MARKHAM FLOOD CONTROL PROGRAM

Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

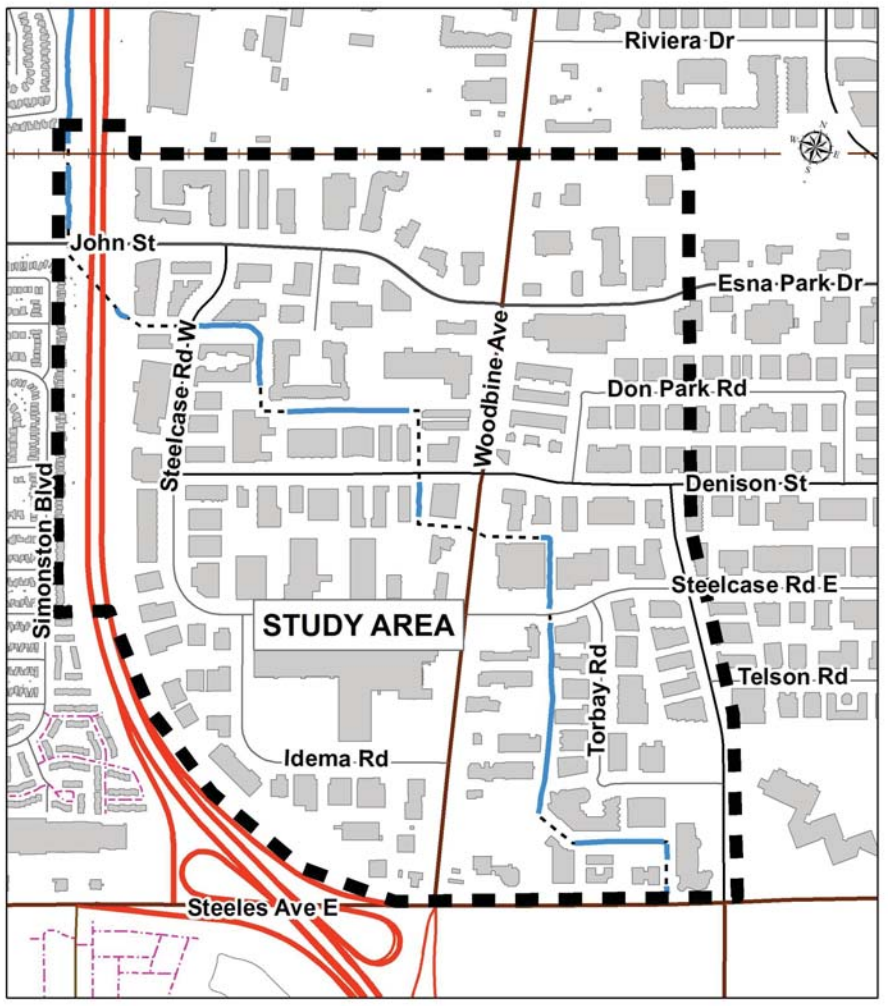
Public Information Centre #1
November 9, 2016
3 to 7 p.m.

Please sign in on the sheet provided. Then feel free to walk around, view the displays and fill out a comment sheet.

The purpose of this Public Information Centre (PIC) is to introduce you to this project, inform you of our progress to date, and obtain your comments.

If you have any questions, our representatives will be pleased to discuss the project with you.

We are interested in receiving any comments that you may have about the project . Should you have any questions, comments, require further information or wish to be added to the project mailing list, please contact either Steve or Rob.



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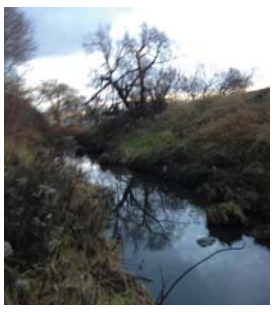

Study Purpose

The Don Mills Channel through the study area was realigned and confined to a relatively narrow channel corridor through historic urban development. Significant portions of the Don Mills Channel were also piped through some of the older development sites in the study area

The current system of open channels and culverts does not have adequate capacity to convey storm runoff from large storm events. Businesses surrounding the Don Mills Channel have been flooded numerous times since the lands developed in the 1970's, and major roads in the study area such as Woodbine Avenue can be impassable during severe storms.

