CONSERVATION HALTON:
URBAN MILTON
FLOOD HAZARD MAPPING STUDY

PUBLIC ENGAGEMENT SESSION #3
February 22, 2023

Conservation Halton

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WELCOME: AGENDA

1. Welcome & Introductions
2. About Conservation Halton and Flood Hazards
3. Urban Milton Flood Hazard Mapping Study Overview
4. Updated Draft Flood Hazard Mapping
5. Questions & Discussion
6. Next Steps

LAND ACKNOWLEDGEMENT

Halton is rich in history and modern traditions of many First Nations and Métis. From the Anishinaabe to the Attawandaron, the Wendat, the Haudenosaunee and the Métis – these lands surrounding the Great Lakes are steeped in Indigenous history. As we gather today on these treaty lands, we have the responsibility to honour and respect the four directions, land, waters, plants, animals, and ancestors that walked before us and all the wonderful elements of creation.

We acknowledge and thank the Mississaugas of the Credit First Nation for the opportunity to work in their traditional territory.

momentum

GREEN • RESILIENT • CONNECTED

OUR PURPOSE

Protect people from natural hazards, conserve nature and provide opportunities for outdoor recreation and education across our watershed.

OUR AMBITION

A green, resilient, connected tomorrow.

CONSERVATION HALTON: PRIORITIES

EDUCATION, EMPOWERMENT & ENGAGEMENT

NATURE & PARKS

SCIENCE, CONSERVATION & RESTORATION

DIGITAL TRANSFORMATION & INNOVATION

NATURAL HAZARDS & WATER

ORGANIZATIONAL SUSTAINABILITY

PEOPLE & TALENT

NATURAL HAZARDS & WATER

Protect people, property, drinking water sources and natural resources to support development that is in balance with the environment

