Mer Bleue Elementary School

Site Servicing and Stormwater Management Report

Prepared for:
Ottawa Catholic School Board

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1 Introduction

Stantec Consulting Ltd. (Stantec) has been commissioned by the Ottawa Catholic School Board (OCSB) to prepare the following Servicing and Stormwater Management Report for Mer Bleue Elementary School within Phase 2 of the Summerside South Subdivision, within the Mer Bleue Urban Expansion Area 10 (MBUEA). The subject property is located at the south end of Allium Street at the intersection with the proposed Street 10 in Phase 2 of the Summerside South Subdivision in the City of Ottawa. The school block is bordered by Phases 2-3 of the Summerside South Subdivision to the west, south, and east, and Street 10 and the existing Summerside West Subdivision to the north, as shown highlighted in orange in Figure 1.1.

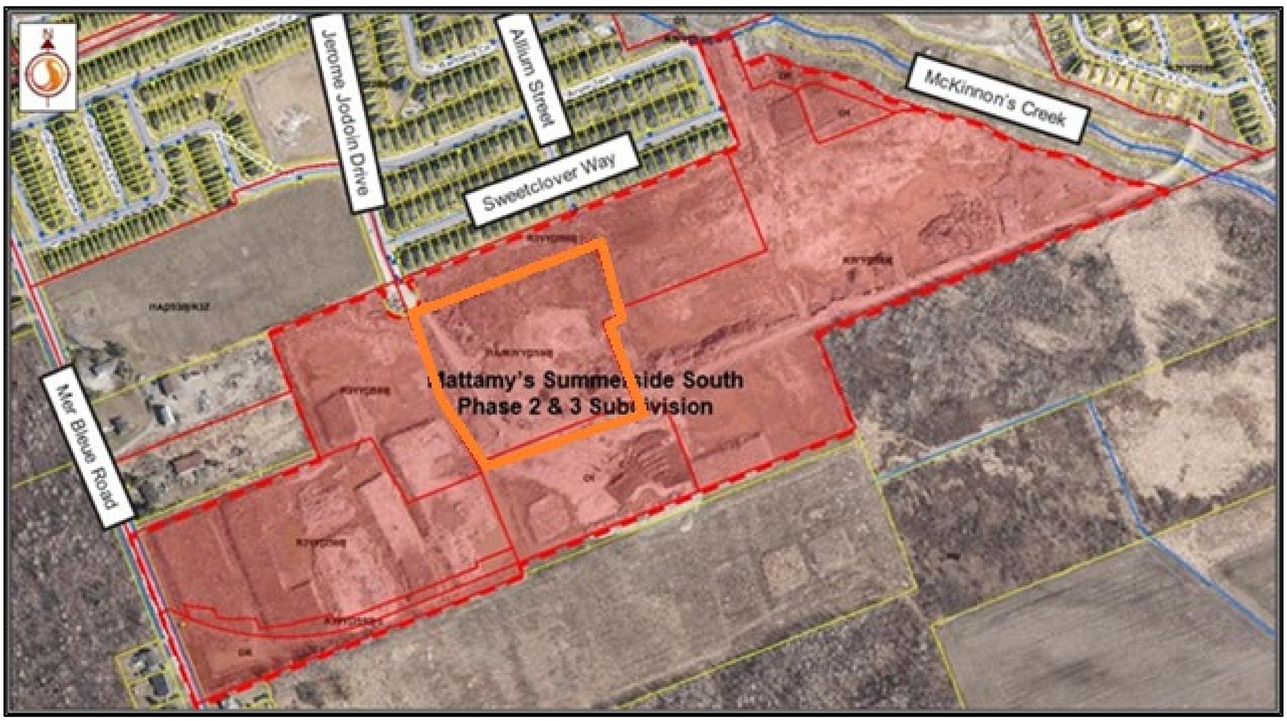


Figure 1.1: Key Map of Phases 2-3 of Summerside South Subdivision

The site is approximately 2.6 ha and consists of the proposed elementary school and related amenities.

Stantec Consulting Ltd. has been retained by the OCSB to provide a detailed servicing design for the school block. The intent of this report is to provide a servicing scenario that is free of conflicts and utilizes the existing and future infrastructure in accordance with the applicable background studies.

2 References

The following documents were referenced in the preparation of this report:

- Mer Bleue Urban Expansion Area 10, Master Servicing, IBI Group, April 2017.
- Functional Servicing Report for Summerside West – Phase 4/5/6 (2464 Tenth Line Road), David Schaeffer Engineering Ltd., December 4, 2018.
- Sump Pump Feasibility Review – Summerside West Residential Development Phases 4,5 and 6, Tenth Line Road – Ottawa, Ontario, Paterson Group Inc., May 24, 2018.
- Mer Bleue Community Design Plan – Tenth Line PS & Wastewater Servicing: Pump Station Capacity Assessment, Stantec Consulting Ltd., August 26, 2016.
- Geotechnical Investigation – Proposed Residential Development – Summerside West Phases 4, 5 and 6, Tenth Line Road, Ottawa, Paterson Group Inc., May 14, 2018.
- Hydraulic Capacity and Modeling Analysis Summerside West Development Phase 2/3 – Technical Memorandum, GeoAdvice Engineering Inc., March 28, 2016.
- Stormwater Management Report for Summerside West Phases 2 and 3, J.F. Sabourin and Associates Inc., December 2016.
- City of Ottawa Sewer Design Guidelines, City of Ottawa, 2025 (and all subsequent technical bulletins).
- City of Ottawa Design Guidelines – Water Distribution, Infrastructure Services Department, City of Ottawa, First Edition, 2025 (and all subsequent technical bulletins).
- Mer Bleue Urban Expansion Area – Northern Stormwater Management Facility, IBI Group, October 15, 2021.
- Summerside South Phases 2-3 – Servicing and Stormwater Management Report, Stantec, 2026.

3 Water Servicing

3.1 Existing Conditions

The proposed development is located within Zone 2E of the City of Ottawa's water distribution system. This zone is fed by two booster pumping stations, with the Innes Road elevated storage tank providing balancing storage for peak flows and demands. Existing watermains adjacent to the site comprise of the existing 200 mm diameter watermain stubs within the south ends of Allium Road and Jerome Jodoin Drive constructed as part of Summerside West Subdivision. Both watermain stub extensions and the proposed 200 mm diameter watermain in Street 10 fronting the school block will be extended in the interim to suit construction of the proposed development in their ultimate locations in advance of Phases 2-3 of the subdivision.

3.2 Design Criteria

3.2.1 Potable Water Demands and Pressures

Potable water demands are estimated using the City of Ottawa Water Distribution Guidelines (2025) (see detailed calculations in **Appendix A.1**).

Institutional Area Demand

Average Daily (AVDY)	28,000 L/gross ha/day
Maximum Daily (MXDY)	1.5 × AVDY
Peak Hour (PKHR)	1.8 × MXDY

Allowable Water Pressure

MXDY Flow	345 kPa (50 psi) to 552 kPa (80 psi)
PKHR Flow Minimum	276 kPa (40 psi)
MXDY + Fire Flow	140 kPa (20 psi)
Maximum Allowable for Occupied Area	552 kPa (80 psi)

3.2.2 Fire Flow and Hydrant Capacity

Fire flow requirements are assessed using the Fire Underwriters Survey (FUS) methodology (2020), while fire hydrant capacity is outlined in NFPA Table 1 Table 18.5.4.3 in Appendix I of the City of Ottawa Technical Bulletin ISTB-2018-02.

3.3 Proposed Watermain Sizing and Layout

The proposed watermain alignment and sizing for the development is demonstrated on **Drawing SSP-1**. Proposed watermain diameters of 300 mm and 200 mm (nominal) have been used for the development (refer to **Drawing SSP-1**). The Summerside South Phase 2-3 Servicing and Stormwater Management Report (Stantec, 2026) was referenced to identify the required diameter of watermains on proposed sections of Jerome Jodoin, Allium, and Street No. 10 to be advanced ahead of subdivision works and to provide a looped interim network for redundancy. These watermain diameters are required to adequately service the proposed development lands, and the lands to the south which are slated for future residential development.

A looped 200 mm diameter water service is proposed for the development site to provide for a redundant service connection to the proposed school building, as well as to provide a fire hydrant within the school block itself for service to future portables located south of the main school building, meeting requirements of the City of Ottawa's Water Distribution Guidelines.

3.3.1 Water Demand

The calculated domestic water consumption for the school block is represented in **Table 3.1**:

Table 3.1: Water Demands

Area (ha)	AVDY (L/s)	MXDY (L/s)	PKHR (L/s)
2.60	0.8	1.3	2.3

3.4 Level of Service

3.4.1 Allowable Pressures

The City of Ottawa Water Distribution Design Guidelines state that the desired range of system pressures under normal demand conditions (i.e. basic day, maximum day and peak hour) should be in the range of 350 to 552 kPa (50 to 80 psi) and no less than 275 kPa (40 psi) at the ground elevation in the streets (i.e. at hydrant level). The maximum pressure at any point in the distribution system in occupied areas outside of the public right-of-way is 552 kPa (80 psi). As per the Ontario Building Code (OBC) & Guide for Plumbing, if pressures greater than 552 kPa (80 psi) are anticipated, pressure relief measures are required. The maximum pressure at any point in the distribution system in unoccupied areas shall not exceed 689 kPa (100 psi). Under emergency fire flow conditions, the minimum pressure objective in the distribution system is 138 kPa (20 psi).

3.4.2 Fire Flow

A maximum fire flow of 6,000 L/min (100 L/s) was determined for the school block based on the Fire Underwriters Survey (FUS) requirements using the proposed floor area of 4690 m^2. Refer to **Appendix A.2** for FUS fire flow calculations.

3.5 Hydraulic Analysis

A hydraulic model was built by Stantec using the boundary conditions summarized in sections below.

The anticipated pressures in this development were assessed to meet minimum servicing requirements (average day and peak hour demands). A fire flow analysis was also performed under maximum day conditions. This analysis herein only assesses conditions for the commercial block. Refer to the hydraulic model prepared for Phases 2 and 3 of the Summerside South Subdivision (Stantec, 2026) for details of the watermain network within the subdivision.

3.5.1 Boundary Conditions

The boundary conditions below were provided by City of Ottawa staff based on previously supplied domestic demand and fire flow demand rates for Phases 2-3 of the Summerside South subdivision and are anticipated to be conservative with respect to interim conditions prior to additional residential unit demand from the subdivision itself. Boundary conditions were based on computer model simulations and are summarized in **Table 3.2**. Boundary condition requests and correspondence with the City for the subdivision at large are included in **Appendix A.3**.

