# Municipality of Lakeshore
# Special Council Meeting Agenda

**Tuesday, November 2, 2021, 6:00 PM**

**Electronically hosted from Council Chambers, 419 Notre Dame Street, Belle River**

**Pages**

1. **Call to Order**

2. **Moment of Reflection**

3. **Disclosures of Pecuniary Interest**

4. **Presentations**

    1. **Flooding Update and Community Feedback** 2

        This presentation will be provided by Municipality of Lakeshore Administration. Representatives of Stantec Consulting, Jacobs and the Essex Region Conservation Authority will be present.

5. **Delegations**

    Note: Delegation requests can be made at www.lakeshore.ca/flooding until 4:30 PM on Monday, November 1, 2021.

    1. **Ron Brant, resident**

    2. **Celeste Willis, representing the Lakeshore Residents Flooding Action Group** 34

    3. **Gary Frost, resident**

    4. **Paula Barrett, resident**

6. **Adjournment**

    **Recommendation:**
    Council adjourn its meeting at ___ PM.

**Municipality of Lakeshore – Report to Council**

**Operations**

**Engineering & Infrastructure**

| | |
|---|---|
| **To:** | Mayor & Members of Council |
| **From:** | Krystal Kalbol, Corporate Leader, Operations |
| **Date:** | October 26, 2021 |
| **Subject:** | Flooding Update and Community Feedback, a Special Meeting of Council |

## Recommendation

This report is for information only.

## Background

On July 16th and into the morning of July 17th, the Municipality of Lakeshore received a significant amount of rainfall that attributed to areas of flooding across Lakeshore and surrounding areas. With the changing climate impacting the region, it is expected that current infrastructure will continue to struggle to manage the volume of stormwater and that the risk of flooding will continue with extreme events.

Based on this, Lakeshore developed the Flood Mitigation and Protection Framework (FMPF) to assist with management of storm events and to mitigate the effects of flooding. This framework was initially presented to Council at the August 12, 2021 Council meeting.

The framework identified additional approaches to address flooding concerns. These approaches include:

- Smoke Testing program and enforcement of repairs
- Expanded building and occupancy inspections
- Review and updates to Lakeshore's Official Plan and Zoning By-Laws
- Review and update of Lakeshore's Development Manual
- Development of a Flood Rapid Response Plan
- Staffing Plan to execute and support the FMPF

Further to the above, Council approved direction for Administration to hold a public meeting in the Fall to allow the public to provide feedback on the July 16th storm event and flooding that occurred. It was also directed by Council for Administration to present the Flood Mitigation and Protection Framework to the public at this time. As part of its direction regarding implementation of the Framework, Council directed the following at its August 12, 2021 meeting:

> …Direct Administration to hold public meeting(s), as required, in the fall to gather further feedback from the public on the July 16th storm event and present the Flood Mitigation and Protection Framework;…

**Comments**

Based on this, the Municipality of Lakeshore is hosting a Special Meeting of Council on this Tuesday, November 2, 2021 to share information about the Municipality's flooding response efforts and framework, as well as hear from community members and property owners who have been affected by local flooding.

Residents and stakeholders were invited to attend as delegates or submit their written comments.

The Municipality undertook the below outreach and marketing pertaining to this Special Council Meeting:

- ¼ page ad published in the Essex Free Press (the week of October 18th, 2021).
- Publication and distribution of media release published by a number of local media sources including Blackburn Radio, AM800/CKLW, and https://windsorite.ca/.
- Publication on Municipal website and e-distribution to 400+ subscribers.
- Social media promotions via Lakeshore's Facebook and Twitter accounts.
- Paid Facebook ad campaign targeting Lakeshore residents.
- Promotion through signage at Lakeshore's Atlas Tube Recreation Center (ATRC).

A presentation will follow regarding the events of the July 16th rainfall event, outline the efforts to date that the Municipality has undertaken, present the recently adopted Flood Mitigation and Protection Framework (FMPF), as well as a summary of programs and services available to help residents protect their properties and mitigate the impact of flooding.

After the presentation, members of the community will be invited to share their experiences and feedback on flooding events.

**Others Consulted**

Essex Region Conservation Authority (ERCA), Stantec Consulting, and Jacobs were consulted.

**Financial Impacts**

It was further identified in the August 12, 2021 Council Meeting to:

> Direct the Treasurer to transfer funds from the Contingency reserve for expenses for public meetings, if required.

Any incurred expenses for this meeting will come from the Contingency reserve to cover off outreach and marketing and consultant fees.

## Attachments

Flood Update and Community Feedback PowerPoint Presentation

## Report Approval Details

| | |
|---|---|
| Document Title: | Flooding Update and Community Feedback.docx |
| Attachments: | - Flooding Update and Community Feedback PowerPoint Presentation.pptx |
| Final Approval Date: | Oct 28, 2021 |

This report and all of its attachments were approved and signed as outlined below:

Jessica Gaspard

Kristen Newman

Truper McBride

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# FLOODING UPDATE AND COMMUNITY FEEDBACK

## Special Meeting of Council

November 2, 2021

# PRESENTATION OVERVIEW

- Why are we here?
- What happens during a storm event to cause flooding?
- What has the Municipality been doing?
- What is the Municipality doing moving forward?
- What can we do together as a Community?
- What can Residents do?
- Flooding Partnership Support
- Closing Remarks and Public Delegations/Comments

*Lanoue Street Extension Stormwater Pond*

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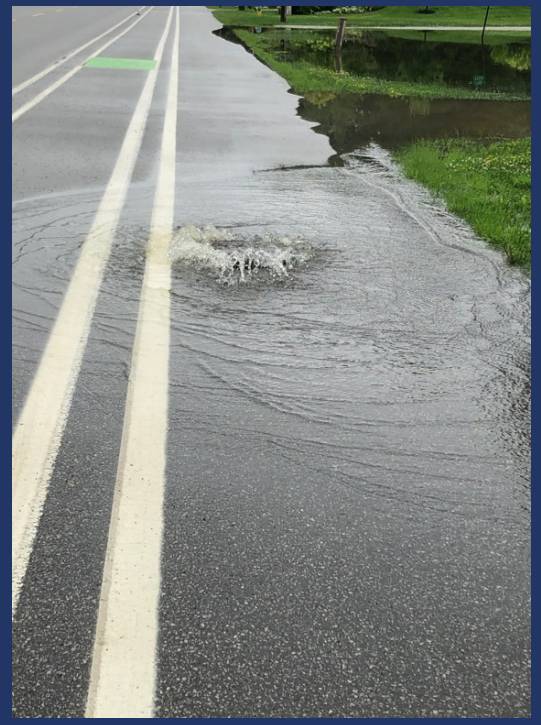
# WHY ARE WE HERE?

Background on the July 16, 2021 storm event.

Reported flooding from residents.

Climate change.

*Leffler Drain*



*Old Tecumseh Road*

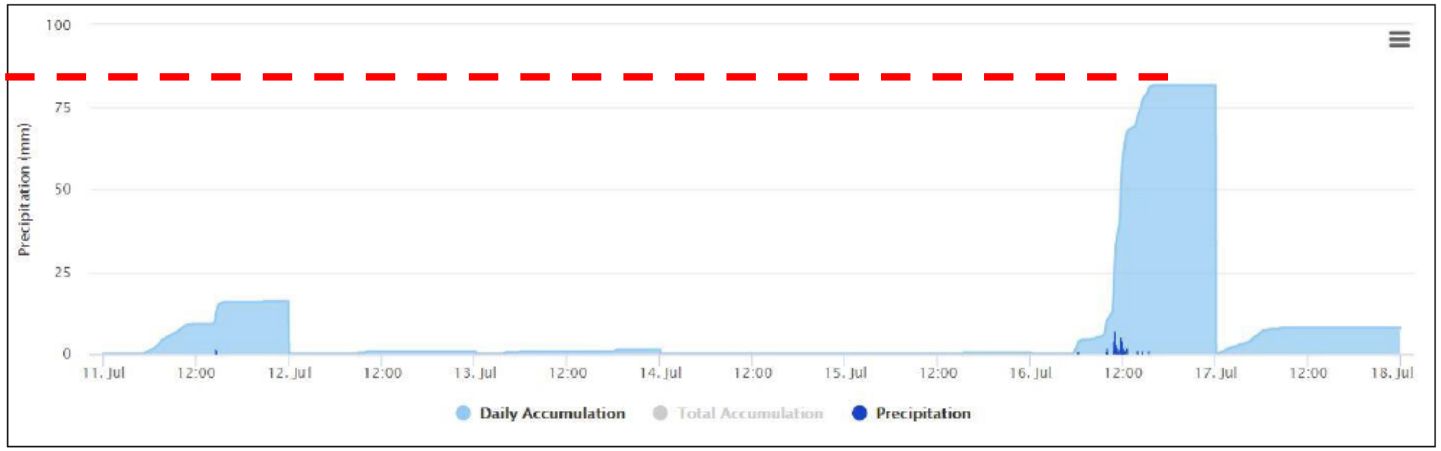
*Willowwood Drive*

# BACKGROUND – JULY 16, 2021 STORM EVENT & SUMMARY

- July 16th, 2021: Significant rainfall event which exceeded design standards.
- 90 mm of rainfall over 24-hour period, with most over a 6-hour period.
- Rainfall equal to a 1:25 year storm and a 1:50 year storm combined.
- State of Emergency declared by Lakeshore.
- Post-rainfall online survey launched to gather data on hardest hit areas.

