

Saville Area Resident Meeting

Halton Region & Town of Oakville
May 10, 2023



Introductions

Sean O'Meara – Ward 1 Regional and Town Councillor

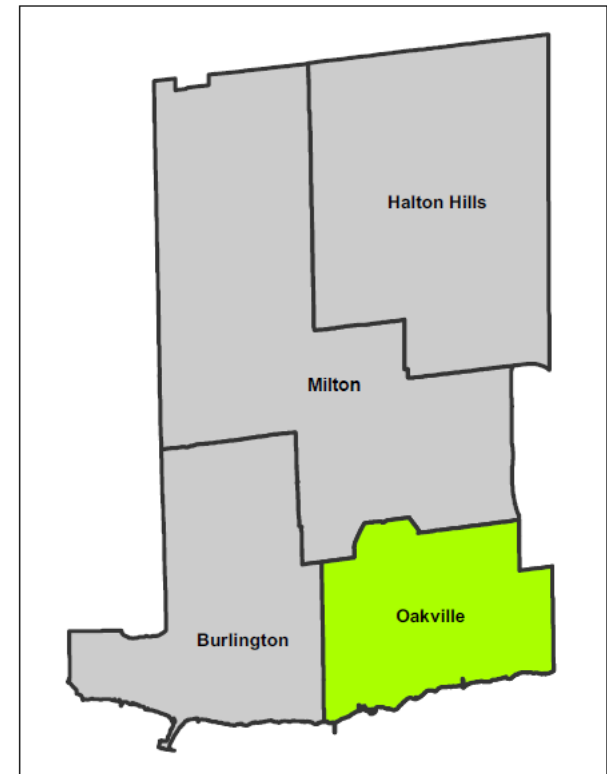
Jonathan McNeice – Ward 1 Town Councillor

Halton Region

- Kiyoshi Oka – Director, Water & Wastewater System Services
- Trish Holden – Manager, Systems Planning & Customer Service
- Magda Bielawski – Supervisor, Infrastructure Systems Improvement
- Matt Stefanik – Operations Support Coordinator

Town of Oakville

- Phoebe Fu – Commissioner, Community Infrastructure Community Infrastructure
- Jill Stephen – Director, Transportation and Engineering
- Phil Kelly – Manager, Design & Construction
- Ralph Kaminski - Director and Chief Building Official



Presentation Overview

Basement Flooding Mitigation – Halton Region

- Your Homes Water Drainage System
- Who is Responsible for What
- Inflow & Infiltration (I/I) and Wastewater System Surcharging
- Saville Area Findings
- Sources of I/I – Public & Private
- Planned Sewer Improvements & Maintenance
- What You Can Do to Reduce Basement Flooding Risk

Storm (Surface) Water Drainage – Town of Oakville

- Surface Water Drainage
 - Area History
 - Area storm water servicing infrastructure
 - How surface water is collected and directed
- Private Side Home Plumbing Elements
- Saville Area Stormwater Improvement Study
- Ontario Building Code Overview

Basement Flooding Mitigation

Halton Region May 10, 2023

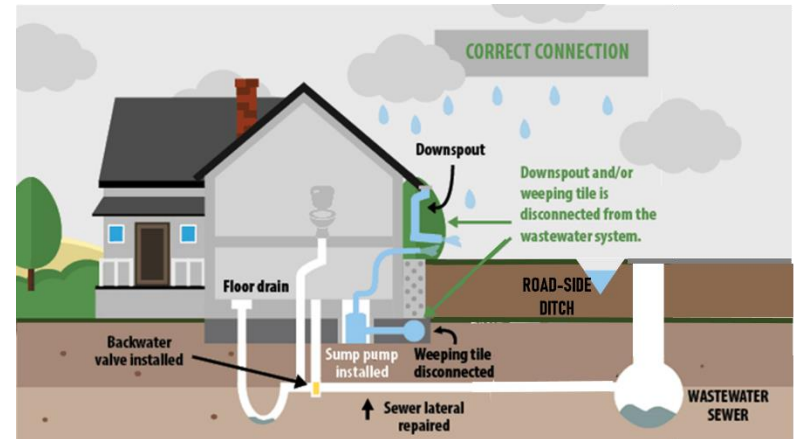


Understanding your Home's Water Drainage System

Your Home's water drainage systems collect groundwater, stormwater (rain and/or snow melt) and wastewater from your home and drains it to the stormwater (ditches) or wastewater system in your street.

Groundwater (collected by your home's weeping tile system) **is pumped up to the surface where it is discharged and directed to road-side ditches.**

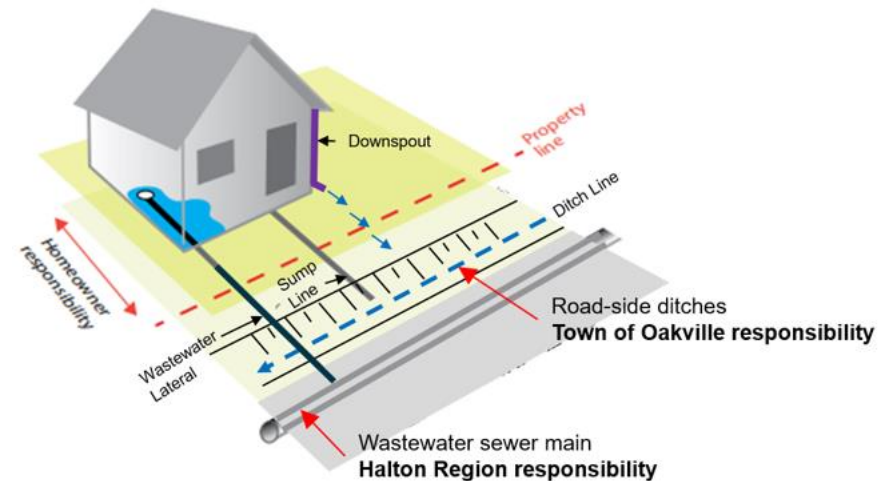
Stormwater (collected from your roof by downspouts and lot grading) **is directed to road-side ditches** which then drain to downstream sewers and is eventually released into area waterways connected to Lake Ontario.



