Basement Flooding Study Area 58 Don River Sewershed from Steeles Avenue/Keele Street to Victoria Park and Eglinton Avenue

Municipal Class Environmental Assessment Study
October 2022

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Learn about our Study

We invite you to read through this presentation to learn more about the City's study about basement flooding for Study Area 58 in the Don River neighbourhoods extending from Steeles Avenue West / Keele Street to Victoria Park Avenue / Eglinton Avenue.

You will learn about:

- the purpose of the study
- what solutions have been considered and the preferred solution
- how impacts will be managed
- how to connect with City staff to ask questions or share your comments

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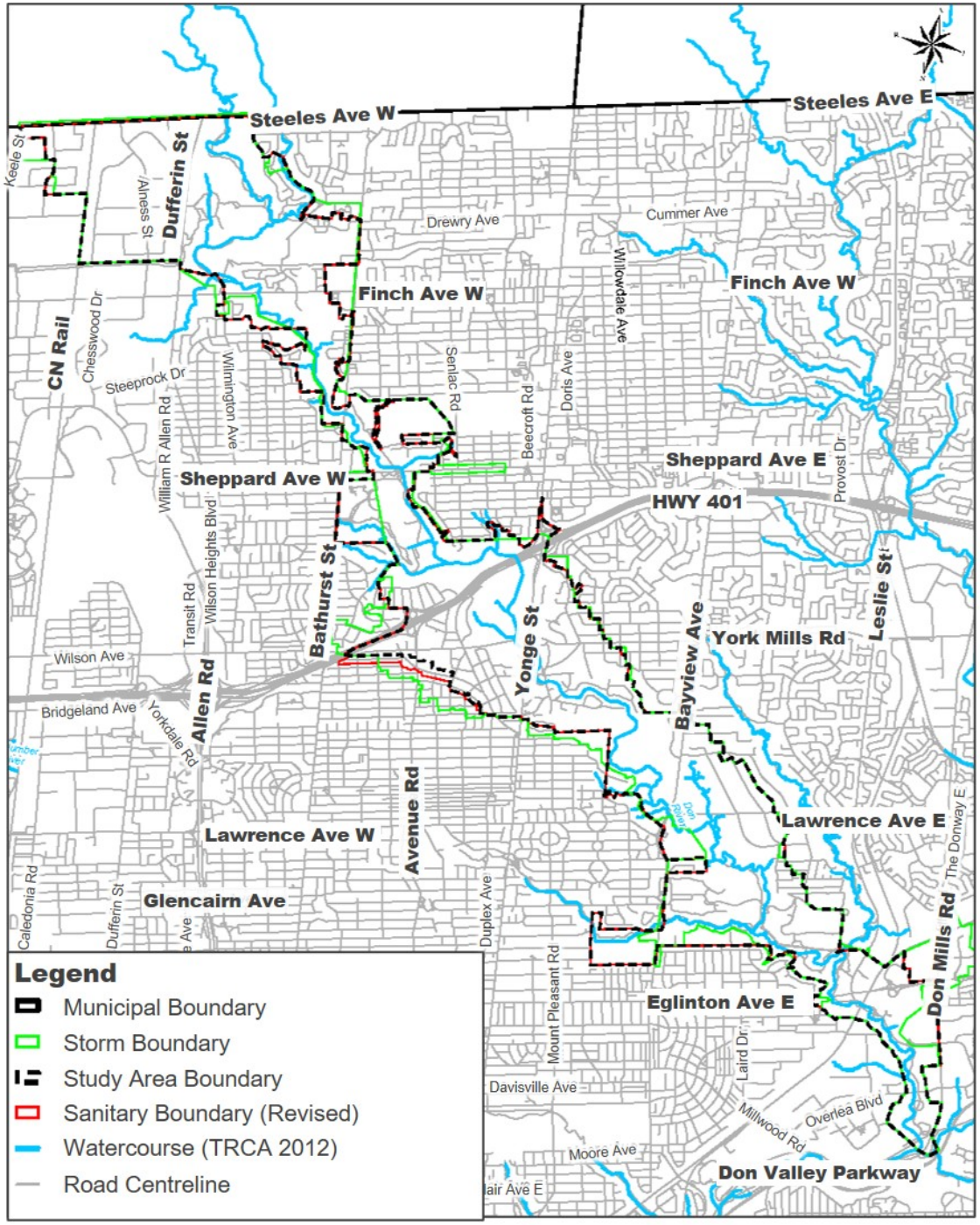
Study Area

The Study Area is located within the York Centre, Eglinton-Lawrence, Don Valley East, and Don Valley West Wards.

This area is bounded by Steeles Avenue and Eglinton Avenue East, and by Keele Street and Victoria Park Avenue along Don River watershed



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Study Purpose

The City is undertaking a Basement Flooding Study to:

- examine the existing storm water drainage and sanitary sewer systems and identify the causes of basement flooding and/or surface flooding (severe ponding on streets during extreme storms)
- identify and evaluate solutions
- make recommendations to reduce the risk of future basement flooding in the area and increase capacity in the City's storm and sanitary collection and overland drainage systems

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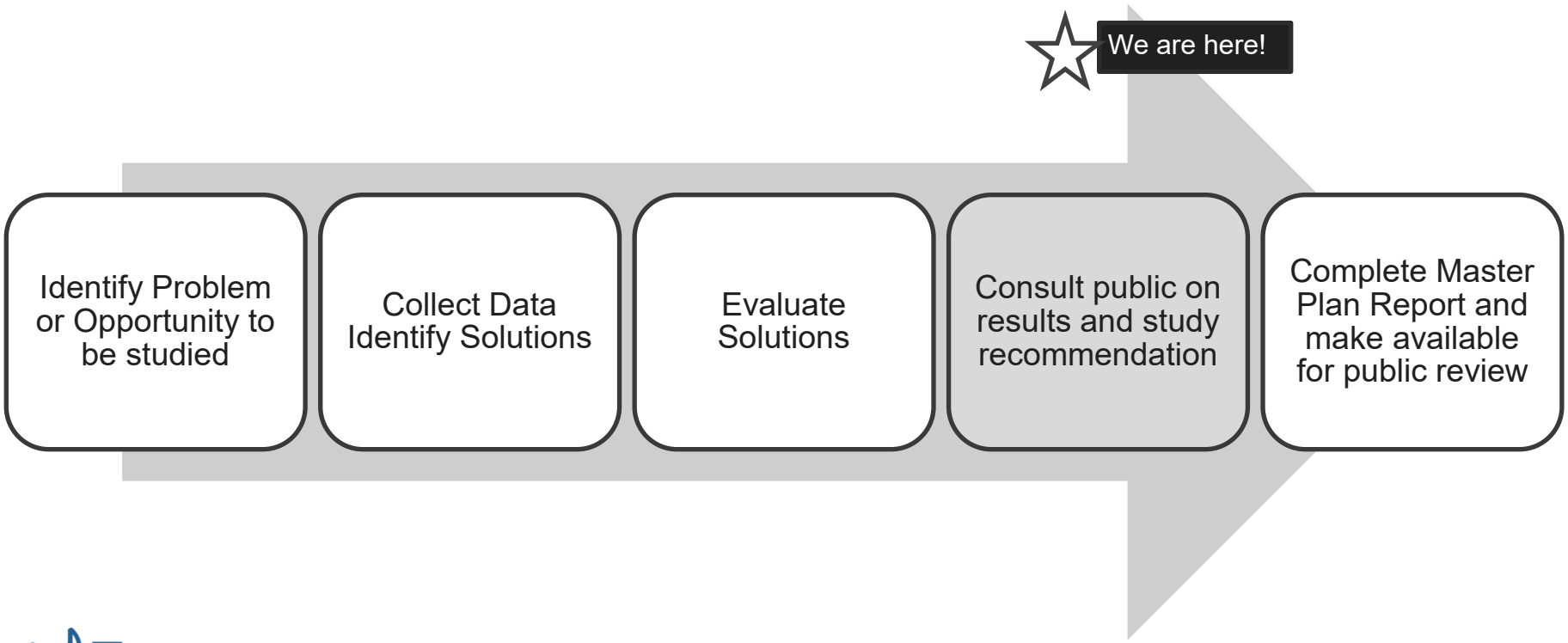
Study Process

The study is being undertaken in accordance with the Municipal Engineers Association's Municipal Class Environmental Assessment process. The study will follow the Master Plan approach which involves completion of Phases 1 and 2 of the planning process as illustrated below.