The Don Mills Channel Flood Reduction Study has been initiated to:

- Identify and understand the key causes of flooding through the study area
- Develop a range of alternative solutions to reduce flooding and flood damages from the Don Mills Channel
- Recommend the preferred solution or suite of solutions to best reduce flooding and flood damages
- Establish the funding, approvals and other activities needed for implementation of the recommended works.

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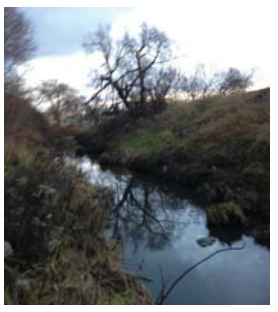

Flood Management History

1972-1984

- The area develops and Highway 404 is constructed (1978)
- Several properties enclose portions of the channel and expand parking areas

1985-1989

- A storm on August 26, 1985 causes flooding in the area
- The City completes studies to assess the capacity of the channel
- Stormwater management policies are instituted for new development and re-development in the drainage area
- Culvert enclosures are no longer permitted

2005-2009

- The storm of August 19,2005 causes significant damages
- The City commissions a study to identify mitigation alternatives and consult with the public
- The study projected costs of $50M to provide 5 year level of service, >$100M for 100 year solution estimated;
- Channel maintenance activities were expanded to include annual vegetation removal from the channel

2009-2015

- The City consults with residents and businesses and implements a stormwater fee to fund flood mitigation projects
- Storms in July and August 2014 cause flooding
- Collection of the residential stormwater fee commences in 2015, non-residential in 2016

2015-Present

- In 2016, the City initiates the Don Mills Channel Flood Reduction EA study
- TMIG is hired as a project consultant to complete the Environmental Assessment Study to identify and evaluate flood mitigation alternatives
- Private property owners institute flood proofing measures

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Flood Control Program Timelines

2015 -2020

Continuation of West Thornhill Design and Construction

Don Mills Channel Class Environmental Assessment and complete short term flood risk reduction measures

Prioritization of Other City-Wide Projects to be undertaken

2021- 2025

Completion of West Thornhill Construction

Complete Design and Initiate Don Mills Channel Capital Works

Initiation of EAs for Other City Wide Projects

2025 -2045

Complete Don Mills Channel Capital Works

Other City Wide Projects to be scheduled in the future (based on Prioritization and Future EAs)

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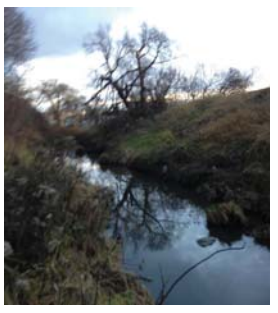

Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Municipal Class Environmental Assessment (EA) Process

Class EA Phase 1

Identify Problem or Opportunity

- Identify Need
- Initiate Consultation with the public and agencies
- **Notice of Commencement**

Background Review

- Obtain and review background documentation and initiate agency contact
- Identify data gaps to be address during the site inventory/ investigation

Class EA Phase 2

Site Inventory / Investigation

- Undertake natural heritage investigations
- Aquatic habitat assessment
- Incidental wildlife survey
- Undertake hydrology/hydraulics investigation
- Archeological Investigations
- Identify opportunities and constraints
- **PIC #1**

Evaluation of Alternatives

- Identify alternatives
- Complete impact assessments
- Evaluate alternatives
- Select preferred alternative

Preliminary Design / Project File Report

- Preliminary design of preferred alternative
- Recommendation for further study, if required
- PIC# 2
- Develop a staging and implementation plan
- Prepare Project File Report
- **Notice of Completion**
- 30-day Public Review

Implementation

Detailed Design / Implementation

- Detailed design of the proposed works
- Obtain permits and approvals
- Prepare contract drawings and tender documents
- Construction and operation of the works
- Post-construction monitoring

Project Schedule

Fall 2016

- Liaison committee meeting with key stakeholders to review existing conditions Public Information Centre (PIC) #1 (Tonight)
- Development of initial flood reduction alternatives

