

# TRIECA | CONFERENCE



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# ***An Opportunity for Leadership, Innovation, and Partnership***

*John Nemeth, C.E.T.*

*Infrastructure Programming and Studies*

*Transportation Division – Public Works Department*

Day Two - Track Two (Hall F)

11:00 a.m. – 11:30 a.m.

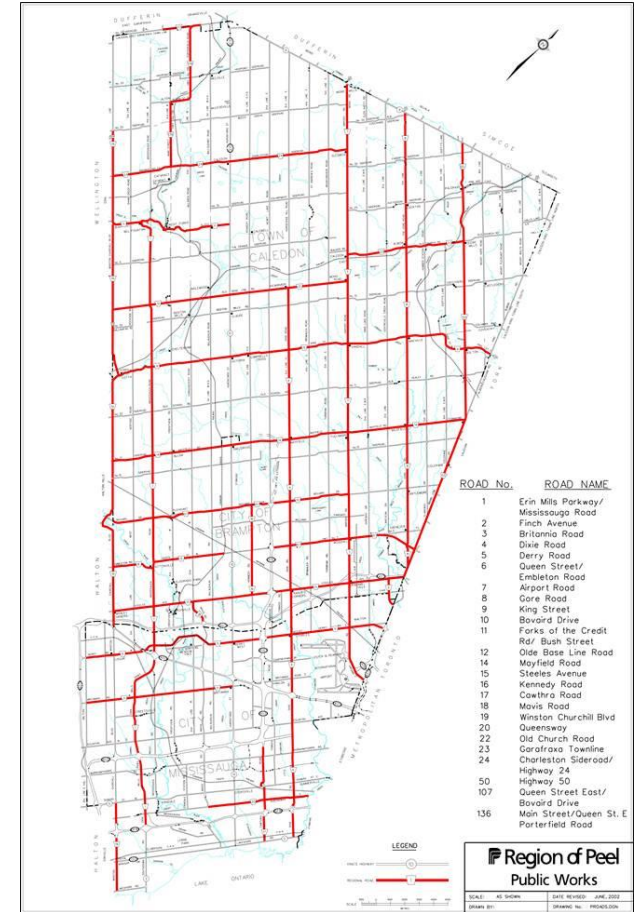
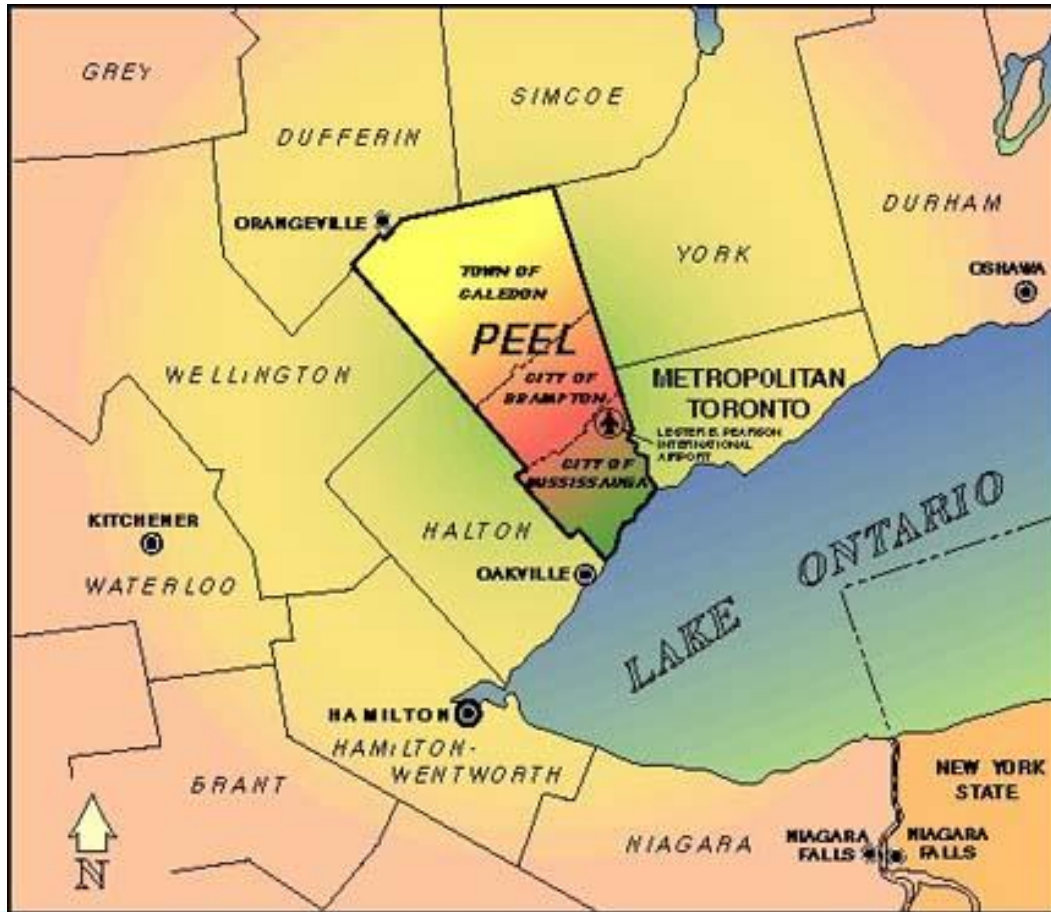
Thursday , March 26th, 2015