Table 3.2: Boundary Conditions

Location	AVDY (m)	PKHR (m)	MXDY+FF* (217 l/s) (m)	MXDY+FF (267 l/s) (m)
Jerome Jodoin	130.3	126.2	124.3	122.7
Allium	130.3	126.1	119.3	115.3

*Note: Boundary condition applied for model development assumes a significantly higher fire flow demand, which is expected to be conservative with respect to the FUS calculations provided for the proposed school.

3.5.2 Model Development

New watermains were added to the hydraulic model to simulate the proposed distribution system. Hazen-Williams coefficients (“C-Factors”) were applied to the new watermain in accordance with the City of Ottawa’s Water Distribution Design Guidelines (**Table 3.3**).

Table 3.3: C-Factors Applied Based on Watermain Diameter

Pipe Diameter (mm)	C-Factor
150	100
200 to 250	110
300 to 600	120
Over 600	130

3.5.3 Hydraulic Modeling Results

The watermain hydraulic analysis was conducted using the EPANET2.2 engine of PCSWMM. The hydraulic analysis assesses the water network under average day, peak hour, and maximum day plus fire flow conditions using the boundary conditions provided by the City of Ottawa and the Summerside South Phases 2-3 Servicing and Stormwater Management Report.

3.5.3.1 Average Day Demand (AVDY)

The hydraulic model results show that the maximum pressures under AVDY conditions are anticipated to be approximately 421 kPa to 417 kPa (61.2 psi to 60.4 psi). These pressures fall within the normal serviceability pressure range of 350 kPa to 552 kPa (50 psi to 80 psi) and no less than 275 kPa (40 psi) per the City of Ottawa Water Distribution Design Guidelines.

Figure 3.1: Maximum Pressures During AVDY Conditions

3.5.3.2 Peak Hour Demand (PKHR)

The hydraulic model results show that the minimum pressures under PKHR conditions are anticipated to be approximately 381 kPa to 376 kPa (55.3 psi to 54.5 psi). These pressures fall within the normal serviceability pressure range of 350 kPa to 552 kPa (50 psi to 80 psi) and no less than 275 kPa (40 psi) per the City of Ottawa Water Distribution Design Guidelines.

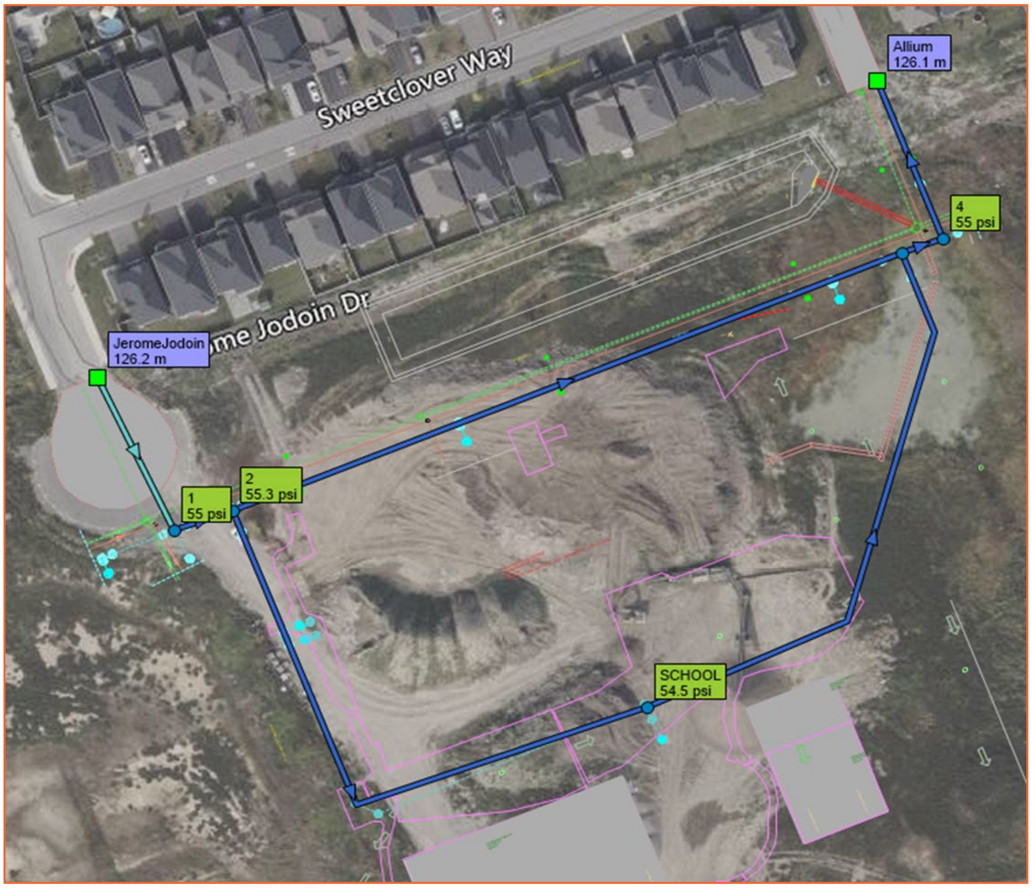


Figure 3.2: Minimum Pressures During PKHR Conditions

3.5.3.3 Maximum Day Plus Fire Flow (MXDY + FF)

An analysis was carried out using the hydraulic model to determine if the proposed development, under maximum day demands, could achieve the required fire flow of 6,000 L/min (100 L/s) in proximity to the proposed school. It was determined that the proposed watermain layout could provide the required fire flow while maintaining a residual pressure of 138 kPa (20 psi). This was accomplished using a steady-state maximum day demand scenario along with the automated fire flow simulation feature of the software. Fire flow analysis was only performed for the school block.

The residual pressures and available flows for the fire flow analysis are demonstrated in **Figure 3.3**. Results of the hydraulic modeling are included in **Appendix A**.

Figure 3.3: Residual Pressures and Available Fire Flows during MXDY Conditions (100 L/s)

4 Wastewater Servicing

4.1 Background

As outlined in the ***Summerside South Phases 2-3 Servicing and Stormwater Management Report*** (Stantec, 2026), the wastewater servicing strategy for Phase 2-3 of the SSS development inclusive of the proposed school block is to convey sanitary peak flows to the Tenth Line Pumping Station (TLPS) via a free flow gravity trunk sewer (Trunk 2) as demonstrated in the sanitary drainage area plan for the subdivision attached in **Appendix B.1**.

As downstream sewers within Summerside South Phase 2 as well as receiving sewers incorporating the crossing under McKinnon's creek to the TLPS via Tenth Line are not anticipated to be available at time of construction of the proposed school block, an interim servicing scenario has been developed to direct proposed sanitary sewers northwards through existing sewers as part of the Summerside West subdivision and ultimately to the TLPS via Allium Street.

4.2 Design Criteria

As outlined in the City's Sewer Design Guidelines, the following design parameters were used to calculate estimated wastewater flow rates and to preliminarily size on-site sanitary sewers:

- Minimum Full Flow Velocity – 0.6 m/s
- Maximum Full Flow Velocity – 3.0 m/s
- Manning's roughness coefficient for all smooth walled pipes – 0.013
- Extraneous Flow Allowance – 0.33 L/s/ha
- Institutional Flows – 28,000 L/ha/day
- Harmon Correction Factor – 0.8
- Maintenance hole Spacing – 120 m
- Minimum Cover – 2.5 m

In addition, an institutional area peaking factor of 1.5 was assigned for institutional areas that contribute greater than 20% of the total tributary area to each sanitary sewer per Ottawa's Sewer Design Guidelines.

4.3 Proposed Servicing

The school block is adjacent to the Summerside West Subdivision, which is currently serviced by a network of gravity sewers directing wastewater flows easterly to the Tenth Line Pumping Station. Sanitary flows within the school block are to flow northerly and easterly and connect to the sanitary sewer network established in Summerside West, while also maintaining a viable ultimate flow route through Summerside South and the future sanitary trunk sewer as indicated in both **Drawing SA-1** and Figure 8.2 of the Mer Bleue MSS (IBI, 2017). respectively. The proposed sanitary sewer design sheet and associated Sanitary Drainage Area Plan can be found in **Appendix B.1**. The proposed sanitary sewer design indicates one connection point to the 200 mm diameter sanitary sewer connecting to Allium Drive.

The connection point and associated flow are summarized in **Table 4.1** below. Sanitary flows have been based on the conservative assumption of 28,000 L/gross ha for daily domestic sewage flow.

The Phases 2-3 Summerside South Subdivision wastewater analysis assigned a sanitary peak flow of 2.1 L/s for the sanitary sewer stub connecting the school block to downstream sewers within the subdivision, as detailed in the subdivision sanitary sewer design sheet in **Appendix B.2**.

Table 4.1: Summerside South Subdivision Phases 2-3 Allocated Wastewater Flow to School Block Sanitary Sewer Stub

Stub ID	Sanitary Drainage Area ID	Institutional Area (ha)	Total Flow (L/s)	Sewer Dia. (mm)
47	I47AA	2.6	2.1	200

Downstream sewers within Summerside West were also assessed for the interim condition where flows are directed northwards to sewers within Allium. Previously approved design sheets as part of **Appendix B.2** for the region identify that the proposed development can be accommodated within the downstream sewer network.

5 Stormwater Management

The following sections describe the stormwater management (SWM) design for the Mer Bleue Elementary School block.

5.1 Objectives

The objective of this stormwater management plan is to determine the measures necessary to control the quantity/quality of stormwater released from the proposed development to criteria established by the Phases 2-3 Summerside South subdivision report (Stantec, 2023) for the area as well as other applicable background documents, to verify that downstream stormwater management measures within Summerside West are capable of providing quantity/quality control for the development in the interim where such works within Phases 2-3 of Summerside South are unavailable, and to provide sufficient detail for approval and construction.

5.2 Design Constraints and Regulatory Requirements

The following summarizes the SWM criteria and constraints that will govern the detailed design of the proposed development as per the governing background studies.

- Design using the dual drainage principle.
- 'Enhanced' level of treatment (80% long term TSS removal) is to be provided in the downstream Mer Bleue Northern SWM Facility (IBI Group, 2021).
- Maximum 100-year water depth of 0.35 m in road sags, including overflow spill depth.
- 100-year hydraulic grade line (HGL) to be a minimum 0.30 m below lowest building underside of footing elevation.
- Design inlets to capture at minimum the 2-year peak flow with a minimum inlet time of 10 minutes and using 2004 City of Ottawa IDF parameters.
- Provide adequate emergency overflow conveyance.
- Limit minor and major system outflows to that identified within the Summerside South Phases 2-3 Servicing and Stormwater Management Report (Stantec, 2026).
- Limit minor system outflows to interim servicing path northwards through Summerside West to that available within existing downstream storm sewer systems.
- Provide quantity storage on-site to control system outflows to the above noted level.
- Recommend erosion control measures to define requirements for construction level documents.

