

TECUMSEH STORM DRAINAGE MASTER PLAN



Presentation To Town of Tecumseh Council

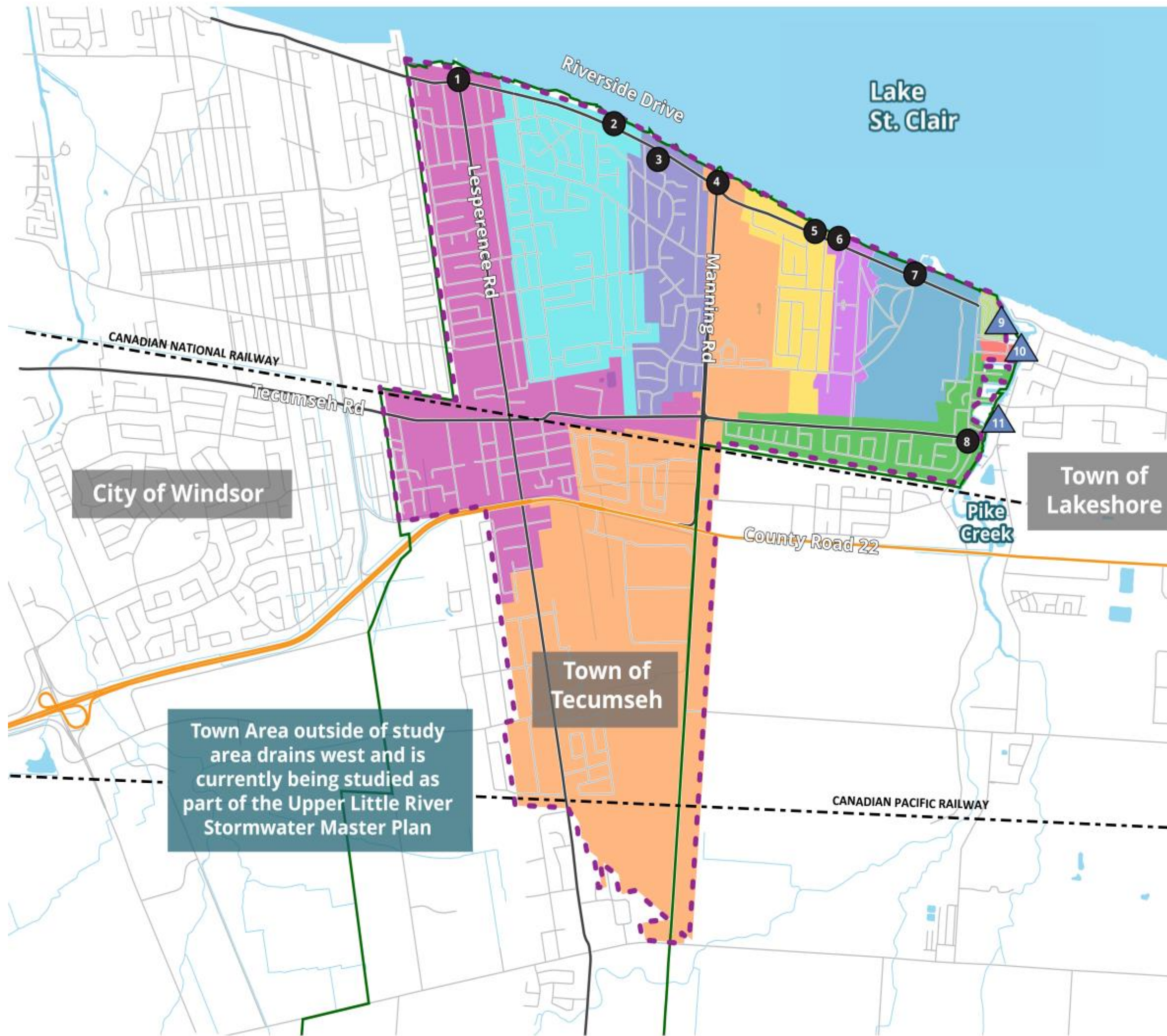
Tuesday, June 25, 2019



Council Presentation Objectives

- ✓ **IDENTIFY AND OUTLINE** why and how the study was completed
- ✓ **PROVIDE** background information and existing condition surface flooding results
- ✓ **PRESENT** the decision making process and preferred surface flooding solutions
- ✓ **SUMMARIZE** the next steps in finalizing the study

Study Storm Outlets and Service Areas



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TOWN OF TECUMSEH STORM DRAINAGE MASTER PLAN

STORM PUMP STATION SERVICE AREA AND GRAVITY OUTFALL MAP FIGURE 1.2

- SEWER GRAVITY OUTFALLS
- PUMP STATION (PS)
- STUDY BOUNDARY
- RAILWAY
- MUNICIPAL DRAIN
- MUNICIPAL BOUNDARY
- MINOR STREET
- MAJOR STREET
- HIGHWAY
- PUMP STATION CATCHMENT AREAS
- 1. LESPERANCE PUMP STATION
- 2. WEST ST. LOUIS PUMP STATION
- 3. EAST ST. LOUIS PUMP STATION
- 4. ETLD/MANNING PUMP STATION
- 5. SCULLY PUMP STATION
- 6. ST. MARK'S PUMP STATION
- 7. PJ CECILE PUMP STATION
- 8. BRIGHTON PUMP STATION
- OUTFALL CATCHMENT AREAS
- 9. PILOTS COVER OUTFALL
- 10. SOUTHWIND/STARWOOD OUTFALL
- 11. MEI-LIN OUTFALL

SCALE 1:NTS

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MAP PROJECTION: NAD 1983 UTM Zone 17N

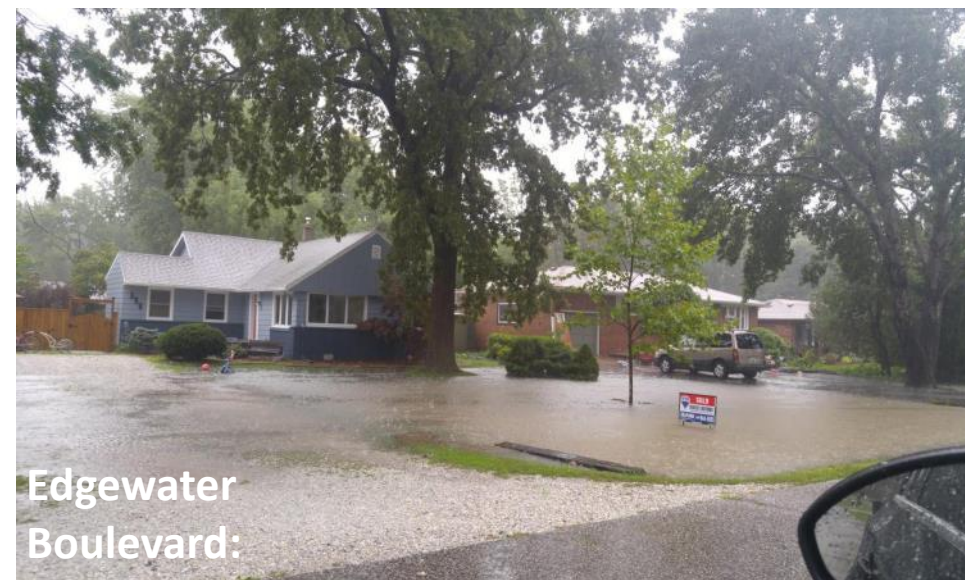
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Problem and Opportunity Statement

The Town of Tecumseh completed 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.

The Master Plan was developed to:

- Confirm the factors contributing to excess surface flooding resulting from significant storm events;
- Identify and evaluate alternative solutions to reduce the risk and impacts of surface flooding;
- Confirm the recommended solutions; and
- Prepare cost estimates and outline a recommended long-term implementation strategy.



Study Process, Schedule, and Scope

Master Plan

The Master Plan followed the requirements of **Approach 2** of the Municipal Class Environmental Assessment (EA) (2000, as amended), which satisfies the requirements for specific **Schedule B** projects.

The Class EA process ensures:

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



This study does not address:

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

Public and Agency Consultations

Engagement Opportunities



Email
updates



Website



Public, agency & Indigenous
Community consultation
events & meetings



Social
Media

60

attendees at
two Public
Information
Centres

Indigenous Community
Consultation, including
one meeting with
Aamjiwnaang First Nation

Comments include
concerns over localized
surface/ basement flooding,
and water quality, and
comments in support of
the solutions proposed.

26

comments
received
from the
public

7

meetings held with residents
directly impacted by pump
station improvements and
surface flooding solutions
which impact private property

Public Information Centre Summary

During Public Information Centre #1 & #2, residents were informed about:

- Causes of surface and basement flooding;
- Areas susceptible to surface flooding based on existing conditions;
- Steps being taken to resolve surface flooding;
- Identification of alternative and preferred solutions;

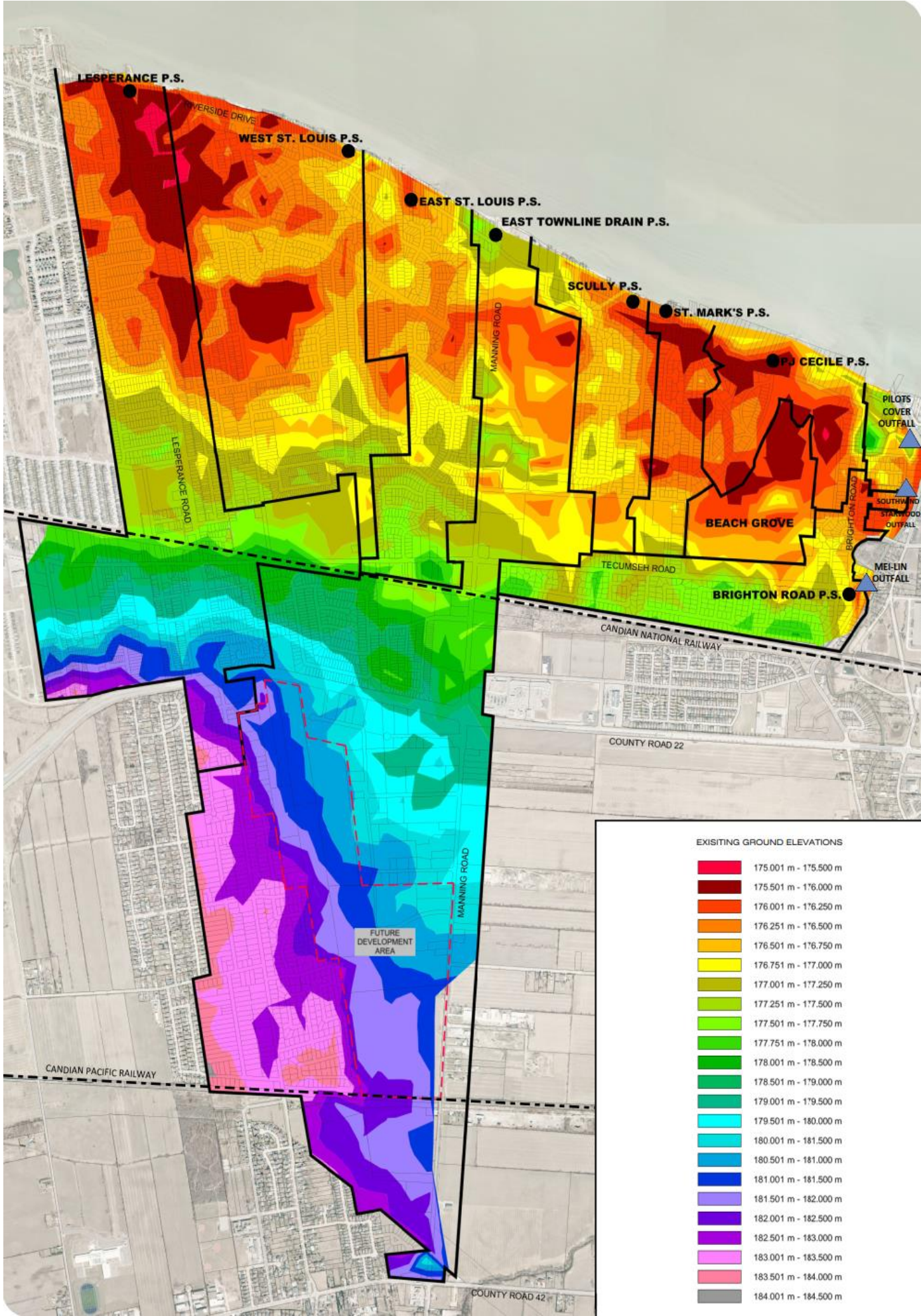


Strategies to alleviate surface flooding include:

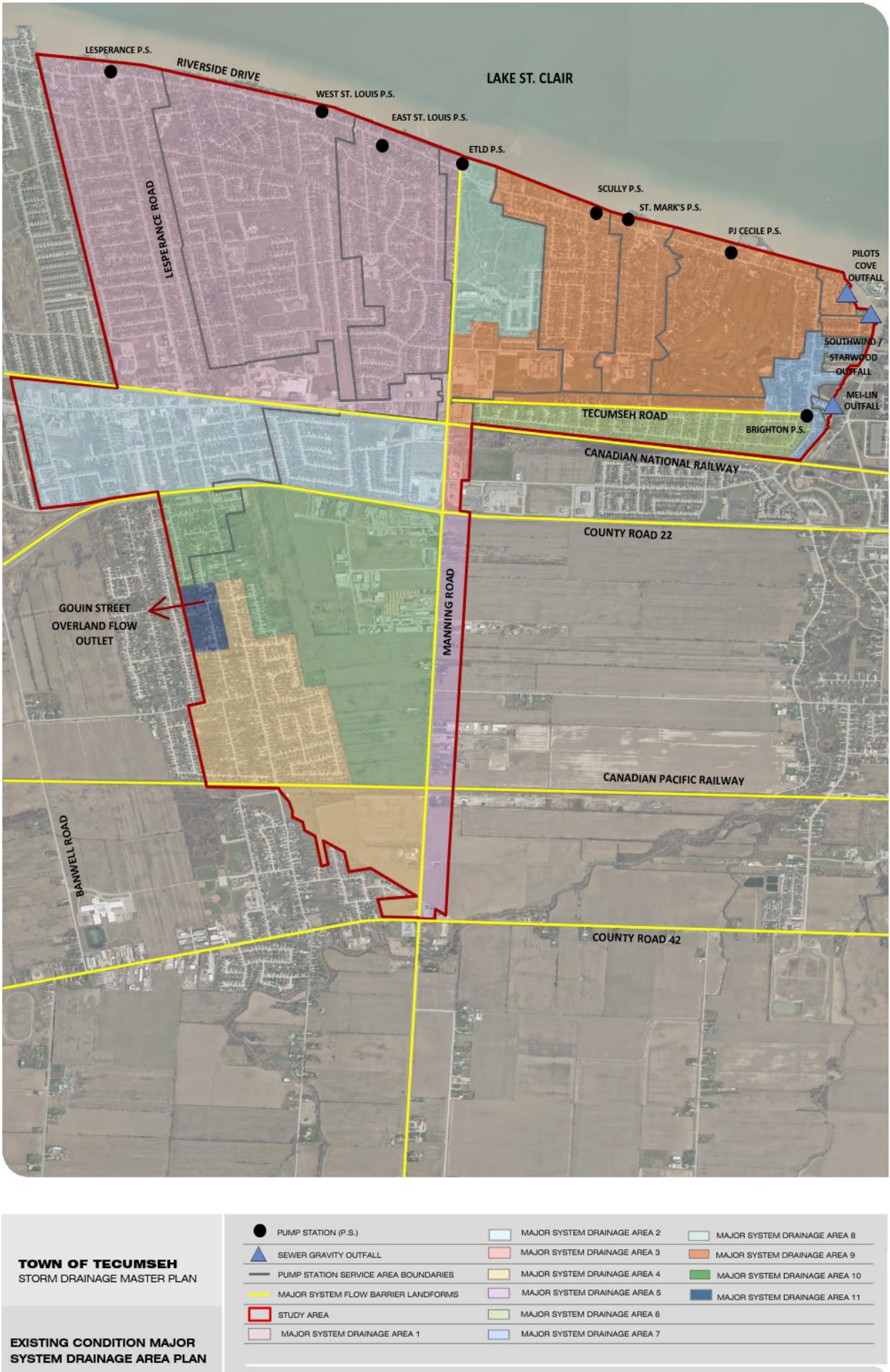
- Above ground and underground storage;
- Improved pump station capacity;
- Improved storm sewer capacity; and
- Surface grading improvements.



Topography/Overland Drainage



Topographic LiDAR Map



Overland Flow Barrier Landforms

Model Development Overview



Dillon developed a 1-Dimensional/2-Dimensional storm drainage model of the study area using PCSWMM software and state of the art topographic ground point technology to:

- Identify the extent of surface flooding under extreme rainfall events; and
- Determine alternative solutions to reduce the risk and impact of surface flooding.

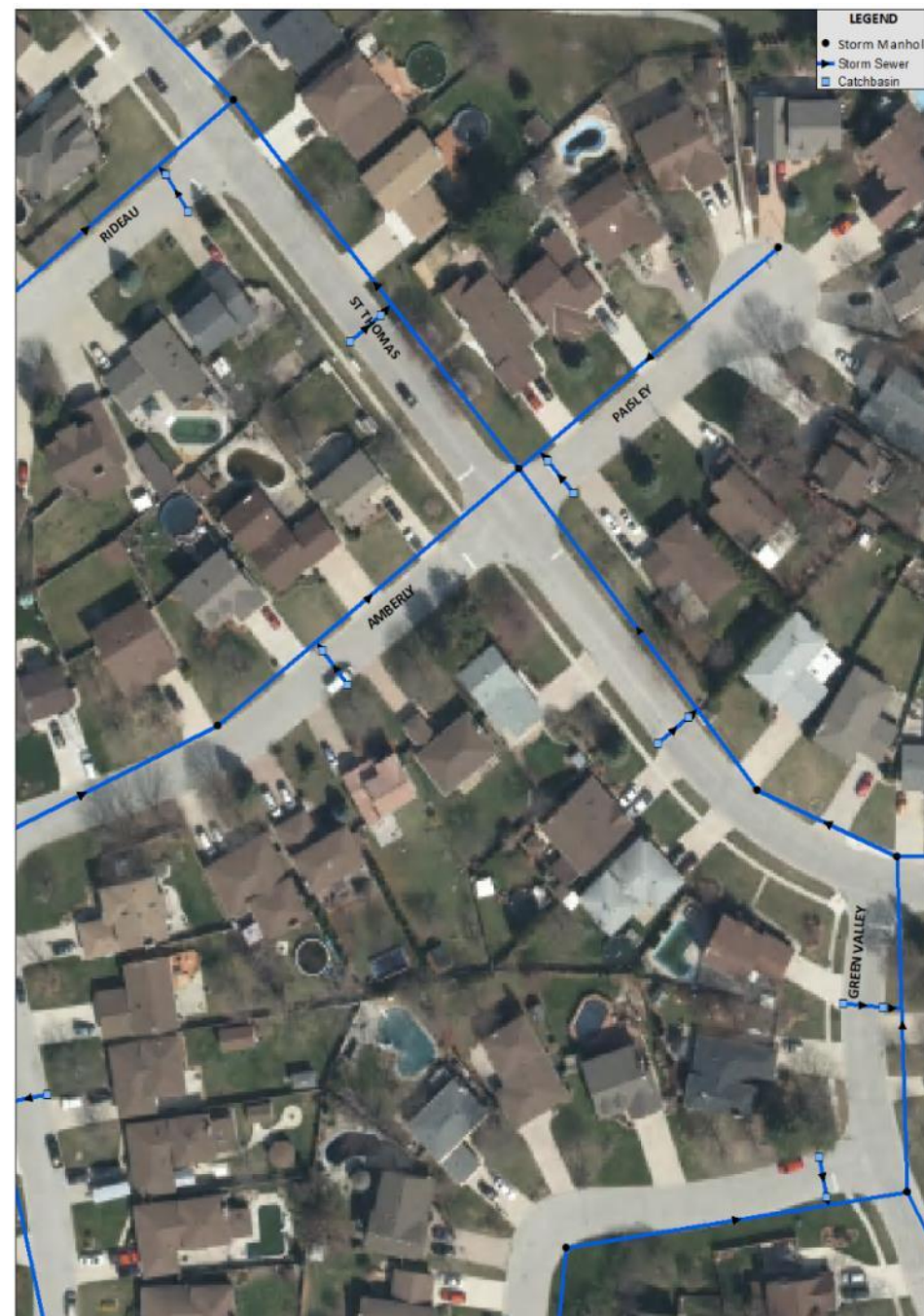
1-Dimensional Model Development

- Study area storm infrastructure modelled to a catchbasin level of detail;
- Incorporated existing storm infrastructure (catchbasins, manholes, sewers > 375mm diameter, pump stations, open drains); and
- Analyzed minor system storm sewer and pump station conveyance capacity.

