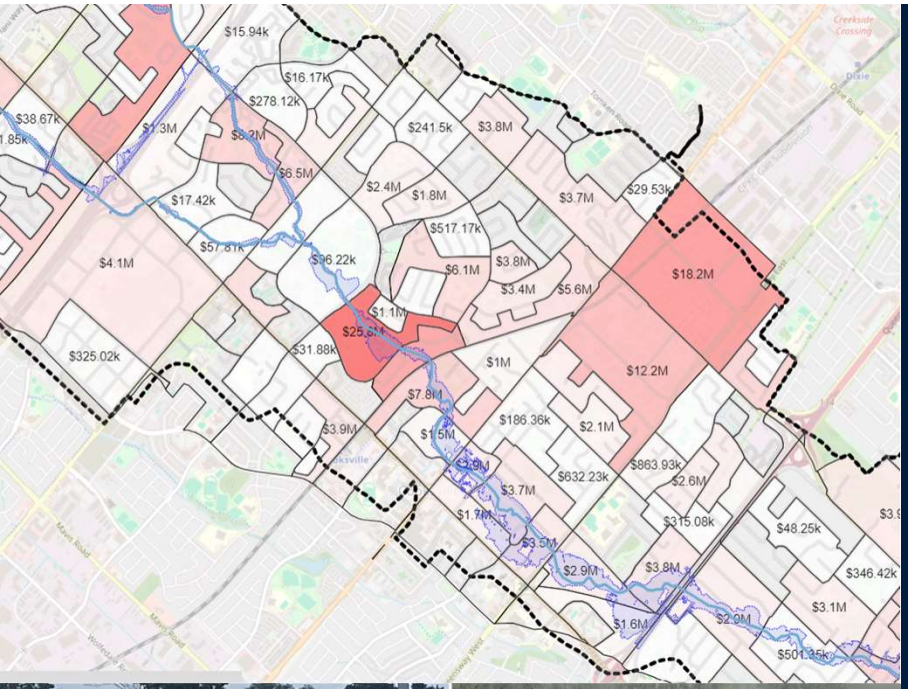


Risk & Return on Investment Tool (RROIT)

Christine Zimmer, Chief Specialist, CVC

October 29th, 2024

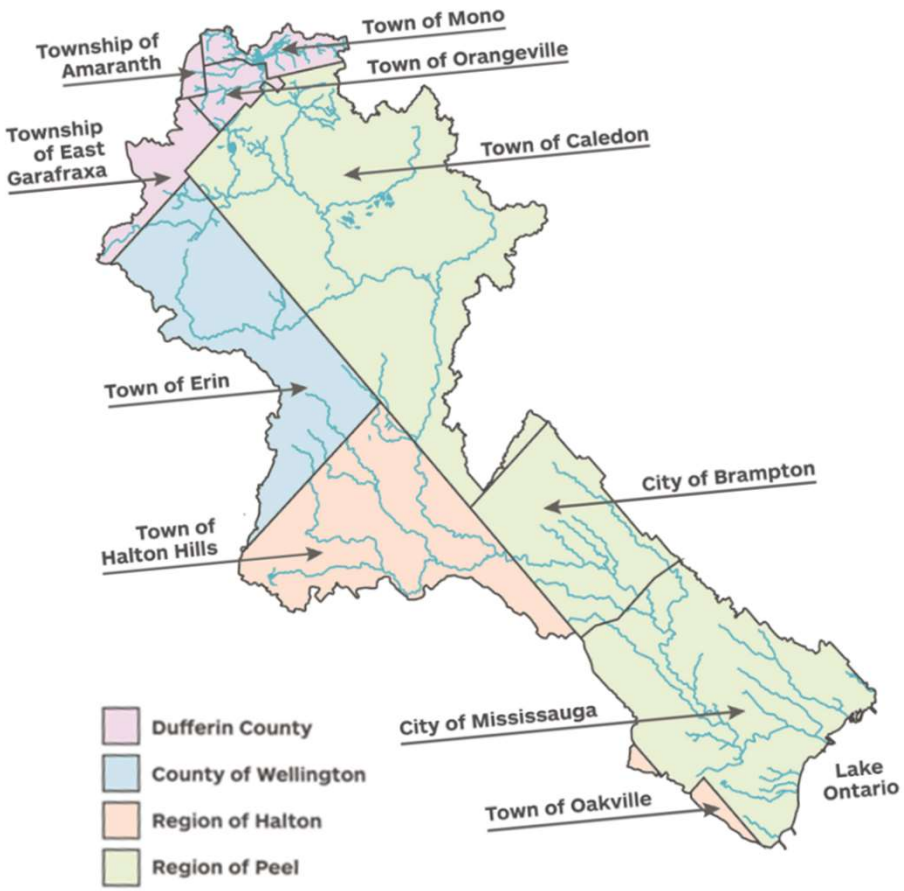
Credit Valley Conservation
inspired by nature