Wastewater from toilets, sinks, showers and laundry facilities **drains to your wastewater lateral connected to the wastewater system** and eventually makes its way to the treatment facilities where it is thoroughly treated before released back into the environment.

Who is responsible for what?

- **Halton Region** is responsible for the wastewater system.
- **Town of Oakville** is responsible for the stormwater system.
- **Homeowners** are responsible for:
 - the building including any subsurface waterproofing systems;
 - the plumbing (fixtures, pipes) within the home and property limits;
 - any mechanical pumping systems (sumps and/or macerators); and
 - ensuring the lot drains appropriately away from their home.

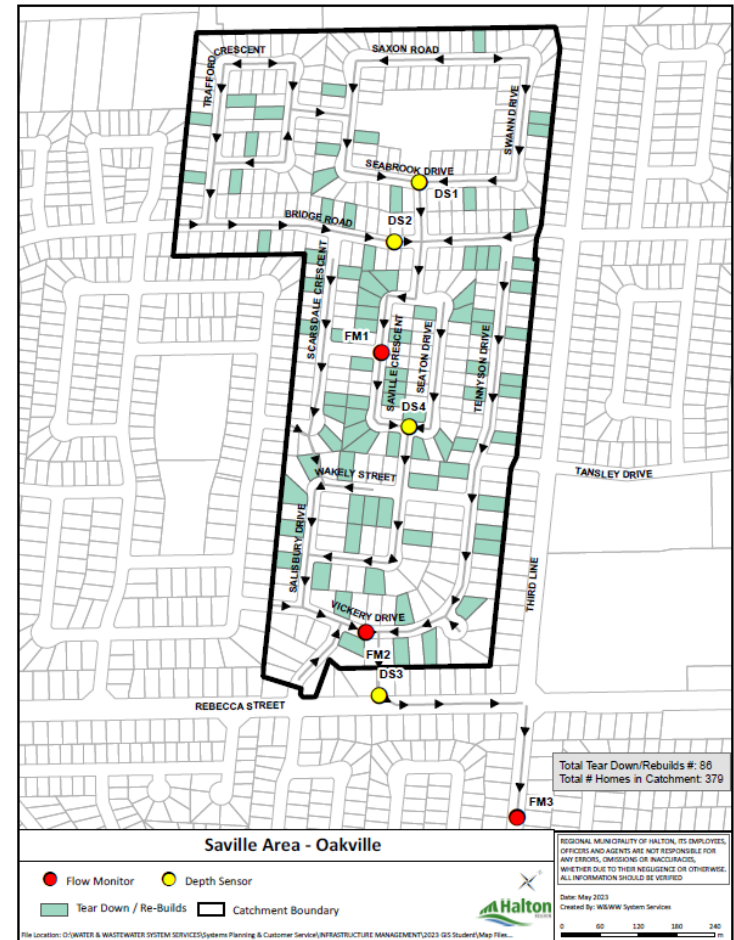


Region's Basement Flooding Response & Investigations

- Respond to 311 Flooding Calls
 - Investigate and remediate (public-side) or inform homeowner of remediation (private-side).
- Conduct Household Drainage Survey
 - Determines source surface & basement flooding to identify the appropriate corrective action
- Rain/Flow Monitoring and System Performance Analysis
 - Determines high priority areas for investigating system surcharging and basement flooding to identify the appropriate mitigation measures.

Basement Flooding Investigation Saville Area Findings

- **16 basement flooding occurrences reported to Region in 11 homes** (10 new rebuilds) over 6 years during 4 small wet weather events (< 2 year storm):
 - 3 in Apr 2023, 4 in Feb 2022, 3 in Jan 2020, 6 in April 2018
 - Infrequent isolated basement flooding reports since 2000
- Homeowner observations & field visits note significant surface ponding (overtopping ditches) during rain events and ponding sometimes lasts days/weeks after a rain event.
- Flow monitoring data shows **excessive Inflow & Infiltration (I/I)** enters the wastewater system during wet weather events causing the wastewater system to surcharge (back-up) into basements.
 - I/I is 10 times higher than design allowance – both high inflow and high infiltration
 - System takes several days to 1 week (normal is 1-2 days) to return to normal dry weather base flows – surface area ponding & high groundwater table
- Sufficient pipe capacity to handle normal dry weather flows and some I/I but **NOT** the excessive I/I in this area.



Excessive Inflow & Infiltration can lead to Wastewater System Surcharging

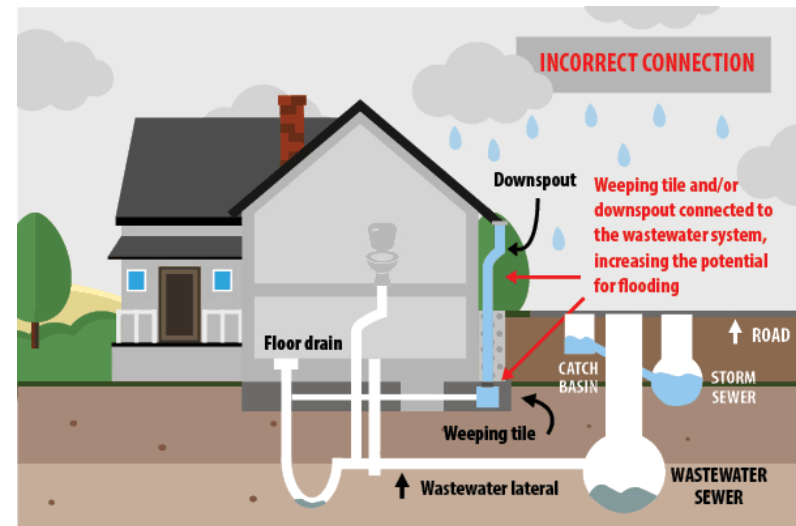
Inflow and Infiltration (I/I) is any stormwater or groundwater that enters the wastewater system.