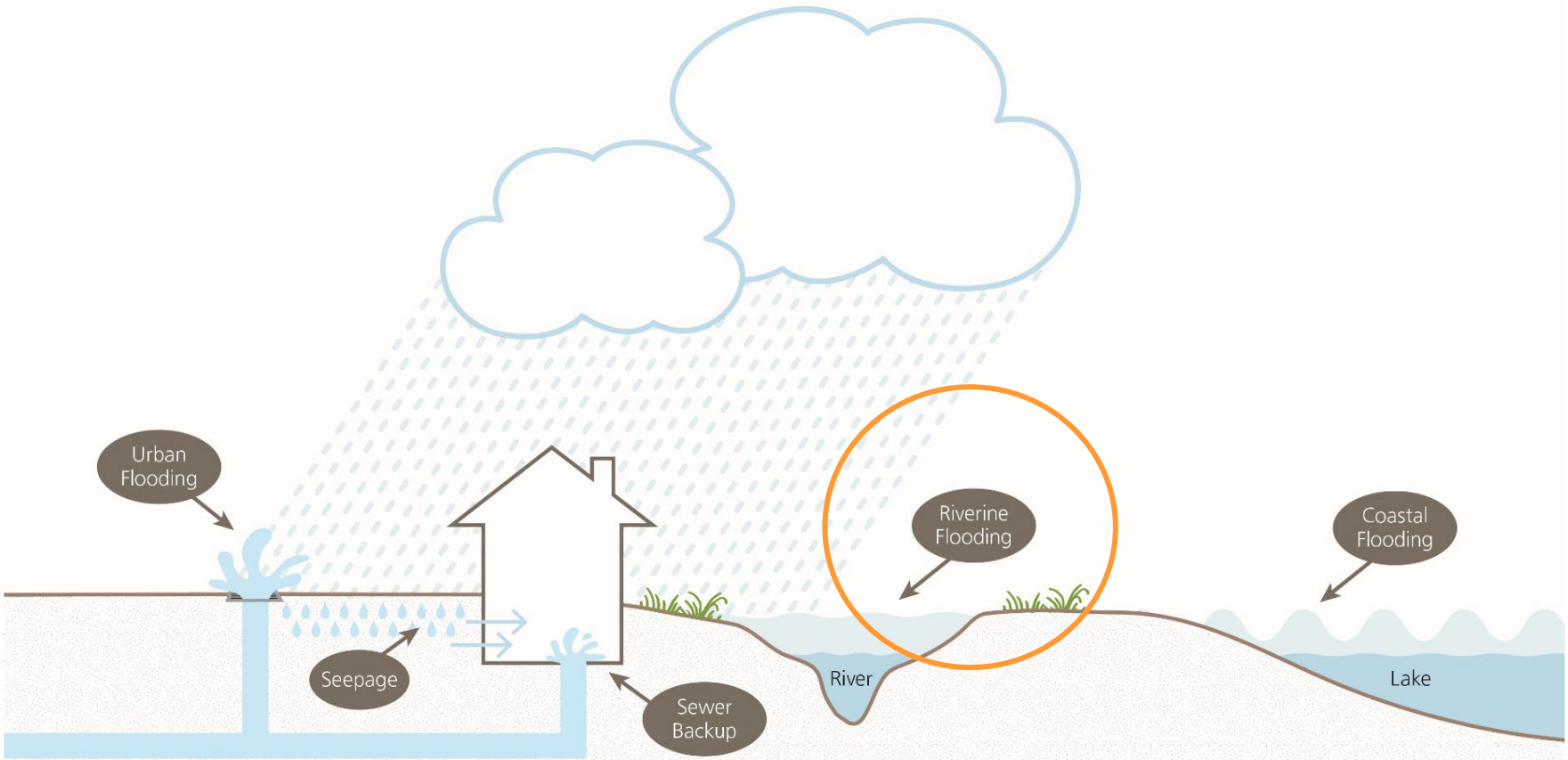
▼

Foster partnerships and identify opportunities to build mutual understanding, trust, respect, and support with watershed stakeholders

CONSERVATION HALTON: PRIORITIES

Conservation Halton's goal is to **protect people and property** from risks related to natural hazards (e.g. flooding & erosion hazards) and to make sure that existing hazards are **not worsened** and/or new hazards are **not created**

