



Public Information Centre #1- Feb. 22, 2023

Lakeshore Stormwater Masterplan – Phase 2

Why Do We Need a Stormwater Master Plan?

The Municipality of Lakeshore is developing a Stormwater Master Plan (SMP) in response to significant flooding events in 2019.

With growing evidence of climate change and more intense rainfall events, there is increased uncertainty on community impacts and potential loss of property and risk to public health and wellbeing due to water damage caused by flooding.

Problem & Opportunity Statement

How can Residents and Municipal Partners:

- Increase community awareness to be better prepared for flooding
- Prevent loss of life and minimize property damage caused by flooding
- Understand Lakeshore's vulnerability to local flooding

The SMP will Address the Following:

- Scope of project will focus on hamlets and urban communities, with additional context related to larger flood potential and flow regime related to municipal drains.
- Leverage findings of broader reports from related studies and other agency recommendations on flood management and risk reduction.
- Develop technical analysis approach to assess flood risk based on existing information.



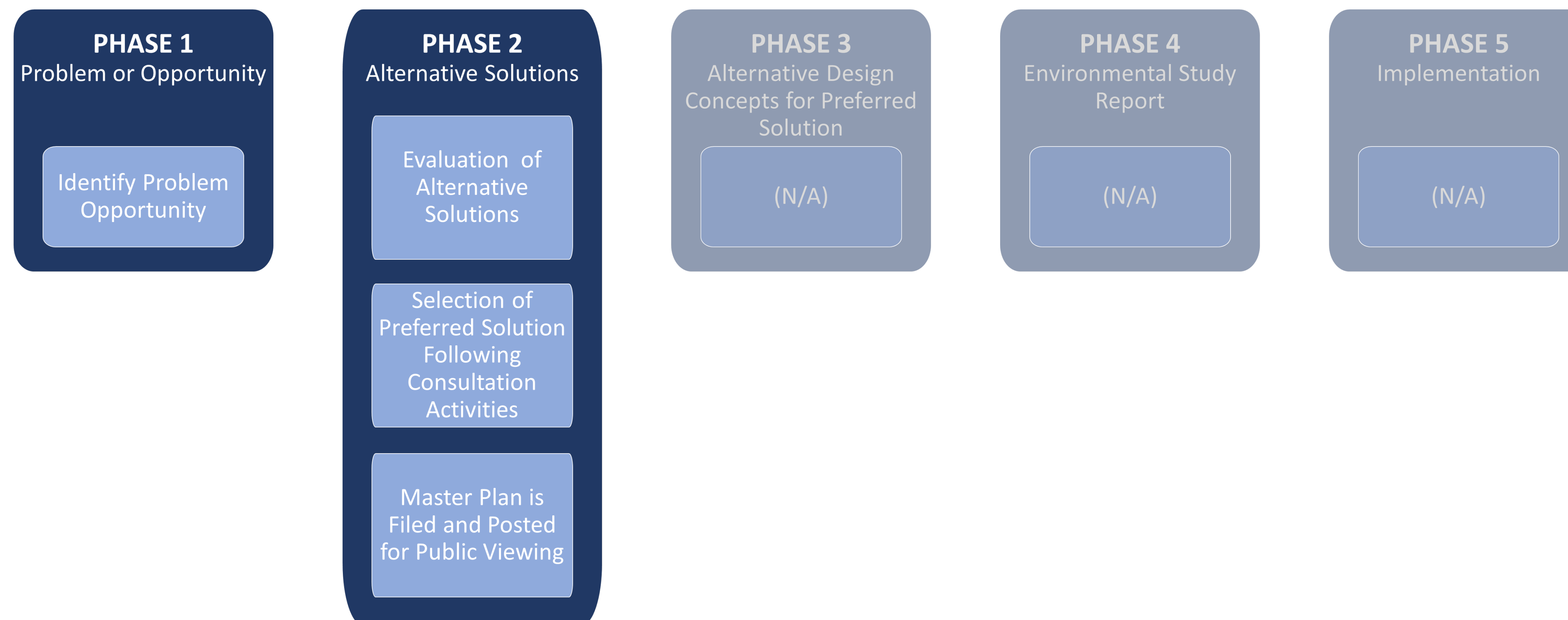
Lighthouse Cove 2023

The Environmental Assessment (EA) Master Plan Process:

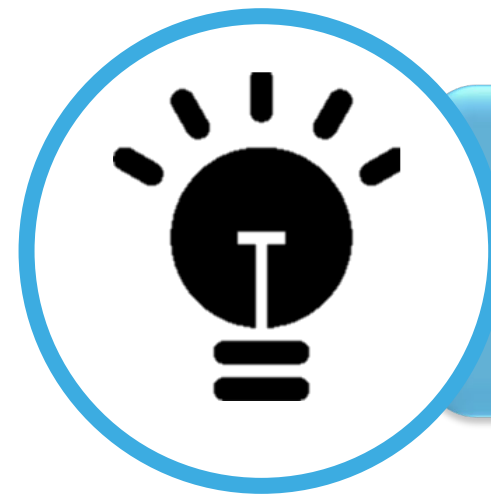
The SMP study will be undertaken in conformance with the Ministry of Environment, Conservation and Parks Stormwater Management Planning and Design Manual (2015) and the Municipal Class EA process ((2000) and amendments). **The Master Plan will address Phase 1 and Phase 2 of the Municipal Class EA.**

The Master Plan will include Schedule B project matters related to culverts replacement, ditches restoration, ponds cleaning and new ditches along dedicated easements. More significant projects (Schedule C) identified through this process may require additional phases through the Municipal Class EA process (Phase 3, 4).

The Class EA defines master plans as long-range plans which integrate infrastructure requirements for existing and future land use with environmental assessment planning principles. These plans examine an infrastructure system or group of related projects in order to outline a framework for planning for subsequent projects and/or developments.



PIC #1 Objectives



Introduce the Stormwater Master Plan study to the public and obtain feedback from local residents, property owners, and community groups



Present existing conditions and areas of concern



Present the scope of the Class Environmental Assessment (EA) process

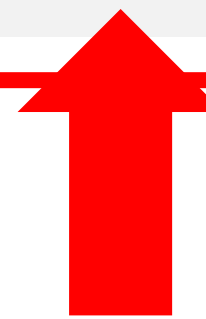


Introduce members of the project team

Project Schedule Timeline

Phase 1
Identify and Describe the Problem/Opportunity Statement

PIC #1
Public Consultation
February 22, 2022



Phase 2
Complete Study Area Inventory and Identify and Evaluate Alternative Solutions

PIC #2
Public Consultation
TBD – Late Spring/Early Summer 2023

Final Report
Documentation of Recommended Alternative Solutions for Stormwater Servicing