2-Dimensional Model Development

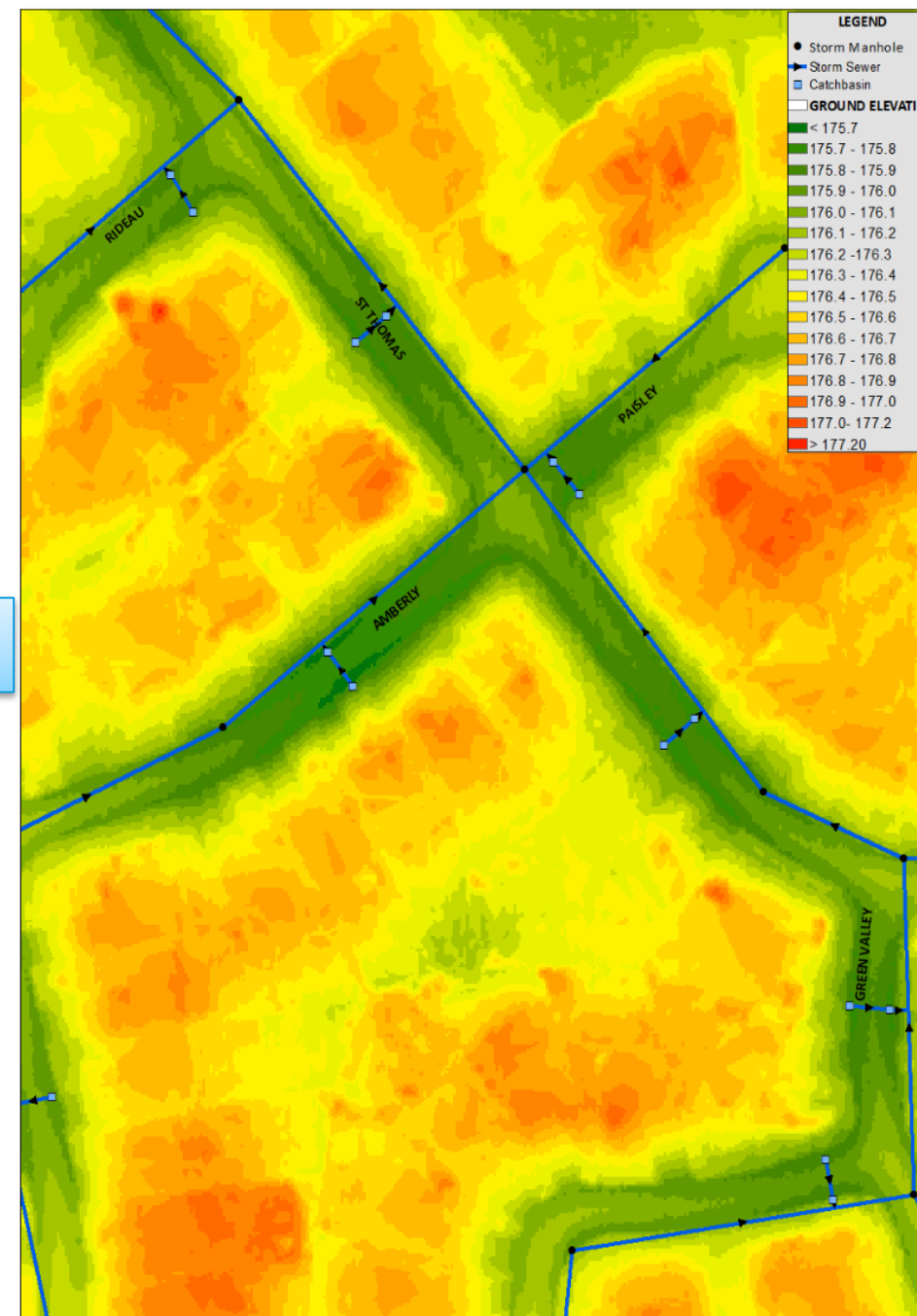
- Advanced 2-Dimensional modelling of the ground surface using Light Detection and Ranging (LiDAR) aerial survey data, including integration with the 1-D storm sewer system model;
- Incorporated building obstructions based on 2017 Aerial GIS Mapping into the 2-D adaptive mesh; and
- Analyzed major overland drainage network by dynamically simulating surface flooding during extreme rainfall events, including interaction with the minor storm sewer system to determine surface ponding depths.

Hydrodynamic 1-D/2-D Modelling



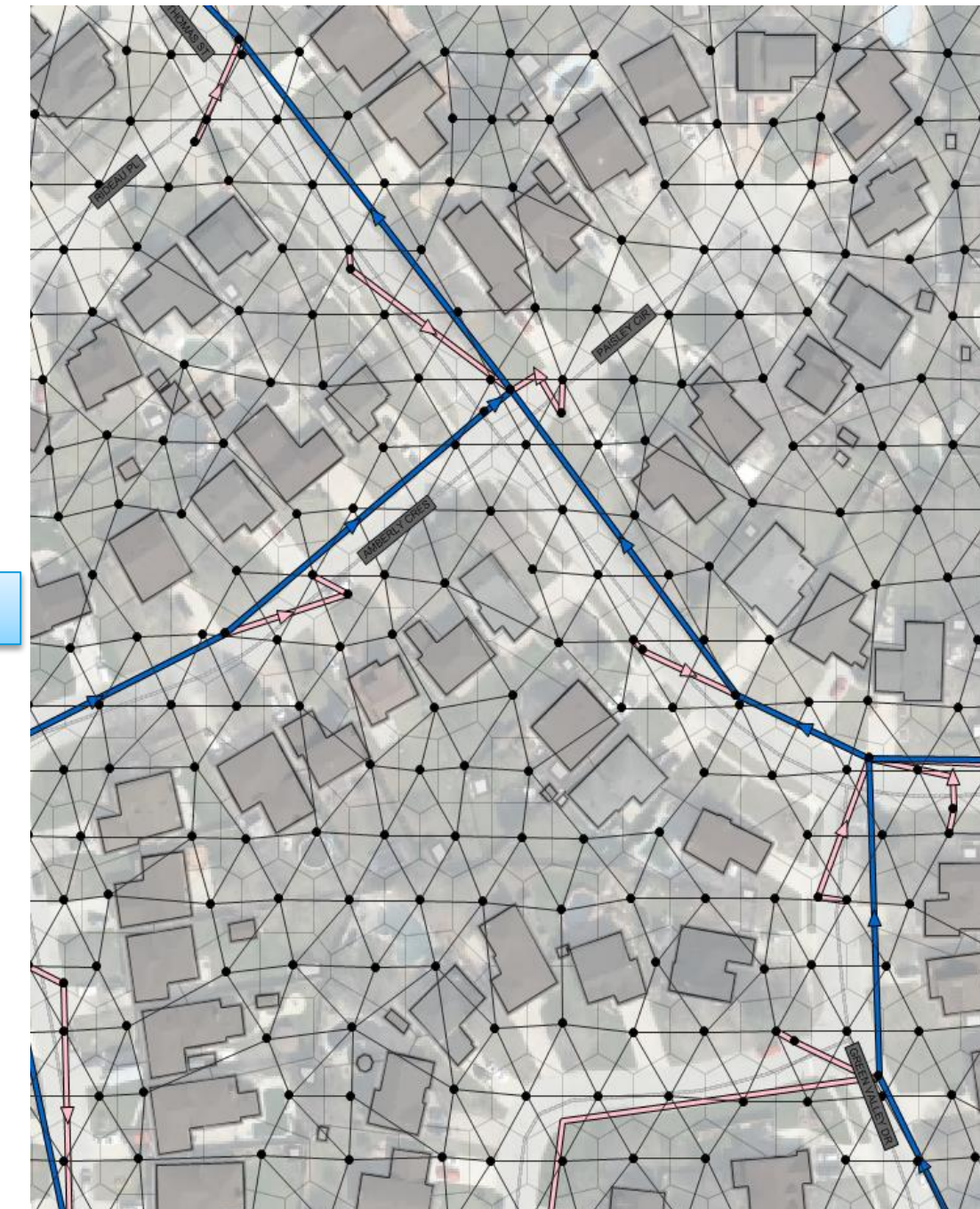
1-D Infrastructure Elements

+



Digital Elevation Mapping

=



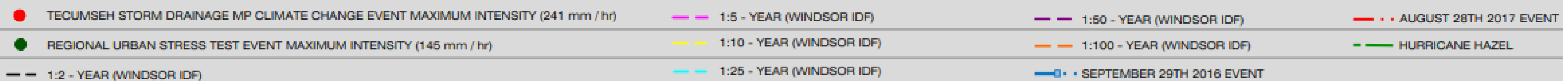
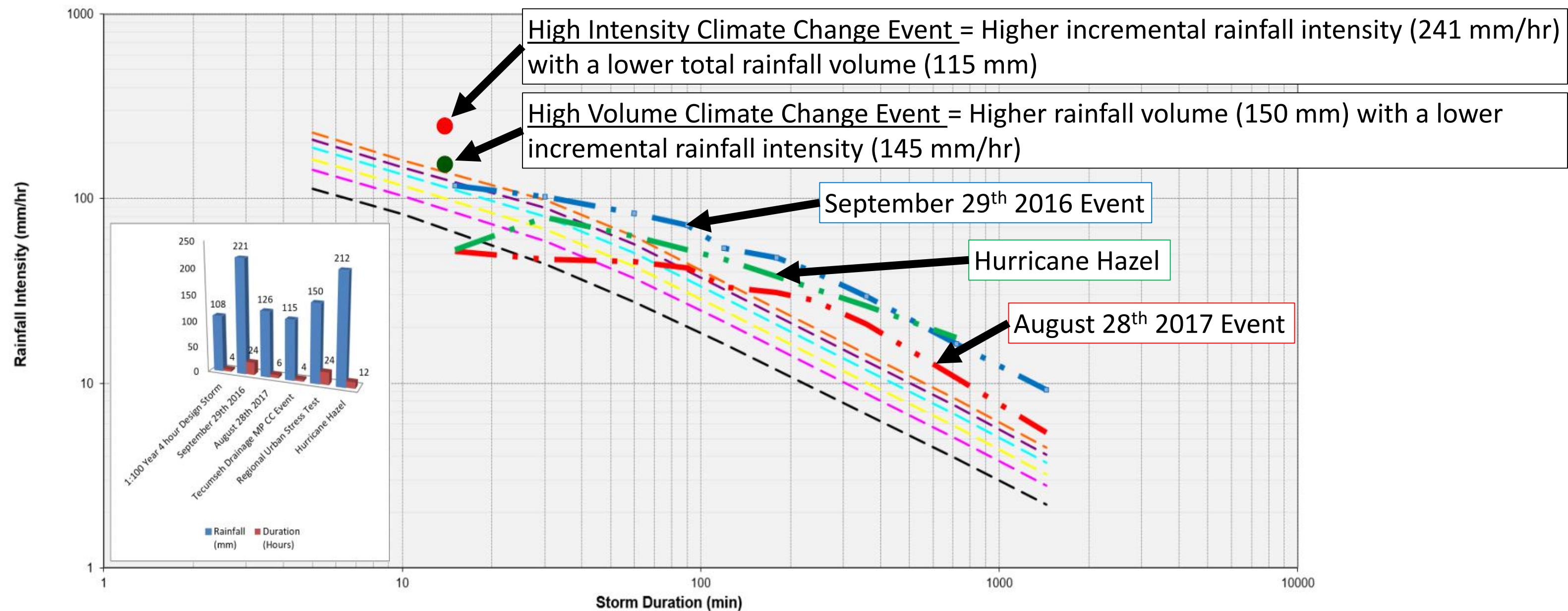
1-D/2-D PCSWMM MODEL

Design Storm Criteria

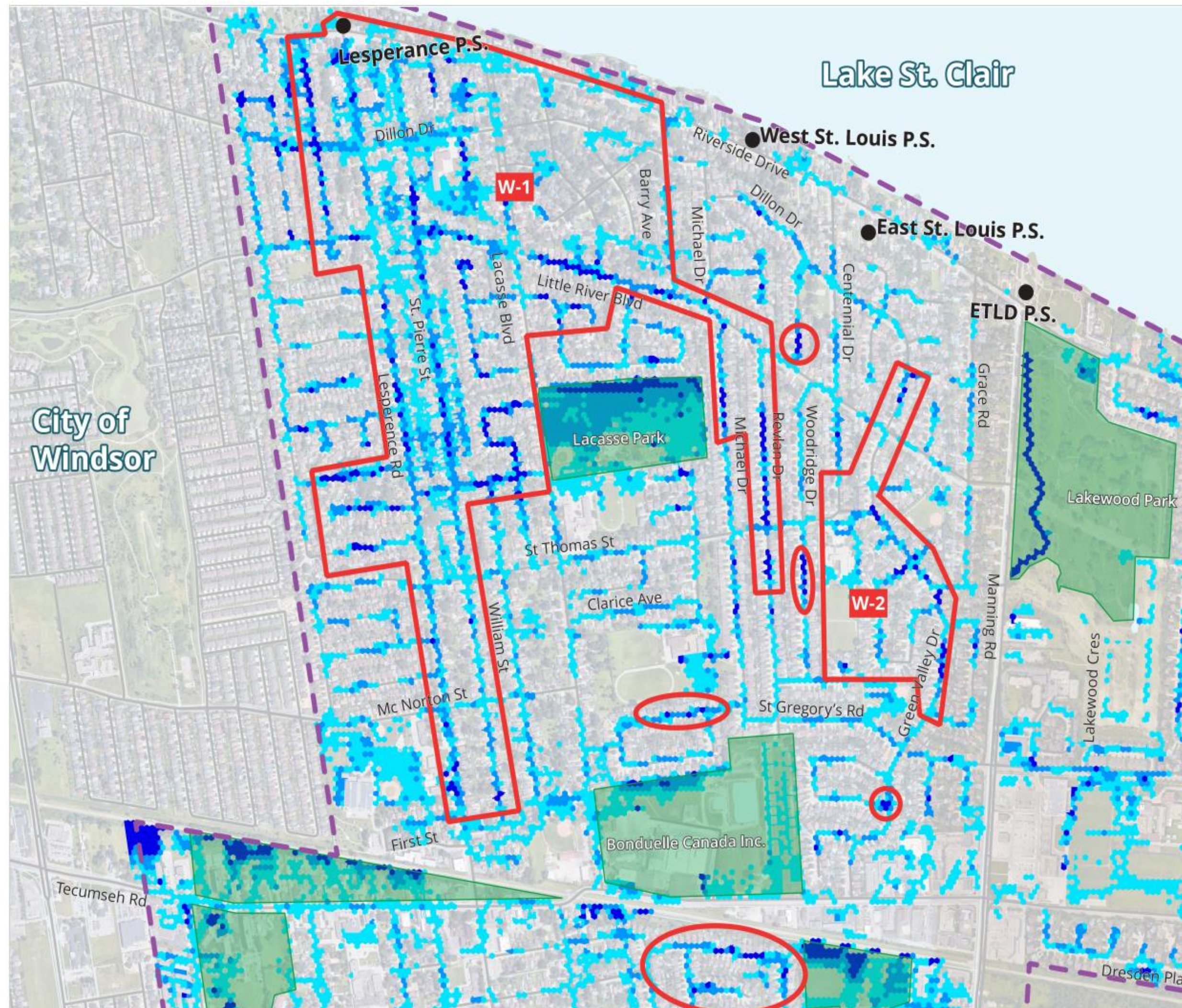
Traditional Design Storms taken from the Windsor/Essex Region Stormwater Management Standards Manual using Environment Canada Windsor Airport Data.