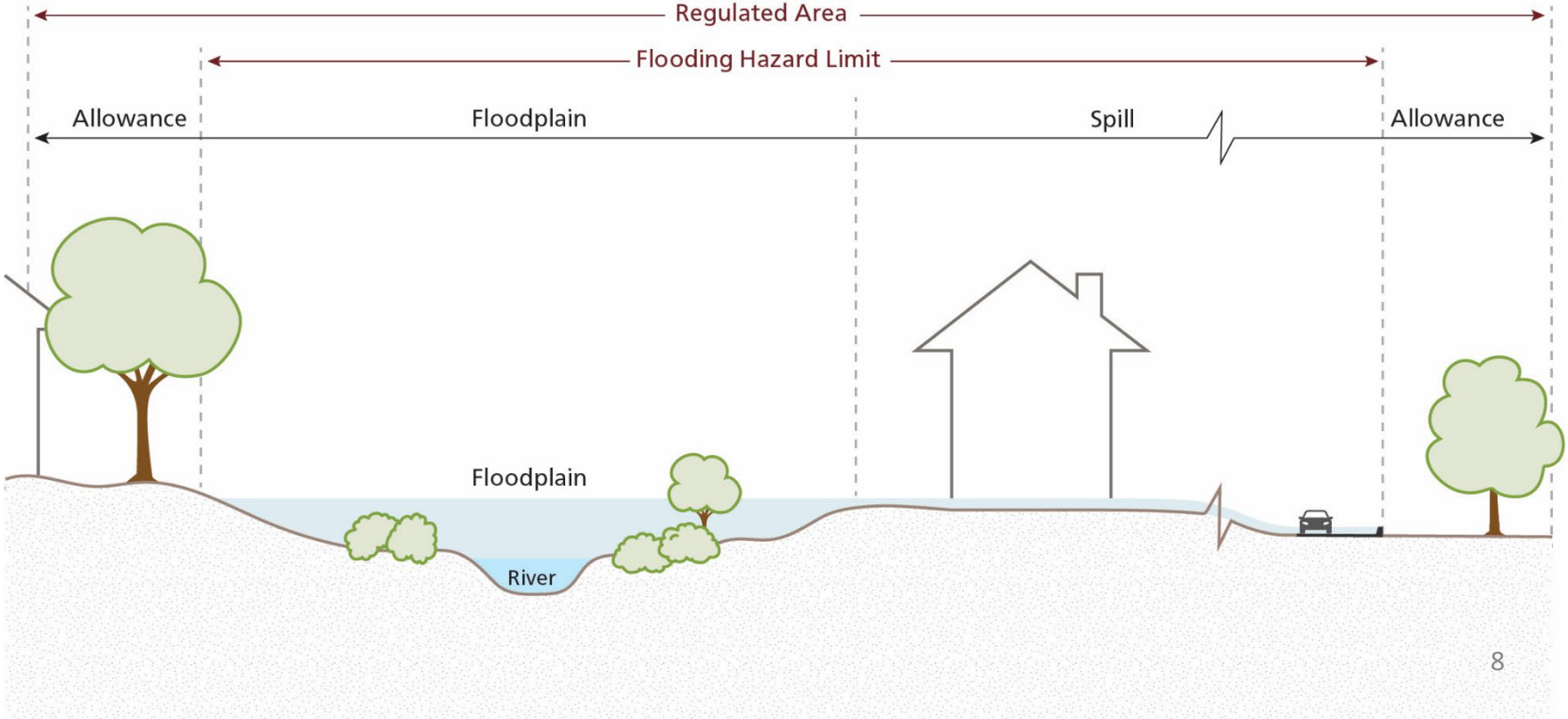
FLOOD HAZARDS: TYPES OF FLOODING



FLOOD HAZARDS: RIVERINE FLOOD HAZARDS

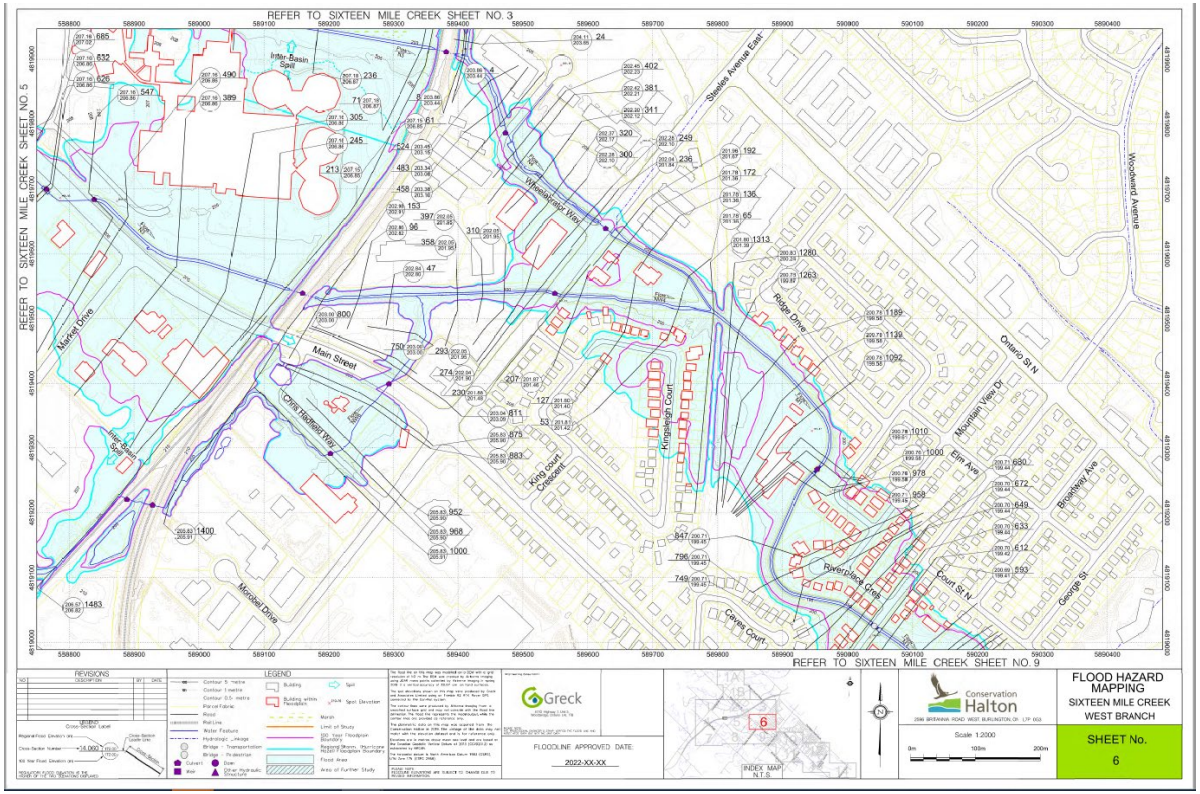
FLOODPLAIN: Area of land that is flooded by a nearby watercourse, such as a creek *(riverine)* or lake *(shoreline),* during large storm events

SPILL: When water leaves the watercourse *and* the valley and floodplain, flows into surrounding lands, and then returns to the watercourse at a distance downstream, or flows into another watershed



FLOOD HAZARDS: WHAT IS FLOOD HAZARD MAPPING?

FLOOD HAZARD MAPPING uses models to predict where riverine flooding will occur and the extent of riverine flood hazards in a given area. Flood hazard mapping ***does not create*** a flooding hazard—it shows where the hazard already exists.