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About Basement Flooding

Flooding within the Study Area

There are a number of factors contributing to flooding in the area, including:

- Surcharge (overflow) of the sanitary sewer during heavy rainfall
- Surcharge of the storm sewer system, which may result in increasing the flow to the sanitary sewer system through potential interaction between the two systems
- High groundwater table, above the sewer or basement elevation
- Accumulation of surface rainwater runoff in low-lying areas
- Backup from sewer outfall or accumulation of sediment in the outflow conduit (channel)
- High overland flow depth on the City's right-of-way (roadway)
- Undersized storm sewer or undersized catchbasins resulting in high overland flow
- Blocked/broken storm and sanitary sewers, maintenance holes and catchbasins

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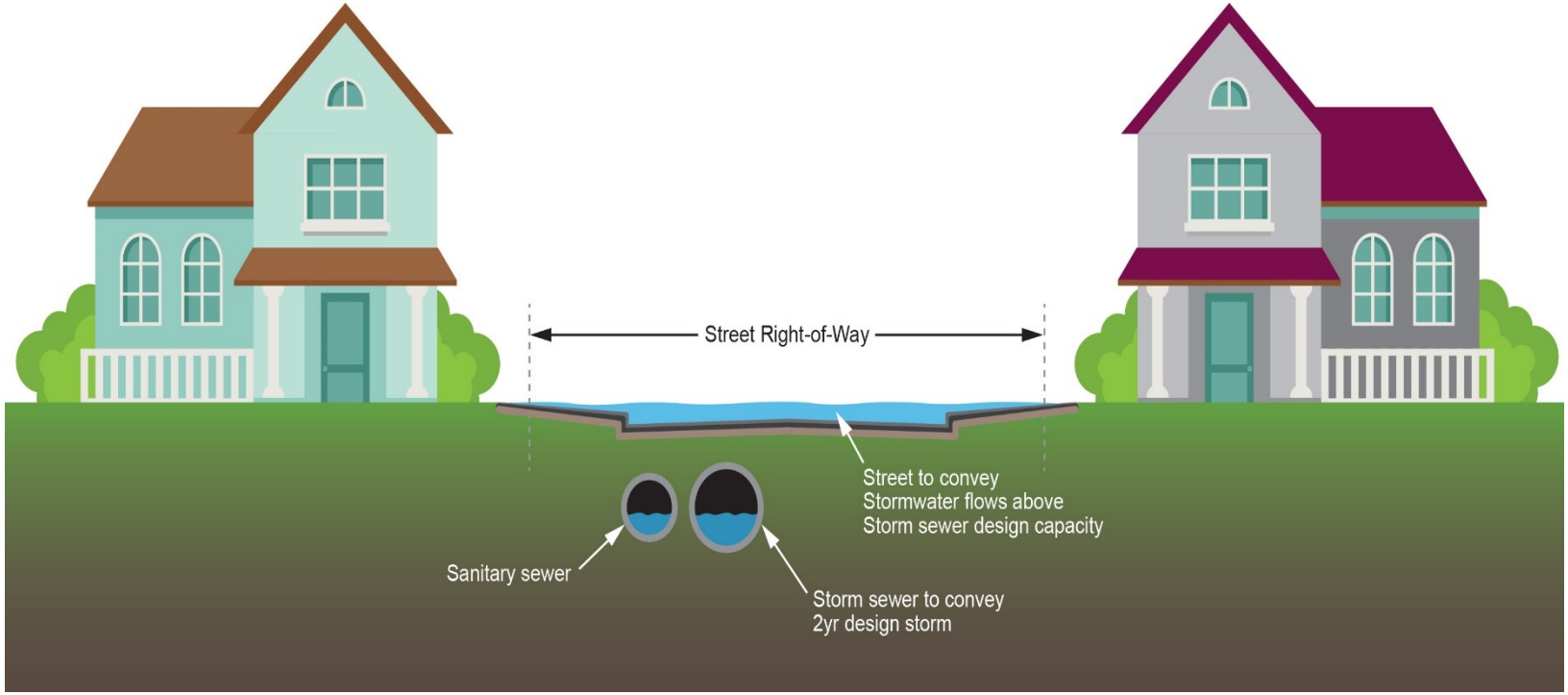
Storm Drainage System

Storm sewers (or minor system) convey stormwater runoff from up to 2-year design storm

Streets (or major system) convey major storms that exceed the storm sewer capacity

Temporary ponding on streets is expected during major rainstorms



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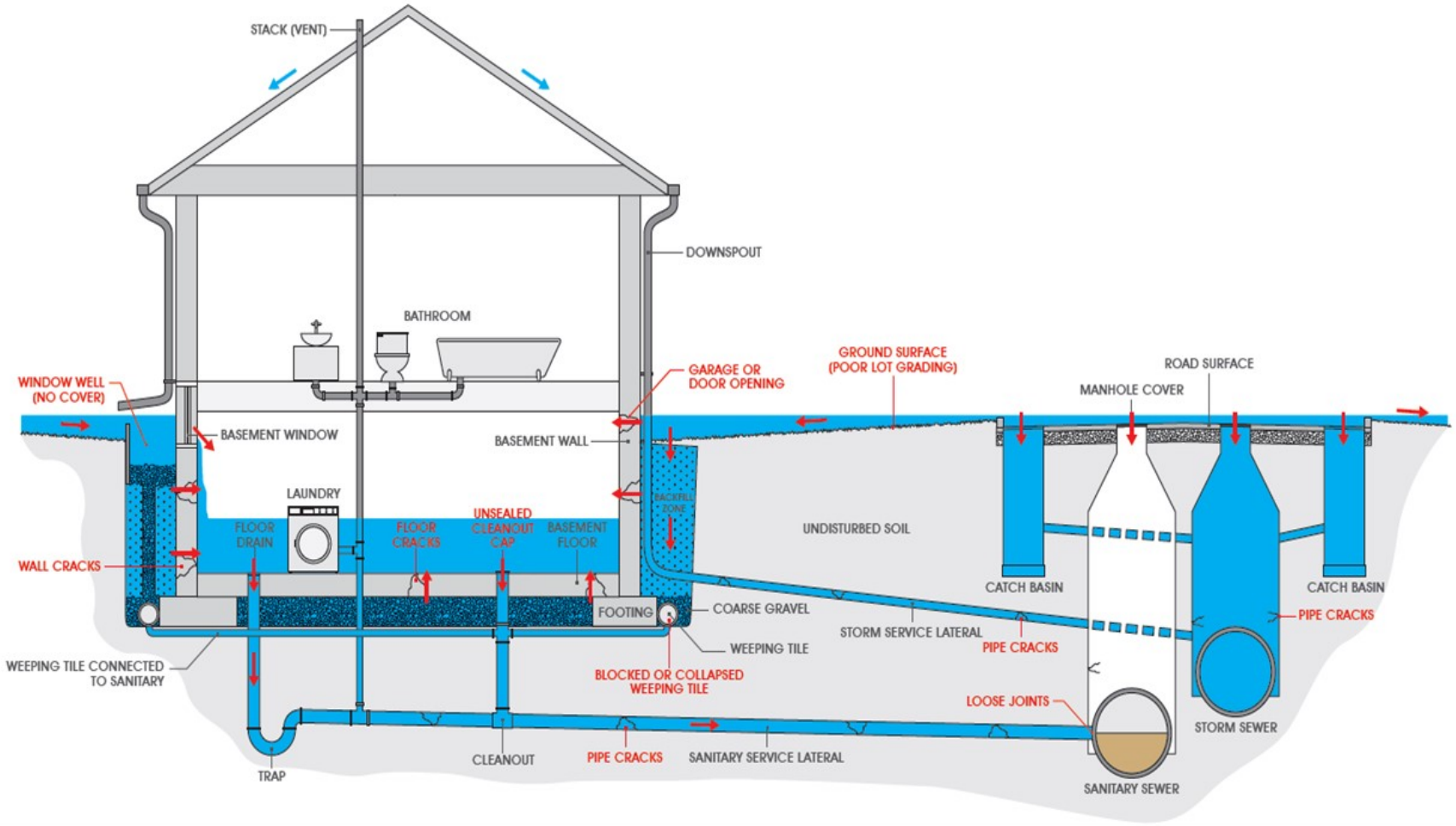
Typical Causes of Basement Flooding



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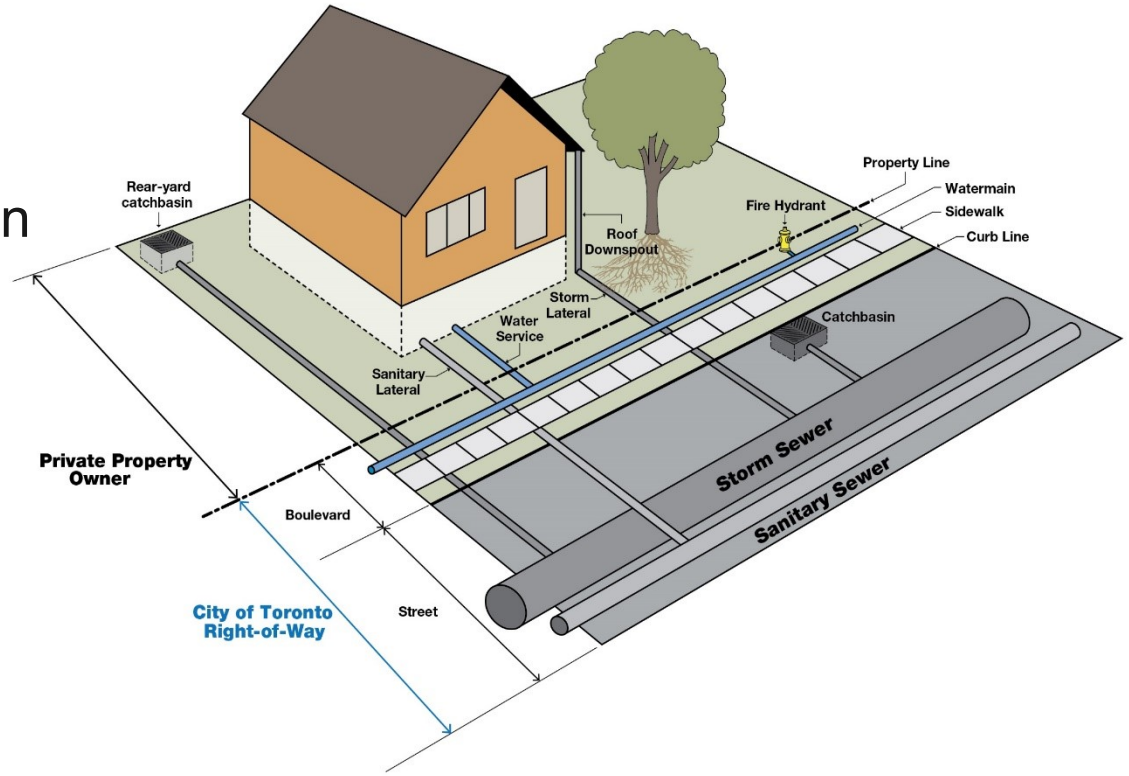
Areas of Responsibility - City