Essex Region Conservation
the place for life

Attachment 1: Rainfall - Week of July 12, 2021




**FACT:**

- 327 flooding concerns received from residents via online survey or calls.
- 200 flooded basements were reported by residents, more than half related to sanitary sewer backup in their basement.

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# CLIMATE CHANGE

- Impacts of climate change are being experienced across Canada.
- Climate change over time has modified design standards.
- Existing infrastructure not designed to accommodate current storm conditions.

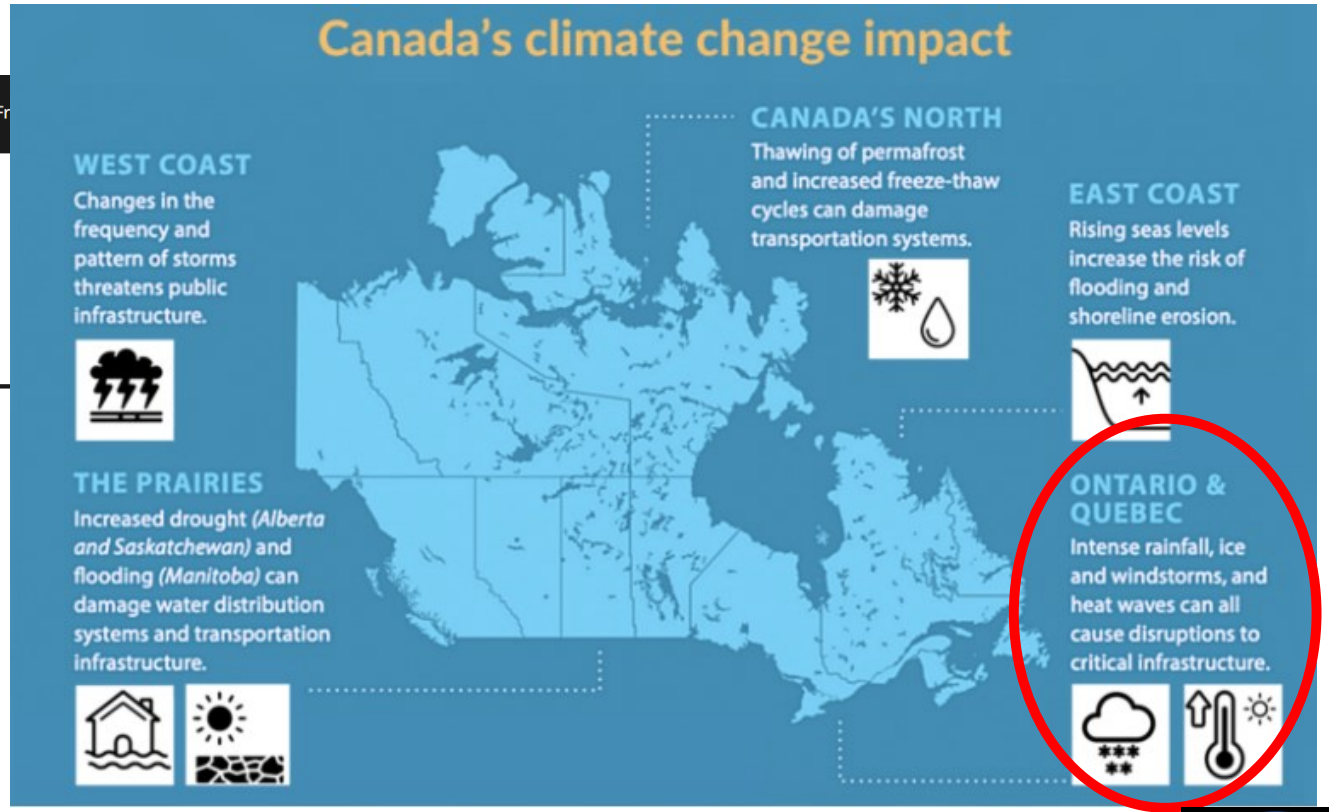
Ontario

Home › Environment and energy

## Climate change

Learn how we're protecting our environment and addressing climate change.

https://www.ontario.ca/page/climate-change

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# WHAT HAPPENS DURING A STORM EVENT TO CAUSE FLOODING?

Operation of the storm sewer system during a storm event.

Operation of the sanitary sewer system during a storm event.

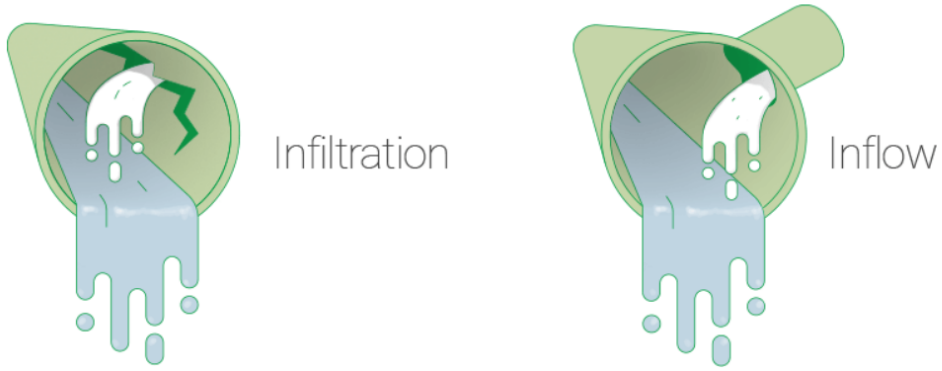
# OPERATION OF STORM SEWER SYSTEM DURING STORM EVENTS

- Understanding the storm sewer system during storm events.

- During storm events, basement flooding can occur due to:
  - Improper lot grading
  - Sump pump failure
  - Power outages
  - Damaged storm sewer piping
  - Overland flows/Shoreline flooding

# OPERATION OF THE SANITARY SEWER SYSTEM DURING STORM EVENT

- During storm events, stormwater enters the sanitary sewer system, causing the sanitary sewers to surcharge (exceed capacity), which can lead to basement flooding.
- This is referred to as Inflow & Infiltration (I & I).
- I & I occurs through:
  - Sewer cross connections
  - Uncapped or damaged cleanout caps
  - Leaky manholes
  - Damaged and leaky pipes
  - Roadway flooding into sanitary manhole
  - Basement flooding




**FACT:**
Doing laundry and use of the shower and toilet facilities during significant storm events (with a surcharged sanitary system) can lead to backflow preventer being opened, contributing to basement flooding.

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# WHAT HAS THE MUNICIPALITY BEEN DOING?

Prioritize resiliency of communities through Lakeshore's Strategic Plan.

Completed Inflow and Infiltration (I&I) improvements.

Flood protections subsidy programs for property owners.

Shoreline Management Plan underway.

Public awareness and open houses.

# PRIORITIZE RESILENCY OF COMMUNITIES

- Investment in and prioritize the long-term resiliency of our communities


# COMPLETED INFLOW & INFILTRATION (I & I ) IMPROVEMENTS

- The Municipality has completed the following improvements:
  - Mainline sewer improvements since 2018.
  - 43 private drain connections were repaired in 2020 to reduce infiltration in the sanitary sewer system.
  - 800+ rain catchers installed.
  - These improvements represent approximately $2,000,000 in investment in improving the Municipality's sanitary sewer system.

# SHORELINE MANAGEMENT PLAN

- Lake St. Clair Shoreline Management Plan final report is expected to be completed in early 2022.

# FLOOD PROTECTION SUBSIDY PROGRAMS FOR PROPERTY OWNERS

- Implementation of subsidy programs to mitigate the impacts of flooding.

| Subsidy Application Statistics | | | | |
|---|---|---|---|---|
| | **Mini Camera Inspections*** | **Sanitary Backflow Valve Installation** | **Sump Pump Overflow Installation** | **Downspout Disconnection** |
| **Program Details** | Free to residents | $750 subsidy | $225 subsidy | $75 subsidy |
| **2021 (to date)** | 105** | 29 | 14 | 1 |
| **2020** | 86 | 33 | 26 | 2 |

- 360 total performed Mini Camera Inspections to date since 2017
- ** 85% of Mini Camera Inspections/Requests in 2021 have occurred after the July 16th Storm event.

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# PUBLIC OUTREACH AND INFORMATION SHARING

- Creation of www.Lakeshore.ca/Flooding as one-stop resource for flooding information.
- Ongoing promotion of flood protection subsidies via print publications, website, and social media.
- Sharing of messages from community partners (e.g. Essex Region Conservation Authority).
- Crisis communications implemented during events to ensure distribution of timely and accurate messaging during flood events.
- Continuing to grow contact list for Municipal e-mail blasts and notices.
- Addition resources can be found below.

**Important web links:**
www.Lakeshore.ca/Flooding
www.Lakeshore.ca/Subscribe
www.Lakeshore.ca/News
www.Lakeshore.ca/Contacts

**Social media:**
Facebook: @MunicipalityOfLakeshore
Twitter: @TweetLakeshore
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# WHAT THE MUNICIPALITY IS DOING MOVING FORWARD?

Revisit and improve existing stormwater management systems.

Continue subsidy programs and look for opportunities to expand.

Flood Mitigation and Protection Framework (FMPF).

- Conduct Smoke Testing program in areas that experience flooding.
- Develop a Flood Rapid Response Plan.
- Enhanced public service and support related to flooding.
- New Development Practices being investigated.

