



Niagara Peninsula
CONSERVATION
nature for all

Oswego Creek Floodplain Mapping

First Public Engagement Meeting
April 13, 2023

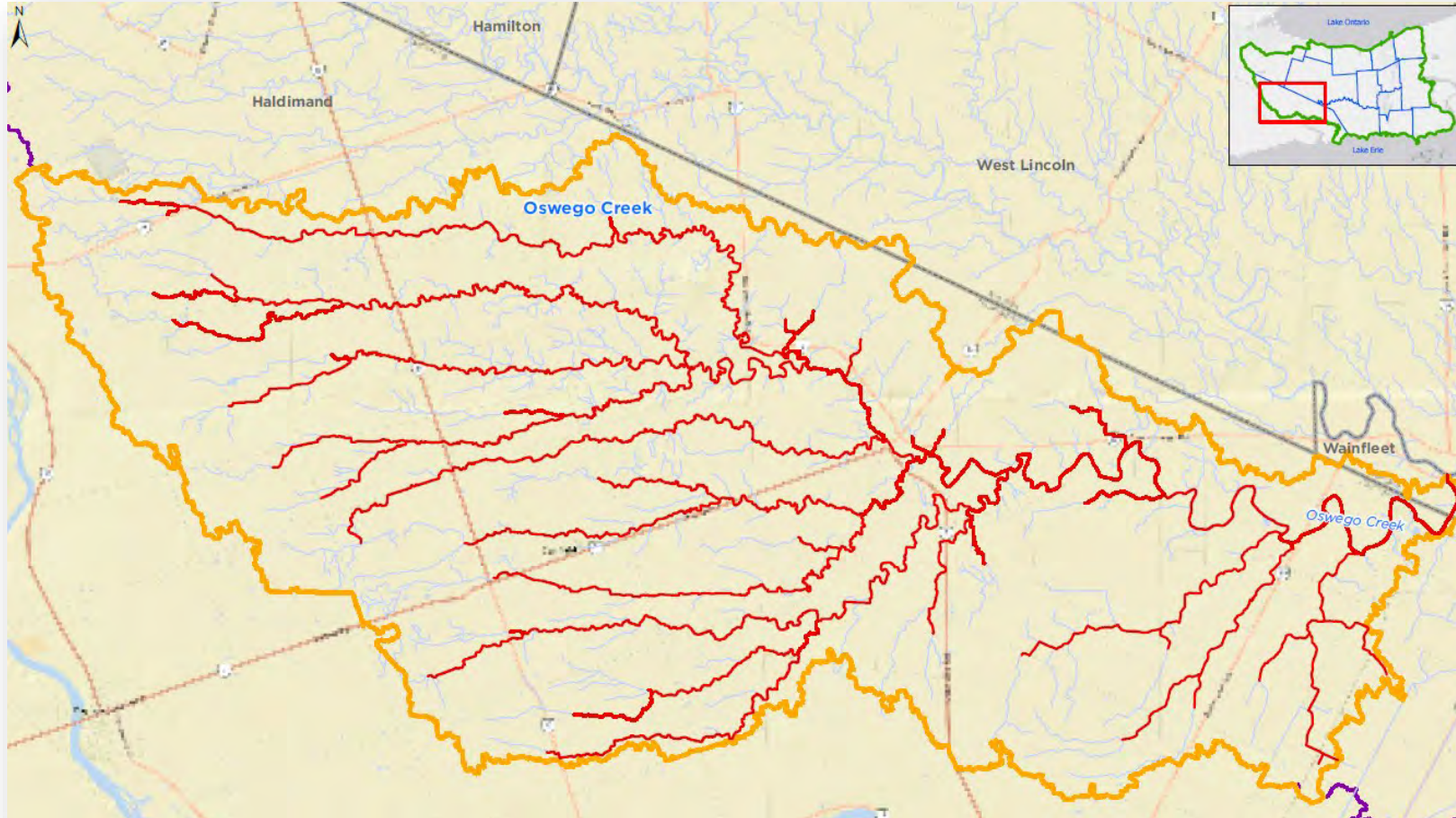
Oswego Creek Floodplain Mapping

First Public Engagement Meeting

Speakers

- Leilani Lee-Yates, Director, Watershed Management
- Tim Mereu, Program Manager
- Brian Greck, Project Director, Greck and Associates Limited
- David Deluce, Senior Manager, Environmental Planning & Policy

Oswego Creek Study Area

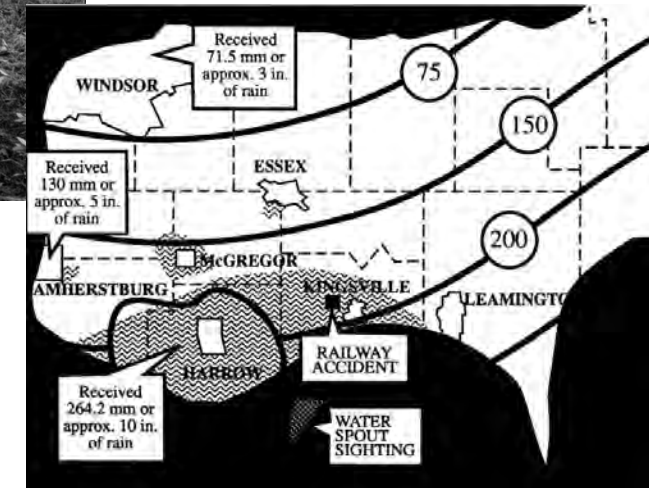


Flooding Does Happen – It is serious and it is costly



In 1954, Hurricane Hazel pounded the Toronto region with 270 mm of rain over approximately 12 hours. 81 people were killed.