Spring 2017

- Liaison committee meeting to review of alternative solutions and the evaluation process
- PIC #2 to present the alternative solutions and evaluation results
- Selection of the preliminary preferred alternative

Summer 2017

- Council presentation
- Confirmation of the preferred alternative

Fall 2017

- Notice of Completion
- File project with the Ministry of the Environment and Climate Change

Spring 2018

- A Phasing Plan for the design and construction of all recommended flood protection works will be created
- Design and construction of lower cost immediate improvement projects to begin

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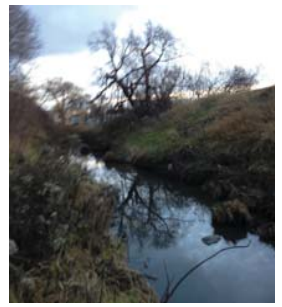
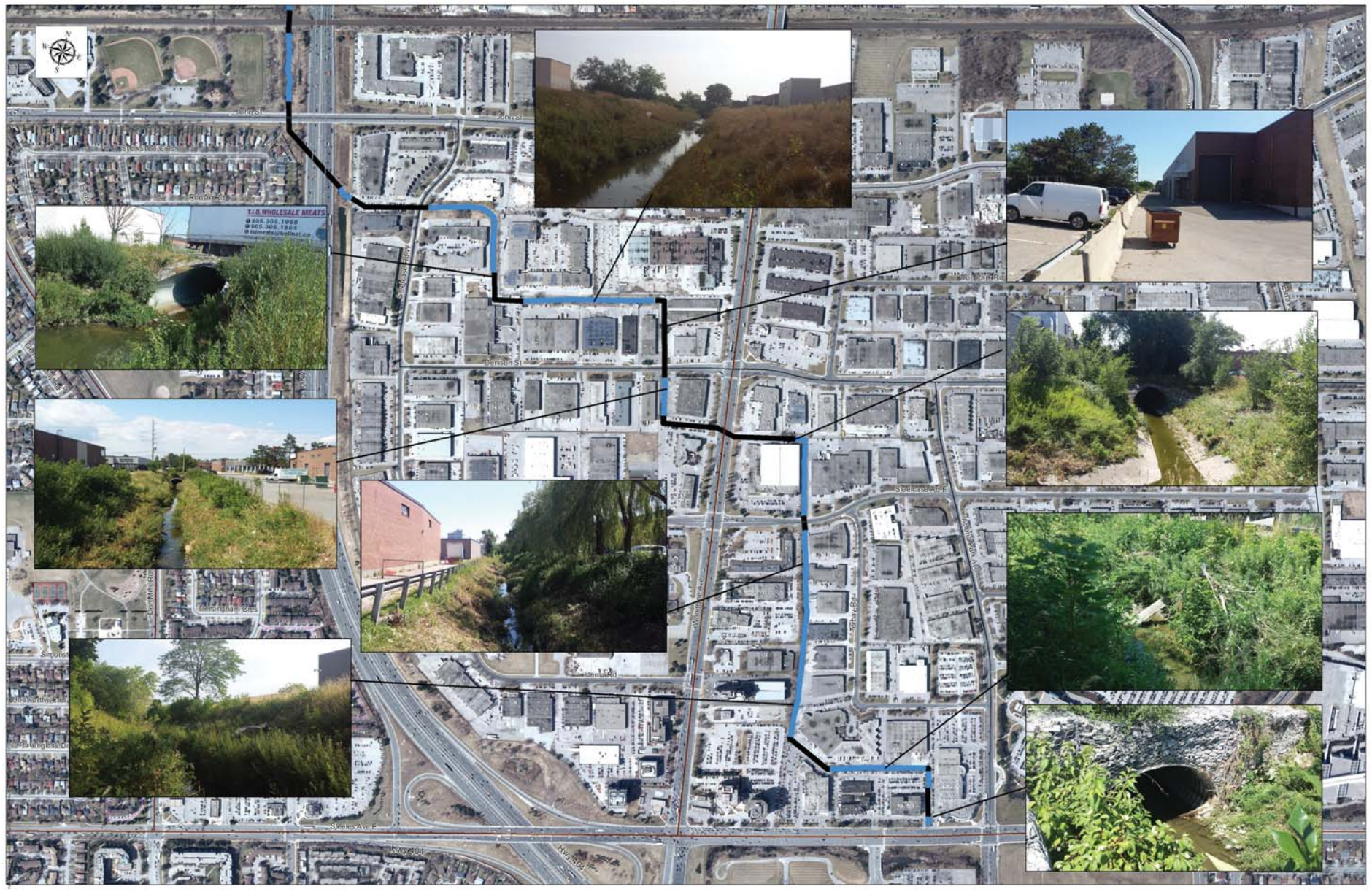


Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Existing Conditions



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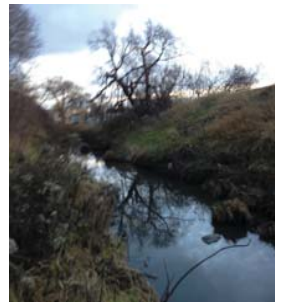

Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Extent of Flooding – August 2005 Storm







Shallow — Deep

Depth and extent of flooding predicted by detailed hydrologic model developed for this study

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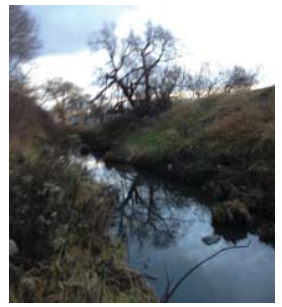
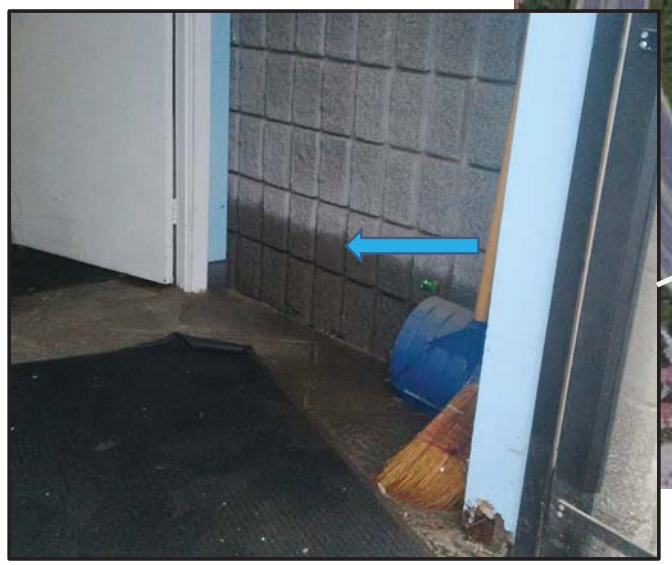


Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Extent of Flooding – July 2014 Storm




Shallow — Deep

Depth and extent of flooding predicted by detailed hydrologic model developed for this study

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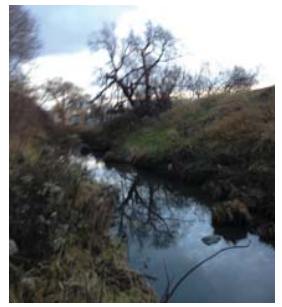

