Niagara Peninsula CONSERVATION

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Coyle Creek and Draper's Creek Floodplain Mapping

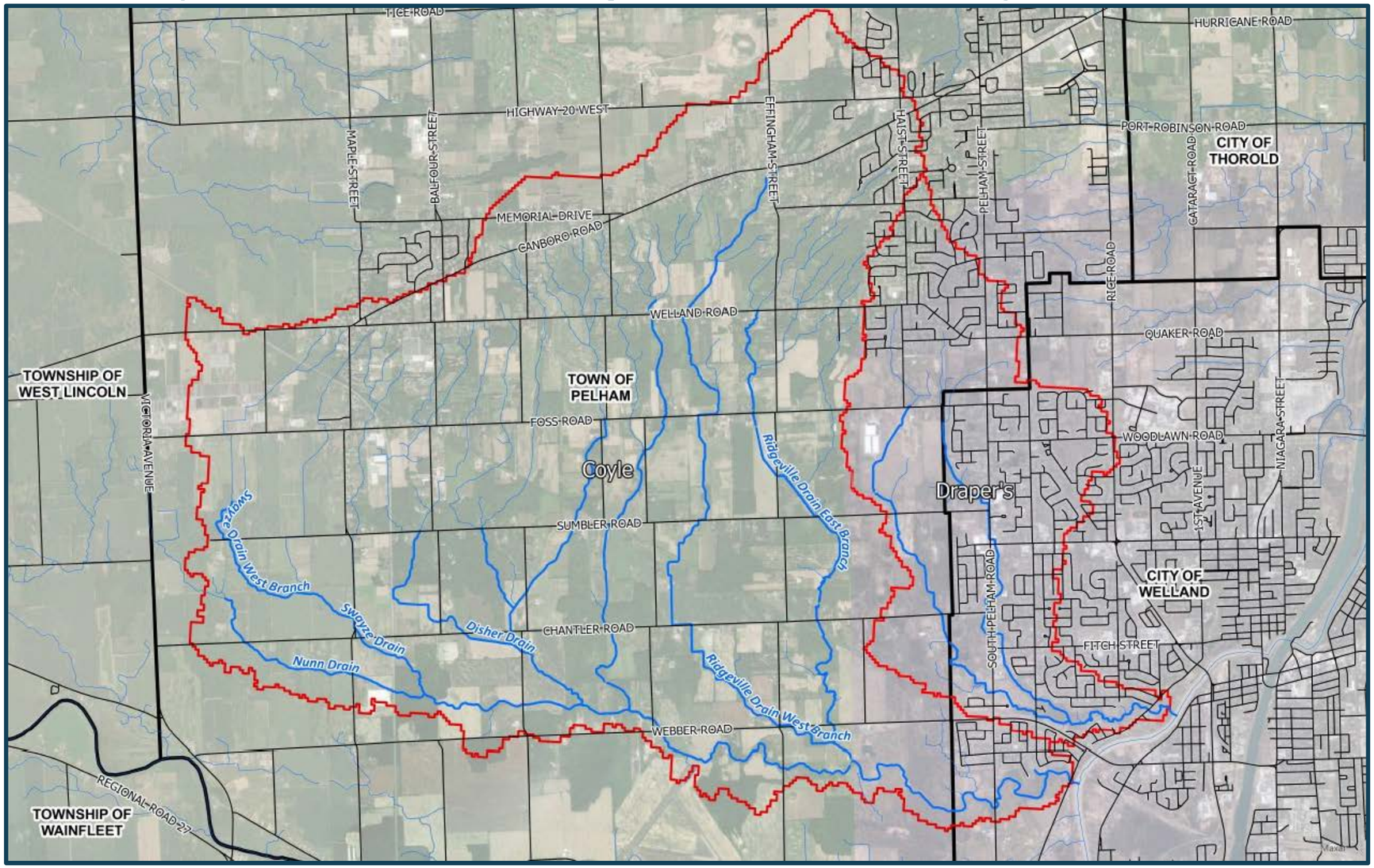
First Public Engagement Meeting
April 11, 2023