# REVISITING EXISTING STORMWATER SYSTEMS

## Stormwater Master Plan

### Phase 1

- In 2020, Lakeshore completed its Stormwater Master Plan, Phase 1 which recommended upgrades to existing stormwater systems including:
  - Reduction of roadway flooding/ponding;
  - Improvement of overland flows;
  - Increase capacity at ponds and pump stations;
  - Pump station upgrades and back up solutions; and
  - Drain enclosures to improve drain capacity and maintenance impact on flows.
- The Municipality is proposing a 10-year plan, pending funding, to implement the recommendations.

### Phase 2

- Includes the remaining areas of the Municipality such as Essex Fringe, North & South Woodslee, Ruscom Station, Staples, Comber, St. Joachim, Rochester Place / Deerbrook, Stoney Point, Tilbury Fringe, Lighthouse Cove.

*River Ridge Stormwater Pond*

## Municipal Drainage Improvements

- Typically, municipal drainage improvements are initiated by residents.
- These works are funded based on the assessment into the drain (residents and the municipality).
- The Municipality can review and identify areas where flooding occurs and suggest or initiate Section 78 of the Drainage Act.
- Community based improvement approach.

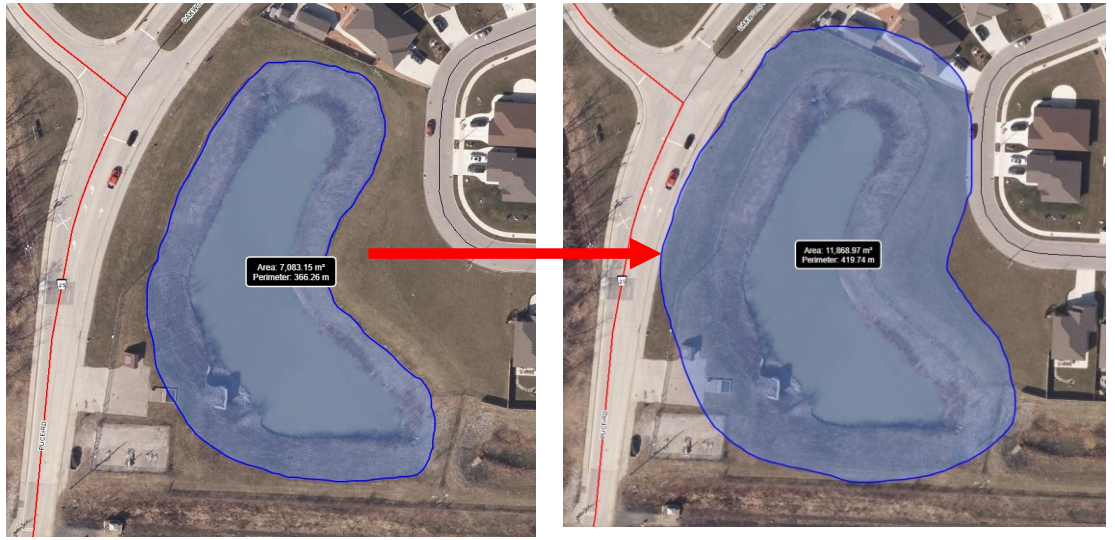
# CONSTRAINTS & CHALLENGES TO MODIFTY EXISTING SYSTEMS

## Increase outlet capacity to Lakes/ Rivers/Streams

*Increasing outlet capacity will increase levels in lakes/rivers/streams and may contribute to shoreline flooding without proper assessment and studies being carried out.*

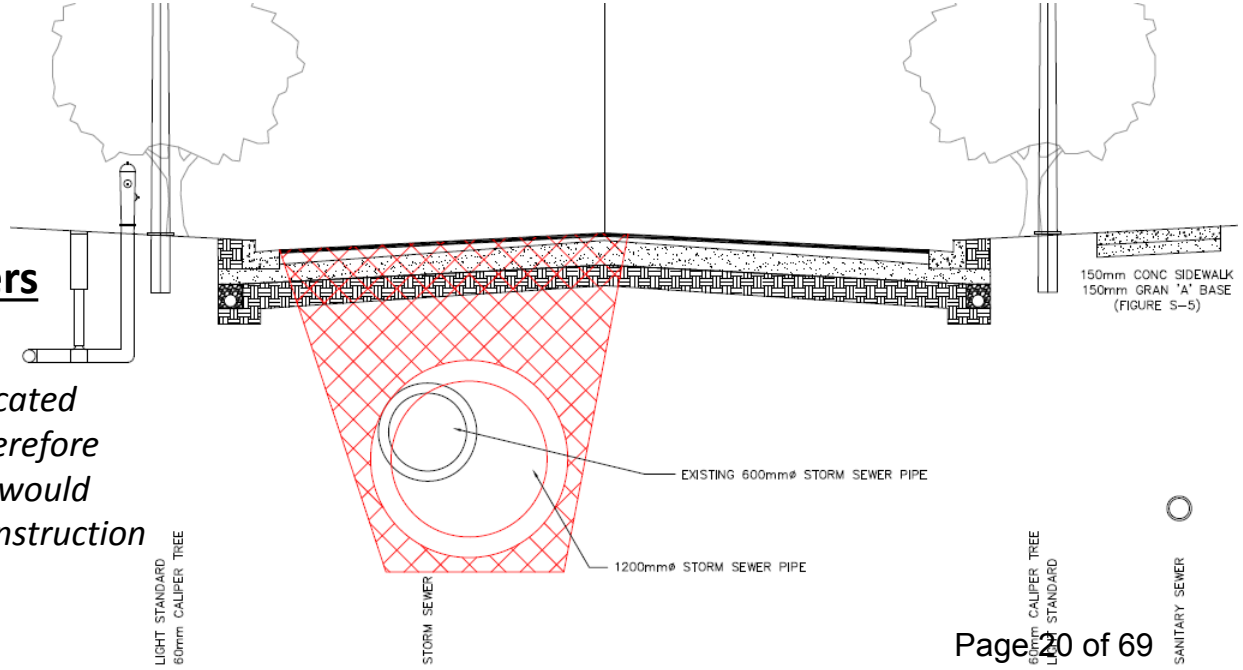
## Expand/deepen existing pond facilities

*Deeper ponds would require a larger footprint of land to satisfy Ministry's requirement. Example - if a pond is deepened by 10 ft (3 m) then area footprint would extend 50 ft (15 m) on each side.*




## Upgrading storm sewers with larger size pipes

*Storm sewers are typically located under the paved roadway therefore increasing storm sewer sizes would require partial/full road reconstruction to occur.*

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# FLOOD MITIGATION AND PROTECTION FRAMEWORK COMPONENTS

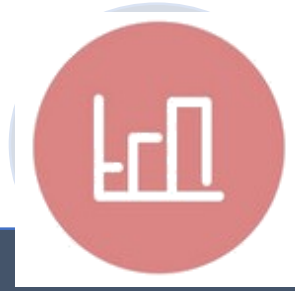
## Smoke Testing Program

- Smoke testing to identify and document any sources of I&I
- Sources identified within private infrastructure will be tracked by Municipal Staff.
- Timelines and follow-ups will be provided to property owners to take corrective action on repairs.
- By-Law Enforcement may follow-up on properties not in compliance with the Municipality's Sewer Use By-Law
- Work is underway and has been completed in Old Tecumseh Road area. Other areas are currently being scheduled.

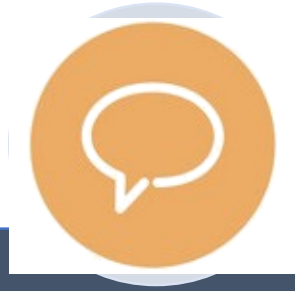
# FLOOD MITIGATION AND PROTECTION FRAMEWORK COMPONENTS CON'T

## Flood Rapid Response Plan

Preparation of a Flood Rapid Response Plan to better manage and prepare for future events.



Organizational charts that establish roles, responsibilities and accountability during events.



Enhanced communication plan to assist with an increased level of service during events when residents call.

Resource plan including dispatching, area prioritization and strengthened communication between field with office staff during flooding.

Staff members dedicated to public service including technical roles, call center staff, by-law enforcement and legal.

