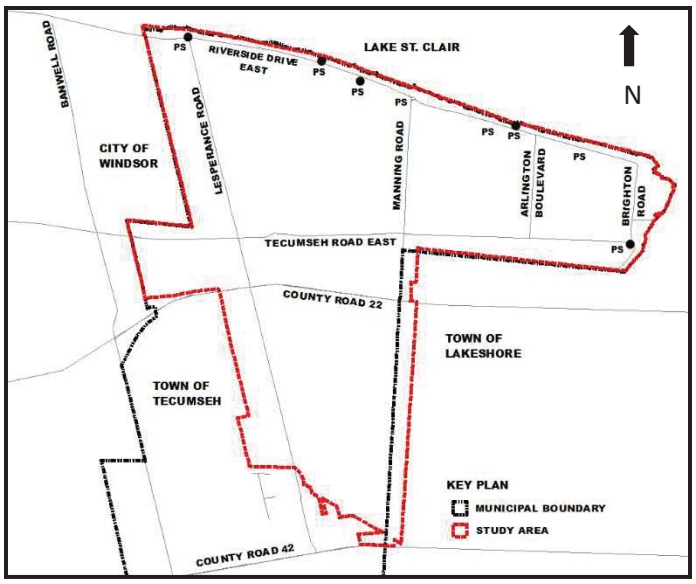
Appendix A-4

Public Information Centre #2

TOWN OF TECUMSEH
STORM DRAINAGE MASTER PLAN
NOTICE OF PUBLIC INFORMATION CENTRE No. 2

The Town of Tecumseh is completing a Storm Drainage Master Plan to address the impacts of surface flooding on the community. This Master Plan will confirm the factors contributing to surface flooding resulting from significant storm events, identify and evaluate alternative solutions to reduce the risk and impacts of surface flooding, and outline a recommended long-term implementation strategy.

This Master Plan does not directly address basement flooding resulting from sanitary sewer surcharging. The Town of Tecumseh has been addressing basement flooding risks separately through other studies, initiatives, and subsidy programs since 2010.



Consultation is an important part of this process and members of the public, agencies, Indigenous communities and other interested persons are encouraged to participate. A Public Information Centre (PIC) was held in July 2018 to receive feedback on a number of alternatives that were developed to improve surface flooding in the study area. We appreciate the feedback received from residents at that event and used the input to further understand the issues and evaluate the solutions developed.

A **second** Public Information Centre meeting is planned for **February 6th, 2019** to present the following:

- Recommended solutions to reduce surface flooding for each problem area;
- List of projects recommended as part of the study;
- Impacts and upgrades of the recommended surface flooding solutions based on a climate change analysis; and
- Next steps and final deliverables.

Public Information Centre #2	
Date:	Wednesday, February 6th, 2019
Time:	3:00pm to 5:00pm and 6:00pm to 8:00pm
Location:	Royal Canadian Legion Branch 261 12326 Lanoue St, Tecumseh, ON N8N 1N3

This will be the final PIC for the study. Visit the Town of Tecumseh website for updated information and resources related to this study and to provide additional input to the study team.

www.tecumseh.ca/townhall/departmental-services/Engineering_Services/studies/storm_drainage_master_plan

This notice first issued on January 11, 2019

The following list of Schedule B projects are recommended as part of the master plan:

Storm Pump Station Improvements

- New storm pump station at the Lesperance pump station site;
- Expansion of the West St. Louis Pump Station;
- Decommission the St. Mark's storm pump station and construct a new Merged Scully/St. Mark's storm pump station at the existing Scully pump station site;
- New PJ Cecile storm pump station site with alternative site locations; and
- New storm pump station along Southwind Crescent.

Underground/Aboveground Storage

- Incorporate surface storage within the "Tecumseh Soccer Fields" at École Secondaire L'Essor;
- Incorporate surface storage within Buster Reaume Park; and
- Incorporate underground/surface storage behind Tecumseh Town Hall.

This study is being carried out in accordance with the Master Plan Approach No. 2 of the Municipal Class Environmental Assessment (EA) (Municipal Engineers Association, 2015) process. This study will fulfill EA requirements for Schedule B projects. Information on each project will be shown at the PIC.

If you have any questions, please contact either of the project representatives:

Phil Bartnik, P.Eng.
Director, Public Works & Environmental Service
Town of Tecumseh
917 Lesperance Road
Tecumseh, Ontario, N8N 1W9
Ph: (519) 735-2184 ext. 148
Email: TecumsehDrainageMP@dillon.ca

Flavio Forest, P.Eng.
Project Manager
Dillon Consulting Limited
3200 Deziel Drive, Suite 608
Windsor, Ontario, N8W 5K8
Ph: (519) 948-4243 ext. 3233
Email: TecumsehDrainageMP@dillon.ca

All comments and information received from individuals, stakeholder groups and agencies regarding this study are being collected to assist the Town of Tecumseh in completing the Storm Drainage Master Plan. Information will be collected in accordance with the *Municipal Freedom of Information and Protection of Privacy Act* and with the exception of personal information, all information provided will become part of the public record. This notice is also available on the Town's website and social media accounts.

TECUMSEH STORM DRAINAGE MASTER PLAN

Welcome to Public Information Centre #2

Wednesday, February 6th 2019

Town of Tecumseh
Royal Canadian Legion Branch 261
12326 Lanoue Street, Tecumseh ON

DILLON CONSULTING

TECUMSEH ON

Welcome

Today's PIC Objectives

- **OUTLINE** why and how the study is being completed
- **PROVIDE** background information and results of the study area drainage modelling
- **PRESENT** the preferred solutions and the decision making process
- **SUMMARIZE** the next steps in finalizing the study

Project Overview

The Town of Tecumseh is completing a Storm Drainage Master Plan to:

- Identify and address the impacts of surface flooding on the community.
- Identify and evaluate a range of solutions to reduce and minimize the risk of surface flooding.
- Recommend a phased approach to implementation that requires action by the Town and property owners.
- Develop recommendations to ensure no adverse impacts from future development on existing neighbourhoods.

This study does not address the following:

- Basement flooding resulting from sanitary sewer surcharging, which the Town of Tecumseh has been addressing separately through other studies, initiatives, and subsidy programs since 2010.
- Surface flooding due to high Lake Levels, which is to be addressed in a future study outlined within the Town's Flood Mitigation Strategy.

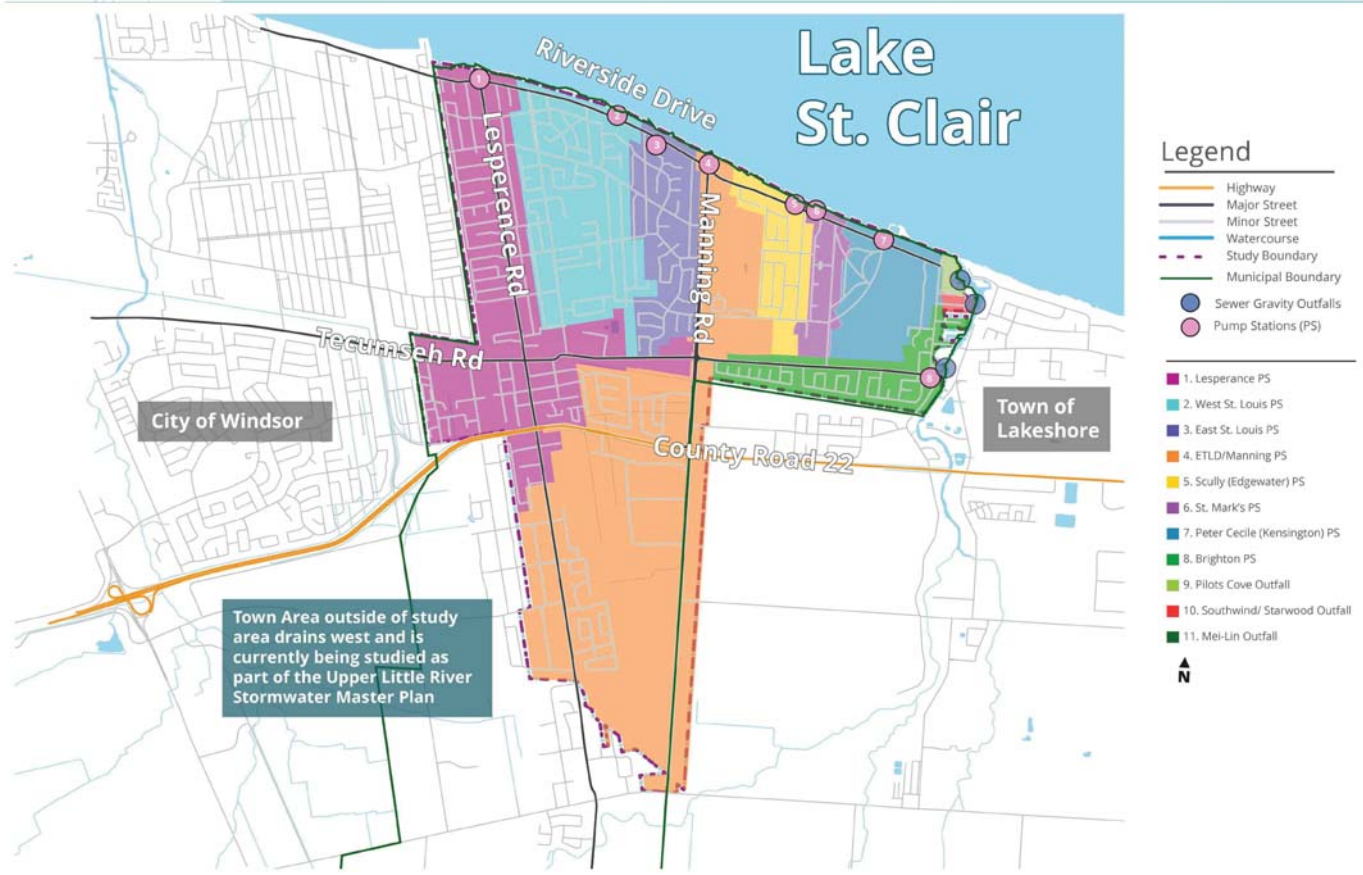
Tonight's PIC

This is the second of two Public Information Centres for the project. We encourage you to review the panels throughout the room, which identify:

- Project Overview, Study Area and Opportunity Statement
- Study Area Surface Flooding Problem Areas
- Decision Making Process and Preferred Surface Flooding Solutions
- Next Steps

Ask questions and provide the team with your input

Study Storm Outlets and Service Areas



Problem and Opportunity Statement

The Town of Tecumseh is completing a Storm Drainage Master Plan to address the impacts of surface flooding on the communities that currently discharge storm water to Lake St. Clair and Pike Creek. This Master Plan will:

- Confirm the factors contributing to surface flooding that exceeds standard depth criteria resulting from significant storm events.
- Identify and evaluate alternative solutions to reduce the risk and impacts of surface flooding and define recommended solutions.
- Outline a recommended long-term implementation strategy.


Little River Boulevard:
September 2016


Pentilly Road:
September 2016

St. Gregory's Road:
September 2016


Edgewater Boulevard:
September 2016


Grace Road:
September 2016

Study Process and Schedule

The Master Plan is following the requirements of the Municipal Class Environmental Assessment (Class EA) (2000, as amended) - Approach No. 2.

The Master Plan will fulfill the requirements of Phases 1 and 2 of the Class EA including the requirements for the noted Schedule B projects.

Class Environmental Assessment

The Class EA Process ensures:

- All relevant social, environmental and engineering factors are considered in the planning and design process.
- Public and agency input is integrated into the decision making process.

Schedule B Project Summary

The Tecumseh Storm Drainage Master Plan followed the requirements of Approach #2 of the Class EA and has identified alternative solutions to address surface flooding. The evaluation of solutions took into consideration the existing environment and improvements to the system to establish preferred solutions which took into account both public and review agency input.

Provided below is a list of the **Schedule B** projects determined through this study:

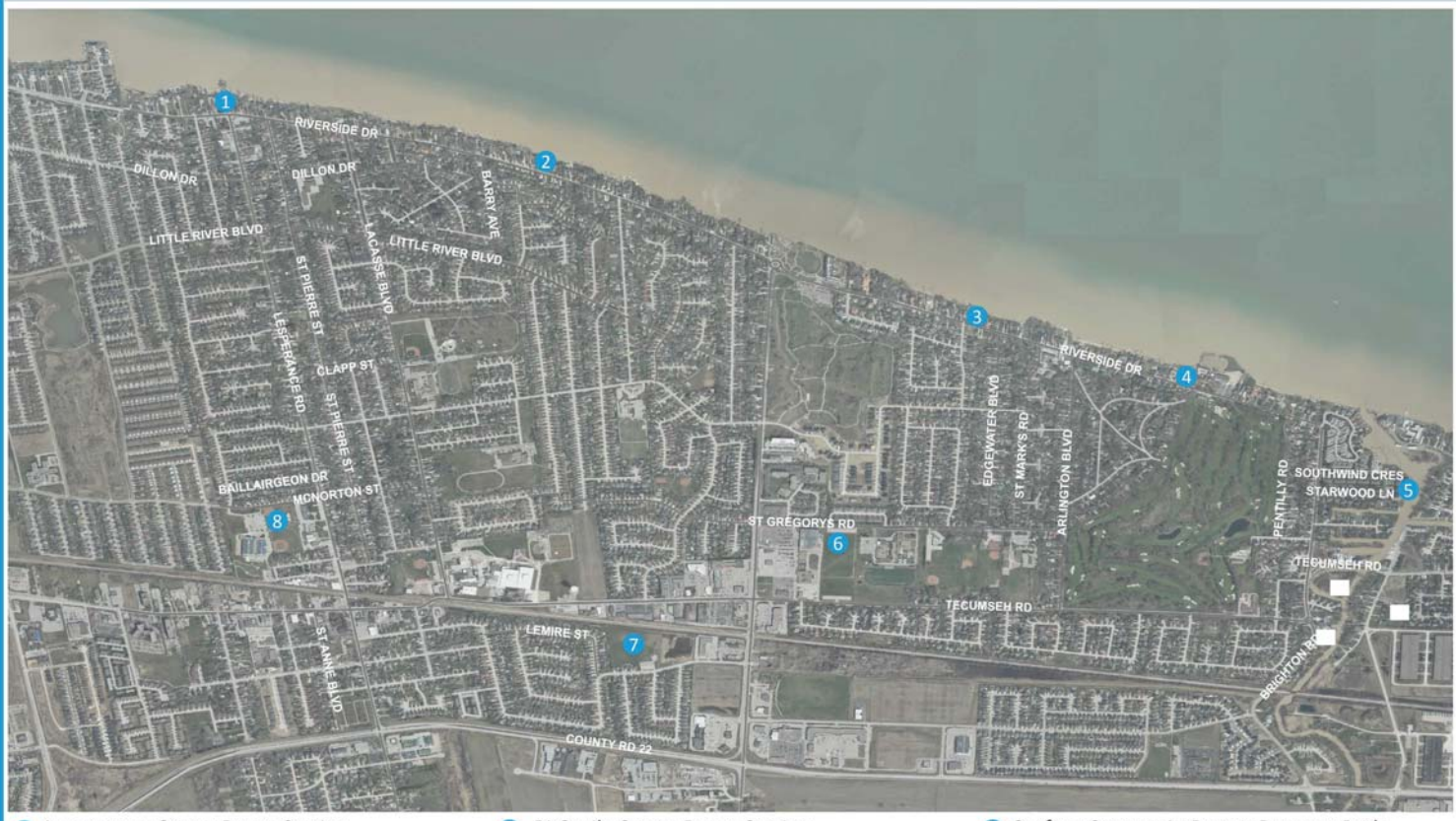
Pump Station Improvements

- Construction of a new storm pump station at the Lesperance pump station site;
- Expansion of the West St. Louis pump station;
- Decommission of the St. Mark's storm pump station and construction of a new consolidated storm pump station at the existing Scully pump station site;
- Construction of a new storm pump station and outlet at the PJ Cecile pump station site; and
- Incorporation of a new storm pump station along Southwind Crescent.

Underground/Aboveground Storage

- Incorporate surface storage within the "Tecumseh Soccer Fields" owned by École Secondaire L'Essor;
- Incorporate surface storage within municipal owned Buster Reaume Park; and
- Incorporate underground/surface storage behind municipal owned Tecumseh Town Hall property.

Schedule-B Project Location Map



1. Lesperance Storm Pump Station
2. West St. Louis Storm Pump Station
3. Consolidated Scully/St. Marks Storm Pump Station
4. PJ Cecile Storm Pump Station
5. Southwind Cres. Storm Pump Station
6. Surface Storage in Soccer Field
7. Surface Storage in Buster Reaume Park
8. Surface and Underground Storage behind Tecumseh Town Hall

Public Information Centre #1 Summary

During Public Information Centre #1, Tecumseh residents were informed about:

- The causes of both surface and basement flooding;
- Location of problem areas and extent of current surface flooding conditions; and
- Steps being taken to resolve surface flooding, including alternative and preliminary recommended solutions.

Alternatives solutions to alleviate surface flooding included:

- Aboveground and underground storage;
- Improved pump stations;
- Local and trunk storm sewer upgrades; and
- Surface grading improvements.

Stay Informed and Involved

Stay involved and provide your feedback….

Visit us at
www.tecumseh.ca/townhall/departmental-services/Engineering_Services/studies/storm_drainage_master_plan


Get Involved

Sign-up to our contact list to receive updates on future events

Email us at:
TecumsehDrainageMP@dillon.ca

Or **mail** a letter to the project team:

Phil Bartnik, P.Eng.,
Director Public Works &
Environmental Services
Town of Tecumseh
917 Lesperance Road,
Tecumseh, ON N8N1W9

Flavio R. Forest, P.Eng.,
Project Manager
Dillon Consulting Ltd.
3200 Deziel Drive, Suite 608
Windsor, ON N8W 5K8

Surface Flooding Considerations

Many Tecumseh residents have been impacted by surface flooding during the major storms of 2016 and 2017 which exceeded the design 1:100 year event **(108mm in 24 hours)**:

- September 28/29, 2016 storm dumped **220 mm** of rain in 24 hours (**110mm** of rain fell between 8:00am – 10:00am).
- August 28, 2017 event dumped **126mm** of rain in six hours.