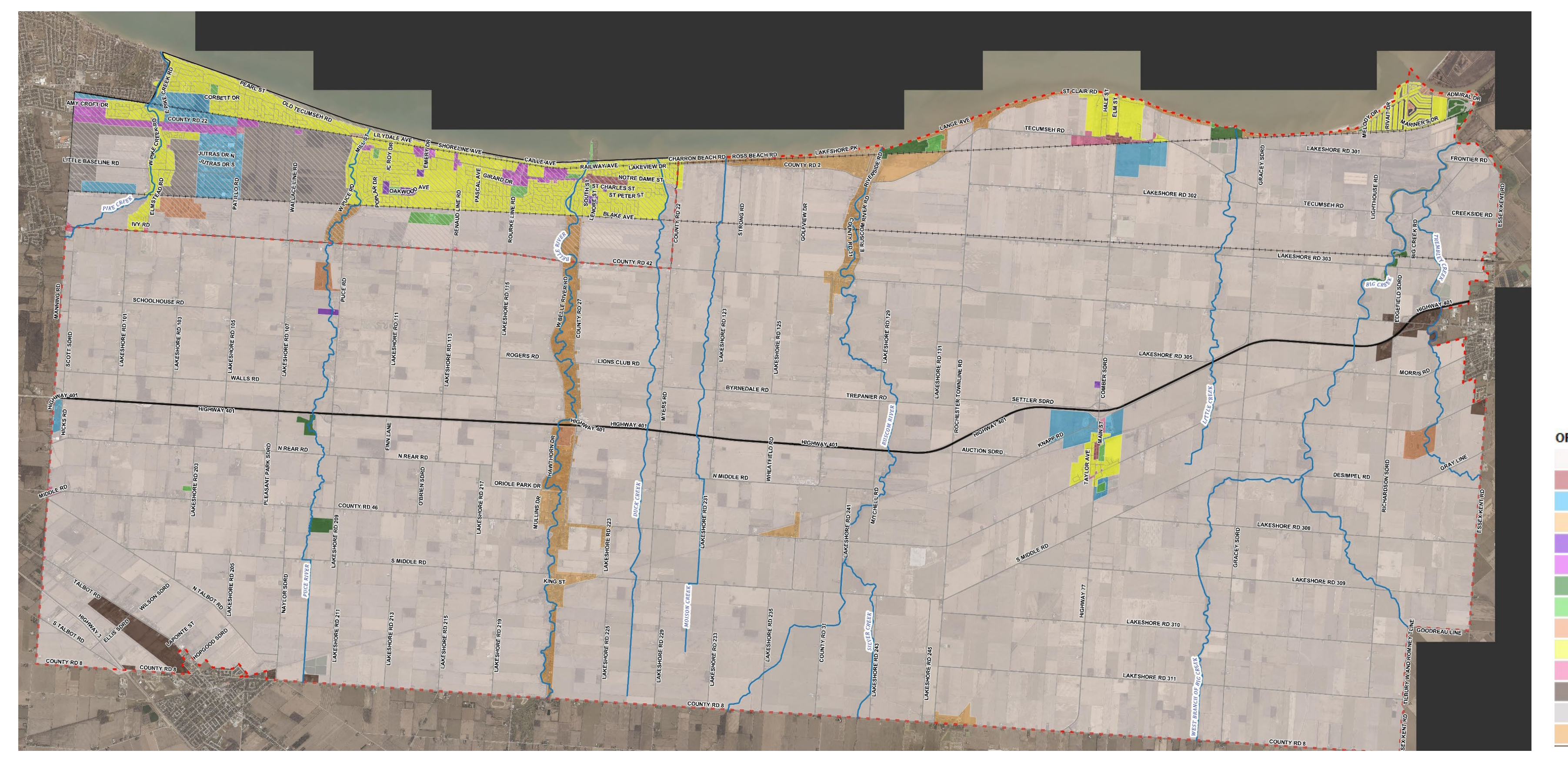
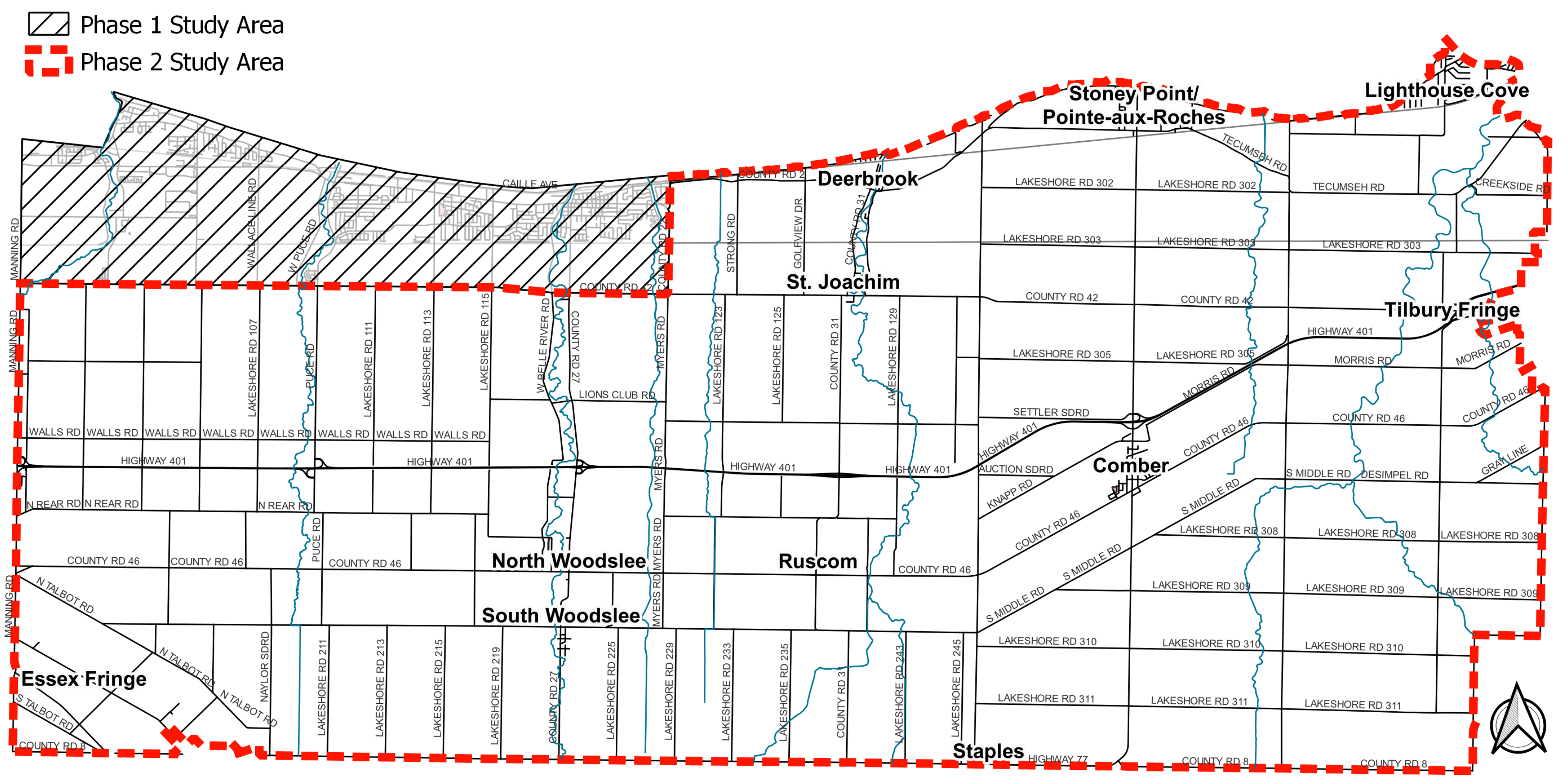
Council Presentation
TBD – Fall 2023

Notice of Completion
TBD – Fall 2023

Study Area

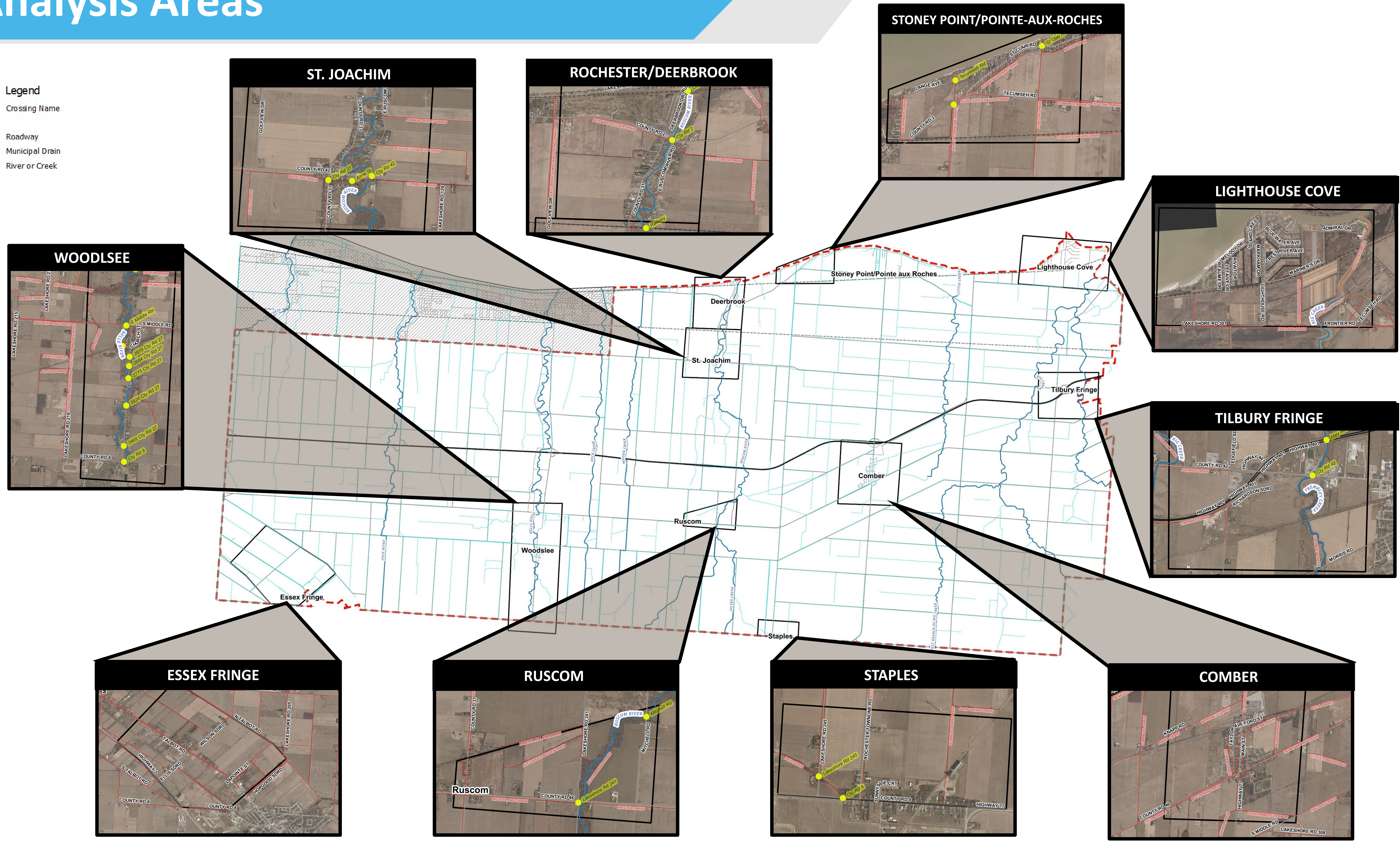
Phase 2 of the Master Plan is focused to the remaining portion of the municipality not studied in Phase 1, including the ten urbanized communities of:

- Comber
- Essex Fringe
- Lighthouse Cove
- Ruscom
- Rochester/Deerbrook
- St. Joachim
- Staples
- Stoney Point / Pointe-aux-Roches
- North and South Woodslee
- Tilbury Fringe



Analysis Areas

- Legend**
- Crossing Name
 - Roadway
 - Municipal Drain
 - River or Creek



Stormwater System Terminology

- **Stormwater Drainage System** - A network of underground pipes and open channels designed for flood control, which discharges straight to creeks and rivers.
- **Catch Basin** - Curbside opening that collects rainwater from streets and serves as an entry point to the storm drain system.
- **Pond** - A stormwater control structure into which storm runoff is directed. May be a dry pond (temporarily stores incoming stormwater) or a wet pond (permanent pool of water with additional capacity).
- **Outfall** – Discharge point by which stormwater leaves the pipe system and enters the water system (i.e. creek, river).
- **Watershed** - An area of land that drains water or runoff to a single point, usually a confluence of streams or rivers, can also be known as drainage area, catchments, or a river basin.
- **100-year Flood** - A statistic that indicates the magnitude of flood which can be expected to occur on average with a frequency of once every 100 years at a given point or reach on a river. The 100-year flood is usually developed from a statistical distribution that is based on historical floods.
- **Municipal Drain** – Drainage system primarily located in rural agricultural areas of the province. Most municipal drains are either ditches or closed systems such as pipes or tiles buried in the ground



Catch Basin



Pond



Outfall



Examples of a
Municipal Drain



Alternative Approaches



Do Nothing



Preparedness

- Know local community risks/vulnerabilities and areas to seek shelter and safety
- Community safety plan and emergency response information systems



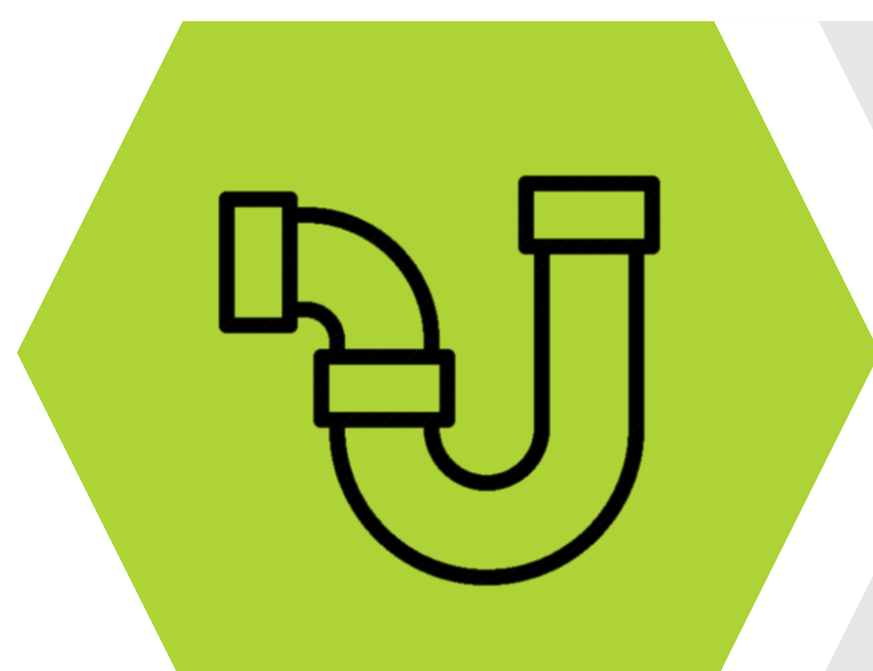
Prevention

- Enhance Planning Policies for better development approval decisions
- Limit growth



Response

- Shelter in Place
- Shelter in Groups
- Shelter through Community Centers



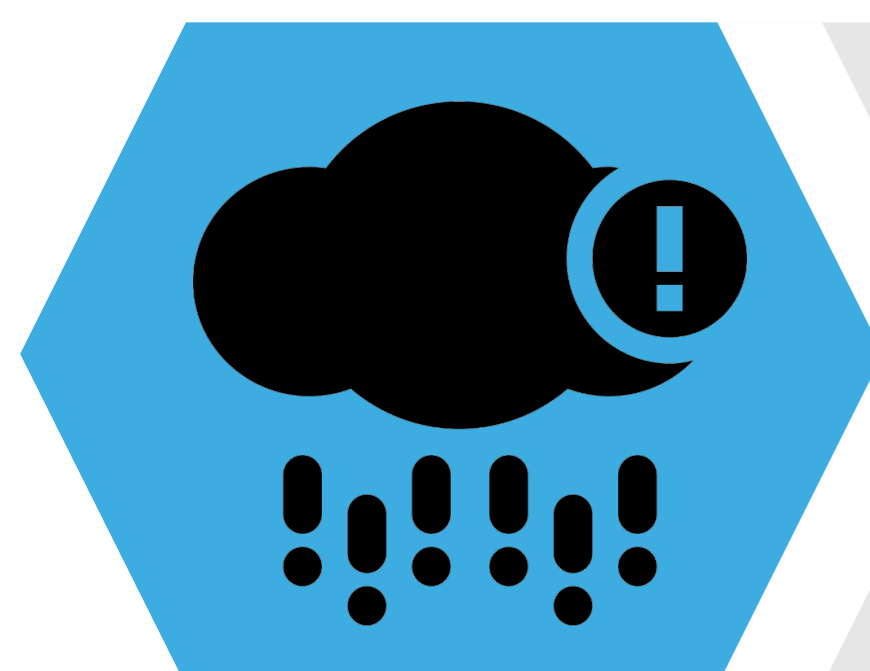
Mitigation (Municipal & Agency)

- Understand and prioritize flood risk areas
- Enhance existing infrastructure resilience
- Build new infrastructure



Recovery

- Private Property recovery
- Municipal recovery



Mitigation (Private Lands)

- Understand private property flood risks and infrastructure vulnerability
- Flood protect property and buildings

Next Steps: Once flooding analysis is complete, these approaches will be reviewed and focused to each community. Certain communities may be recommended a combination of approaches best suited to their conditions.

Flood Management – Shared Responsibility

Flood management is a shared responsibility requiring involvement of government, agencies, and the public.

Roles and Responsibilities:

Federal:

- Coordinate with and support Province (Emergency Management Act)

Provincial:

- Set policies and regulations in land use and oversight over municipalities and emergency management (disaster relief funding)

Municipal:

- Lead local response to recovery, land use and by-law controls, risk awareness, and mitigation

Conservation Authorities:

- Create programs to protect life and property from natural hazards such as flooding and erosion

Communities and Individuals:

- Be aware and be better equipped to take an active role in reducing negative consequences of flooding
- Seek out information that better helps understand property flood risk
- Implement risk mitigation measures for personal and community resilience
 - Adequate and appropriate insurance
 - Residential flood proofing measures



Common Expectations

- Residents expect assistance in disaster recovery
- Residents have vested interest in effective and efficient flood risk management
- Residents have a role to play in emergency management
- Important to acknowledge different needs, resources, capacities and vulnerabilities of individuals and communities
- Residents have a role in self-education about local flood risk conditions

Proposed Modelling & Analysis

Channel Flooding Analyses

What is Channel Flooding?