Flooding Does Happen – It is serious and it is costly



In 1989, up to 260 mm of rain fell on Harrow in Essex County causing wide-spread flooding and damage. (storm much greater than the 1:100-yr)

Recent Examples of Flooding

Reg. Road 45 – Wainfleet



Bartlett Creek – Beamsville



Oswego Creek Floodplain Mapping

It is almost impossible to stop a river from flooding, but we can reduce the consequence of flooding

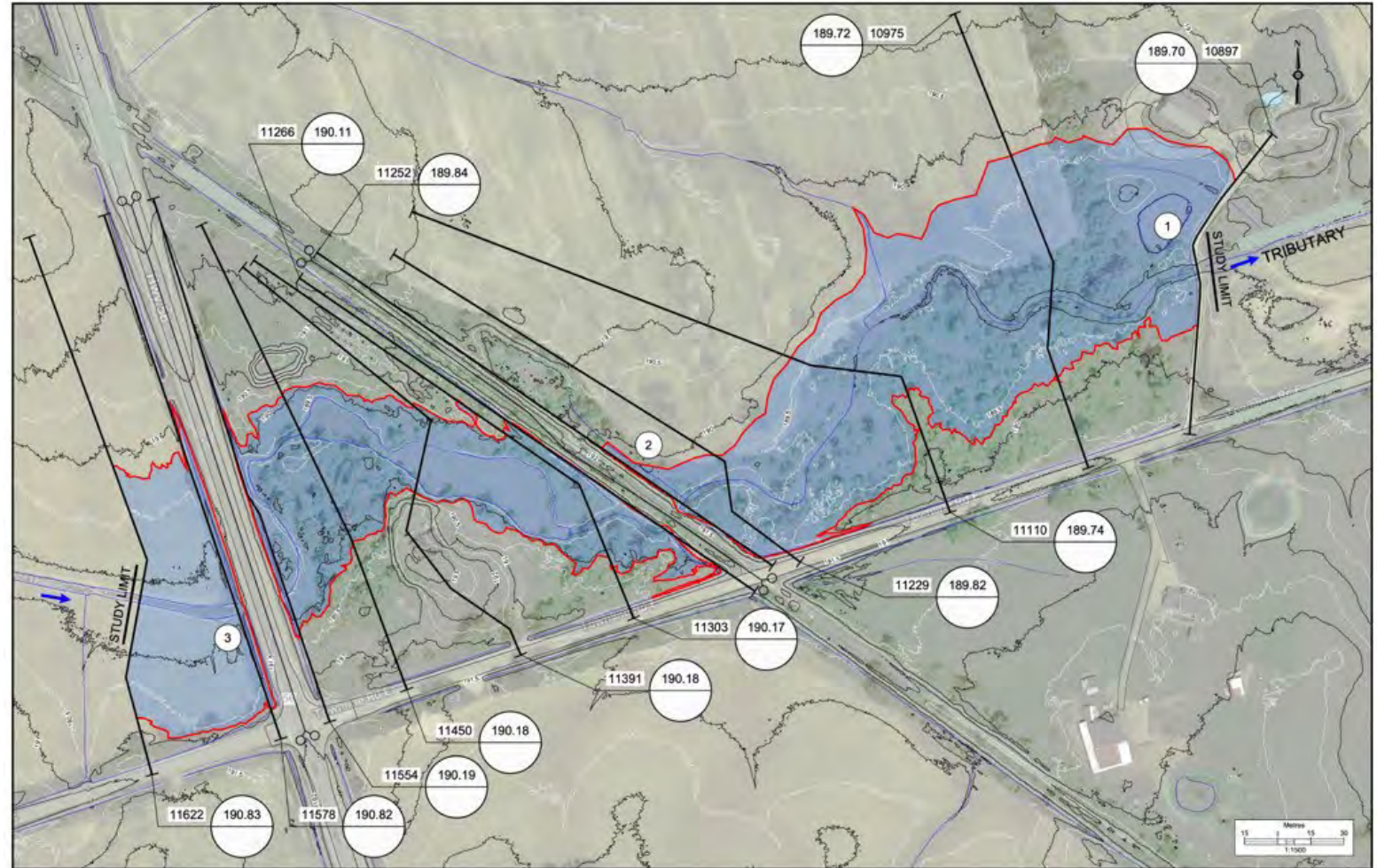
- Create floodplain maps that illustrate the frequency and depth of flooding
- Manage development in the floodplain



Typical Floodplain Map

The first step to reduce the cost of flood damage within a community is to have mapping that accurately shows the flood hazard.

These maps help people prepare for and respond to potential flooding.