The City is responsible for infrastructure within the public Right-of-Way and plans to achieve a higher than existing level of service for:

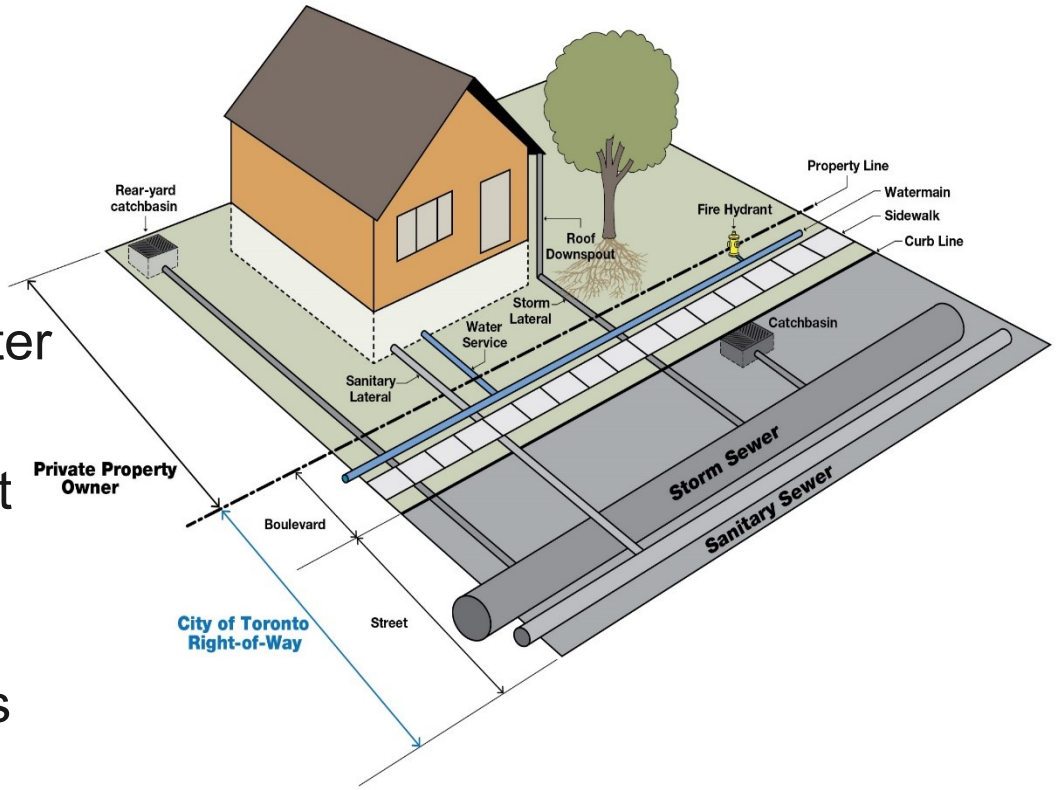
- Sanitary Sewers
- Storm Sewers
- Catchbasins within roadways
- Overland drainage within roadways



Area of Responsibility – Property Owner

Each homeowner is responsible for the operation and maintenance of drainage systems on private property including:

- Lot grading
- Front and rear-yard or driveway drainage catchbasins
- Foundation drains
- Sump pumps and backwater valves
- Private tree roots and what you put down the drains (fats, oils, grease, etc.)
- Disconnecting downspouts



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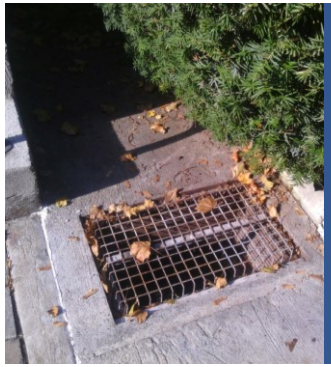
Property Owner – Potential Solutions

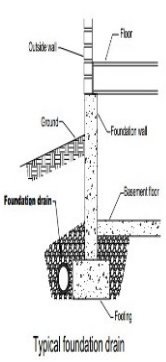
Source control solutions that can be implemented by property owners include:



Maintaining front and rear yard drainage or driveway catchbasins

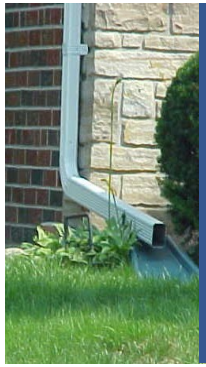
Installing backwater valve

Installing permeable paving



Disconnecting foundation drains from sanitary sewer and installing / maintaining sump pumps

Improving lot grading



Disconnect downspouts

Using rain barrels

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Existing Flooding Conditions

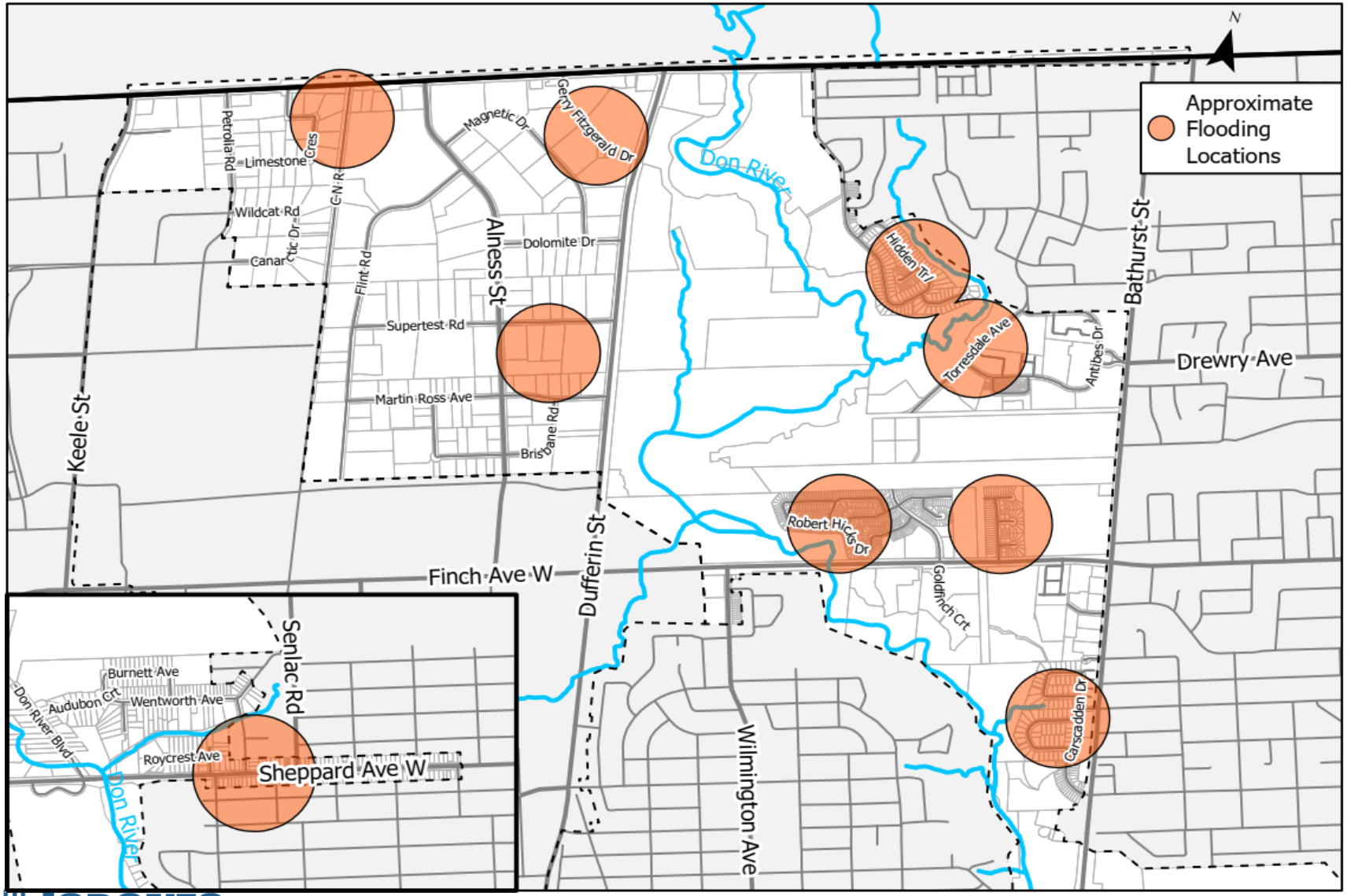
Existing Flooding Conditions

The City and its consultants have examined a number of factors related to flooding. They include:

- Overland flow (the amount of surface drainage conveyed on the road during large rainfall events)
- Locations of sags in the roadway where overland flow will pond, which are vulnerable to surface and basement flooding
- Capacity of existing storm and sanitary sewers

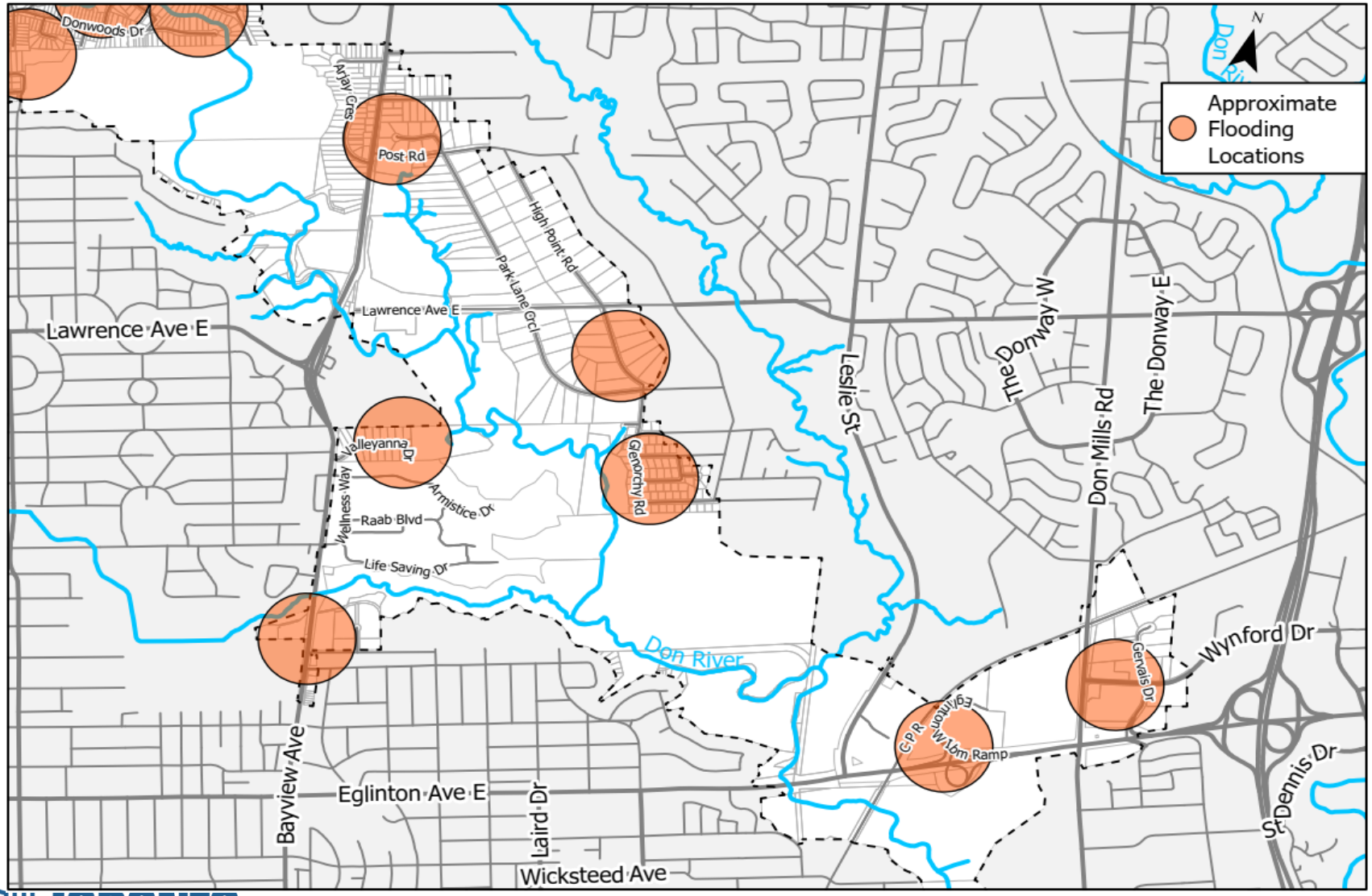
The general locations of flooding within the study area are shown in the following three maps.

Existing Flooding Conditions



Existing Flooding Conditions

Existing Flooding Conditions



Basement Flooding Solutions

Solutions to Basement Flooding

To help reduce the risk of future basement flooding in the area, the City has identified several solutions prioritized for implementation, which include:

- Overland controls
- Increasing the number of catch basins
- Catch basin inlet controls
- In-line storage pipes
- Replacing existing pipes with new larger pipes

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Basement Flooding Solutions

Overland Control

- This solution diverts stormwater away from low lying areas that have no direct outlet to reduce ponding on the surface

What Does it Involve?

- Installation of a large inlet grate or “curb drain” (shown below) to intercept road or boulevard flows and direct the flow into the sewer system

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Basement Flooding Solutions

Increasing the Number of Catch Basins

- Where there is capacity in the storm sewer, the City will add more catchbasins to capture flow from the surface

What Does it Involve?

- Minor excavation of the road to install the new catchbasin(s) and connect to the storm sewer and restoration of the curb and road

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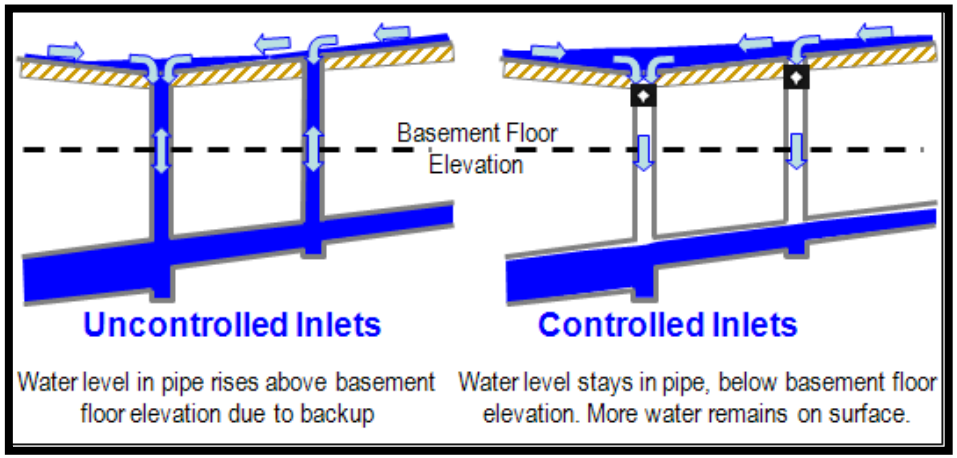
Basement Flooding Solutions

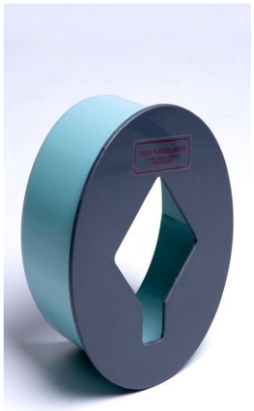
Catch basin Inlet Controls

- Can limit flow into the storm sewer system to control back-up
- Used in locations where more water can be kept on the surface

What Does it Involve?

- Installation of a plastic or metal plate / device inside the catch basin outlet and is not visible
- Requires minimal effort and time to install





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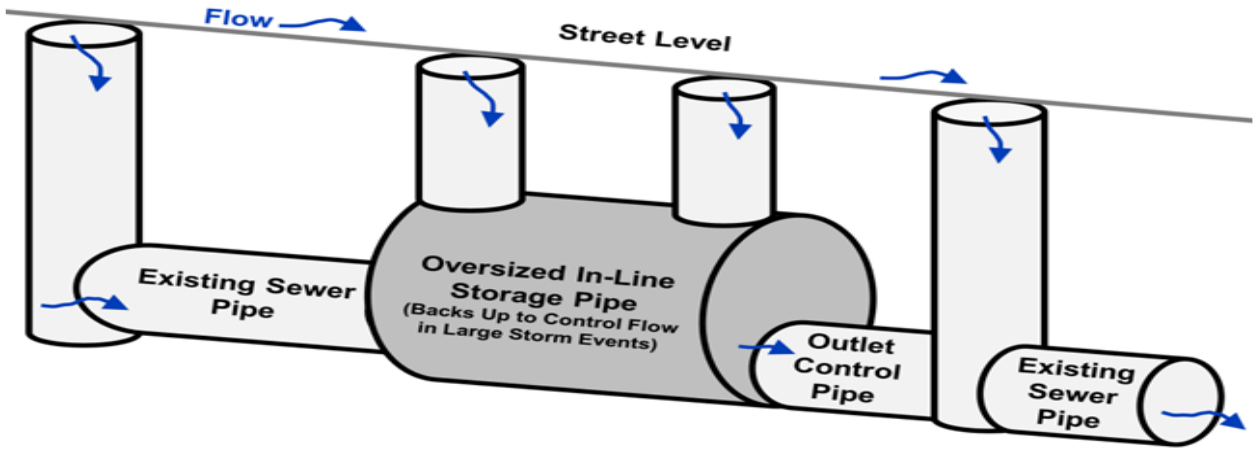
Basement Flooding Solutions

In-line Storage Pipes

- New oversized pipes are constructed to temporarily store water and help relieve overloading of the sewer system

What Does it Involve?