- *When streams/riders or municipal drain channels exceed the capacity of their natural or constructed channels and water overflows the banks to dry land.*

Communities of Focus:

Ruscom, St. Joachim, Tilbury Fringe, Woodsee, Rochester/Deerbrook, Staples

Proposed Analysis Approach:

- Review surrounding land elevations relative to incremental flow depths within river channels and municipal drain channels at key crossing(s) and display areas subject to potential flood extents.
- Key crossings include bridges, culverts, railway crossings, etc.

Lake Flooding Analyses

What is Lake Flooding?

- *The inundation of land areas adjacent to a lake caused by lake water exceeding normal levels. Lakeshore flooding impacts the immediate lakefront, bays, and the and connecting waterways, such as rivers.*

Communities of Focus:

Lighthouse Cove, Stoney Point/Pointe-aux-Roches, Deerbrook

Proposed Analysis Approach:

- Plot average water surface elevation of Lake St Clair.
- Show flooding extent calculated through Lakeshore's Shoreline Management Plan.
- Display areas subject to two intermediate potential flood extents.

Analysis in Areas with No Lakes or Rivers

What Flood Can Occur in Areas with No Lakes or Rivers?

- *Normally dry land can become inundated with water during extreme rainfall events. This occurs when more rain enters an area than can be removed by infiltration into the ground or discharge through infrastructure.*

Communities of Focus:

Essex Fringe, Comber

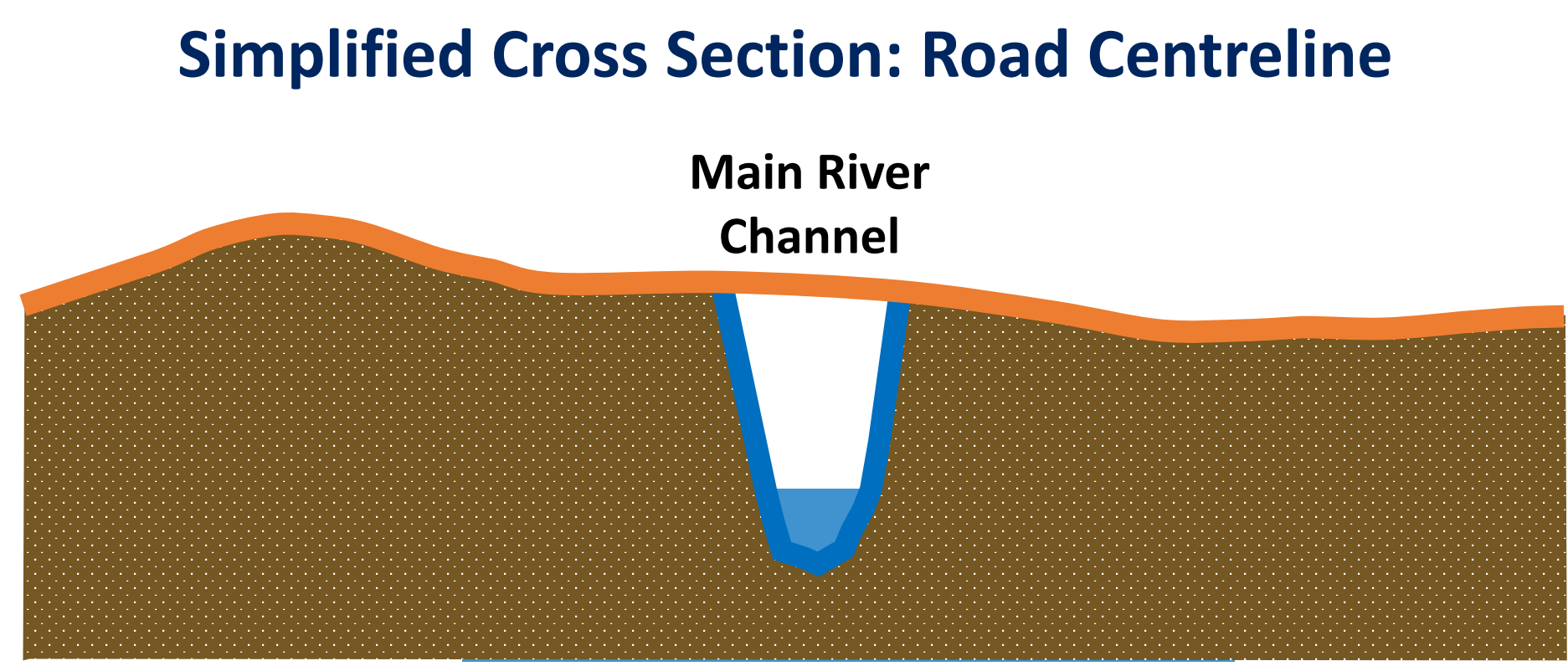
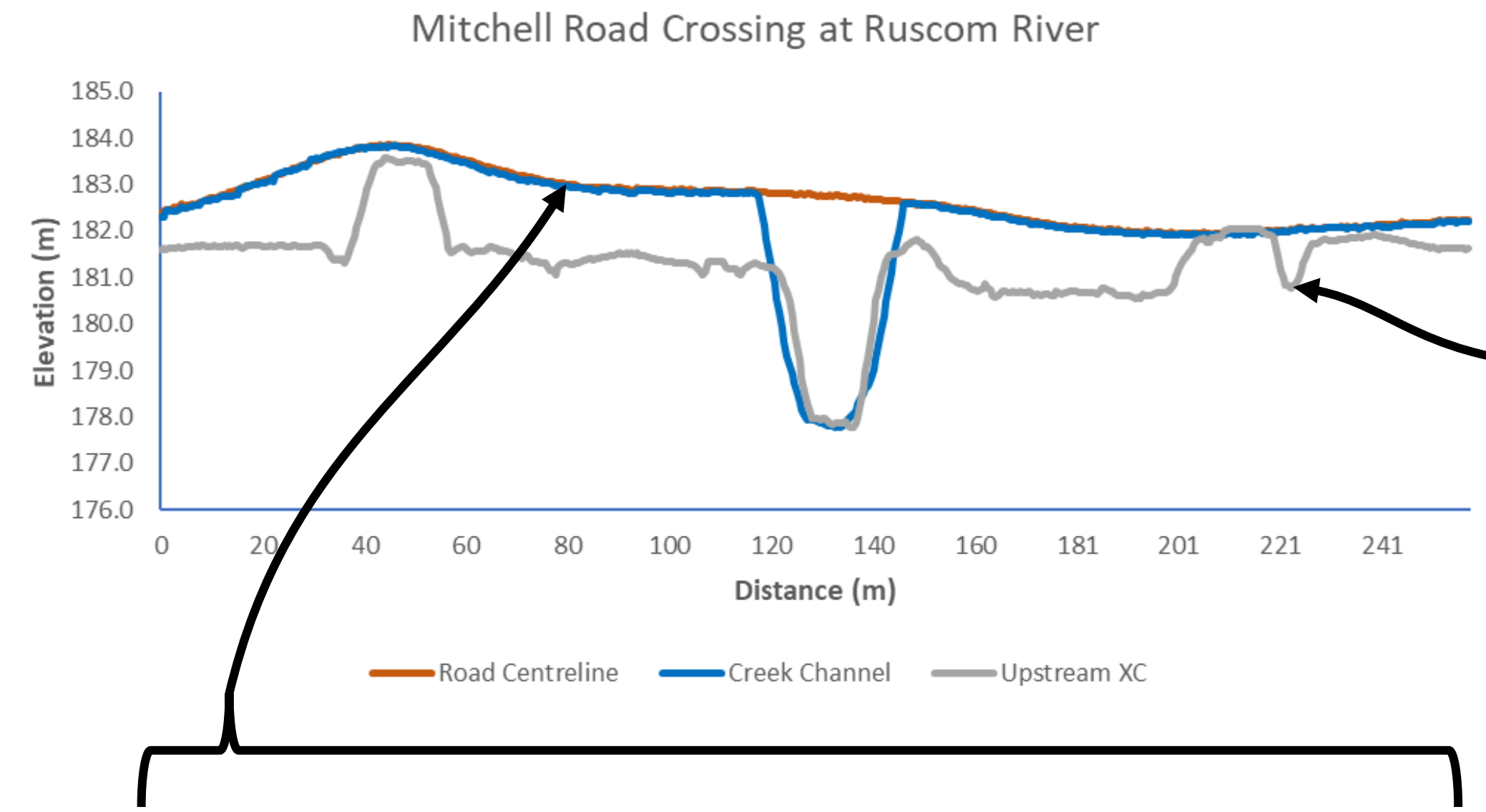
Proposed Analysis Approach:

- Show the lowest point within the community and display incremental depths to display areas subject to potential flood extents.