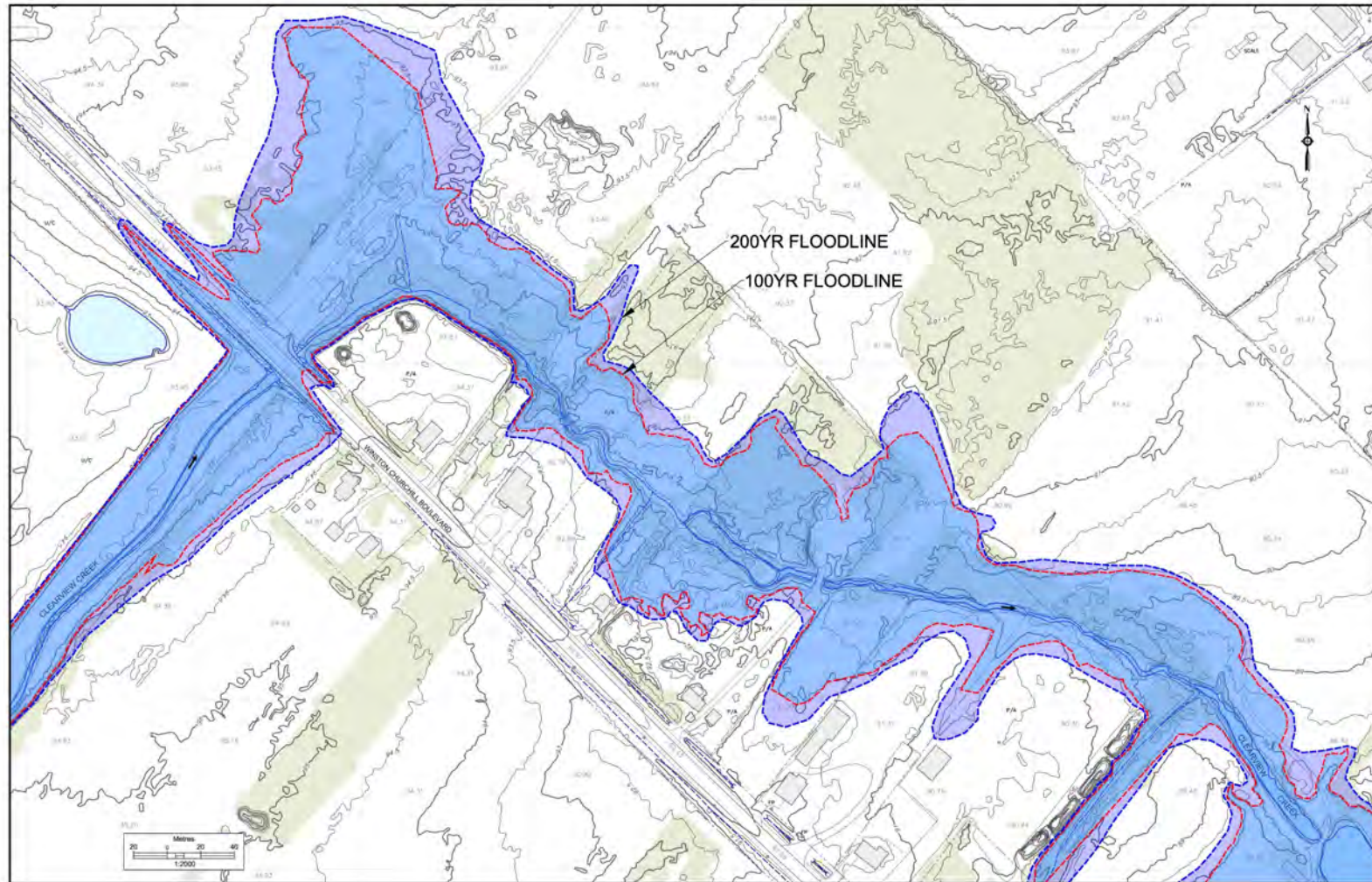


What is the 1:100 year flood and why is it used to map and regulate floodplains?

- 1% chance of happening in any given year
- The Province requires the 1:100-year flood to be mapped and the lands in the floodplain to be regulated
- To illustrate more severe flooding associated with climate change, also map floodplain with 20% increase in flows



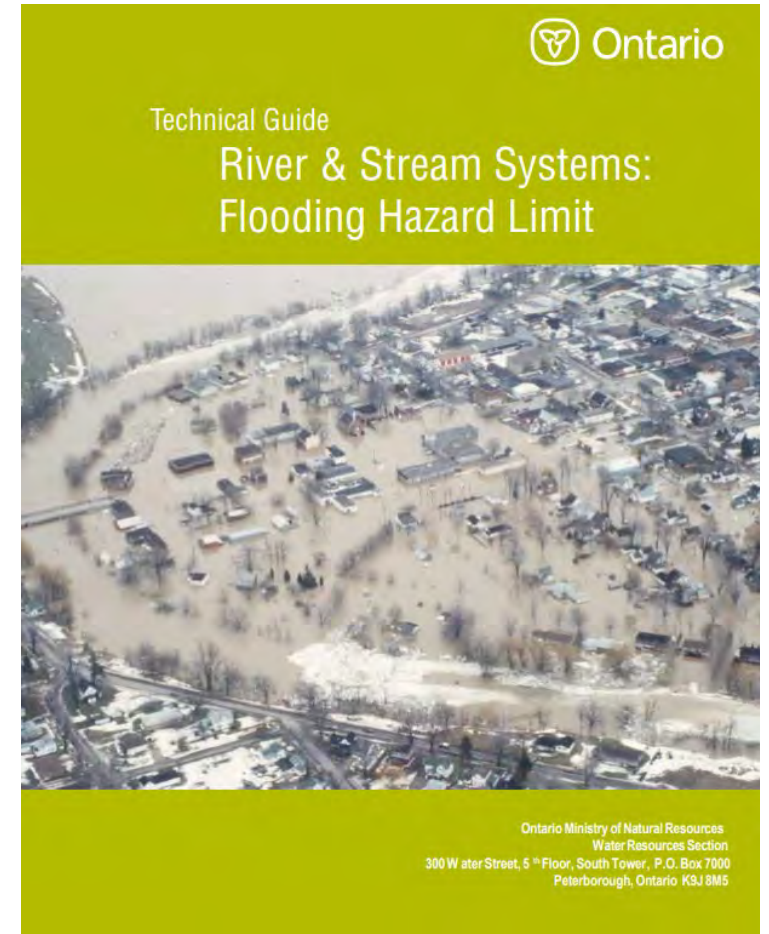
Floodplain Map: 1:100 year and 1:200 year