Climate Change Analysis took into consideration two extreme rainfall simulations:

1. *Extreme High Intensity Event (developed as part of this study); and*
2. *Extreme High Volume Event (as per the Windsor/Essex Stormwater Management Standards Manual).*



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



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SURFACE FLOODING PROBLEM AREAS - W-1 & W-2 FIGURE 8.2

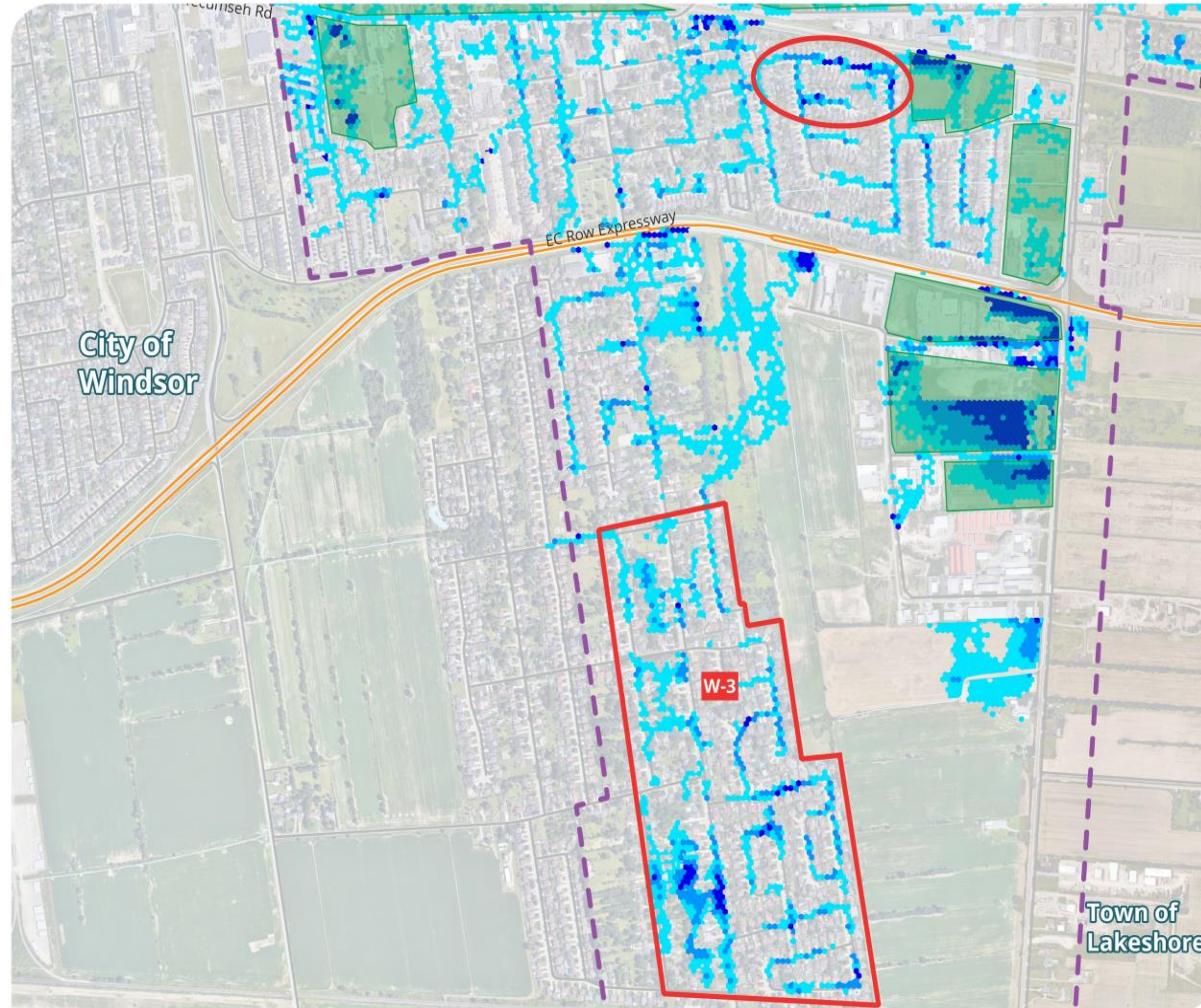
- PUMP STATION (P.S.)
 - ISOLATED SURFACE FLOODING PROBLEM AREAS
 - STUDY AREA
 - PARKLAND/ PRIVATE PROPERTY NOT TO BE ANALYZED
 - STREETS
 - REGIONAL SURFACE FLOODING PROBLEM AREAS
- 1:100 SURFACE PONDING
- LESS THAN 0.15m DEPTH
 - BETWEEN 0.15m - 0.30 m DEPTH
 - OVER 0.30m DEPTH



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MAP CHECKED BY: RTL
MAP PROJECTION: NAD 1983 UTM Zone 17N

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






TOWN OF TECUMSEH
STORM DRAINAGE MASTER PLAN

**SURFACE FLOODING PROBLEM
AREAS - W-3**
FIGURE 8.3

-  ISOLATED SURFACE FLOODING PROBLEM AREAS
-  STUDY AREA
-  PARKLAND/ PRIVATE PROPERTY NOT TO BE ANALYZED
-  STREETS
-  REGIONAL SURFACE FLOODING PROBLEM AREAS

1:100 SURFACE PONDING

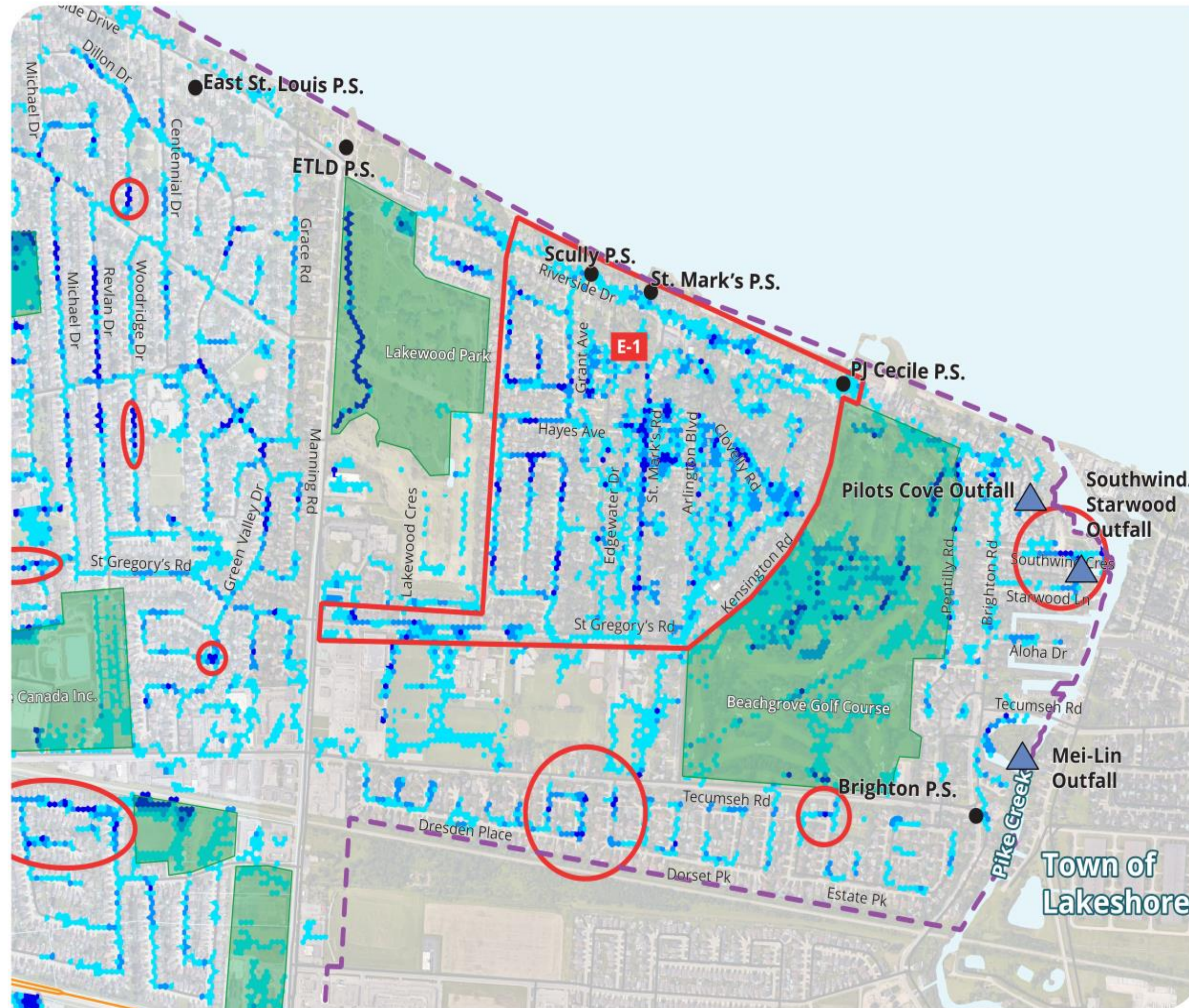
-  LESS THAN 0.15m DEPTH
-  BETWEEN 0.15m - 0.30 m DEPTH
-  OVER 0.30m DEPTH



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




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**SURFACE FLOODING PROBLEM
AREAS - E-1**
FIGURE 8.5

- PUMP STATION (P.S.)
- ▲ SEWER GRAVITY OUTFALLS
- ISOLATED SURFACE FLOODING PROBLEM AREAS
- ▭ STUDY AREA
- ▭ PARKLAND/ PRIVATE PROPERTY NOT TO BE ANALYZED
- STREETS
- REGIONAL SURFACE FLOODING PROBLEM AREAS

1:100 SURFACE PONDING

- LESS THAN 0.15m DEPTH
- BETWEEN 0.15m - 0.30 m DEPTH
- OVER 0.30m DEPTH



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MAP CHECKED BY: RTL
MAP PROJECTION: NAD 1983 UTM Zone 17N

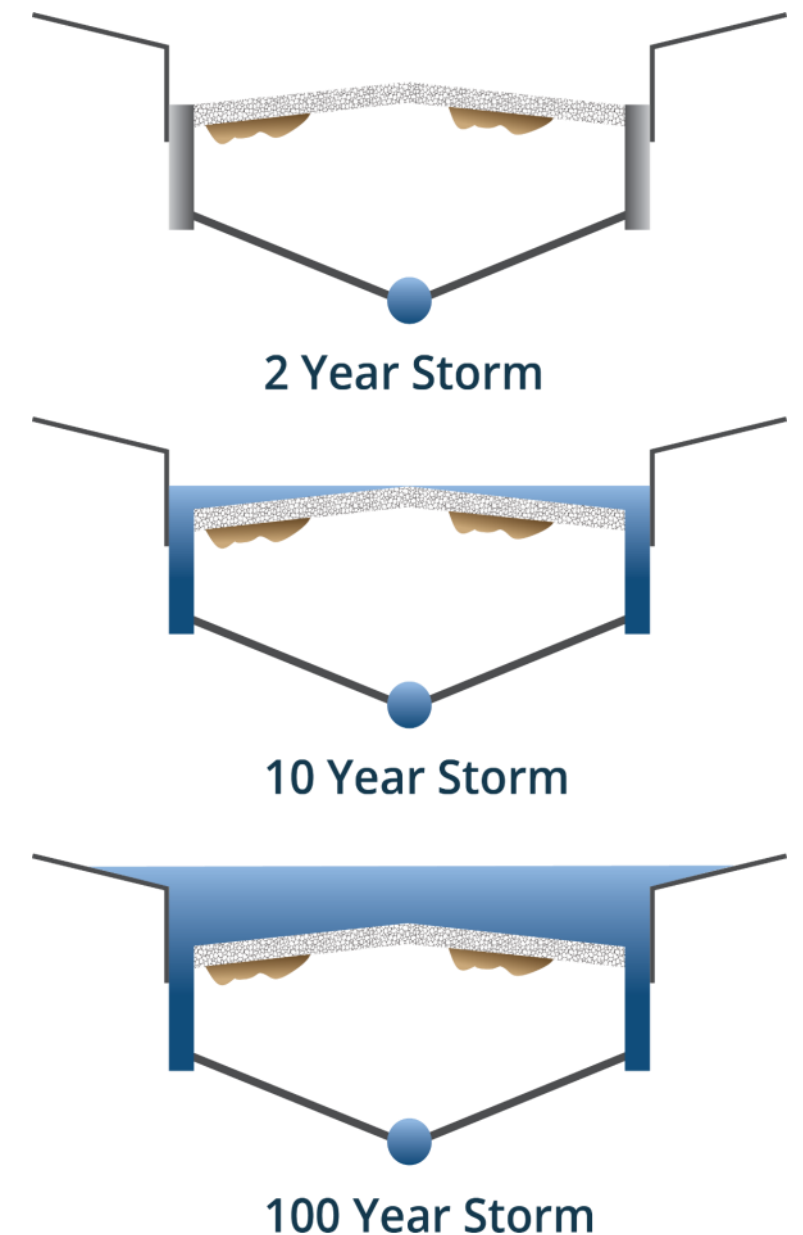
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Design Criteria and Level of Service

Sewer Drainage Design (Minor System)

Storm Sewer Systems are designed to convey more frequent storm events without surface flooding, which typically range from a 1:2 year storm (50% chance of occurrence in a year) to a 1:5 year storm (20% change of occurrence in a year).

Storm Pump Stations are designed to convey the expected storm sewer flows, but may also have increased capacity to limit surface flooding during larger 1:100 year storms (1% chance of occurrence in a year).



Overland Drainage Design (Major System)

Overland Drainage Systems (surface drainage in roads and low lying areas) are designed to limit the depth of surface flooding from a 1:100 year storm to less than 0.30 m.

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



Design Criteria and Level of Service



Design criteria for this study is based on the Windsor/Essex Region Stormwater Management Standards Manual (December 2018)

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

* Climate Change simulation took into consideration both the Extreme High Intensity Rainfall Event generated for this study and the Extreme High Volume Rainfall Event taken from the Windsor/Essex Region Stormwater Management Standards Manual (December, 2018)

Climate Change

- The Storm Drainage Master Plan took an adaptive approach to consider the resiliency of drainage infrastructure in accommodating the risks of climate change.
- A decision matrix was developed to determine the level of service that was best suited to address the surface flooding risks in each area that was susceptible to surface flooding.

TRADITIONAL Engineering Approach

Static design criteria
established by
regulatory agencies

Standard level of
service and flood risk
mitigation

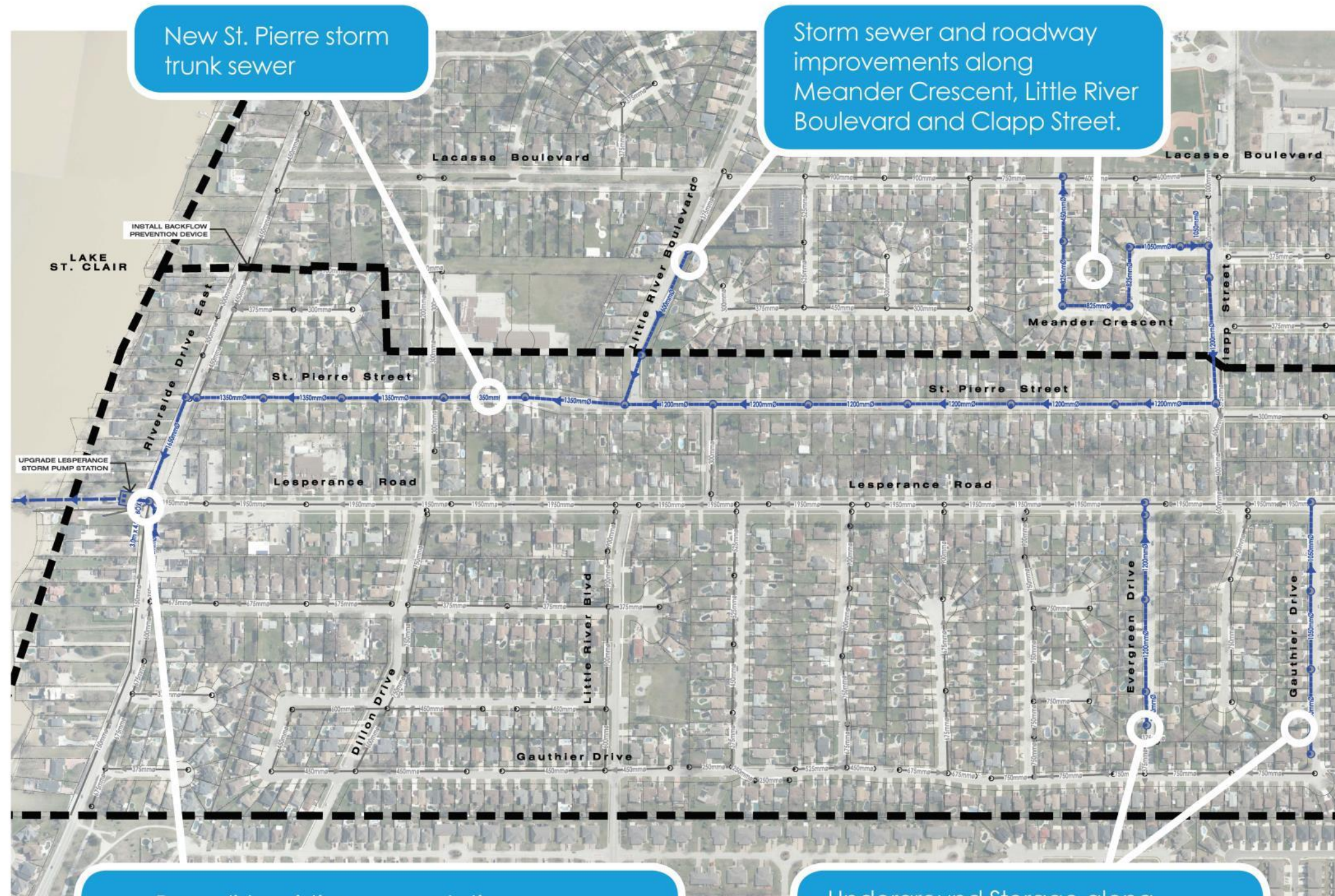
ADAPTIVE Storm Drainage Master Plan Approach

Flexible and
sustainable solutions
that account for a
reasonable degree of
uncertainty due to
climate change

Enhanced and variable
level of service and
flood risk mitigation

Recommended Surface Flooding Solutions

1) Lesperance Pump Station Service Area



- Demolish existing pump station
- New larger capacity pump station equipped with vertical submersible axial flow pumps
- Modify existing outfall to accommodate increased pump station capacity
- Install backflow prevention device at Lesperance/West St. Louis service area storm interconnection

Recommended Surface Flooding Solutions

2) West St. Louis Pump Station Service Area

- Leave existing pump station in service
- Increase capacity of the pump station with an expansion to the east



LEGEND

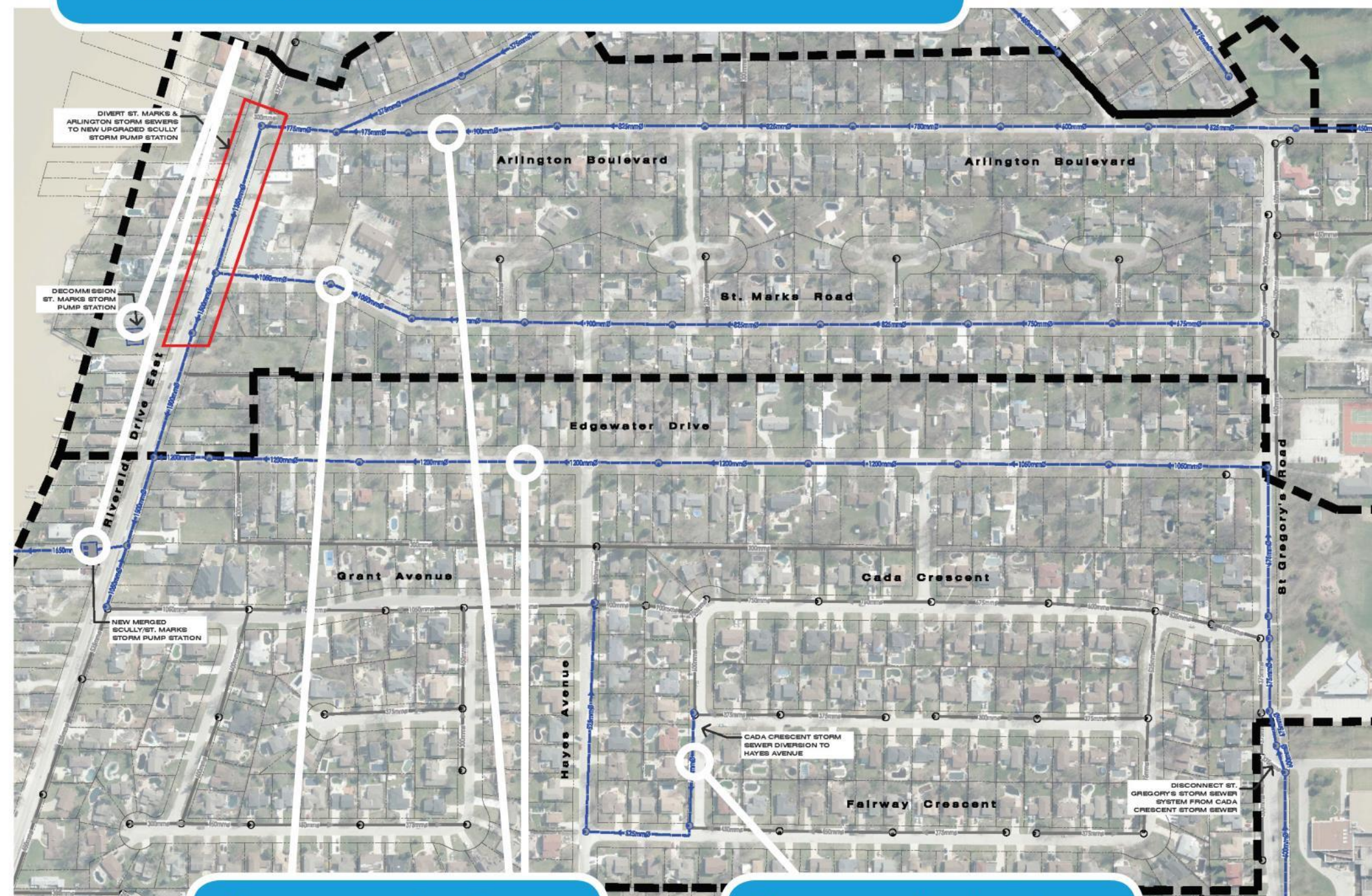
- Proposed manhole
- Proposed storm sewer
- Proposed catch basin
- Existing manhole
- Existing storm sewer
- Pump Station service area boundary

Storm sewer and roadway improvements along Coronado Dish area, Lacasse Boulevard, Little River Boulevard and Kimberly Drive and Jelso Place

Recommended Surface Flooding Solutions

3) Scully, St. Mark's Pump Station Service Area

- Decommission St. Mark's pump station and construct a new pump station at the Scully pump station site to handle flow from a consolidated service area
- Locate station north of the existing structure. New inlet, outfall pipe, and expanded outfall structure required.