FLOOD MITIGATION: ROLES & RESPONSIBILITIES

1

MUNICIPALITY

- Emergency Preparedness & Services
- Road Drainage
- Stormwater Management
- Parks & Trails
- Subwatershed Planning
- Land Use Planning & Zoning

2

REGIONAL MUNICIPALITY

- Emergency Management
- Flooding Prevention & Recovery
- Basement Flooding Subsidy
- Regional Infrastructure
- Water Quality

3

CONSERVATION AUTHORITY

- Flood Hazard Mapping & Modelling
- Flood Forecasting & Warning
- Flood Control Infrastructure
- Natural Hazard & Wetland Regulations

4

RESIDENTS

- Know the Risks: Is your property flood susceptible? Is flooding expected?
- Make a plan to protect yourself and your property
- Prepare a kit with supplies for 72 hours

CONSERVATION HALTON'S REGULATION

- Section 28 (1) of the *Conservation Authorities Act* allows conservation authorities to make regulations related to development in hazardous lands

- CH's regulation is Ontario Regulation 162/06 and its purpose is to **protect people and property** from risks related to natural hazards

CONSERVATION HALTON'S REGULATION

- Under **Ontario Regulation 162/06**, Conservation Halton regulates:
  - Watercourses
  - Valleylands
  - Wetlands
  - Lake Ontario and Hamilton Harbour Shoreline
  - Hazardous Lands
  - Lands adjacent to these features

- Permission is required from Conservation Halton to develop in regulated areas

FLOOD HAZARDS: STORM EVENTS

REGULATORY FLOOD HAZARD

- Standard approved by Province to define the limit of the regulated flood hazard
- In CH's jurisdiction, the regulatory flood hazard is based on the greater of the Regional Storm (Hurricane Hazel) or the 100 year storm event

REGIONAL STORM

- The Hurricane Hazel or Regional storm event (1954) caused more than 80 deaths and left thousands homeless in Toronto (285mm of rain in 48 hours)
- CH simulates the precipitation produced by Hurricane Hazel over the watersheds in its jurisdiction to calculate the regulatory flood hazard

100 YEAR STORM

- 1 in 100 year storm is a storm event that statistically has a 1% chance of occurring in any given year, at any given place.

URBAN MILTON FLOOD HAZARD MAPPING STUDY PURPOSE

UPDATE FLOOD HAZARD MAPPING

- Undertake comprehensive update of riverine flood hazard mapping mostly affecting western parts of existing urban areas in the Town of Milton
- Better understand flood hazards using new tools and technologies
- Update floodlines & CH's regulatory mapping

PUBLIC AND STAKEHOLDER ENGAGEMENT

- Engage with public & stakeholders to ensure they are informed about flood hazards / risks and have opportunities to share input
- Work with a Technical Advisory Committee (TAC) with reps from Halton Region, Town of Milton and Town of Halton Hills

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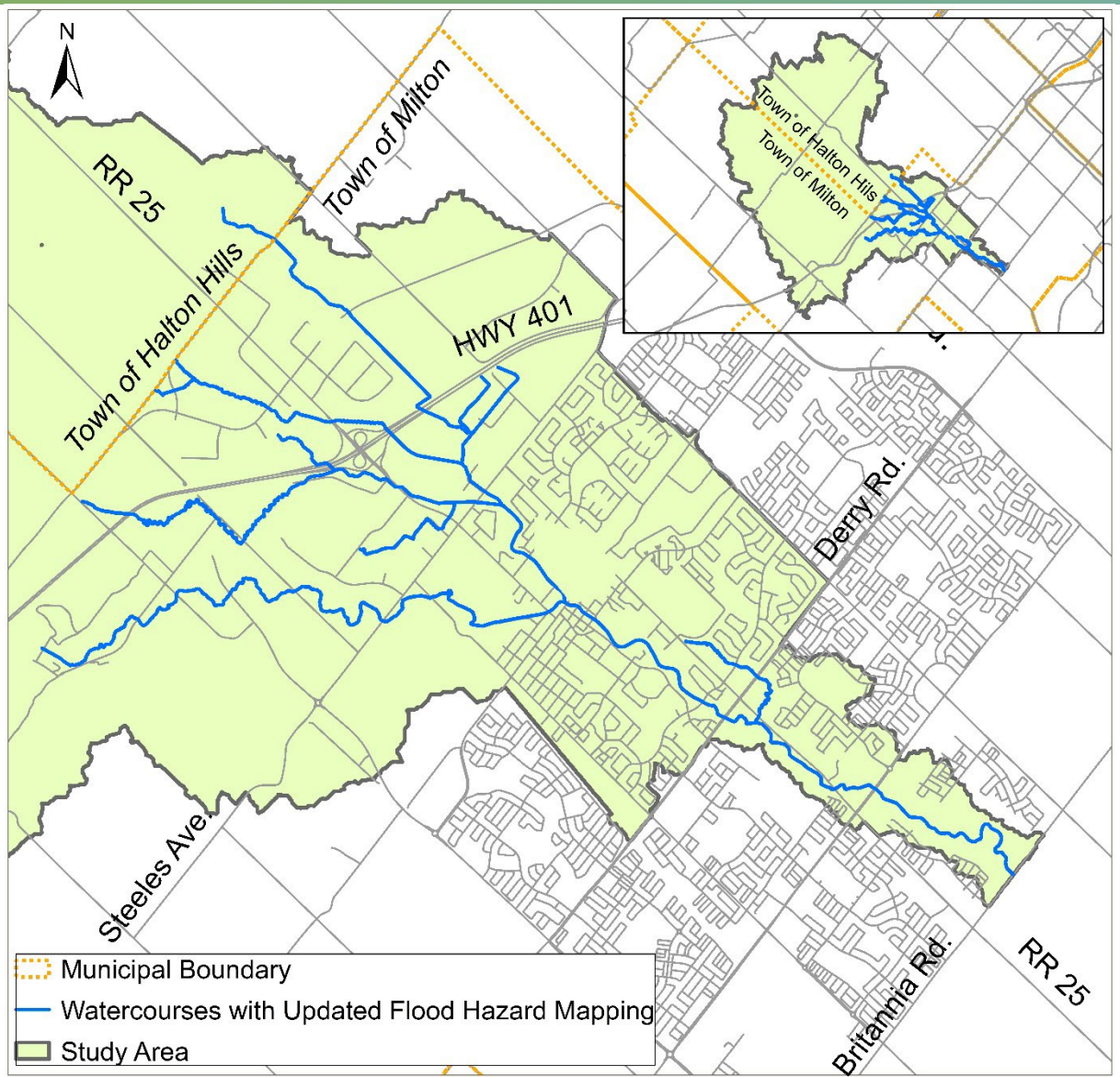
URBAN MILTON FLOOD HAZARD MAPPING STUDY AREA