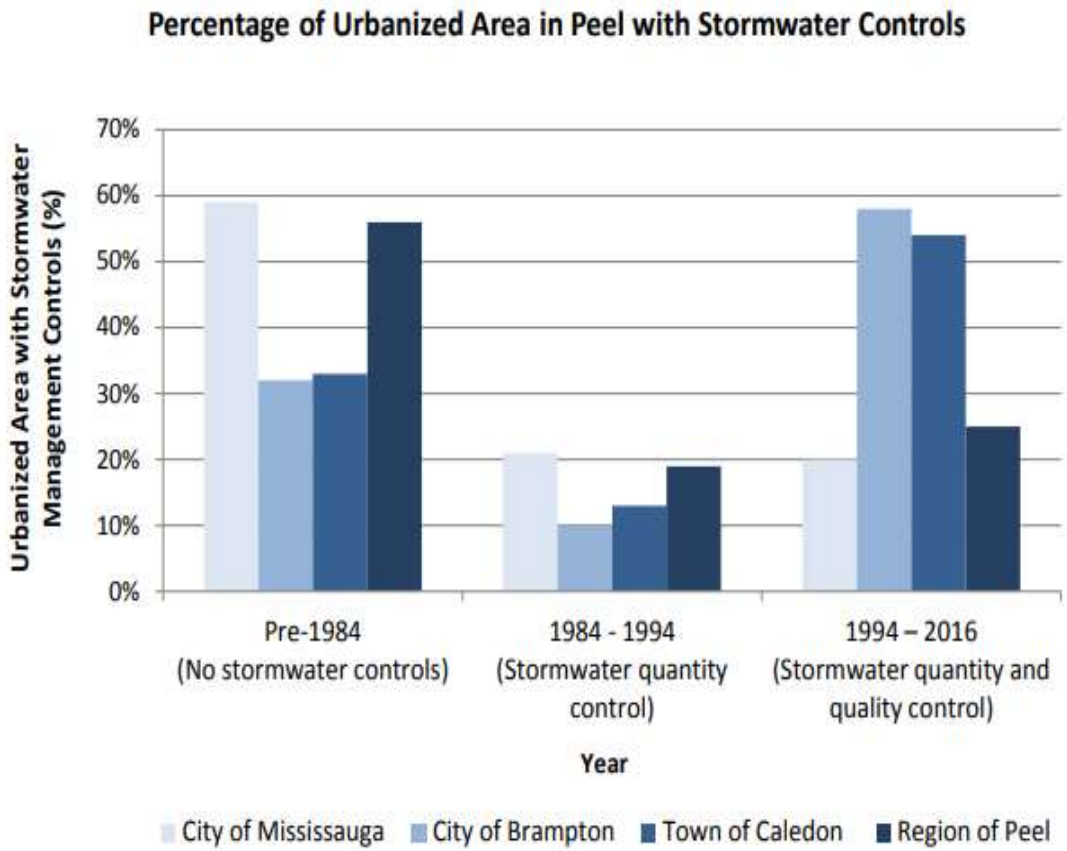
70 years 1954-2024

Credit Valley Conservation

Setting the Stage

Credit River Watershed





Source: Region of Peel, Generalized Land Use Layer, 1984 – 2016

Extreme Rainfall Events & Protecting our Most Vulnerable

GTA

Mississauga parents fear for their children's lives if another flood hits during the school year

"What I saw was almost like a river. How is a teacher with 15, 20 kids, going to safely evacuate them if the building is flooded?" asks a parent after two massive rainfalls in the Applewood Acres neighbourhood flooded St. Edmund Catholic Elementary School.