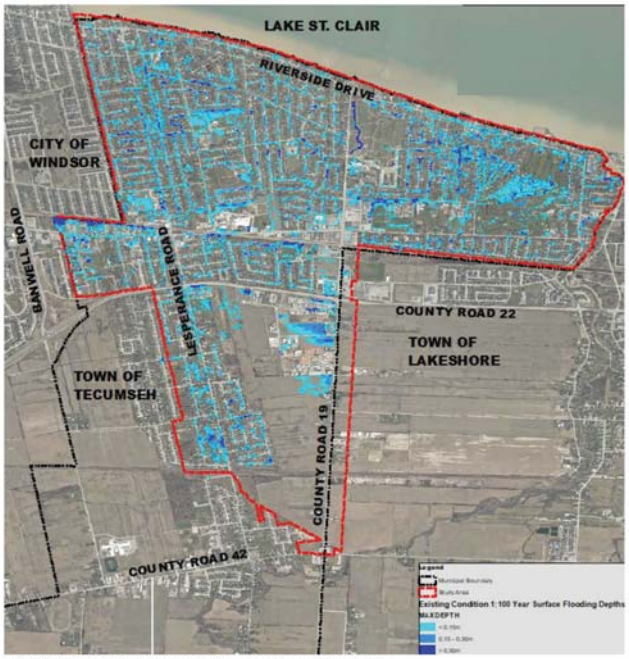
Flooding assessment in Tecumseh:

To address the risk of surface flooding, various factors were considered, including:

- Lake and creek water levels and ground elevations;
- Rainfall amount, duration and distribution;
- Ground cover, soil type and soil saturation conditions;
- Capacity of storm drainage systems;
- Storm drainage design criteria and level of service standard; and
- Climate change.

This current study does not include a review of the sanitary system to evaluate sanitary surcharging or surface flooding due to high Lake Levels. This will be reviewed under future studies as part of the Town's Flood Mitigation Strategy.

The Town has taken all provincially accepted industry measures to mitigate the impacts of surface flooding from reasonable rainfall events.



PCSWMM 2D Model Surface Flooding Results: 1:100 year Event

Surface Flooding Considerations

Lake and Creek Water Levels and Ground Elevations

Ground Elevations:

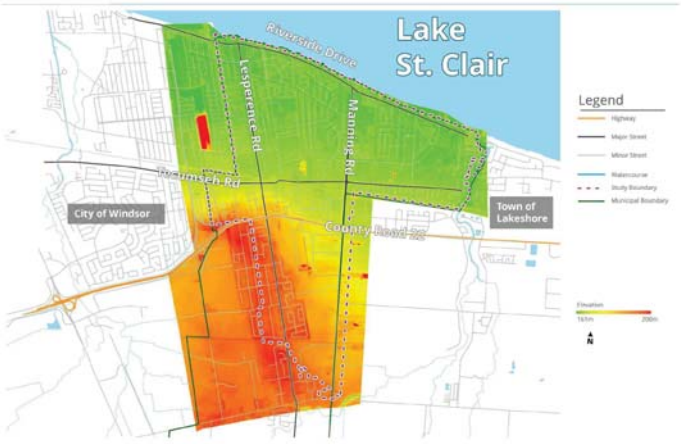
The southwestern portion of the study area is as much as **8.5m (28ft)** higher than lands to the north.

Stormwater runoff from higher elevated areas can generally be managed by gravity outlets.

River and Lake Water Levels:

To help drain lower-lying areas, the Town has currently introduced the following strategies:

- Pump Stations
- Temporary Storage

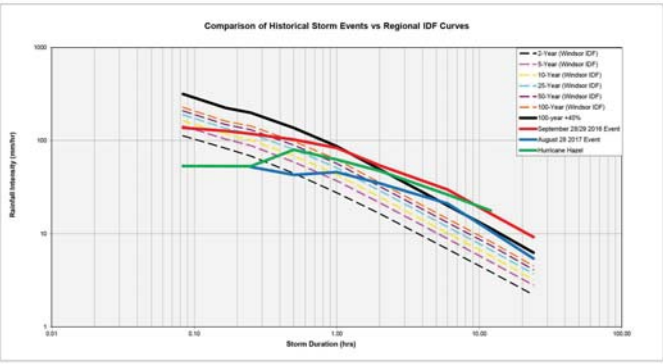


Surface Flooding Considerations

Rainfall Amount, Duration and Distribution

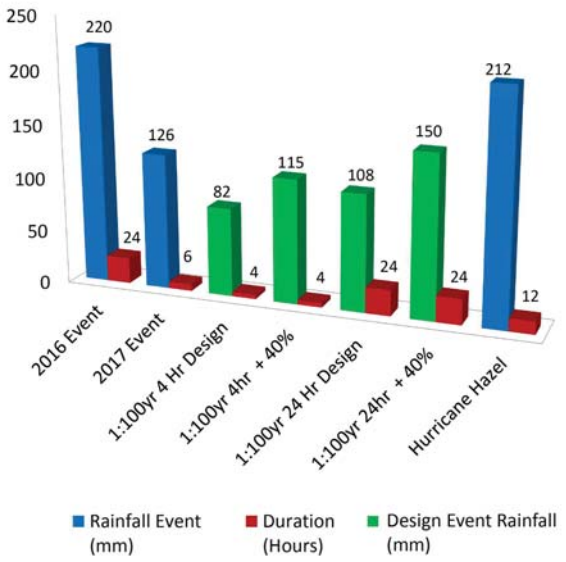
What is a 1:100 Year Storm?

- "1 in 100" year storm means there is **1% risk** that a storm of this size will occur in any year.
- Currently used as a design standard for overland drainage systems (major system).
- Over the last 60 years, 4 storm events in the Town exceeded a 1:100 year storm – 1957, 2013, 2016 and 2017.



Storms vary across the Town

- Rainfall amounts can vary across a municipality based on the storm pattern.

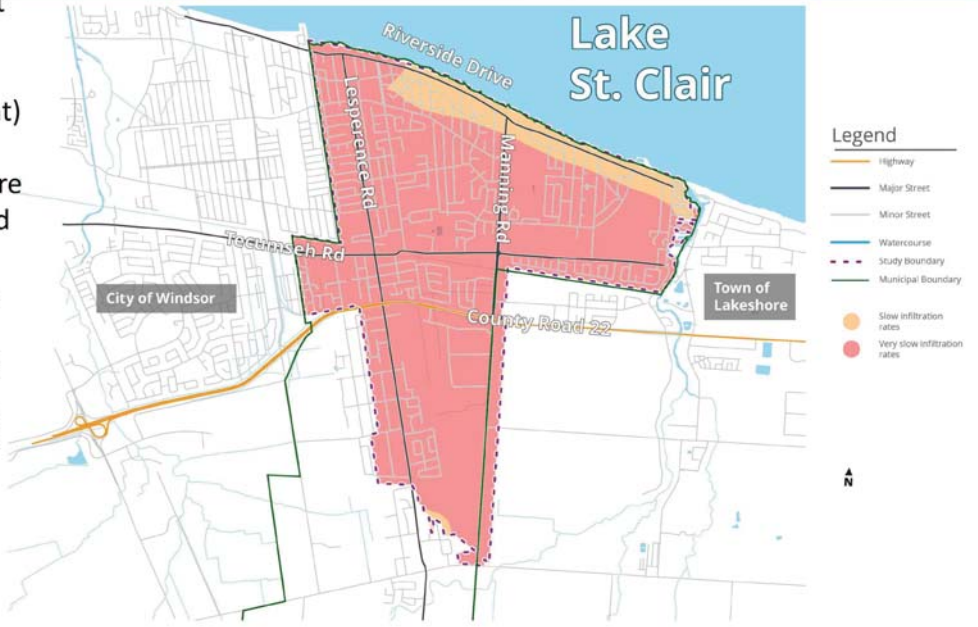


Surface Flooding Considerations

Ground Cover, Soil Type and Soil Saturation Conditions

Ground conditions can significantly impact the volume and rate of runoff produced from a rain event.

- Hard, impervious surfaces (ie. Pavement) allow limited infiltration and have less available ponding areas resulting in more runoff than pervious surfaces (grass and soil).
- Most of Tecumseh consists of clay soils, which have low infiltration rates.
- Soil saturation levels affect the amount of water that can soak into the ground, affecting the volume and rate of runoff.
- Spring runoff, which can fully saturate the soil, and frozen ground conditions can have a direct impact on a soils infiltration rate.



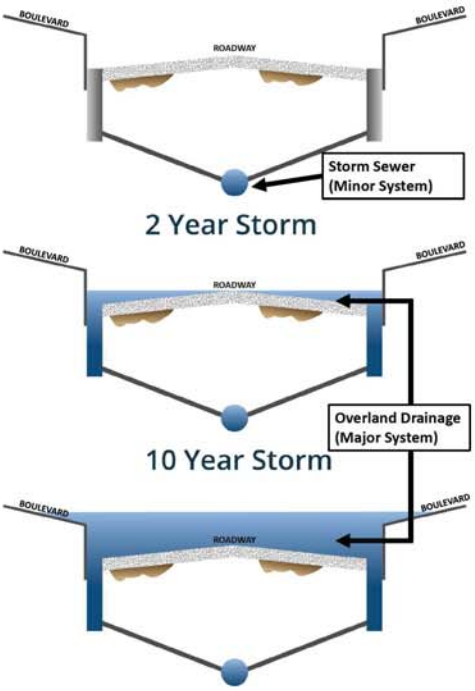
Surface Flooding Considerations

Storm Drainage Design Criteria & Level of Service Standard

Sewer Drainage Design (Minor System)

Storm Sewer Systems are designed to a provincially accepted and affordable level of service to convey the 1:2 year (50% chance of occurrence in a given year) to 1:5 year (20% change of occurrence in a given year).

Storm Pump Stations work to handle expected flows from the storm system and discharge to an acceptable outlet to limit sewer surcharging and surface (roadway) ponding during larger 1:100 year (1% chance of occurrence in a given year) storm events.



Overland Drainage Design (Major System)

Overland Drainage Systems (roadways, low lying areas) are currently designed to reduce the amount of water from a 1:100 year storm to a surface ponding depth of less than 0.30 m, where practical.

Increasing Level of Service reduces risk, but typically comes at a higher cost

Surface Flooding Considerations, Design Criteria and Level of Service

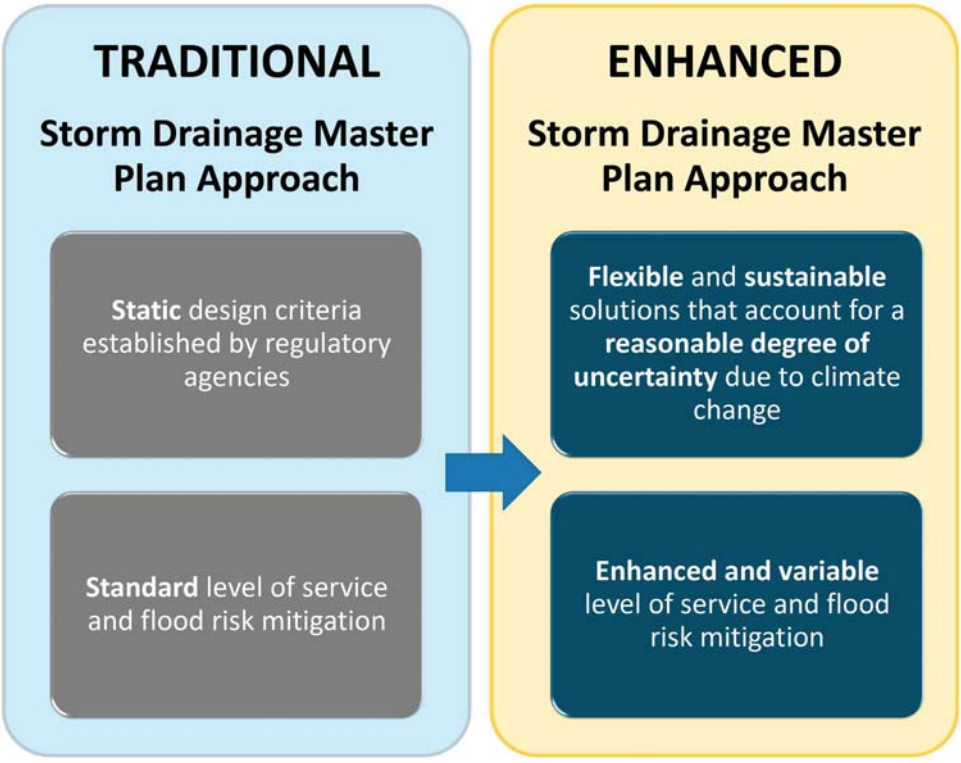
	PROPOSED LEVEL OF SERVICE Storm Drainage (Public Right-of-Way)	
	Existing Developed Areas	**New Development**
MINOR SYSTEM	1:2 year storm Goal: Reduce significant existing surface flooding, where practical	1:5 year storm Goal: No surface flooding
MAJOR SYSTEM	1:100 year storm Goal: Reduce surface flooding to less than 0.30 m, where practical	1:100 year storm Goal: No more than 0.30 m surface flooding depths
	Climate Change* Goal: Enhanced/variable level of service for higher-risk areas	Climate Change* Goal: Enhanced/variable level of service for all new development

* Climate Change simulation used 1:100 year + 40% design storm as per the Windsor/Essex Stormwater Management Standards

Surface Flooding Considerations

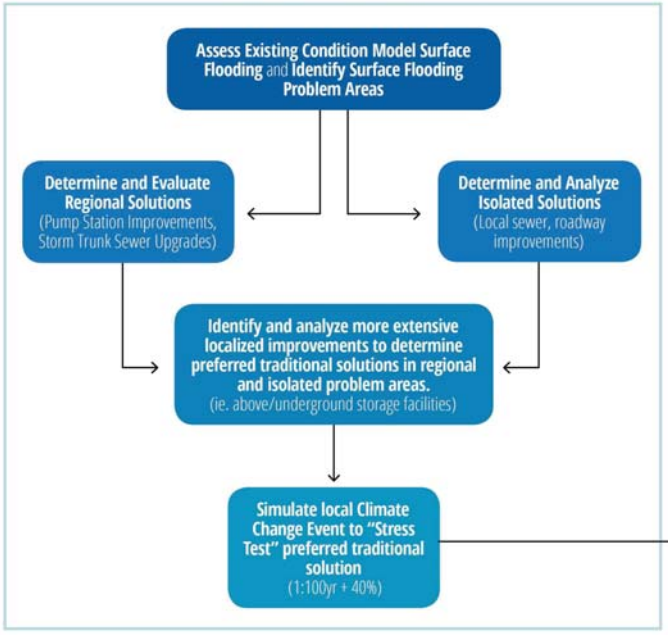
Climate Change

- Shift in weather patterns associated with an increase in global average temperatures.
- The Storm Drainage Master Plan will look at ways to improve the resiliency of drainage infrastructure, taking into consideration the impacts of climate change and recommend the required level of service.
- A decision matrix is used to determine a preferred design solution and identify areas that require either a traditional or enhanced level of service.
- Enhanced level of service adds more resiliency to the storm system, but at a higher capital cost.

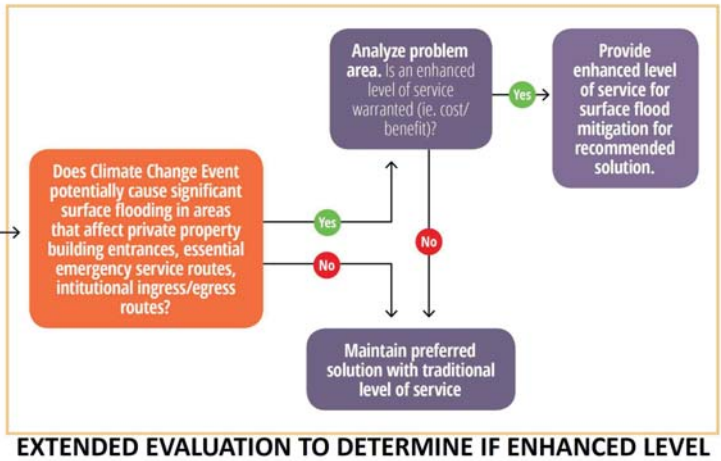


Decision Matrix for Preferred Surface Flooding Solutions

LIMIT OF EVALUATION FOR TRADITIONAL LEVEL OF SERVICE SOLUTION



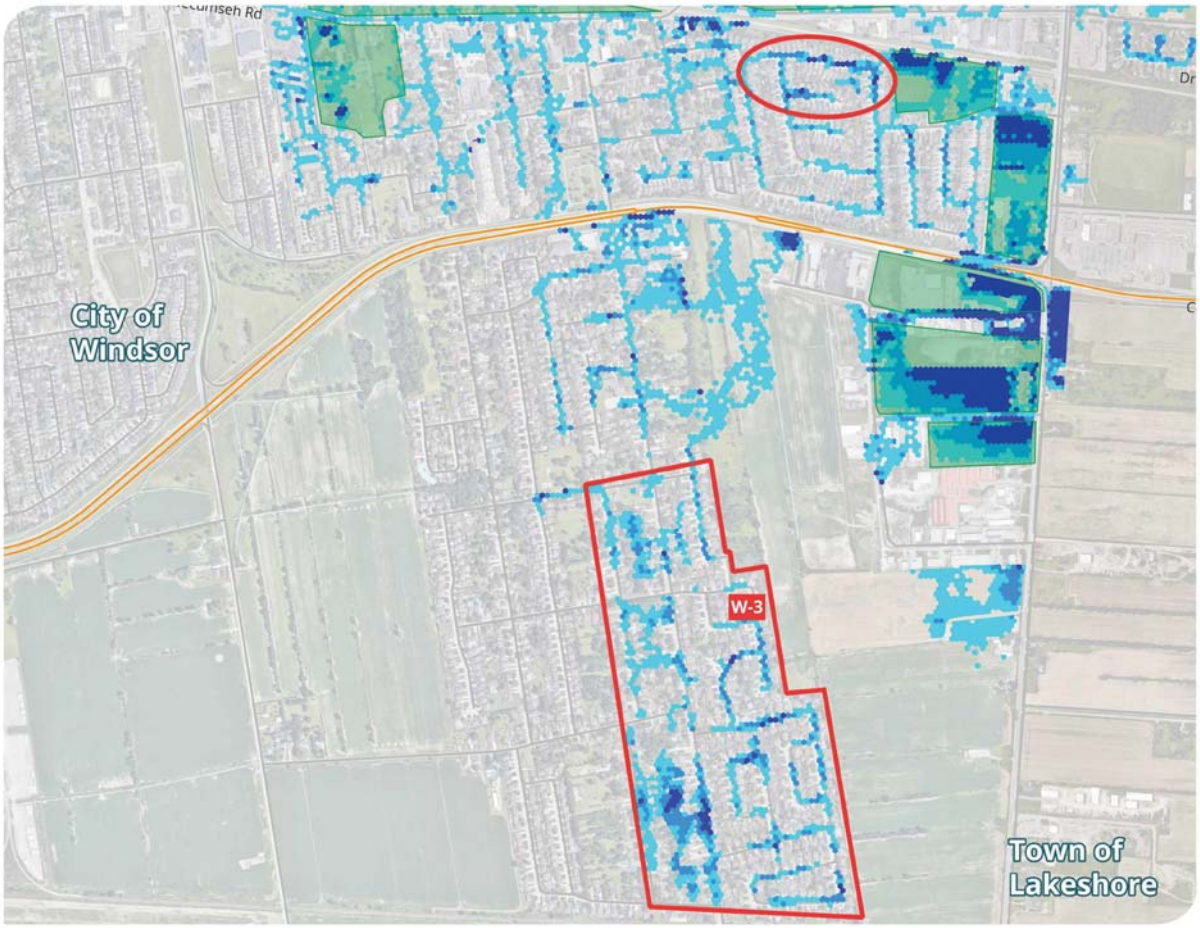
Although recommended solutions will improve the risk and impact of surface flooding, some private and public properties in low-lying areas may still be susceptible to localized flooding during extreme rainfall events.