- **Infiltration** is groundwater that seeps into cracks, joint failures and holes in aging sewer pipes, maintenance holes and sewer laterals (public and private).
- **Inflow** is stormwater (rain/snow melt) that quickly enters the wastewater system via improper direct private storm connections (roof downspouts and weeping tile), stormwater system cross-connections and vent holes in maintenance hole covers.

The Wastewater System is designed to take a small amount of I/I as the system ages but it was not meant to accept excessive I/I from:

- Improper direct private storm connections (foundation weeping tiles, roof downspouts) or from
- Submerged Maintenance Holes
- Defective Private-Side Sewer laterals (cracks, displaced joints and holes)

This excessive I/I can quickly overwhelm (surcharge) the Wastewater System and cause sewage to backup into basements.



- **Shared Responsibility** to get excessive I/I out of the wastewater system and reduce risk of System Surcharging and Basement Flooding

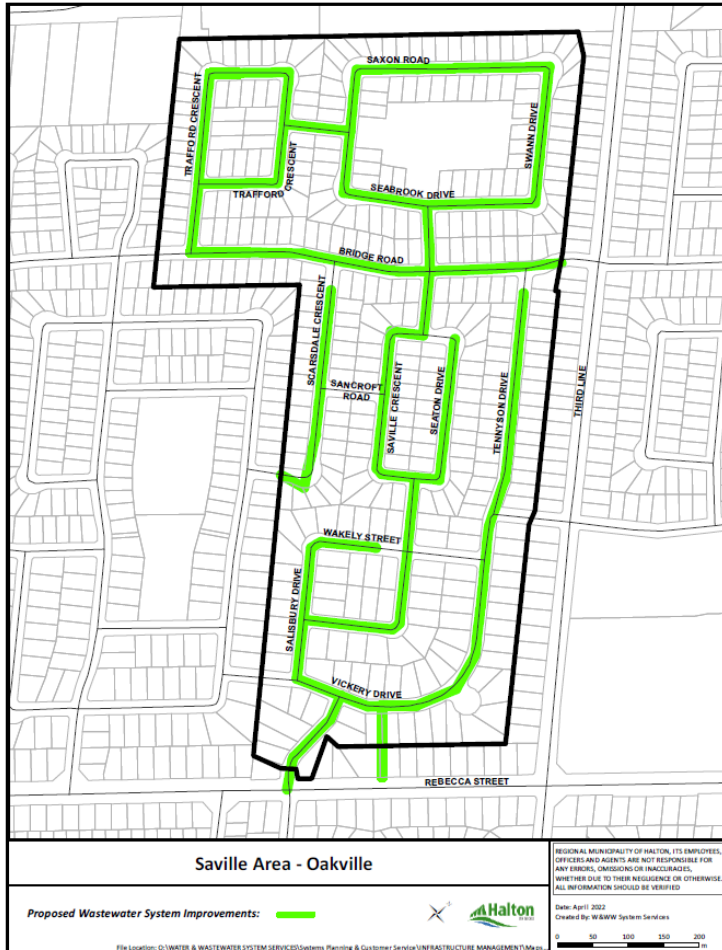
Saville Area Public-Side Sources of I/I

Wastewater System Condition

- CCTV video confirms that some Sewer Main sections require remediation - allow some Infiltration to enter wastewater system.
- Field Investigations confirm some Maintenance Holes (MH) require interim waterproofing measures given their proximity to ditches that are prone to surface ponding during storms and for some time after.



Planned Regional Sewer Works - \$22 Million



Extensive sewer system improvements identified in Saville Area, accelerated from original forecast:

- **Design Initiated** – requires significant geotechnical work, permits and locates
- **Tentative Construction start 2025**

Scope of Work:

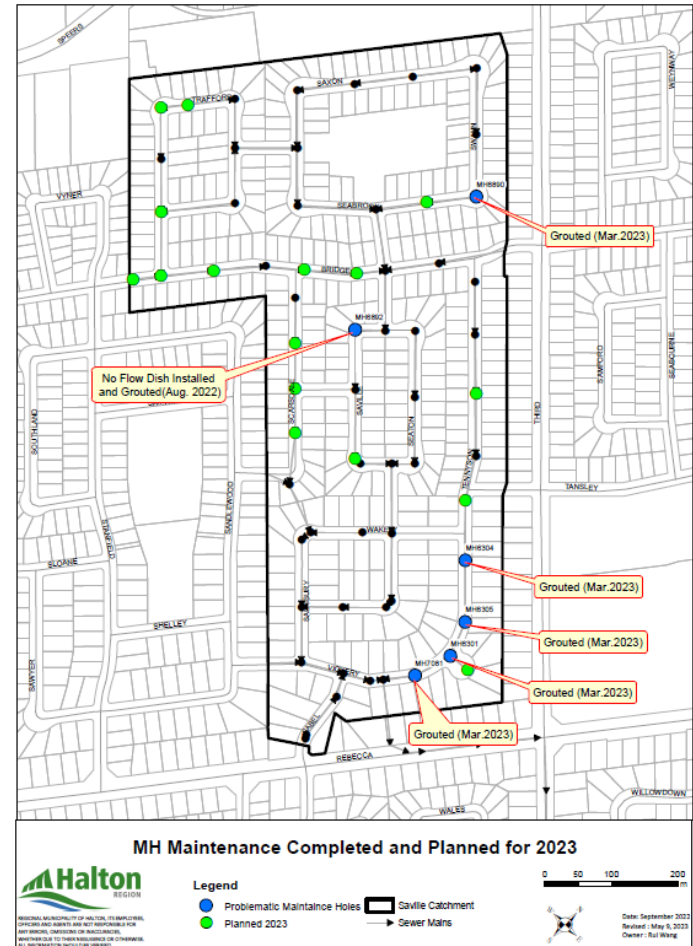
- Upsize sewers along Saville (Bridge to Rebecca)
- Replace sewers north of Bridge and side streets
- Includes Replacement of public-side portion of sewer laterals
- **Exploring options to coordinate private-side lateral replacement for older homes**

Region's On-Going Maintenance Hole Rehabilitation

The Region's Maintenance Hole (MH) Rehabilitation Program

- Waterproofing MHs in the Saville area to prevent storm water & surface water ponding from entering the wastewater system.