5.2.1 Allowable Release Rate

Allowable release rates for the site are based on the *Summerside South Phase 2-3 Servicing and Stormwater Management Report* (Stantec, 2026), section 5.3.4.1 in consideration of a 2.61 ha site at a runoff coefficient of 0.70. Peak release rates for the site are summarized in **Table 5.1** below.

Table 5.1: Allowable Release Rates

Storm Event	Allowable Inflow (L/s)	Inflow MH
2-Year, 3 Hour Chicago	451	STM 147
100-Year, 3 Hour Chicago	451	STM 147

The proposed site is expected to advance to construction prior to full build-out of the downstream Summerside South Phase 2-3, inclusive of the ultimate storm sewer outlet to the east. As such, an interim scenario is proposed where a portion of Street 10 is constructed in advance of the remaining subdivision roadways. The storm sewer within Street 10 inclusive of street catch basins and ICDs is proposed to be installed as per the subdivision report and drawings for Summerside South. The storm sewer outlet within Street 10 at the eastern limit of construction is proposed to be bulkheaded, with a relief path provided to an interim dry pond located north of Street 10 encompassing the location of ultimate residential lots for the subdivision. The dry pond outlet is proposed to be directed to storm sewers along Allium Street northwards through the existing Summerside West Phases 2-3, towards the existing Avalon West SWM Facility.

In reviewing the Stormwater Management Report for Summerside West Phases 2 and 3 (JFSA, 2016), Rational Method design sheets point to the sewer at Allium Street to have an available conveyance capacity of at minimum 28L/s (sewer between nodes 20 and 23). This stretch of sewer is also does not surcharge under the 100-year modeled storm scenario, with sewer sections downstream maintaining ample freeboard from unit underside of footings. As such, in the interim condition it is proposed that the dry pond outlet rate to the Allium sewer be restricted to **28L/s** under all storm events up to and including the 100-year storm. As the Allium sewer is noted as free-flowing under the 100-year storm event, HGLs noted within the sewer are entirely a result of inflow from connected CBs within Allium, and do not signify the need for consideration of downstream tailwater conditions for the purposes of interim condition modeling.

5.3 Stormwater Management Plan

The proposed school block encompasses 2.6 ha of land at approximately 55% imperviousness (as determined by conservative estimate of hard surface coverage measured from site servicing plans). Storm sewers from the site will outlet to the subdivision storm sewer system on Street 10 west of Allium.

Inlet control devices at low points within paved areas will be used to restrict inflow rates to suit the allowable release rate, and ensure no surface ponding during the 2-year storm event.

Emergency overland flow routes from the majority of the block will be directed north onto Street 10, with the exception of the southwestern predominantly grassed portion of the site which will be directed west to Jerome Jodoin Drive as shown on **Drawing SD-1.**

As noted in the section above, a dry pond has been proposed north of Street 10 to provide additional quantity control in the interim condition in advance of construction of downstream receiving sewers east of the proposed site. Interim sewers within Street 10 terminating at the eastern limit of construction are designed with a downstream structure open top of grate elevation of 86.0 to allow for an emergency overland outlet through future subdivision lands to the east from the proposed interim dry pond and connected sewers in the event of blockage of the orifice outletting to sewers within Allium Street.

5.3.1 Modeling Rationale

A comprehensive hydrologic modeling exercise is completed with PCSWMM, accounting for the estimated major and minor systems to evaluate the storm sewer infrastructure. The use of PCSWMM for modeling of the site hydrology and hydraulics allows for an analysis of the systems response during various storm events. Surface storage estimates are based on the final grading plan design (see **Drawing GP-1**). The following assumptions are applied to the detailed model:

- Hydrologic parameters as per the City of Ottawa Sewer Design Guidelines (OSDG), including Manning's 'n', and depression storage values.
- Subcatchment infiltration parameters using the Horton Infiltration method as per the Ottawa Sewer Design Guidelines.
- The following storm distributions are assessed: 3-hour Chicago Storm distribution for the 2, 5, and 100-year analysis, the 24-hour SCS Storm distribution for the 100-year event. Design storm events are as described by the OSDG.
- To 'stress test' the system a 'climate change' scenario is created by adding 20% of the individual intensity values of the 100-year Chicago storm event at each specified time step.
- Percent imperviousness is calculated based on actual soft and hard surfaces on each subcatchment. Where applicable imperviousness is converted to equivalent Runoff Coefficient using the relationship C = (Imp. x 0.7) + 0.2
- Subcatchment areas are defined from high-point to high-point where sags occur. Subcatchment width is determined by multiplying street segment length x 2 (length of overland flow path measured from high-point to high-point) for street (double-sided) catchments, multiplying by 1.5 for single-loaded roads, multiplying by 1.0 for single-sided catchments, or by multiplying the subcatchment area by 225m where a street segment flow path has not otherwise been defined.
- Number of catchbasins (CBs) based on proposed servicing plan (**Drawing SSP-1**)
- CB inflow restricted with inlet-control devices (ICDs) as necessary to maintain inflow target rate, maximize use of surface storage, and eliminate standing water during the 2-year event (5-year event level of service for collector roads). Public roadway CBs are not to be interconnected.
- Rim elevation values are extended 0.4m above the proposed ground surface for the modelling analysis such that when the water level rises above the rim elevation during the major storm events, major system routing occurs without model losses noted within the 'flooding' section of model results.
- For storage on roads with defined cross-sections, active storage is modeled based on actual conduit flow using cross-sections as detailed on the civil drawings.

5.3.1.1 SWMM Dual Drainage Methodology

The proposed site is modeled in PCSWMM as a dual conduit system (see **Figure 8**), with: 1) circular conduits representing the sewers & junction nodes representing maintenance holes (MH); 2) irregular conduits using street-shaped cross-sections or weirs to represent the saw-toothed overland road network from high-point to low-point, weirs representing spill elevations from parking ponding areas, and storage nodes representing catch basins. The dual drainage systems are connected via orifice link objects (or outlets) from storage node (i.e., CB) to junction (i.e., MH), and represent ICDs. Subcatchments are linked to the storage node representing the CB to direct runoff hydrographs to the minor system as the initial analysis condition.

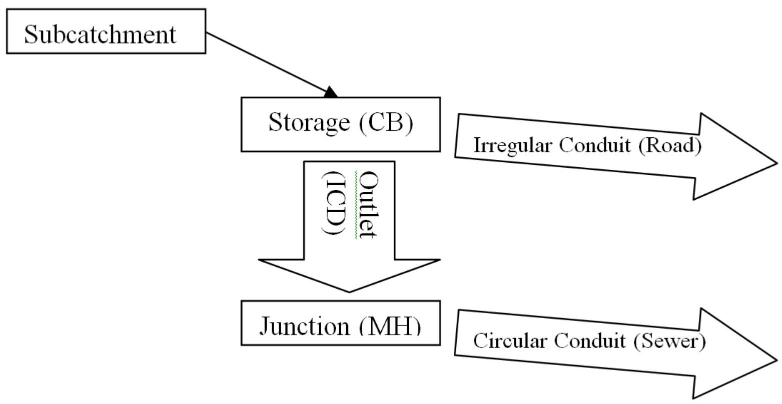


Figure 4: Schematic Representing Model Object Roles

Storage nodes are used in the model to represent CBs as well as major system junctions. For storage nodes representing CBs, the invert of the storage node represents the invert of the CB and the rim of the storage node is set at above the actual proposed ground elevation to allow for representation of depth of surface water over the storage node (to be limited to a maximum of 0.35m during the 100-year event). The additional depth is added to rim elevations to allow routing from one surface storage to the next. Storage nodes that represent CBs at sags, are surrounded by two or more transects that represent the road segments forming the sag. The storage value assigned to the storage node represents either the volume available within the MH structure, or surface ponding in parking areas where no regular street cross-section exists. If the available storage volume in a storage node is exceeded, flows spill above the storage node and into the sag in the irregular conduits (representing roads). The volume stored within the road sags includes the total static volume and the ponded depth above the node representing the dynamic flow depth. Flow storage volumes exceeding the sag storage available in the transect (roadway) will spill at the downstream highpoint into the next sag and continue routing through the system until ultimately flows either re-enter the minor system or reach the outfall of the major system. Storage nodes representing high points are assigned an invert elevation equal to the transect invert (spill elevation at edge of pavement) and a rim elevation equal to the maximum allowable flow depth elevation above the storage node (equal to the spill elevation at edge of pavement plus an additional 0.40 m). A storage value of zero is assigned to the high point nodes to disable linear volume calculations. No storage is considered within storage nodes at high points. In this manner, storage accumulates according to the actual ponding depths before spilling along the roadway conduit, and to the next downstream road conduit.

ICDs as represented by orifice/outlet links use a user-specified diameter and discharge coefficient or functional head relationship taken from manufacturer's specifications for the chosen ICD model.

Subcatchment imperviousness is calculated via impervious area measured from **Drawing SSP-1**.

5.3.2 Input Parameters

Drawings SD-1, 2 and 3 summarize the discretized subcatchments used in the analysis of the proposed site and outlines the major overland flow paths.

Appendix C2 summarizes the modeling input parameters and results for the subject area; a PCSWMM layout figure and an example input file is provided for the 100-year 3hr Chicago storm. All other input files and results of storm scenarios are within the electronic model files located on the CD provided with this report. Although this analysis is performed using PCSWMM, which is a front-end GUI to the EPA-SWMM engine, model data files can be examined in any program which can read EPA-SWMM files version 5.1.014.

