land uses put pressure on the lake's ecosystem

- ❑ Agricultural practices release nutrients and other pollutants from fields into streams that drain into the lake (25%)
- ❑ Urban and rural stormwater runoff release nutrients to watershed streams (31%)
- ❑ Water Pollution Control Plants represent 7% of total phosphorus load to Lake Simcoe



Phosphorus – Cause & Effect



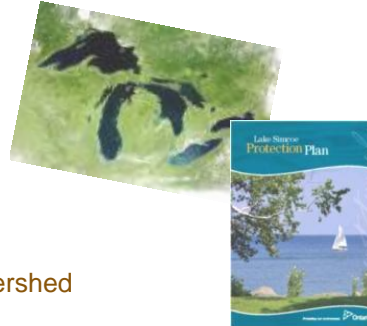
- ❑ Water quality in the lake has been affected by excessive phosphorus, stimulating algae growth
- ❑ Algae growth resulted in critically low dissolved oxygen levels in deep portions of the lake
- ❑ Decline of lake trout and whitefish populations in the late '70s and early '80s
- ❑ Lake Simcoe has also been victim to invasive species:
 - Zebra Mussel, Purple Loosestrife, Black Crappie, Spiny Water Flea, Round Goby and Eurasian Milfoil invasions





Taking Protective Action

- Lake Simcoe Protection Plan approved in June 2009
- Legislation with a goal to
 - Protect the Oak Ridges Moraine
 - Respect our Great Lakes
 - Revitalize the Lake Simcoe Watershed



“ We believe that the lake is life and the health of the lake determines the quality of life.”
 Lake Simcoe Protection Plan



Taking Protective Action

By working together, we can make what may seem impossible, possible

- Regulations, Guidelines and Programs by Lake Simcoe Region Conservation Authority and municipalities
- Lake Simcoe Science Advisory Committee and Stakeholder Advisory Committee
- Phosphorus Reduction Strategy
- Education and outreach programs, such as SPLASH! Water Festival

Microorganisms



Zebra mussels

Road salt





Consultation on the Preferred Alternative

- ❑ Presentations to York Regional Council, Town of East Gwillimbury Committee of the Whole, Town of Georgina Council, and the Lake Simcoe Region Conservation Authority Board
- ❑ Presentation to Lake Simcoe Coordinating and Science Committees
- ❑ Community Liaison Forum meeting
- ❑ Two Review Agency Advisory Committee meetings
- ❑ Two rounds of public information forums / workshops
- ❑ Two meetings with First Nations
- ❑ Interviews and meetings with various participants
- ❑ Monthly Tuesday Talks
- ❑ Lake Simcoe SPLASH! Festival