Low Flow MH Dish Installation - prevents direct inflow of storm water to our sewer system when ditches overtop during storms.



Saville Area Private-Side Sources of I/I & Basement Flooding

29 (of 379) Household Drainage surveys conducted in Saville Area found the following:

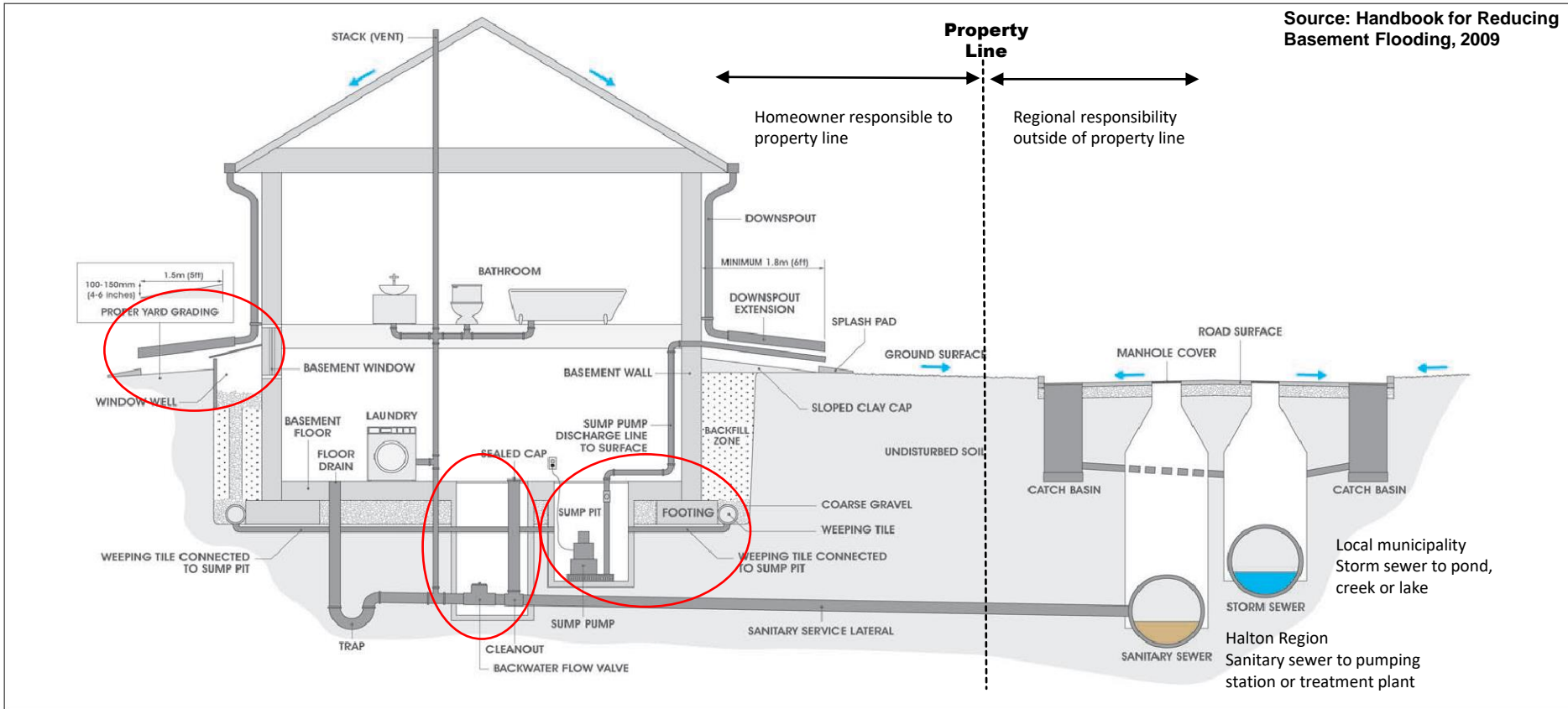
Private Side I/I Sources:

- New Rebuilds – (11 surveyed)
 - **Basement Drain** (2 homes) - groundwater infiltration enters sewer lateral (gap) until back water valve (BWV) closes and then basement floods with clear water.
- Older Homes – (18 surveyed)
 - **5 Clay sewer laterals** in poor to very poor condition – source of infiltration
 - **1 Basement walkout drain** – connected to sanitary system – source of direct inflow
 - **No Downspout or Weeping tile Direct connections** – however still suspect some may exist

Other Contributing Factors to Basement Flooding:

- **Backwater Valve Failure** due to lack of Maintenance – sewer system backups into basement
- **Improper water use** while Backwater Valve is engaged – self flood – household wastewater backups into basement
- **Frozen Sump Pump Discharge Pipe** – sump pit overflows - clear water backs up into basement

What You Can Do to Reduce I/I & Basement Flooding Risk



Repair Defective Laterals & Disconnect Private Drain Connections



April 27, 2022

halton.ca 311



Halton's Basement Flooding Prevention Subsidy Program

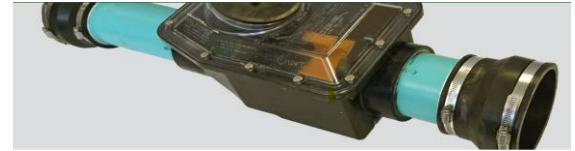
Subsidy Type	Subsidy Amount	Eligibility Requirements
Weeping Tile Disconnection & Sump Pump Installation	100%, max \$5,000	Itemized paid invoice, use of authorized contactor, copy of building permit, and confirmation of permit inspection completion.
Downspout Disconnection	100%, max \$500	Itemized paid invoice, completed sketch (on page 4 of the application form), before and after photographs.
Lateral Repair or Replacement	50%, max \$2,000	Itemized paid invoice, before and after CCTV inspection videos, copy of building permit, and confirmation of permit inspection completion.
Backwater Valve Installation	50%, max \$675	Itemized paid invoice, written confirmation that the weeping tile is not connected to the sanitary sewer lateral, copy of building permit, and confirmation of permit inspection completion.