5.3.2.1 Hydrologic Parameters

Table 5-2 presents the general subcatchment parameters used for the model:

Table 5-2: General Subcatchment Parameters

Parameter	Value
Infiltration Method	Horton
Max. Infiltration Rate (mm/hr)	76.2
Min. Infiltration Rate (mm/hr)	13.2
Decay Constant (1/hr)	4.14
Drying Time (d)	7
N Impervious	0.013
N Pervious	0.25
Dstore Imperv. (mm)	1.57
Dstore Perv. (mm)	4.67
Zero Imperv. (%)	0

Table 5-3 presents the individual parameters that vary for each of the proposed subcatchments:

Table 5-3: Subcatchment Parameters

Name	Area (ha)	Width (m)	Slope (%)	Imperv. (%)	Runoff 'C'
BLDGA	0.483	108.8	1.5	100.0	0.90
C134A	0.073	34.0	2.0	71.4	0.70
L113B2	0.028	62.6	4.0	28.6	0.40
L129A	0.116	64.0	2.0	64.3	0.65
L129A2	0.052	54.4	4.0	7.1	0.25
L133A	0.106	61.0	2.0	64.3	0.65
L133A2	0.057	60.0	4.0	14.3	0.30
L133B	0.104	57.0	2.0	71.4	0.70
L148A	0.055	36.0	2.0	71.4	0.70
L200A	0.096	46.1	2.0	85.7	0.80
L200B	0.108	47.1	2.0	82.9	0.78
L201A	0.095	38.4	2.0	100.0	0.90
L202A	0.113	59.7	2.0	78.6	0.75
L203A	0.322	89.1	3.0	71.4	0.70
L203B	0.020	20.1	3.0	85.7	0.80
L203C	0.164	58.0	3.0	85.7	0.80
L205A	0.354	79.7	2.0	14.3	0.30
L206A	0.319	71.7	3.0	32.9	0.43
L206B	0.335	75.4	2.0	2.9	0.22
POND	0.457	165.0	33.0	0.0	0.20
UNC-1	0.044	45.2	4.0	35.7	0.45
UNC-2	0.015	15.6	3.0	95.7	0.87

Table 5-4 summarizes the storage node parameters used in the model. Rim elevations for each node correspond to the rim elevation of the associated area CB plus maximum depth of storage plus an additional buffer depth to allow for potential conveyance of overland flow across high points in the road profile.

Table 5-4: Storage Node Parameters

Name	Invert (m)	Rim (m)	Depth (m)
C134A-S	85.97	87.75	1.78
C134A-S1	87.56	87.96	0.4

Name	Invert (m)	Rim (m)	Depth (m)
L129A-S	85.71	87.49	1.78
L129A-S1	87.44	87.84	0.4
L133A-S	85.75	87.53	1.78
L133A-S1	87.39	87.79	0.4
L133B-S	85.7	87.48	1.78
L133B-S1	87.33	87.73	0.4
L147A-S1	87.25	87.65	0.4
L148A-S	85.7	87.48	1.78
L148A-S1	87.37	87.77	0.4
L200A-S	85.85	87.73	1.88
L200B-S	86.01	87.89	1.88
L201A-S	85.99	87.87	1.88
L202A-S	86	87.88	1.88
L203A-S	85.96	87.84	1.88
L203B-S	86.27	88.15	1.88
L203C-S	86.14	88.02	1.88
POND-S	84.35	86	1.65

5.3.2.2 Hydraulic Parameters

As per the OSDG, Manning's roughness values of 0.013 are used for sewer modeling and overland flow corridors representing roadways. Subcatchment width is determined as described in **Section 5.3.2**. Subcatchment slopes were applied based on the proposed grading plan for the site and to correspond to the Summerside South Phase 2-3 Servicing and Stormwater Management Report for catchments along Street 10.

Storm sewers are modeled to confirm flow capacities and hydraulic grade lines (HGLs) in the interim condition with consideration of flow contributions from Street 10 until such a time as the remaining subdivision and downstream storm sewers can be completed. The detailed storm sewer design sheet for on-site works is included in **Appendix C.1**. As the interim condition represents a dry pond with active storage elevation that extends into the on-site storm sewer system, HGLs in the interim condition are considered to be conservative with respect to the ultimate buildout where storm sewer outflow is directed west along Street 10.

Maintenance hole loss coefficients are applied as conduit exit losses with values assigned per Appendix 6-B of the OSDG assuming no flow deflector in the maintenance hole.

Table 5-5 below presents the parameters for the outlet and orifice link objects in the model, which represent ICDs or flow-controlled areas. All orifices are assigned a discharge coefficient of 0.572 to correspond to manufacturer supplied discharge curves for IPEX Tempest HF/MHF models. Should an approved equivalent model be required, the peak outlet rate of the selected model is required to match that of the modeled ICD at the maximum head noted in the model results portion of this report.

Table 5-5: Orifice Parameters

Name	Tributary Area ID	Minor System Node	Type	Diameter (m)
204-O	L205A, L206A, L206B	204	CIRCULAR	0.127
C134A-IC1	C134A	C134A-S	CIRCULAR	0.083
C134A-IC2	C134A	C134A-S	CIRCULAR	0.083
L133A-IC2	L133A, A2	L133A-S	CIRCULAR	0.083
L133B-IC2	L133B, B2	L133B-S	CIRCULAR	0.083
L129A-IC1	L129A, A2	L129A-S	CIRCULAR	0.083
L129A-IC2	L129A, A2	L129A-S	CIRCULAR	0.083
L133A-IC1	L133A, A2	L133A-S	CIRCULAR	0.083
L133B-IC1	L133B, B2	L133B-S	CIRCULAR	0.083
L148A-IC1	L148A	L148A-S	CIRCULAR	0.083
L148A-IC2	L148A	L148A-S	CIRCULAR	0.083
L200A-O	L200A	L200A-S	CIRCULAR	0.095
L200B-O	L200B	L200B-S	CIRCULAR	0.095
L201A-O	L201A	L201A-S	CIRCULAR	0.095
L202A-O	L202A	L202A-S	CIRCULAR	0.095
L203A-O	L203A	L203A-S	CIRCULAR	0.178
L203B-O	L203B	L203B-S	CIRCULAR	0.083
L203C-O	L203C	L203C-S	CIRCULAR	0.127
POND-O	POND	POND-S	CIRCULAR	0.108

5.3.2.3 Rooftop Storage

It is proposed to retain stormwater on the building rooftop by installing restricted flow roof drains. The following calculations assume the roof will be equipped with Watts Accutrol Weir restricted roof drains.

The Watts roof drain weir data has been used to calculate a practical roof release rate and detention storage volume for the rooftops. It should be noted that the Watts drains have been used as an example only, and that other products may be specified for use, provided that the total roof drain release rate is restricted to match the maximum rate of release indicated in Table 5-2, and that sufficient storage is provided to meet (or exceed) the resulting volume of detained stormwater. Storage volume and controlled release rates are summarized in **Table 5.6**, and details for the Watts drains are provided in **Appendix C.4**.

Table 5.6: Summary of Roof Controls

Area ID	Area (ha)	Depth (mm)	Discharge (L/s)	Volume (m^3)
BLDG A	0.48	146	26.1	179.7

5.3.2.4 Surface Storage

In addition to rooftop storage, it is proposed to detain stormwater on the surface in parking lot areas using inlet control devices (ICDs) in associated catch basins, and also within proposed subdrain trenches to provide drainage for the proposed yard area within the southern quadrant of the site. Additional runoff in excess of the 100-year storm event that exceeds available on-site storage will be directed overland towards adjacent municipal rights-of-way.

Surface ponding volumes applied to the PCSWMM model are outlined in **Drawing SD-1.**

5.3.2.5 Uncontrolled Area

A small portion of the overall site (see areas L133A2, L133B2, L129A2, UNC-1 and UNC-2 on **Drawing SD-1**) could not be graded to enter the site's storm system and as such will drain uncontrolled towards the interim section of Street 10 and ultimate Jerome Jodoin Drive. Peak discharges from uncontrolled areas have been considered in the overall SWM plan and have been balanced through over-controlling proposed site discharge rates to meet target levels for the ultimate condition. Areas L133A2, L133B2, and L129A2 have been incorporated into the major system for Street 10, and have negligible effects on ponding depths in the area.

Table 5.7 summarizes the 2-year and 100-year uncontrolled release rates from the proposed site.

Table 5.7: Peak Uncontrolled 2-Year and 100-Year Release Rate

Area ID	Area (ha)	Tc (min)	2-Year Release (L/s)	100-Year Release (L/s)
L129A2	0.05	10	1.1	20.6
L133A2	0.06	10	2.0	23.3
L133B2	0.03	10	2.0	12.5
UNC-1	0.04	10	3.6	19.3
UNC-2	0.01	10	3.0	7.3

5.3.3 Model Results

The following section summarizes the key hydrologic and hydraulic model results. For detailed model results or inputs please refer to the example input file in **Appendix C.2,** model output data in **Appendix C.3**, and the electronic model files provided.

Table 5.8 demonstrates that the proposed stormwater management plan provides adequate attenuation storage to meet the target peak outflow rates for the site under the ultimate condition where sewers downstream of the development within Summerside South have been fully constructed. Anticipated discharge rates from the proposed dry pond directed to the Allium Street sewers are noted in **Table 5.9**.

Table 5.8: Storm Event Peak Discharge Rates (Ultimate)

Discharge Location	2-Year Peak Discharge (L/s)	100-Year Peak Discharge (L/s)	100-Year +20% Peak Discharge (L/s)
STM 147 (Street 10)	195.4	274.8	340.9
Uncontrolled (Ultimate Jerome Jodoin)	6.6	26.6	56.4
Total	**202.0**	**301.4**	**397.3**
Target	**451**	**451**	**-**

Table 5.9: Storm Event Peak Discharge Rates (Interim)

Discharge Location	2-Year Peak Discharge (L/s)	100-Year Peak Discharge (L/s)	100-Year +20% Peak Discharge (L/s)
Allium Storm Sewer	12.7	23.0	24.6
Target	**28**	**28**	**28**
Uncontrolled (Ultimate Jerome Jodoin)	6.6	26.6	56.4

PCSWMM model results for the interim condition 100-Year and 100-Year +20% events identify an HGL at MH 201 of 85.88 and 86.03 respectively. As the proposed school building is to maintain a minimum USF elevation of 86.19, the required freeboard per the Sewer Design Guidelines is achieved. As ultimate condition HGLs within the Street 10 sewer are considerably lower than that of the interim pond high water elevation of 85.85, no issues with maintaining USF freeboard elevations are anticipated under the ultimate buildout scenario.

Table 5-10 presents the maximum total surface water depths (static ponding depth + dynamic flow) above the top-of-grate of catchbasins for the 100-year design storm and climate change storm. Based on the model results, the total ponding depth (static + dynamic) does not exceed the required 0.35m maximum during the 100-year event. Total ponding depths during the climate change scenario are below adjacent building openings and are not expected to impact proposed buildings within the development.