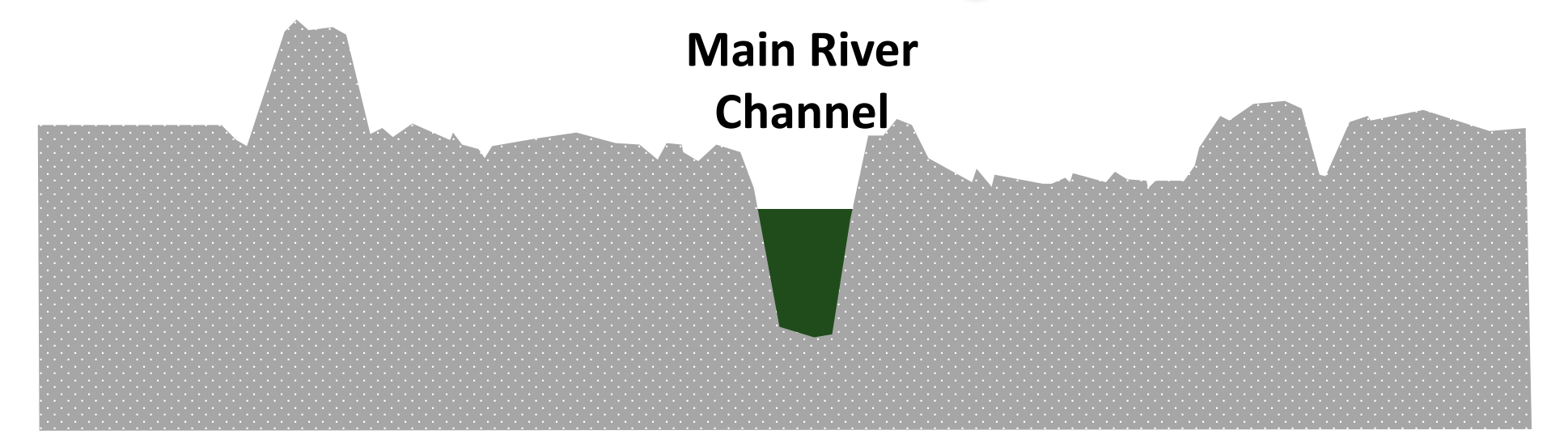
Channel Flooding Analysis Process

Analysis Explanation:

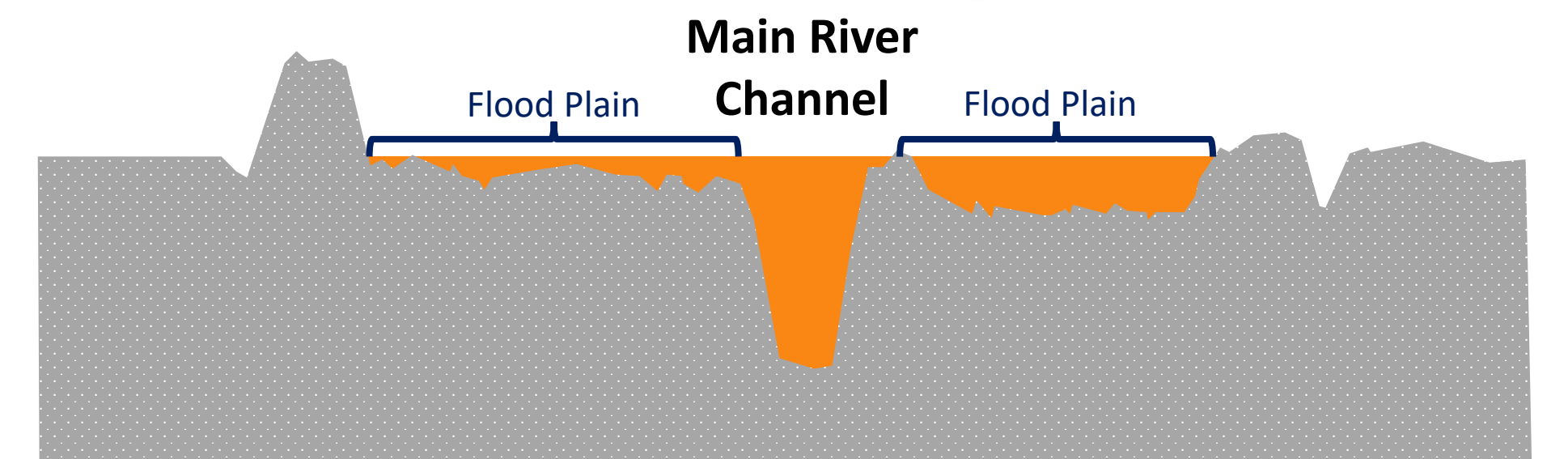
- Elevation data is reviewed at key crossings (bridges, culverts, railways etc). Since crossings are typically higher in elevation, crossings provide barriers/flow restrictions causing potential flooding upstream.
- Therefore, elevation data is reviewed upstream to determine the impact of the restriction/crossing.
- Three potential flooding scenarios are reviewed at 50%, 75%, and 100% depth of water within the river or municipal drain channel.
- Impacted lands are shaded to show which lands, roads, buildings, etc. which could be impacted by flooding.
- The following shows a sample analysis completed for one key crossing in Ruscom.