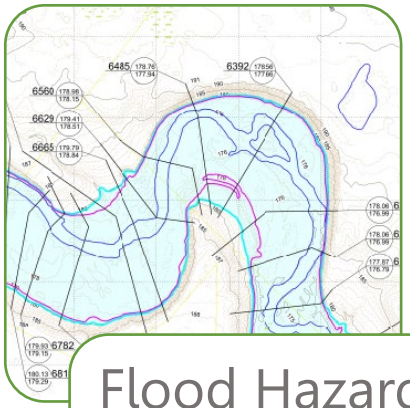
URBAN MILTON FLOOD HAZARD MAPPING: HOW ARE FLOOD HAZARDS ARE DETERMINED?

Hydrology

- Determine how much water drains to the watercourse

Hydraulics

- Determine how much the watercourse "fills up"

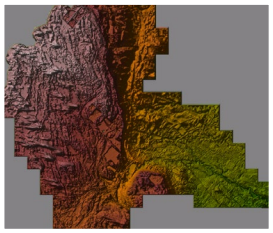


Flood Hazard Mapping

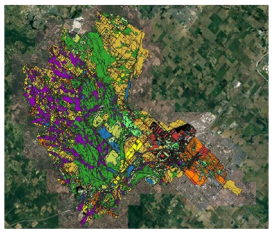
- Delineate flood hazard limits to evaluate flood risks

URBAN MILTON FLOOD HAZARD MAPPING: HYDROLOGY

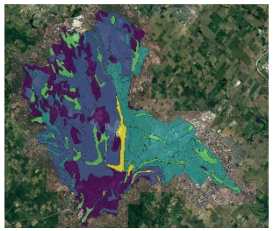
- To estimate flood flows, a hydrologic model was developed incorporating the land-use, soils, drainage patterns and rainfall data
- Topographic (elevation) information was used to determine overall drainage patterns