**Pearson Convention Centre  
2638 Steeles Avenue East  
Brampton, ON, L6T 4L7**

**TRIECA** | CONFERENCE

 **Region of Peel**  
*Working for you*

# Peel Region



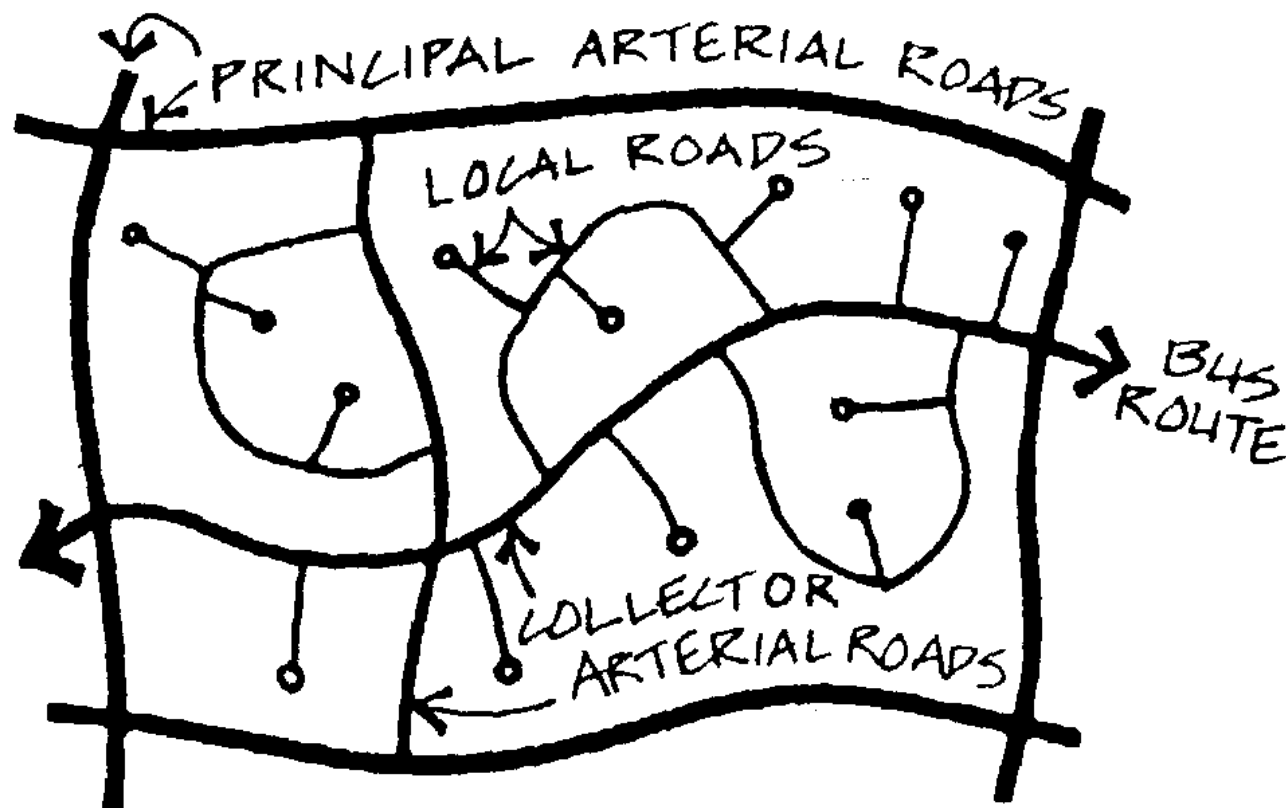
# ***Why Manage Stormwater?***

“The ultimate goal of stormwater management is to maintain the health of streams, lakes and aquatic life as well as provide opportunities for human uses of water by mitigating the effects of urban development. To achieve this goal stormwater management strives to maintain the natural hydrologic cycle, prevent an increased risk of flooding, prevent undesirable stream erosion, and protect water quality”

Source – Province of Ontario



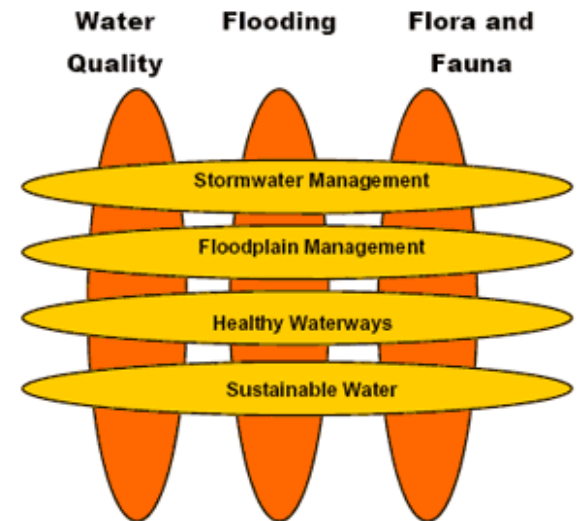
# Watershed includes all Roads



# ***Key Theme Areas of Work***

The following key theme areas of work have been identified:

1. Development of Watershed Management Principles/Policies
2. Flooding Preparedness and Response
3. SWM Quantity and Quality management for Regional Infrastructure