Updated Aug. 29, 2024 at 8:00 a.m. | Aug. 28, 2024 | 2 min read

- In the past 20 years, the GTA has experienced over 12 (+/-) extreme storm events <u>exceeding infrastructure design standards</u>
- Ranging in total rainfall depth between 60 mm - 250 mm, between 2 hours - 16 hours
- Approx 8 (+/-) "Near Miss" events for CVC's jurisdiction since 2017

August 17, 2024

July 16, 2024

July 8, 2013

Credit Valley Conservation

Overview of Risk and Return on Investment Tool (RROIT)

Prioritizing Risk and Collective Actions to Achieve Flood Resiliency with the Greatest Return on Investment

Credit Valley Conservation

Step 1: Identify assets at risk of flooding

Step 2: Quantify property and infrastructure damages

Step 3: Prioritize high risk areas for targeted investments

LEGEND
- Cooksville_Boundary
- Roads
- damage-riverine-buildings-100YR_FUT
- damage-riverine-buildings-350YR_FUT
- 100yr Floodplain (Current)
- 350yr Floodplain (Future 100-yr)

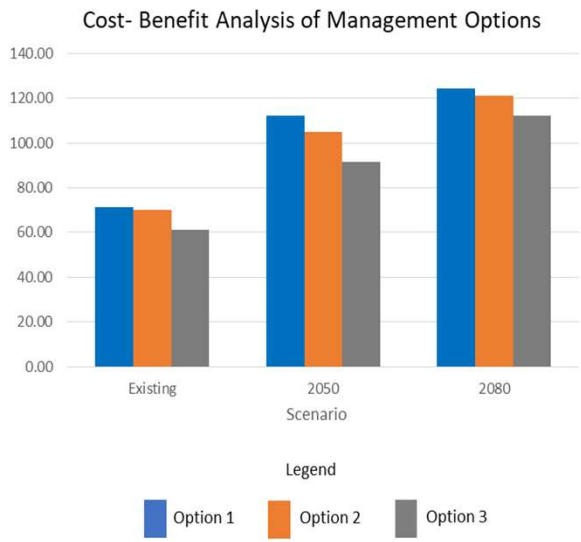
Return Period	Buildings Flooded (Riverine)	Buildings Flooded (Urban)
100-yr	368	3121
350-yr	477	4223

Legend

'Hot Spots' for health impacts (injury, illness)

Prioritizing Risk and Collective Actions to Achieve Flood Resiliency with the Greatest Return on Investment

Step 4: Assess cost-benefit and GHG emissions of solutions



Scenario	Net Emissions (kt)
10 SWMPs	71
Option # 1	824
Option #2	704

Prioritizing Risk and Collective Actions to Achieve Flood Resiliency with the Greatest Return on Investment

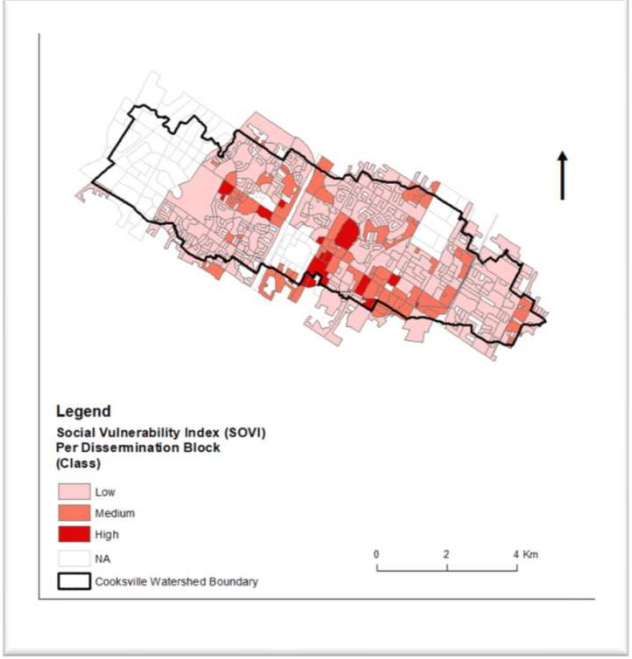
Step 5: Support the business case for funding applications, partner plans, and in-the-ground action