- Excavation of the road to remove the old sewer, manhole and catch basin and disconnection of the sewer service line(s)
- A new sewer is then installed and connected to the system followed by restoration of the road and boulevard



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Basement Flooding Solutions

Replacement of Existing Storm, Combined and/or Sanitary Sewers

- Increase the size of the sewer pipe by replacing the old sewer with a larger pipe (upsize), installing underground storage tanks

What Does it Involve?

- Excavation and removal of the old sewer, manhole and catchbasin and disconnection of sewer service line(s)
- A new sewer is then installed and connected to the system followed by restoration of the road and boulevard

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Recommendations and Alternative solutions for Five Areas

Recommended Improvements

A total of 44 sewer improvement projects (as shown in Slides 28 to 30) have been identified to address surface and basement flooding within the study area:

- Sanitary sewer system upgrades, including storage tanks and sewer upsizing at nine locations
- Storm sewer system upgrades, including storage tanks, sewer upsizing, and catch basin works at 35 locations

Five of the projects involve works located outside the City's right-of-way and need to be evaluated further as shown in Slides 31 to 42:

Area 1: Robert Hicks Finch/Bathurst Area (Storm Sewer Upgrades)

Area 2: Old Yonge Street (Storm Sewer System Upgrades)

Area 3: Belgrave / Highway 401 Area (Storm Sewer System Upgrades)

Area 4: York Mills Road Area (Sanitary Sewer System Upgrades)

Area 5: Eglinton Avenue East Area (Storm Sewer System Upgrades)

Evaluation Criteria for Alternatives

Each alternative solution was evaluated based on their ability to address the study's purpose and the criteria below.

Natural Environment

Potential impacts on:

- ✓ Terrestrial systems (vegetation, trees, wildlife)
- ✓ Aquatic systems (aquatic life and vegetation)
- ✓ Surface and groundwater
- ✓ Soil and geology
- ✓ Receiving water quality

Socio-Cultural

- ✓ Land use impacts (parks, ravines, open spaces)
- ✓ Community disruption during construction (traffic, noise, construction in easements)
- ✓ Community disruption after construction (visual impact, odour, safety)
- ✓ Potential impacts to archaeological and cultural resources
- ✓ Impacts to First Nations

Technical

- ✓ Effectiveness in reducing surface and basement flooding
- ✓ Improvement to runoff quality
- ✓ Feasibility of implementation (available space, accessibility, constructability, easement requirements, approvals)
- ✓ Potential impacts on upstream/downstream and surrounding area infrastructure
- ✓ Impacts on operating and maintenance requirements

Economics

- ✓ Capital cost
- ✓ Operating and maintenance costs

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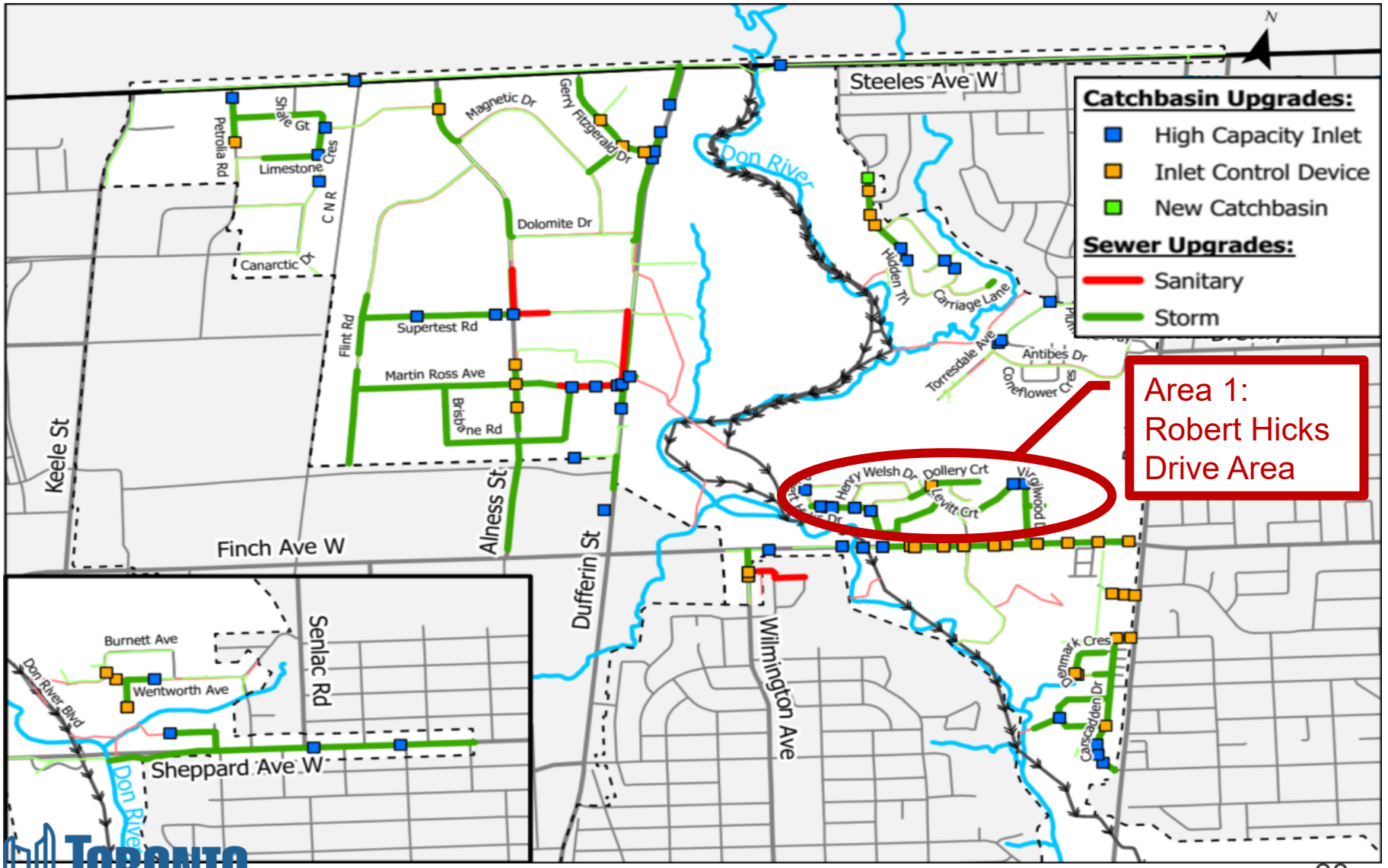
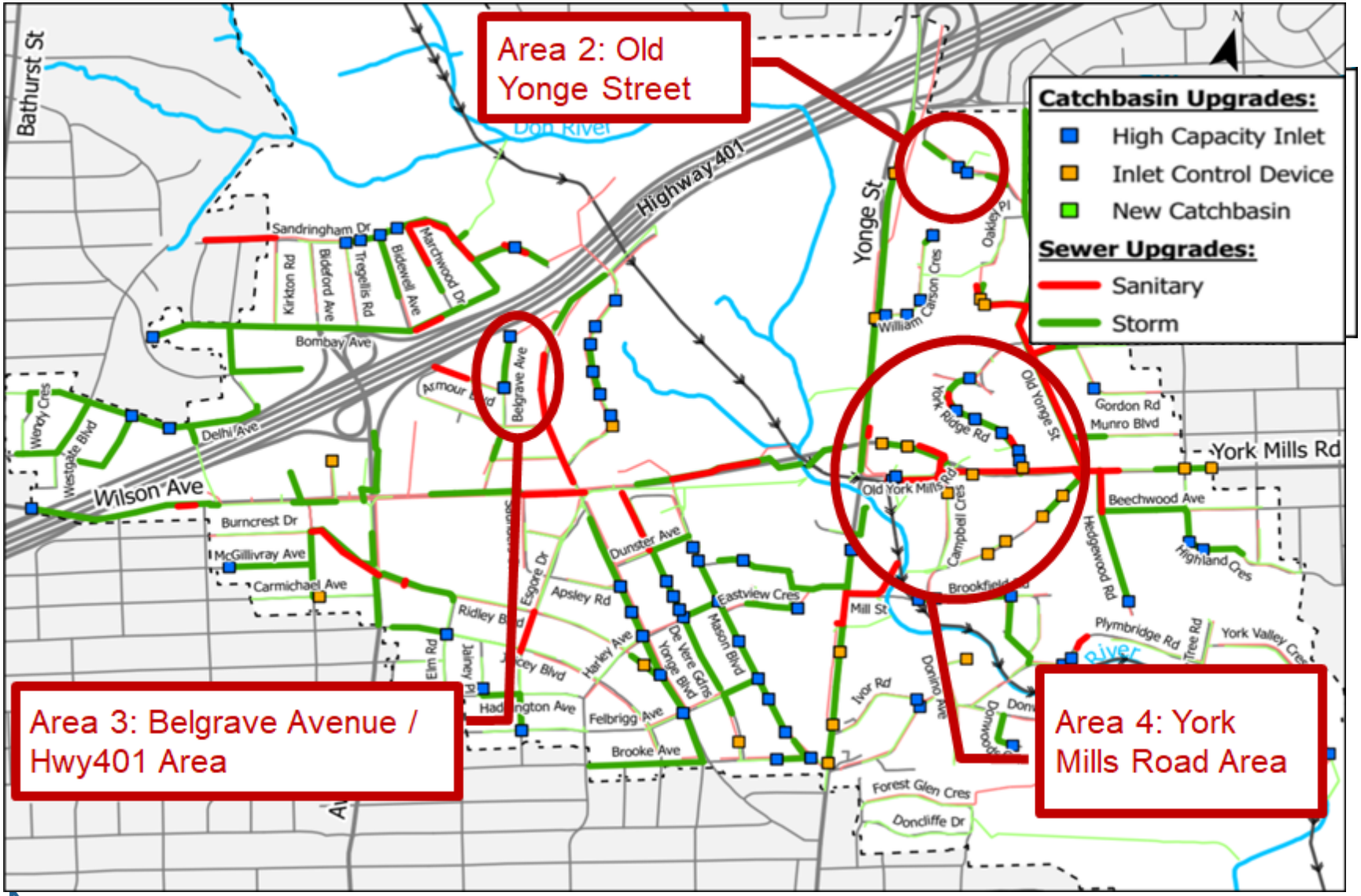
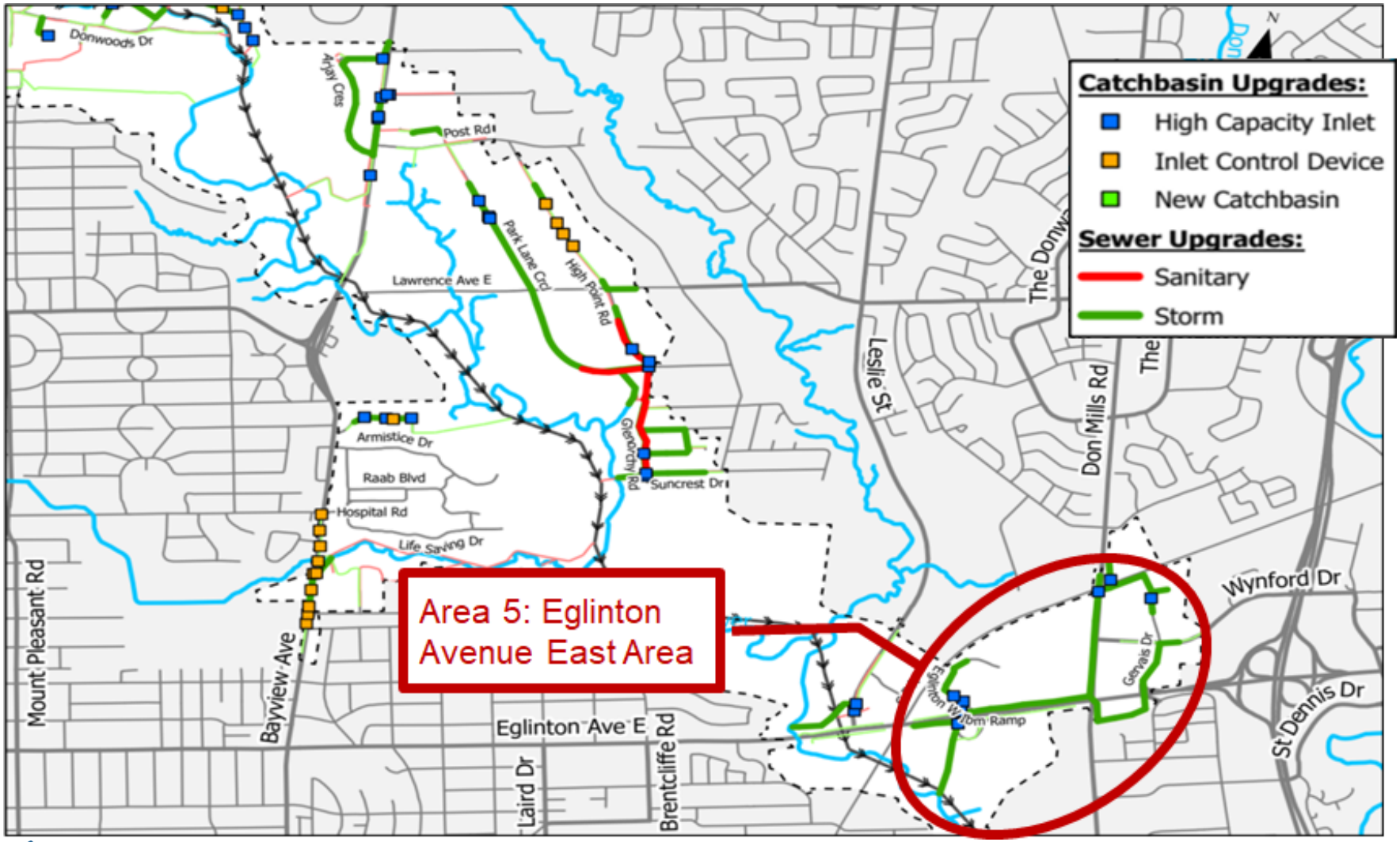
Recommended Improvements