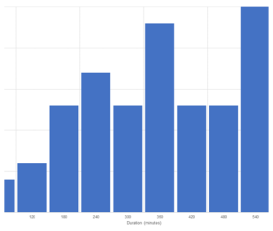
Topography



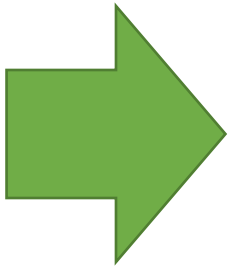
Land-Use

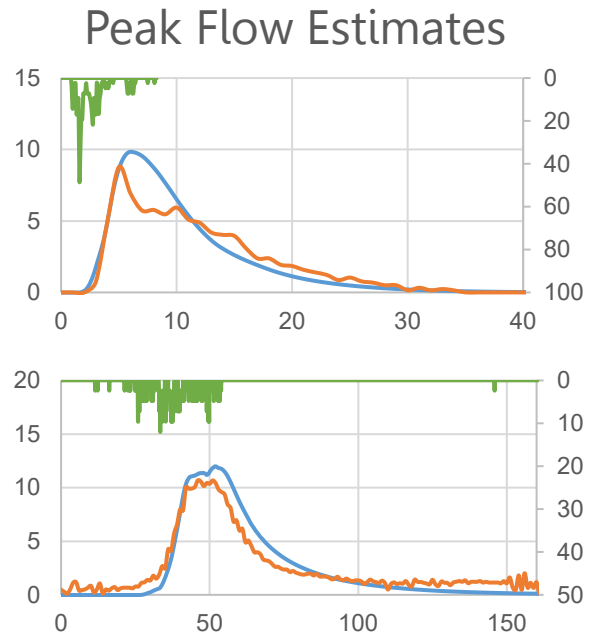


Soils



Rainfall

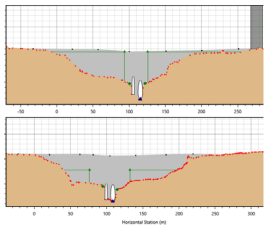




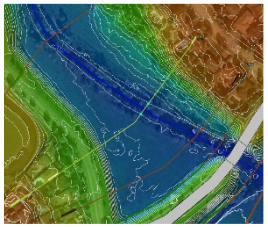
URBAN MILTON FLOOD HAZARD MAPPING: HYDRAULICS

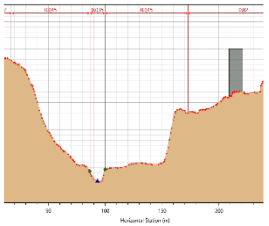
- Surveys and a hydraulic model were developed to predict flood elevations and the extent of flooding throughout the study area
- The hydraulic model evaluates the impacts of bridges, river and valley shape among other things to determine flood elevations using flood flows from the hydrologic model