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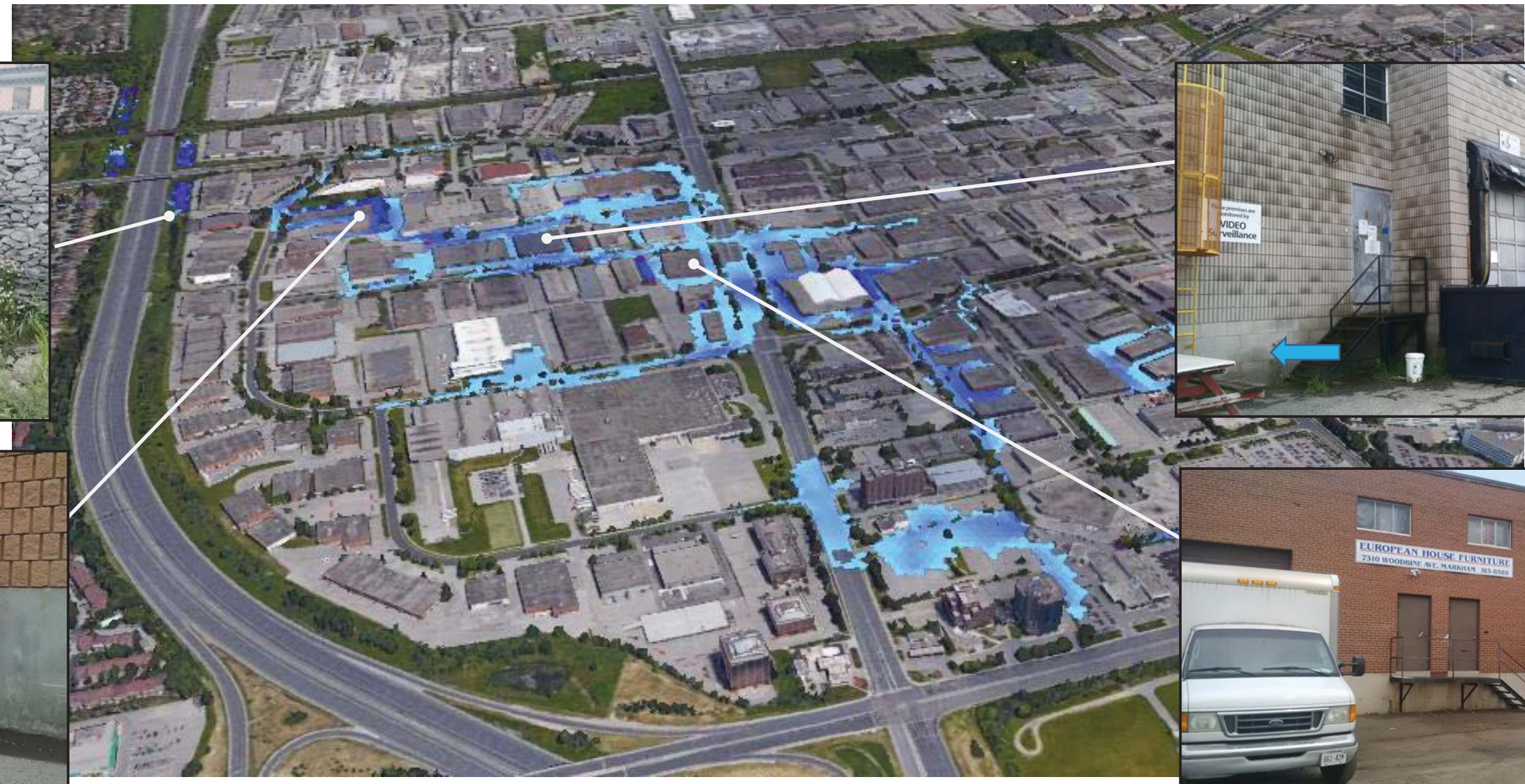
Extent of Flooding – August 2014 Storm

Shallow — Deep

Depth and extent of flooding predicted by detailed hydrologic model developed for this study

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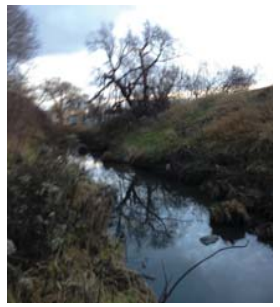

Extent of Flooding – 5 Year Storm

Depth and extent of flooding predicted by detailed hydrologic model developed for this study

Shallow — Deep

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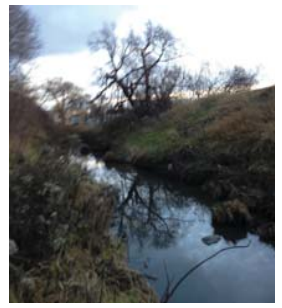

Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Extent of Flooding – 100 Year Storm

Depth and extent of flooding predicted by detailed hydrologic model developed for this study

Shallow — Deep

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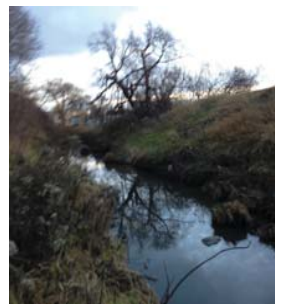


Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Potential Alternative Solutions

Option A: Reduce Peak Flow Rates in the Channel

A1: Construction of Storage Tanks Under Private Parking Lots

Storage tanks to be installed in private parking lots, without loss of parking in the long term

A2: Open Storm Detention Storage along Channel

Land to be acquired, excavated and landscaped, and used to store flood waters during storms

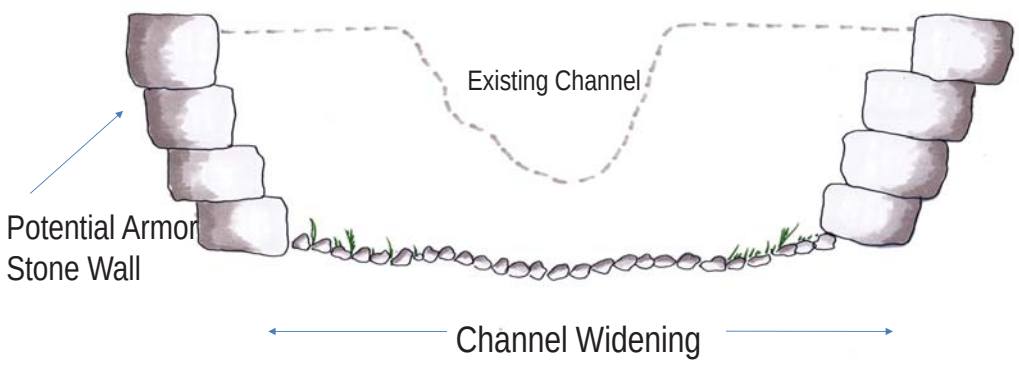
A3: Flow Diversion

Excavate right of ways and smaller private lands to install large storm sewers, and divert water around flood prone areas

Potential Alternative Solutions

Option B: Increase Channel Capacity

B1: Channel Widening and Culvert Improvements



Twin Existing Culverts Under Roads/Parking Lots

B2: Increased Channel Maintenance

Option C: Flood Proofing

Prevent flood waters from entering low lying building openings

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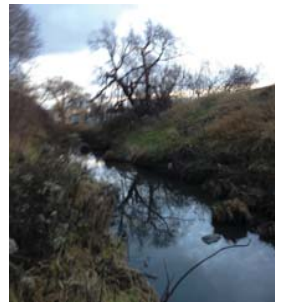

Don Mills Channel Flood Reduction Municipal Class Environmental Assessment

Evaluation of Alternatives

Natural Environment

- Potential impact on terrestrial system (vegetation, trees and wildlife)
- Potential impact on aquatic systems (aquatic life, surface water and groundwater)
- Potential to improve natural environmental conditions

Social Environment

- Disruption to existing community during construction (business disturbance, traffic, noise)
- Impacts to community in the long term (emergency access, land acquisition, aesthetics)
- Ability to reduce risks to public safety
- Impacts to Archaeological resources and First Nations
- Timeliness of Implementation

Technical

- Effectiveness of solution in reducing flood risk (based on 5 year level of service target)
- Impacts on upstream and downstream landowners
- Long term operations and maintenance
- Constructability
- Ability to meet regulatory requirements

Economic

- Estimated costs to implement project
- Estimated costs of long term operations and maintenance
- Estimated reduction in flood damages

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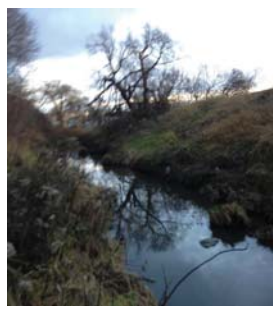

Next Steps

1. Development of alternative solutions, refinement of evaluation criteria and evaluation of alternative solutions
2. Presentation of alternative solutions, evaluation and preliminary preferred solution at Open House # 2, Spring/Summer of 2017
3. Council Presentation and confirmation of preferred solution
4. Issuance of Notice of Completion, 30 day public review period

Thank You For Attending!