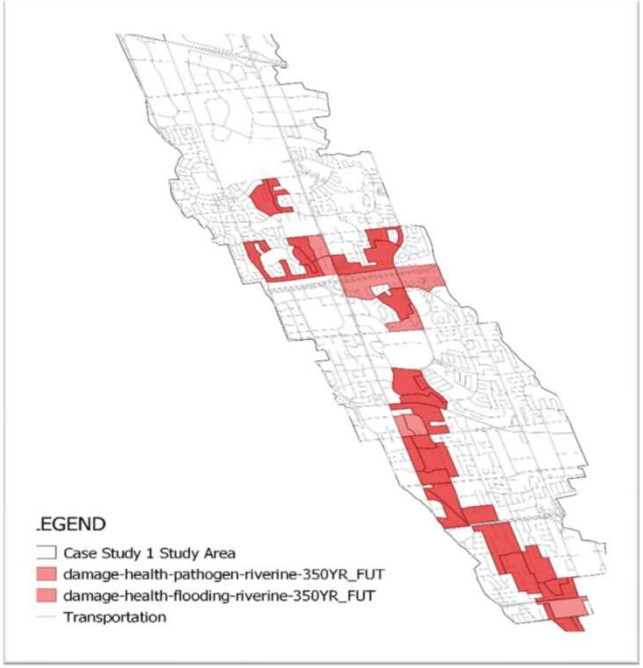
Credit Valley Conservation

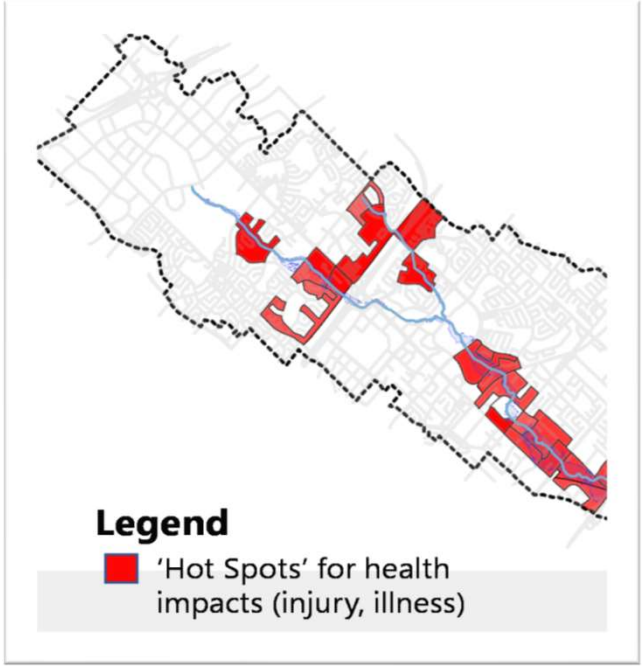
Example Applications of RROIT

Credit Valley Conservation

Incorporating Social Vulnerability into Emergency Preparedness, Land-use Planning, Infrastructure Investment & Public Health / Social Services