Coyle Creek and Draper's Creek Floodplain Mapping
First Public Engagement Meeting

Speakers

- **Leilani Lee-Yates, Director, Planning and Development, NPCA**
- **Tim Mereu, Program Manager, NPCA**
- **Rob Amos, Project Manager, Aquafor Beech Ltd.**
- **David Deluce, Senior Manager, Environmental Planning & Policy, NPCA**

Coyle Creek and Draper's Creek Study Area



Flooding Does Happen – It is serious and it is costly

dddd



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





The Calgary flood of 2013 caused $5 billion of damages.

Coyle Creek and Draper's Creek Floodplain Mapping

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

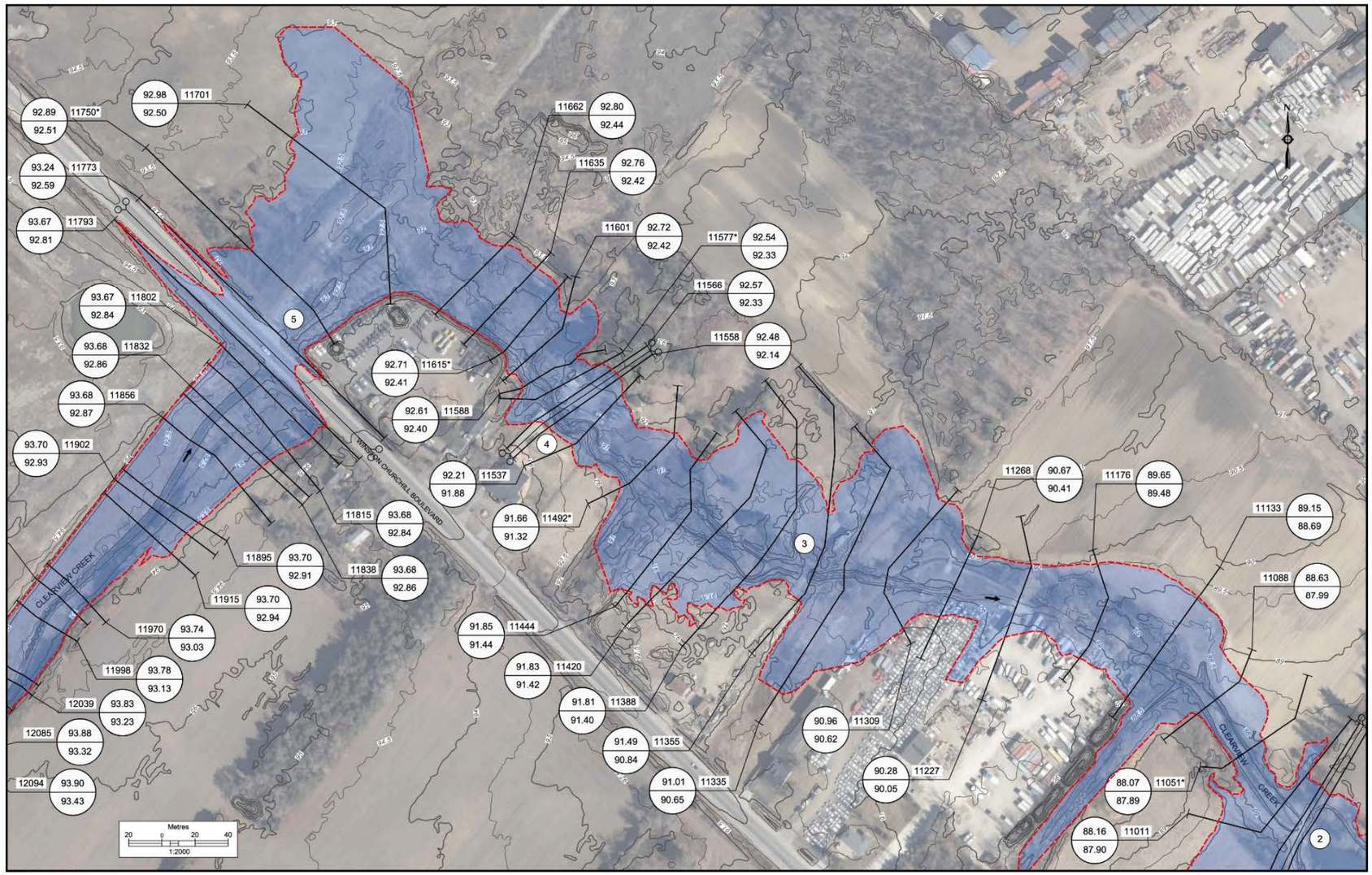


- **Create floodplain maps that illustrate the <u>frequency</u> and <u>depth</u> of flooding**
- **Manage development in the floodplain**

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.