LEGEND

- Proposed manhole
- 450mm Proposed storm sewer
- Proposed catch basin
- Existing manhole
- 100mm Existing storm sewer
- Pump Station service area boundary

Storm sewer and roadway improvements along Arlington Boulevard, St. Mark's Road, Edgewater Drive, St. Gregory's Road and Riverside Drive.

Storm sewer diversion along Cada Crescent to Hayes Avenue.

Recommended Surface Flooding Solutions

4) PJ Cecile Pump Station Service Area

- Construct a new pump station at the PJ Cecile site over the footprint of the existing structure
- Install new outfall pipe to increase flow capacity
- Extend new outfall to northern end of the jetty bank
- Replace inlet pipe with a larger diameter pipe in the existing alignment

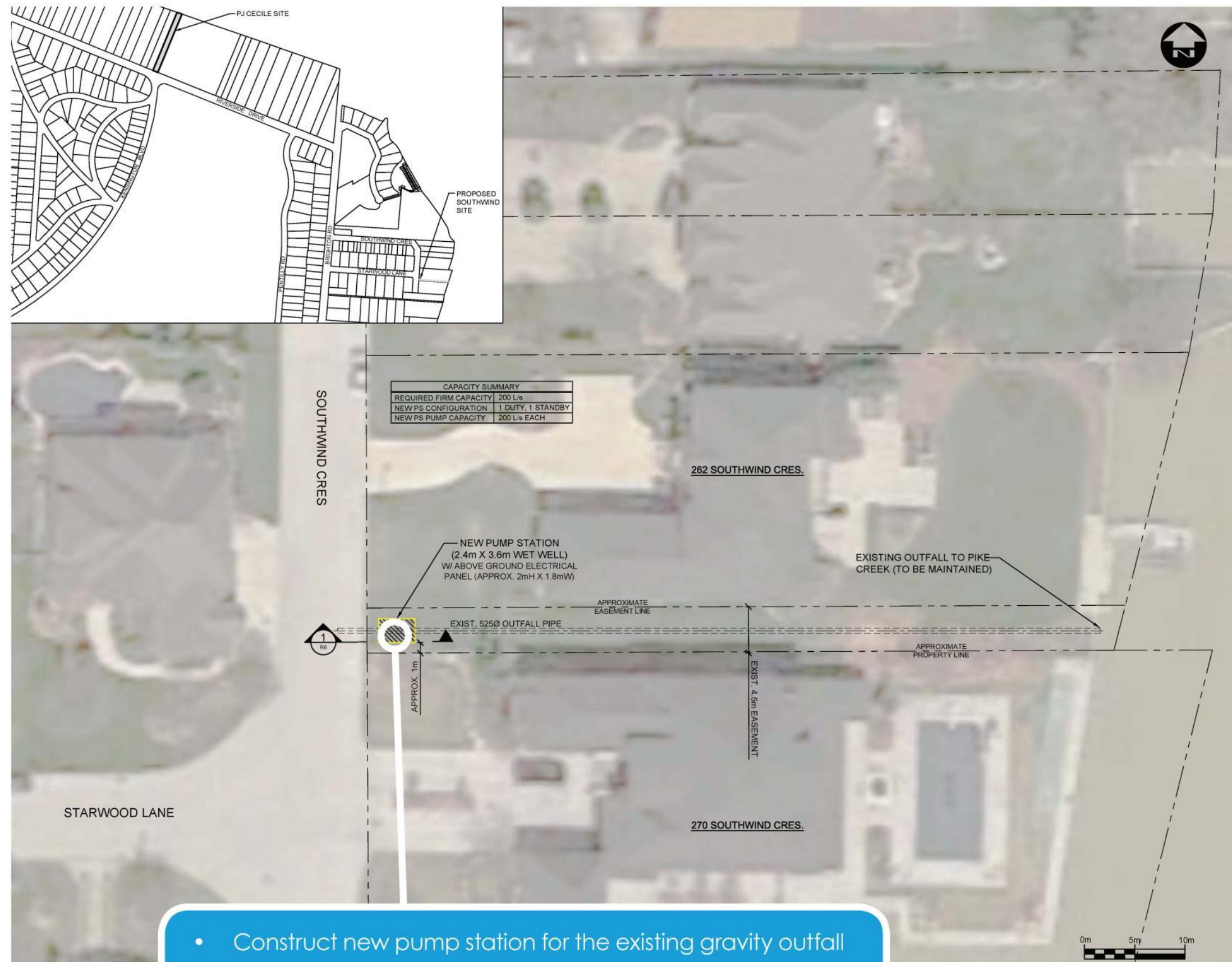


LEGEND

- Proposed manhole
- 450mmØ Proposed storm sewer
- Proposed catch basin
- Existing manhole
- 100mmØ Existing storm sewer
- Pump Station service area boundary

Recommended Surface Flooding Solutions

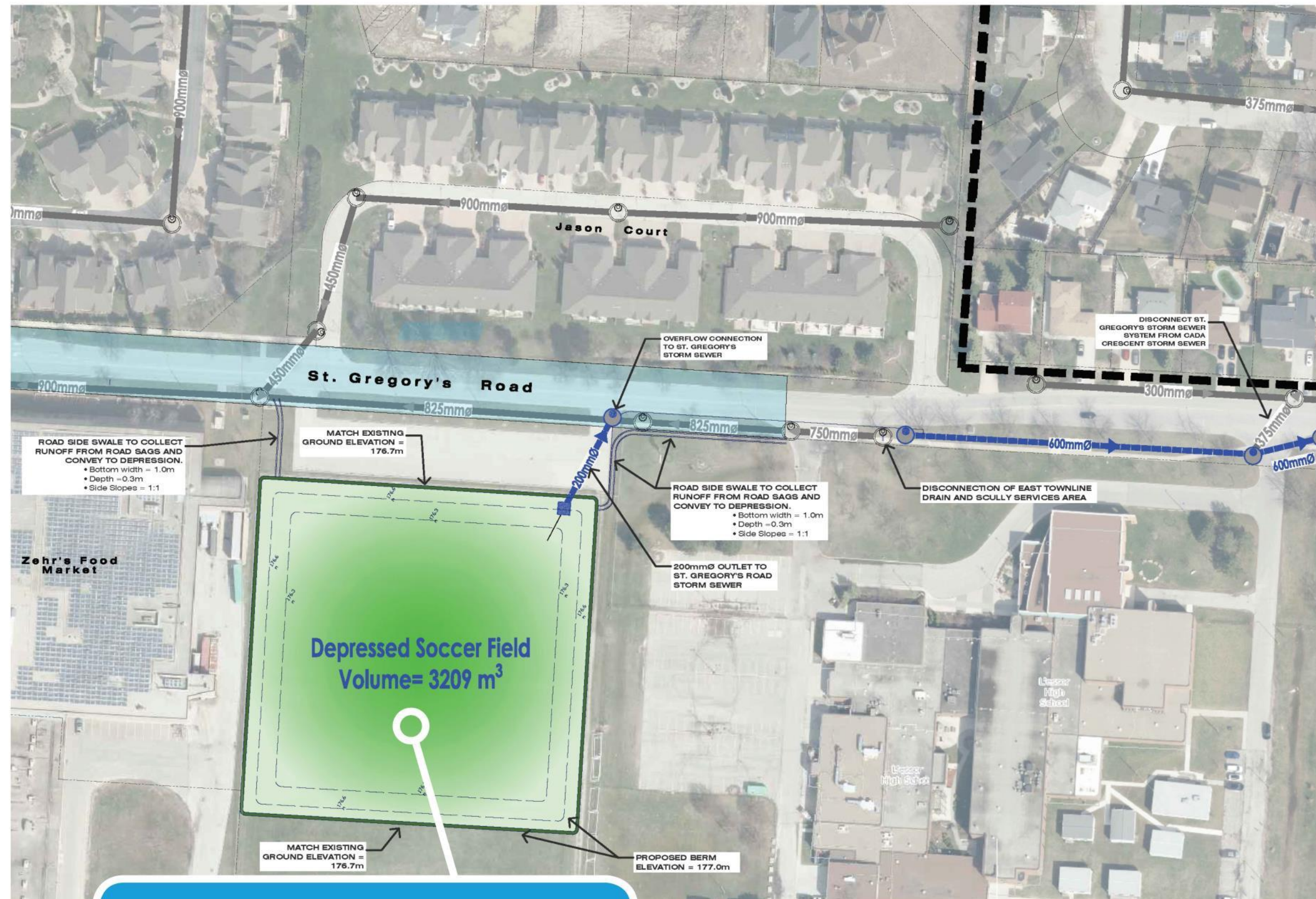
5) New Southwind Crescent Pump Station



- Construct new pump station for the existing gravity outfall
- Construct within the existing easement directly east of the Southwind right-of-way
- Maintain existing outfall pipe

Recommended Surface Flooding Solutions

6) St. Gregory's Road



LEGEND

- Proposed manhole
- Proposed storm sewer
- Proposed catch basin
- Existing manhole
- Existing storm sewer
- Pump Station service area boundary
- Roadway grading improvements
- Depressed area

Depress northern portion of Tecumseh Soccer Fields Park by 0.70m to provide approximately 3,200 m³ of aboveground surface storage



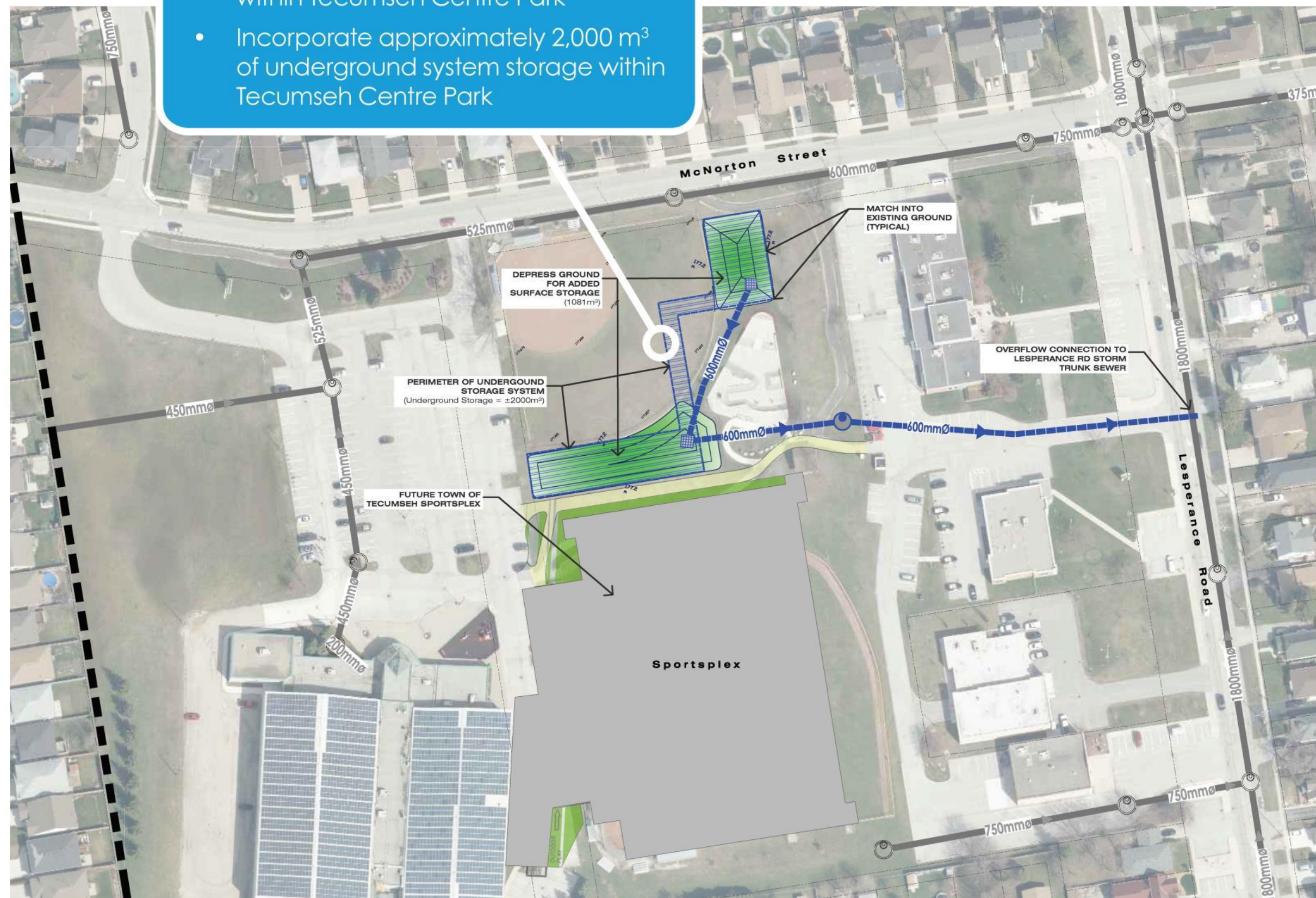
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CONSULTING

| | |
|---|------------------------------------|
|  | Proposed manhole |
|  | Proposed storm sewer |
|  | Proposed catch basin |
|  | Existing manhole |
|  | Existing storm sewer |
|  | Pump Station service area boundary |
|  | Roadway grading improvements |
|  | Depressed area |

Recommended Surface Flooding Solutions

8) Tecumseh Centre Park

- Construct a depression for approximately 1,080 m³ of surface storage behind Tecumseh Town Hall within Tecumseh Centre Park
- Incorporate approximately 2,000 m³ of underground system storage within Tecumseh Centre Park



LEGEND

- Proposed manhole
- Proposed storm sewer
- Proposed catch basin
- Existing manhole
- Existing storm sewer
- Pump Station service area boundary
- Roadway grading improvements
- Depressed area
- Underground Storage Chambers

Recommended Surface Flooding Solutions

10) Tecumseh Road Storm Sewer Extension

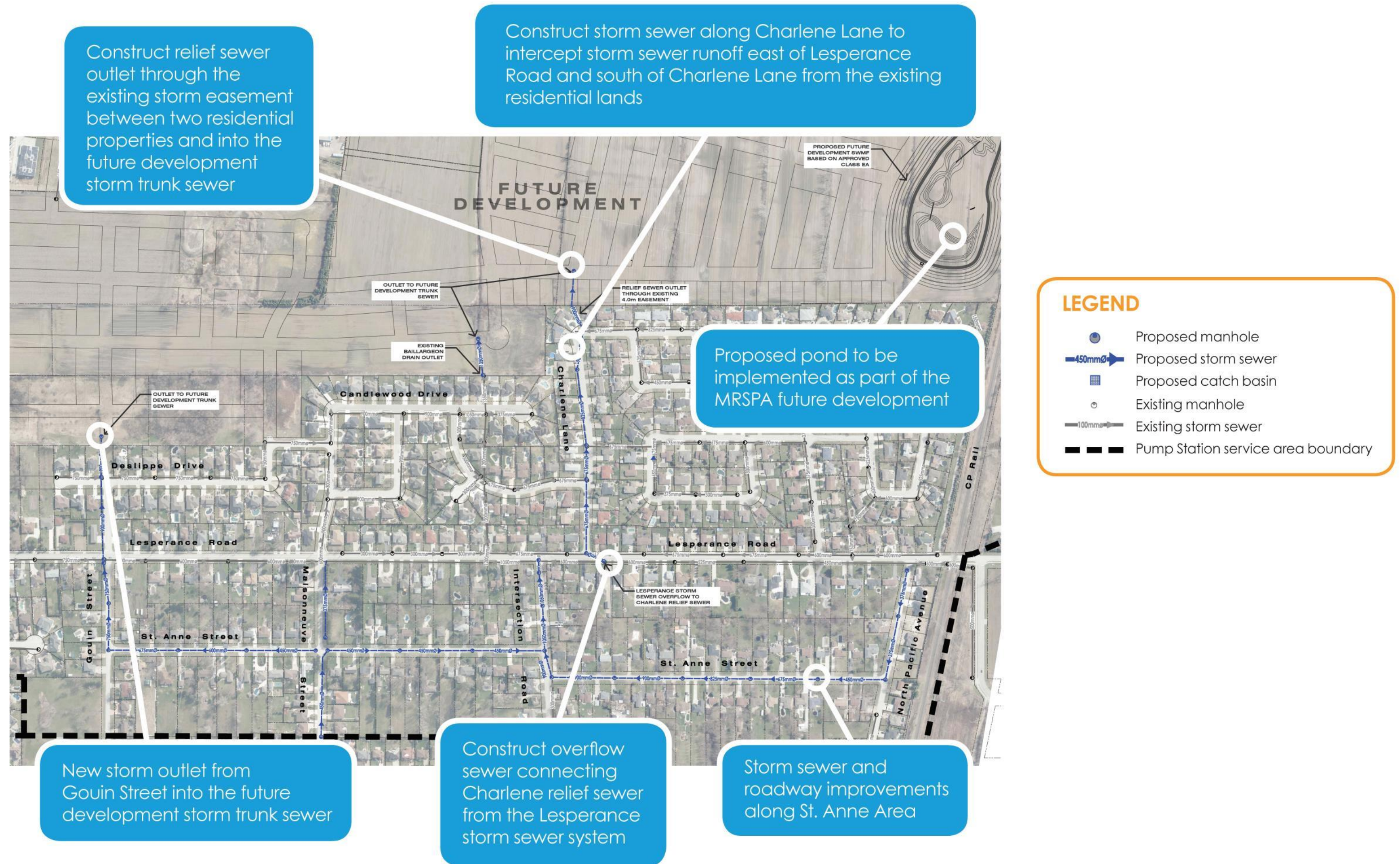


LEGEND

- Proposed manhole
- Proposed storm sewer
- Proposed catch basin
- Existing manhole
- Existing storm sewer
- Pump Station service area boundary