4. Development of Common Standards, Criteria, Guidelines, Levels of Service and Standard Operating Procedures
5. Sustainable Funding Program
6. Communications, Outreach and Education
7. Monitoring - Data Collection and Enhancement
8. Studies, Communications and Emergency Services
9. Governance



# ***Municipal Interest***

Stormwater is considered in three distinct areas of municipal interest;

1. through the planning and land development processes;
2. through capital programs delivering engineering projects of the municipality e.g. roads, erosion, facility design, etc;
3. operations and maintenance programs and practices.



Stormwater and  
Drainage report  
to be completed  
upfront,  
**for**  
**consideration**  
**in**  
**Detailed**  
**design**



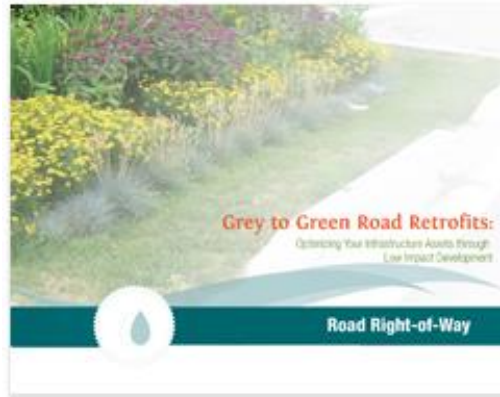
# Green Infrastructure

## Green infrastructure:

means natural and human-made elements that provide ecological and hydrological functions and processes. *Green infrastructure* can include components such as natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces, and green roofs.