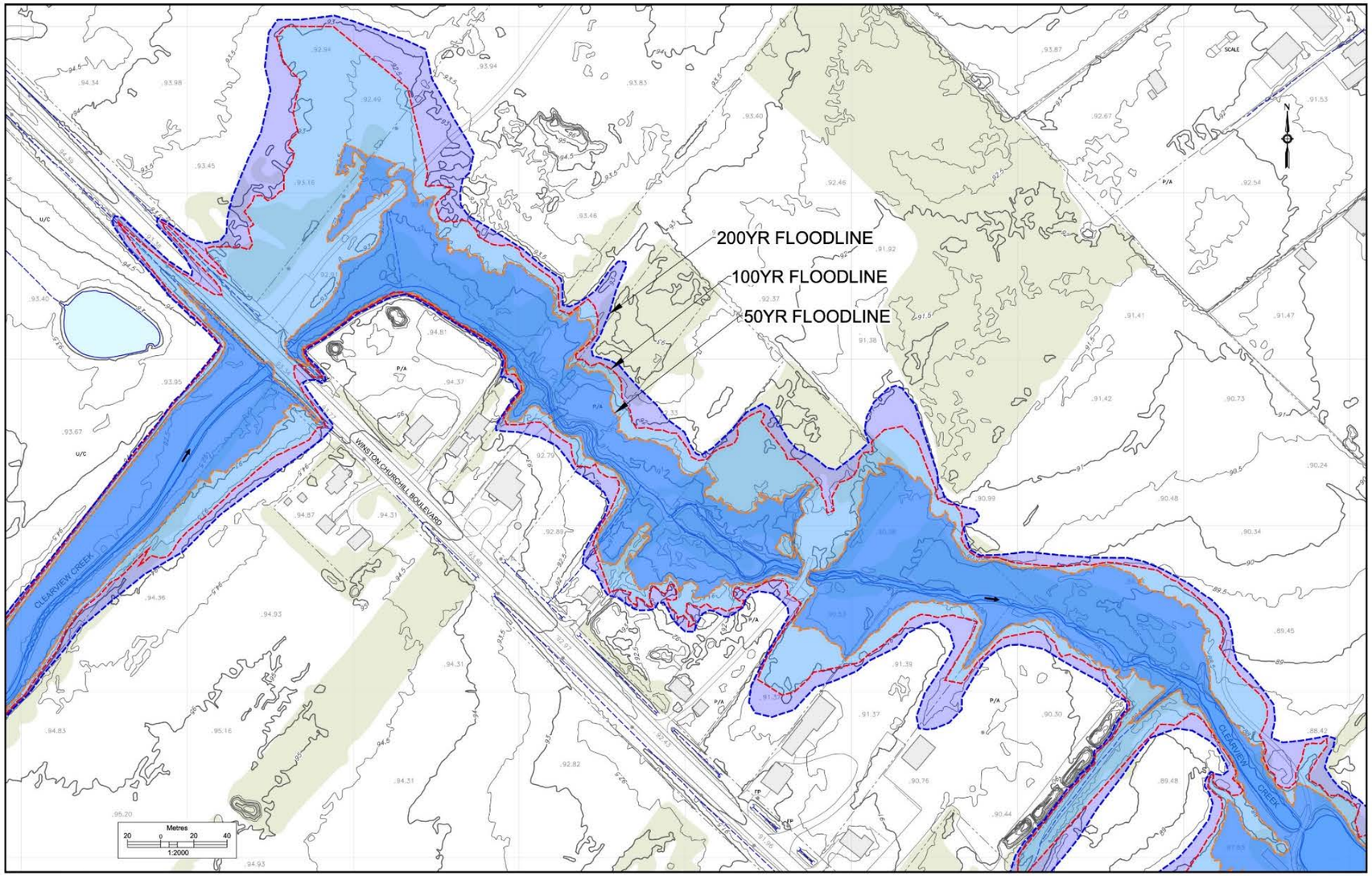


What is the 1:100 year flood and why is it used to map and regulate floodplains?