Recommended Surface Flooding Solutions

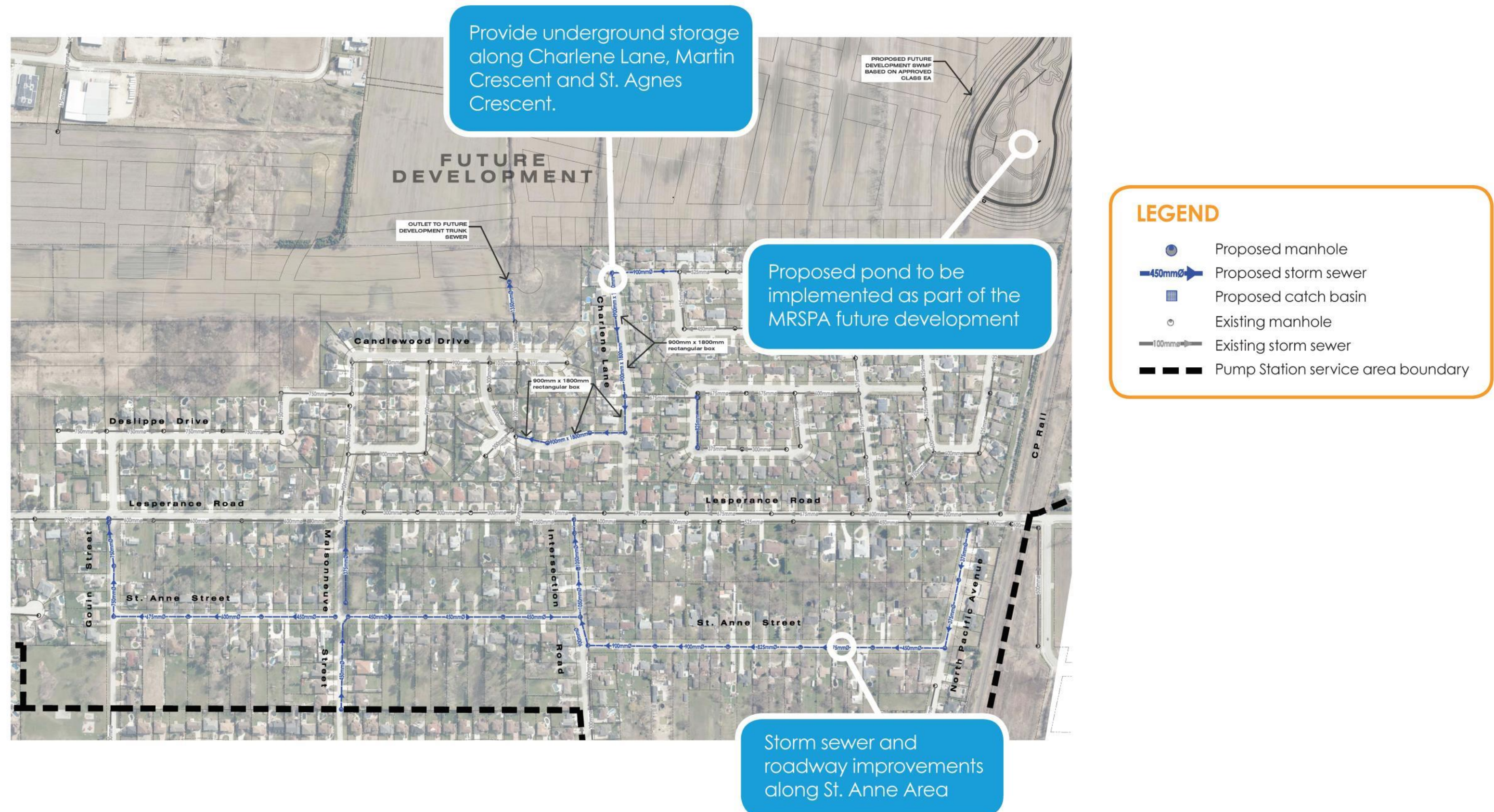
11) Baillargeon Drain Service Area (Option 1)



Recommended Surface Flooding Solutions

11) Baillargeon Drain Service Area (Option 2)

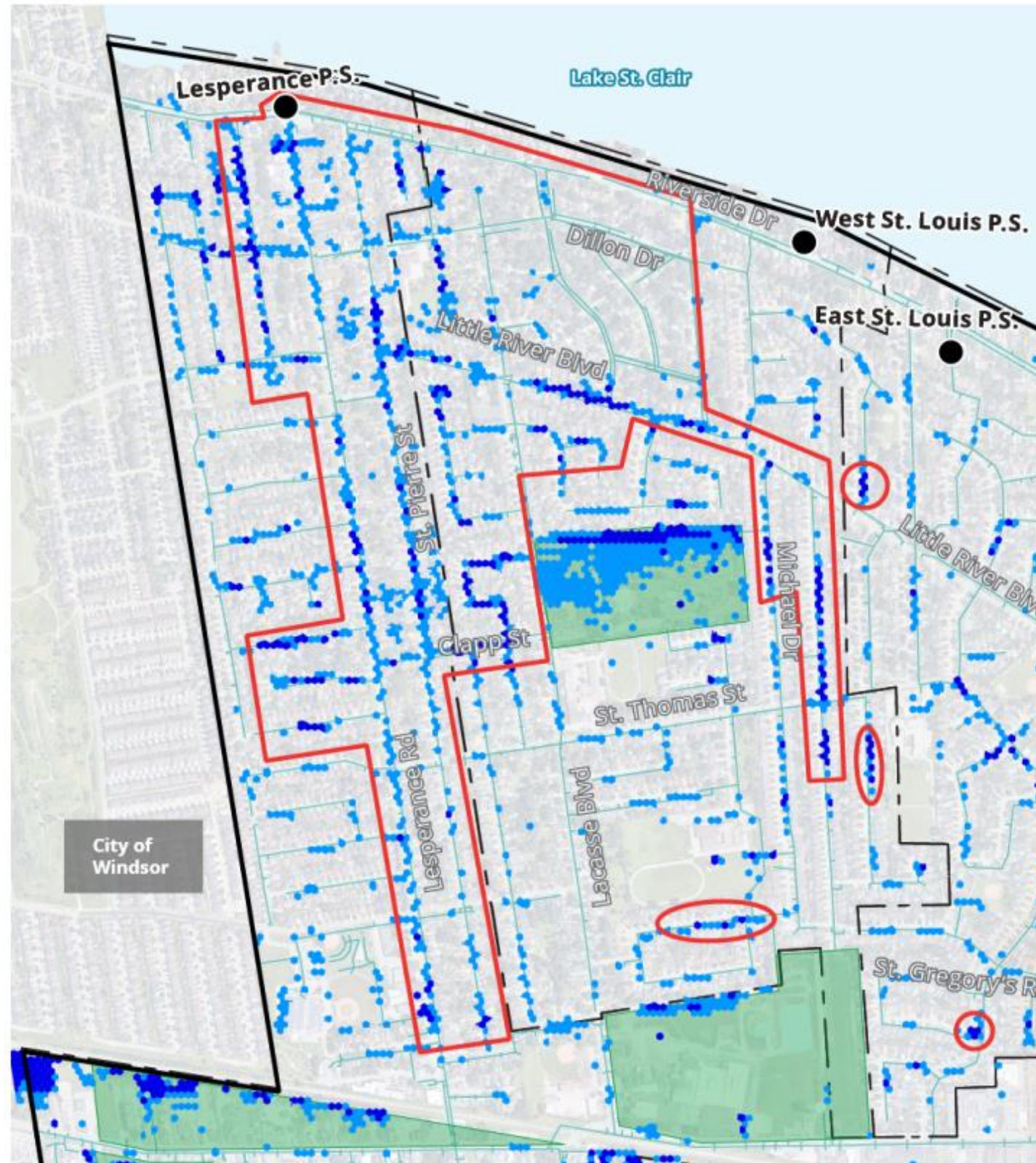
Alternative 1 is considered the preferred for this area, but is entirely dependent on agreements with the land owners and developers of the future development lands. Alternative 2 is presented as a secondary recommended option.



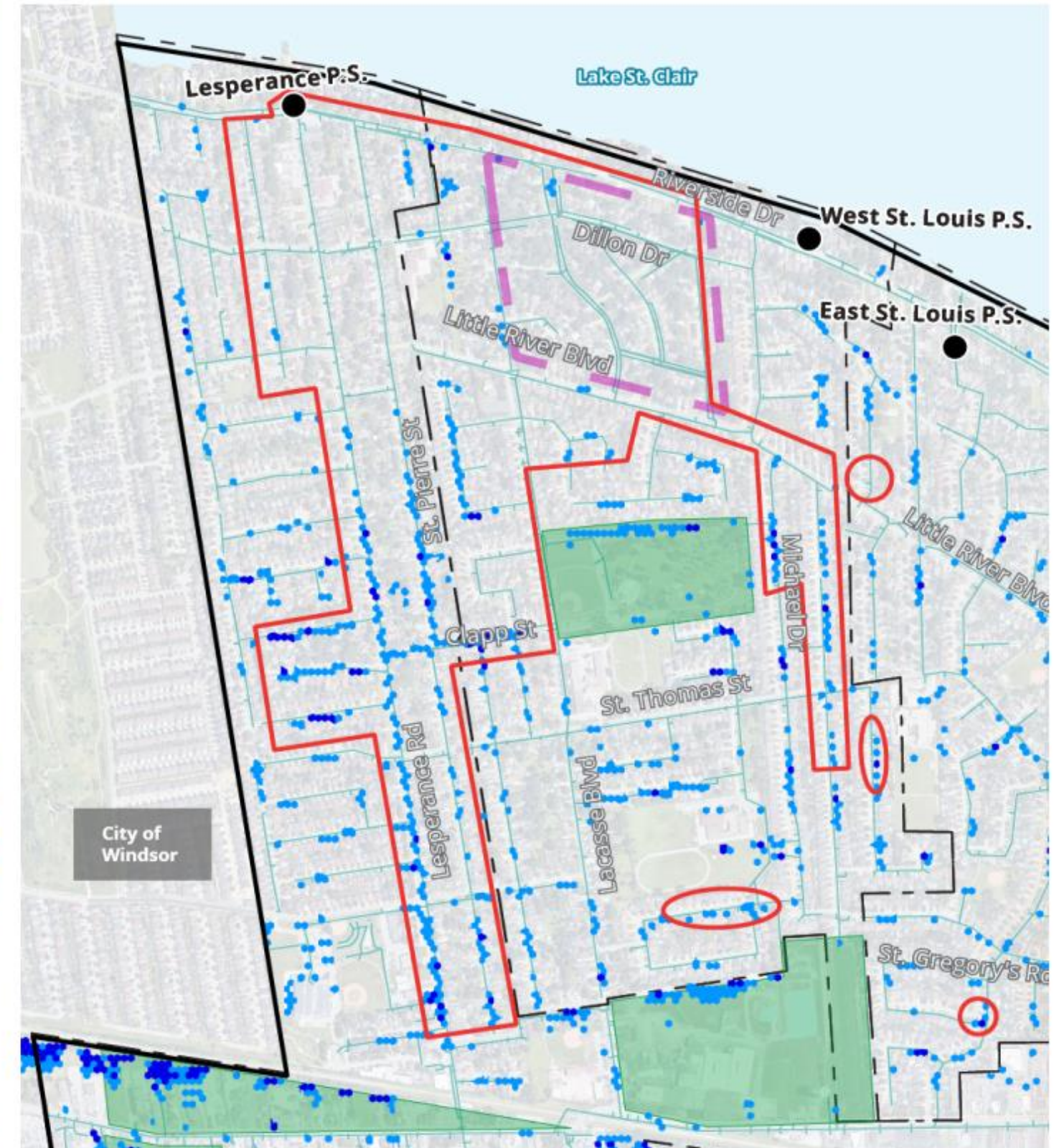
Future Surface Flooding Comparisons

West of Manning Road – Problem Area W1

EXISTING CONDITION (1:100 YEAR SURFACE PONDING SIMULATION)



FUTURE CONDITION (1:100 YEAR SURFACE PONDING SIMULATION)

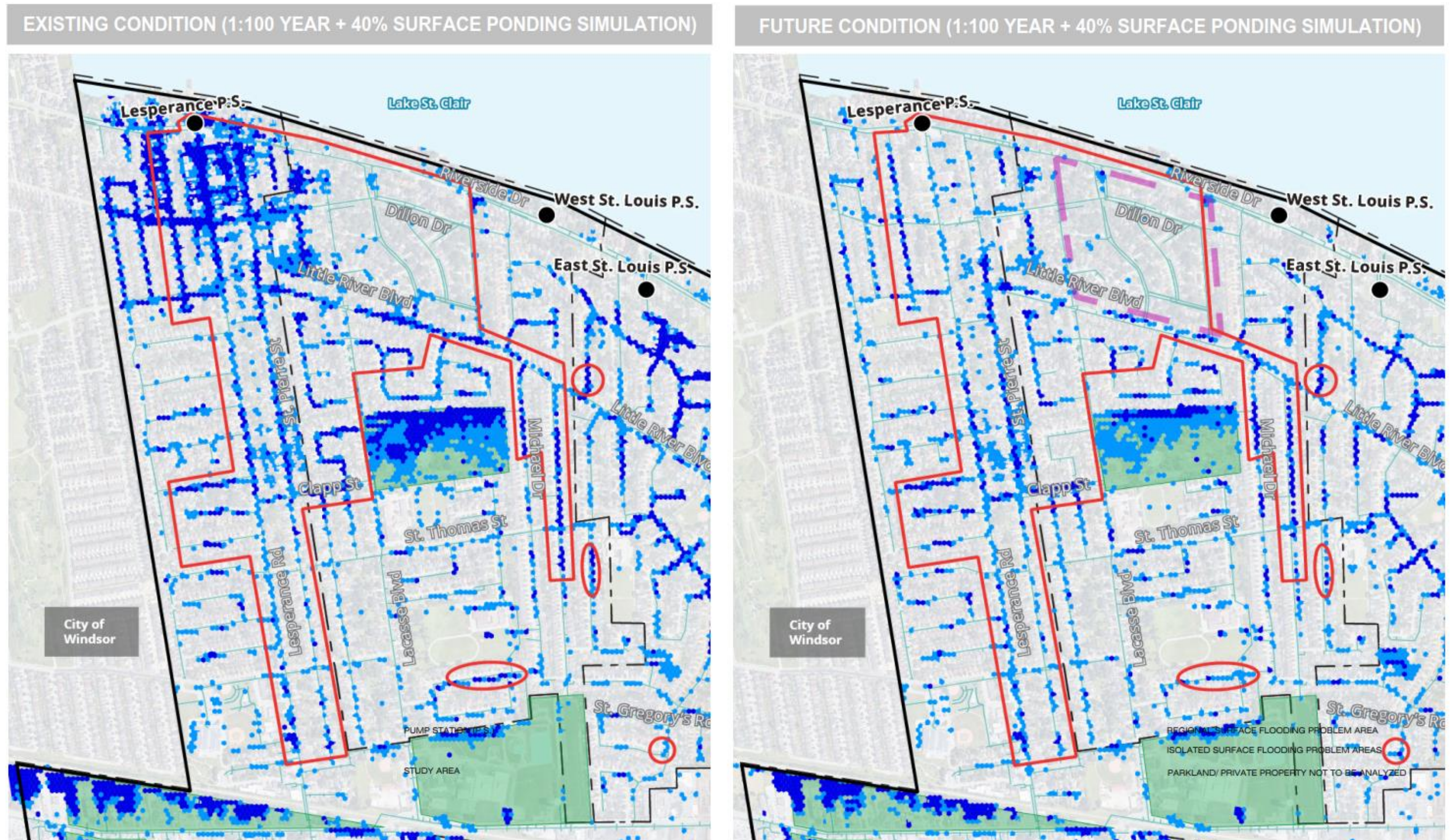


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1:100 YEAR EXISTING VS FUTURE CONDITION
SURFACE FLOODING - PROBLEM AREA W-1
FIGURE 11.15

Future Surface Flooding Comparisons

West of Manning Road – Problem Area W1



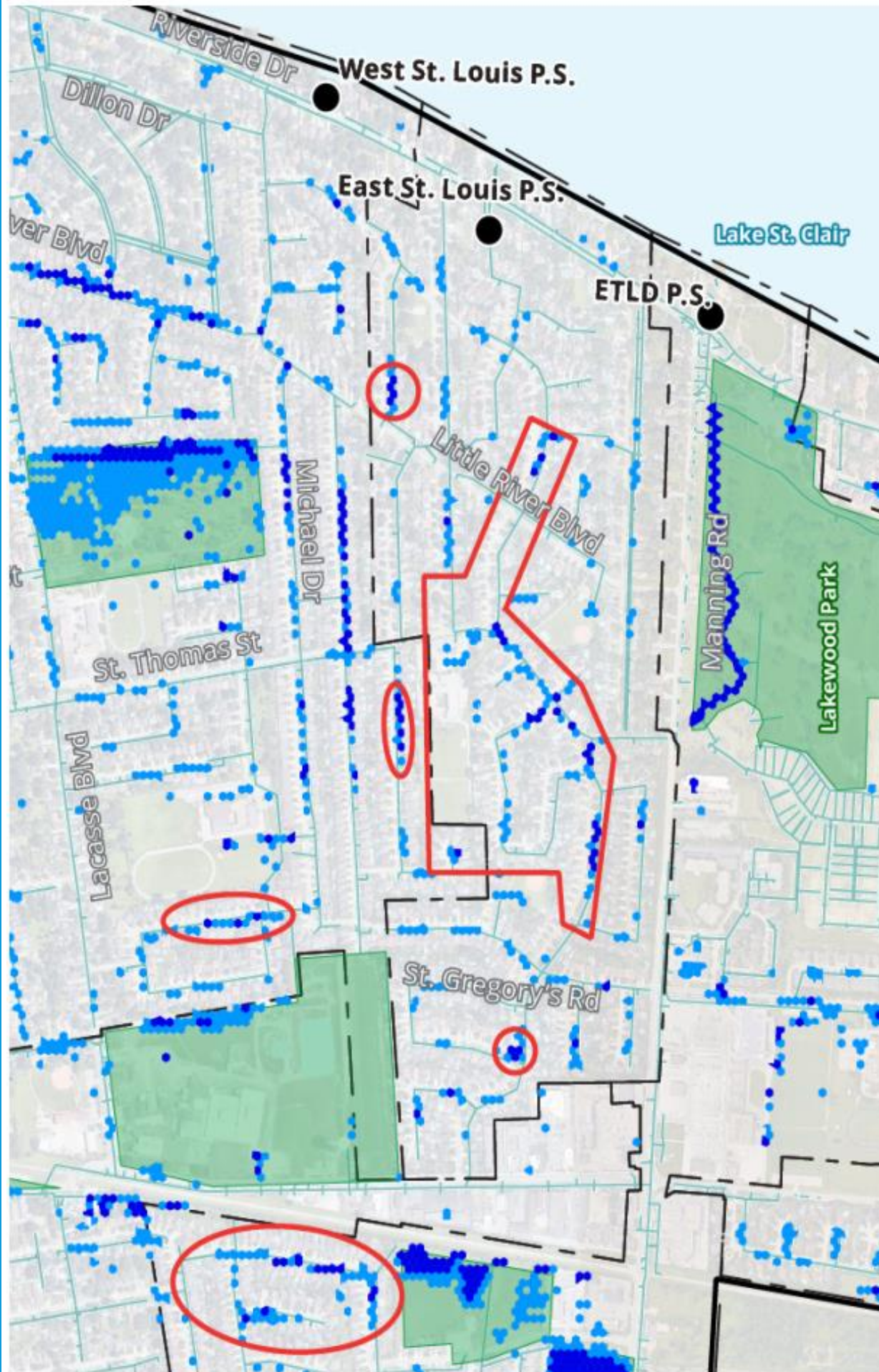
TOWN OF TECUMSEH
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1:100 YEAR + 40% EXISTING VS FUTURE CONDITION
SURFACE FLOODING - PROBLEM AREA W-1
FIGURE 11.16