June 2011 Public Information Forum

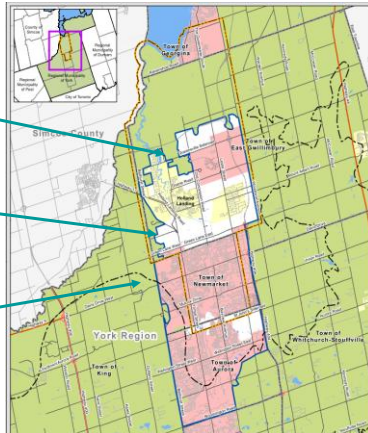


Servicing Tomorrow's Communities

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

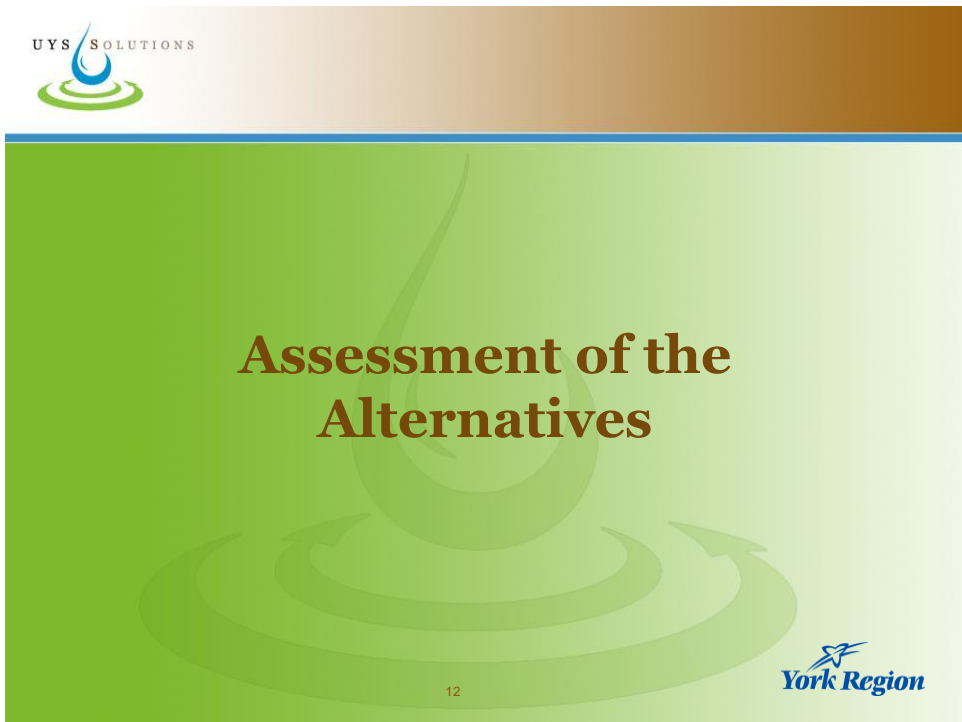


Purpose / Opportunity Statement:

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

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







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)



Do Nothing & Discharge to Lake Simcoe

Do Nothing

- Benchmark alternative

Discharge to Lake Simcoe

- Wastewater conveyance system and treatment facility, within the Lake Simcoe watershed
 - Must comply with Phosphorus Reduction Strategy WPCP phosphorus limits
- Wastewater from growth in Newmarket and Aurora conveyed to the existing York Durham Sewage System

✗ These alternatives are not recommended

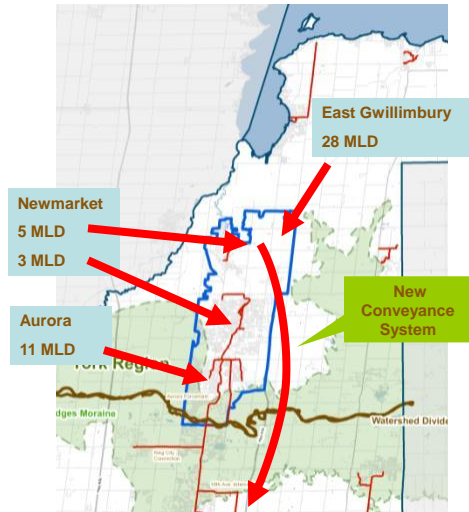




Discharge to Lake Ontario

- ❑ 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

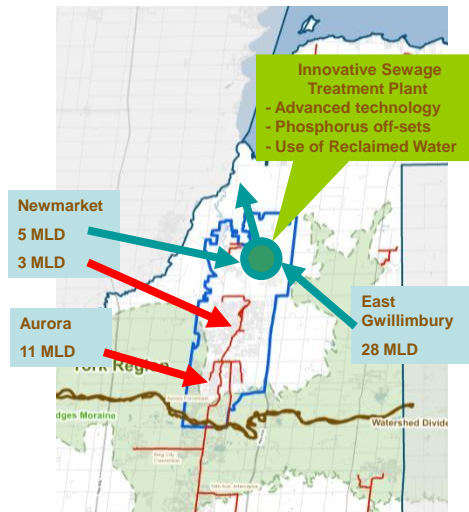
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Lake Simcoe Water Reclamation Centre

- ❑ 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 (YDSS) for discharge to Lake Ontario
- ❑ Modifications to existing YDSS include additional forcemains interconnecting Newmarket, Aurora and Bogart Creek Pumping Stations

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Preferred Alternative

York Region has confirmed the ...

Lake Simcoe Water Reclamation Centre as the Preferred Alternative



Innovation &
Creativity

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Rationale for the Preferred Alternative

- ✓+ Enhances York Region's Water Efficiency and Conservation Program by making reclaimed available, therefore reducing the demand for fresh/potable water resources.
- ✓+ Consistent with the intra-basin transfer provisions of the *Ontario Water Resources Act*, and may promote a water balance within the Lake Simcoe watershed.
- ✓+ Improves the quality and increases the quantity of water flowing into Lake Simcoe.
- ✓+ Financially viable and construction can be phased over time resulting in lower initial capital costs.
- ✓+ No new wastewater infrastructure would be required within the Oak Ridges Moraine.

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Confirmed 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 and October 2011 MOE confirmed support for Water Reclamation Centre Alternative through written commitments on provincial approval requirements that would allow a Lake Simcoe servicing solution

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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

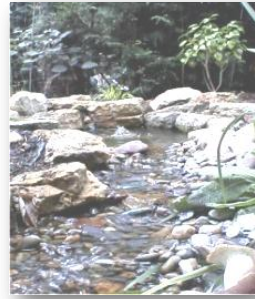
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What is a Water Reclamation Centre?