# Building on past Experience



Making The Case For LID –  
Business cases, Discussion  
Papers and Articles.

# Mississauga Road LID Project

## Reconstruction and expansion of road surface

Project 1: Mississauga Road  
(Credit River to Williams Parkway)

Project 2: Mississauga Road  
(Williams Parkway to Bovaird)



# Site Reconnaissance

## Existing Conditions: Filter Fabric and Mulch



# Site Reconnaissance

**Existing Conditions: Existing Storm Sewer System**



# Project Goals and Objectives

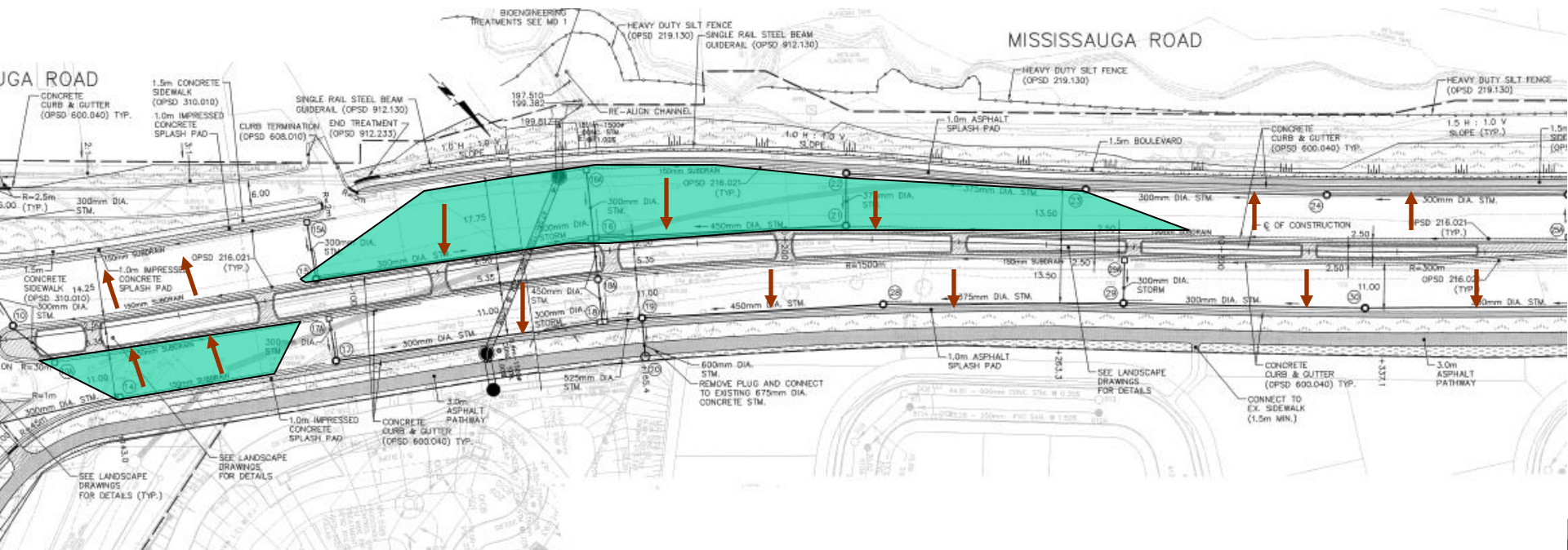
## The goals of the two (2) LID pilot projects,

- ✓ **Overall improvements to the health of the Credit River Watershed**
  - ✓ **Compliance with the Peel Climate Change Strategy Background Report (June 2011), specifically Section 3.4 which calls for the redesign and retrofit water collection and conveyance infrastructure and systems to reduce vulnerabilities due to climate change, as well as implement runoff reduction practices such as source and conveyance controls.**
- 
- 1. Aesthetics & Maintenance** - The median landscape must meet a high aesthetic standard while requiring minimal to no long term irrigation and maintenance. Irrigation with potable region of Peel water is not an option.
  - 2. Water Conservation** - Uses stormwater to the greatest extent possible to sustain the vegetation in the median (i.e.. underground storage tanks with pumps or gravity fed irrigation).
  - 3. Water Quality** - Provide level 1 treatment or better (80% removal of TSS). Assume a water quality volume of 25 mm. Mitigate impacts to Red Side Dace including temperature mitigation.
  - 4. Water Balance/Erosion** - Maintain pre-development to post-development water balance to the greatest extent possible. Infiltrate or reuse a minimum of 5 mm.
  - 5. Flooding** - Match pre-development to post-development peak flows to the greatest extent possible.