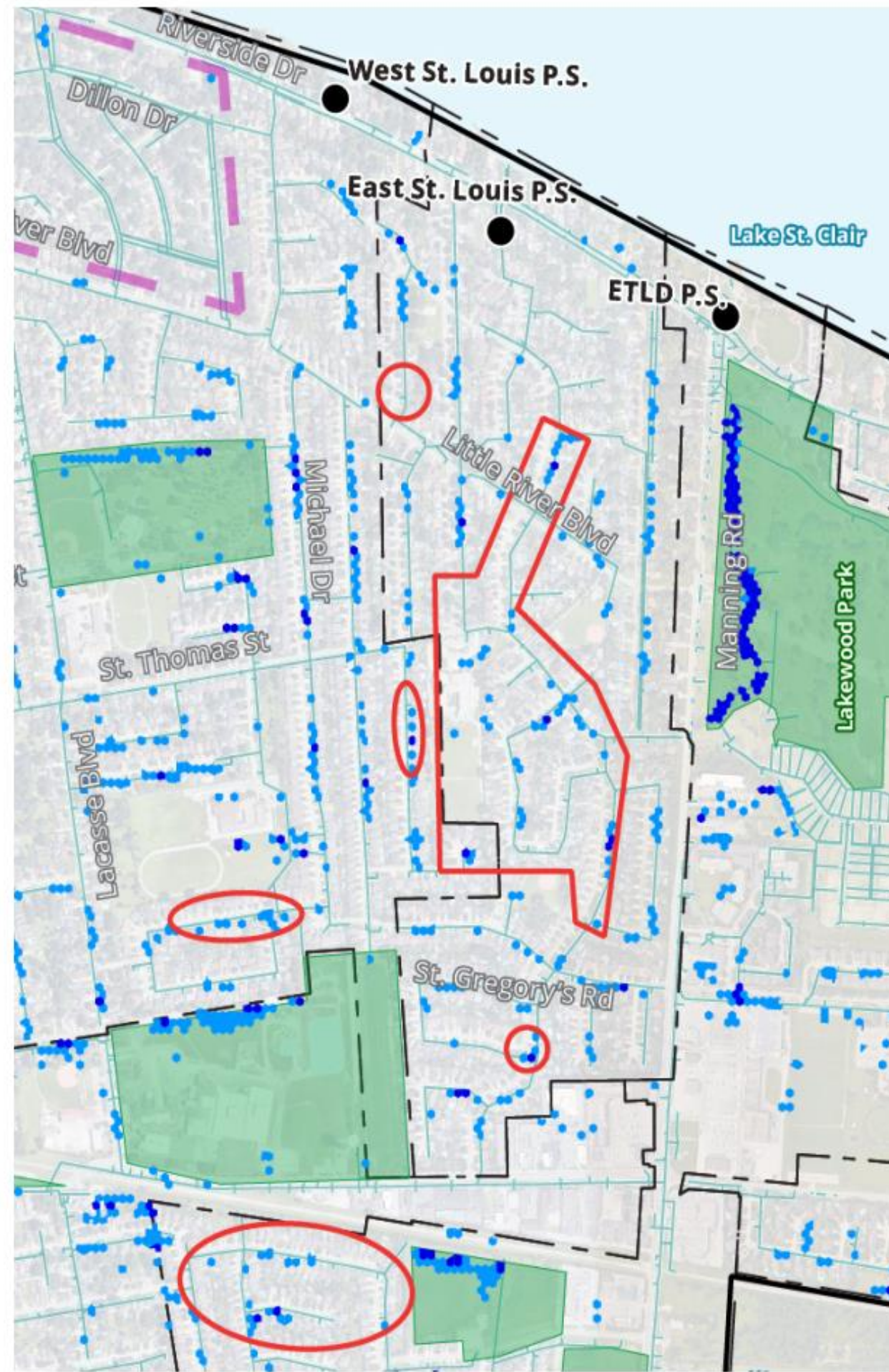
Future Surface Flooding Comparisons

West of Manning Road – Problem Area W2

EXISTING CONDITION
(1:100 YEAR SURFACE PONDING SIMULATION)



FUTURE CONDITION
(1:100 YEAR SURFACE PONDING SIMULATION)

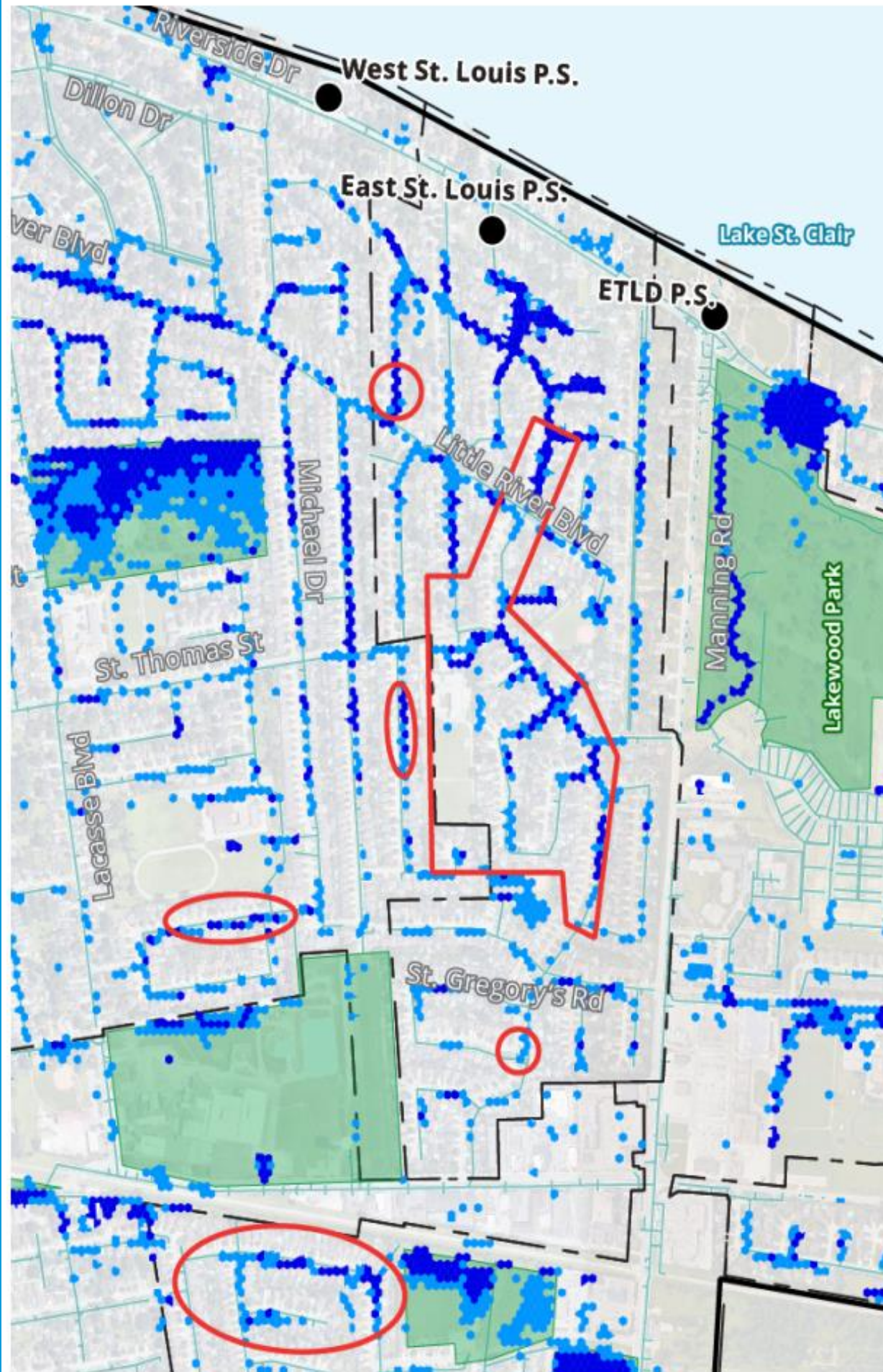


- PUMP STATION (P.S.)
- - - PUMP STATION SERVICE AREA
- STUDY AREA
- SURFACE PONDING WITHIN AREA MAINTAINED BELOW 0.30m
- REGIONAL SURFACE FLOODING PROBLEM AREAS
- ISOLATED SURFACE FLOODING PROBLEM AREAS
- PARKLAND / PRIVATE PROPERTY NOT TO BE ANALYZED
- SURFACE PONDING BETWEEN 0.15m - 0.30m DEPTH
- SURFACE PONDING > 0.30m DEPTH

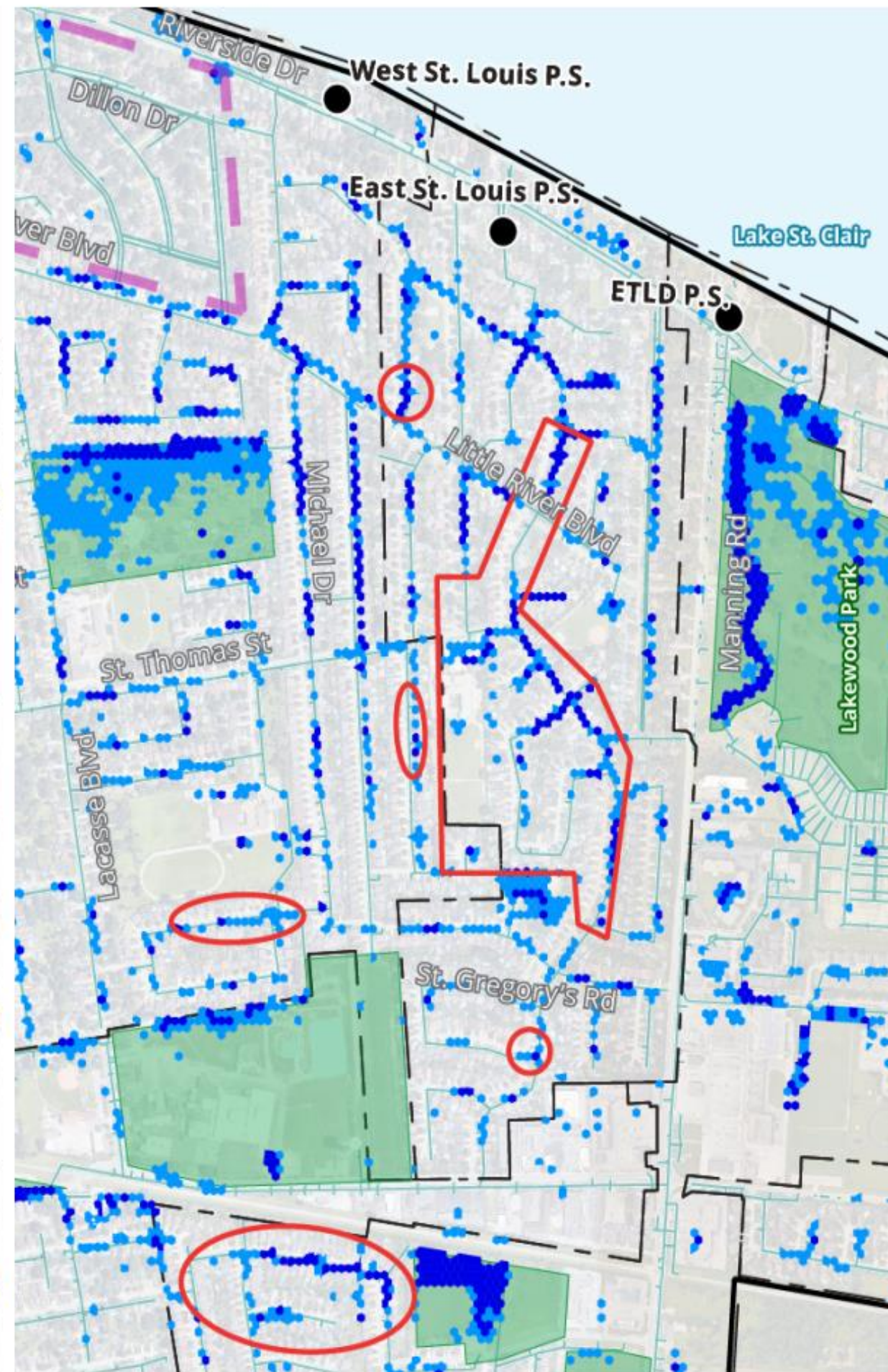
Future Surface Flooding Comparisons

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)



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**1:100 YEAR + 40% EXISTING VS
FUTURE CONDITION SURFACE
FLOODING - PROBLEM AREA W-2**
FIGURE 11.18

- PUMP STATION (P.S.)
- PUMP STATION SERVICE AREA
- STUDY AREA
- SURFACE PONDING WITHIN AREA MAINTAINED BELOW 0.30m
- REGIONAL SURFACE FLOODING PROBLEM AREAS
- ISOLATED SURFACE FLOODING PROBLEM AREAS
- PARKLAND / PRIVATE PROPERTY NOT TO BE ANALYZED
- SURFACE PONDING BETWEEN 0.15m - 0.30m DEPTH
- SURFACE PONDING > 0.30m DEPTH

SCALE 1:1NTS

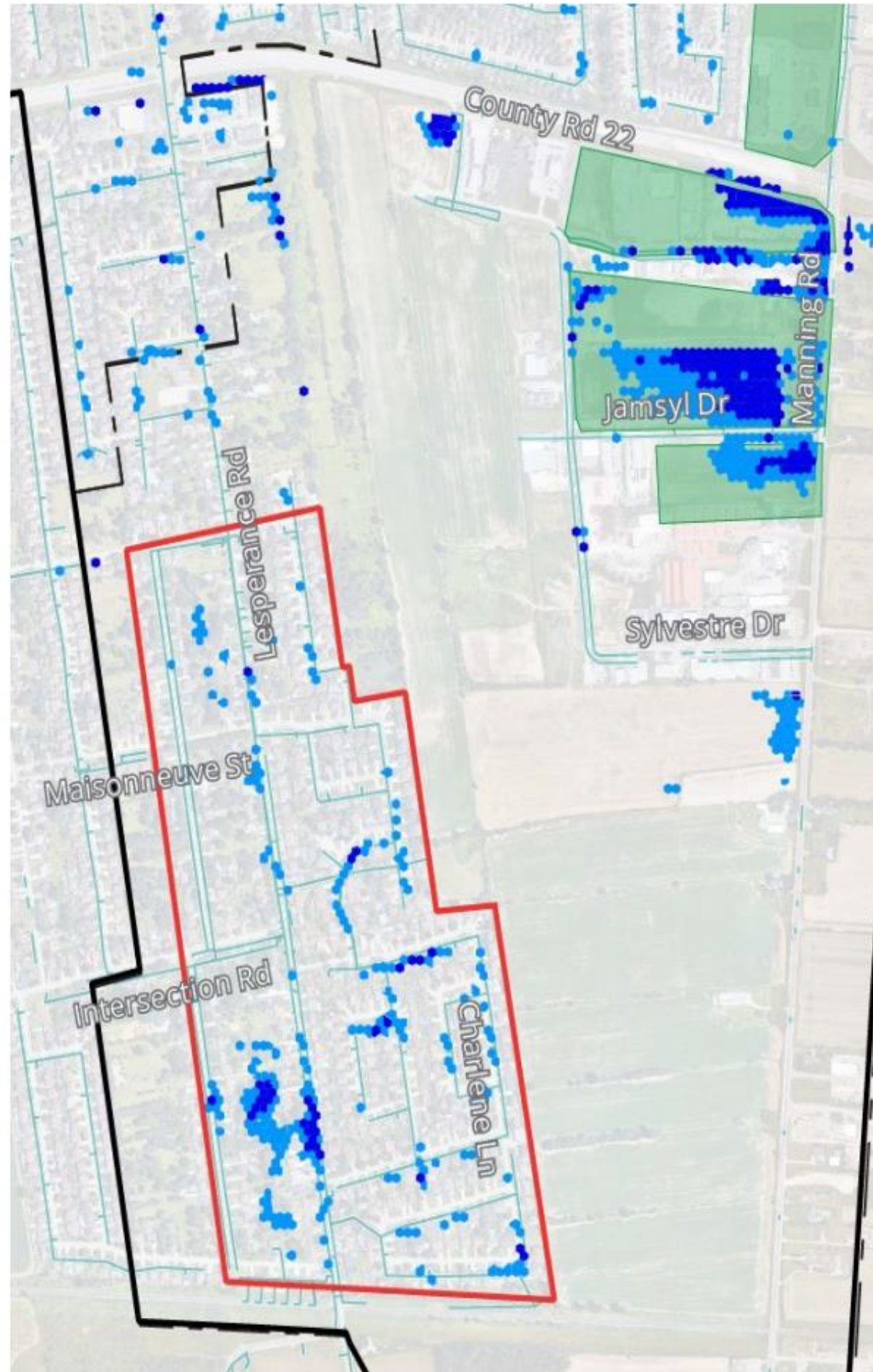
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BEIGE - 11X17 LANDSCAPE - LEGEND RIGHT.MXD

