

# **Stormwater Management in Ontario**

A.D. Latornell Conservation Symposium

November 17, 2011

Ministry of the Environment

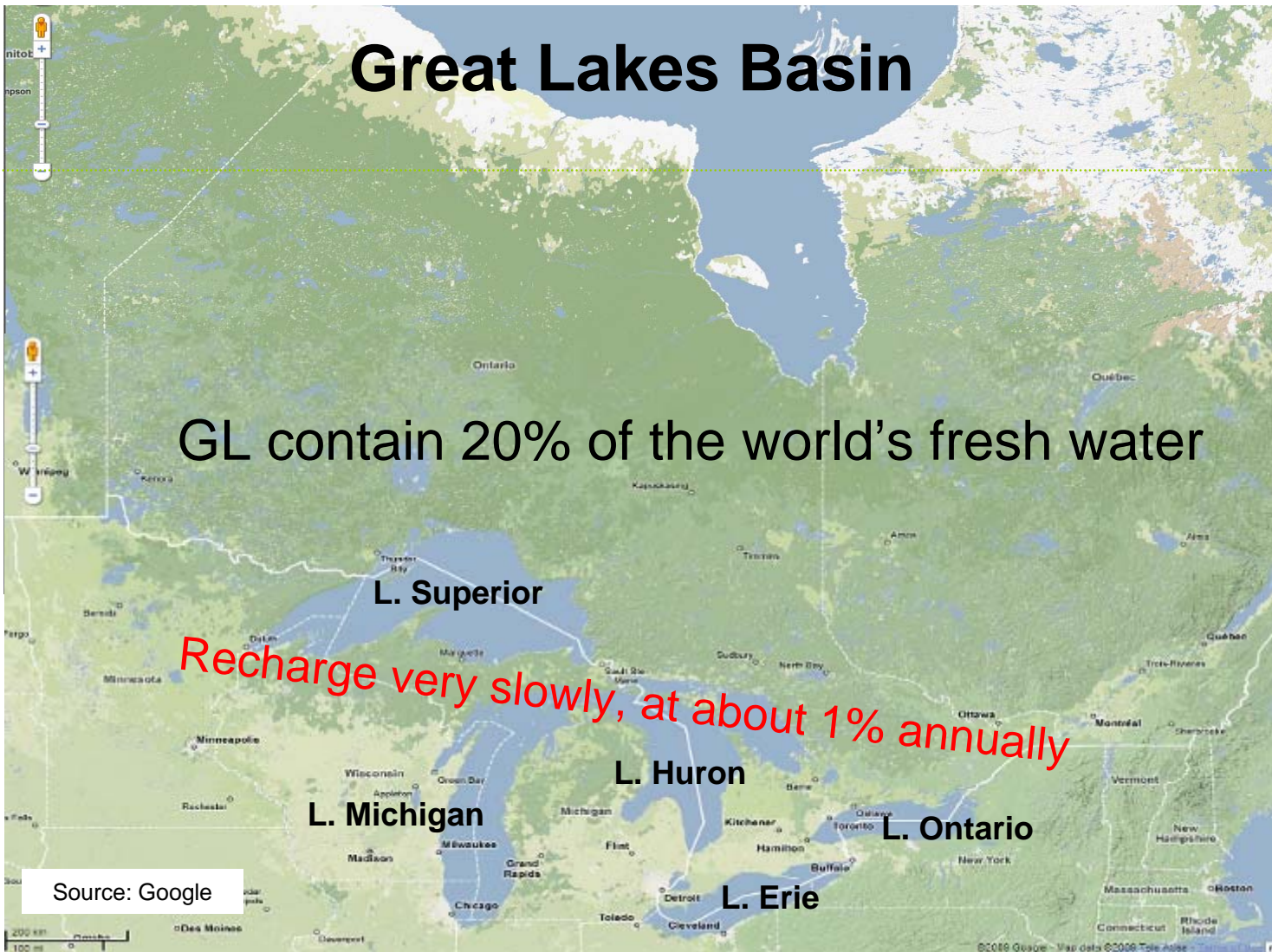
# Purpose of Presentation

- To provide an overview of
  - Stormwater management policy in Ontario
  - Recent initiatives