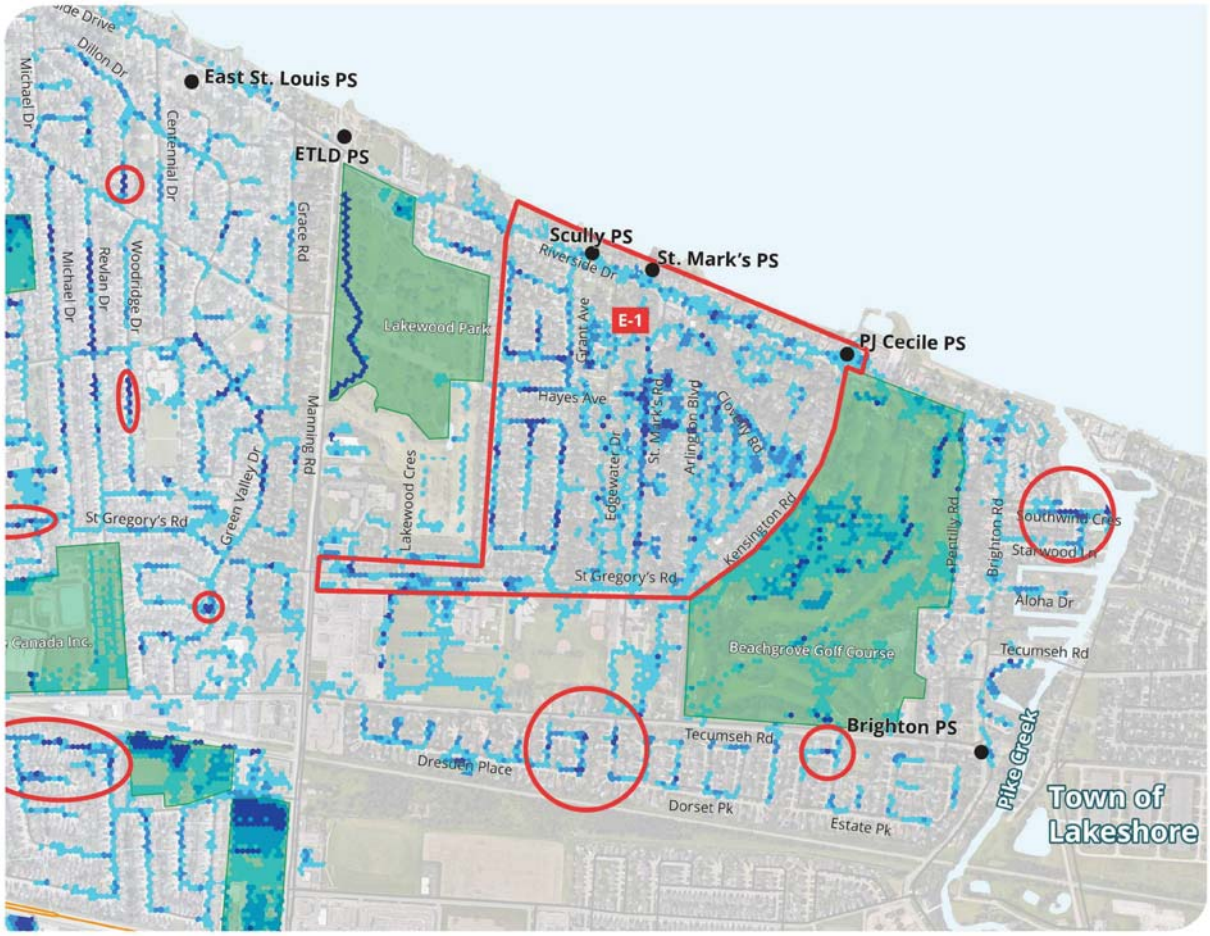
EXTENDED EVALUATION TO DETERMINE IF ENHANCED LEVEL OF SERVICE SOLUTION IS WARRANTED

Existing Condition 1:100 Year Surface Flooding West of Manning Road

Existing Condition 1:100 Year Surface Flooding West of Manning Road



Existing Condition 1:100 Year Surface Flooding East of Manning Road



Legend

- Streets
- Regional Surface Flooding Problem Areas
- Isolated Surface Flooding Problem Areas
- Parkland/ Private Property not to be Analyzed
- Pump Station (PS)

1:100 Surface Ponding

- Less than 0.15m depth
- Between 0.15m - 0.30m depth
- Over 0.30m depth

N

Recommended Surface Flooding Mitigation Strategies - West Of Manning Road

REGIONAL PROBLEM AREA ID	LOCATION	RECOMMENDED FLOODING MITIGATION STRATEGIES (STORM INFRASTRUCTURE IMPROVEMENTS)									
		STORM TRUNK SEWER	LOCAL STORM SEWER	ROADWAY GRADING	RE-DIRECTION OF STORM DRAINAGE	INCORPORATION OF SEWER OVERFLOWS	PUMP STATION	UNDERGROUND STORAGE	SURFACE STORAGE	CATHCBASIN INLET EFFICIENCY	BACKFLOW PREVENTION
W-1	LESPERANCE ROAD NORTH OF COUNTY ROAD 22, GAUTHIER, EVERGREEN, PAPINEAU						●	●	●		
W-1	ST. PIERRE STREET	●			●		●			●	
W-1	MEANDER CRESCENT AND CLAPP STREET	●	●	●	●	●	●			●	●
W-1	LITTLE RIVER DRIVE		●				●	●		●	
W-1	LACASSE BOULEVARD		●		●		●			●	
W-1	CORONADO DISH AREA	●	●				●			●	
W-2	GREEN VALLEY DRIVE AND AMBERLY CRESCENT		●		●	●				●	●
W-3	ST. ANNE ST BLOCK SOUTH OF COUNTY ROAD 22		●	●	●	●				●	
W-3	LESPERANCE ROAD AND CHARLENE LANE		●		●	●				●	
-	LEMIRE STREET/LANOUE STREET		●		●				●	●	●

● Traditional Level of Service Applied

● Enhanced Level of Service Applied for Added Resiliency

Recommended Surface Flooding Mitigation Strategies - West Of Manning Road

SCHEDULE B ALTERNATIVES: LESPERANCE ROAD LOCAL SOLUTION

ALTERNATIVE 1
(Above/Underground storage with overflow from trunk sewer)

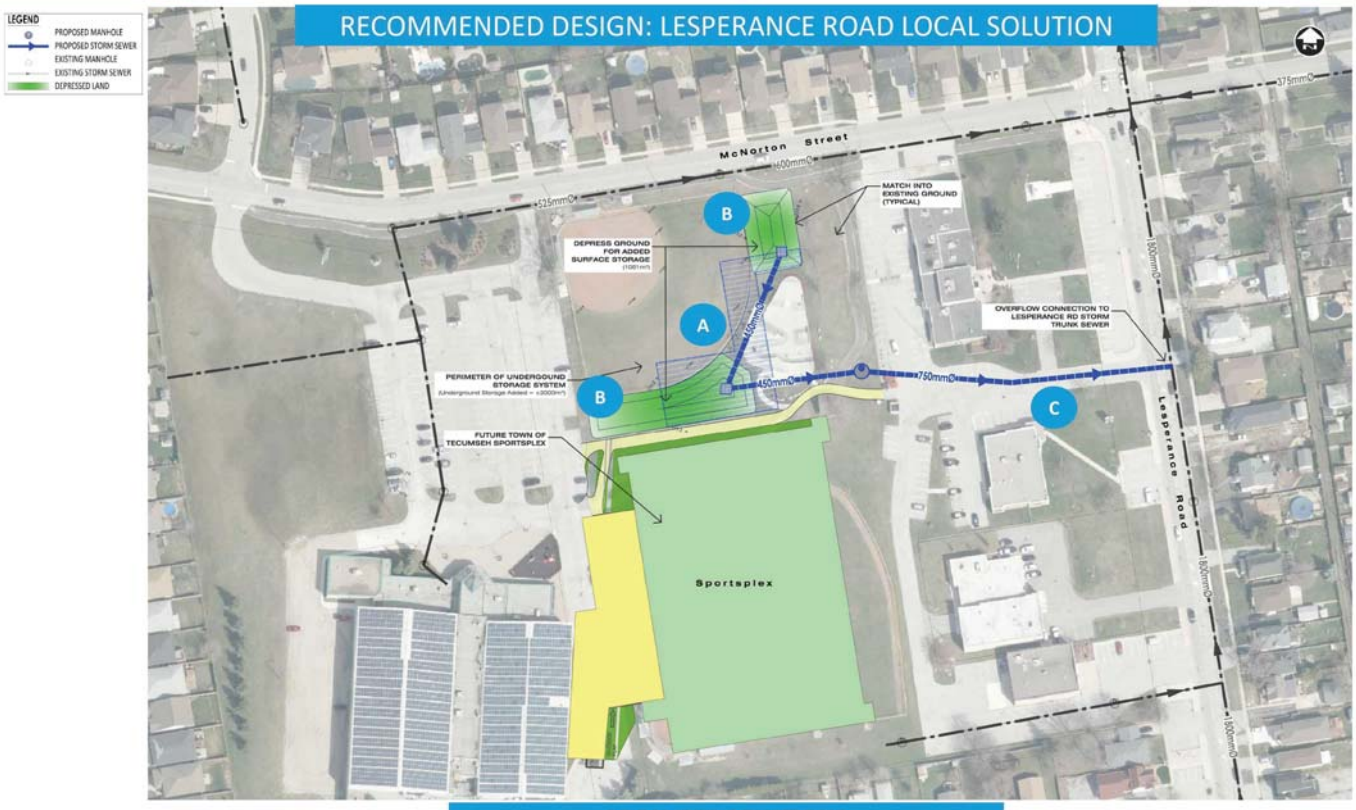
ALTERNATIVE 2
(Trunk sewer conveyance upgrades)

EVALUATION OF ALTERNATIVES

	ALTERNATIVE 1	ALTERNATIVE 2
ADVANTAGES	• Limited traffic disruption and work within roadways. • No long-term disruption to existing land-use: baseball diamond and skatepark.	• Provides a regional solution to reduce surface flooding and improving storm sewer conveyance within Lesperance pump station service area.
DISADVANTAGES	• Temporary disruption of baseball diamond during construction and restoration. • Temporary displacement of municipal building entrance during construction.	• Trunk sewer is required to be constructed very deep to reduce conflicts with existing services. • Greater traffic disruption along Lesperance. • Higher capital cost than Alternative 1.

RECOMMENDED SOLUTION

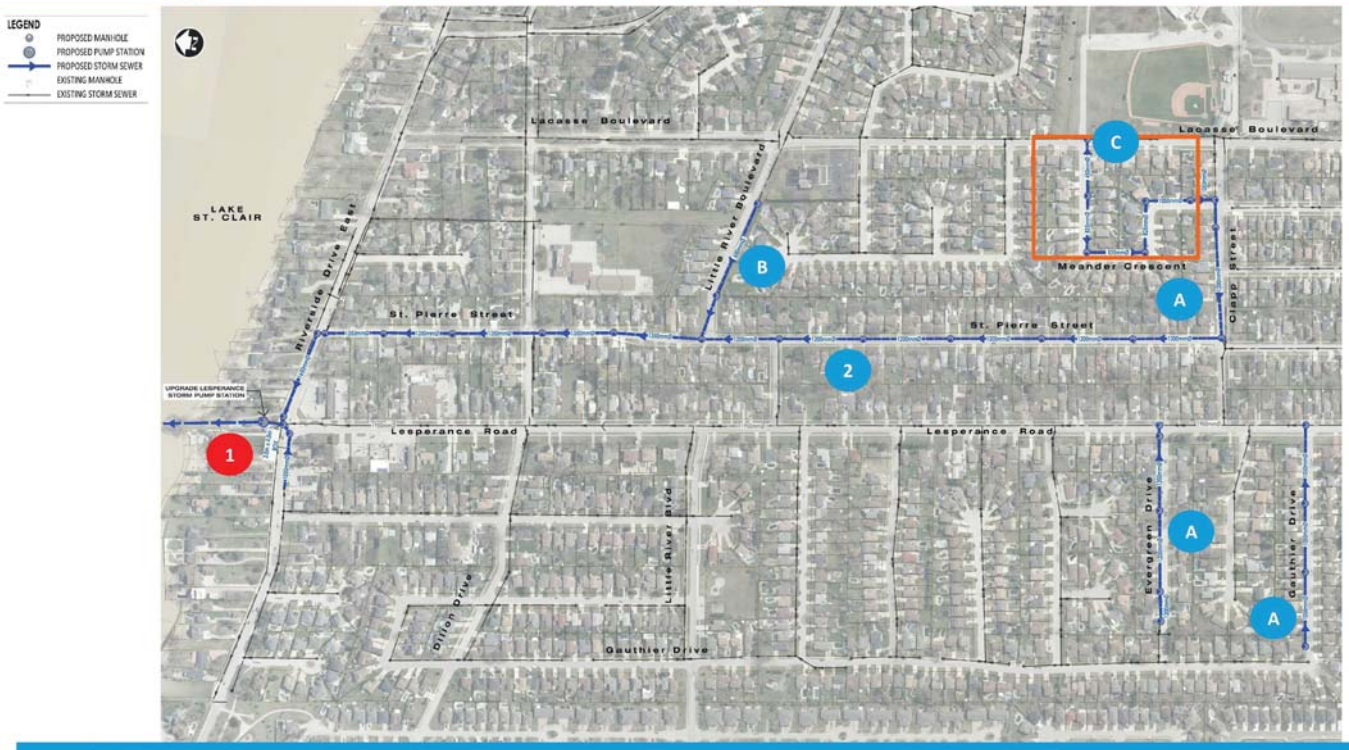
Recommended Surface Flooding Mitigation Strategies - West Of Manning Road



LOCALIZED SOLUTIONS

- A Underground Storage
- B Surface Storage
- C Overflow Sewer

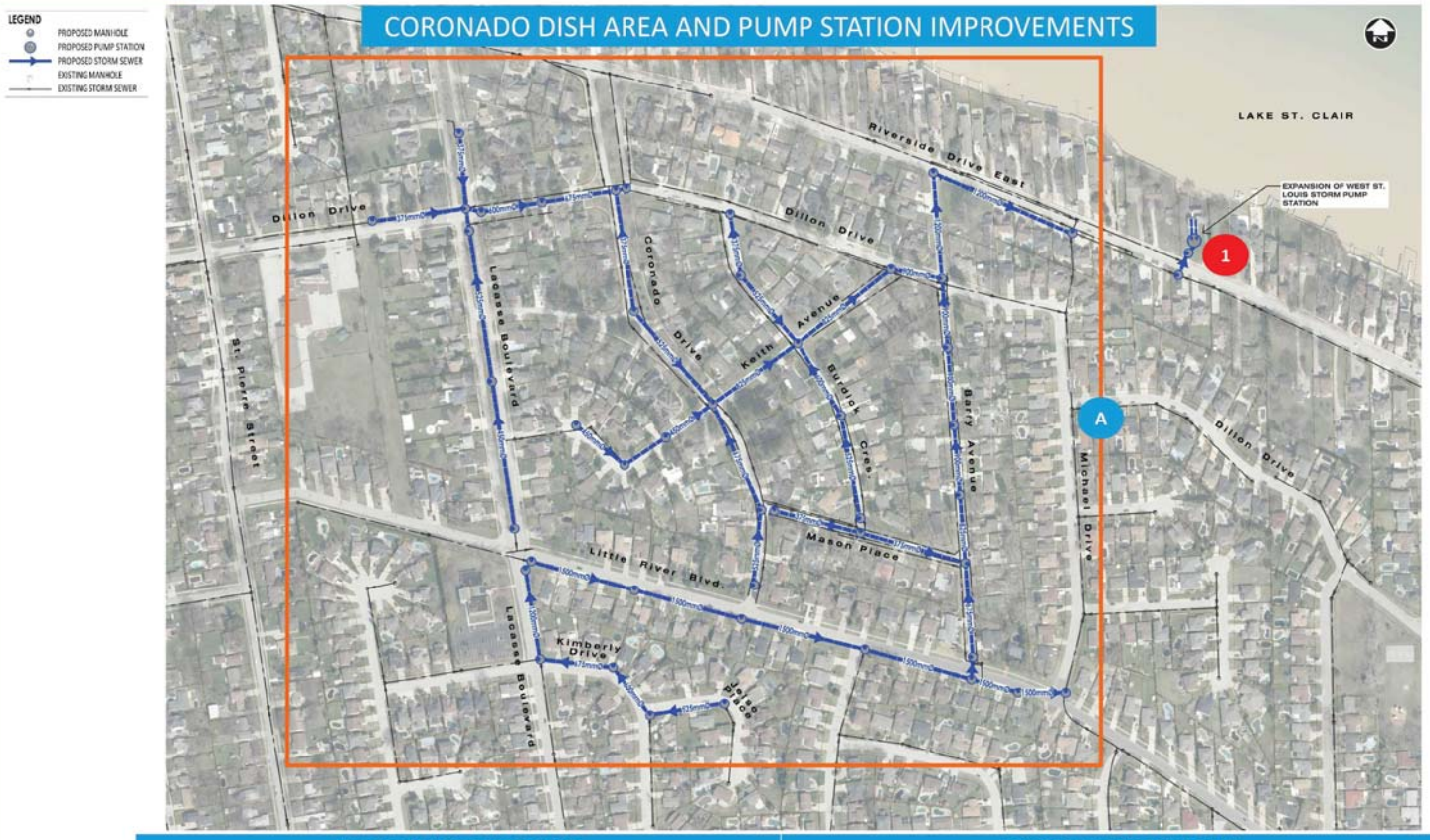
Recommended Surface Flooding Mitigation Strategies - West Of Manning Road