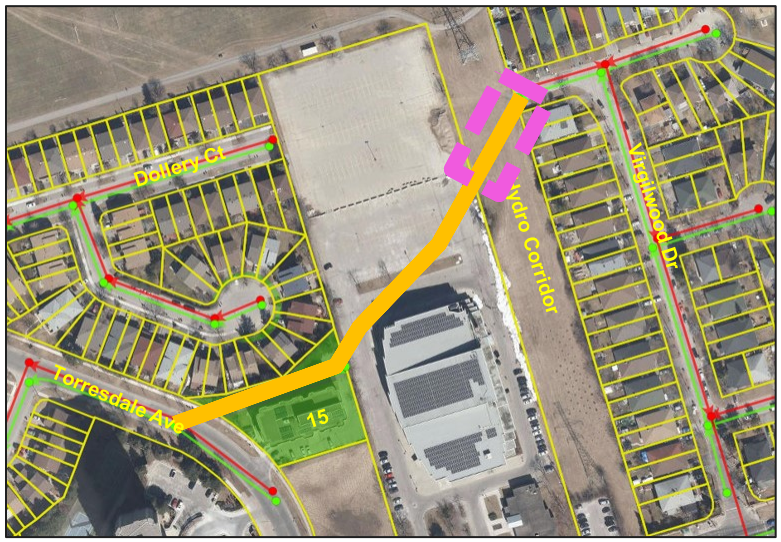
Recommended Improvements

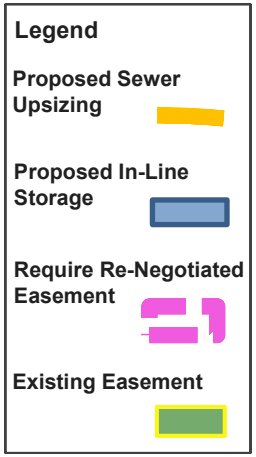


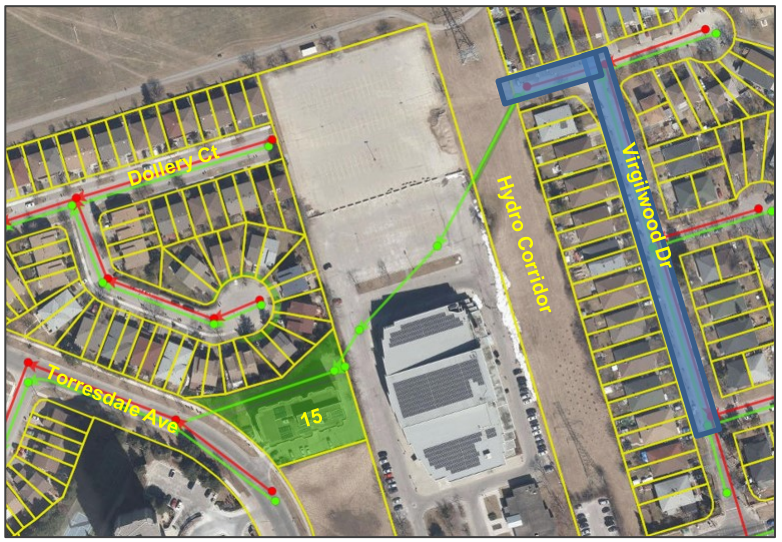
Recommended Improvements



Alternative Solutions for Area 1: Robert Hicks Drive Area







Alternative #1 outside of the Right-of-Way:

- Upsize storm sewer segments affecting 15 Torresdale Avenue (has existing easement) and the Hydro Corridor (has existing restricted easement)
- Provide high capacity inlets
- $2.5M Capital Construction Cost

Alternative #2 within the Right-of-Way:

- Provide storm system inline storage on Virgilwood Drive
- Provide high capacity inlets
- $4.5M Capital Construction Cost