Oswego Creek Floodplain Mapping

Guidelines for Creating Floodplain Maps

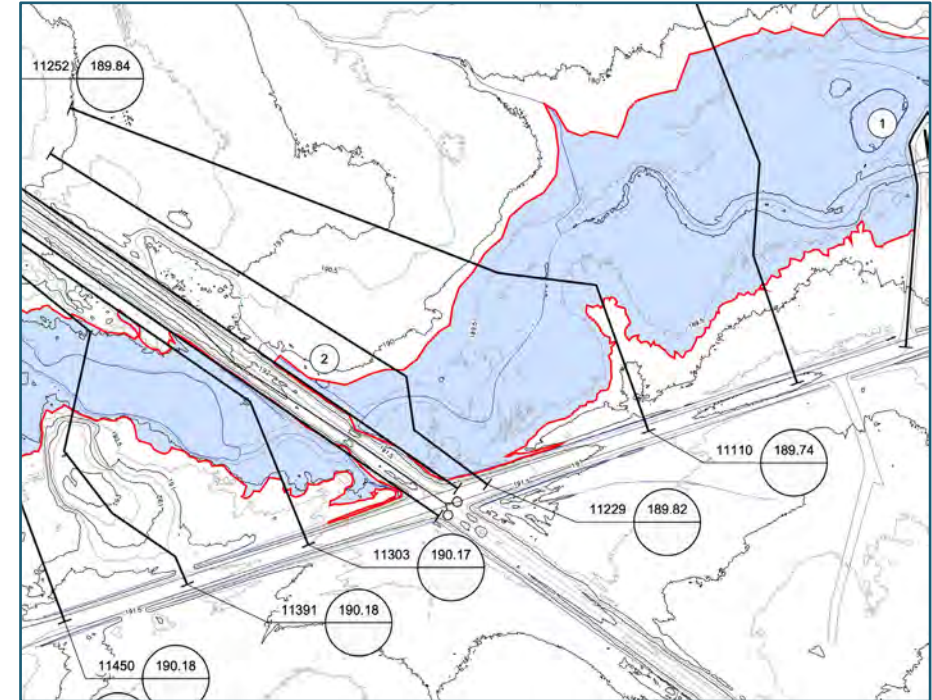
- Floodplain mapping must be undertaken in a manner consistent with the Provincial Technical Guide for River and Stream Systems.
- This guide is used by all Conservation Authorities undertaking floodplain mapping projects.



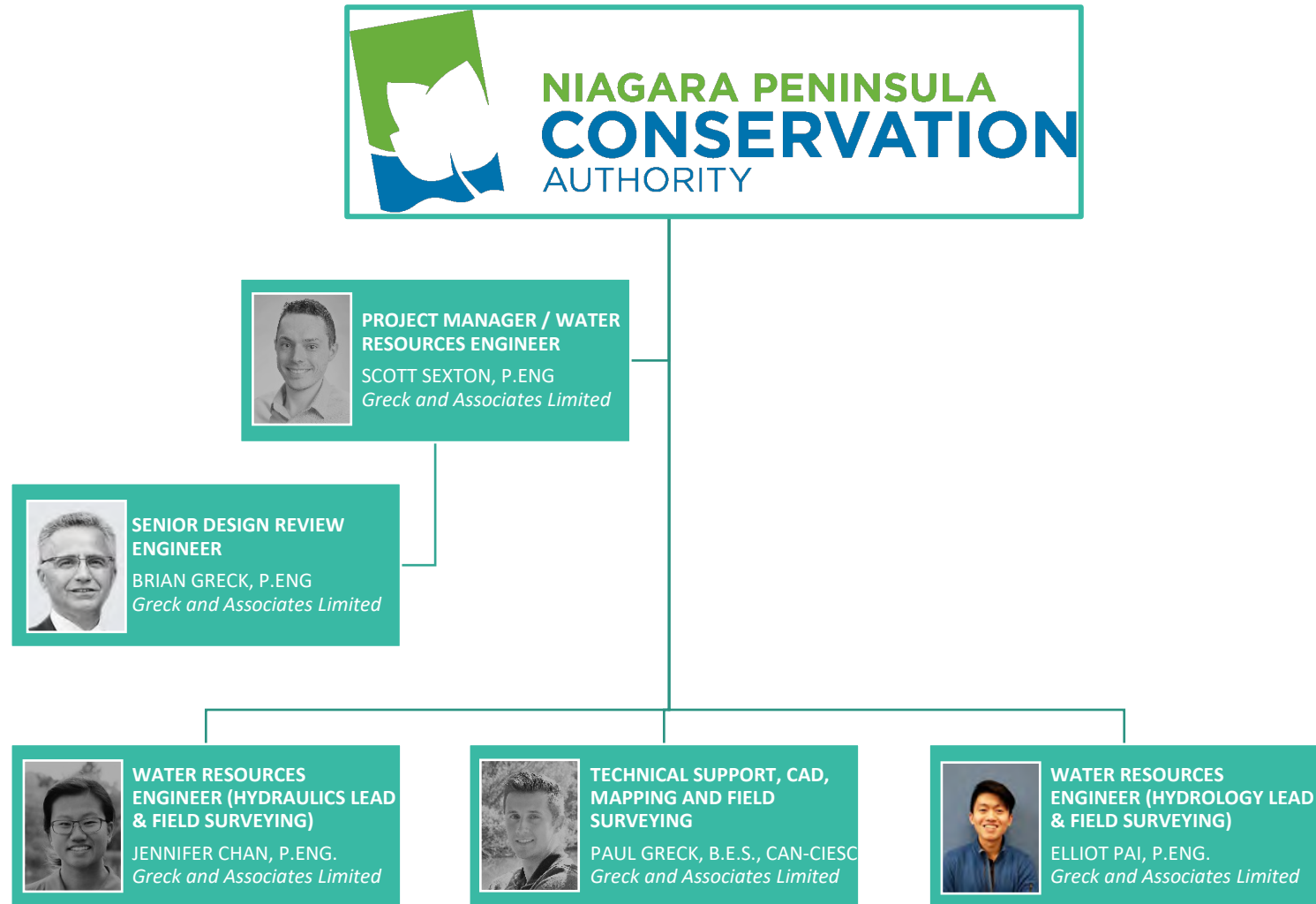
Oswego Creek Floodplain Mapping

What are the key steps in preparing a floodplain map?