It is a sustainable sewage treatment facility that uses proven, leading-edge, advanced wastewater purification and water reclamation technologies



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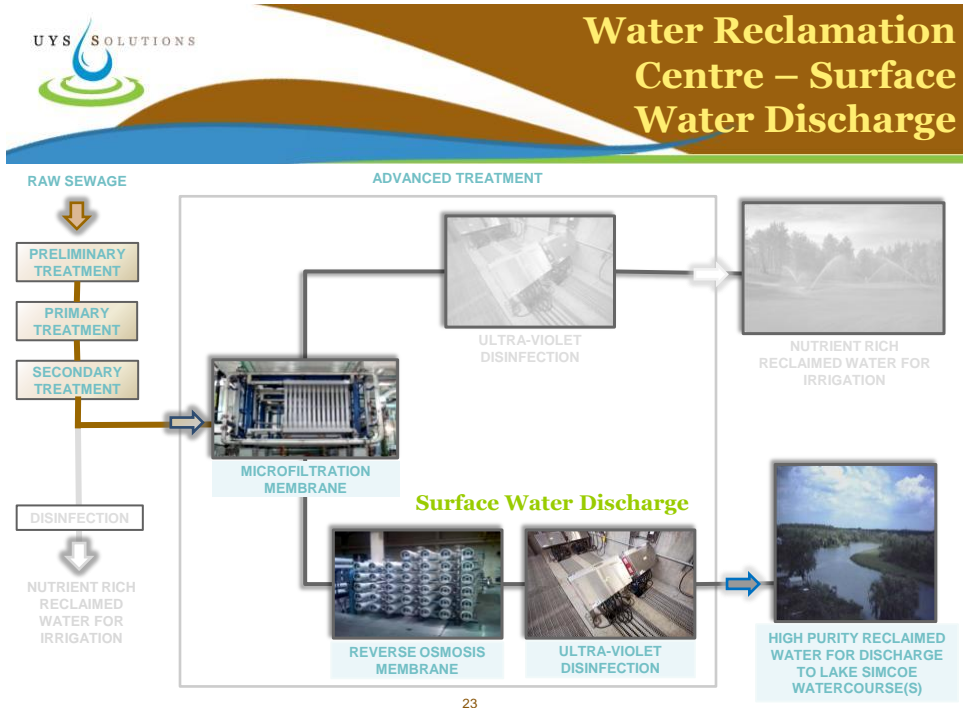
Water Reclamation Centre Process Concept

A picture is worth a 1,000 words...

[Click here to run animation](#)

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Phosphorus Off-Setting

- ❑ 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

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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



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

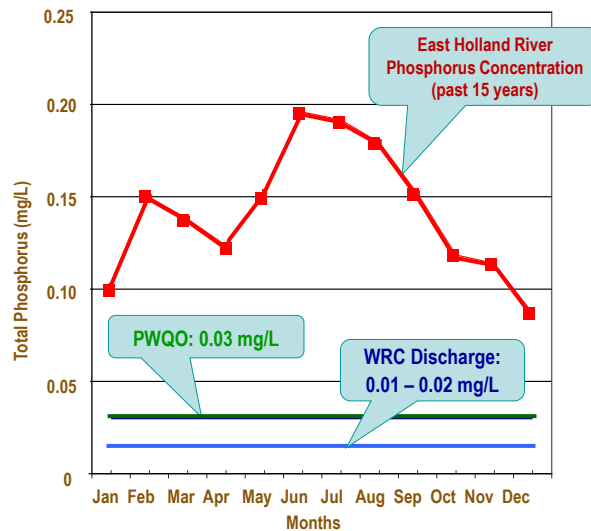


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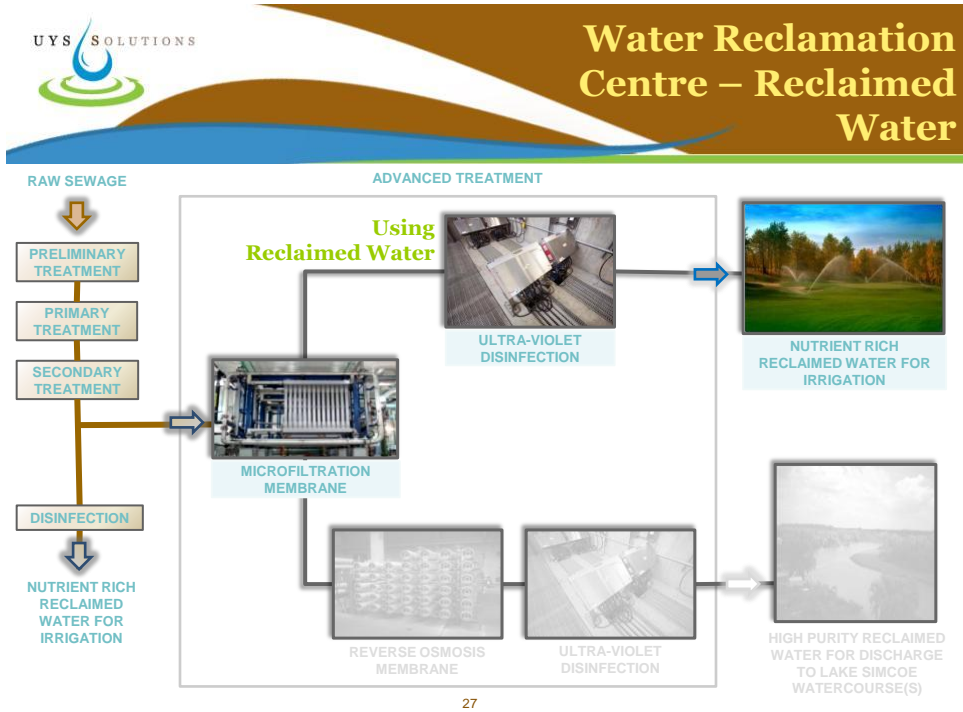