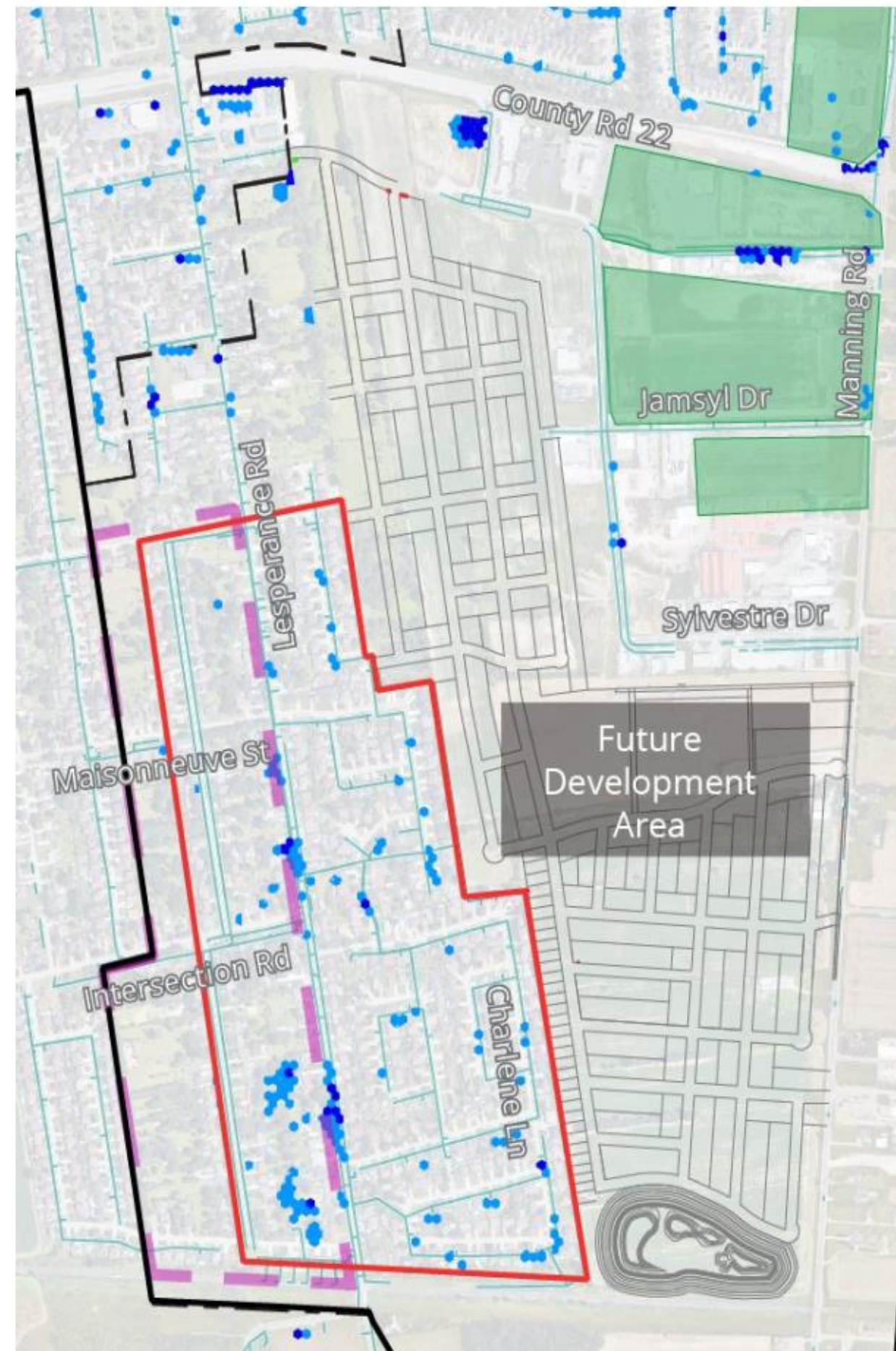
Future Surface Flooding Comparisons

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
- STUDY AREA
- SURFACE PONDING WITHIN AREA MAINTAINED BELOW 0.30m
- REGIONAL SURFACE FLOODING PROBLEM AREAS
- ISOLATED SURFACE FLOODING PROBLEM AREAS
- PARKLAND / PRIVATE PROPERTY NOT TO BE ANALYZED
- SURFACE PONDING BETWEEN 0.15m - 0.30m DEPTH
- SURFACE PONDING > 0.30m DEPTH



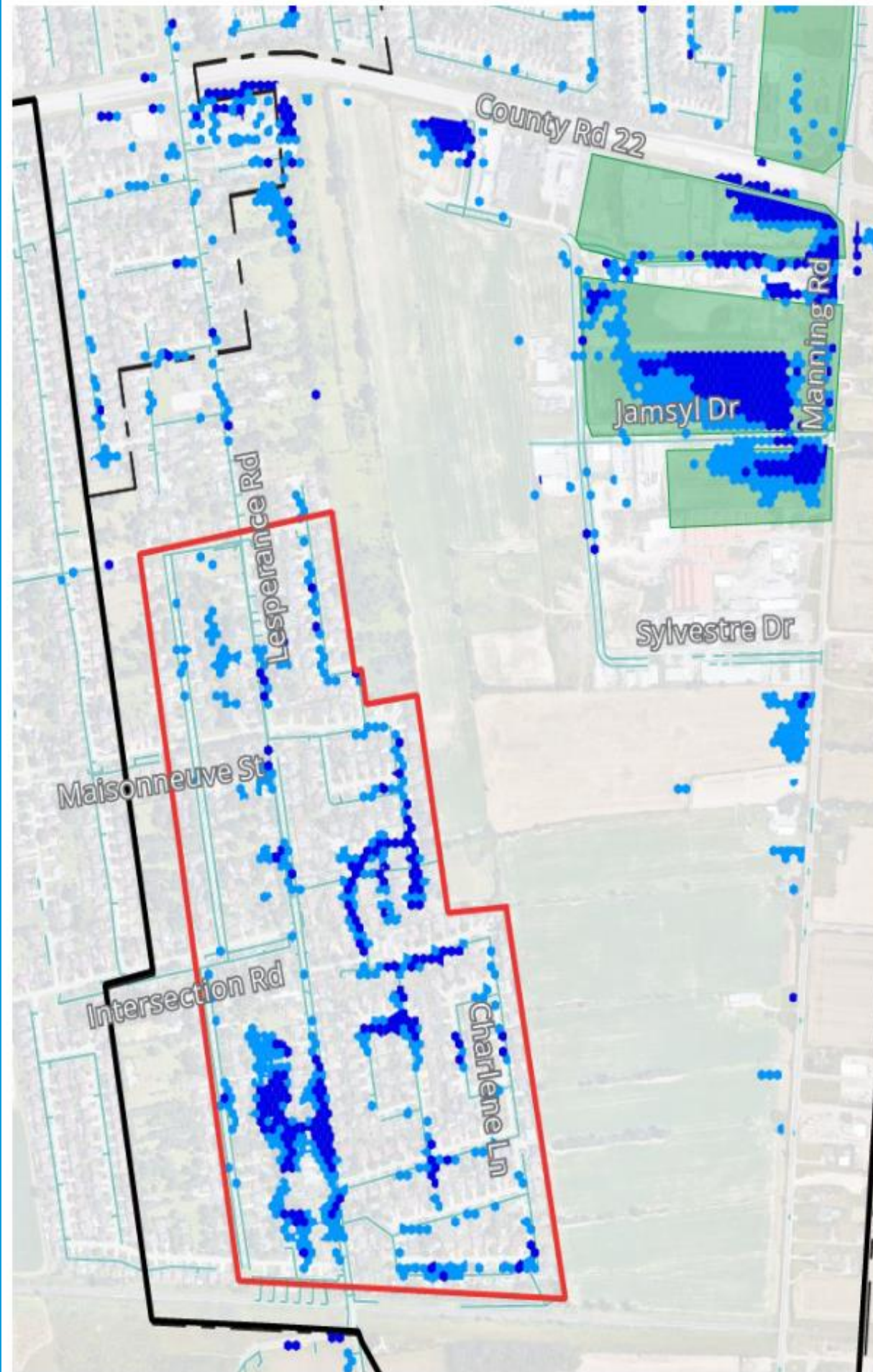
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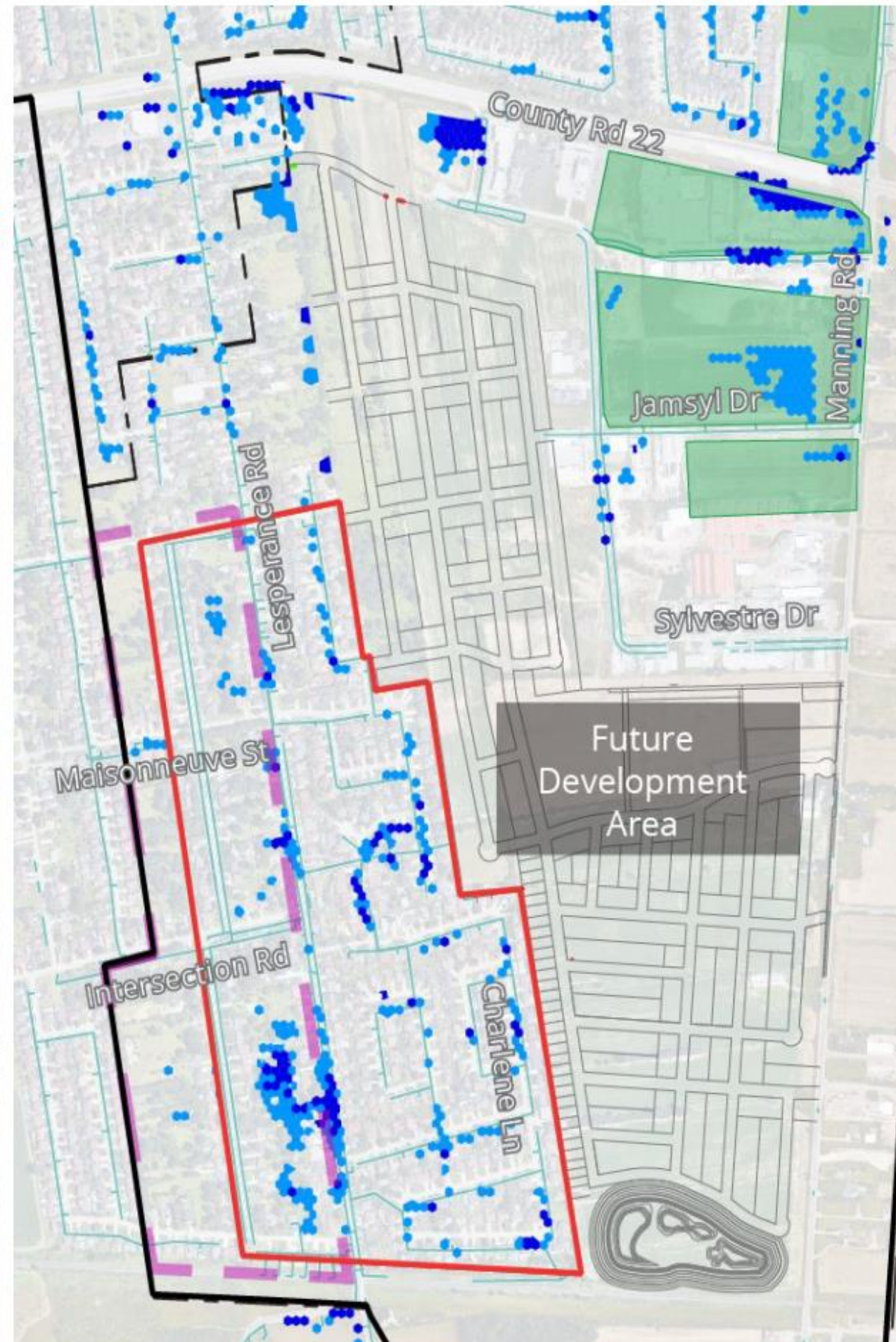
Future Surface Flooding Comparisons

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)

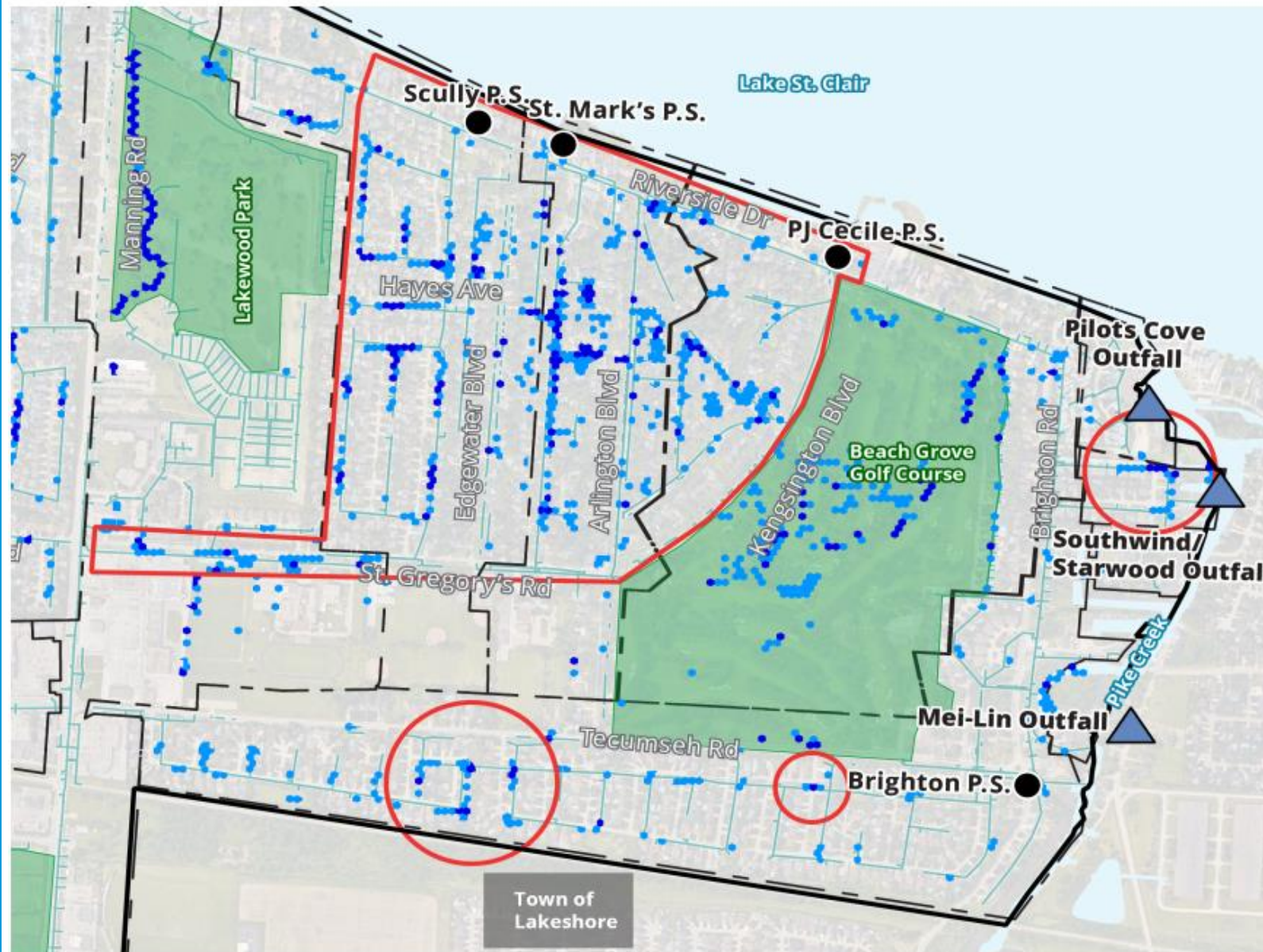


- PUMP STATION SERVICE AREA
- STUDY AREA
- SURFACE PONDING WITHIN AREA MAINTAINED BELOW 0.30m
- REGIONAL SURFACE FLOODING PROBLEM AREAS
- ISOLATED SURFACE FLOODING PROBLEM AREAS
- PARKLAND / PRIVATE PROPERTY NOT TO BE ANALYZED
- SURFACE PONDING BETWEEN 0.15m - 0.30m DEPTH
- SURFACE PONDING > 0.30m DEPTH

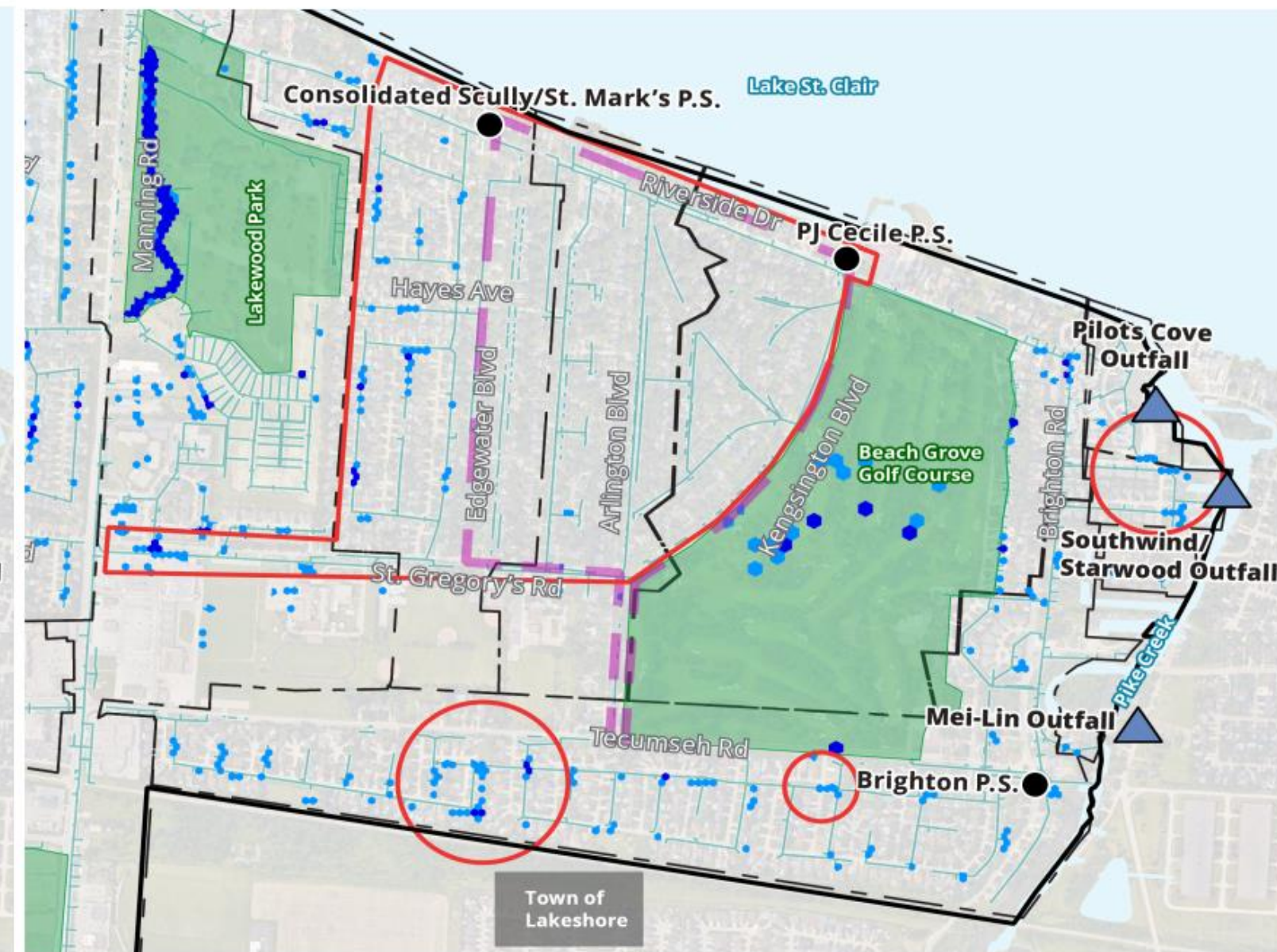
Future Surface Flooding Comparisons

East of Manning Road – Problem Area E1

EXISTING CONDITION (1:100 YEAR SURFACE PONDING SIMULATION)



FUTURE CONDITION (1:100 YEAR SURFACE PONDING SIMULATION)



TOWN OF TECUMSEH STORM DRAINAGE MASTER PLAN

1:100 YEAR EXISTING VS
FUTURE CONDITION
SURFACE FLOODING -
PROBLEM AREA E-1
FIGURE 11.21



| | | | |
|--|--|--|--|
| | SEWER GRAVITY OUTFALL | | REGIONAL SURFACE FLOODING PROBLEM AREAS |
| | PUMP STATION (P.S.) | | ISOLATED SURFACE FLOODING PROBLEM AREAS |
| | PUMP STATION SERVICE AREA | | PARKLAND / PRIVATE PROPERTY NOT TO BE ANALYZED |
| | STUDY AREA | | SURFACE PONDING BETWEEN 0.15m - 0.30m DEPTH |
| | SURFACE PONDING WITHIN AREA MAINTAINED BELOW 0.30m | | SURFACE PONDING > 0.30m DEPTH |