- Base Mapping
- Calculate the 1:100 year flow rate
- Survey bridges and culverts
- Develop a computer model that combines all of the above to estimate flood elevations
- Prepare the floodplain maps

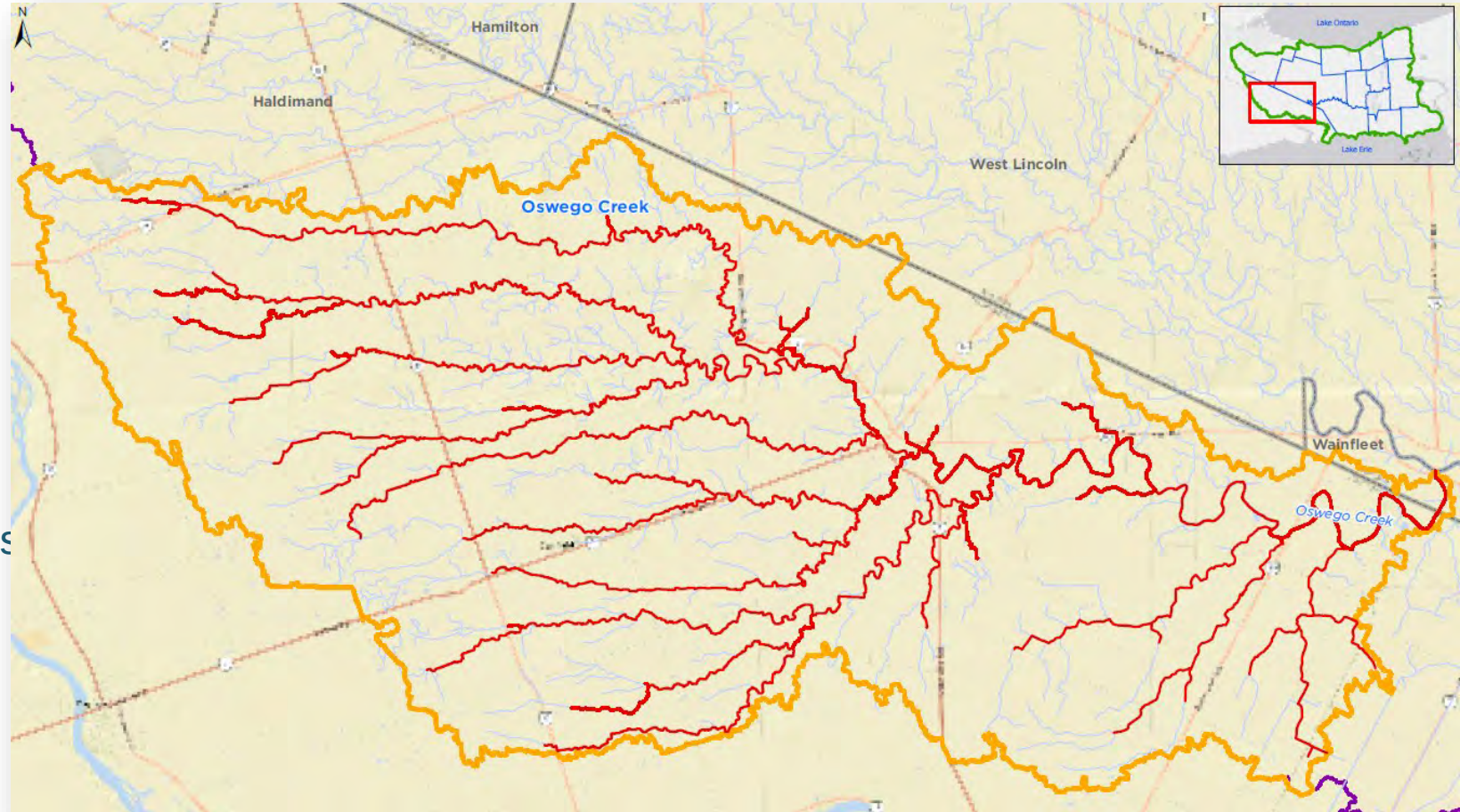


Greck and Associates Limited (GRECK)- Who We Are

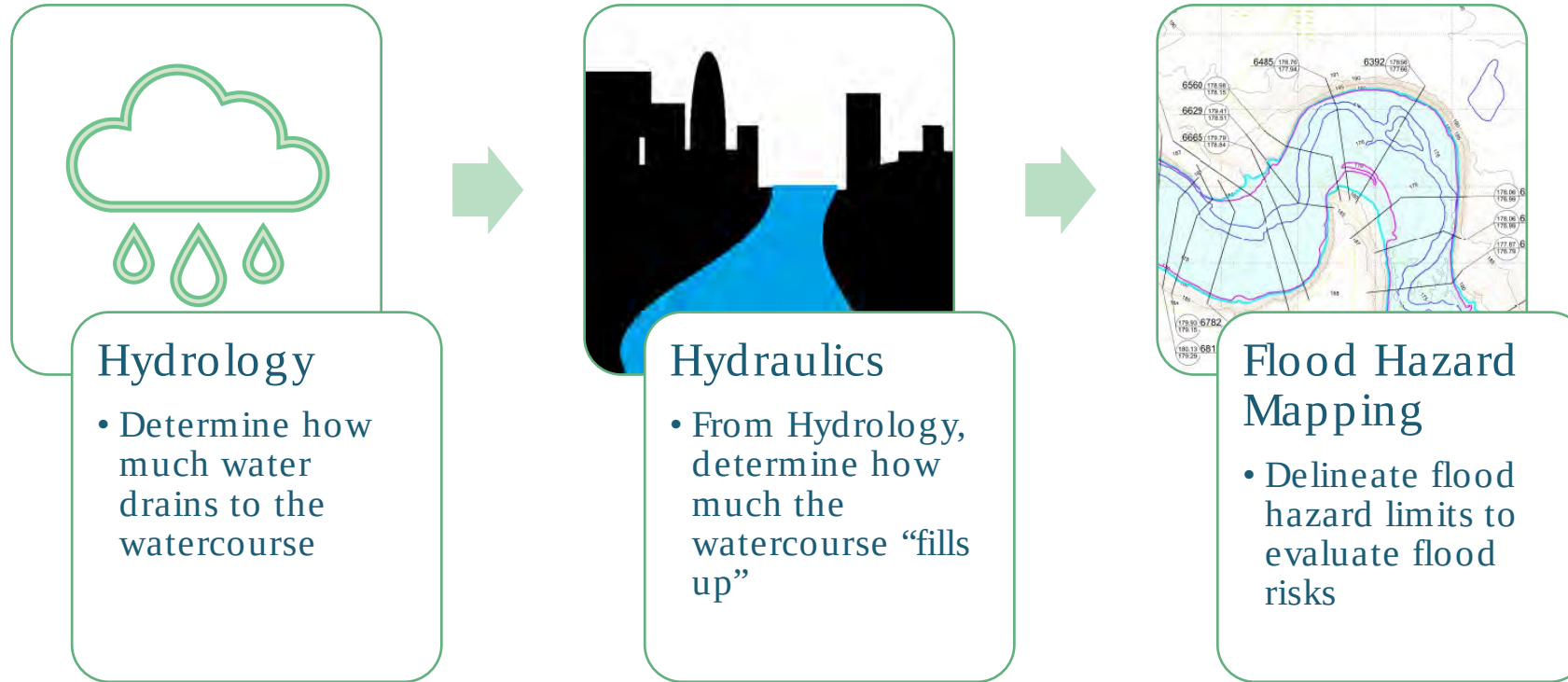


Oswego Creek Watershed

- 187km² subwatershed area of the Welland River
- Primarily rural/agricultural landuses
- Limited surface imperviousness from urbanization
- Underlying soils primarily clay/silty clays with low infiltration potential
- Relatively flat topography, with meandering (windy) watercourses