- 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



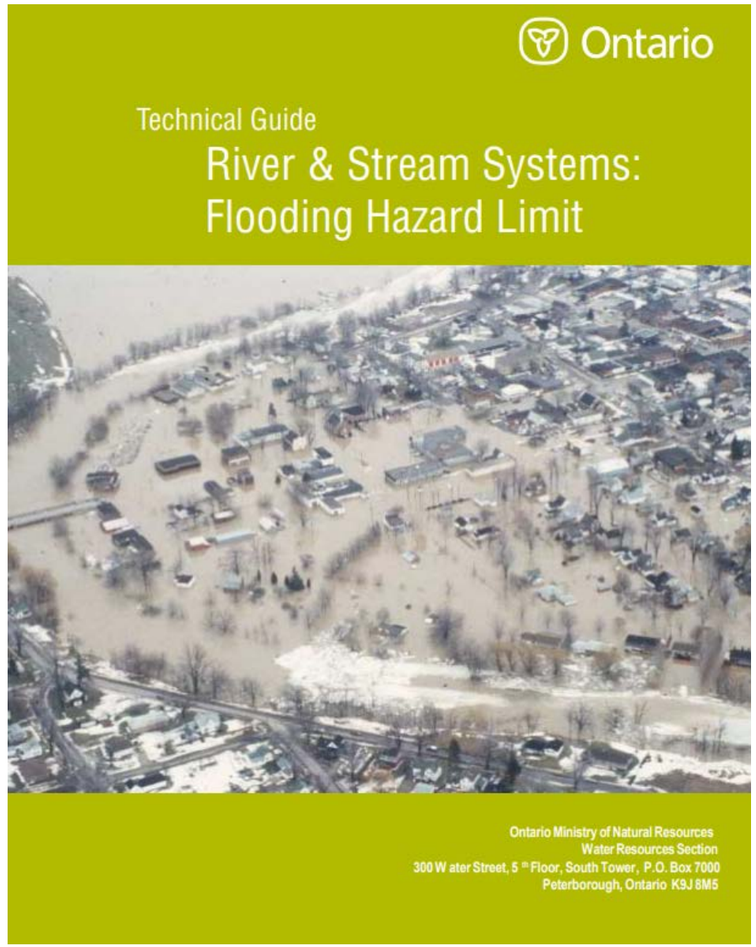
Floodplain Map: 1:50 year, 1:100 year; 1:200 year