Survey Bridges



Model Bridges

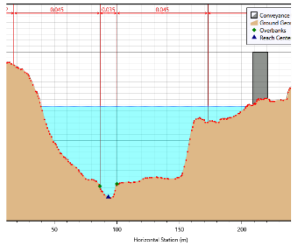




Define river/valley geometry

Peak Flow Estimates from Hydrology

Hydraulic Models

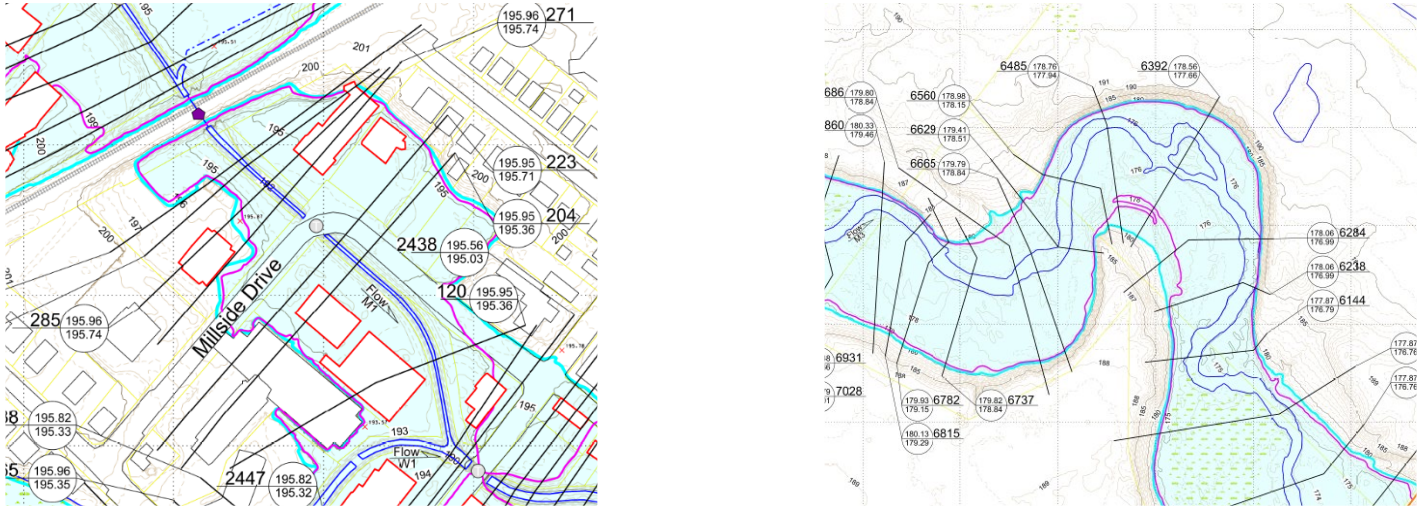


Flood Results

Flood Hazard Mapping

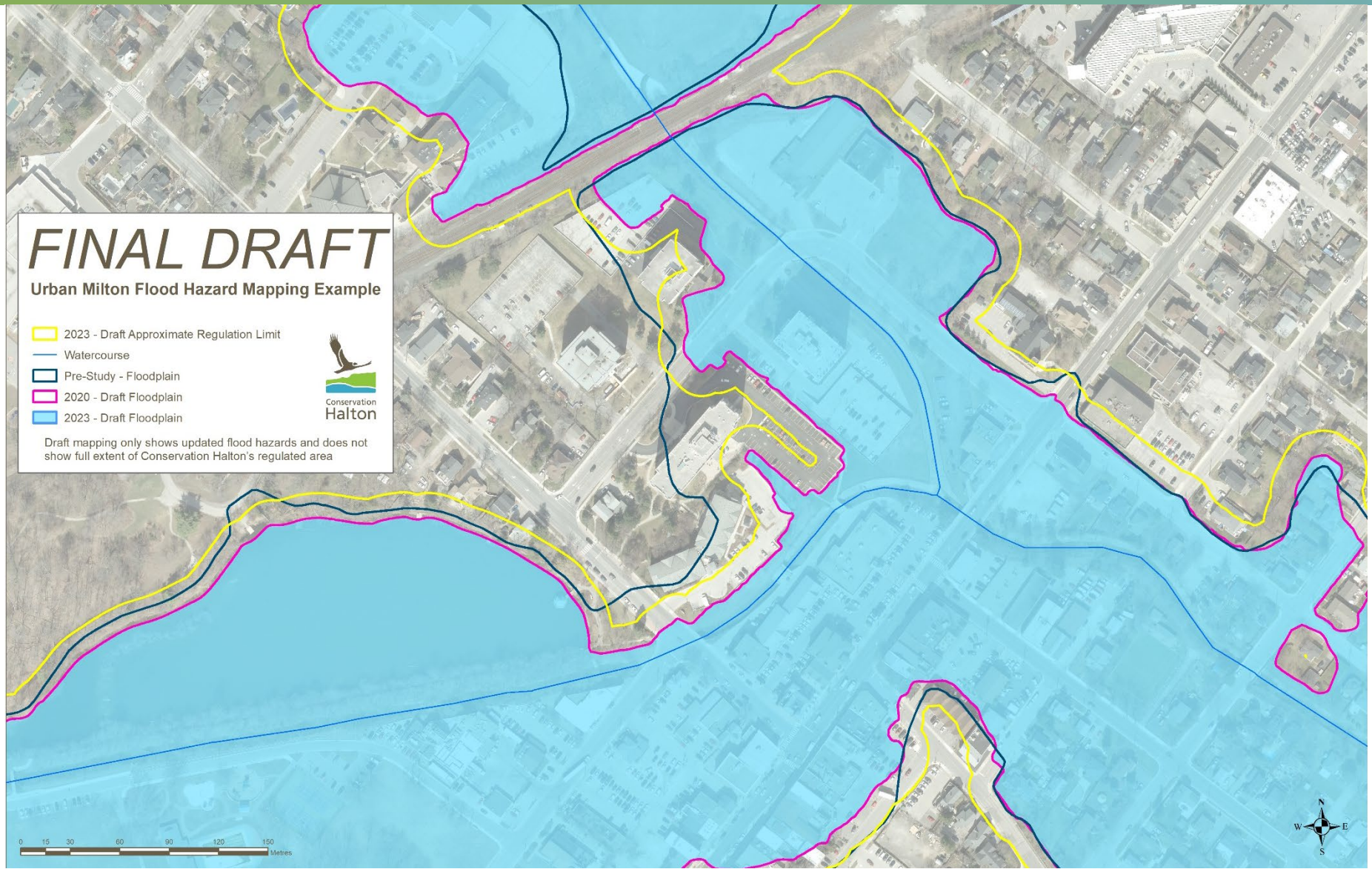
URBAN MILTON FLOOD HAZARD MAPPING: MAP SHEETS

- Results from the hydrologic and hydraulic flood hazard modelling are presented in overall flood hazard mapping
- Flood Hazard Mapsheets display both the “Regional Storm” and “100-year” storm floodlines
- The greater of the two defines the “Regulatory” flood hazard limit