- Features one (1) flow gauge, located in Canborough
- Limited rain gauge data (at Welland River)

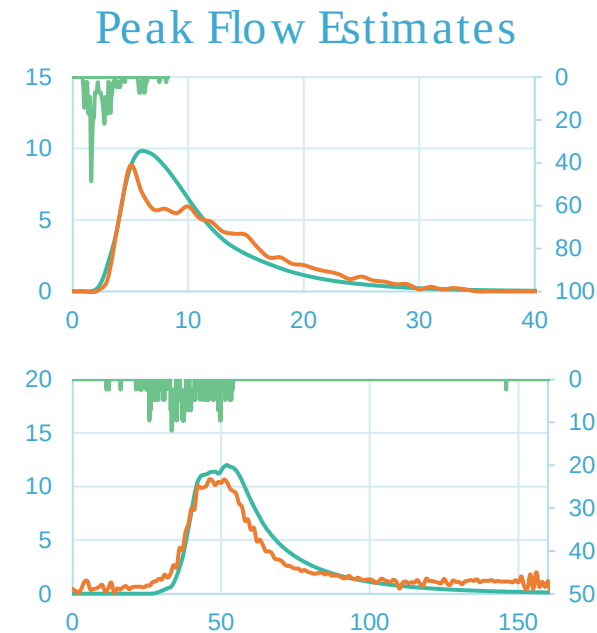
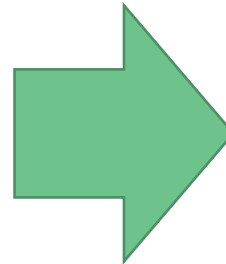
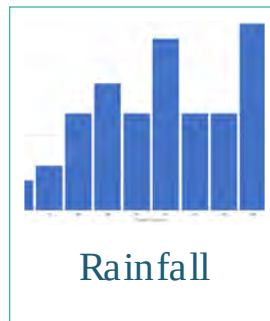
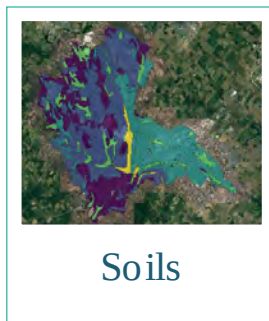
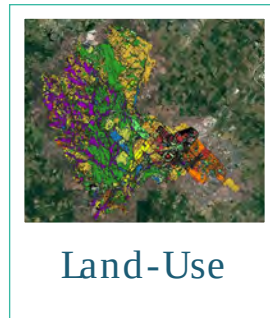
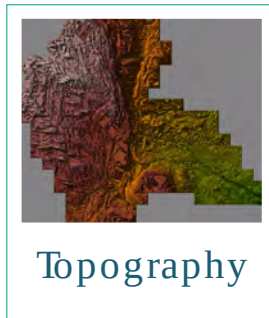


Oswego Creek: How Are Flood Hazard Determined?



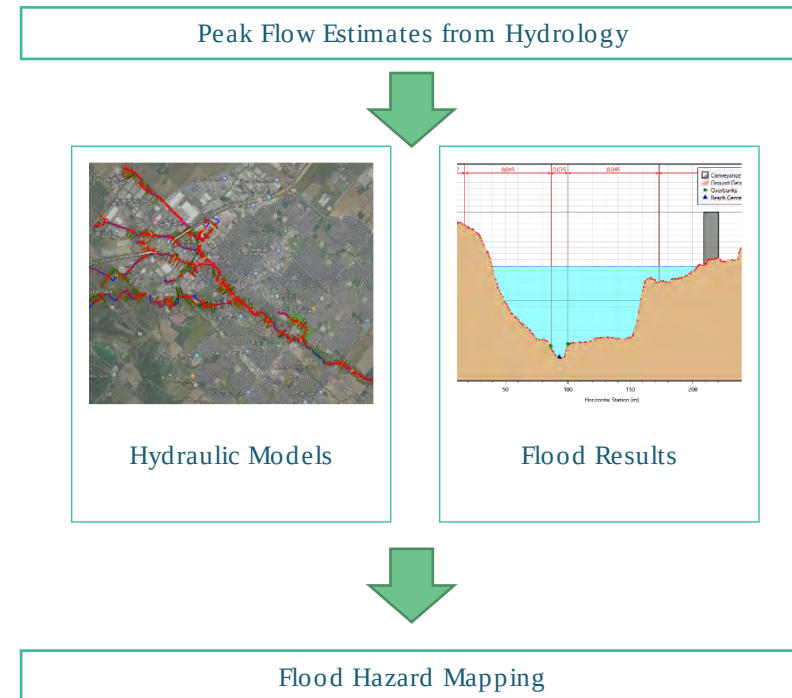
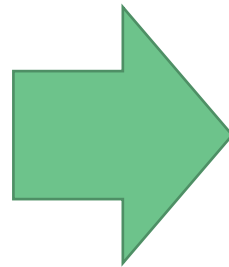
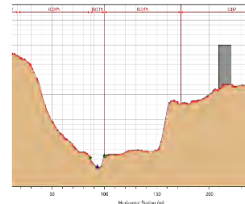
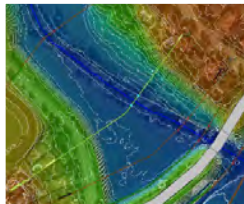
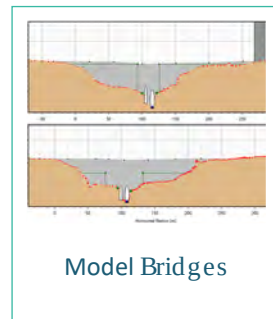
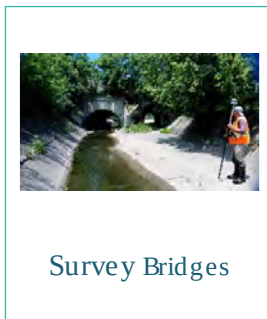
Oswego Creek: Hydrologic Analyses