Guidelines for Creating Floodplain Maps

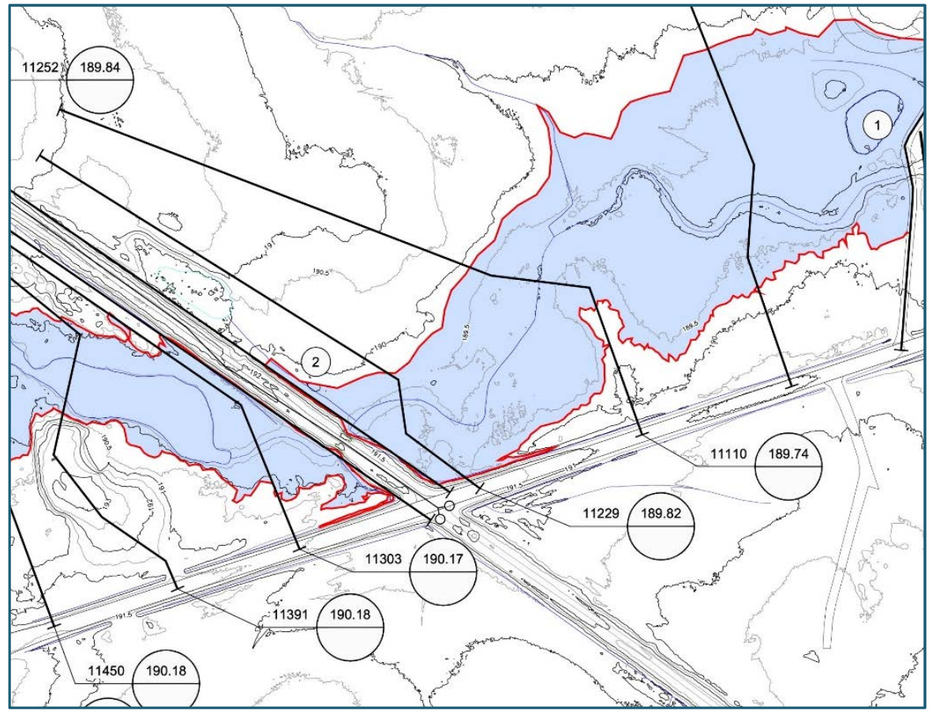
- **Floodplain mapping must be undertaken in a manner consistent with the Provincial Technical Guide for River and Stream Systems.**

- **This guide is used by all Conservation Authorities undertaking floodplain mapping projects.**



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**



Aquafor Beech Limited

Company Profile:

- **Aquafor Beech Limited (Aquafor) is a Canadian company, incorporated in 1990, providing engineering and environmental services to a broad range of public (e.g., municipalities, conservation authorities) and private sector clients.**
- **Specific Area of Expertise:**
  - **Hydrologic & hydraulic modelling for flood hazard delineation & Regulatory Floodplain mapping**
  - **Development of Stormwater Management Master Plans**
  - **Watershed planning**
  - **Natural channel and hydraulic structure design**
- **Aquafor Employes: 55**
- **Two Offices: Mississauga (head office) & Guelph**
- **Project Experience: CANADA - Ontario, BC, Labrador, USA – Vermont, Texas, California**

Aquafor's Team

Attending Person:
Rob Amos, Project Manager
amos.r@aquaforbeech.com
416.705.2367

Coyle & Draper's Creeks Floodplain Mapping Study

NIAGARA PENINSULA CONSERVATION AUTHORITY & Aquafor Beech Limited

PROJECT MANAGEMENT SUPPORT
Senior Project Advisor & QA/QC
Dave Maunder, MSc., P.Eng.

Project Manager
Rob Amos, MASc., P.Eng.