Phosphorus in East Holland River

- 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



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UYS SOLUTIONS

Reclaimed Water Use in York Region

Reclaimed water use is a sustainable way to conserve the Region's 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:
 - Golf courses
 - Sod farms
 - Tree farms

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York Region



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



UYSS Relationship with Lake Simcoe





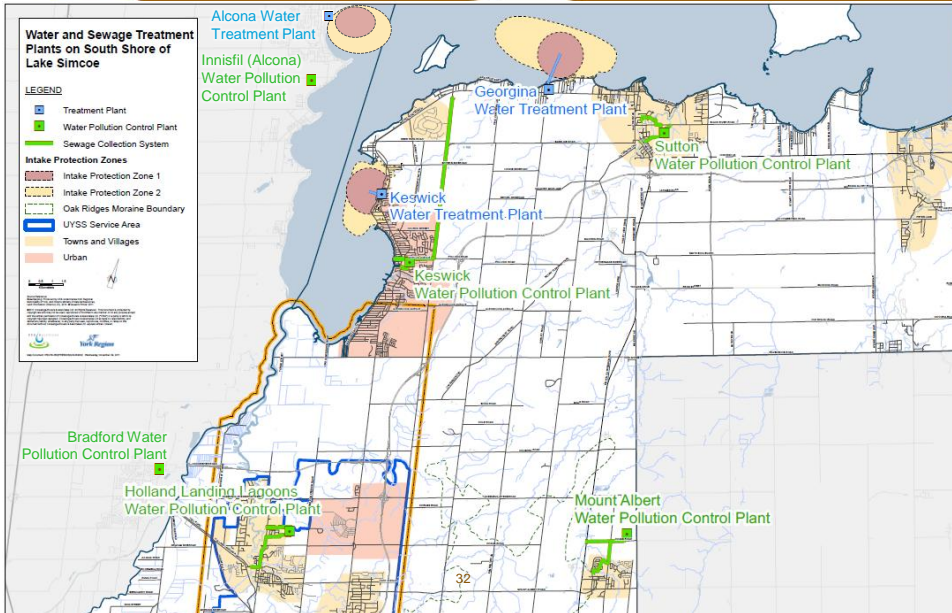
Unparalleled Treatment Levels in Ontario



Lake Simcoe the beneficiary of Innovative Wastewater Treatment Technologies



Lake Simcoe South Shore Treatment Plants





To Clarify ...

- No measurable effect from the Water Reclamation Centre discharge on Lake Simcoe
 - Daily discharge from Water Reclamation Centre would be 0.00034% of the total volume of Lake Simcoe
 - It would take Water Reclamation Centre discharge 795 years to fill Lake Simcoe
- Net Benefit through phosphorus off-sets
- Reverse osmosis along with other treatment processes is the most effective available technology for removing microconstituents (PPCP)
- Proposed Water Reclamation Centre goes beyond treatment at Keswick WPCP


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Next Steps


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Ongoing Studies on the East Holland River

- Hydrodynamic Modelling Report has been posted to the project website following review by LSCRA and MOE
- Proposed studies under the direction of LSRCA and MOE during next stage of UYSS EA will address:
 - Study of the Potential Impacts of the WRC Discharge on River Flooding
 - Watershed Modelling Study to Generate Improved Hydrodynamic Model Boundary Conditions
 - 2D Hydrodynamic and Water Quality River Modelling Study
 - Thermal Impacts of WRC Discharge on the Receiver
 - Hydrodynamic Modelling Study to Support Outfall Design
 - Aquatic Habitat Assessment
 - Geomorphologic Impacts from the WRC Discharge



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Next Steps...

- Public Workshop before end of 2011:
 - Present the Lake Simcoe Water Reclamation Centre as the confirmed Preferred Alternative
 - Discuss the potential of other Reclamation Centre sites
 - Obtain input from the public to help determine the final Reclamation Centre site
- Demonstration Facility established at the Mount Albert Water Treatment Plant Control Plant

MOE Issues Certificate of Approval for Demonstration Facility




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Thank You!



Questions/ Comments

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