- To estimate peak flow rates throughout the watershed, a computer-based hydrologic simulation model will be developed incorporating the land-use, soils, drainage patterns and rainfall data
- Topographic (elevation) information was captured using LiDAR and used to determine overall drainage patterns, or “sub-catchments



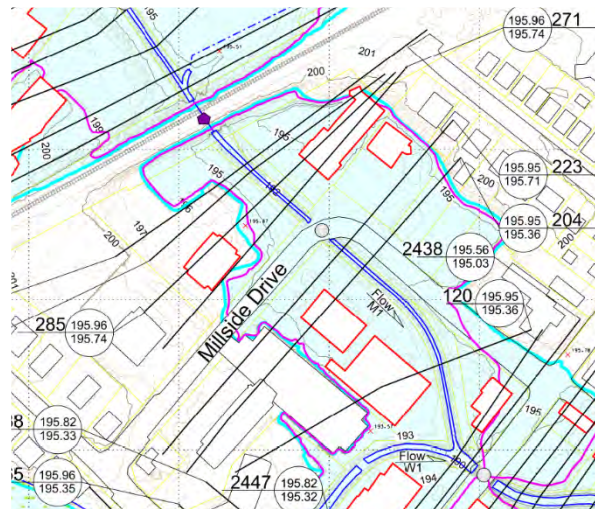
Oswego Creek: Hydraulic Analyses

- A field investigation and a computer based hydraulic simulation model will be completed to predict flood elevations and the extent of flooding throughout the study area
- The hydraulic model will evaluate the impacts of bridges, river and valley geometry, building obstructions, surface roughness to determine flood elevations using flow rates determined from the hydrologic model



Oswego Creek: Flood Hazard Mapping

- Results from the hydrologic and hydraulic modelling will be presented in overall flood hazard mapping
- Flood Hazard Mapsheets will display the Regulatory storm (100-year) floodlines to define the “Regulatory” flood hazard limit



Flood Hazard Mapping Example

Project Timeline & Key Milestones

Key Milestone	Estimated Date
Public Consultation – Project Initiation	April 13 th , 2023
Field Program	May 1 st , 2023, to July 31 st , 2023
30% Design Submission	May 24 th , 2023
60% Design Submission	September 4 th , 2023
Public Consultation #2	October 2 nd , 2023
90% Design Submission	December 18 th , 2023
Final Draft Submission	January 22 nd , 2024
Public Consultation #3	February 19 th , 2024
Final Submission	March 11 th , 2024



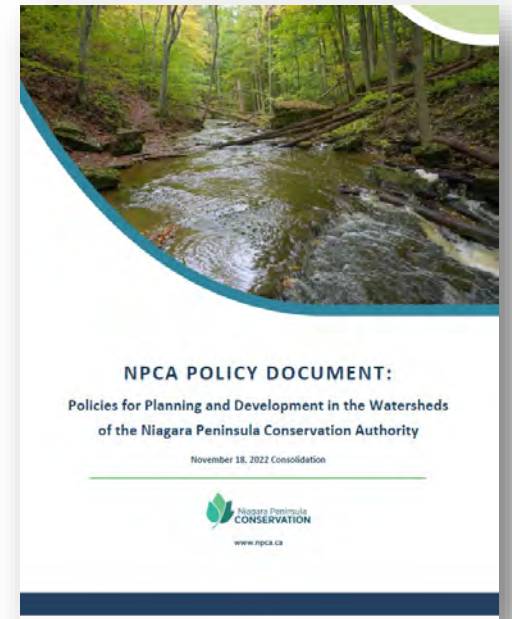
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NPCA FLOODPLAIN POLICIES

April 2023

David Deluce, MCIP, RPP
Senior Manager, Environmental Planning and Policy



Legislative Context

- *Conservation Authorities Act* – Section 28
- *Ontario Regulation 155/06*
 - Subsection 2(1) – Development prohibited; and
 - Subsection 3(1) – Permission to Develop
 - New Regulation expected in the future
- *Planning Act*
 - Section 3 – Provincial Policy Statement, Natural Hazards



NPCA Policies

- Current policies approved November 2022
- Policies guide NPCA decision making
- Policies will need to be updated following Provincial approval of a new Conservation Authorities Act s.28 Regulation



What is Allowed?

- Passive open space uses
- Accessory structures (subject to criteria)
- Additions to existing buildings (up to 46.5 square metres)
- New agricultural buildings (subject to criteria)
- Up to 50 cubic metres of clean fill
- Balanced cut and fill
- Other uses not likely to incur damage from floodwaters



What is Not Allowed?