Table 5-10: Maximum Surface Water Depths

Storage Node ID	Rim Elevation (m)	100yr 3hr Chicago		100yr +20% 3hr Chicago	
		Max. Surface HGL (m)	Total Surface Water Depth (m)	Max. Surface HGL (m)	Total Surface Water Depth (m)
C134A-S	87.35	86.16	0.00	86.19	0.00
L129A-S	87.09	85.95	0.00	86.01	0.00
L133A-S	87.13	86.00	0.00	86.04	0.00
L133B-S	87.08	85.94	0.00	86.03	0.00
L148A-S	87.08	85.87	0.00	86.02	0.00
L200A-S	87.23	87.37	0.14	87.44	0.21
L200B-S	87.39	87.52	0.13	87.55	0.16
L201A-S	87.37	87.52	0.15	87.55	0.18
L202A-S	87.38	87.53	0.15	87.58	0.20
L203A-S	87.34	87.55	0.21	87.60	0.26
L203B-S	87.65	86.79	0.00	87.00	0.00
L203C-S	87.52	87.76	0.24	87.79	0.27
POND-S	84.35	85.87	1.52	86.02	1.67

Table 5-11 summarizes the orifice link maximum flow rates and heads across the proposed development for the appropriate 3hr Chicago storm event (found to produce the highest surface water elevations / head at the ICD).

Table 5-11: ICD Results

Outlet Orifice Name	ICD Type	2yr Head (m)	100yr Head (m)	2yr Flow (L/s)	100yr Flow (L/s)
204-O	CIRCULAR 127mm ORIFICE	0.55	1.92	22.5	43.8
C134A-IC1	CIRCULAR 83mm ORIFICE	0.10	0.19	3.3	5.4
C134A-IC2	CIRCULAR 83mm ORIFICE	0.10	0.19	3.0	5.2
L129A-IC1	CIRCULAR 83mm ORIFICE	0.12	0.24	3.9	5.7
L129A-IC2	CIRCULAR 83mm ORIFICE	0.13	0.24	4.0	6.2
L133A-IC1	CIRCULAR 83mm ORIFICE	0.12	0.25	3.0	5.8
L133A-IC2	CIRCULAR 83mm ORIFICE	0.12	0.25	3.8	6.3
L133B-IC1	CIRCULAR 83mm ORIFICE	0.12	0.24	3.1	5.6
L133B-IC2	CIRCULAR 83mm ORIFICE	0.13	0.24	3.2	6.1
L148A-IC1	CIRCULAR 83mm ORIFICE	0.08	0.17	2.8	4.7
L148A-IC2	CIRCULAR 83mm ORIFICE	0.08	0.17	2.8	4.7

Outlet Orifice Name	ICD Type	2yr Head (m)	100yr Head (m)	2yr Flow (L/s)	100yr Flow (L/s)
L200A-O	CIRCULAR 95mm ORIFICE	0.99	1.52	17.4	21.8
L200B-O	CIRCULAR 95mm ORIFICE	1.15	1.51	18.9	21.8
L201A-O	CIRCULAR 95mm ORIFICE	1.28	1.53	20.0	21.9
L202A-O	CIRCULAR 95mm ORIFICE	1.14	1.53	18.8	21.9
L203A-O	CIRCULAR 178mm ORIFICE	0.70	1.59	49.3	77.1
L203B-O	CIRCULAR 83mm ORIFICE	0.11	0.52	3.6	9.5
L203C-O	CIRCULAR 127mm ORIFICE	0.93	1.62	30.0	40.1
POND-O	CIRCULAR 108mm ORIFICE	0.84	1.52	12.7	23.0

5.3.4 Water Quality Objectives

Per the Summerside South Phase 2-3 Servicing and Stormwater Management Report, the site was previously considered as a single subcatchment with a runoff coefficient of 0.70 (71% imperviousness) in confirmation of adequate sizing for quality control within the downstream pond (Mer Bleue Northern SWM Facility) to be constructed for the ultimate buildout scenario. As the proposed site maintains an imperviousness of roughly 55.3%, no issues are anticipated with provision of the required 80% level of quality control within the downstream pond for the ultimate condition. Under the interim condition, controlled runoff from the site is directed to the existing Avalon West SWM Facility which was designed to meet 80% TSS removal efficiency for the existing subdivision. Per excerpts from the SWM report for Summerside West Phases 2-3 included in **Appendix C**, ample additional extended detention storage and permanent pool storage exists within the existing pond to permit quality control of the proposed school block and Street 10 segment in the interim until such a time as sewers downstream of Street 10 can be constructed and outflow diverted to the Mer Bleue Northern SWM Facility.

6 Grading

The proposed block is located within the Summerside South Phase 2 and 3 lands measuring approximately 25.3 ha in area overall. Development lands are formerly undeveloped and grassed agricultural land. The original site elevations are very flat with minimal sloping generally from West to East.

In 2019 the former agricultural site was re-graded as part of the soil preloading program administered by Paterson Group. Western portions of the site are filled with preloading/surcharge piles placed throughout the future lot footprints. The surcharge material placed on the Phase 2-3 lands is being monitored using settlement plates installed and surveyed by Paterson Group. The central portion of the site has been stripped of topsoil and contains stockpiles of both topsoil and native fill. Eastern portions of the site which are anticipated below the permissible grade raise restriction remain at original ground.

The objective of the grading design strategy is to satisfy the site stormwater management requirements, adhere to permissible grade raise restrictions (see Section 9.0 for details), and provide for minimum cover requirements for storm and sanitary sewers. The grading design also follows the recommendations outlined in the Summerside South Phase 2 and 3 Servicing and Stormwater Management Report where possible, and endeavors to provide an overland route at the northern site boundary to Street 10 and ultimately to the Mer Bleue Northern SWM Facility.

Refer to **Drawing GP-1** for detailed grading plans of the block.

7 Approvals

An Environmental Compliance Approval (ECA) from the Ontario Ministry of Environment, Conservation, and Parks (MECP) will not be required for the proposed site servicing works related to storm sewers and sanitary sewers so long as the property is retained under singular ownership. The South Nation Conservation Authority (SNCA) will be circulated on detailed design submissions in conjunction with municipal approval of the development.

An MECP Permit to Take Water (PTTW) may be required for the development if more than 400,000 L/day of ground or surface water is to be pumped during the construction works. If between 50,000 L/day and 400,000 L/day are expected to be pumped during the construction works, registration on the Environmental Activity and Sector Registry (EASR) are required. The geotechnical consultant shall confirm prior to construction whether a PTTW or EASR registry are required for construction dewatering purposes.

8 Utilities

Utility providers are expected to upgrade their infrastructure as required to service the development area in conjunction with the Summerside South Phase 2-3 subdivision.

We are working with the utility providers to develop their utility designs for the subject site in coordination with the servicing and landscaping for the subdivision development. Coordinated designs from the electrical, gas and telecom providers as well as any City streetlighting, OC Transpo, streetscape and servicing constraints will be reflected on the composite utility plan.

9 Erosion Control During Construction

To protect downstream water quality and prevent sediment build-up in catch basins and storm sewers, erosion and sediment control measures must be implemented during construction. The following recommendations will be included in the contract documents and communicated to the Contractor.

1. Until the local storm sewer is constructed, groundwater in trenches will be pumped into a filter mechanism prior to release to the environment. After construction of required downstream systems, any construction dewatering will be routed to the nearest storm sewer.
2. Seepage barriers to be constructed in any temporary drainage ditches.
3. Install a silt fence along the site perimeter.
4. Limit the extent of the exposed soils at any given time.
5. Re-vegetate exposed areas as soon as possible.
6. Minimize the area to be cleared and grubbed.
7. Protect exposed slopes with geotextiles, geogrid, or synthetic mulches.
8. Install silt barriers/fencing around the perimeter of the site as indicated in **Drawing ECDS-1** to prevent the migration of sediment offsite.
9. Install trackout control mats (mud mats) at the entrance/egress to prevent migration of sediment into the public ROW.
10. Provide sediment traps and basins during dewatering works.
11. Install sediment traps (such as SiltSack® by Terrafix) between catch basins and frames.
12. Schedule the construction works at times which avoid flooding due to seasonal rains.

The Contractor will also be required to complete inspections and guarantee the proper performance of their erosion and sediment control measures at least after every rainfall. The inspections are to include:

- Verification that water is not flowing under silt barriers.
- Cleaning and changing the sediment traps placed on catch basins.

Refer to **Drawing ECDS-1** for the proposed location of silt fences, sediment traps, and other erosion control measures.

10 Geotechnical Considerations and Grading

A geotechnical investigation for the proposed school block was completed by Paterson Group Ltd. in March of 2026, and to be read in conjunction with prior reporting PG7671-1 dated October 21, 2025. The report summarizes the existing soil conditions within the subject area and construction recommendations. For details which are not summarized below, please see the original Paterson report included in **Appendix D**.

A review of the proposed grading plan GP-1 was made by Paterson Group, and recommended a permissible grade raise restriction of 1.3m above original ground surface for grading throughout the building footprint. As proposed grade of the building is expected to exceed this value, lightweight fill is recommended below the entire building footprint. No other lightweight fill recommendations were made for remaining site areas.

Clay seals are recommended along sewer runs between SAN47B and SAN47A as well as STM147A to STM101.

The recommended pavement structure for the local residential roadways is outlined in **Table 10-1** below.

Table 10-1 Recommended Pavement Structure for Local Residential Roadways

Thickness (mm)	Material Description
40	Wear Course – Superpave SP 12.5 Asphalt (PG 58-34, Traffic Level B)
50	Binder Course – Superpave SP 19 Asphalt (PG 58-34, Traffic Level B)
150	Base - OPSS Granular ‘A’ crushed stone
300	Subbase - OPSS Granular ‘B’ Type II
Subgrade – Either fill, in situ soil or OPSS Granular ‘B’ Type I or II material placed over in situ soil or fill	

The recommended pavement structure for the roadways with bus traffic is outlined in **Table 9-2** below.