# FLOOD MITIGATION AND PROTECTION FRAMEWORK COMPONENTS CON'T

## New Development Practices Being Investigated

| Expanded Building Inspections | Review of Official Plan and Zoning By-law | Changes to the Development Standards Manual |
|---|---|---|
| Expand inspections through Building Division to confirm no cross connection of services prior to dwelling occupancy (ie. enhanced testing prior to occupancy).<br><br>Builder is responsible to rectify problem before occupancy is granted. | Review directing all new development out of flood plains, increase development setbacks from riparian lands and maximum lot coverage restrictions.<br><br>Review policies to leverage ecological infrastructure and parkland for natural storage of stormwater.<br><br>Expand policies to support low impact development and the use of environmentally sustainable practices (i.e. green roofs and rain gardens). | Update the Municipality's Development Manual to include stricter guidelines and requirements.<br><br>Requirements to consider include alternatives to backflow prevention devices, mandate and enforce all downspouts are discharged to the lawn, use of sewer ejector pits and runoff coefficients and stormwater management standards followed. |

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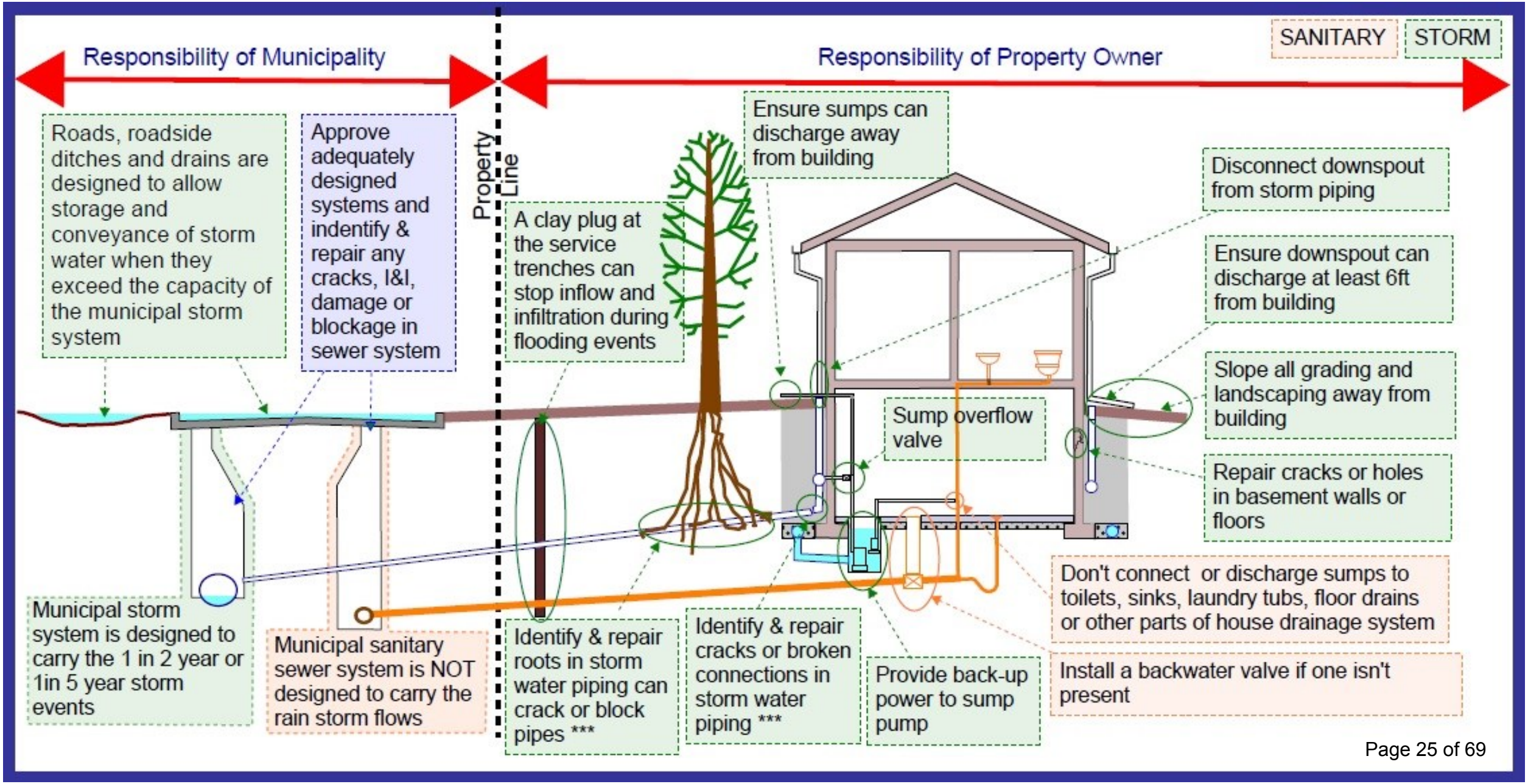
# WHAT CAN WE CAN DO TOGETHER AS A COMMUNITY?

Understand the responsibilities of the Resident and the Municipality.

Participate in and collaborate during smoke testing and stormwater assessment programs.

Ensure that repairs that are undertaken on private property are confirmed with the Municipality.

# RESPONSIBILITY OF THE PROPERTY OWNER AND MUNICIPALITY



# SMOKE TESTING PROGRAM, PHASE 1 FINDINGS

## County Road 2 (Old Tecumseh Road)

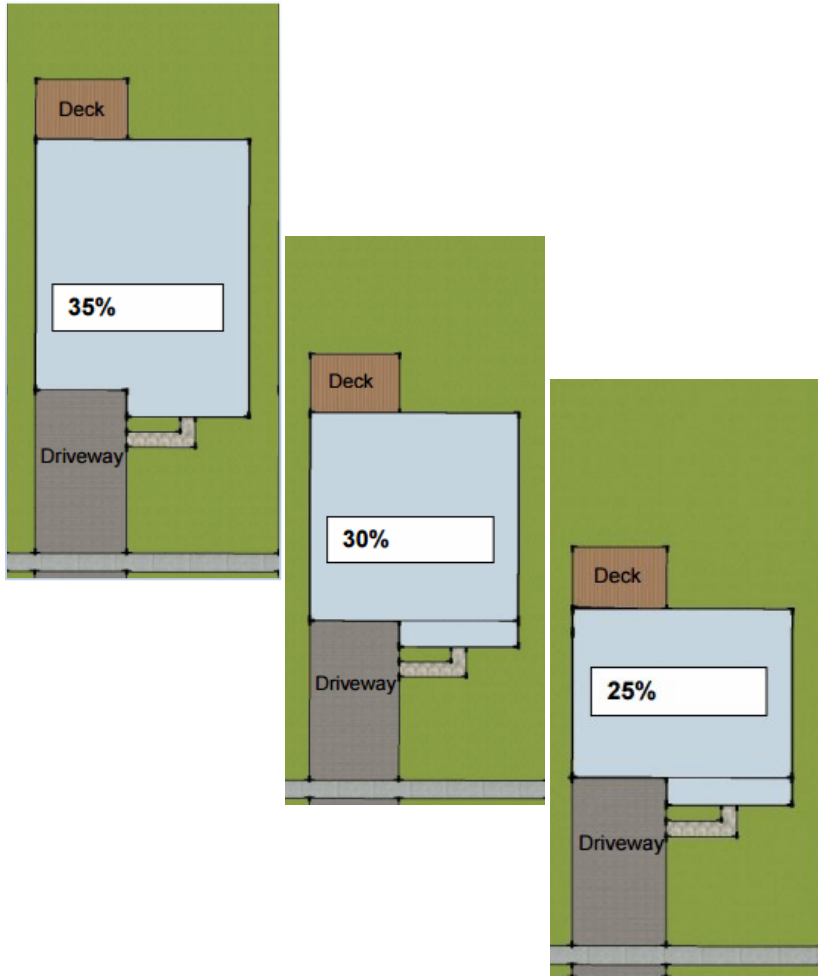
- Phase 1 was completed in September 2021
- Over 800 homes were smoke tested
  - Over 70 homes were found to be contributing to inflow into the sanitary sewer system
  - 2 Municipal related repairs were identified
- Lakeshore will:
  - Notify residents within those areas that require repairs on private property
  - Repair any inflow/infiltration sources found within Lakeshore right of way limits.

**FACT:**
Majority of inflow that was found in Phase 1 smoke testing was related to broken or missing sanitary sewer caps, which constantly drain storm water into the sanitary system during storm events.

# IMPACTS OF PRIVATE SYSTEMS ON MUNICIPAL STORM SYSTEM

## Vintage Oaks Drive & Bel Air Circle - Review and Findings

- Resident concerns related to excessive street flooding during storm events and sump pumps running frequently.
- The Municipality undertook a review of the stormwater management plan and completed mini camera inspections on all 13 homes.




Mini cam result findings:

- 7 homes were found to have damage on private side of storm system around home and property.
- Most damage found was on private property was due to broken downspout pipes.

Stormwater review findings:

- Current paved lot coverage averaging 55% higher than the original design (completed in 2003).
- Connected downspouts contributing to the increase amount of stormwater in the roadway as the stormwater management plan indicated downspouts to be disconnected.
- More frequent and intense storm events based on climate change.

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# WHAT CAN RESIDENTS DO?

Participate and collaborate in the smoke testing program.

Ensure that the identified repairs are undertaken and are confirmed with the Municipality.

Understand this is multi-year plan.

Cooperate and Participate in Municipal Subsidy Programs.

Keep flood mitigation top of mind.

Follow information at www.lakeshore/flooding and reach out if you have questions.

# PROPERTY MAINTENANCE, REPAIRS AND PROTECTION

- Attend and participate in public open houses for awareness and education.
- Stay connected to Municipal communication and outreach.
- Understand your responsibilities as a homeowner pertaining to maintenance of private appurtenances in and around your home.
- Take advantage of all Municipal subsidy programs.
- Add sanitary sewer cap maintenance to your to do list.
- Ensure repairs identified through Municipal run programs (smoke testing and mini camera inspections) on private property are completed and reported to Lakeshore.
- Prepare for flooding including regular maintenance of flood protection devices to ensure your home is and continues to be protected - visit https://www.lakeshore.ca/en/living-here/flooding.aspx for more details on how to protect your property.
- Contact the Municipality if you have any concerns related to flooding at 519-728-2488 x 601 (Operations Center).




**FACT:**
Consider the impact of any outdoor works on your neighbours – hard landscaping will increase levels of runoff.

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# FLOODING PARTNERSHIP SUPPORT

Continue to collaborate with partners.

All will form part of the Flood Rapid Response Plan.