ST. PIERRE STORM TRUNK SEWER, LESPERANCE PUMP STATION IMPROVEMENTS AND LOCALIZED SOLUTIONS

REGIONAL SOLUTIONS	LOCALIZED SOLUTIONS
1 Pump Station Improvements (Enhanced Level of Service)	A Underground Storage
2 Storm Trunk Sewer	B Overflow Sewer
	C Storm Sewer Conveyance, Road Grading and Catchbasin Improvements

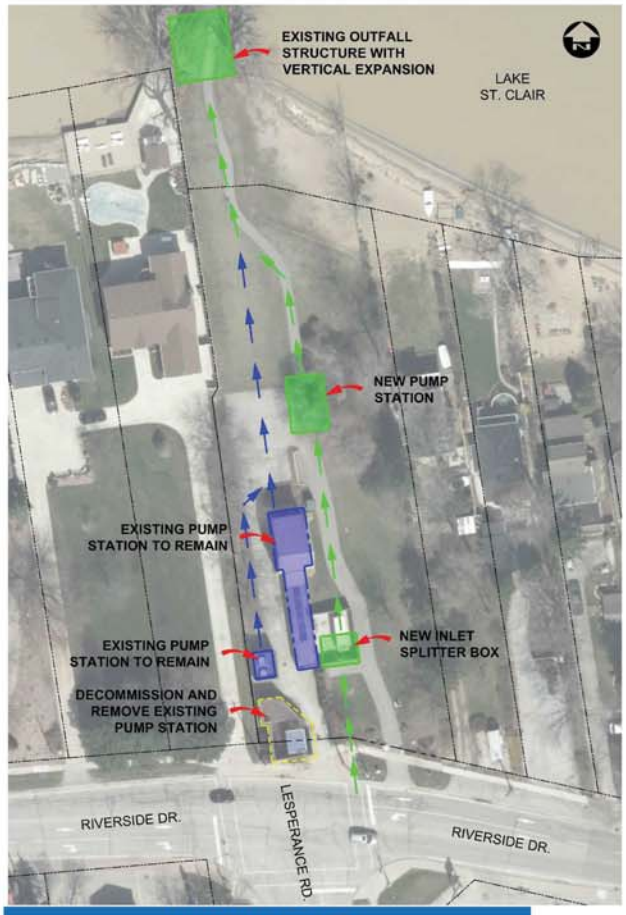
Recommended Surface Flooding Mitigation Strategies - West Of Manning Road



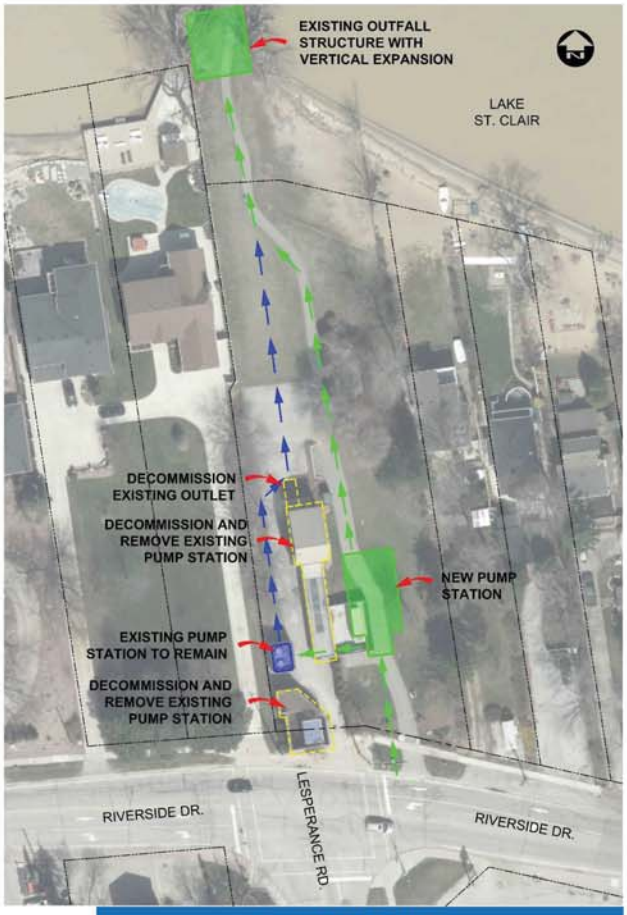
REGIONAL SOLUTIONS	LOCALIZED SOLUTIONS
1 Pump Station Improvements (Enhanced Level of Service)	A Storm Sewer Conveyance, Road Grading and Catchbasin Improvements

Recommended Pump Station Improvements – West of Manning Road

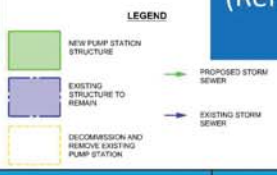
SCHEDULE B ALTERNATIVES: LESPERANCE STORM PUMP STATION IMPROVEMENTS



ALTERNATIVE 1
(Expansion of existing main pump station)



ALTERNATIVE 2
(Removal and replacement of existing main pump station)



EVALUATION OF ALTERNATIVES

	ALTERNATIVE 1	ALTERNATIVE 2
ADVANTAGES	• Lower capital cost for expansion than Alternative 2. • Expansion easier to implement with a reduced construction schedule.	• Lower long term operation and maintenance costs than Alternative 1 due to decommission of old station. • No impact on adjacent properties during construction due to new station being positioned directly east of old station.
DISADVANTAGES	• Continued high operation and maintenance costs on larger older pump station. • Expansion located further north and closer to adjacent homeowners which impact residential sight lines.	• Higher capital cost for new station than Alternative 1. • Longer construction time to decommission and remove old station and implement new station.

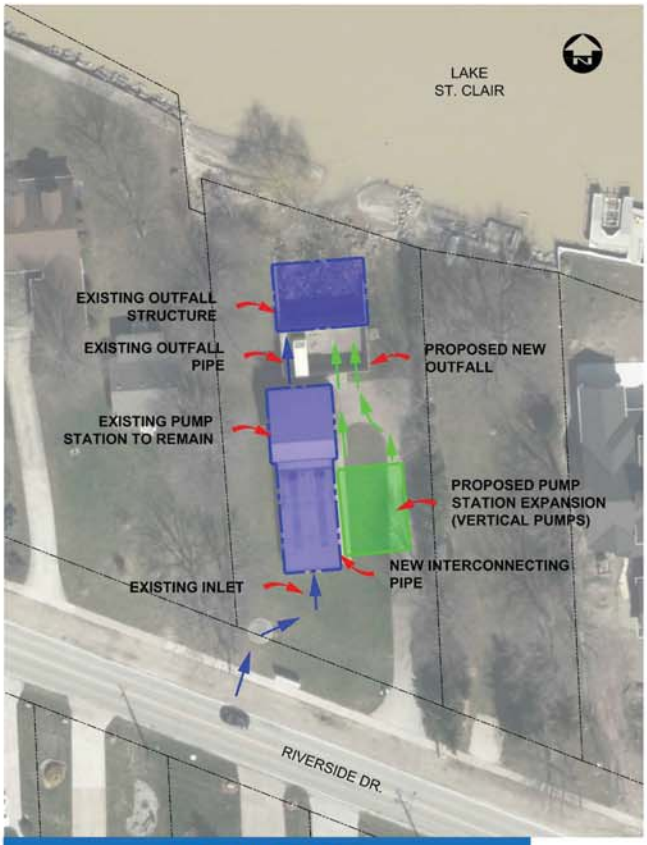
RECOMMENDED SOLUTION

Recommended Pump Station Improvements - West of Manning Road

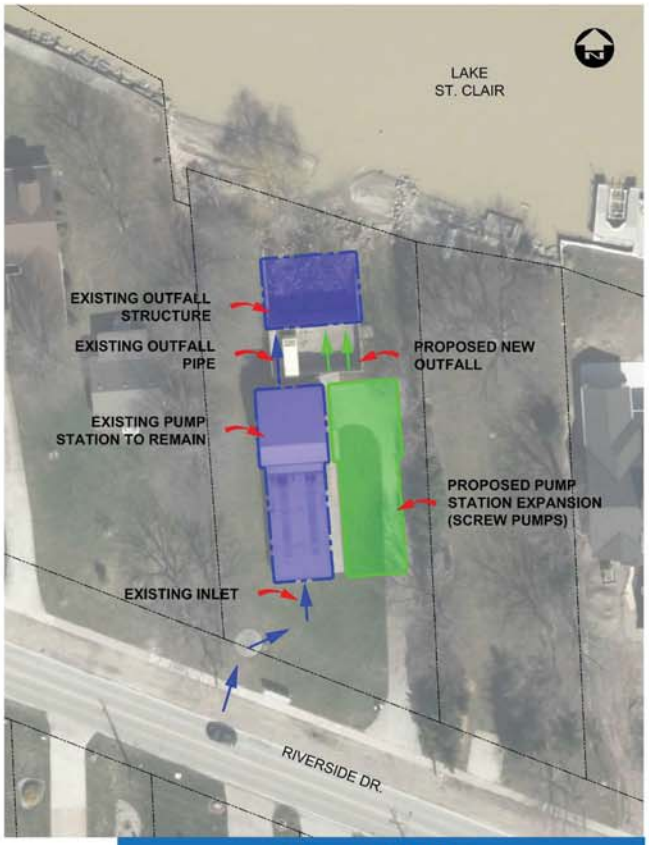
RECOMMENDED DESIGN: LESPERANCE STORM PUMP STATION IMPROVEMENTS

Recommended Pump Station Improvements – West of Manning Road

SCHEDULE B ALTERNATIVES: WEST ST. LOUIS STORM PUMP STATION DESIGN



ALTERNATIVE 1
(Expansion of existing pump station with vertical turbine pumps)



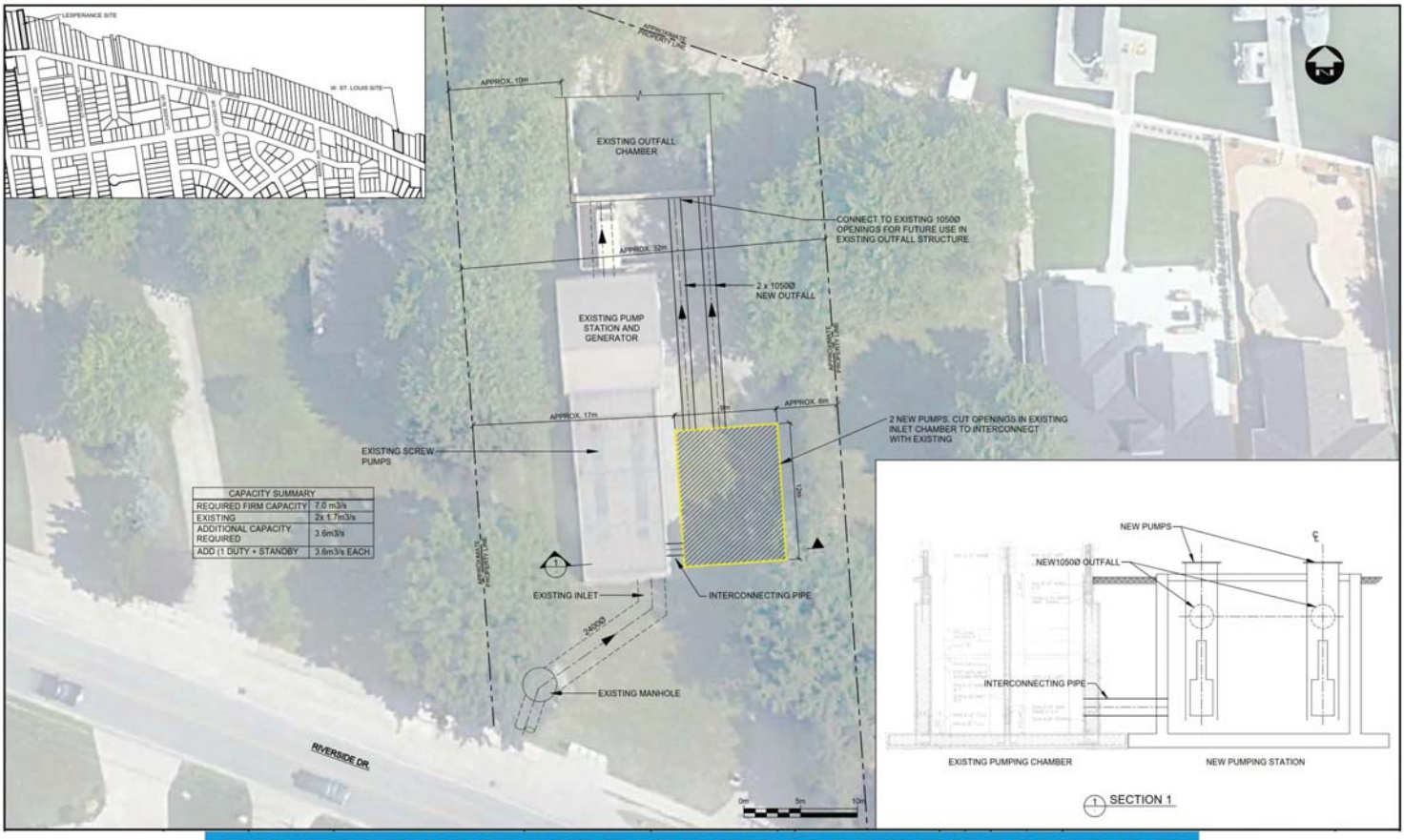
ALTERNATIVE 2
(Expansion of existing pump station with screw pumps)

EVALUATION OF ALTERNATIVES

	ALTERNATIVE 1	ALTERNATIVE 2
ADVANTAGES	• Lower capital cost than Alternative 2. • Smaller footprint with vertical pumps. • Vertical pumps are more common and are continually being advanced in improving operations.	• Layout of new station consistent with original pump station expansion that was considered during original design. • Screw pumps are known to be more reliable over the long term and require little maintenance with no deep sump required.
DISADVANTAGES	• Potential for higher long term operation and maintenance costs due to wear and damage under high operation speeds. • Aboveground housing would not be consistent with architecture of existing station.	• Not commonly used anymore for storm pump stations. • Expensive maintenance and replacement costs. • Larger wet well and overall building footprint.

RECOMMENDED SOLUTION

Recommended Pump Station Improvements - West of Manning Road



RECOMMENDED DESIGN: WEST ST. LOUIS STORM PUMP STATION IMPROVEMENTS

Recommended Surface Flooding Mitigation Strategies - West Of Manning Road

LOCALIZED/REGIONAL SOLUTIONS

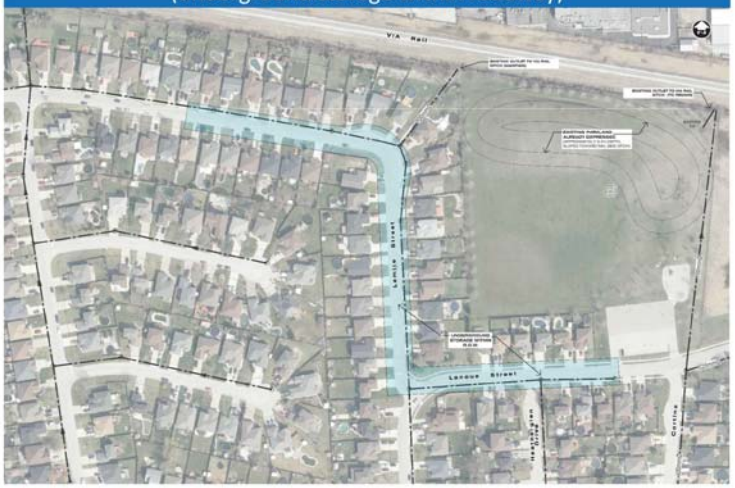
- A Storm Sewer Conveyance Improvements
- B Overflow Sewer
- C Backflow Prevention

Recommended Surface Flooding Mitigation Strategies - West Of Manning Road

SCHEDULE B ALTERNATIVES: LEMIRE STREET/LANOUE STREET LOCAL SOLUTION

ALTERNATIVE 1
(storm sewer conveyance improvements and aboveground storage)

ALTERNATIVE 2
(underground storage within roadway)



EVALUATION OF ALTERNATIVES

	ALTERNATIVE 1	ALTERNATIVE 2
ADVANTAGES	• Cost effective solution to reduce surface flooding and improve storm sewer conveyance. • No long-term disruption to existing parkland.	• Does not disrupt use of Buster Reaume park. • Maintains existing direction of storm sewers and outlet sewer through municipal easement to Via Rail Ditch.
DISADVANTAGES	• Temporary disruption to Buster Reaume park during construction and during 1:100 year rainfall events. • Temporary disruption to residents along Lemire and Lanoue during construction.	• Utility Conflicts within roadway and depth constraints at VIA Rail ditch outlet. • Higher capital cost than Alternative 1.