# Great Lakes Basin

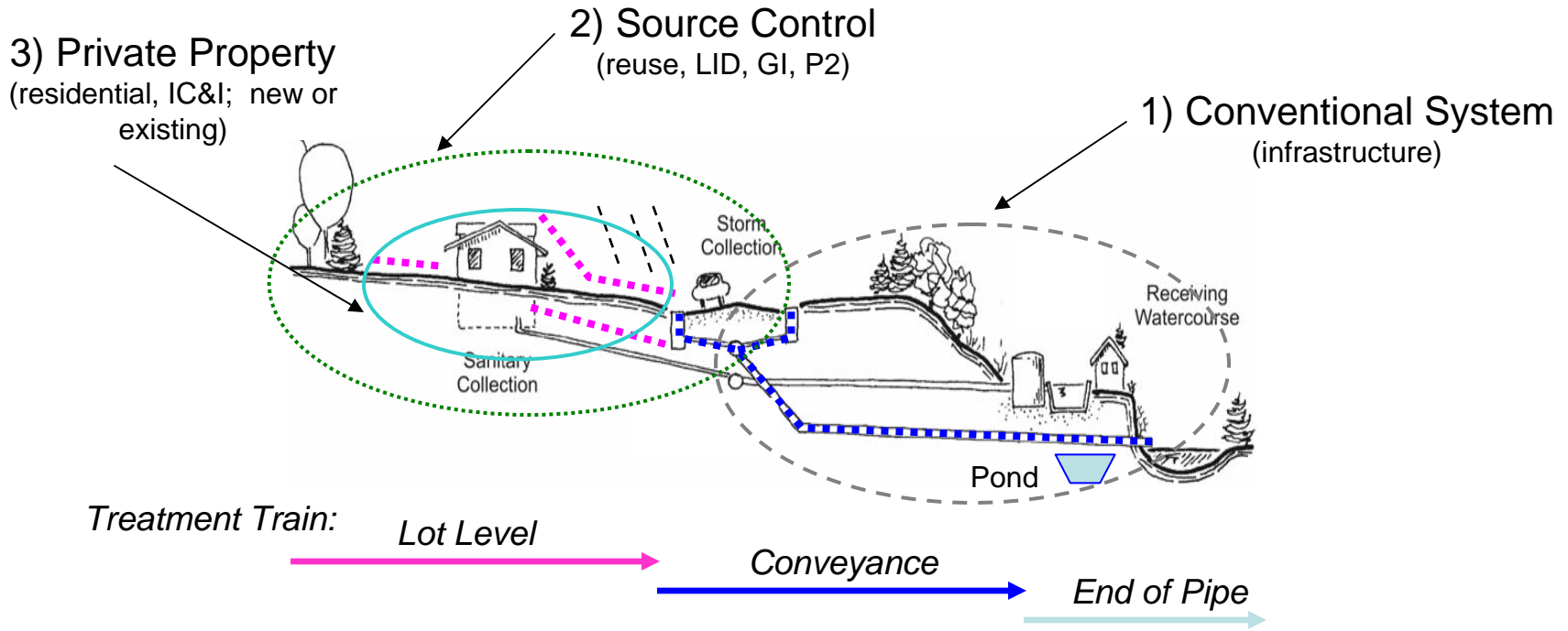
GL contain 20% of the world's fresh water

*Recharge very slowly, at about 1% annually*



Source: Google

# Municipal Stormwater Management



- Municipalities are the practitioners - planning, design, build and operations
- Past MOE focus on the portion of the stormwater collected and managed through the conventional system (e.g. storm sewers, wet ponds)

# Ontario's Stormwater Management Policy

- PPS identifies master planning concept for water and sewage (includes stormwater) for infrastructure planning and relationship to projected growth
- Municipal Class Environmental Assessment applies to municipal projects
- Individual development parcels apply for an Environmental Compliance Approval for stormwater sewage works under the Environmental Protection Act
  - Required to establish, alter, extend or replace new or existing works
  - Review is conducted using the Stormwater Manual as a reference guideline and in conformance with the EA and any other documents approved by the municipality
  - Water Management B series policies may be considered where receiving water is considered at risk
  - Exemption for single, non-industrial lot or parcel discharging into storm sewer
  - Certain types of stormwater works may be reviewed at the municipal level according to a Transfer of Review agreement specific to that municipality
- MOE district offices assess compliance against the MOE Approval on a risk-based prioritization basis and in response to complaints

# Water Quality and Quantity - and Link to Climate Change



Peterborough, July 2004

Water Quantity  
Water Quality  
Climate Change

- Expect increased frequency and intensity of storms
  - Potential for increased drought
- Climate Change Science Evolving
- Adaptation decisions needed now



Source: TRCA

Toronto,  
August 2005



Sources: Google, City of Toronto; Friends of the Rouge Watershed

# Stormwater Management – New Approaches

Some jurisdictions are managing stormwater by:

- Reducing the generation of stormwater by building urban communities that interfere less with the natural water cycle
  - e.g. narrow street design, green roof, permeable pavement
- Reusing stormwater for watering landscapes or another purpose
  - e.g. toilet flushing, water fountain, skating rink
- Recycling clean stormwater back into the natural water cycle by infiltration or by release to surface water
  - e.g. bioretention, stormwater ponds
- Not only do these stormwater management practices reduce the risk of flooding on properties, but they also provide the opportunity to reuse stormwater.