# Basic LID Functional Benefits

- **LID's function effectively to capture the first 1.5 to 2 inches of rainfall runoff, which is 75 to 95 percent of the rainfall events in most locations.**
- **Urbanized and urbanizing watersheds can experience localized flooding during these rainfall events due to the amount of impervious surface that accompanies development.**
- **LID captures this runoff and retains it on site, rather than allowing it to flow downstream into streets or nearby properties.**

# Catchment Area Assessment



# Artists Rendition of Proposed LID



# LID Process Report

Version 1.0  
September 16<sup>th</sup>, 2014

LID IMPLEMENTATION PROCESS FOR  
REGIONAL ROAD RIGHT-OF-WAYS

A report prepared by:  
**Aquafor Beech Ltd.**



In association with:  
Credit Valley Conservation

Guelph, Ontario.  
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- STEP 1. Building the Project Team**
- STEP 2. Site Evaluation and Field Reconnaissance**
- STEP 3. Screening the LID options**
- STEP 4. Preliminary Design**
- STEP 5. Detailed Design**
- STEP 6. Approvals**
- STEP 7. Tender and Contract**
- STEP 8. Construction Supervision and Administration**
- STEP 9. Assumption and Verification**
- STEP 10. Lifecycle Activities**

# Monitoring Program



## Mississauga Road Monitoring Plan



Draft November 2014

## ***Objectives of Interest:***

- ❖ Evaluate whether LID SWM systems are providing flood control, erosion control, water quality, recharge, and natural heritage protection as per the design standard.
- ❖ Evaluate long-term maintenance needs and maintenance programs, and the impact of maintenance on performance.
- ❖ Determine the life cycle costs for LID practices.
- ❖ Demonstrate the degree to which LID mitigates urban thermal impacts on receiving waters.
- ❖ Assess the ancillary benefits, or non-SWM benefits.
- ❖ Improve and refine the designs for individual LID practices.

# SWM Standards and Specifications

<b>Development</b>	Design Criteria Design Standards Design Specifications Monitoring Infrastructure Assumption Protocols Infrastructure End of Maintenance Procedures	<ul style="list-style-type: none"> <li>•Master Environmental Servicing Plans</li> <li>•Plans of Subdivision</li> <li>•Site Plans</li> </ul>
<b>Engineering Capital Construction</b>	Design Standards Design Specifications Monitoring Infrastructure Assumption Protocols	<ul style="list-style-type: none"> <li>•Design</li> <li>•Construction</li> </ul>
<b>Operations and Maintenance</b>	Design Standards Design Specifications Monitoring Operations and Maintenance Standard Operating Procedures	<ul style="list-style-type: none"> <li>•Operations</li> <li>•Maintenance</li> <li>•Repair</li> <li>•Replacement</li> </ul>

# ***What is needed?***

- Leadership by Example -  
the time is now to lead in a manner that  
allows area municipalities to maintain  
existing stormwater responsibilities,  
BUT at the same time enhance the  
relationship between  
Regional government and Conservation  
Authorities to take a watershed  
approach



# CONCLUSION

- The Region of Peel will focus on stormwater management activities addressing the Regional road network infrastructure.
- Peel will work in collaboration with our internal partners and Conservation Authorities to improve our overall program, data sharing, best practices and technology enhancements.
- As the work program moves forward staff will seek partnerships with local area municipalities.
- Staff will report back to Regional Council on the progress of initiatives in mid 2015.

*Thank you !*