For more information visit Halton.ca

Other Flooding Protection Measures for you Home

- Regularly inspect & maintain your Backwater Valve and/or Sump Pump System (Handouts Available)
- Ensure your sump-pump is properly sized and has backup power
- Ensure Sump Pump Pipes and Downspouts discharge to ground and are directed away from foundation walls towards ditches
- Ensure proper Lot Grading and Ditches/Culverts remain un-obstructed



A Household Drainage Survey helps to identify potential sources of surface & basement flooding specific to your Home and the appropriate corrective action.

For more information

- Visit **Halton.ca** for more information on:
 - Basement Flooding Prevention Subsidy Program
 - Guide to Flood Prevention & Recovery
 - Taking Action – Wastewater Backups
 - Call **311** to report Basement Flooding

The screenshot shows the Halton Region website page for the "Enhanced Basement Flooding Prevention Subsidy Program". The page features a green header with the Halton Region logo and navigation links for "For Residents", "For Business", and "The Region". The main content area includes a breadcrumb trail: "Home / For Residents / Water and Environment / Enhanced Basement Flooding Prevention Subsidy Program". A large image of a white downspout pipe is shown. Below the image, there are social media sharing options and a "Need help?" button. The text on the page explains that flooding can happen when you least expect it and that the Region has invested millions of dollars in optimizing the wastewater sewer system. It also mentions that the Enhanced Basement Flooding Prevention Subsidy Program makes it easier and more affordable for residents to undertake home improvements. A note states that in order to qualify for the weeping tile disconnection & sump pump installation subsidy, you must use a contractor included on Halton's List of Approved Contractors. At the bottom, there are six tiles with images and text describing various services: Downspout disconnection, Weeping tile disconnection & sump pump installation, Backwater valve installation, Sewer lateral (pipe) lining & repair, Guide to Flooding Prevention and Recovery Print Order Form, and Taking Action - Wastewater (Sewage) Backups in Homes.

Saville Area Storm (Surface) Water Drainage

Town of Oakville

Resident Meeting – May 10, 2023

Presentation Overview

- **Surface Water Drainage**
 - Area History
 - Area storm water servicing infrastructure
 - How surface water is collected and directed
- **Private Side Home Plumbing Elements**
- **Saville Area Stormwater Improvement Study**
- **Ontario Building Code Overview**

Area History

Area was developed under Plan 852
Approved in 1958 – built late 1950's early 60's

Servicing included:

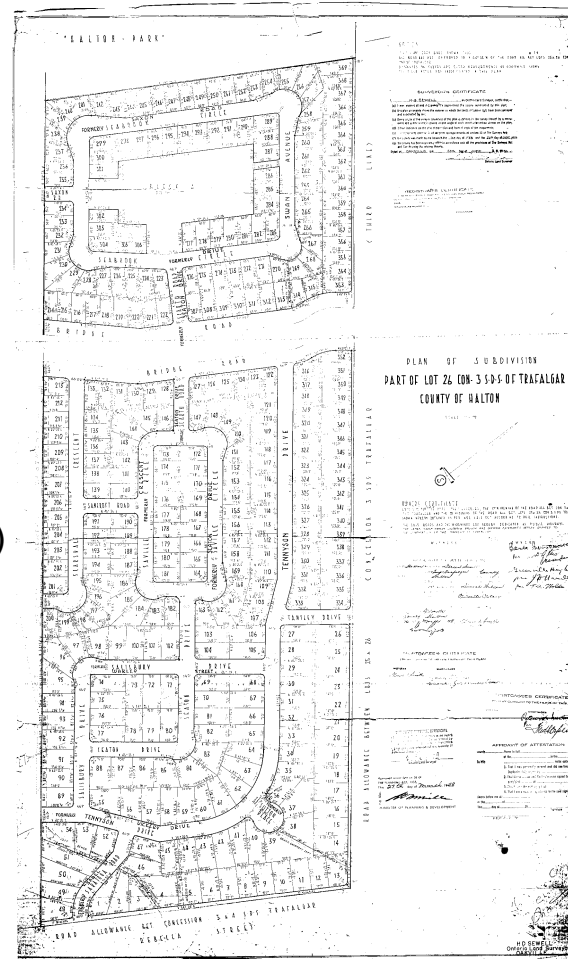
- Watermains (**potable water**)
- Sanitary sewers (**wastewater**)
(possible weeper/roof leader connections)
- Roadside ditches (**surface water drainage**)
*Exception: Tennyson Drive
(ditches and storm sewer)*

Some storm sewers added to the area:

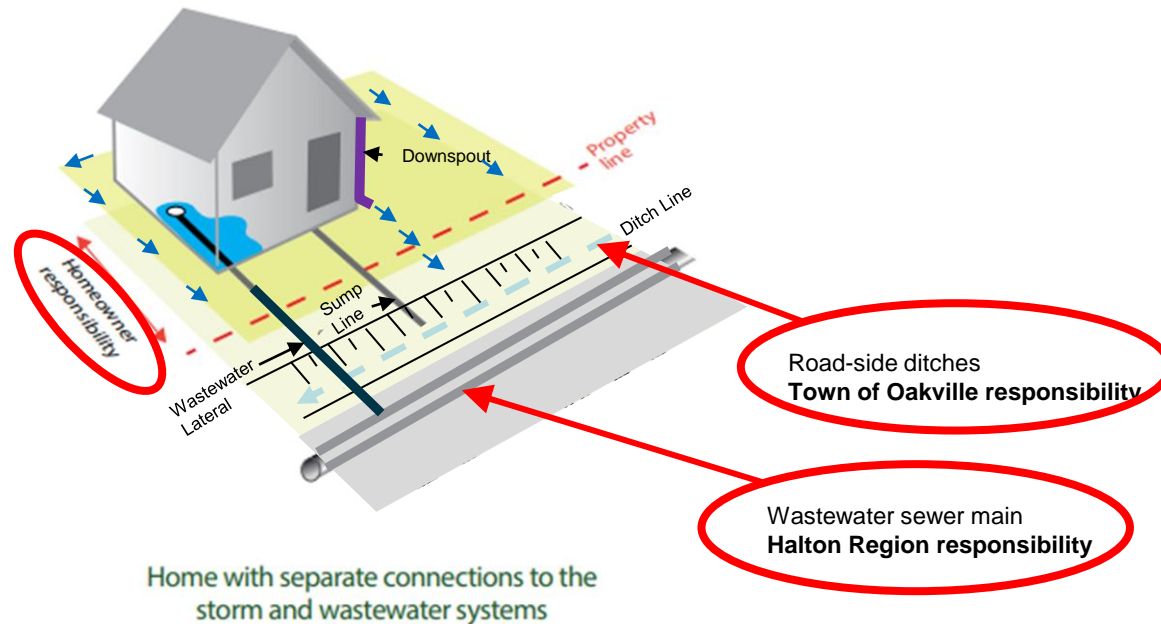
1979: Vickery, Sandlewood, **Scarsdale**

1981: **Scarsdale** and Bridge Road

1982: Rear lot of **Scarsdale**



Current Area Surface Drainage System



SURFACE WATER

Lots are to be graded to sheet flow **surface** water to the roadside ditch

Private Side Home Plumbing Elements

SURFACE WATER DRAINAGE SYSTEM

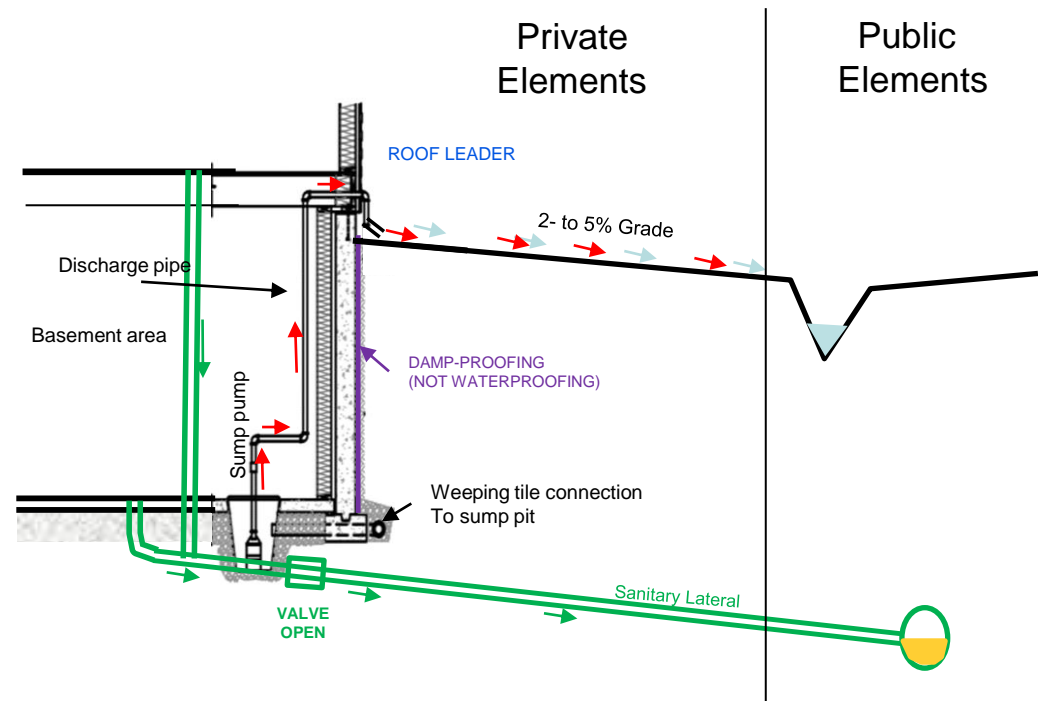
1. Roof sheets to eavestrough
2. Downspouts to ground surface
3. Lot graded away from home to swales and taking surface water to ditch

GROUNDWATER DRAINAGE SYSTEM

1. Weepers collect groundwater drainage – directs to sump pit
2. Sump pump – pumps collected water to surface
3. Buried sump line to ditch

SANITARY DRAINAGE SYSTEM

1. Wastewater pipe – conveys household wastewater to sanitary sewers
2. Backwater Valve – allows unidirectional flow of wastewater to sanitary sewers. Closes when sanitary sewer becomes surcharged