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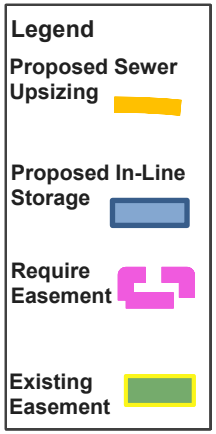
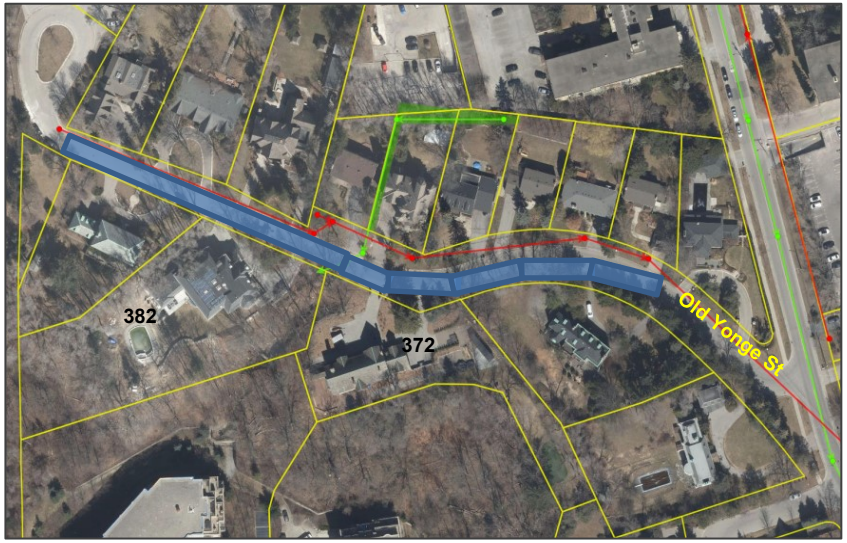
Area 1: Recommendation

Alternative #1 which is outside the City's right-of-way has been selected because:

- There is an existing easement agreement in place with 15 Torresdale Avenue property owner
- There is an existing hydro easement with restrictions in place. Negotiation with Hydro One is required, but is not anticipated to be time-consuming
- Minimal disruption to Hydro One infrastructure is expected within the easement during construction
- The alternative within municipal right-of-way (inline storage option) is more costly

Alternative Solutions for Area 2: Old Yonge Street Area





Alternative #1 outside of Right-of-Way:

- Need to obtain easement over the private properties (372 & 382 Old Yonge Street) to upsize the storm sewers
- Provide high capacity inlets
- $500,000 Capital Construction Cost

Alternative #2 within City's Right-of-Way:

- Provide storm inline storage on Old Yonge Street upstream of the undersized storm sewers
- Provide high capacity inlets
- $3.4M Capital Construction Cost

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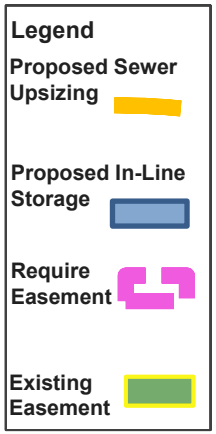
Area 2: Recommendation

Alternative #1 located outside the City's right-of-way has been selected because:

- The alternative within municipal right-of-way (inline storage option) may not be constructible (pipe restriction size is less than the City's Operation and Maintenance requirements)

- The alternative with inline storage is more costly

Alternative Solutions for Area 3: Belgrave Avenue and Hwy 401



Alternative #1 outside of the City's Right-of-Way:

- Need to obtain easement for the storm outlet to Ministry of Transportation (MTO) property at the north end of Belgrave Avenue
- Upsize the storm outlet and provide additional capacity
- $400,000 Capital Construction Cost

Alternative #2 within City's Right-of-Way:

- Provide storm inline storage on Belgrave Avenue upstream of the outlet
- Provide high capacity inlets
- $1.3M Capital Construction Cost

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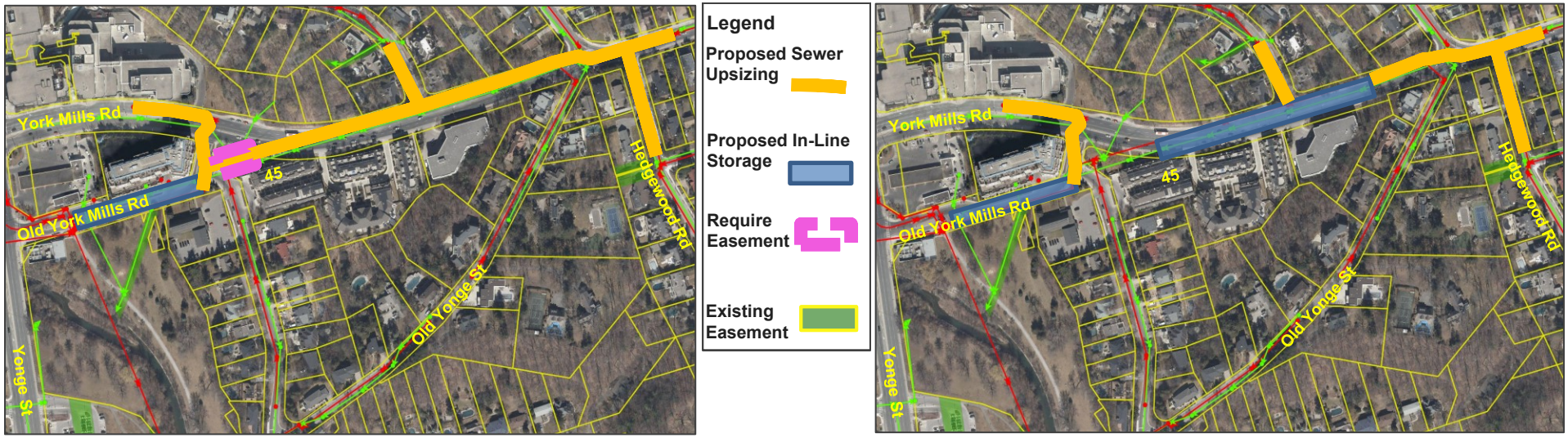
Area 3: Recommendation

Alternative #1 located outside the City's right-of-way has been selected because:

- The alternative within City's right-of-way (inline storage option) may not be constructible (pipe restriction size is less than the City's Operation and Maintenance requirements)
- The alternative with inline storage does not fully meet the design requirements to resolve basement flooding
- The alternative with inline storage is more costly

Alternative Solutions for Area 4: York Mills Road Area



Alternative #1 outside of the City's Right-of-Way:

- Upsize sanitary sewer segments on private property and provide sanitary inline storage downstream on Old York Mills Road
- Need to obtain easement for the sanitary sewer segments on private property (45 York Mills Road)
- $3.3M Capital Construction Cost

Alternative #2 within the City's Right-of-Way:

- Provide sanitary inline storage upstream of 45 York Mills Road (private property) and limit flows to reduce surcharging
- Provide downstream sanitary inline storage on Old York Mills Road
- $6.1M Capital Construction Cost

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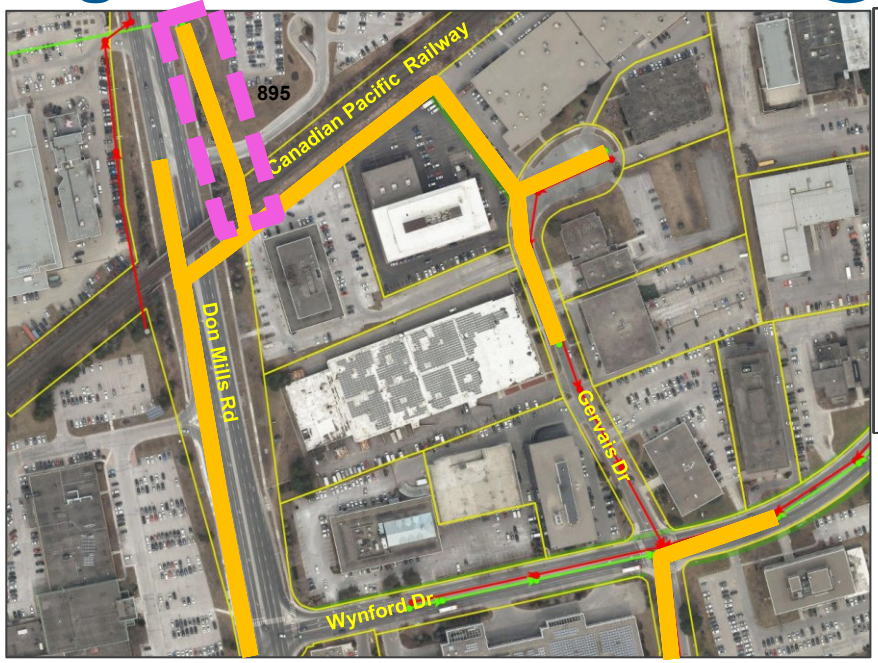
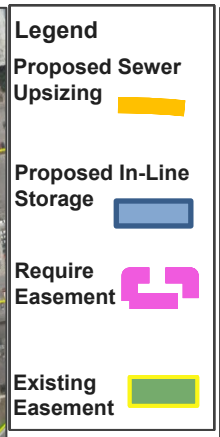
Area 4: Recommendation