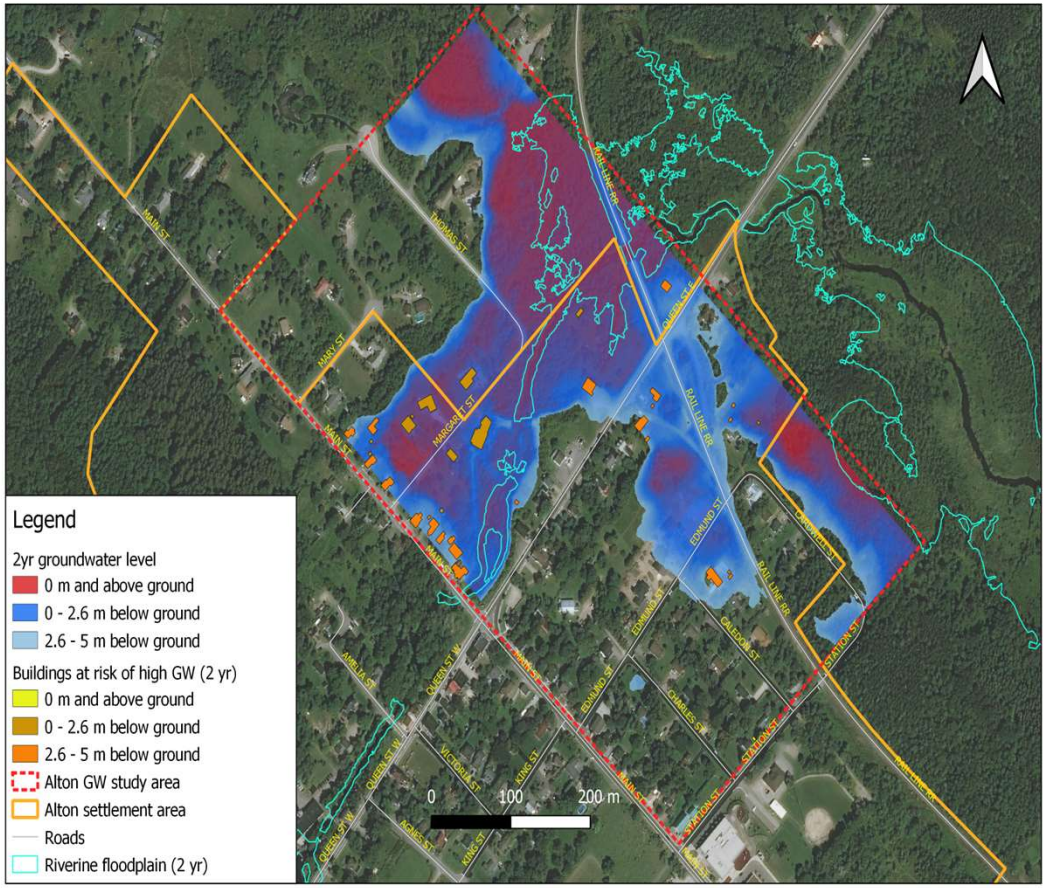




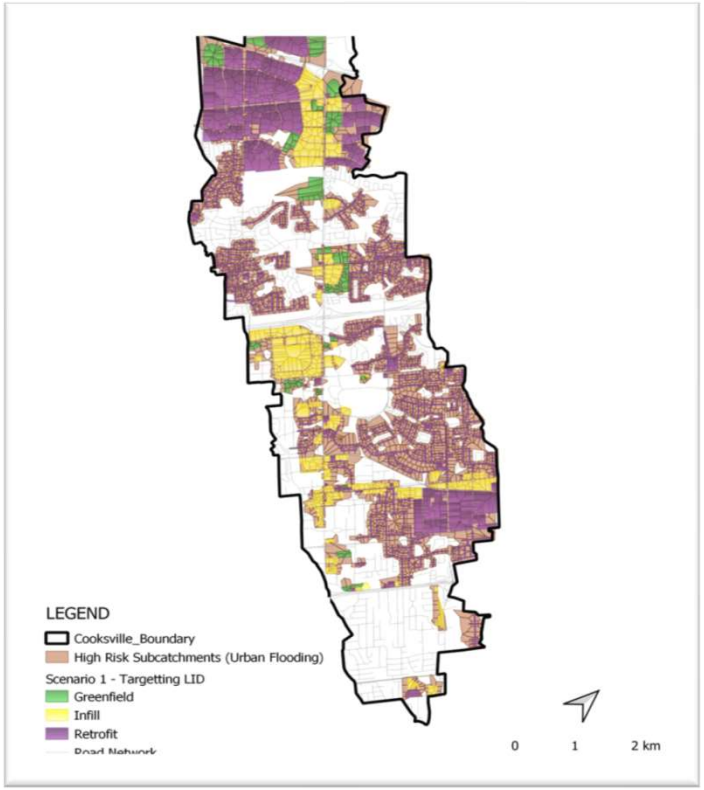
Understanding Multiple Flood Risks – Groundwater Frequency Analysis