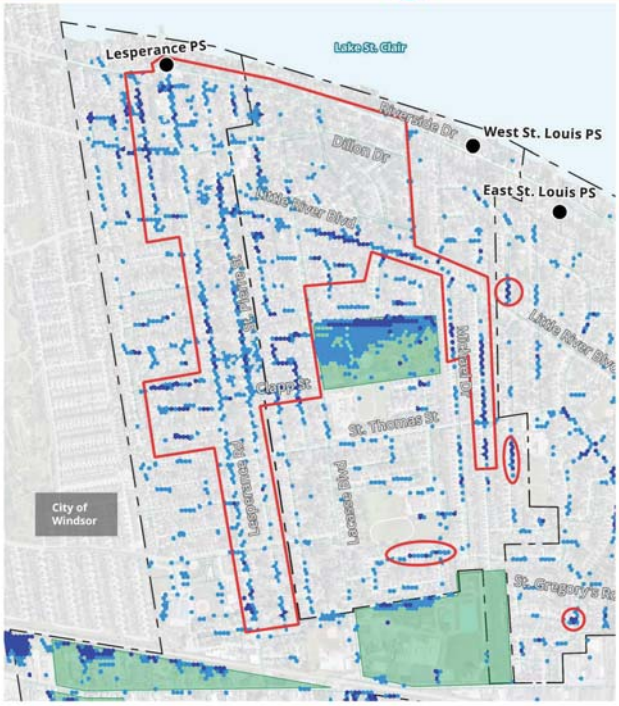
RECOMMENDED SOLUTION

Recommended Surface Flooding Mitigation Strategies - West Of Manning Road

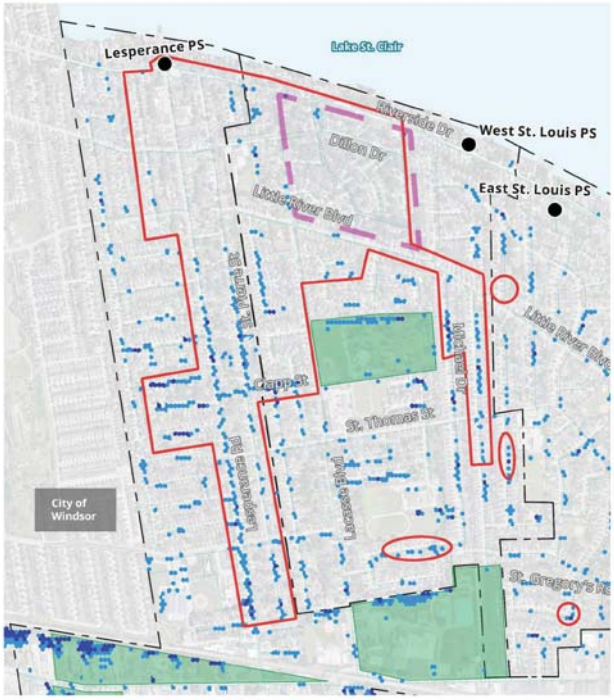
LOCALIZED SOLUTIONS

- A Storm Sewer Conveyance Improvements (Enhanced Level of Service)
- B Surface Storage (Enhanced Level of Service)
- C Backflow Prevention

Future Surface Flooding Comparisons
West of Manning Road – Problem Area W1



Existing Condition (1:100 Year Surface Ponding Simulation)



Future Condition (1: 100 Year Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.30m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

Future Surface Flooding Comparisons
West of Manning Road – Problem Area W1

Existing Condition (1: 100 Year + 40% Surface Ponding Simulation)

Future Condition (1: 100 Year + 40% Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.40m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

Future Surface Flooding Comparisons
West of Manning Road – Problem Area W2

Existing Condition (1:100 Year Surface Ponding Simulation)

Future Condition (1: 100 Year Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.30m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

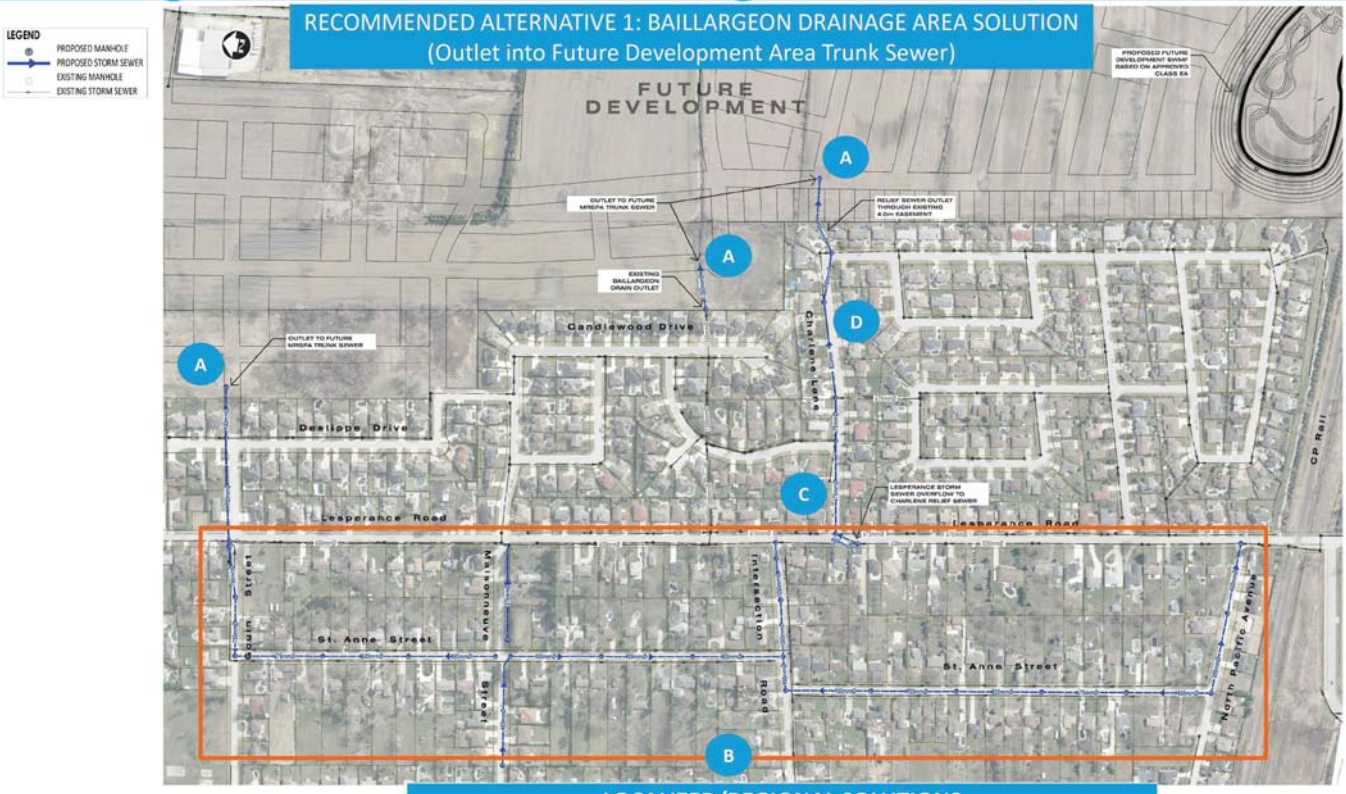
Future Surface Flooding Comparisons
West of Manning Road – Problem Area W2

Existing Condition (1: 100 Year + 40% Surface Ponding Simulation)

Future Condition (1: 100 Year + 40% Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.40m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

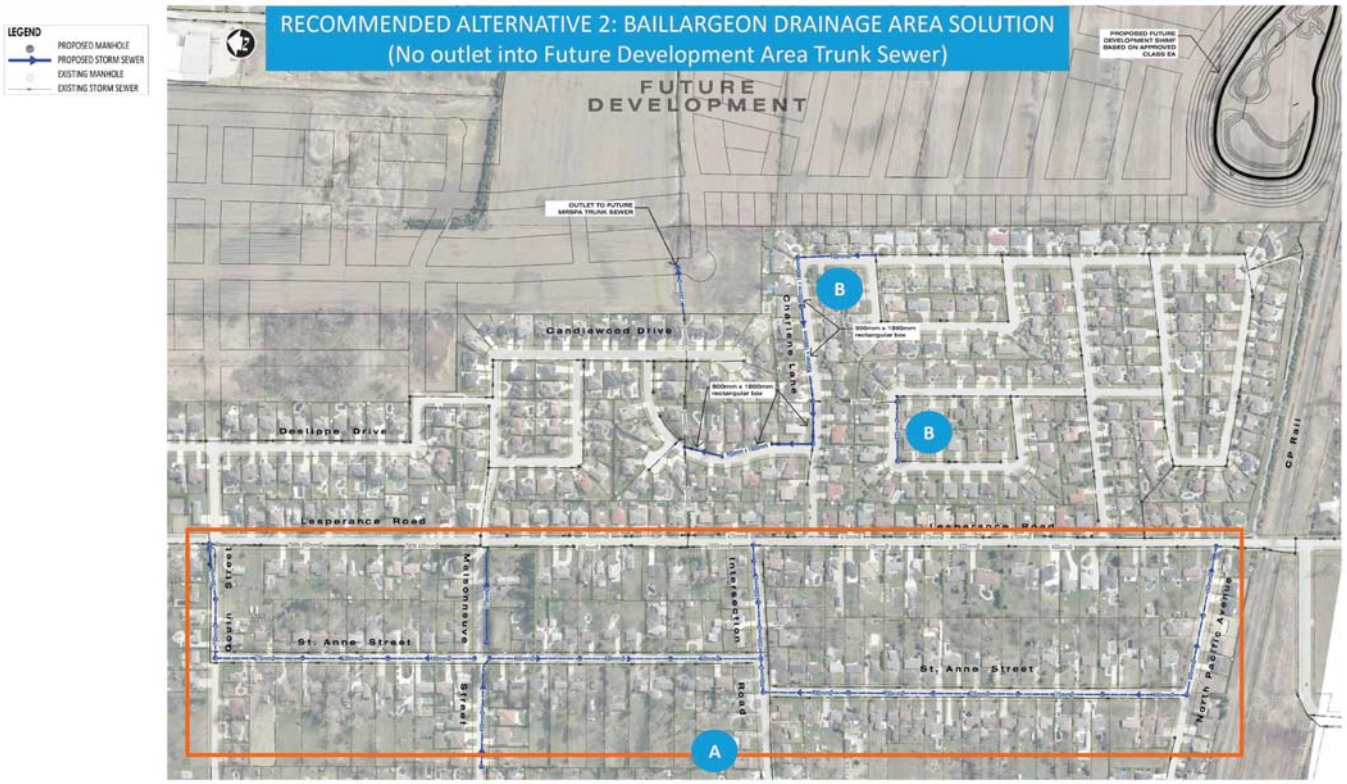
Recommended Surface Flooding Mitigation Strategies - West Of Manning Road



LOCALIZED/REGIONAL SOLUTIONS

- A Outlet Improvements
- B Storm Sewer Conveyance, Road Grading and Catchbasin Improvements
- C Overflow Sewer
- D Storm Relief Sewer

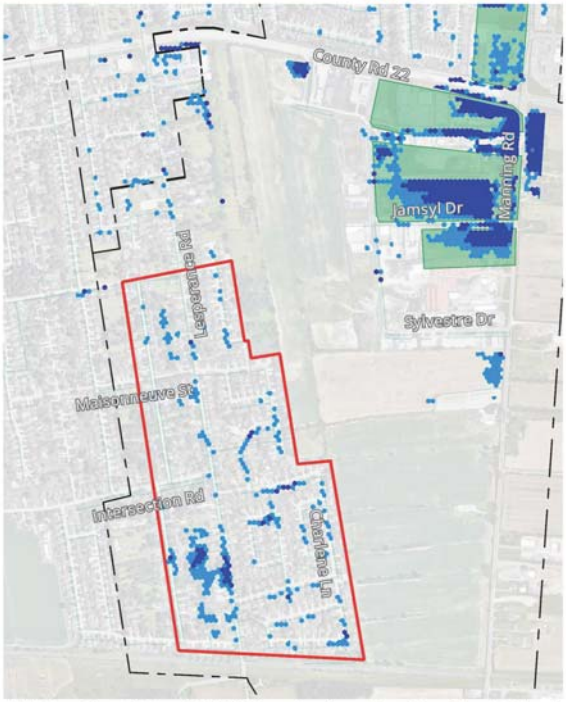
Recommended Surface Flooding Mitigation Strategies - West Of Manning Road



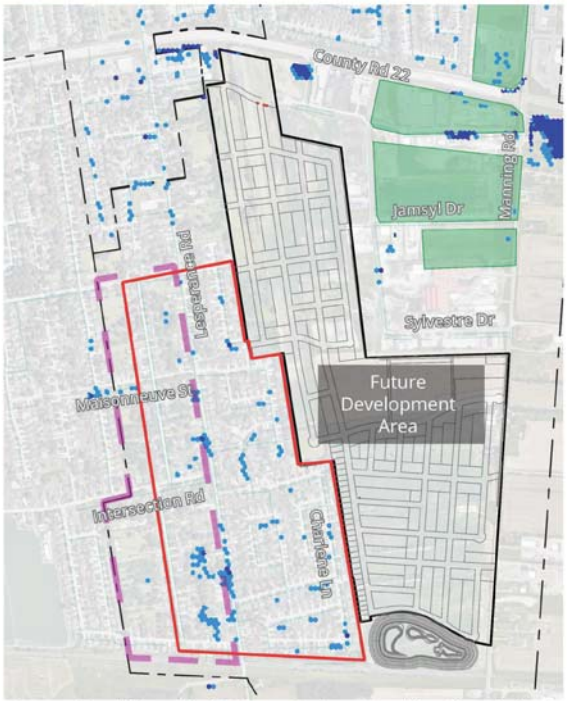
LOCALIZED/REGIONAL SOLUTIONS

- A Storm Sewer Conveyance, Road Grading and Catchbasin Improvements
- B Underground Storage

Future Surface Flooding Comparisons
West of Manning Road – Problem Area W3



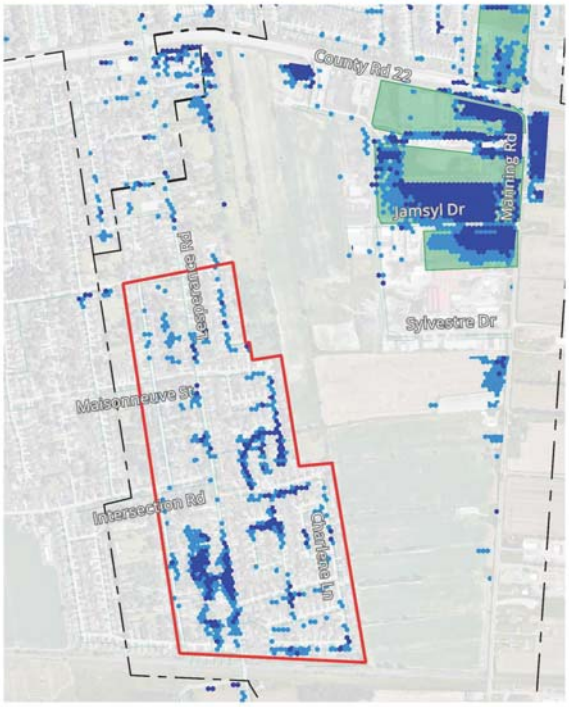
Existing Condition (1:100 Year Surface Ponding Simulation)



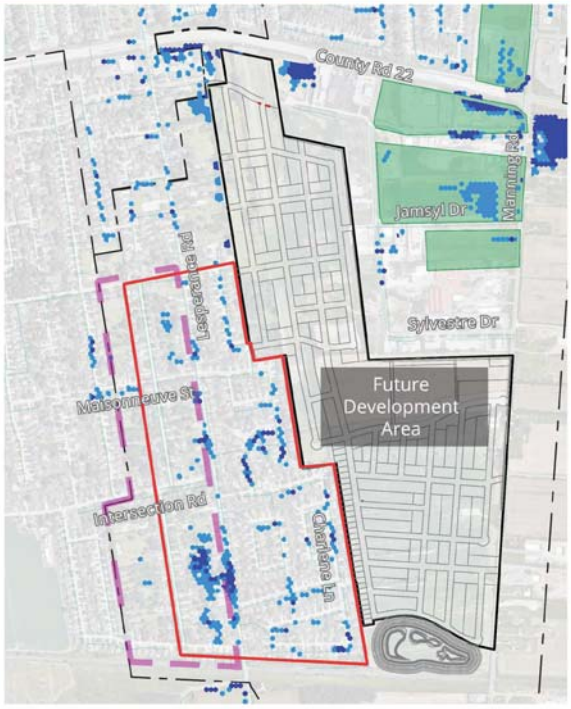
Future Condition (1: 100 Year Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.30m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

Future Surface Flooding Comparisons
West of Manning Road – Problem Area W3



Existing Condition (1: 100 Year + 40% Surface Ponding Simulation)



Future Condition (1: 100 Year + 40% Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.40m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