BACKGROUND REVIEW & FIELD WORK

Background Review

Background Review Lead
Dave Maunder, MSc., P.Eng

Hydrologic
Tim Koen, B.Sc., P.Eng

Hydraulics
Julie Michel, MSc., EIT

GIS
Jakub Ripley, B.A

Field Work and Data Collection

Field Work Lead
Rob Amos, MASc., P.Eng

Survey
Alex Verville, B.A
Jakub Ripley, B.A

Hydraulics
Julie Michel, MSc., EIT

MODELLING

Hydrologic Modelling

Hydrologic Modelling Lead
Tim Koen, B.Sc., P.Eng

Hydrologic Support
Kyle Haley, BASc., P.Eng
Gabriel Dubé, MSc., EIT

Hydrologic Modelling Technologist
Julie Michel, MSc., EIT

Hydraulic Modelling

Hydraulic Modelling Lead
Kyle Haley, BASc., P.Eng

Hydraulic Support
Julie Michel, MSc., EIT

Hydraulic Modelling Technologist
Gabriel Dubé, MSc., EIT

TECHINCAL MEMO, REPORTS and MAPPING

Deliverables

Coordinator / Reviewer
Rob Amos, MASc., P.Eng
Dave Maunder, MSc., P.Eng

Hydrologic Report Writing Lead
Tim Koen, B.Sc., P.Eng

Hydraulic Report Writing Lead
Kyle Haley, BASc., P.Eng

GIS & Floodplain Mapping
Alex Verville, B.A
Jakub Ripley, B.A

Hydrologic/Hydraulic Report Writing Support
Gabriel Dubé, MSc., EIT
Julie Michel, MSc., EIT

PUBLIC CONSULTATION

Public Consultation

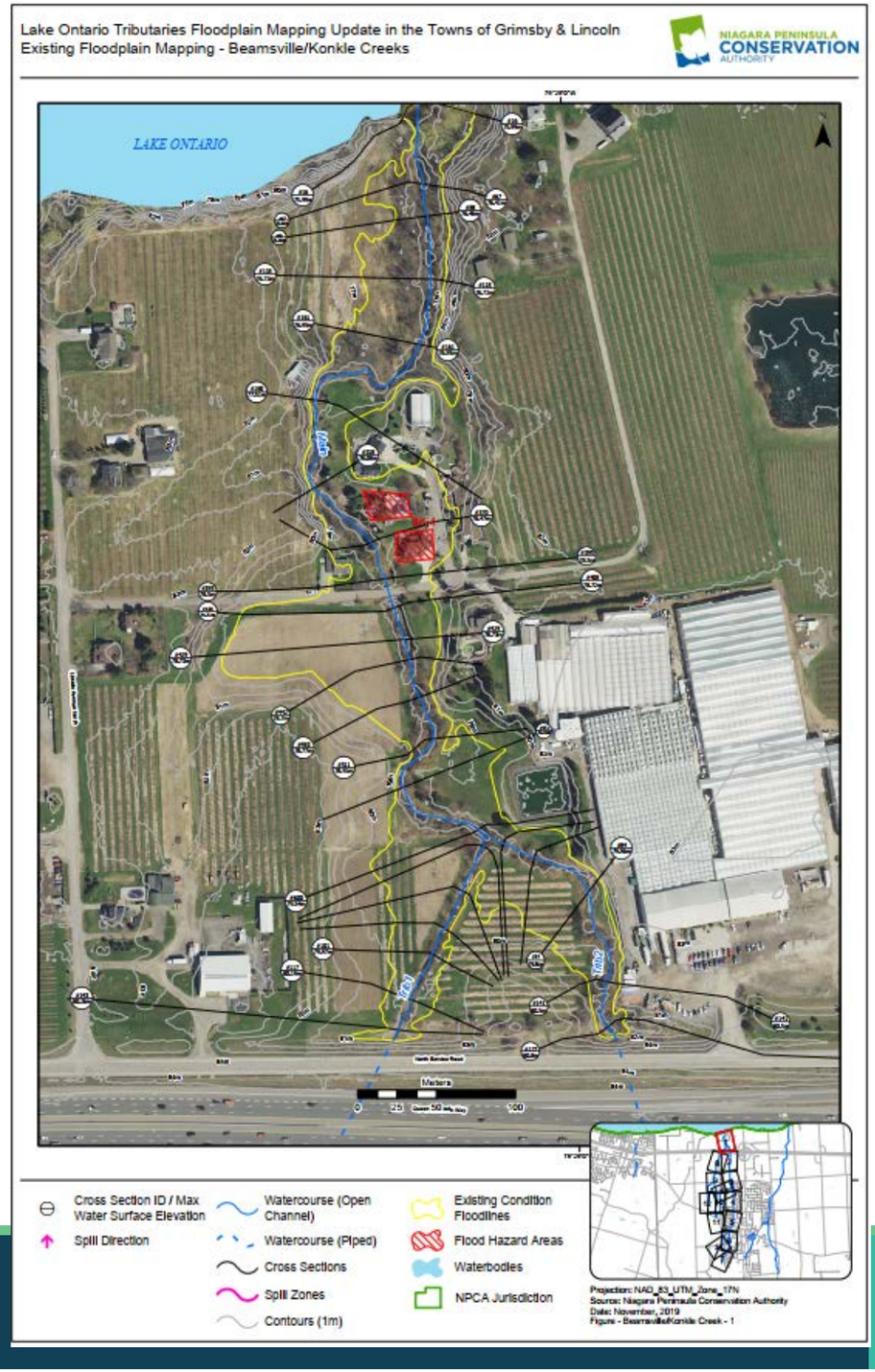
Lead / Coordinator
Rob Amos, MSc., P.Eng