Table 10-2 Recommended Pavement Structure for Roadways with Bus Traffic

Thickness (mm)	Material Description
40	Wear Course – Superpave SP 12.5 Asphalt (PG 64-34, Traffic Level D)
50	Upper Binder Course – Superpave SP 19 Asphalt (PG 64-34, Traffic Level D)
50	Lower Binder Course – Superpave SP 19 Asphalt (PG 64-34, Traffic Level D)
150	Base - OPSS Granular ‘A’ crushed stone
600	Subbase - OPSS Granular ‘B’ Type II
Subgrade – Either fill, in situ soil or OPSS Granular ‘B’ Type I or II material placed over in situ soil or fill	

11 Conclusion

11.1 Water Servicing

The proposed piping alignment and sizing can achieve the required level of service in the proposed school block of the subdivision. Based on the hydraulic analysis, the following conclusions were made:

- The proposed water distribution system in the school block is recommended to include 200mm diameter pipes;
- During average day (AVDY) conditions, the block's proposed watermain network will operate under the maximum pressure objective of 552 kPa (80 psi);
- During peak hour (PKHR) conditions, the block's proposed watermain network is capable of operating above the minimum pressure objective of 276 kPa (40 psi);
- During fire conditions with a fire demand of 6,000 L/min (100 L/s) in proximity to the proposed school building, the block's proposed piping is capable of providing sufficient fire flow while maintaining a residual pressure of 138 kPa (20 psi) in all areas within the block;

11.2 Wastewater Servicing

The school block will be serviced by a network of gravity sewers which will direct wastewater flows eastwards to the sanitary sewer in Street, and ultimately joining the subdivision wastewater flows to the Forest Valley Pumping Station. In advance of construction of downstream sanitary sewers east of Street 10, the proposed sanitary sewer design for the block in the interim indicates one connection point to the existing sewer network within Summerside West within Allium Street. The preferred cover requirement of 2.5 m for the sanitary sewer system has been satisfied where possible (with the use of insulation on shallow building services), and requirements for slope and velocities have been met within the local internal sewers. Downstream sewers have been adequately sized to receive peak sanitary discharge from the proposed site.

11.3 Stormwater Management

Rooftop and surface storage on the parking lot have been proposed to limit the post-development stormwater discharge rate for all rainfall events up to and including the 100-year event to their respective allowable release rates. An interim dry pond is proposed in advance of the ultimate drainage path of downstream sewers along Street 10 to the east, and diverts site outflow northwards through Summerside West.

Either downstream Avalon West SWM Facility in the interim or the Mer Bleue Northern SWM Pond ultimately has sufficient volume capacity to receive runoff volumes from the proposed site and provide the required water quantity and quality control as outlined in the referenced background reports.

11.4 Grading

The grading for this site has been designed to allow for an emergency overland flow outlet to downstream rights-of-way as per City standards and to minimize the grade raise restrictions as recommended by the Geotechnical Investigation by Paterson Group.

11.5 Approvals/Permits

An MECP Environmental Compliance Approval (ECA) will not be required for the installation of the proposed storm and sanitary sewers within the site so long as it is retained under singular ownership. A Permit to Take Water or registration on the EASR may be required for dewatering works during sewer/watermain installation pending confirmation by the geotechnical consultant. The South Nation Conservation Authority will need to be consulted in order to obtain municipal approval for site development. No other approval requirements from other regulatory agencies are anticipated.

Appendices

Appendix A Water Servicing

A.1 Domestic Water Demand

Mer Bleue School Block, Ottawa, ON - Domestic Water Demand Estimates

Site Plan provided by Pye & Richards Architects. (January 2026)

Project No. 160402258 Designed by: MW

Revision: 01 Checked by: DT

Date: 31-Mar-2026 Date Checked: 14-May-2026

Demand conversion factors per Table 4.2 of the City of Ottawa Water Design Guidelines and Technical Bulletin ISTB-2021-03:		
Institutional	28000	L/ha/day

Building	Lot Area (m^2)	Avg Day Demand		Max Day Demand [1]		Peak Hour Demand [1]	
		(L/min)	(L/s)	(L/min)	(L/s)	(L/min)	(L/s)
School	26012	50.6	0.8	75.9	1.3	136.6	2.3
Total Site :	**26012**	**50.6**	**0.8**	**75.9**	**1.3**	**136.6**	**2.3**

Notes:

1 Water demand criteria used to estimate peak demand rates for commercial areas are as follows:

maximum daily demand rate = 1.5 x average day demand rate

peak hour demand rate = 1.8 x maximum day demand rate (as per Technical Bulletin ISD-2010-02)

A.2 FUS Fire Flow Demands

FUS Fire Flow Calculation Sheet - 2020 FUS Guidelines

Stantec

Stantec Project #: 160402258
Project Name: Mer Bleue School Block
Date: 3/31/2026
Fire Flow Calculation #: 1
Description: 1-storey school building.

Notes: Per OBC Section 3.2.2.23

Step	Task	Notes										Value Used	Req'd Fire Flow (L/min)
1	Determine Type of Construction	Type II - Noncombustible Construction / Type IV-A - Mass Timber Construction										0.8	-
2	Determine Effective Floor Area	Sum of Two Largest Floors + 50% of Eight Additional Floors					Vertical Openings Protected?					NO	-
		4690										4690	-
3	Determine Required Fire Flow	(F = 220 x C x $A^{1/2}$). Round to nearest 1000 L/min										-	12000
4	Determine Occupancy Charge	Limited Combustible										-15%	10200
5	Determine Sprinkler Reduction	Conforms to NFPA 13										-30%	-5100
		Standard Water Supply										-10%	
		Fully Supervised										-10%	
		% Coverage of Sprinkler System										100%	
6	Determine Increase for Exposures (Max. 75%)	Direction	Exposure Distance (m)	Exposed Length (m)	Exposed Height (Stories)	Length-Height Factor (m x stories)	Construction of Adjacent Wall	Firewall / Sprinklered ?				-	-
		North	20.1 to 30	106	1	> 100	Type V	NO				10%	1020
		East	> 30	0	0	0-20	Type V	NO				0%	
		South	> 30	0	0	0-20	Type V	NO				0%	
		West	> 30	0	0	0-20	Type V	NO				0%	
7	Determine Final Required Fire Flow	Total Required Fire Flow in L/min, Rounded to Nearest 1000L/min											6000
		Total Required Fire Flow in L/s											100.0
		Required Duration of Fire Flow (hrs)											2.00
		Required Volume of Fire Flow (m^3)											720

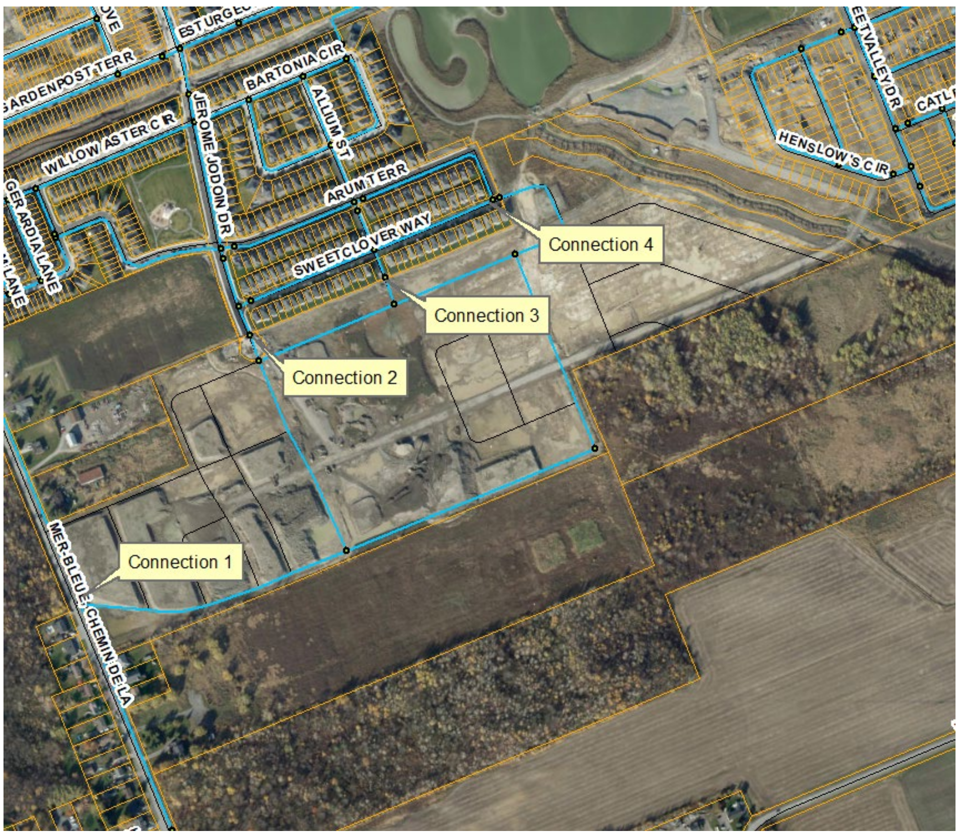
A.3 Boundary Conditions

Boundary Conditions
Summerside South Phase 2 & 3

Provided Information

Scenario	Demand	
	L/min	L/s
Average Daily Demand	341	5.68
Maximum Daily Demand	569	9.48
Peak Hour	1,082	18.03
Fire Flow Demand #1	13,000	216.67
Fire Flow Demand #2	18,000	300.00

Location



Results

Connection 1 – Mer Blue Road

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.4	61.7
Peak Hour	126.3	55.8
Max Day plus Fire 1	125.3	54.4
Max Day plus Fire 2	123.5	51.8

Ground Elevation = 87.0 m

Connection 2 – Jerome Jodoin Drive

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.3	62.2
Peak Hour	126.2	56.3
Max Day plus Fire 1	124.3	53.6
Max Day plus Fire 2	121.7	49.9

Ground Elevation = 86.6 m

Connection 3 – Allium Street

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.3	62.2
Peak Hour	126.1	56.2
Max Day plus Fire 1	119.3	46.5
Max Day plus Fire 2	112.6	37.0

Ground Elevation = 86.6 m

Connection 4 – Sweetclover Way

Demand Scenario	Head (m)	Pressure[1] (psi)
Maximum HGL	130.3	62.8
Peak Hour	126.1	56.8
Max Day plus Fire 1	116.5	43.1
Max Day plus Fire 2	107.5	30.3

Ground Elevation = 86.2 m

Notes

1. Proposed watermains for the site were added for modeling purposes, as internal looping is required to meet minimum fire flow requirements.

Disclaimer

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.