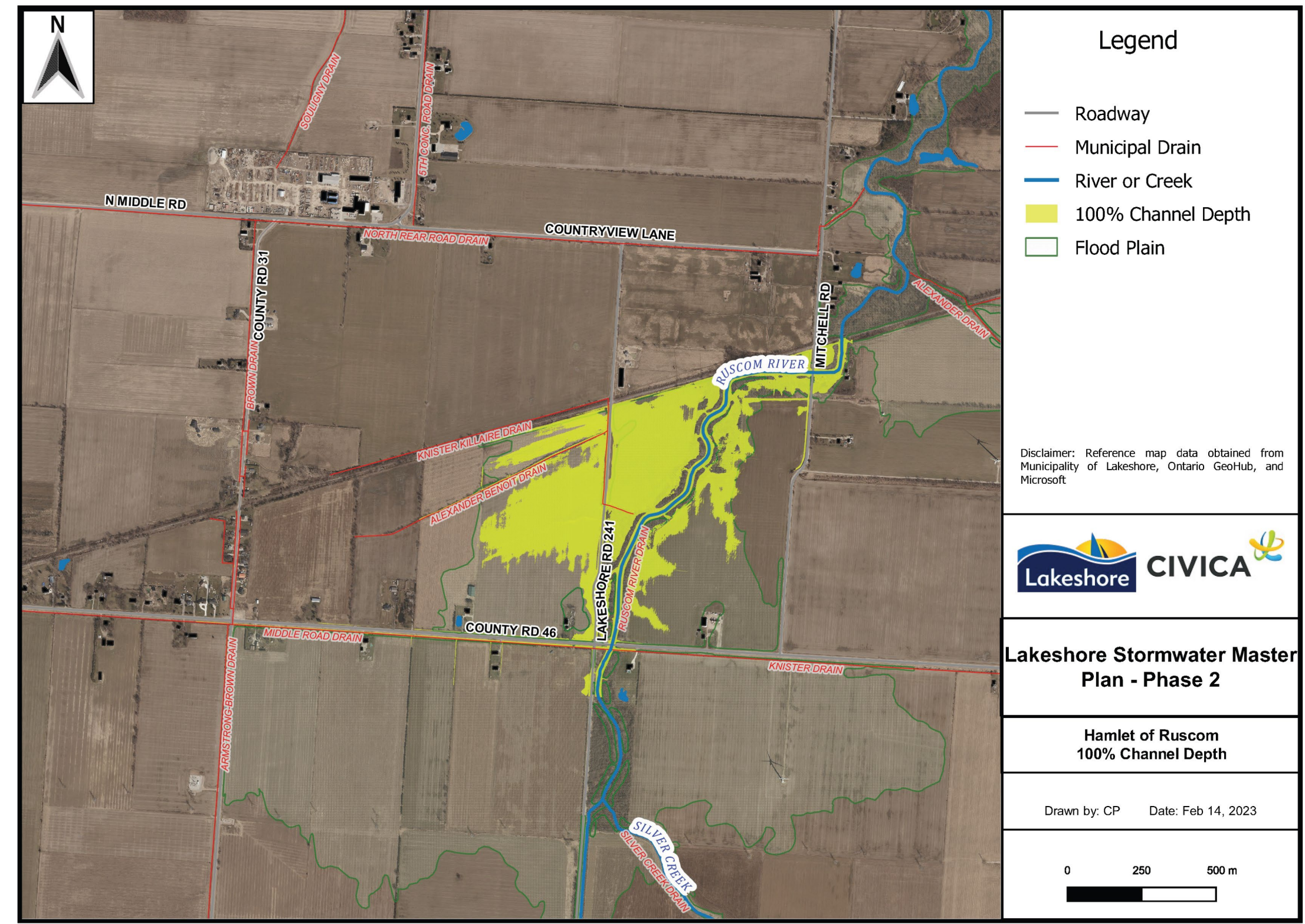
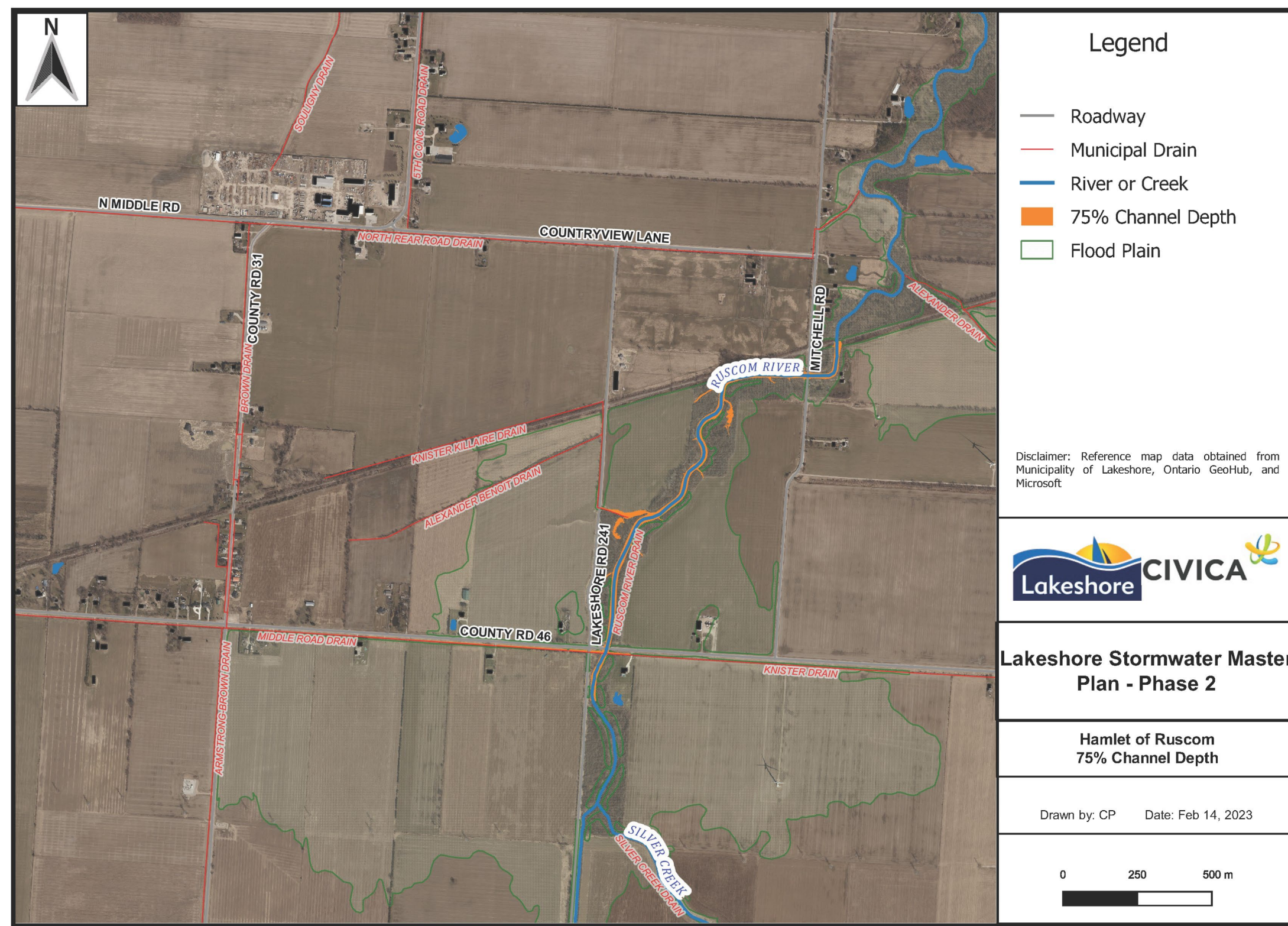
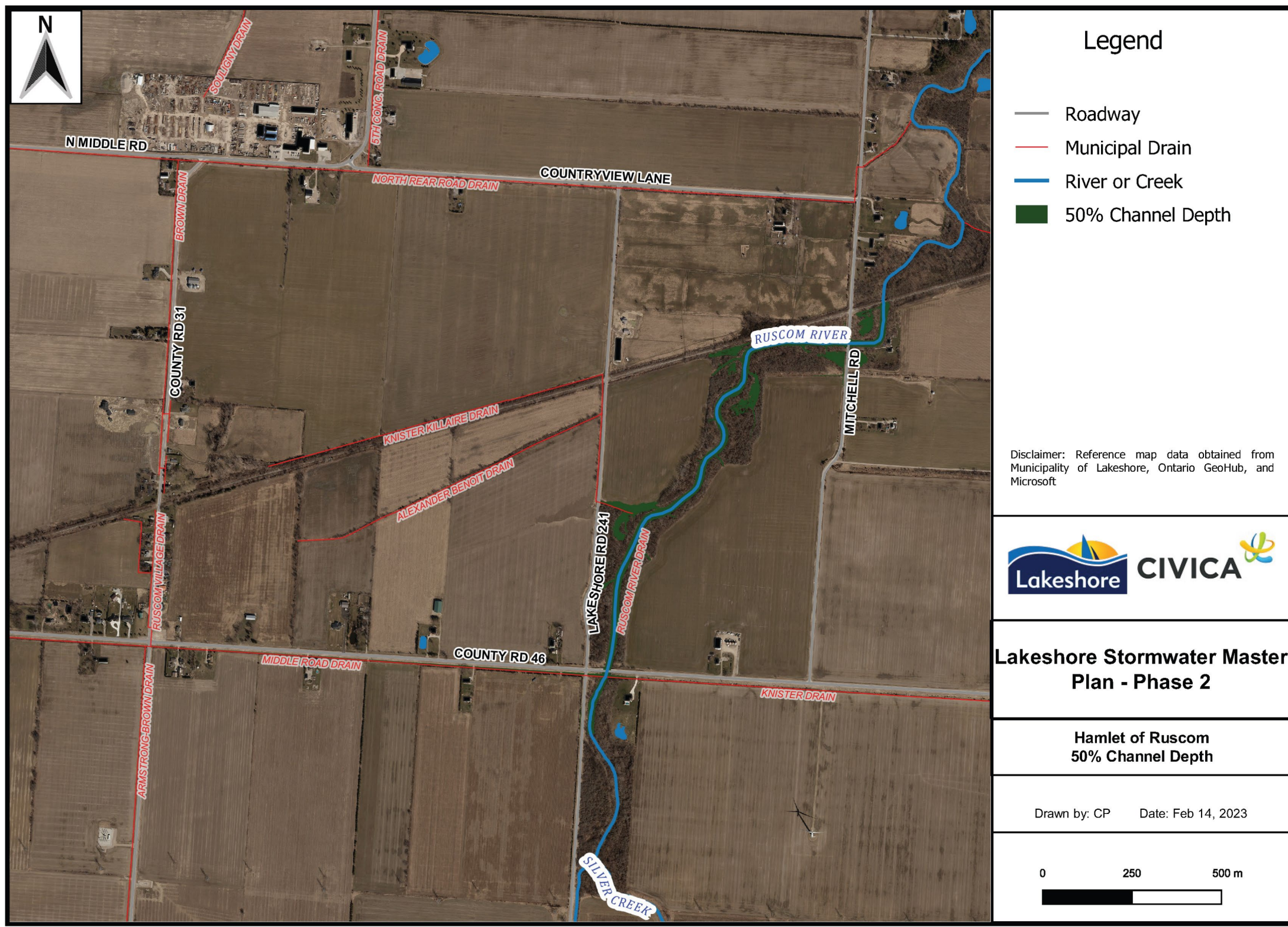
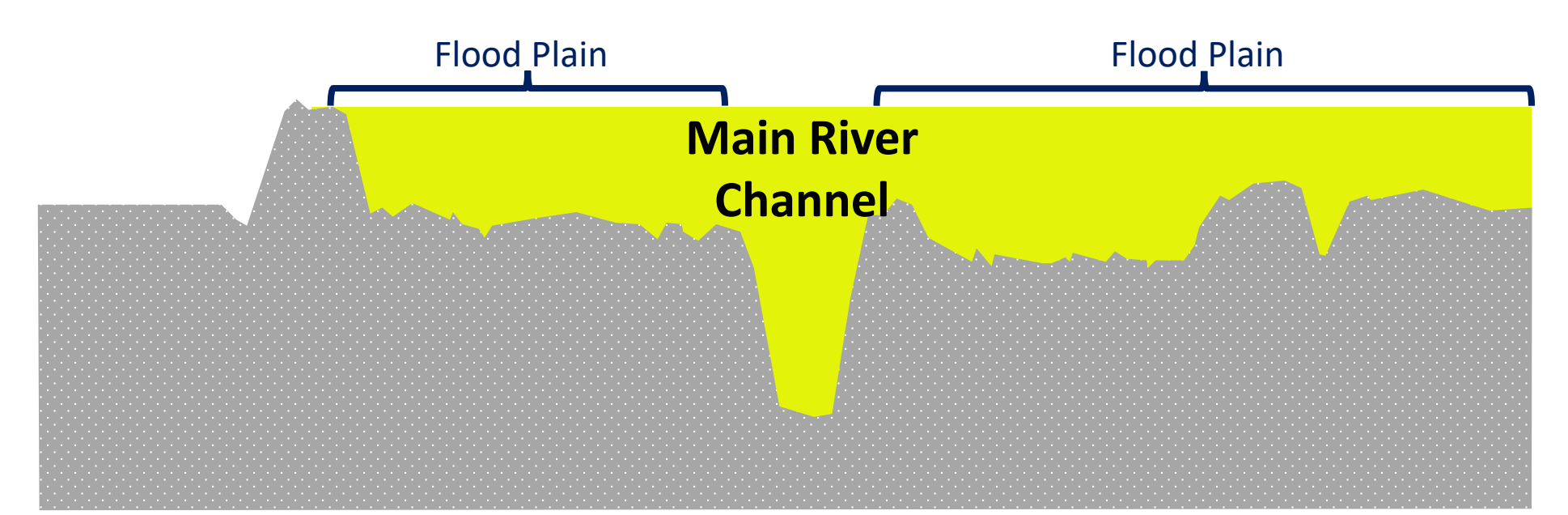
Simplified Cross Section: Upstream of Road Crossing
50% Channel Depth