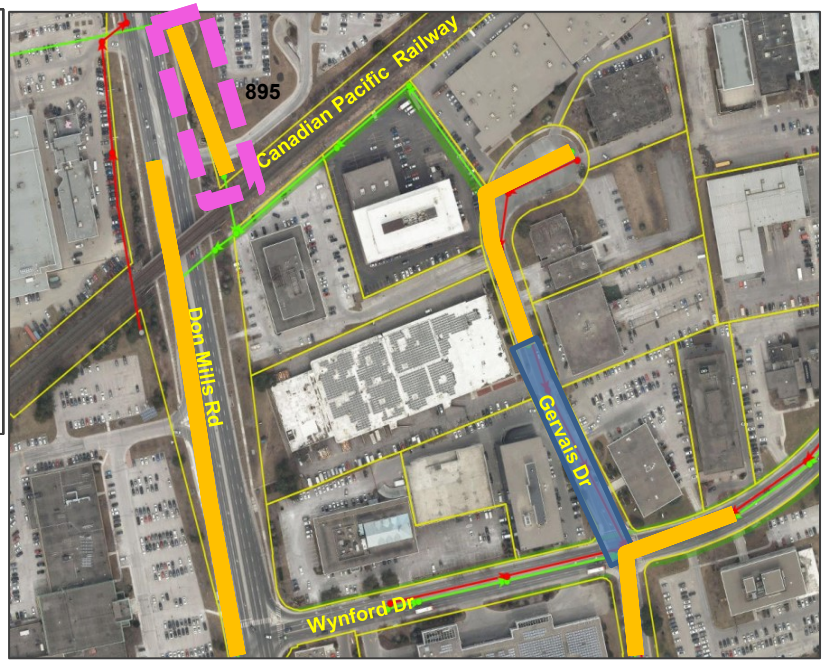
Alternative #1 located outside the City's right-of-way is selected because:

- The easement requirement is not expected to cause significant impact to the public
- The alternative with inline storage is expected to cause more disturbance to the public
- The alternative with inline storage is more costly

Alternative Solutions for Area 5a: Eglinton Avenue East @ Gervais Drive







Alternative 1 (outside of the Right-of-Way):

- Need to obtain easements for the private property (895 Don Mills Rd) and Canadian Pacific Railway crossing
- Upsize storm sewers and provide additional capacity
- $2.3M Capital Construction Cost

Alternative 2 (within & outside the Right-of-Way):

- Provide storm inline storage on Gervais Drive and reroute sewer southwards to Wynford Dr
- Need to obtain easement for the private property (895 Don Mills Rd)
- Upsize storm sewers and provide ICDs to limit inflows
- $4.6M Capital Construction Cost

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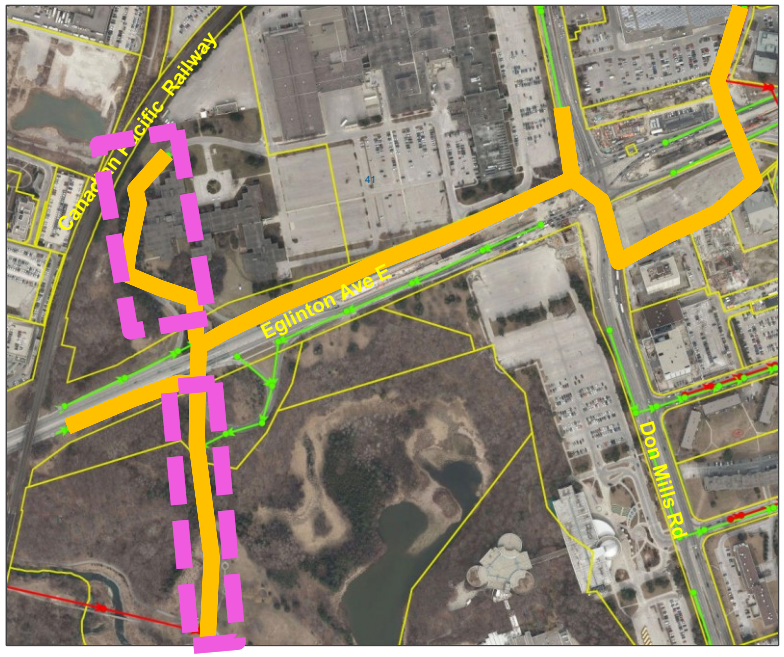
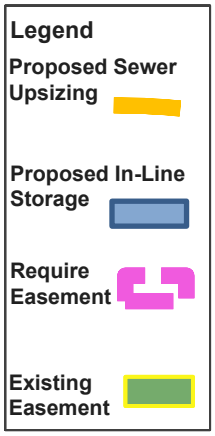
Area 5a: Recommendation

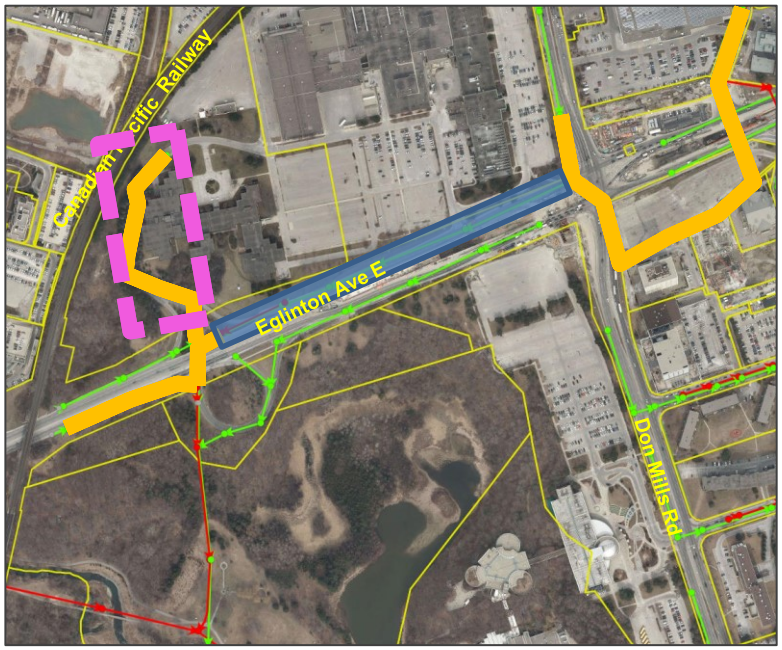
Alternative 2 (within & outside the municipal right-of-way) has been selected because:

- Alternative 1 (outside of the right-of-way) is more disruptive
- Alternative 1 (outside of the right-of-way) will require negotiation of the Canadian Pacific Railway crossing and is anticipated to take considerable time
- Additional construction costs beyond those shown above are expected to cross the Canadian Pacific Railway tracks

Alternative Solutions for Area 5b: Eglinton Avenue East @ Don Mills Road







Alternative 1 (outside of the Right-of-Way):

- Need to obtain easements for the private property (1150 Eglinton Avenue East) and TRCA parklands (E.T Seton Park)
- Upsize storm sewers
- $7.7M Capital Construction Cost

Alternative 2 (within & outside the Right-of-Way):

- Provide storm inline storage on Eglinton Avenue East upstream of the TRCA parklands
- Install High Capacity Inlets (HCIs) to reduce surface flooding
- $17M Capital Construction Cost

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Area 5b: Recommendation

Alternative 1 (outside of the right-of-way) has been selected because:

- Alternative 2 (within & outside the City's Right-of-Way) creates additional conflict with the Eglinton Avenue light rail transit network due to the proposed inline storage works

- Alternative 2 (within & outside the City's Right-of-Way) is considerably more costly

Mitigation of Potential Impacts and Next Steps

Mitigation of Potential Impacts

Mitigation measures will be reviewed and refined during the detailed design

Habitat and Trees

- Vegetation removal to occur outside of the breeding bird season of April to August
- If stockpiles of gravel and sand are required during the active turtle season (April to October), install turtle exclusion fencing around stockpiles prior
- Implement erosion and sediment control mitigation measures
- Spill Prevention and Contingency Plan to be developed prior to construction
- Prepare tree removal and protection plans, along with tree protection barriers and signage where required
- Any damaged trees will be pruned through the implementation of proper arboricultural techniques, under supervision of a certified arborist
- On-site inspection during construction

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Mitigation of Potential Impacts

Sediment and Watercourse Protection

- Develop hydraulic model prior to the installation of new outfall to determine the impacts to the current banks required to prevent erosion
- Consider additional sediment inputs into the embayment, the creek, and its effects to the navigability of the watercourse through the detailed hydraulic model
- Consider and investigate the effects of increased sediment inputs to aquatic habitat

Construction Measures

- Complete Traffic Management Plan
- Conduct a field review to confirm the result of archaeological potential Use of Best Management Practices for dust control and vibration monitoring during construction
- Use of low noise equipment during construction, where possible
- Notify impacted property owners prior to construction
- Maintain access to fronting properties

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From Study to Construction

- All City basement flooding projects are prioritized and scheduled to protect the greatest number of properties as soon as possible, within approved budgets and coordinated with other construction work as per Council approved criteria
- Projects are also prioritized for implementation based on a City Council adopted $68,000 cost per benefitting property threshold
- Projects with a cost-benefit less than $68,000 per property at the preliminary design stage may proceed to construction
- Projects that exceed the $68,000 cost per benefitting property threshold will be moved into the State-of-Good-Repair's long term capital plan

Contact us

Thank you for viewing the study information

- Contact us if you have any questions or submit comments by email or phone
  - Mae Lee, Senior Public Consultation Coordinator 416-392-8210 or FloodingStudy@toronto.ca
- The study team will review your feedback and finalize the preferred solution
- A study report will then be completed later this year and made available for a 30-day public review

www.toronto.ca/BF58

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