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Lower Thames Conservation

OCWA
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# ESSEX REGION CONSERVATION AUTHORITY (ERCA)

Essex Region Conservation Authority
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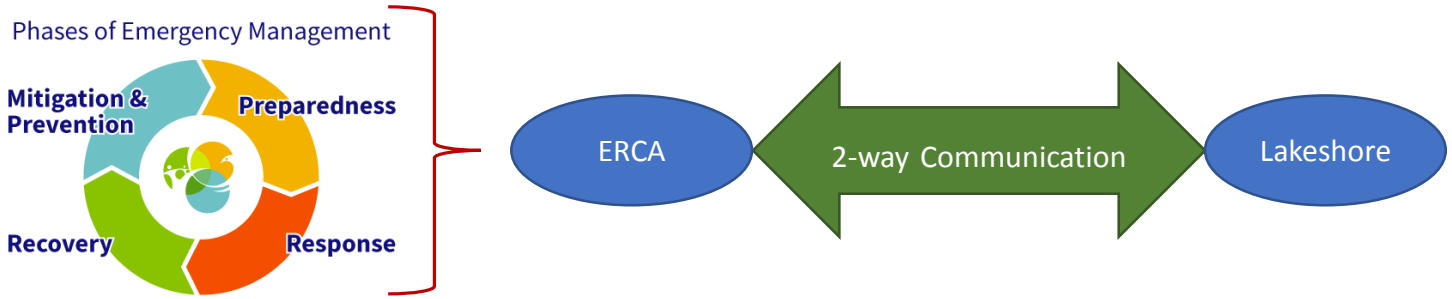
- Administers Flood Advisory Program on behalf of the Province of Ontario (Ministry of Natural Resources and Forestry)


| Colour | Shoreline Status/Advisory | Watershed Status/Advisory |
|---|---|---|
| GREEN | No Warning | No Warning |
| YELLOW | Shoreline Conditions Statement | Watershed Conditions Statement |
| ORANGE | Flood Watch | Flood Watch |
| RED | Flood Warning | Flood Warning |

- ERCA works with local Flood Coordinators as part of the Flood Advisory Program. Communication between ERCA and Lakeshore are maintained during a natural hazard flood event (current and forecasted conditions)




**Current Flood Status**

**Shoreline:**
https://essexregionconservation.ca/flood-status/

**Watershed:**
https://essexregionconservation.ca/flood-forecasting/

- ERCA regulates new development to reduce risk of flooding (and erosion)
- Leads regional watershed-based initiatives(i.e. Windsor-Essex Stormwater Management Guidelines)

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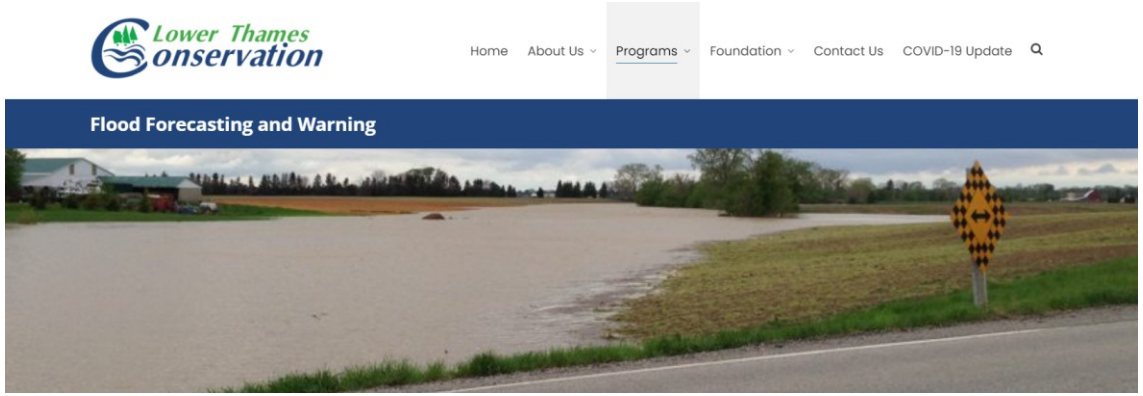
# LOWER THAMES CONSERVATION AUTHORITY

- Flood Forecasting and Warning
- Monitor areas and coordination with the local municipalities




https://www.lowerthames-conservation.on.ca/water-management/flood-forecasting/

# ONTARIO CLEAN WATER AGENCY (OCWA)

- OCWA operates and maintains Lakeshore's Sanitary Treatment and Pumping Stations.
- OCWA supports Lakeshore's smoke testing program.

OCWA
ONTARIO CLEAN WATER AGENCY
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https://www.ocwa.com/

***Denis St. Pierre Treatment Plant***

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# CLOSING REMARKS & PUBLIC DELEGATIONS/ COMMENTS

We want to hear from you.

# Lakeshore Resident Flooding Action Group

November 2021

Lakeshore Resident Flood Action Group

# MISSION STATEMENT

To ensure the Municipality of Lakeshore upgrades the stormwater and sanitary system before any additional building proceeds.

To protect out capital investment in our homes and property.

# 2019 Councils strategic plan Priority 2

# Stantec Stormwater Master Plan June 2020-Overview

- There is a total of 25 storm sewer pump stations and 16 municipal drain pump stations within Phase 1 study area.

- Past stormwater practices dealt with minor system drainage and did not adequately consider overland routing.

# Stormwater Master Plan–Ponding

- GOOD–**Depth less than 0.3 m**: is the preferred maximum surface ponding depth, consistent with both Town and ERCA design guidelines.

- FAIR–**Depth between 0.3m and 0.5m** ponding depths present a moderate risk to public safety, may limit access/egress by passenger vehicles.

- POOR–**Depth greater than 0.5m** is an undesirable level, presents a more significant threat to public safety, could make roadways inaccessible and force road closures. Higher potential for damage due to surface flooding.

- VERY POOR–Areas that demonstrated the **potential extent of surface flooding encroaching up to building footprints** were identified as top priority for infrastructure

| Total Score | Prioritization Grade |
|---|---|
| 8-10 | Very Poor |
| 6-8 | Poor |
| 4-6 | Fair |
| 2-4 | Good |
| 0-2 | Very Good |

# Existing Conditions–Catchment Screening

9 catchments that threaten building and sanitary sewer by surface ponding. Residents are seeking answers on 5 drains.

| Catchment | Surface Ponding >0.5 m | Buildings Threatened by Surface Ponding | Infrastructure Poorly Located [1] | SWM Pond Size Insufficient to Service Future Development | Detailed Analysis Required |
|---|---|---|---|---|---|
| Amy Croft Drive | Y | N | y | Y | Y |
| Croft Drive | Y | Y | Y | N | Y |
| Ruggaber Reaume | N | N | N | N | N |
| Gammon | N | N | N | N | N |
| Monarch Meadows | N | N | N | N | N |
| Chelsea Parkway | Y | Y | N | N | Y |
| River Downs | N | N | N | N | N |
| Optimist | N | Y | Y | N | Y |
| Notre Dame Pump | N | Y-Improvements Complete | Y | N | Y |
| Seasons at the Creek | N | N | N | N | Y |
| Belle River West | N | Y | Y | N | Y |
| Bacon/Forest Hill | N | N | N | Y | Y |
| Terra Lou | Y | N | Y | N | Y |
| Russell Woods | Y | Y | Y | N | Y |
| Lefaive Drain | Y | Y | Y | N | Y |
| Whitewood | N | N | N | N | N |
| Brown's Creek Drain | Y | Y | Y | N | Y |
| Lakeshore New Centre Estates | N | N | N | N | N |
| Bulcke Reaume | N | N | N | N | N |
| Leffler Drain | Y | Y | N | N | Y |
| County Walk | Y | Y | N | N | Y |
| King Emeryville | N | N | N | N | N |
| River Ridge - Puce | N | N | N | N | N |
| River Ridge - 4th Concession | N | N | N | N | N |
| Rosewood | N | N | N | N | N |

Notes: 1 Drainage infrastructure or major flow route located outside of municipal right-of-way or enforceable maintenance easement.

# LeFaive Drain

## Stantec estimated cost for Preferred solution
## $8,000,000

# Roadway Ponding over 3 years

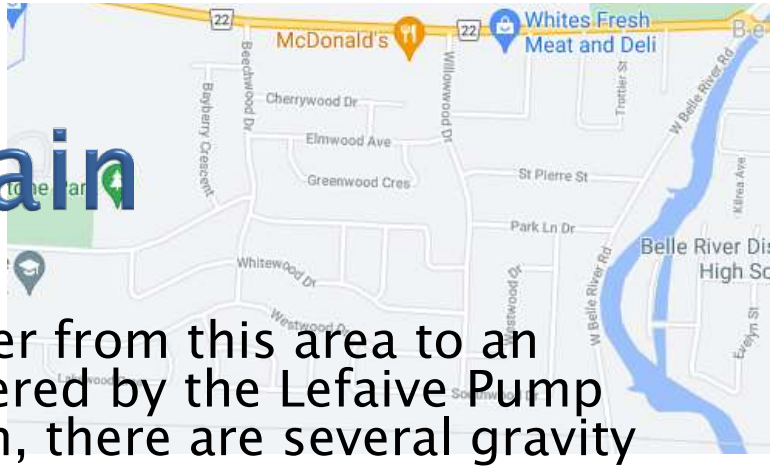
## Elmwood & Greenwood



# Roadway Ponding over 2 years
## Cherrywood & Walnut



# 5.3.4.15 Lefaive Drain




- Gravity storm sewers convey stormwater from this area to an enclosed municipal trunk sewer dewatered by the Lefaive Pump Station. In addition to the pump station, there are several gravity outlets that discharge to the Belle River.