Simplified Cross Section: Upstream of Road Crossing
75% Channel Depth



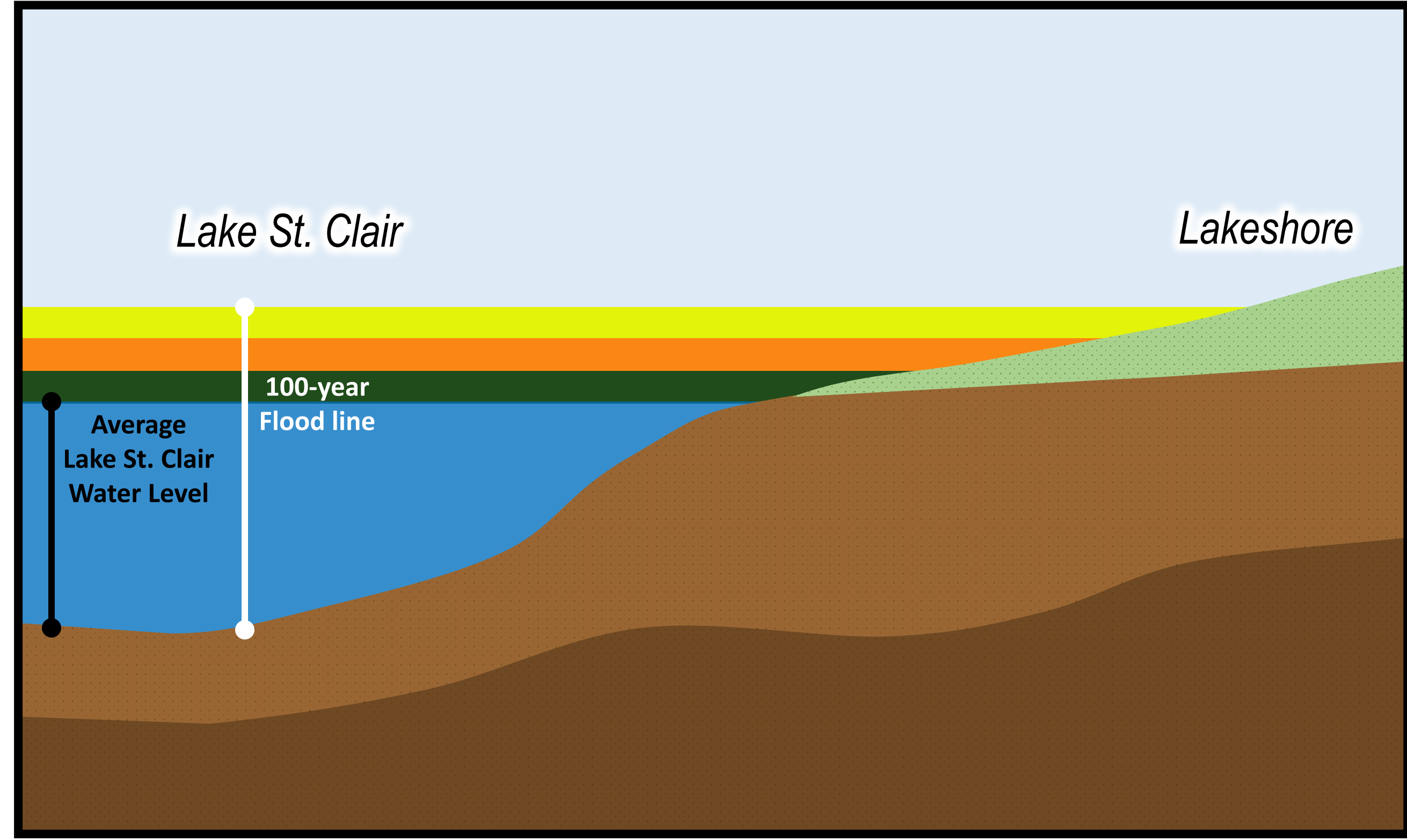
Simplified Cross Section: Upstream of Road Crossing
100% Channel Depth



Lake Flooding Analysis Process

Analysis Explanation:

- Average water elevation data is gathered for Lake St. Clair from historic records.
- Flooding extents through Lakeshore's Shoreline Management Plan are mapped. This flooding scenario is the most severe and reflects the 100-year flood elevation.
- Two intermediate potential flood scenarios are mapped at 33% depth and 66% depth of the 100-year flood elevation.
- Lands impacted are shaded in through mapping. Shaded areas show infrastructure (roads, buildings, etc.) which could be impacted by flooding.
- Diagrams on this slide show sample analysis completed for the community of Lighthouse Cove