Methodology & Milestones

- **P.I.S. # 1: 11th April, 2023**
- **Task 1: Field Inventory and Survey work à 3rd week of May 2023**
  - **Field reconnaissance & Topographic survey**
- **Task 2: Hydrologic Modelling à Middle of August 2023**
  - **Estimate the stream flows at key locations**
- **Task 3: Hydraulic Modelling à First Week of September 2023**
  - **Estimate the water surface elevation all along the creek**
- **P.I.S. # 2: 2nd week of September, 2023**
- **Task 4: Develop Floodplain Mapping**
  - **Identify the Regulatory Floodplain Mapping (Regulated Area)**
  - **Draft: 2nd week of October 2023**
  - **Final: last week of February 2024**
- **P.I.S. # 3: 1st week of February, 2024**
- **Task 5: Flood Hazard Assessment and Flood Mitigation Recommendations**
  - **Identify the flood issues (Roads, Properties, Buildings) &Propose Mitigation Measures**
  - **Draft: Last week of October 2023**
  - **Final: last week of February 2024**

Sample Floodplain Map:

Towns of Grimsby and Lincoln Floodplain Mapping Study – Completed by Aquafor in 2018/2019



Niagara Peninsula CONSERVATION
nature for all

NPCA FLOODPLAIN POLICIES

April 2023



NPCA POLICY DOCUMENT:

Policies for Planning and Development in the Watersheds of the Niagara Peninsula Conservation Authority

November 18, 2022 Consolidation

Niagara Peninsula CONSERVATION

www.npca.ca

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 Polices



- 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?

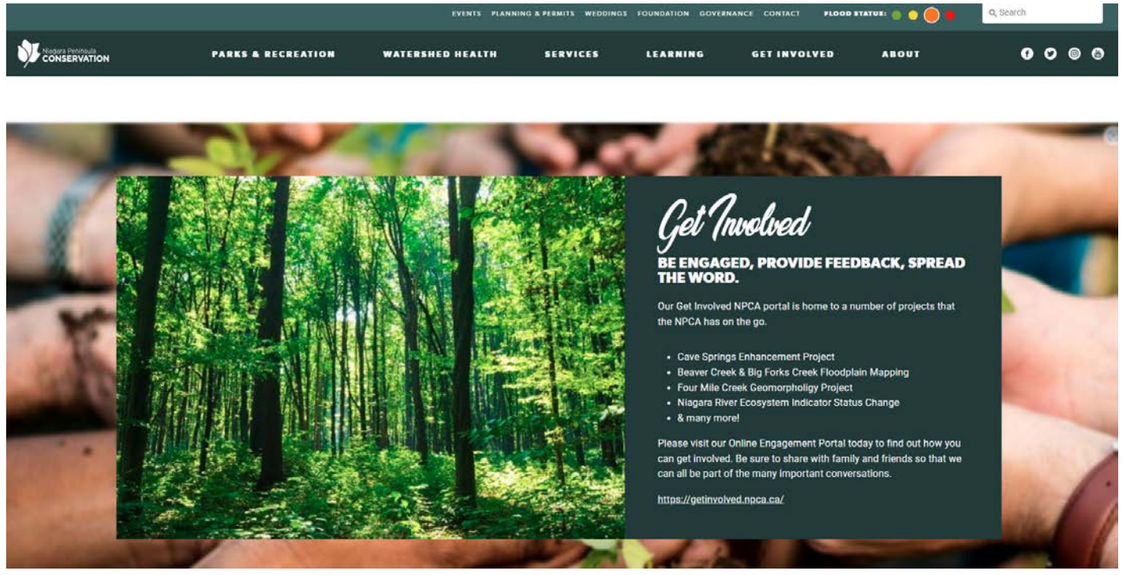
- Sensitive uses, such as hospitals, nursing homes, day-cares/pre-schools and schools
- Emergency services facilities
- Uses associated with the disposal, treatment, manufacturing/processing or storage of hazardous substances
- Any other use or development deemed to be inappropriate based on the objectives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