Recommended Surface Flooding Mitigation Strategies - East Of Manning Road

REGIONAL PROBLEM AREA ID	LOCATION	RECOMMENDED FLOODING MITIGATION STRATEGIES (STORM INFRASTRUCTURE IMPROVEMENTS)								
		STORM TRUNK SEWER	LOCAL STORM SEWER	ROADWAY GRADING	RE-DIRECTION OF STORM DRAINAGE	INCORPORATION OF SEWER OVERFLOWS	PUMP STATION	SURFACE STORAGE	CATHCBASIN INLET EFFICIENCY	BACKFLOW PREVENTION
E-1	ST. GREGORY'S ROAD		●	●	●	●	●	●	●	●
E-1	CADA CRES, FAIRWAY CRES AND GRANT AVE		●		●		●		●	
E-1	EDGEWATER BLVD		●	●			●		●	
E-1	ST. MARK'S ROAD		●	●			●		●	
E-1	ARLINGTON BLVD		●	●	●		●		●	
E-1	Riverside Drive	●		●	●		●		●	
E-1	KENSINGTON DISH AREA		●	●			●		●	
-	TECUMSEH ROAD		●	●	●					
-	STARWOOD LANE/SOUTHWIND CRESCENT						●		●	●

● Traditional Level of Service Applied

● Enhanced Level of Service Applied for Added Resiliency

Recommended Surface Flooding Mitigation Strategies - East Of Manning Road

SCHEDULE B ALTERNATIVES: ST. GREGORY'S ROAD LOCAL SOLUTION

ALTERNATIVE 1
(aboveground storage outside of roadway)

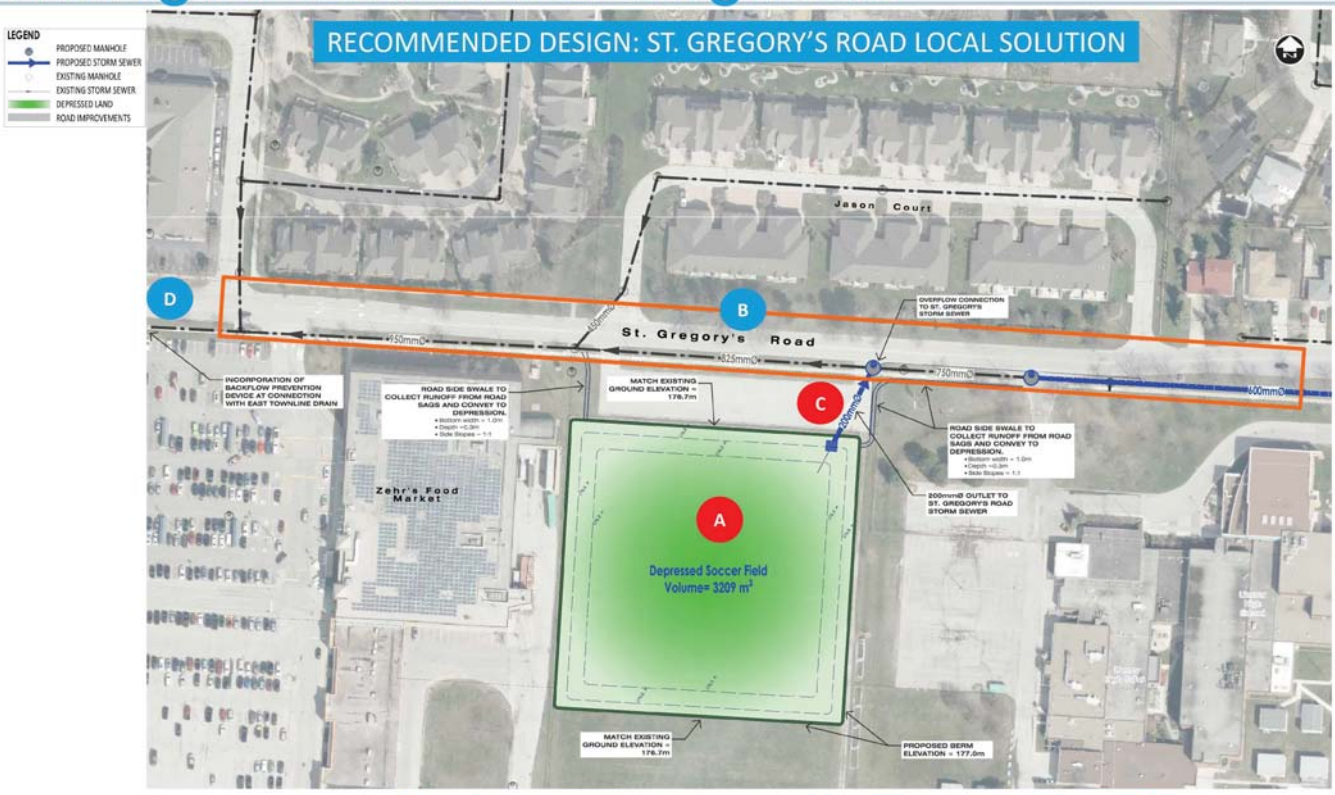
ALTERNATIVE 2
(underground storage within roadway)

EVALUATION OF ALTERNATIVES

	ALTERNATIVE 1	ALTERNATIVE 2
ADVANTAGES	• Effective solution for surface flooding within localized problem area. • Limited traffic disruption during construction.	• Does not disrupt use of soccer fields. • No maintenance easement required along private property. • Greater level of service for storm sewer conveyance during more frequent storm events.
DISADVANTAGES	• Temporary disruption to soccer fields during construction and during storm events beyond a 1:100 year rainfall. • Maintenance easement required around depressed area.	• Higher capital cost than Alternative 1. • Difficult to construct: Utility conflicts within the roadway. • Higher traffic disruption during construction

RECOMMENDED SOLUTION

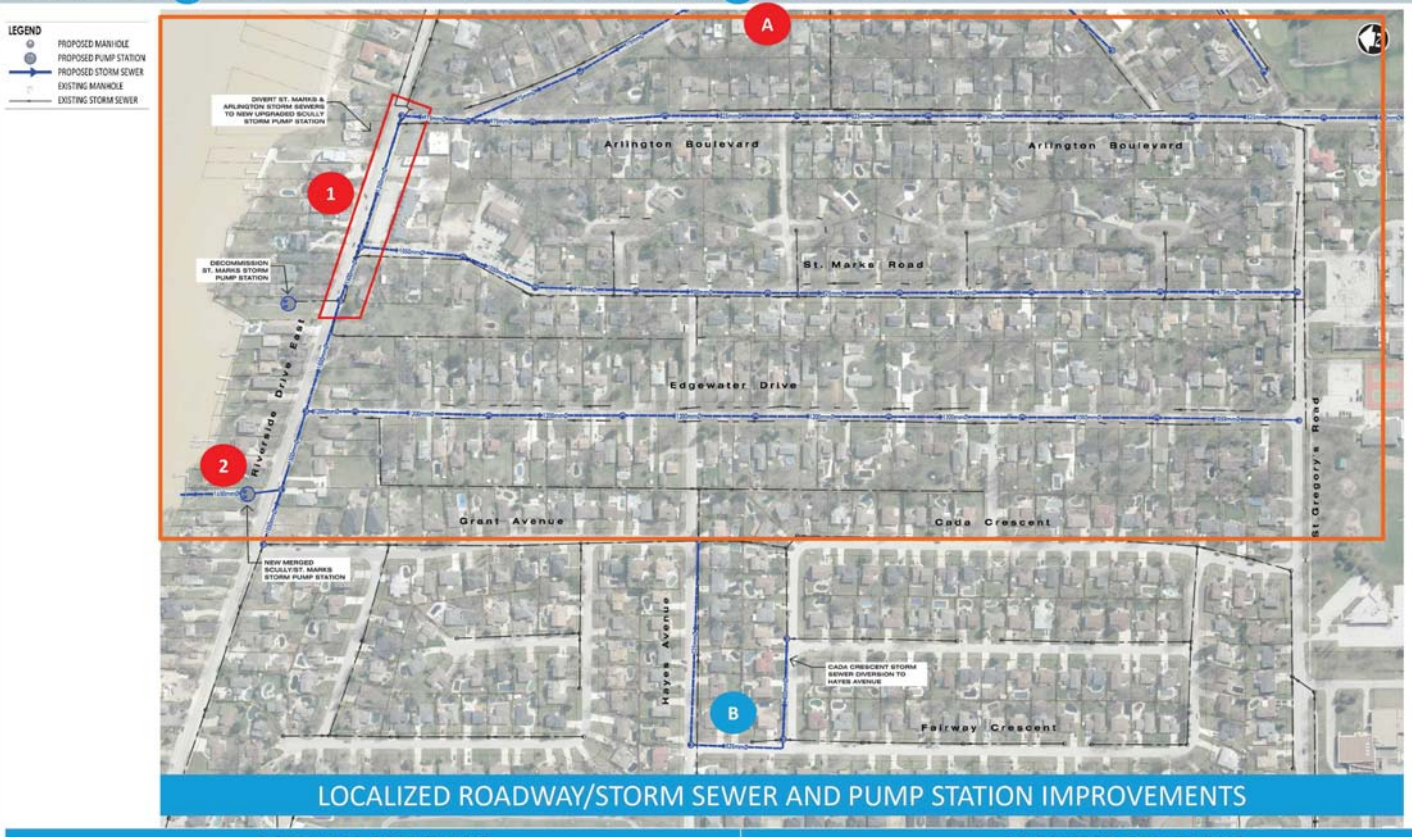
Recommended Surface Flooding Mitigation Strategies - East Of Manning Road



LOCALIZED SOLUTIONS

- A Surface Storage (Enhanced Level of Service)
- B Storm Sewer Conveyance, Road Grading and Catchbasin Improvements
- C Overflow Sewer
- D Backflow Prevention

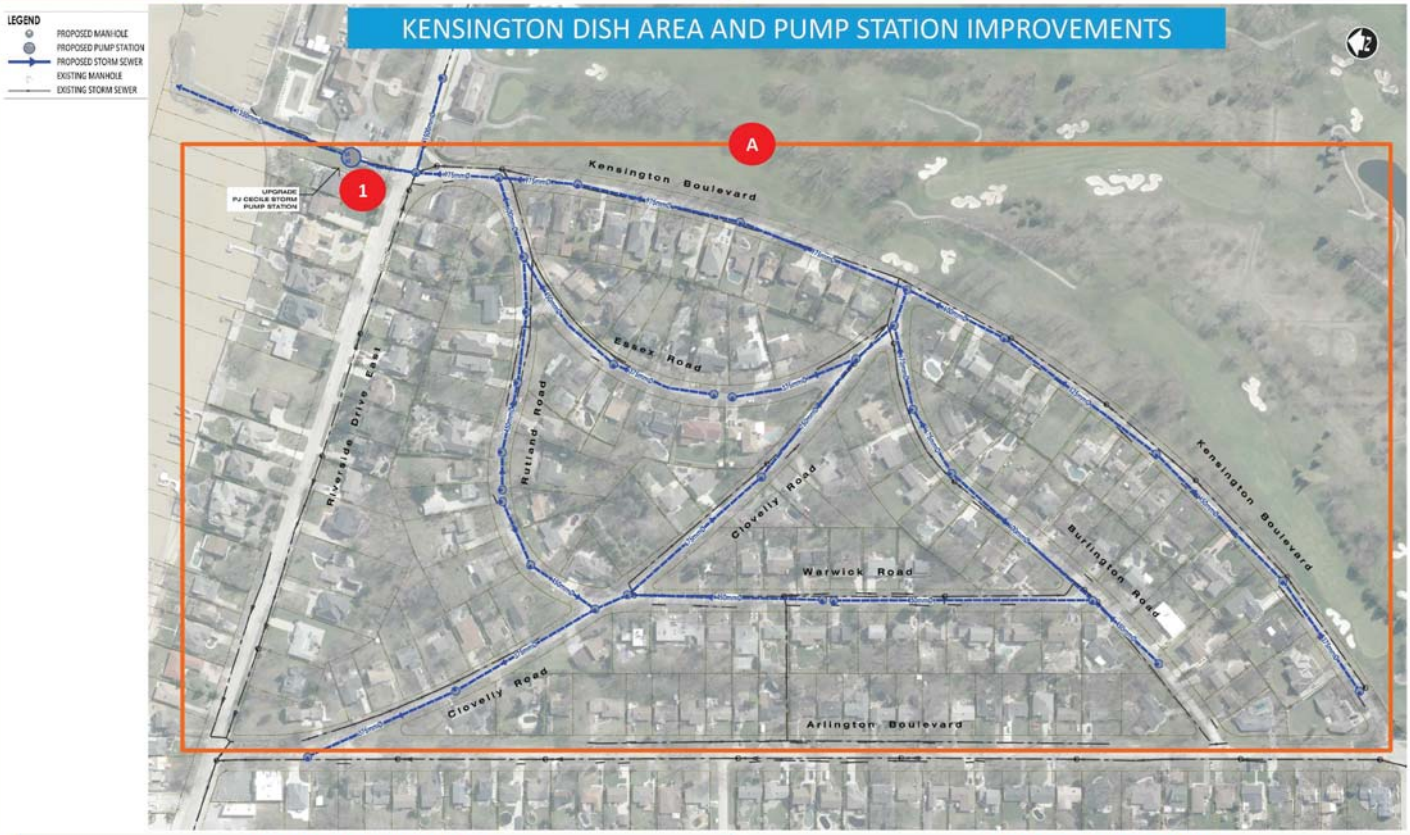
Recommended Surface Flooding Mitigation Strategies - East Of Manning Road



LOCALIZED ROADWAY/STORM SEWER AND PUMP STATION IMPROVEMENTS

REGIONAL SOLUTIONS	LOCALIZED SOLUTIONS
1 Storm Trunk Sewer Improvements (Enhanced Level of Service)	A Storm Sewer Conveyance, Road Grading and Catchbasin Improvements (Enhanced Level of Service)
2 Pump Station Improvements (Enhanced Level of Service)	B Diversion Sewer

Recommended Surface Flooding Mitigation Strategies - East Of Manning Road



REGIONAL SOLUTIONS	LOCALIZED SOLUTIONS
1 Pump Station Improvements (Enhanced Level of Service)	A Storm Sewer Conveyance, Road Grading and Catchbasin Improvements (Enhanced Level of Service)

Recommended Surface Flooding Mitigation Strategies - East Of Manning Road

LEGEND
- PROPOSED MANHOLE
- PROPOSED STORM SEWER
- EXISTING MANHOLE
- EXISTING STORM SEWER

TECUMSEH ROAD STORM CONVEYANCE IMPROVEMENTS

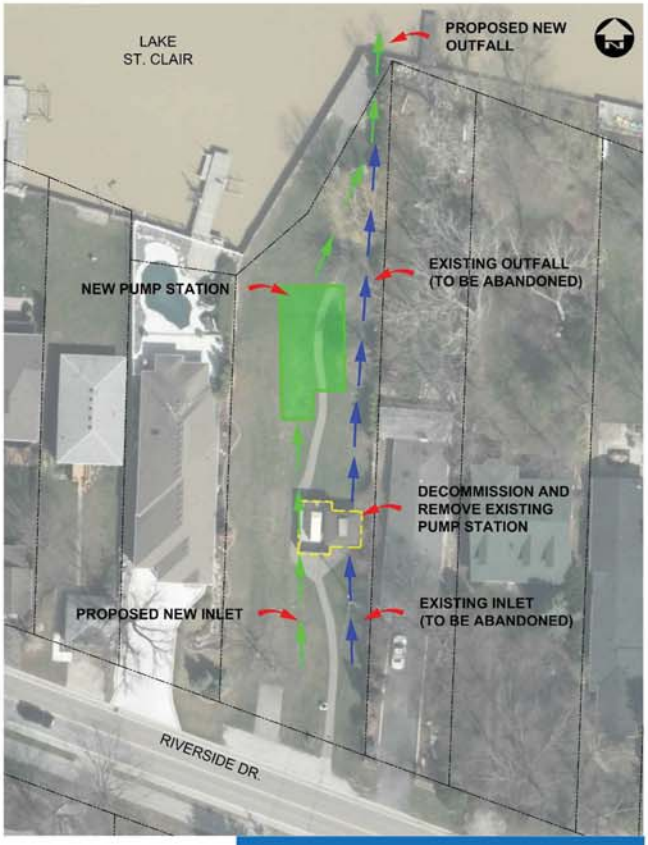
LOCALIZED SOLUTIONS

- (A) Storm Sewer Conveyance, Road Grading and Catchbasin Improvements

Recommended Pump Station Improvements – East of Manning Road

SCHEDULE B ALTERNATIVES: CONSOLIDATED SCULLY/ST. MARKS STORM PUMP STATION

ALTERNATIVE 1:
New consolidated pump station constructed on existing Scully pump station site



ALTERNATIVE 2:
New consolidated pump station constructed on existing St. Marks pump station site

EVALUATION OF ALTERNATIVES

	ALTERNATIVE 1	ALTERNATIVE 2
ADVANTAGES	• Provides a greater reduction of surface flooding within Grant Avenue area. • Outfall to lake more centered within property.	• More centralized location within existing Scully and St. Mark's service area.
DISADVANTAGES	• Narrow existing pump station property. • Higher decommissioning and removal costs of old pump station.	• Outfall has potential to negatively impact adjacent eastern property due to proximity with existing dock. • Building location impacts existing adjacent property sightlines.