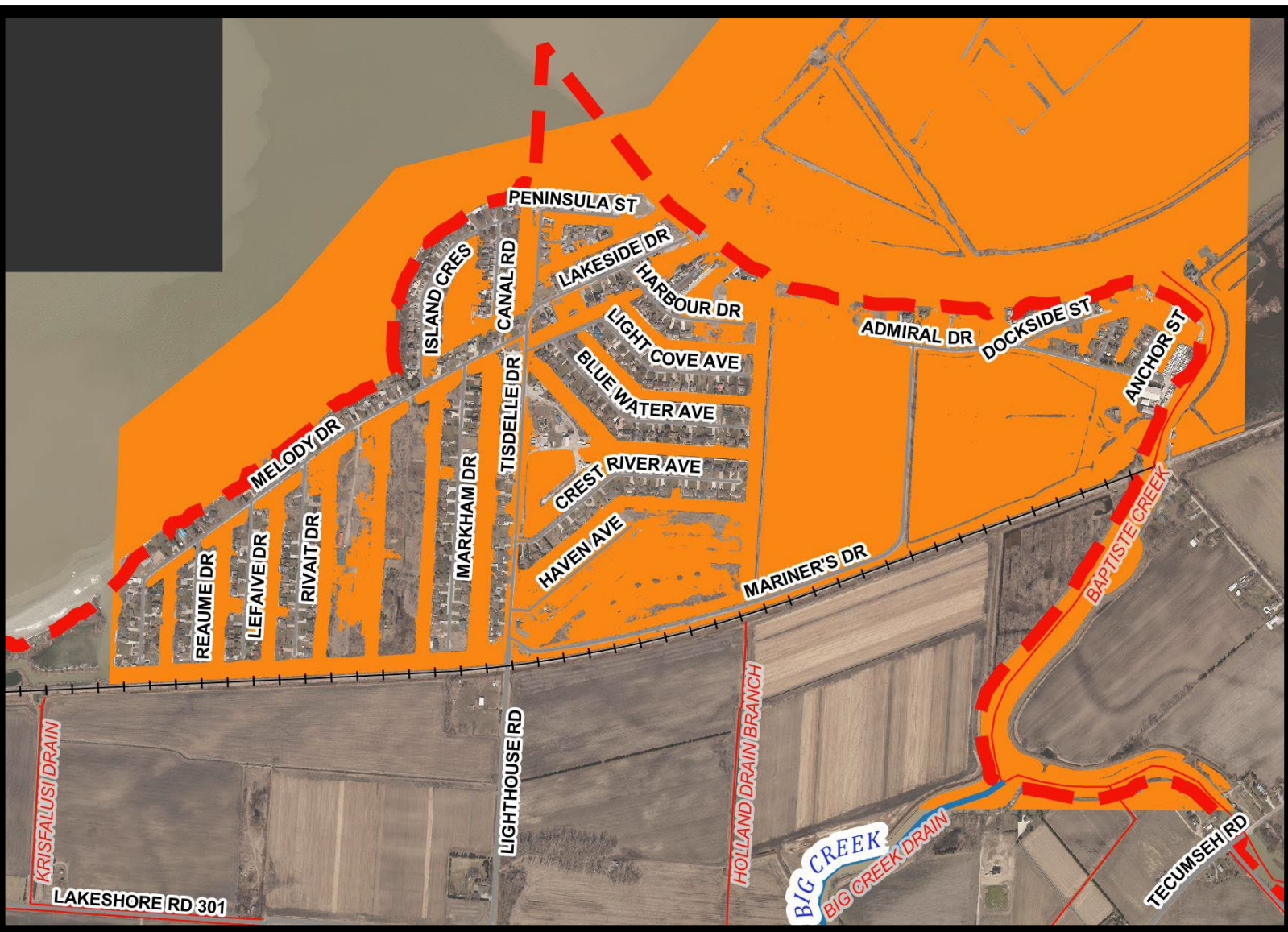


Average Water Surface Level

33% Depth

66% Depth

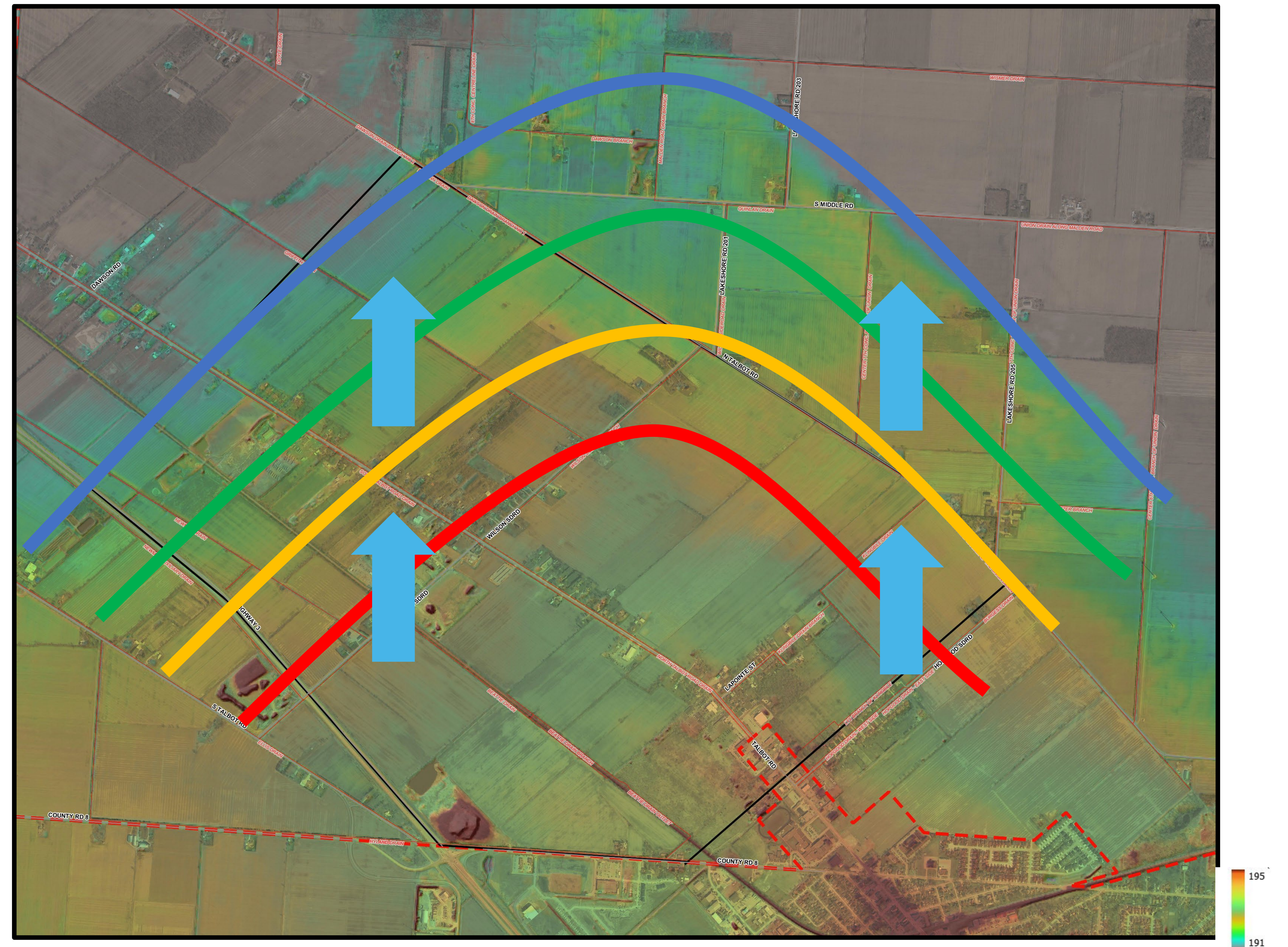
100-Year Flood Level



Analysis in Areas with No Lakes or Rivers Process

Analysis Explanation:

- Each community can be reviewed to determine how elevation impacts flooding.
- The purpose is to identify low-lying areas where ponding may occur so that residents are aware that they have increased flooding risk.
- Incremental elevation bands of 0.2 meters are mapped.
- Infrastructure (roads, buildings, etc.) located in lower elevations may be at higher risk for impacts of flooding.
- The image on right depicts Essex Fringe.
- Land shown in blue is at the lowest elevation in this community.



References

The documents and reports listed below are resources which the Stormwater Management Plan references and builds upon. These documents are excellent resources for better understanding the Lakeshore community including its susceptibility to flooding.

- Town of Lakeshore Stormwater Master Plan – Phase 1 (2020)
- Municipality of Lakeshore Shoreline Management Plan (2022)
- Essex County Floodplain Prioritization Study (2021)
- Ministry of Natural Resources and Forestry: An Independent Review of the 2019 Flood Events in Ontario (2019)
- Protecting People and Property: Ontario’s Flooding Strategy (2020)
- County of Essex Official Plan (2014)
- Town of Lakeshore Official Plan (2010)
- Windsor/Essex Region Stormwater Management Standards Manual (2018)
- Various Municipal Drain Reports



Following Public Information Centre 1, we will:

- Review public feedback to better understand the priorities of Lakeshore residents and stakeholders
- Finalize the values, vision, and objectives based on your input
- Outline the stormwater system needs, issues, and opportunities, building on your input
- Commence EA Phase 2 of the SMP study, and develop recommended infrastructure projects and supporting policies and strategies
- Present recommended projects, strategies and other solutions at the second round of public consultation (PIC #2)

Who's Listening?

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Share your input!

Provide your feedback on the draft vision and objectives, your thoughts on flooding, and your suggestions on where we can best focus infrastructure improvements in the Municipality of Lakeshore.

Help shape the SMP study by visiting [Lakeshore.ca/SWMP2](https://lakeshore.ca/SWMP2) to:

- Complete the online survey and leave comments or input.
- Submit questions to the project team
- See the latest updates and future public consultation opportunities