- The estimated surface ponding depths within this catchment area are greater than the maximum design ponding depth of 0.3 m and exceed the 0.5 m at some locations. Overland flows are conveyed eastward by the existing right-of-ways to the Lefaive Drain easement, which conveys major flows towards Belle River. However, overland flows from this catchment to the Belle River are blocked by the Belle River Flood Protection Works.

- The available topographic mapping suggests that some homes may be vulnerable to surface flooding, as the flooding extents associated with the maximum estimated major flow depth appear to encroach into some building envelopes.

VERY POOR

# 5.3.4.15 Lefaive Drain Preferred Alternative # 2

- Lefaive Drain will be abandoned in accordance with the provisions of the Drainage Act from Willowwood Drive to the downstream connection to Marie Street and replaced with a new storm sewer located on St. Pierre Street that conveys the minor flows to a new pump station. The proposed storm sewer will be designed to convey the 5-year peak discharge and St. Pierre Street will be reprofiled to reduce the local road ponding depths.

- The proposed pump station will be constructed with a gravity overflow and will include at least two pumps that will operate alternately. The proposed pump station will convey the 5-year peak discharge and will include necessary equipment to facilitate pump removal and replacement. Both flap gates and clay plugs shall be installed at the proposed outfall to mitigate the effects of high downstream water levels on the system performance and to reduce seepage. The existing gravity outfalls to Belle River will be decommissioned.

# Question Lefaive Drain YES/NO

1. Was the Lefaive drain fixed after the June 26-July 1 2021 failure?

2. Was the Lefaive drain operating properly from July 16th on12am to 12:30 pm when an auxiliary pump was added?

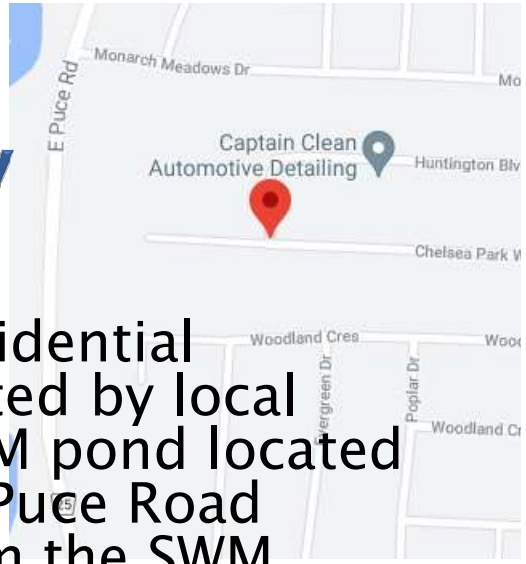
3. Do the Sanitary Sewer covers in this area have the new Sanitary Sewer  RainGuard covers?

4. Does the pump have an alarm or notification system when not working?

# Chelsea Parkway

## Stantec Estimated cost for Preferred solution
## $100,000

# 5.3.4.6 Chelsea Parkway




- Runoff from both existing and proposed residential development within this catchment is collected by local storm sewers and treated by an existing SWM pond located south of Monarch Meadows Drive. The East Puce Road Drain Pump Station conveys stormwater from the SWM pond to the 1350 mm diameter Puce Drain, which discharges to the Puce River.

- Major flows from a small portion of the catchment are conveyed eastward to the neighbouring King/Emeryville catchment and are discharged to the 4th Concession Drain. The maximum calculated ponding depths are greater than 0.5 m, though the available grading plans suggest that the resulting surface ponding extents do not encroach into homes.

VERY POOR

# 5.3.4.6 Chelsea Parkway Preferred Alternative #3

- The maximum ponding depths at the Regency Crescent/Agency Road intersection will be reduced to 300 mm by constructing a major flow route from the ponding location to the existing SWM pond on the neighbouring River Ridge 4th Concession future development. Future development agreements will include clauses stating that the proposed major system must be designed to accommodate the major flows from the Regency Crescent/Agency Road intersection low point.

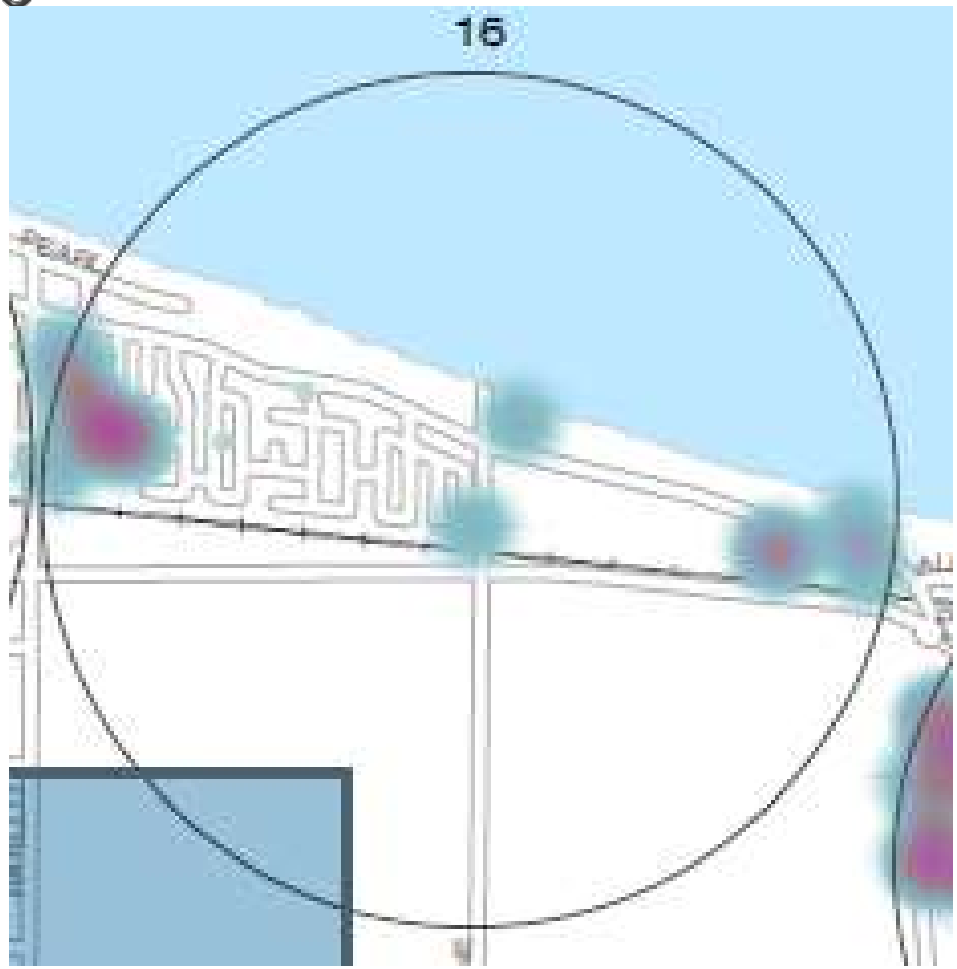
- Additionally, a drainage easement shall be obtained on the existing overland flow route from East Puce Road to the Puce River. The drainage easement will mitigate the risk of alterations or obstructions on the overland flow route that could cause deeper upstream ponding during severe storm events.

# Question Chelsea Parkway Yes/No

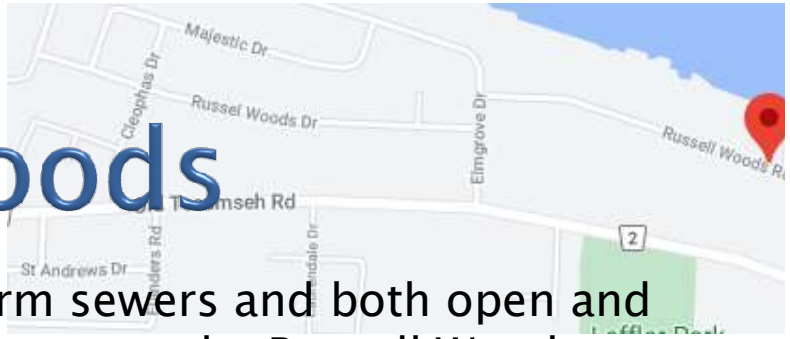
1. Do the Sanitary Sewer covers in this area have the new Sanitary Sewer RainGuard covers?

# Russell Woods

## Stantec Estimated cost for Preferred solution
## $2,700,000



# 5.3.4.14 Russell Woods




- The drainage infrastructure consists of storm sewers and both open and closed municipal drains that convey stormwater to the Russell Woods Pump Station. The pump station discharges to Pike Creek. The station has three duty pumps as well as an overflow pipe with a manual sluice gate. When lake levels are high, the sluice gate must be manually operated during major storm events to provide a gravity outlet.

- There is currently an issue with lake water seeping into the pump chamber. The adjacent shore wall is in poor condition and the Town has engaged a consultant to assess its condition.

- The maximum estimated surface ponding depths in the Russell Woods catchment area are greater than 0.5 m.

- The flooding extents that correspond with the maximum anticipated overland flow depth in this area encroach into several existing building envelopes.