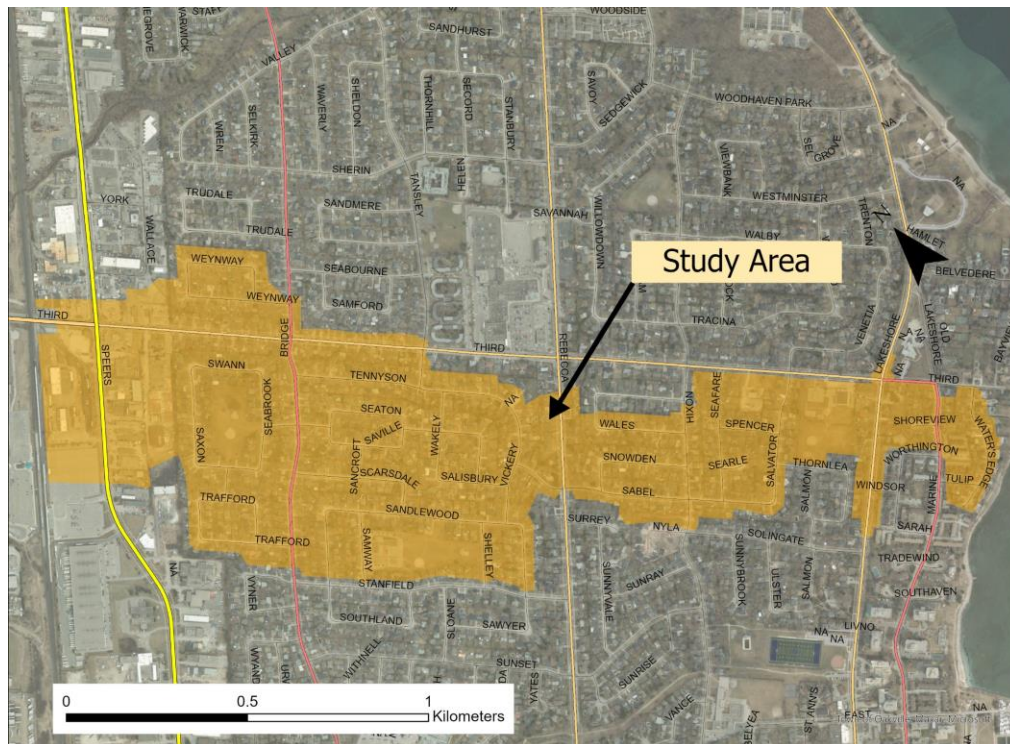
Saville Area Stormwater System Improvement Study

Town of Oakville

Town of Oakville

Saville Area Stormwater System Improvement Study (Class EA)

- Notice of Study Commencement will be published Thurs May 11th 2023
- Aquafor Beech Ltd. is the consultant
- The purpose of this study is to identify drainage deficiencies, explore opportunities for stormwater system improvement, and develop preferred options to improve drainage
- The study area extends from approximately Speers Road to Lake Ontario
- The focus of the study is on improving drainage north of Rebecca Street. Drainage could be improved by, for example:
 - Addition of storm sewers
 - Adding storm sewer inlets on existing streets
 - Re-ditching
 - Replacement of driveway culverts
 - Addition of stormwater storage
 - Other means

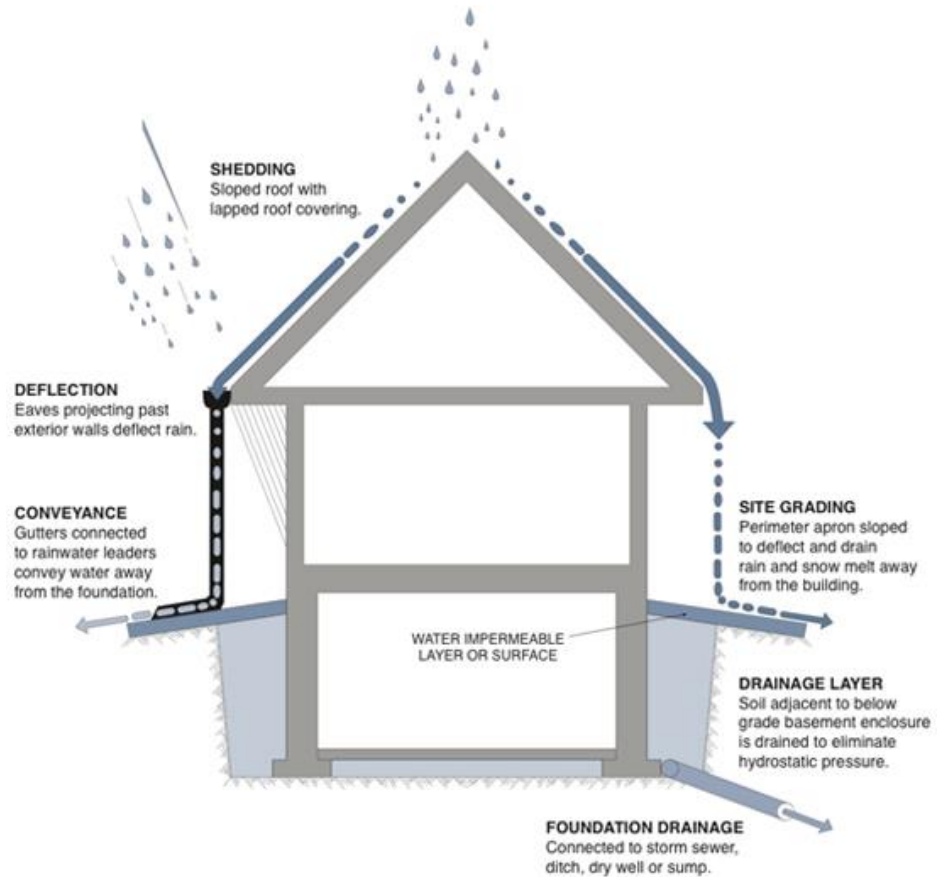


Town of Oakville

Saville Area Stormwater System Improvement Study (Class EA)