- Sensitive uses, such as hospitals, nursing homes, day-cares/pre-schools and schools
- Emergency services facilities
- Uses associated with the disposal, treatment, manufacturing/processing or storage of hazardous substances
- Any other use or development deemed to be inappropriate based on the objectives stated in 6.2.1.

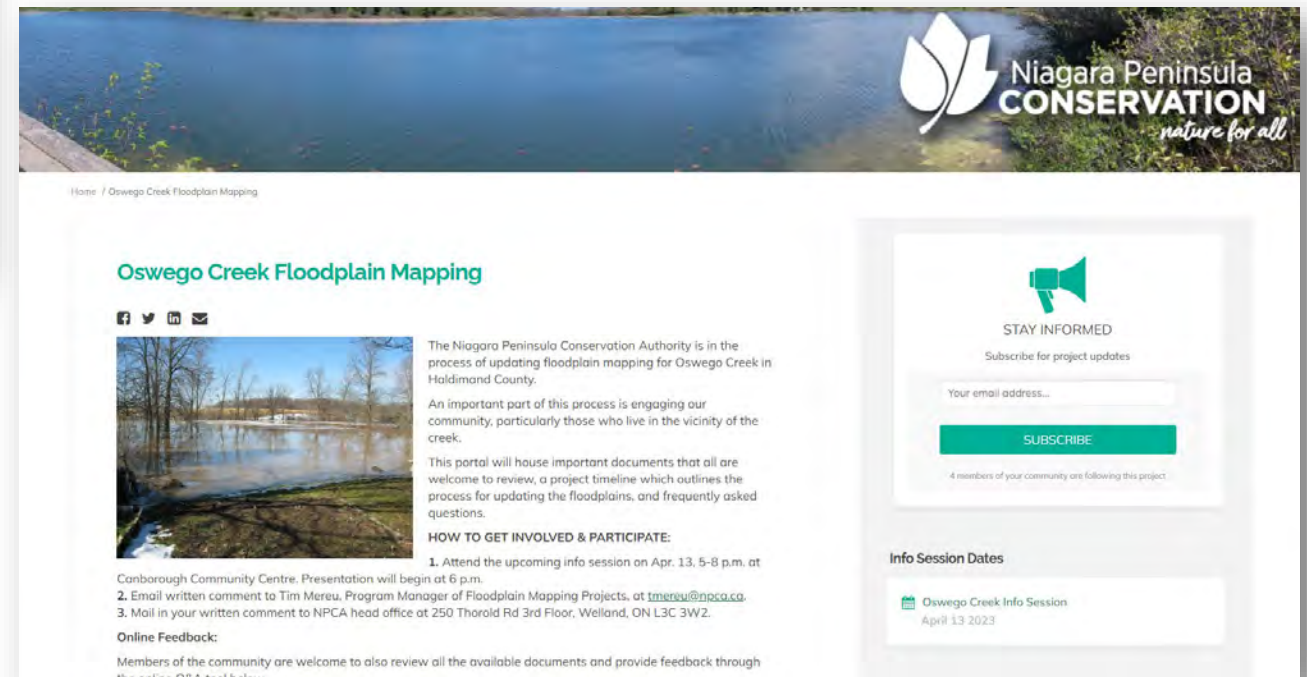
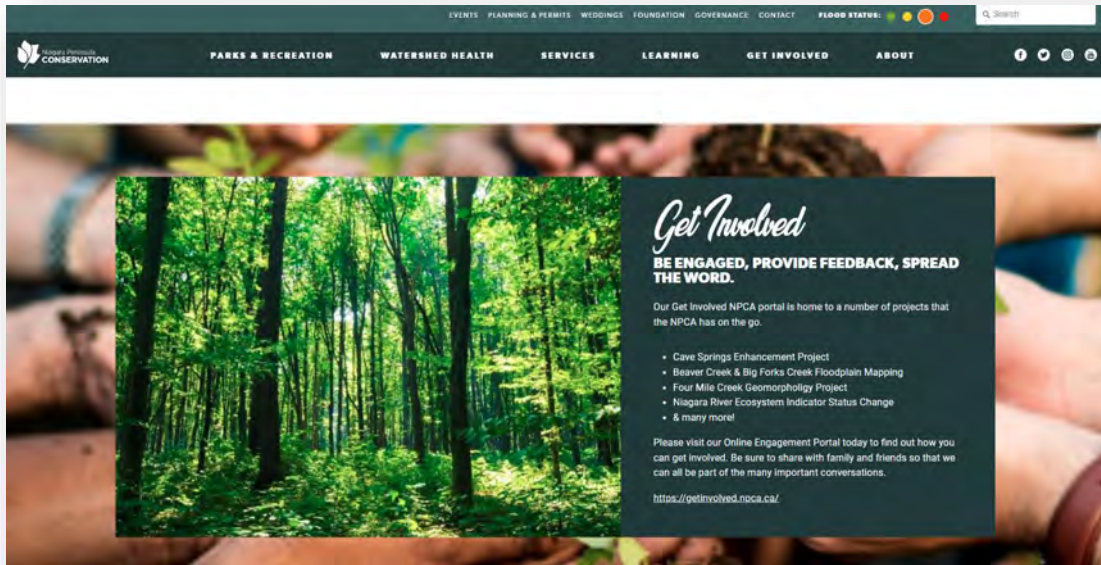


NPCA Role in Planning Applications

- Conservation Authorities required by Province to review applications for:
 - Consistency with Natural Hazards Policies of the Provincial Policy Statement
 - Conformity with Natural Hazards Policies of any applicable Provincial Plan
- NPCA seeks to avoid situations where a Planning approval is given but an NPCA Permit cannot be supported

Stay Informed and Have Your Say

www.npca.ca





Thank you!

Questions?

Leilani Lee-Yates, Director, Planning and Development, NPCA

Tim Mereu, Program Manager, NPCA

Brian Greck, Project Director, Greck and Associates Limited

David Deluce, Senior Manager, Environmental Planning & Policy, NPCA