# Stormwater Source Control - LIDs

## Ottawa - Pervious pipes in neighbourhood

- >20 years old; 75-85% of run-off volume reduction

## Seattle - SEA street retrofit

- bioretention, narrow street design
- 99% reduction of stormwater run-off

## Mississauga – municipal stormwater bioretention

- located on school board property

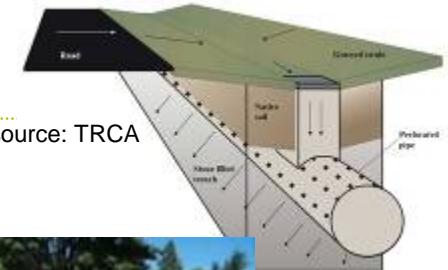
## Toronto – business with a green roof

## Guelph - on-site management on industrial facilities

- 1 in 100 year return storm, e.g. Infiltration basin

## Toronto - Evergreen Brickworks

- brownfield redevelopment



source: TRCA



source: Seattle, USA



source: MOE



source:  
www.creditvalleyca.ca



source: www.evergreen.ca

source: Mountain Equipment Co-op

# Stormwater Source Control - Reuse

Toronto - Minto condo reuse for toilets and landscape

Ottawa - Minto's Eco-home demonstration

- 50% reduction through water conservation features
- 75% reduction (total) with stormwater reuse added

Toronto - Sherbourne Commons fountain

Waterloo - City's RIM sports park

Toronto - Woodbine Entertainment

Burlington - Mountain Equipment Co-op

Brampton - municipal stormwater retrofit

- watering private golf courses

source: Minto



Source: mondegreatgulf.com



source: woodbineentertainment.com



Source: Google Map



# Stormwater Management – Recent Examples of Collaboration

## City of Welland project

- Public Infrastructure Engineering Vulnerability Committee (PIEVC) climate change risk assessment for municipal stormwater and wastewater infrastructure
- Use the Engineers Canada's PIEVC Protocol for the first time on a full scale with a larger municipality in Ontario to assess the risk of climate change for stormwater, sanitary and combined sewer systems and to update the local rainfall IDF curve for climate change
- Partners: Niagara Region, Engineers Canada, GLSLCI

## City of Hamilton project

- Innovative source control stormwater management for business or industrial park development
- Produce a document that would assist municipalities to develop or approve a business or industrial park development with innovative stormwater management (reuse and LID)
- Partners: City of Guelph, GLSLCI

## Town of Oakville project

- Encourage and enable upper and lower tier collaboration on integrated water services sustainability planning for water, stormwater and wastewater systems
- Identify existing or current studies or plans that contribute to sustainability
- Partners: Halton Region, Halton CA, GLSLCI

# Final Thoughts - Sharing Ontario's Experience

Opportunities  
Innovation  
Collaboration  
Sharing Knowledge

- MOE stormwater web site  
[www.ene.gov.on.ca](http://www.ene.gov.on.ca)
- Innovative Stormwater Management Practices  
[www.iswm.ca](http://www.iswm.ca)
- [henry.jun@ontario.ca](mailto:henry.jun@ontario.ca)

The screenshot displays the Ontario Ministry of the Environment website. At the top, the Ontario logo and 'MINISTRY OF THE ENVIRONMENT' are visible. A search bar is present in the header. Below the navigation menu, the 'Stormwater Management' page is shown. The page features a sidebar with links: 'What Stormwater Management Involves', 'Information For Municipalities and Property Owners', 'Adaptation, Innovation and Opportunities', and 'Learn More'. The main content area includes a list of bullet points: 'What stormwater is', 'Why stormwater management is important', and 'The benefits of stormwater management'. Below this, a section titled 'What stormwater is' provides a definition: 'Stormwater is rain, melted snow or any other form of precipitation that has come into contact with the ground or any other surface. This water either seeps into the ground, is absorbed by vegetation, ...'. At the bottom of the screenshot, a banner for 'www.iswm.ca Innovative Stormwater Management Practices' is visible, featuring a map of Ontario with various locations marked.