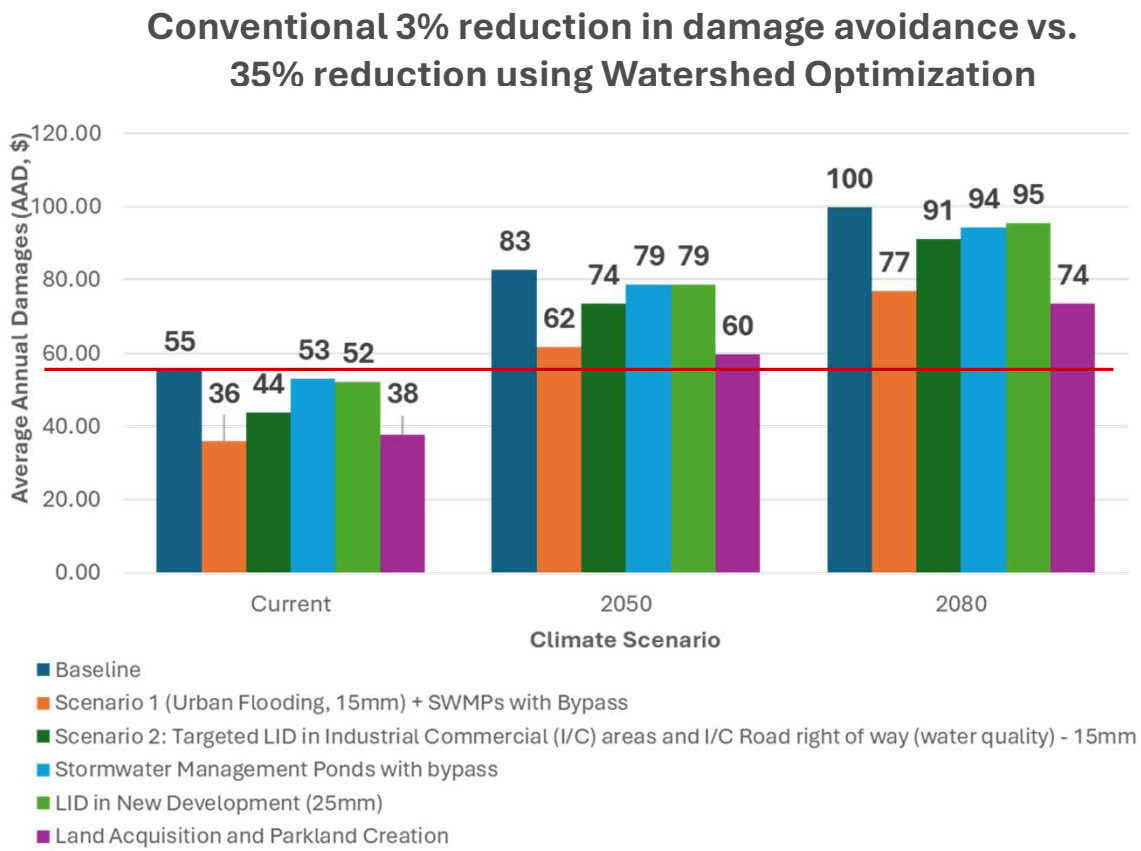
"Understanding the locations of high groundwater risk areas is critical to informing development, stormwater master planning, and stormwater retrofits."

Cassie Schembri, Senior Project Manager, Stormwater Engineering Services Department, Town of Caledon



Understand the cost-benefit of adaptation options offered by natural, green and grey infrastructure





Our Partners in Conservation

Credit Valley Conservation
inspired by nature

Credit Valley Conservation FOUNDATION

Toronto and Region Conservation Authority

Conservation ONTARIO
Natural Champions

GREEN BELT
Possibility grows here.

MISSISSAUGA

BRAMPTON

TOWN OF CALEDON

TOWN OF HALTON HILLS

OAKVILLE

Orangeville
Historic Charm Dynamic Future

MILTON

TOWN OF MONO

TOWNSHIP OF EAST GARAFRAXA

TOWNSHIP OF AMARANTH

TOWN OF ERIN