VERY POOR

# 5.3.4.14 Russell Woods Preferred Alternative #3

- An automatic sluice gate at the Russell Woods pump station to provide a gravity outlet under high lake level conditions; Improvements at the Laurendale Subdivision pump station to increase the peak discharges.
- A new pump station that discharges from the East Pike Creek Drain to Pike creek. Pump station will be constructed with a gravity overflow and will include at least two pumps that will operate alternately.
- Gradual storm sewer replacements upstream of the proposed pump station.
- Lake water encroaching into the East Pike Creek Road right-of-way from the private boat launch under high lake level conditions should continue to be managed using temporary measures. Since sand bags have not previously been effective, the town should consider other temporary measures such as aquadams

# Question Russell Woods Yes/No

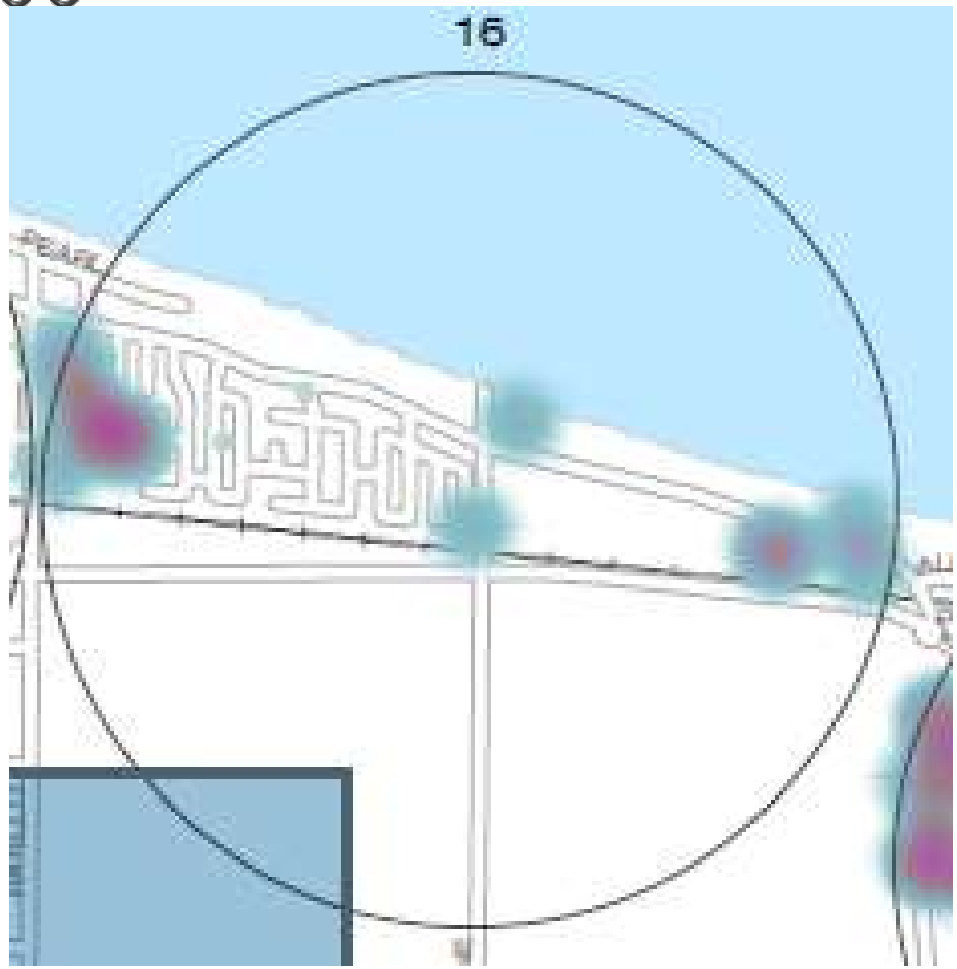
1. Has this work been started?

2. Do the Sanitary Sewer covers in this area have the new Sanitary Sewer RainGuard covers?

# Leffler Drain

## Stantec Estimated cost for Preferred solution

## $14,000,000



# 5.3.4.15 Leffler Drain


- The Leffler Drain is an open drain along Patillo Road starting from County Road 42 running north. It becomes enclosed just south of Old Tecumseh Road and continues north towards a pump station that outlets to Lake St. Clair. The Hood Drain is enclosed and runs west along Old Tecumseh Road to connect to the Leffler Drain. The pump station contains 3 duty pumps, an overflow weir with aluminum stoplogs, and an emergency discharge pump operated by tractor power take-off (PTO).

- Current pump operation settings do not correspond with the design settings. The pump start and stop elevations have been altered, which may affect the maximum observed upstream water levels during storm events at the pump station grate during the extreme event to the point where inflow to the pump station was being partially impeded – to the extent that the third pump stopped operating many hours sooner than the model predicted.

- Design work is underway for improvements to Patillo Road from County Road 22 to the Canadian Pacific Railway. The proposed work includes enclosure of the Leffler Drain within the project limits, which is expected to reduce the risk of obstructions caused by trash/debris.

- The maximum estimated surface ponding depths in this catchment are greater than 0.5 m.

VERY POOR

# 5.3.4.15 Leffler Drain Preferred Alternative #4

- In addition to the proposed automatic sluice gate at the Leffler Drain pump station proposed as part of the Patillo Road improvements, a permanent motor will be installed at the emergency PTO pump and the Leffler Drain will be enclosed from the railway to the pump station.

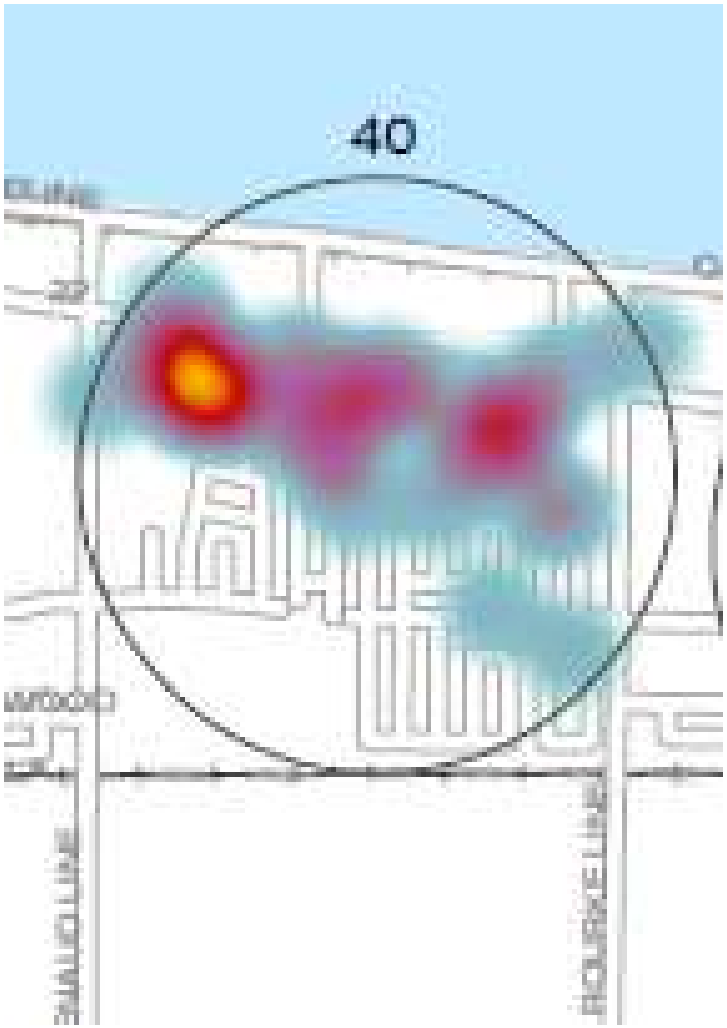
# Question Leffler Drain Yes/No

1. Has this work been started?

2. Do the Sanitary Sewer covers in this area have the new Sanitary Sewer RainGuard covers?

# Brown's Creek Drain

## No improvements value noted in Stantec study

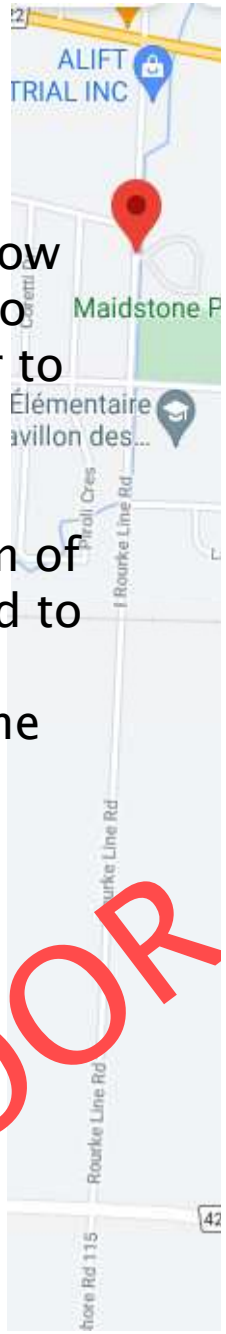


# 5.3.4.15 Brown's Creek Drain

- Brown's Creek Drain is an enclosed municipal drain and receives flow from the Oakwood and Girard subdivisions. The drain discharges to Lake St. Clair. The Browns Creek Pump Station conveys stormwater to the lake when high lake levels prevent gravity discharge.

- Stormwater from the Oakwood Subdivision is conveyed by a system of gravity storm sewers that outlets to a local wet SWM pond designed to provide both water quality and quantity treatment. Under extreme events, an overflow pipe conveys flows from the pond directly to the drain.