A.4 Watermain Hydraulic Analysis

Junction Results - Basic Day

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)	Pressure (psi)2	Pressure (kPa)
1	0.00	87.49	130.30	42.81	60.87	419.71
4	0.00	87.44	130.30	42.86	60.94	420.17
3	0.00	87.27	130.30	43.03	61.18	421.84
SCHOOL	0.80	87.80	130.30	42.50	60.43	416.68
2	0.00	87.31	130.30	42.99	61.13	421.48

Link Results - Basic Day

ID	FROM	TO	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)
1000	1	JeromeJodoin	39.65	297	120	-0.476	0.007
1001	3	4	9.80	204	110	-0.324	0.010
1002	4	Allium	39.58	204	110	-0.324	0.010
1008	3	SCHOOL	139.70	204	110	0.397	0.012
1006	2	3	161.78	204	110	0.073	0.002
1005	1	2	13.77	204	110	0.476	0.015
1007	2	SCHOOL	143.11	204	110	0.403	0.012

Junction Results - Peak Hour

ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (m)	Pressure (psi)2	Pressure (kPa)
1	0.00	87.49	126.20	38.70	55.04	379.46
4	0.00	87.44	126.13	38.68	55.00	379.24
3	0.00	87.27	126.13	38.86	55.26	380.98
SCHOOL	2.30	87.80	126.15	38.35	54.53	375.94
2	0.00	87.31	126.18	38.87	55.27	381.10

Link Results - Peak Hour

ID	FROM	TO	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)
1000	1	JeromeJodoin	39.65	297	120	-11.222	0.162
1001	3	4	9.80	204	110	8.922	0.273
1002	4	Allium	39.58	204	110	8.922	0.273
1008	3	SCHOOL	139.70	204	110	-3.048	0.093
1006	2	3	161.78	204	110	5.874	0.180
1005	1	2	13.77	204	110	11.222	0.343
1007	2	SCHOOL	143.11	204	110	5.348	0.164

Fire Flow Results - Max Day + 100 L/s

ID	Static Demand (L/s)	Static Pressure (m)	Static Pressure (psi)	Static Pressure (kPa)	Static Head (m)	Fire Flow Demand (L/s)	Residual Pressure (m)	Residual Pressure (psi)	Available Flow (L/s)	Available Pressure (psi)
1	0.00	36.59	52.03	358.74	124.08	100.00	35.92	51.08	1181.46	20
4	0.00	33.40	47.50	327.47	120.85	100.00	31.86	45.30	530.58	20
3	0.00	33.96	48.28	332.90	121.23	100.00	32.04	45.56	513.76	20
SCHOOL	1.30	34.53	49.09	338.49	122.33	100.00	30.71	43.67	293.90	20
2	0.00	36.22	51.50	355.09	123.53	100.00	34.35	48.84	692.70	20

Appendix B Wastewater Servicing

B.1 Sanitary Sewer Design Sheet

SUBDIVISION:	
Mer Bleue School Block	
DATE:	3/31/2026
REVISION:	1
DESIGNED BY:	JP
CHECKED BY:	MW

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

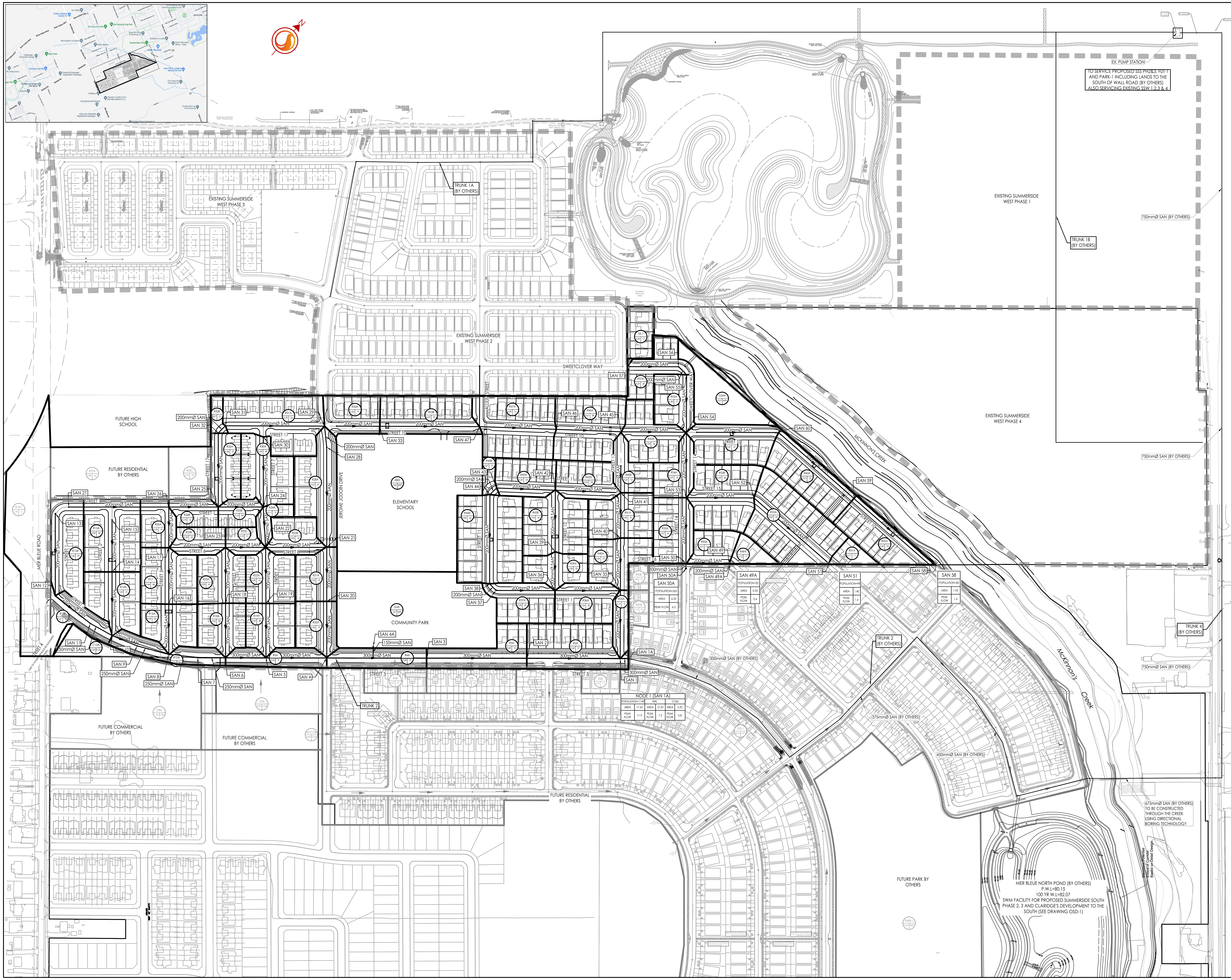
FILE NUMBER: 160402258

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	280 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	28,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (ICI >20%):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / SINGLE	3.4	INSTITUTIONAL	28,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / TOWNHOME	2.7	INFILTRATION	0.33 l/s/Ha	HARMON CORRECTION FACTOR	0.8
PERSONS / APARTMENT	1.8				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE							
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (ha)	UNITS SINGLE	UNITS TOWN	UNITS APT	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	FLOW (l/s)	LENGTH (m)	DIA (mm)	MATERIAL	CLASS	SLOPE (%)	CAP. (FULL) (l/s)	CAP. V PEAK FLOW (%)	VEL. (FULL) (m/s)
School Block	33B	33	0.00	0	0	0	0	0.00	0	3.80	0.0	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60	0.00	0.00	1.3	2.60	2.60	0.9	2.1	9.9	150 200	PVC	DR 28	1.00	15.3	**13.84%**	0.86

B.2 Sanitary Excerpts from Background Reports



Stantec

Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

Legend

- PROPOSED SANITARY SEWER
- R200A / 0.38 / 14: SANITARY DRAINAGE AREA ID#; POPULATION; SANITARY DRAINAGE AREA ha.
- SANITARY DRAINAGE AREA ha.
- TYPICAL SERVICE LATERAL LOCATION
- TYPICAL SERVICE LATERAL LOCATION (EXTERNAL/FUTURE)
- EXISTING/FUTURE SANITARY SEWER
- R200A / 0.38 / 14: EXTERNAL/FUTURE SANITARY DRAINAGE AREA ID#; EXTERNAL/FUTURE POPULATION; EXTERNAL/FUTURE SANITARY DRAINAGE AREA ha.
- EXTERNAL/FUTURE SANITARY DRAINAGE AREA ha.
- EXTERNAL/FUTURE SANITARY DRAINAGE FLOW DIRECTION

Notes

1. SERVICING INFORMATION ON JEROME JODOIN DRIVE AND ALLIUM STREET BY DSEL ENGINEERING LTD: MATTAMY SUMMERSIDE WEST PHASE 2&3, SHEET 16, DATED AUG 10 2016
2. SERVICING INFORMATION ON JEROME JODOIN DRIVE AND ALIUM STREET BY DSEL ENGINEERING LTD: MATTAMY SUMMERSIDE WEST PHASE 2&3, SHEET 17, DATED AUG 10 2016
3. SERVICING INFORMATION ON MERE BLEUE ROAD BY REGIONAL MUNICIPALITY OF OTTAWA CARLTON WORKS DEPARTMENT, 16" W.M IN CHEMIN MER BLEUE ROAD, FROM STA 43+07 TO 52+00, DATED 19 FEB 1976

		By	Appd.	YY.MM.DD
3	ISSUED FOR SECOND SUBMISSION	JP	SG	26.06.24
2	REVISED PROFILE AND SURFACE GRADING	JP	SGG	23.07.24
1	ISSUED FOR FIRST SUBMISSION	JP	SGG	23.01.12

Revision

File Name	Dwn.	Chkd.	Dsgn.	YY.MM.DD
160401737 OSA.dwg	JP	DT	JP	22.10.26

Permit-Seal

Client/Project

MATTAMY (MER BLEUE 2) LTD
50 HINES ROAD, SUITE 100
OTTAWA ON K2K 2M5

SUMMERSIDE SOUTH PHASE 2/3 SUBDIVISION
OTTAWA, ON, CANADA

Title

OVERALL SANITARY SERVICING PLAN

Project No. 160401737 | Scale 1:2000 (0, 20, 60, 100m)

Drawing No. OSA-1 | Sheet 55 of 62 | Revision 3

D07-16-22-0007

DWG# XXXXX

W:\active\160401737\design\drawing\160401737 OSA.dwg
2025/04/24 4:18 PM By: Pabingo, Jupiter