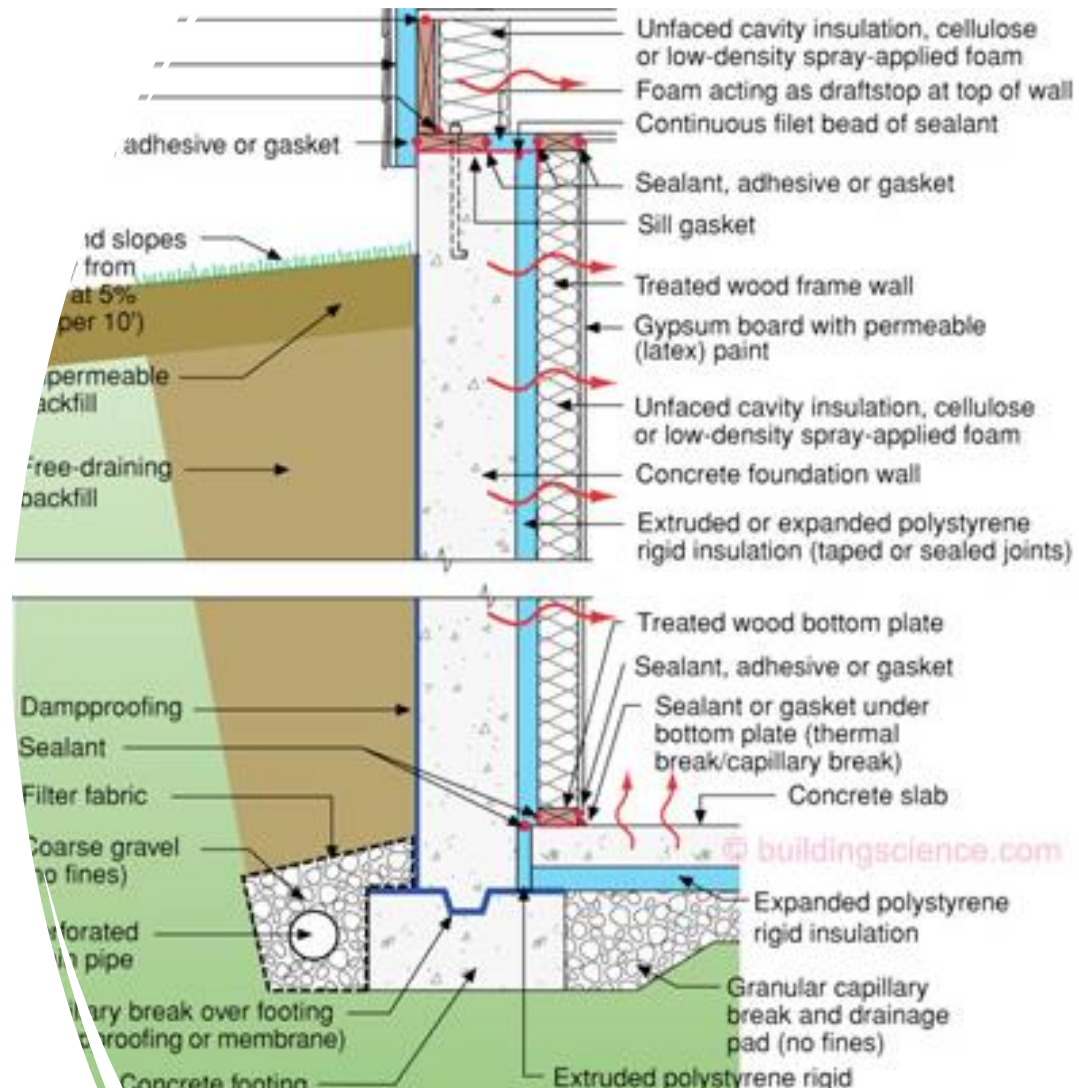
- Project Timeline
 - Phase 1 – Problem Definition/Background Review (March to June, 2023)
 - **Detailed Field Review of Driveway Culverts/Ditches (May/June 2023)**
 - Phase 2 – Development and Review of Options (June to September, 2023)
 - Phase 3 – Preferred Alternatives Selection and Functional Design (Sept to Dec, 2023)
 - Phase 4 – Preparation of Environmental Study Report (Q1 2024)
- Public Meetings (PICs) and Engagement
 - At least one public meeting in 2023 (public input invited)
 - Study findings made available to the public for review and comment

How your house is protected from water.



Foundation Details

- Damp proofing
- Free-draining backfill
- Weeping Tile
- Coarse gravel



We're all in this together

- Homeowner
- Builder
- Designer
- Building Officials
- Tarion, HCRA (Home Construction Regulatory Association)
- By-laws and MES (Municipal Enforcement Services)

A GUIDE TO THE USE OF THE CODE

The Ontario Building Code is a regulation made under the Building Code Act. This edition is prepared for purposes of convenience only and contains additional explanatory material. For accurate reference, recourse should be had to the Official Volumes.

The Ontario Building Code is based, in large measure, on the National Building Code of Canada (NBC).

The Code is essentially a set of minimum provisions respecting the safety of buildings with reference to public health, fire protection and structural sufficiency. It is not intended to be a textbook on building design, advice on which should be sought from professional sources. Its primary purpose is the promotion of public safety through the application of appropriate uniform building standards.

The Code is divided into 12 Parts and a decimal numbering system has been used to identify particular requirements. The first number indicates the Part of the Code, the second, the Section in the Part, the third, the Subsection and the fourth, the Article in the Subsection. An Article may be further broken down into Sentences (indicated by numbers in brackets), and the Sentence further divided into Clauses and Subclauses. They are illustrated as follows:

3	Part
3.5	Section
3.5.1.	Subsection
3.5.1.6.	Article
3.5.1.6.(1)	Sentence
3.5.1.6.(1)(e)	Clause
3.5.1.6.(1)(e)(i)	Subclause

Only the values provided with metric units of measure which appear in the Code are official. Imperial equivalent values which appear in brackets are included for convenience only.

SUMMARY OF THE CONTENTS OF THE CODE

Part 1: Scope and Definitions

Part 1 contains the definitions of all words throughout the Code that appear in italic type. This Part also contains a list of abbreviations used in the Code.

Part 2: General Requirements

Part 2 contains provisions of an administrative nature such as the use of referenced documents, climatic data, professional design requirements and allowances for occupying unfinished buildings.

Part 3: Use and Occupancy

This Part contains the requirements with respect to health and fire safety, which depend upon the use to which a building is put and its type of occupancy. The first Section contains material relating to occupancy classification and the more general features of fire protection. Sections that follow contain specific requirements relating to building size and occupancy, and fire safety within floor areas, exit requirements, requirements for service spaces and health requirements. Section 3.7 contains specific requirements for those buildings required to be accessible to persons with physical or sensory disabilities. Section 3.11 includes requirements for the design of public pools.

Resources

- <https://www.tarion.com/homeowners/roles-responsibilities>
- <https://www.ontario.ca/laws/statute/92b23>

THANK YOU

QUESTIONS?