MAP CREATED BY: SZ
MAP CHECKED BY: RTL
MAP PROJECTION: NAD 1983 UTM Zone 17N

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MXD TEMPLATES\
BEIGE - 11X17 LANDSCAPE - LEGEND BOTTOM.MXD

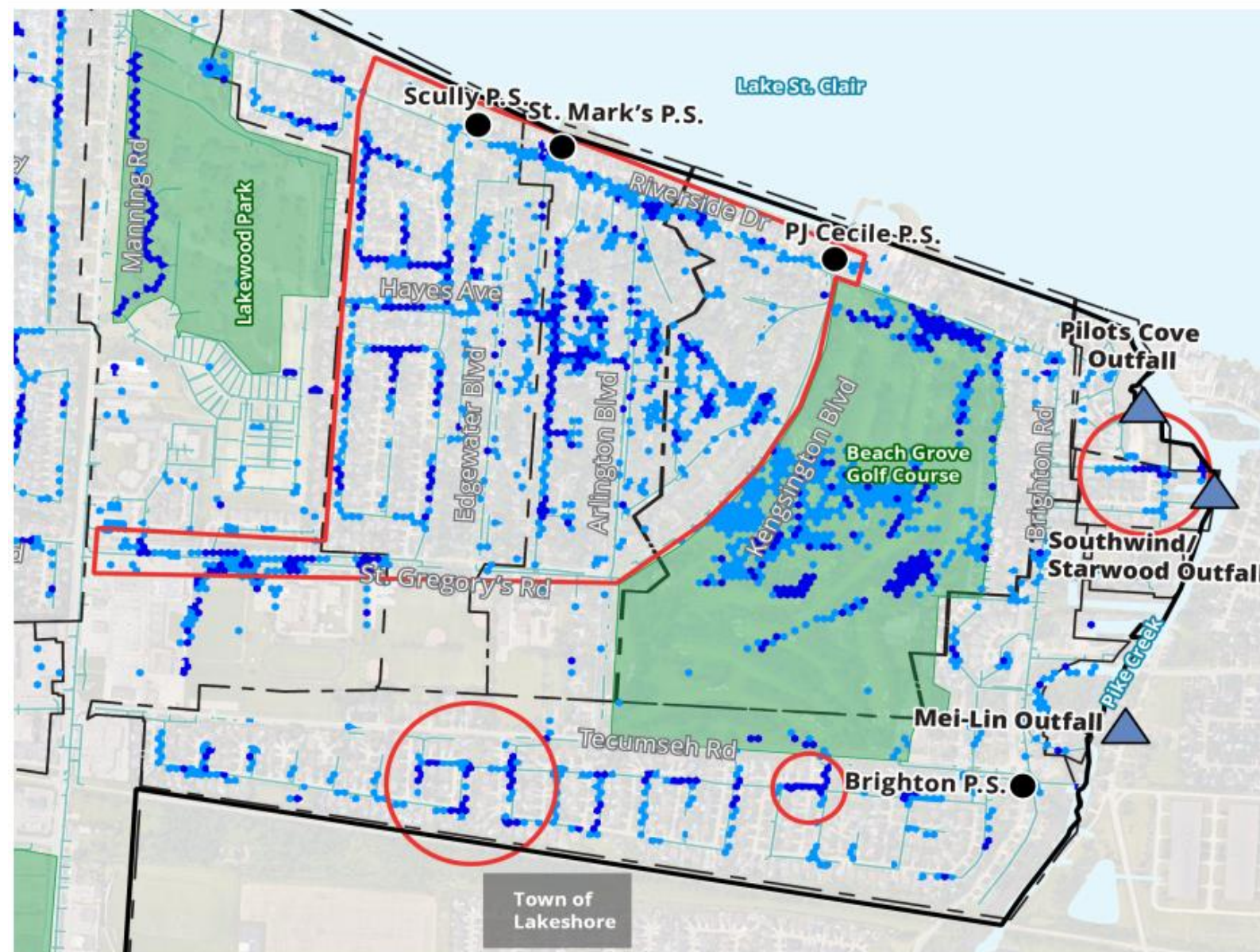


PROJECT: 16-4880 STATUS: FINAL DATE: JUNE 2019

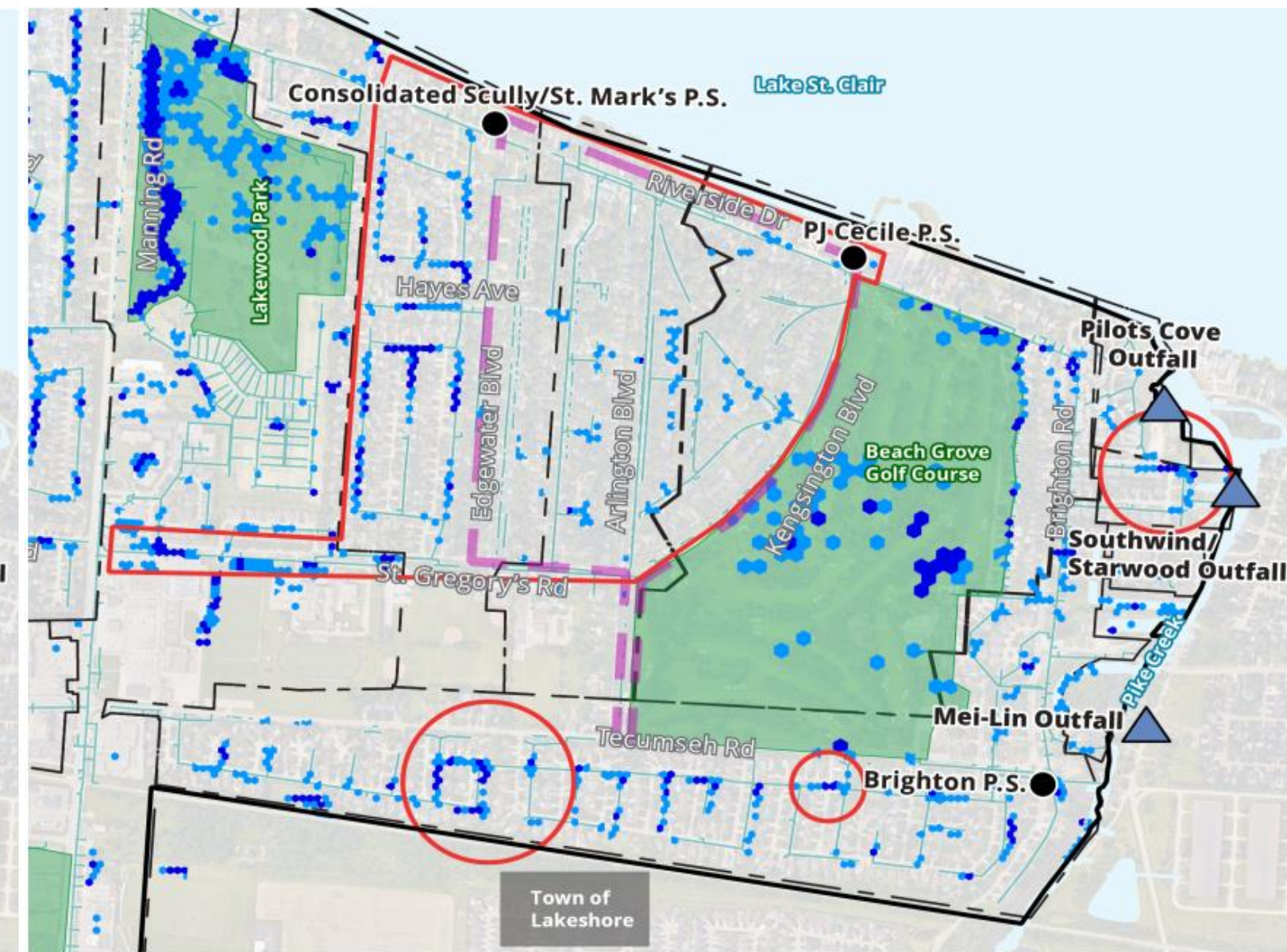
Future Surface Flooding Comparisons

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)



TOWN OF TECUMSEH STORM DRAINAGE MASTER PLAN

**1:100 YEAR +40% EXISTING
VS FUTURE CONDITION
SURFACE FLOODING -
PROBLEM AREA E-1
FIGURE 11.22**



| | | | |
|--|--|--|--|
| | SEWER GRAVITY OUTFALL | | REGIONAL SURFACE FLOODING PROBLEM AREAS |
| | PUMP STATION (P.S.) | | ISOLATED SURFACE FLOODING PROBLEM AREAS |
| | PUMP STATION SERVICE AREA | | PARKLAND / PRIVATE PROPERTY NOT TO BE ANALYZED |
| | STUDY AREA | | SURFACE PONDING BETWEEN 0.15m - 0.30m DEPTH |
| | SURFACE PONDING WITHIN AREA MAINTAINED BELOW 0.30m | | SURFACE PONDING > 0.30m DEPTH |



MAP CREATED BY: SZ
MAP CHECKED BY: RTL
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: \\DILLON.CA\DILLON_DPS\LONDON\ LONDON CAD\GIS\VISUAL COMMUNICATIONS D\ MXD TEMPLATES\ BEIGE - 11X17 LANDSCAPE - LEGEND BOTTOM.MXD



PROJECT: 16-4880 STATUS: FINAL DATE: JUNE 2019

Schedule B Project Summary

The Tecumseh Storm Drainage Master Plan followed the requirements of Approach 2 of the Class EA, which addresses the requirements for specific Schedule B projects.

The following **Schedule B** projects were identified in this study:

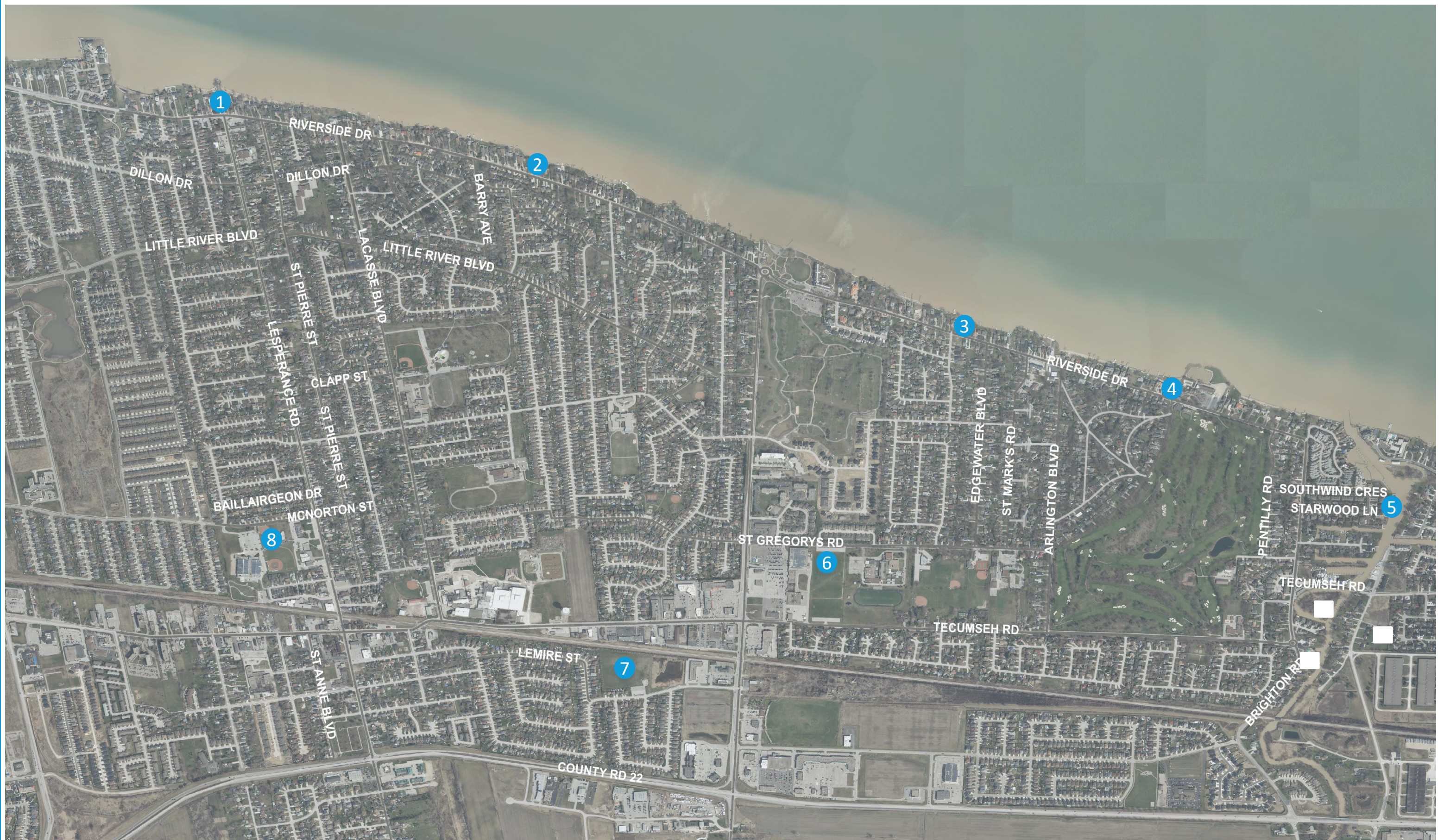
Pump Station Improvements

- Upgrade and replace the existing Lesperance Road pump station with a new pump station and outlet;
- Expand the West St. Louis pump station;
- Upgrade and replace the St. Mark's and Scully pump stations with a new consolidated pump station at the existing Scully pump station site;
- Upgrade and replace the existing PJ Ceceile pump station with a new pump station and outlet; and
- Construct a new storm pump station on Southwind Crescent.

Underground/Aboveground Storage

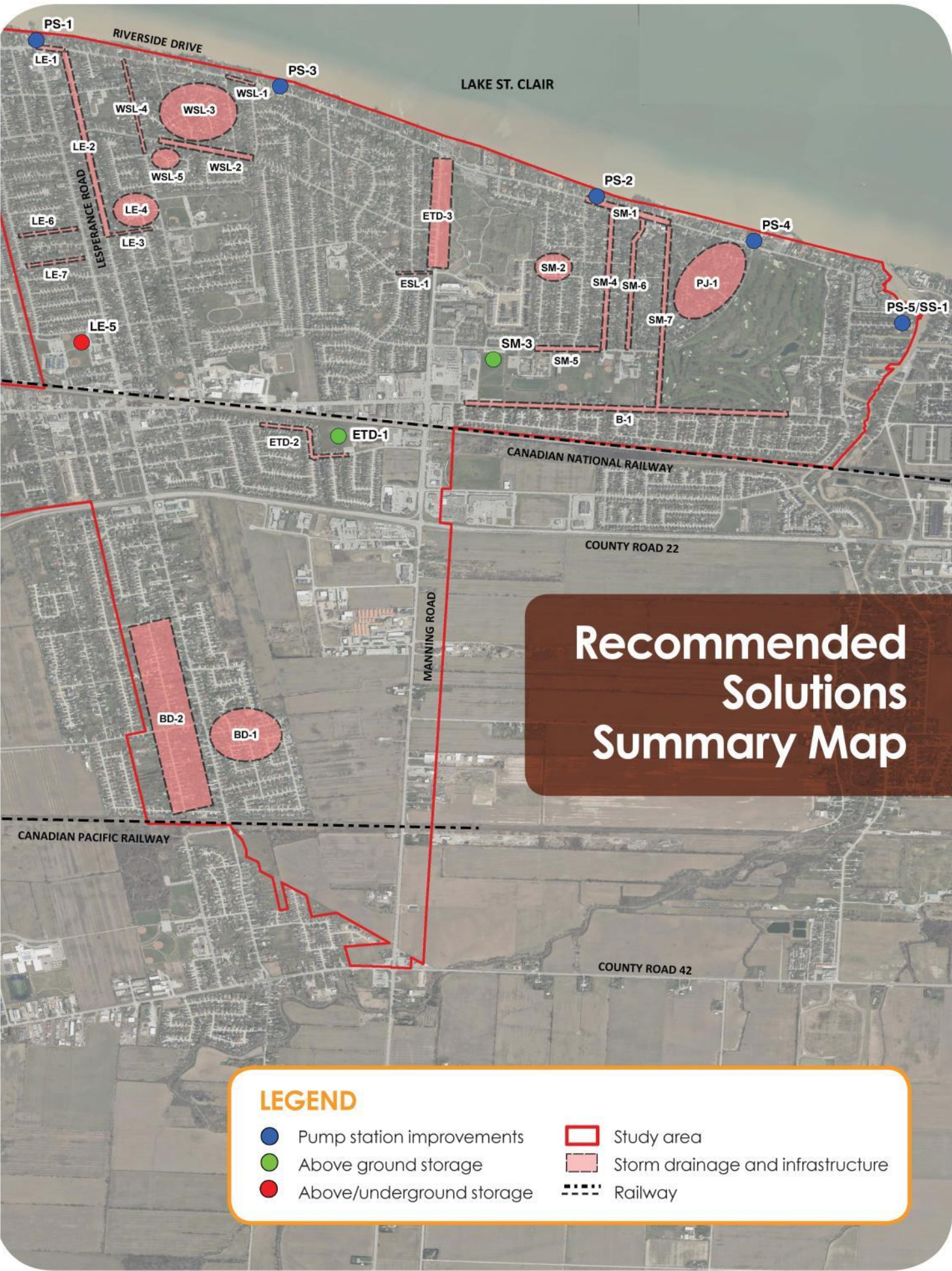
- Incorporate surface storage within the "Tecumseh Soccer Fields" owned by École Secondaire L'Essor;
- Incorporate surface storage within Buster Reaume Park; and
- Incorporate underground/surface storage behind the Tecumseh Town Hall property.

Schedule B Project Location Map



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

Estimated Costs of Recommended Surface Flooding Solutions



| RECOMMENDED IMPROVEMENTS | ESTIMATED COST |
|--|-------------------------|
| Lesperance Pump Station Service Area | \$30.53 MILLION |
| West St. Louis Pump Station Service Area | \$20.95 MILLION |
| East St. Louis And East Townline Drain Pump Station Service Area | \$6.97 MILLION |
| Baillargeon Drain Service Area | \$7.73 MILLION |
| Consolidated Scully/St. Mark's Pump Station Service Area | \$22.70 MILLION |
| P. J. Cecile Pump Station Service Area | \$12.86 MILLION |
| Brighton Pump Station Service Area | \$3.80 MILLION |
| Southwind/Starwood Service Area | \$1.05 MILLION |
| TOTAL | \$106.59 MILLION |

Notes:

- Cost estimates include:
 - Removal and restoration of one pavement lane width.
 - Flow control chambers, temporary pipes and pumps, decommissioning and demolishing of old pump stations, and new outfalls or improvements to existing outfalls.
- Cost estimates do not include:
 - Other infrastructure improvements and utility relocations.
 - Applicable taxes
 - Property acquisitions

Next Steps

- UPDATE the Final Storm Drainage Master Plan documents based on Town Council Comments;
- RECEIVE Town Council Approval to issue Notice of Completion; and
- PUBLISH the Executive Summary, Environmental Assessment Document (VOLUME 1) and Technical Modelling Report (VOLUME 2) for a 30-day public review period.

THANK YOU