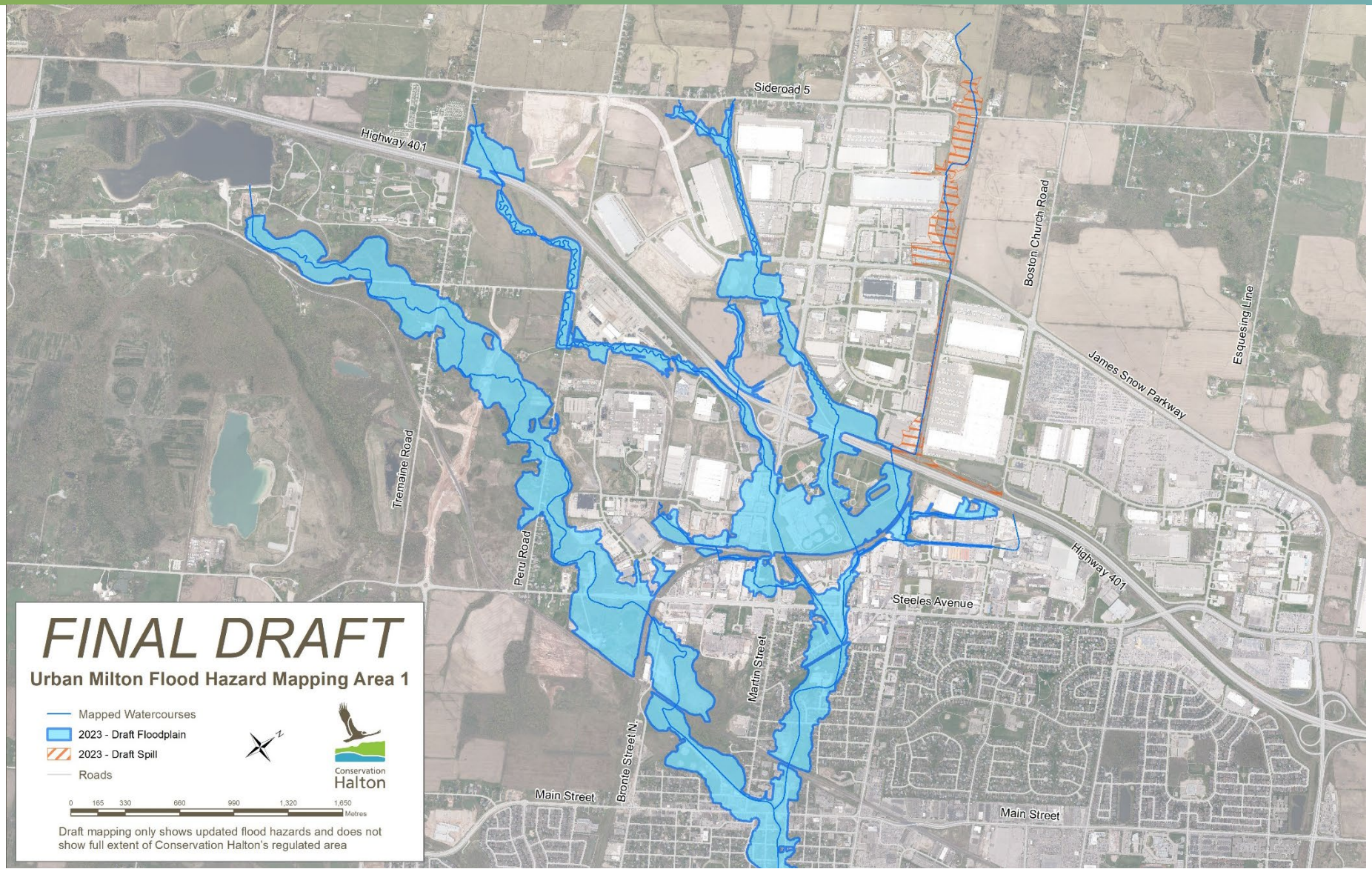


Flood Hazard Mapping Example

URBAN MILTON FLOOD HAZARD DRAFT MAPPING



URBAN MILTON FLOOD HAZARD DRAFT MAPPING



URBAN MILTON FLOOD HAZARD DRAFT MAPPING

QUESTIONS & DISCUSSION

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NEXT STEPS

COMPLETED:

Step 1: Field Work and Data Collection

Step 2: Hydrologic Model Generation

Step 3: Hydraulic Modelling

Step 4: Draft Mapping & Reporting

NEXT STEPS:

Step 5: Receive feedback and questions, finalize draft mapping & reporting

PRESENT TO CH BOARD OF DIRECTORS FOR APPROVAL

Spring 2023

- Final draft flood hazard mapping and reporting will be presented
- Opportunity for CH Board of Directors to review final draft flood hazard mapping, feedback received and receive recommendation for approval

HOW TO REACH US

Questions about your property? Comments and feedback?

- E-mail: floodplainmapping@hrca.on.ca
- Website: www.conservationhalton.ca/mapping-and-studies/
- 30-day public review and feedback on draft mapping until March 18

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Email: floodplainmapping@hrca.on.ca

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Information will be collected in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, all comments will become part of the public record.

THANK YOU

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