- The maximum estimated surface ponding depths are greater than 0.3 m guideline at several locations and greater than 0.5 m at one location on Traditional Trail. The available topographic information suggests that the local major system spill elevations are lower than the ground elevations at the existing homes.




VERY POOR

# 5.3.4.15 Brown's Creek Drain Preferred Alternative #1

- **Preferred Alternative – Alternative 1**
- The alternative evaluation suggests that reducing the maximum ponding depth in this catchment will cause significant disturbance and has a significant cost. Since there are no significant safety issues associated with the maximum ponding depth and access to properties is unlikely to be significantly affected during severe storm events, no public drainage system improvements are proposed at this time.

- The available topographic information suggests that major flow from Heritage Garden Crescent travel eastwards across the existing undeveloped lands to Brown's Creek Drain. Future development agreements shall include clauses stating that the proposed major system must be designed to accommodate these major flows.

# Question Brown's Creek Drain

1. How many of the Sanitary Sewer covers have been replaced with the new Sanitary Sewer RainGuard covers?

2. Are the corrective actions complete since Oakwood is being developed?

# Root Case of Resident Flooding

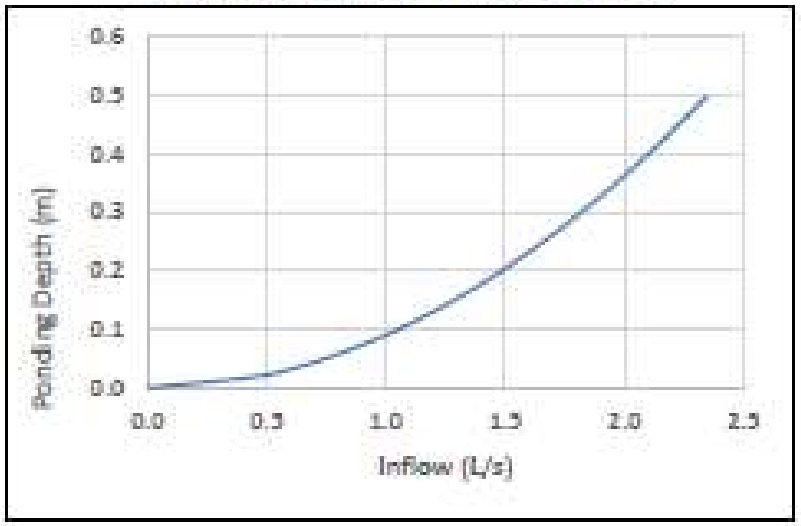
- Ponding Depth above 0.3m flooding storm sewer and spilling onto the roads.
- Pumps not adequately performing (LeFaive Drain)

**Resulting Affect**

- Surface Inflow to Sanitary Sewer during major storm events, water can sometimes enter the sanitary sewer through manhole lift holes.

  At an inflow rate of 1.8 L/s for one manhole, **it would only take 10 manholes** with 0.3 metres of ponding to use up the sewer capacity.

Graph 7.1: Sanitary Manhole Inflow



# Question YES/NO

1. Was the investigation of the root source of residential flooding, complete when the Mayor made the statement to the news?

2. Did the investigation include the road ponding water entering the sanitary sewers?

# Damage from floods

- Flooded basements
- Basement floors cracking
- Cracking in drywall due to sinking foundations
- Damage to driveways from water travelling underground
- Deterioration of roadways
- Environmental/Health issues from
- sanitary water contamination.
- House value decreased
- Mental health stress

# Resident's Questions

## Sent to Council August 18, 2021

1. How many sanitary sewer illegal hook-ups were recorded at time of reporting?

2. How many of the 900 sanitary manhole in the flood hot zone covers don't have the RainGuard Covers?

3. What 4 infrastructure improvements are planned to complete in 2022 and what are their completion dates?

4. What are the project timeline and high-level plans for the remaining 9 infrastructure improvements?

# Support the Flood Mitigation & Protection Framework

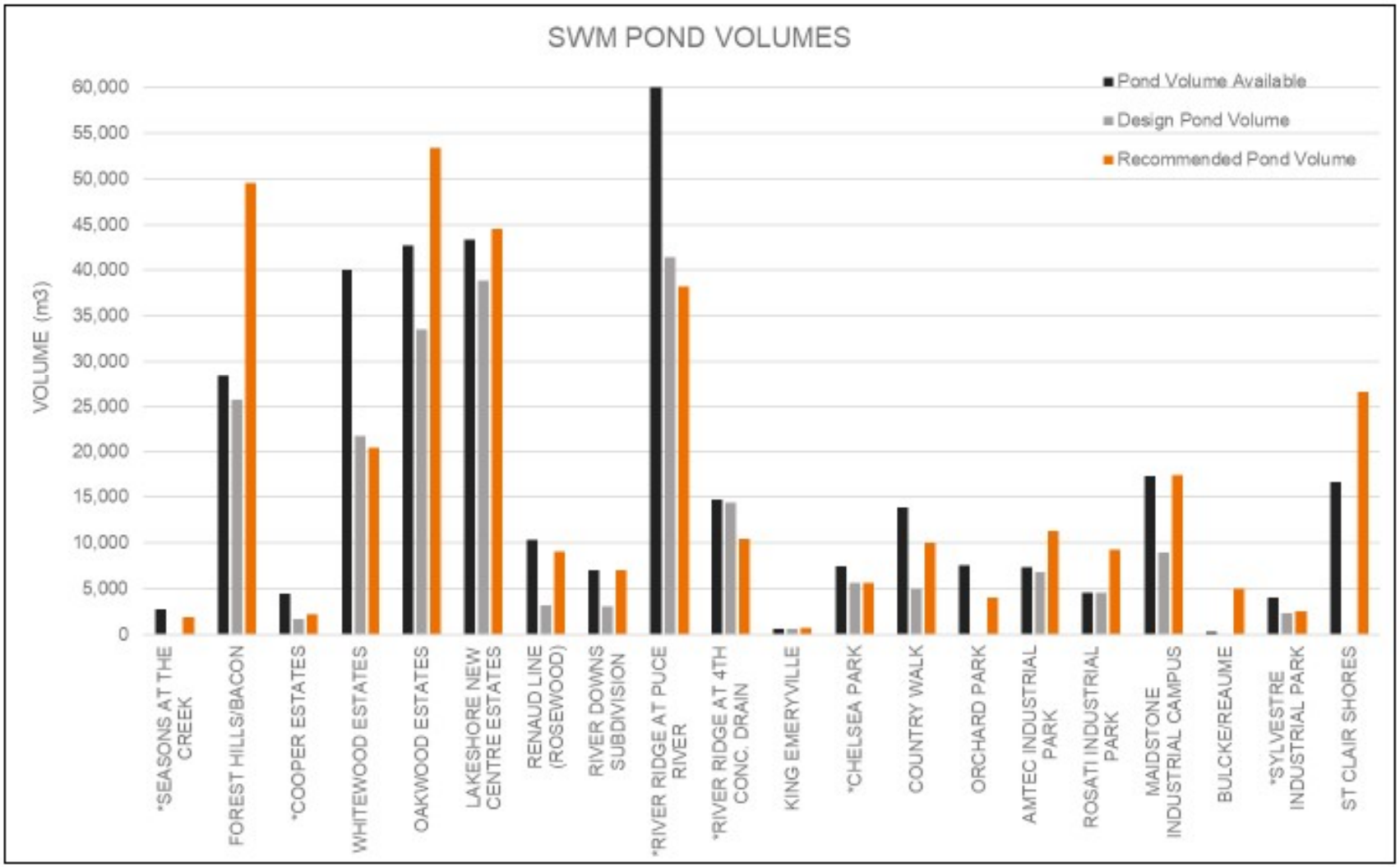
## 8/10/2021 Council meeting–APPROVED

- $80,000 Direct Administration to redirect the encumbered from the Community Improvement Plans in two communities to develop and formalize a Flood Rapid **Response Plan**;
  $111,000 Direct Administration to fund a Water Resources and **Flood Response** Team in 2021
- $191,000 TOTAL

**WE NEED FUNDS DIRECTED TO GETTING THE IMPROVEMENTS DONE!**

# Research Notes

# SWM Exiting Pond Volumes 5.3.3



# Cost and Conclusions for Preferred Solutions

**Table 8.4 Preliminary Opinion of Probable Costs for Preferred Solutions**

| Catchment | Projects | Cost |
|---|---|---|
| Amy Croft Drive | SWM Pond Retrofit, Storm Sewer Replacement, Major Flow Improvements, Municipal Drain Abandonment | $600,000 |
| Croft Drive | Major Flow Improvements | $80,000 |
| Chelsea Parkway | Major Flow Improvements | $100,000 |
| Optimist | Pump Station Replacement, Storm Sewer Replacement | $1,400,000 |
| Seasons at the Creek | Pump Station Improvements | $140,000 |
| Belle River West | New Pump Stations, Major System Improvements | $4,100,000 |
| Terra Lou | Major System Improvements | $120,000 |
| Bacon/Forest Hill | Pump Station Improvements | $1,700,000 |
| Russell Woods | Pump Station Improvements, New Pump Station | $2,700,000 |
| Lefaive Drain | New Storm Sewer, Pump Station Replacement, Municipal Drain Abandonment | $8,000,000 |
| Hood and Leffler Drain | Pump Station Improvements, Municipal Drain Enclosure | $14,000,000 |
| Country Walk and Dean Development | SWM Pond Retrofit | $700,000 |
| | TOTAL | $33,640,000 |

Note that the costs presented in Table 8.4 do not include HST.