RECOMMENDED SOLUTION

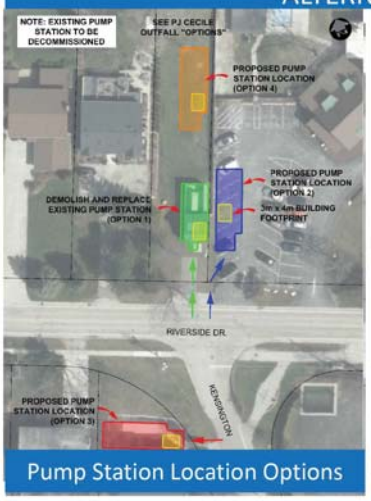
Recommended Pump Station Improvements - East of Manning Road

RECOMMENDED DESIGN: CONSOLIDATED SCULLY/ST. MARKS STORM PUMP STATION

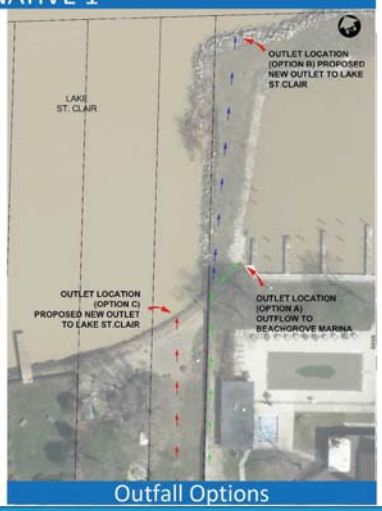
Recommended Pump Station Improvements - East of Manning Road

SCHEDULE B ALTERNATIVES: PJ CECILE STORM PUMP STATION IMPROVEMENTS

ALTERNATIVE 1



Pump Station Location Options



Outfall Options

ALTERNATIVE 2

ALTERNATIVE 1

Pump Station Location Option Evaluation Summary

- Option 1 requires decommissioning and demolition of existing station and construction of new station within existing station footprint. Temporary working easement required within Beachgrove Club parking lot during construction.
- Option 1 maintains existing station maintenance access to beach property from Riverside Drive.
- Option 2 requires new maintenance easement and has impact to Beachgrove Club. No impact to Kensington Beach area.
- Option 3 requires property acquisition and impact to residential property. No impact to Kensington Beach area or Beachgrove Club.
- Option 4 reduces maintenance access to beach property from Riverside Drive. Impact to Kensington Beach area access and no impact to Beachgrove Club.
- Temporary disruption during construction to Kensington Beach and Beachgrove Club under all options.

New Outfall Location Option Evaluation Summary

- Option A increases flows to existing outfall to Beachgrove marina. No impact to Kensington Beach area.
- Option B requires construction through existing marina jetty and acquisition of maintenance easement.
- Option B discharges flows further into the lake to not affect adjacent property owners.
- Option C requires property acquisition of residentially owned Kensington Beach area.

ALTERNATIVE 2

Advantages

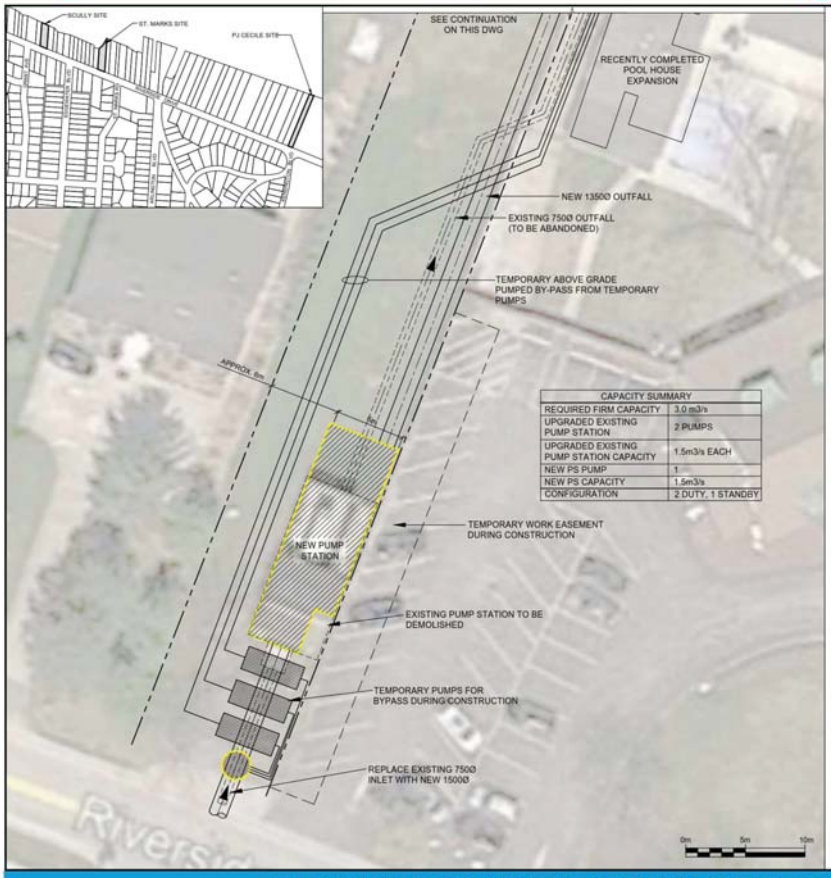
- No impact to residentially owned Kensington Beach area.
- New outlet to lake causes no disruption to adjacent beach properties.

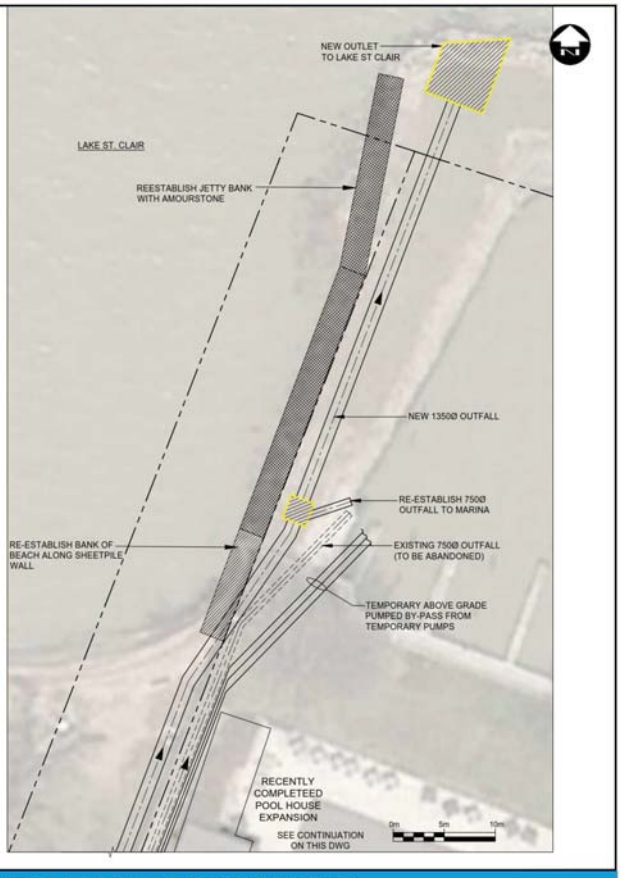
Disadvantages

- Greater roadway and storm sewer improvements along Riverside Drive to convey runoff to new station location.
- Temporary disruption to Beachgrove Club parking lot during construction.
- Permanent loss of parking spots within Beachgrove Club.
- Location would require further discussion with Beachgrove Club to not disrupt potential development of Northeastern parcel.
- New maintenance easement required within Beachgrove Club property.

RECOMMENDED SOLUTION

Recommended Pump Station Improvements - East of Manning Road

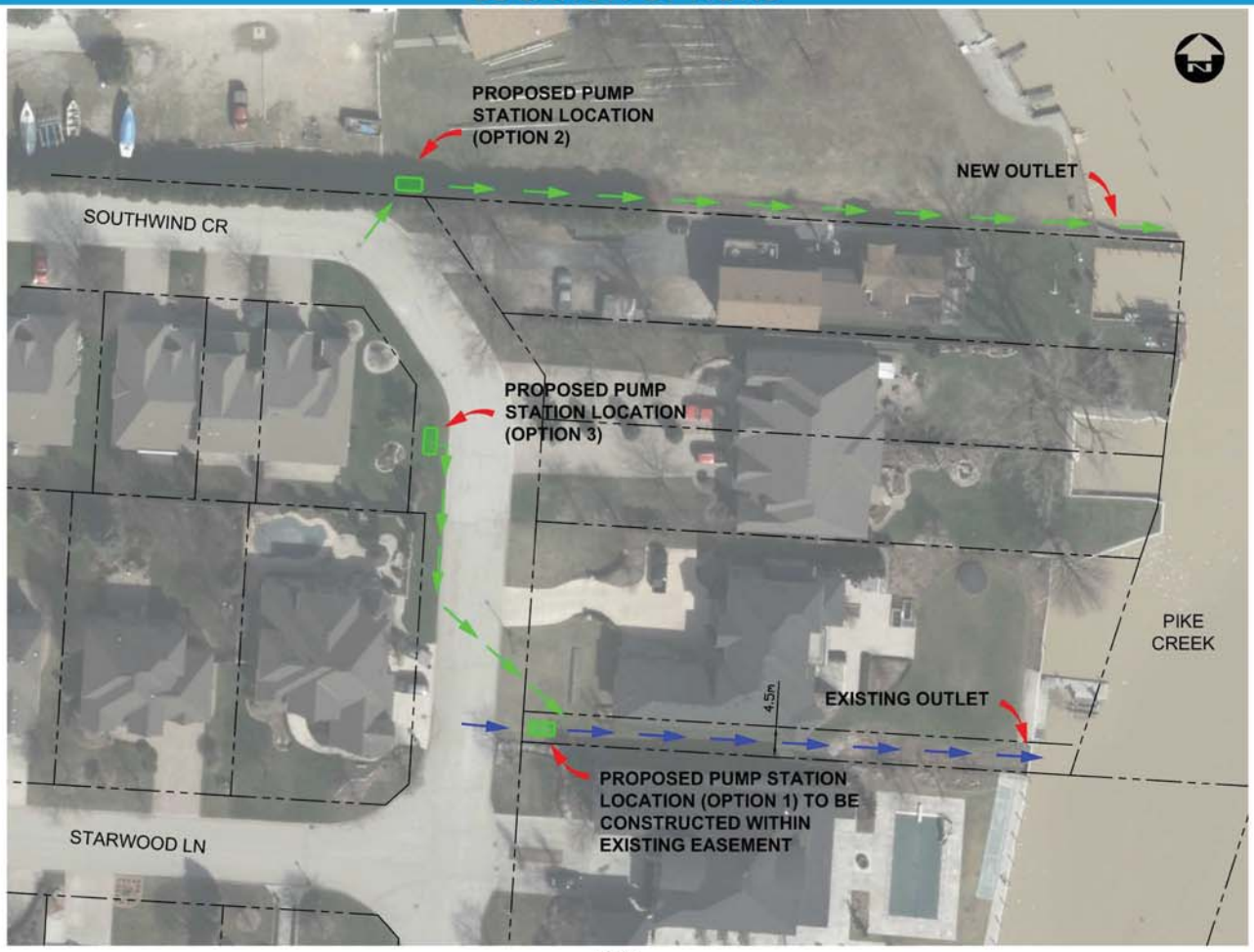




RECOMMENDED DESIGN: PJ CECILE STORM PUMP STATION IMPROVEMENTS

Recommended Pump Station Improvements – East of Manning Road

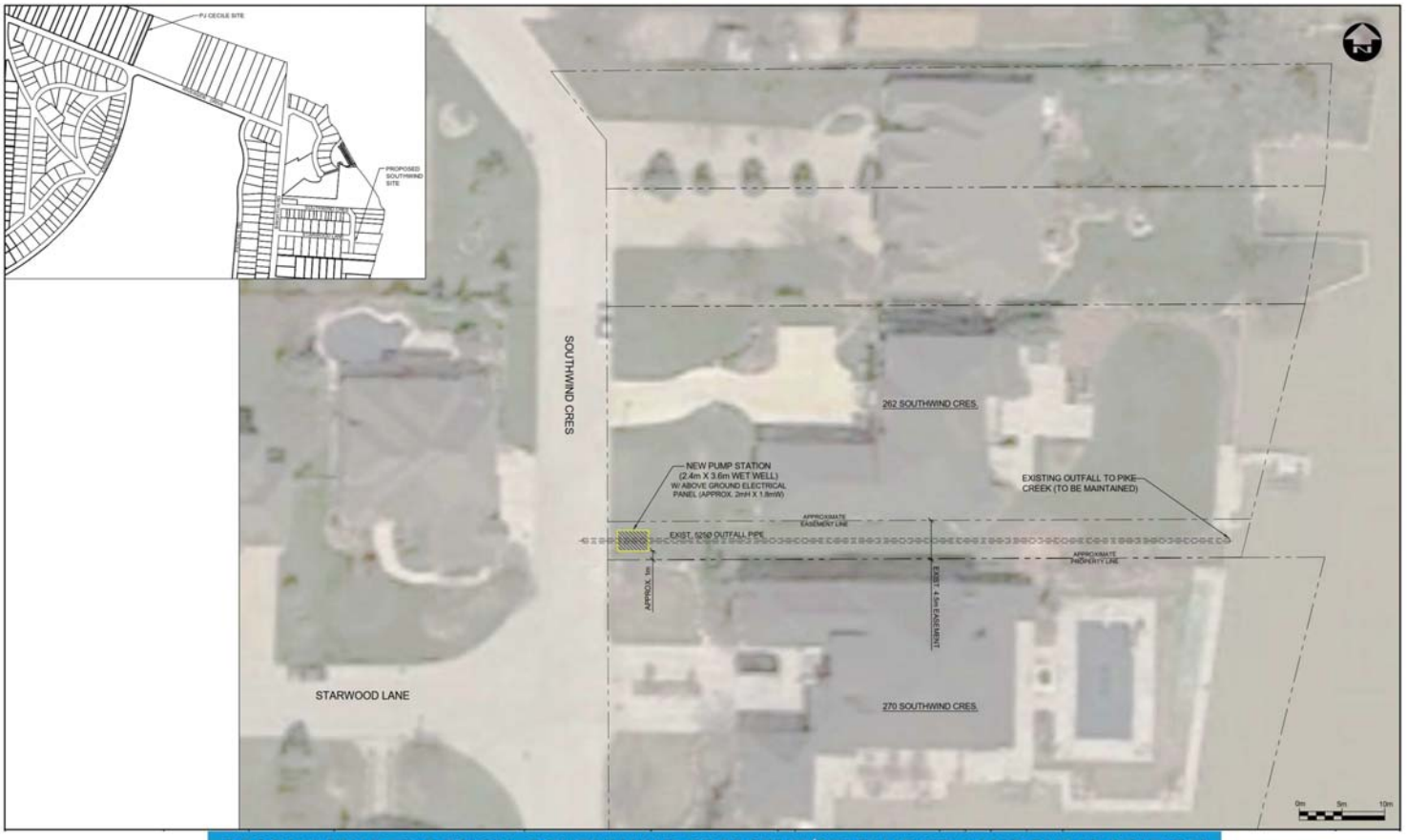
SCHEDULE B ALTERNATIVES: PROPOSED SOUTHWIND STORM PUMP STATION LOCATION OPTIONS



EVALUATION OF PUMP STATION LOCATION OPTIONS

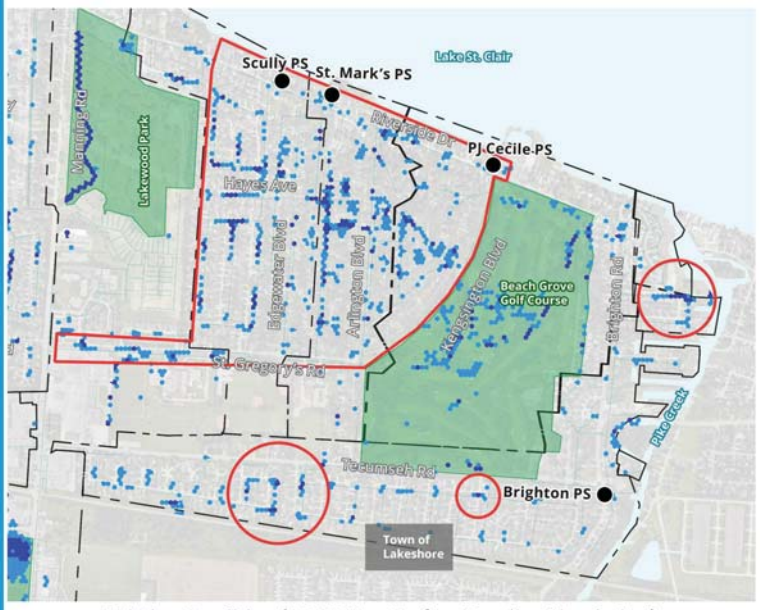
	ADVANTAGES	DISADVANTAGES
Option 1 RECOMMENDED SOLUTION	• No additional property acquisition or easement required. • Maintain use of existing water quality treatment unit and outlet sewer • Limited work within roadway.	• Station and aboveground electrical panel located along front side lot of residential home.
Option 2	• Station outside of existing subdivision area. • Limited work within roadway.	• Higher capital cost than Option 1 • Property acquisition or easement required. • New outlet to Pike Creek. • Loss of existing boat docks along property
Option 3	• No property acquisition or maintenance easement required. • Station and electrical panel located along side yard frontage.	• Higher capital cost than Option 1 • Increased construction within roadway. • Potential for existing utility conflicts.