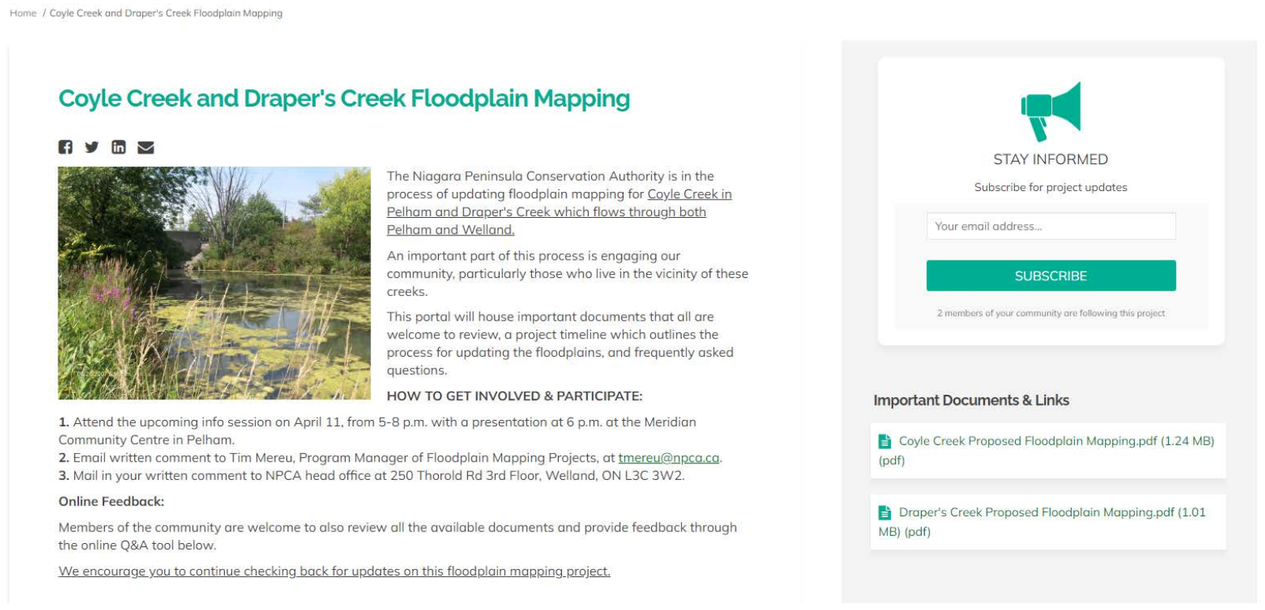


NPCA Role in Planning Applications

- 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
Rob Amos, Project Manager, Aquafor Beech Ltd.
David Deluce, Senior Manager, Environmental Planning & Policy, NPCA