Recommended Surface Flooding Mitigation Strategies - East of Manning Road

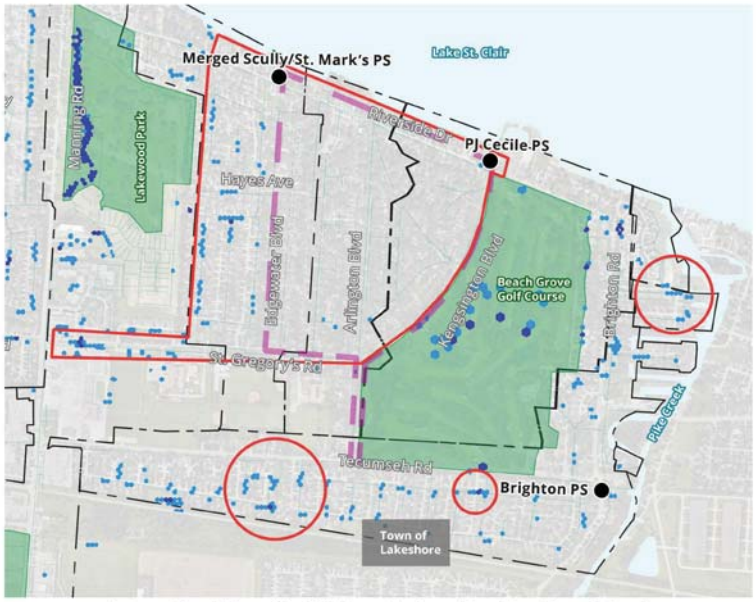


RECOMMENDED DESIGN: SOUTHWIND CRESCENT/STARWOOD LANE PUMP STATION

Future Surface Flooding Comparisons
East of Manning Road – Problem Area E1



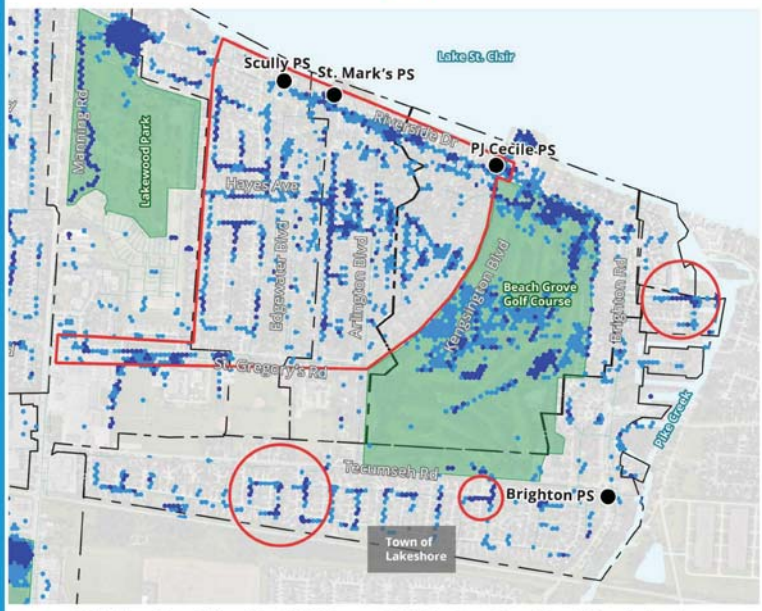
Existing Condition (1:100 Year Surface Ponding Simulation)



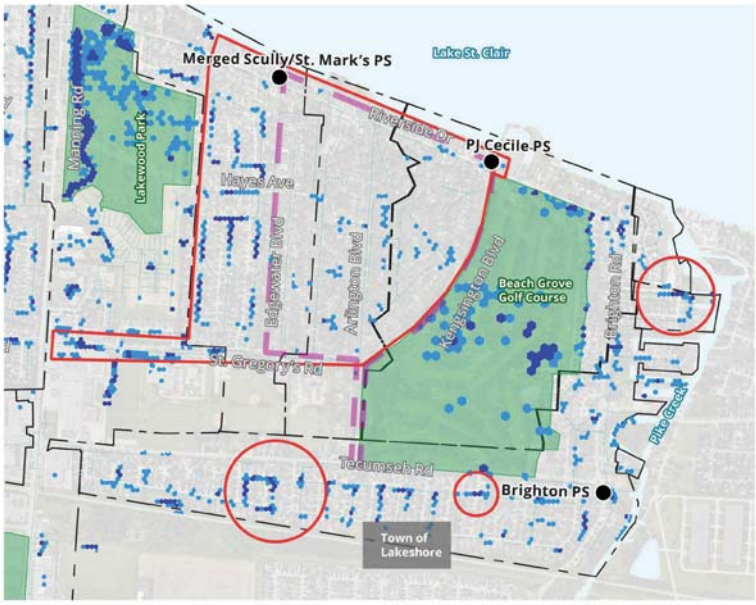
Future Condition (1: 100 Year Surface Ponding Simulation)

- Pump Station Service Area
- Pump Station (PS)
- Surface Ponding 0.15m to 0.30m
- Surface Ponding greater than 0.30m
- Surface Ponding within area maintained below 0.30m
- REGIONAL Surface Flooding Problem Area
- ISOLATED Surface Flooding Problem Areas
- Parkland/Private Property not to be Analyzed

Future Surface Flooding Comparisons
East of Manning Road – Problem Area E1



Existing Condition (1: 100 Year + 40%Surface Ponding Simulation)



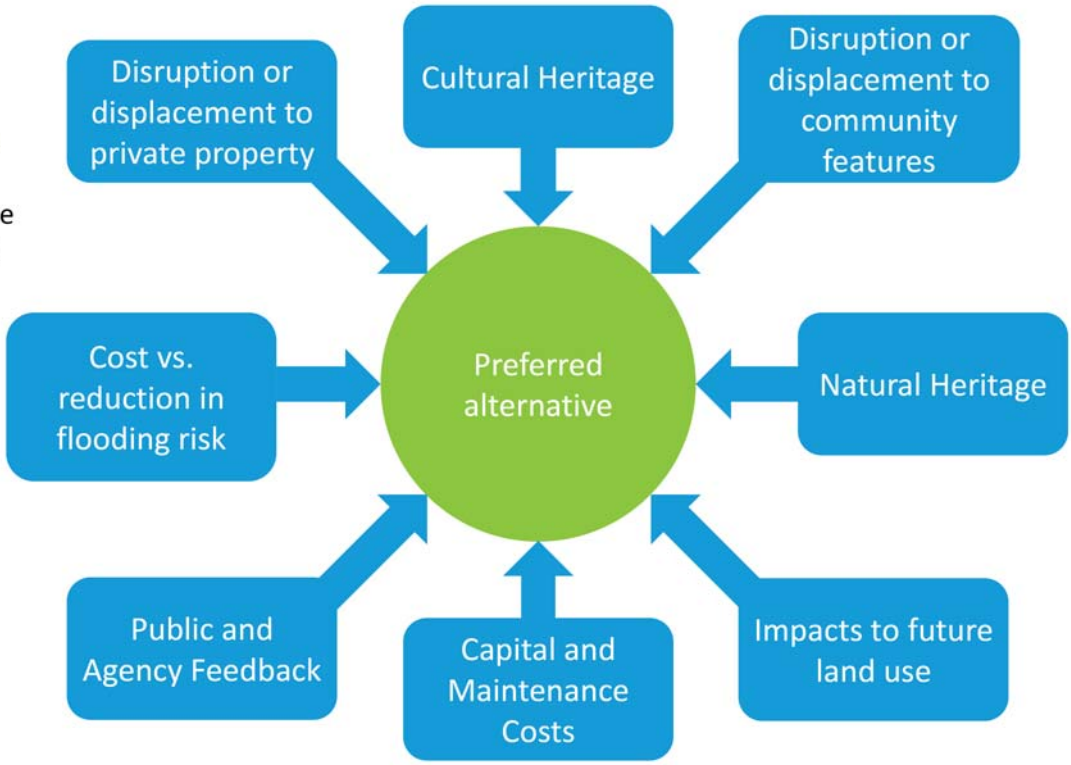
Future Condition (1: 100 Year + 40%Surface Ponding Simulation)

Pump Station Service Area
Pump Station (PS)
Surface Ponding 0.15m to 0.30m
Surface Ponding greater than 0.30m
Surface Ponding within area maintained below 0.40m
REGIONAL Surface Flooding Problem Area
ISOLATED Surface Flooding Problem Areas
Parkland/Private Property not to be Analyzed

Evaluation Of Alternatives

A number of evaluation criteria factored into the decision making process for the recommended surface flooding solutions.

The preferred solution details presented at Public Information Centre #2 are shown to a functional level of design and are to be incorporated into the final Master Planning document.



Next Steps

1. Continue public and agency consultation and review comments arising from PIC#2.
2. Consider Public/Agency input in refining/continuing the recommended solutions
3. Prepare the long-term implementation strategy
4. Finalize the Storm Drainage Master Plan Report (April 2019) and issue Notice of Completion. The Plan will be presented to Council and will be available for a 30-day public review period.

THANK YOU FOR ATTENDING

Your input is important to the outcome of this study.
Please complete a comment form or send comments to
tecumsehdrainagemp@dillon.ca

Sign-in Sheet

February 6, 2019
Town of Tecumseh Storm Drainage Master Plan
Public Information Centre #2

NAME	MAILING ADDRESS (PLEASE PRINT)	POSTAL CODE
[redacted]	AMY CROFT DR. UNIT [redacted]	N9K 1C7
[redacted]	RIVERSIDE DR E	N8N 2H8
[redacted]	TOWN OF LAKESHORE	
[redacted]	MANNING RD	N8N 2C9
[redacted]	LACASSE BLVD	N8N 2B7
[redacted]	[redacted]	
[redacted]	[redacted] L'ESPERANCE	N8N 1X8
[redacted]	[redacted]	
[redacted]	[redacted] GORDON AVE	N8N 2Y7.
[redacted]	[redacted] CHARLENE LANE.	N9K 1B1
[redacted]	TOWN OF LAKESHORE	

Information collected for the study will be used in accordance with the Municipal Freedom of Information and Protection of Privacy Act. With the exception of personal information, such as name, address and property location, all comments received throughout the study will become part of the public record and included in project documentation.

Sign-in Sheet

February 6, 2019
Town of Tecumseh Storm Drainage Master Plan
Public Information Centre #2

NAME	MAILING ADDRESS (PLEASE PRINT)	POSTAL CODE
[redacted]	County Rd. 42	NOR 1K0
[redacted]	TOWN of TECUMSEH	
[redacted]	Riverside Dr.	N8N 1B6
[redacted]	MANNING	N8N 2G8
[redacted]	Dillon Dr.	N8N 1C2
[redacted]	Southwind	N8N 4Y5
[redacted]	Corbi	N8N 2N1
[redacted]	[redacted] Rd	N8N 1S8
[redacted]	STARRWOOD	N8N 4X3
[redacted]	WEDGEWOOD	N8N 4J5
[redacted]	Strawn	N8N 4X3
[redacted]	AMY CRAFT DR. UNIT [redacted]	N9K 1C7

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Sign-in Sheet

February 6, 2019
Town of Tecumseh Storm Drainage Master Plan
Public Information Centre #2

NAME	MAILING ADDRESS (PLEASE PRINT)	POSTAL CODE
[redacted]	Gauthier	N8N-4E3
[redacted]	Cedar Cres.	N8N 2J4
[redacted]	Riverside Dr. E.	N8N 1B7
[redacted]	Oak Park	N8N 4P1

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Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

Name / Email Address: [redacted]

Mailing Address: [redacted] McPOUGALL ST. NIA 1M2

PLEASE RETURN THIS FORM BY **February 28, 2019**, BY EMAIL TO: **TECUMSEHDRAINAGEMP@DILLON.CA** OR RETURN THIS FORM TO:

Flavio R. Forest, P.Eng.,
Project Manager
Dillon Consulting Ltd.
3200 Deziel Drive, Suite 608
Windsor, ON N8W 5K8

Share with us your input on the materials presented:

What did you learn about surface flooding in Tecumseh? 1.) THAT MANY HOMES/SUBDIVISION SHOULDN'T HAVE BEEN BUILT IN SOME AREAS IN THE FIRST PLACE 2.) THAT THEY WERE POORLY DESIGNED 3. THAT IT WILL BE COSTLY TO FIX THE PROBLEM 4.) THAT YOUR CONSIDERING NEW + UPGRADED + MORE PUMP STATIONS - BUT SO FAR - NOT ANY SIGNIFICANT STORM WATER QUALITY TREATMENT, JUST PUSHING OUT IN THE LAKE FASTER, WITH MORE VOLUME 4.) INTERESTING SEEING THE 'TEMP STORAGE' AT PARK SITES BEING CONSIDERED HERE, BUT NO IMPROVED ATTEMPTS TO PERCOLATION / OR LANDSCAPE BEAUTIFICATION AT THE SAME TIME 5.) ROADWAY STORAGE (U/G) INTERESTING, IF IT ALSO WOULD INVOLVE BOTH QUALITY OR STORMWATER IMPROVEMENT AS WELL AS SOME PERCOLATION IF FEASIBLE. BUT SO FAR IT DOESN'T

What questions do you still have about flooding that were not answered?
WHY NO SIDE OF STREET WATER QUALITY MITIGATION THROUGH NATURAL MEAN IS NOT BEING CONSIDERED, JUST GETTING RID OF EXISTING SWALES AND CURBING ROADS WITH NEW STORM SEWERS. WHY NOT CONSIDER IMPROVING THE SWALE SYSTEM AND BEAUTIFYING THE NEIGHBOURHOOD AT THE SAME TIME.
WHY NOT CONSIDER THE SAME STANDARD THAT NEW SUBDIVISION HAVE TO ADHERE TO WHEN ATTEMPTING TO IMPROVE EXISTING. ALSO DESIGN STANDARDS THAT ALSO STATE THAT MORE COMMON SENSE (REASON) REGARDING EXISTING AREAS BEFORE PROMATURELY MOVING ON TO FUTURE RESERVE CAPACITY. INCENTIVES + RESTRICTIONS

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NOT SURE DIRECTIONAL GUARDS AND THE SOLUTION ON INCREASING CAPACITY WITHOUT AT LEAST ATTEMPTING SOME ADDITIONAL SOURCE MITIGATION

Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

If you were deciding which alternatives to implement, what factors would be most important to you?

- LONGTERM FACTORS OVER SHORT TERM FACTORS
- WATER QUALITY TREATMENT, LESS HARDSCAPE
- INDIVIDUAL HOME SITE MITIGATION VS. GREATER MEASURES TO FLUSH IT AWAY TO LAKE ST. CLAIR
  - RAIN BARRELS, RAIN GARDENS, GREEN ROOF (INCENTIVE TO PUSH THESE ALONG)

Do you have any comments in regards to the recommended surface flooding solutions shown today?
(SEE OTHER SIDE OF PAGE)

- STORMWATER SURCHARGE FEES FOR MINIMALLY, ALL WHEN BUILD DEVELOPMENT

Other comments, questions, or suggestions?

CONSIDER ILLUSTRATING SOLUTIONS THAT OTHER MUNICIPALITIES HAVE IMPLEMENTED SUCCESSFULLY, THAT DEAL WITH STORMWATER AT ITS SOURCE

- INCENTIVIZE + REGULATE LANDSCAPE, TO LESSEN IT
- WORK TOGETHER ON REGIONAL SOLUTIONS WITH OTHER AREAS

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Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

Name / Email Address: [redacted]

Mailing Address: [redacted] WEDGEWOOD LANE TEC. ON. N8N 4J5

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Flavio R. Forest, P.Eng.,
Project Manager
Dillon Consulting Ltd.
3200 Deziel Drive, Suite 608
Windsor, ON N8W 5K8

Share with us your input on the materials presented:

What did you learn about surface flooding in Tecumseh?

What questions do you still have about flooding that were not answered?

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Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

If you were deciding which alternatives to implement, what factors would be most important to you?

Do you have any comments in regards to the recommended surface flooding solutions shown today?

Other comments, questions, or suggestions? The most important issue in my mind is to prevent sanitary sewer surcharging. I believe the most important thing to do, is to prevent storm water ~~to~~ from getting into the sanitary sewer system. I believe mandatory disconnections must happen!!

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Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

Name / Email Address: [redacted]

Mailing Address: [redacted] CR 42

PLEASE RETURN THIS FORM BY **February 28, 2019**, BY EMAIL TO: **TECUMSEHDRAINAGEMP@DILLON.CA** OR RETURN THIS FORM TO:

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Project Manager
Dillon Consulting Ltd.
3200 Deziel Drive, Suite 608
Windsor, ON N8W 5K8

Share with us your input on the materials presented:

What did you learn about surface flooding in Tecumseh?

What questions do you still have about flooding that were not answered?

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Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

If you were deciding which alternatives to implement, what factors would be most important to you?

Focus on more efficient Pumping Stations to expel water to St. Clair River Lake

Do you have any comments in regards to the recommended surface flooding solutions shown today?

Other comments, questions, or suggestions?

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Comment Sheet

February 6, 2019
TECUMSEH STORM DRAINAGE MASTER PLAN
PUBLIC INFORMATION CENTRE #2

Name / Email Address: [redacted]

Mailing Address: [redacted] Dillon Dr. Tecumseh, ON N8N 1C2

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Flavio R. Forest, P.Eng.,
Project Manager
Dillon Consulting Ltd.
3200 Deziel Drive, Suite 608
Windsor, ON N8W 5K8

Share with us your input on the materials presented:

What did you learn about surface flooding in Tecumseh?

I learned surface flooding is more widespread than I realized. I am in a flood zone on Dillon Dr. & concerned how long it will take to correct my area. There is a new development across the street where Victoria School was and hope my area will be prioritized. I'm glad the town is taking a serious step to study this flooding issue & hope the residents see results soon.

What questions do you still have about flooding that were not answered?

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Comment Sheet

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If you were deciding which alternatives to implement, what factors would be most important to you?

- that the lowest lying areas such as my home are addressed & corrected first including the Lesperance Rd Pump Station.
- that consideration be taken to improve Road of Dillon Drive where new residential development will be taking place (old Victoria School property). It is too high across from my address [redacted] Dillon Dr. & on my side of Dillon ~~Road~~ properties are too low. Photos attached that shows significant ROAD RUNOFF ONTO MY FRONTAGE. OVERWHELMS MY STORM SEWER DRAIN

Do you have any comments in regards to the recommended surface flooding solutions shown today?

Other comments, questions, or suggestions?

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DILLON CONSULTING

Durocher, Maggie <mdurocher@dillon.ca>

Storm Drainge Information Meeting

1 message

[redacted] Thu, Feb 7, 2019 at 10:39 AM

To: "TecumsehDrainageMP@dillon.ca" <TecumsehDrainageMP@dillon.ca>

Gentlemen

Thanks for taking the time to discuss this very important issue affecting many residents of Tecumseh who have experienced flooding in their basements and properties.

Attached is my comment sheet as best as I can understand your study with concerns, of course, to my property at [redacted] Dillon Drive.

Phil further to our discussion at Feb. 6 meeting, also attached are photos of a rain water road-run off problem I have been having for approximately 20 years in front of my house. Take note the photos were taken after a heavy down pour. The run-off was much worse during the heavy rain.

Regards,

[redacted]

Email [redacted]

Office [redacted]

Cell [redacted]

Fax [redacted]

[redacted]Lesperance Rd. Tecumseh ON N8N 1X2

[redacted]

6 attachments

S7300026.jpg
858K

S7300031.jpg
861K

S7300032.jpg
857K

S7300030.jpg
850K

DRAINAGE COMMENTSHEET.pdf
187K

DRAINAGE COMMENTSHEETpg2.pdf
177K