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

Stantec

SUBDIVISION:	Summerside PH2/3
DATE:	4/24/2026
REVISION:	1
DESIGNED BY:	JP
CHECKED BY:	DT
FILE NUMBER:	160401737

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	280 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	28,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (ICI >20%):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / SINGLE	3.4	INSTITUTIONAL	28,000 l/ha/day	MINIMUM COVER	2.50 m
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PERSONS / APARTMENT	1.8				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)		INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE								
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (ha)	UNITS SINGLE	UNITS TOWN	UNITS APT	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	FLOW (l/s)	LENGTH (m)	DIA (mm)	MATERIAL	CLASS	SLOPE (%)	CAP. (FULL) (l/s)	CAP. V PEAK FLOW (%)	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
G61A, R61B	61	60	0.47	8	0	0	27	0.47	27	3.69	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.51	0.0	0.98	0.98	0.3	0.7	98.1	200	PVC	SDR 35	0.65	27.0	**2.41%**	0.85	0.29
R60A	60	59	0.51	9	0	0	31	0.98	58	3.64	0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.0	0.51	1.50	0.5	1.2	119.9	200	PVC	SDR 35	0.35	19.8	**5.95%**	0.62	0.28
R59A	59	58	0.46	7	0	0	24	1.44	82	3.61	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.51	0.0	0.46	1.95	0.6	1.6	120.0	200	PVC	SDR 35	0.35	19.8	**8.09%**	0.62	0.31
																												200							
R53B	53	52	0.59	13	0	0	44	0.59	44	3.66	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.59	0.59	0.2	0.7	81.2	200	PVC	SDR 35	0.35	19.8	**3.64%**	0.62	0.25
R52A	52	51	0.83	16	0	0	54	1.42	99	3.60	1.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.83	1.42	0.5	1.6	120.0	200	PVC	SDR 35	0.35	19.8	**8.18%**	0.62	0.31
																												200							
R33AA	33A	33	0.30	5	0	0	17	0.30	17	3.71	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.30	0.30	0.1	0.3	51.3	200	PVC	SDR 35	0.65	27.0	**1.13%**	0.85	0.24
I33BA	33B	33	0.00	0	0	0	0	0.00	0	3.80	0.0	0.00	0.00	0.00	0.00	0.00	0.00	2.60	2.60	0.00	0.00	1.3	2.60	2.60	0.9	2.1	9.9	150	PVC	DR 28	1.00	15.3	**13.84%**	0.86	0.50
R33A	33	47	0.52	11	0	0	37	0.82	54	3.65	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.52	3.42	1.1	3.0	120.0	200	PVC	SDR 35	0.40	21.1	**14.35%**	0.67	0.39
R47A	47	46	0.69	16	0	0	54	1.51	109	3.59	1.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.69	4.11	1.4	3.9	92.4	200	PVC	SDR 35	0.40	21.1	**18.39%**	0.66	0.42
R46A	46	45	0.61	15	0	0	51	2.12	160	3.55	1.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.61	4.72	1.6	4.7	77.3	200	PVC	SDR 35	0.40	21.2	**21.98%**	0.67	0.45
R45A	45	54	0.39	8	0	0	27	2.51	187	3.53	2.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.39	5.11	1.7	5.1	78.4	200	PVC	SDR 35	0.40	21.1	**24.06%**	0.67	0.45
R57A	57	56	0.31	6	0	0	20	0.31	20	3.70	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.31	0.31	0.1	0.3	58.7	200	PVC	SDR 35	0.65	27.0	**1.29%**	0.85	0.24
	56	55	0.00	0	0	0	0	0.31	20	3.70	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.31	0.1	0.3	13.7	200	PVC	SDR 35	0.35	19.8	**1.75%**	0.62	0.20
R55A	55	54	0.30	5	0	0	17	0.61	37	3.67	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.30	0.61	0.2	0.6	68.8	200	PVC	SDR 35	0.35	19.8	**3.27%**	0.62	0.24
R54A	54	53	0.25	4	0	0	14	3.37	238	3.50	2.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.25	5.97	2.0	5.9	78.4	200	PVC	SDR 35	0.35	19.8	**29.98%**	0.62	0.45
R53A	53	50	0.37	8	0	0	27	3.75	265	3.48	3.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.37	6.35	2.1	6.3	78.4	200	PVC	SDR 35	0.35	19.8	**32.10%**	0.62	0.47
	50	50A	0.00	0	0	0	0	3.75	265	3.48	3.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.60	0.00	0.00	1.3	0.00	6.35	2.1	6.3	6.9	200	PVC	SDR 35	0.35	19.8	**32.10%**	0.62	0.47
																												200							
R50A	50	49	0.21	4	0	0	14	0.21	14	3.72	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.21	0.21	0.1	0.2	51.9	200	PVC	SDR 35	0.65	27.0	**0.86%**	0.85	0.23
R49A	49	49A	0.12	2	0	0	7	0.33	20	3.70	0.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.12	0.33	0.1	0.4	1.9	200	PVC	SDR 35	0.35	19.8	**1.79%**	0.62	0.20
																												200							
R13A	13	12	0.46	0	12	0	32	0.46	32	3.68	0.4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.46	0.46	0.2	0.5	98.4	200	PVC	SDR 35	0.70	28.0	**1.92%**	0.88	0.29
C12A, R12C, R12B	12	11	2.02	0	0	0	0	2.48	32	3.68	0.4	0.20	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1	2.22	2.68	0.9	1.3	53.7	250	PVC	SDR 35	0.40	38.3	**3.48%**	0.77	0.31
	11	10	0.00	0	0	0	0	2.48	32	3.68	0.4	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1	0.00	2.68	0.9	1.3	29.8	250	PVC	SDR 35	0.30	33.2	**4.02%**	0.67	0.27
R15A	15	14	0.59	0	18	0	49	0.59	49	3.65	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.59	0.59	0.2	0.8	62.3	200	PVC	SDR 35	0.40	21.3	**3.62%**	0.67	0.26
R14A	14	10	0.43	0	15	0	41	1.02	89	3.61	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.43	1.02	0.3	1.4	76.3	200	PVC	SDR 35	0.80	29.9	**4.61%**	0.94	0.40
R10A	10	9	0.31	0	0	0	0	3.81	122	3.58	1.4	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1	0.31	4.01	1.3	2.8	32.6	250	PVC	SDR 35	0.30	33.2	**8.41%**	0.67	0.34
	9	8	0.00	0	0	0	0	3.81	122	3.58	1.4	0.00	0.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.1	0.00	4.01	1.3	2.8	39.2	250	PVC	SDR 35	0.30	33.2	**8.41%**	0.67	0.34
R23B	23	17	0.20	0	8	0	22	0.20	22	3.70	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.20	0.20	0.1	0.3	68.0	200	PVC	SDR 35	0.65	27.0	**1.20%**	0.85	0.24
R27A	27	26	0.89	0	0	0	54	0.89	54	3.65	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.89	0.89	0.3	0.9	120.0	200	PVC	SDR 35	0.40	21.2	**4.41%**	0.67	0.28
R26A	26	17	0.23	0	5	0	14	1.12	68	3.63	0.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.23	1.12	0.4	1.2	48.4	200	PVC	SDR 35	0.40	21.1	**5.50%**	0.67	0.29
R17A	17	16	0.44	0	17	0	46	1.75	135	3.56	1.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.44	1.75	0.6	2.1	68.0	200	PVC	SDR 35	0.40	21.1	**10.11%**	0.67	0.36
R16A	16	8	0.34	0	11	0	30	2.09	165	3.54	1.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.34	2.09	0.7	2.6	60.2	200	PVC	SDR 35	1.25	37.3	**6.91%**	1.17	0.57
C8A	8	7	0.00	0	0	0	0	5.90	286	3.47	3.2	1.52	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.8	1.52	7.62	2.5	6.6	34.9	250	PVC	SDR 35	0.30	33.2	**19.78%**	0.67	0.43
	7	6	0.00	0	0	0	0	5.90	286	3.47	3.2	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.8	0.00	7.62	2.5	6.6	33.4	250	PVC	SDR 35	0.30	33.2	**19.78%**	0.67	0.43
R23A	23	18	0.35	0	15	0	41	0.35	41	3.67	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.35	0.35	0.1	0.6	66.9	200	PVC	SDR 35	0.40	21.1	**2.82%**	0.67	0.24
R18A	18	6	0.32	0	14	0	38	0.67	78	3.62	0.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.32	0.67	0.2	1.1	65.3	200	PVC	SDR 35	1.15	35.9	**3.18%**	1.13	0.43
R6A	6	5	0.26	0	0	0	0	6.83	365	3.43	4.1	0.00	1.72	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.8	0.26	8.55	2.8	7.7	48.4	300	PVC	SDR 35	0.20	42.9	**17.97%**	0.61	0.38
R22A	22	19	0.35	0	15	0	41	0.35	41	3.67	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.35	0.35	0.1	0.6	67.2	200	PVC	SDR 35	0.40	21.1	**2.83%**	0.67	0.24
R19A	19	5	0.33	0	14	0	38	0.68	78	3.62	0.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.33	0.68	0.2	1.1	65.1	200	PVC	SDR 35	1.55	41.6	**2.75%**	1.31	0.48
C5A	5	4	0.00	0	0	0	0	7.51	443	3.40	4.9	0.80	2.52	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.2	0.80	10.03	3.3	9.4	72.9	300	PVC	SDR 35	0.20	42.9	**21.93%**	0.61	0.41
R32B	32	31	0.07	0	2	0	5	0.07	5	3.75	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.07	0.07	0.0	0.1	12.2	200	PVC	SDR 35	0.65	27.0	**0.33%**	0.85	0.16
R31A	31	29	0.70	0	20	0	54	0.77	59	3.64	0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.70	0.77	0.3	1.0	118.7	200	PVC	SDR 35	0.40	21.1	**4.51%**	0.67	0.28
	29	28	0.00	0	0	0	0	0.77	59	3.64	0.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.77	0.3	1.0	25.5	200	PVC	SDR 35	0.40	21.1	**4.51%**	0.67	0.28
R28A	28	21	0.53	0	10	0	27	1.29	86	3.61	1.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.53	1.29	0.4	1.4	120.0	200	PVC	SDR 35	0.40	21.1	**6.80%**	0.67	0.31
R23C	23	22	0.13	0	4	0	11	0.13	11	3.73	0.1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.13	0.13	0.0	0.2	48.0	200	PVC	SDR 35	0.65	27.0	**0.64%**	0.85	0.21
R26C, R26B	26	25	0.50	0	7	0	39	0.50	39	3.67	0.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.50	0.50	0.2	0.6	59.3	200	PVC	SDR 35	0.65	27.0	**2.32%**	0.85	0.29
R32A	32	25	0.30	0	10	0	27	0.30	27	3.69	0.3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.30	0.30	0.1	0.4	88.7	200	PVC	SDR 35	0.40	21.1	**1.99%**	0.67	0.22
R25B	25	24	0.16	0	5	0	14	0.95	79	3.62	0.9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.16	0.95	0.3	1.2	54.0	200	PVC	SDR 35	0.40	21.1	**5.88%**	0.67	0.30
R30A	30	24	0.45	0	18	0	49	0.45	49	3.65	0.6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.45	0.45	0.1	0.7	83.9	200	PVC	SDR 35	0.40	21.1	**3.42%**	0.67	0.26
R24A	24	22	0.11	0	2	0	5	1.51	133	3.57	1.5	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.11	1.51	0.5	2.0	48.5	200	PVC	SDR 35	0.40	21.1	**9.64%**	0.67	0.35
R22B	22	21	0.26	0	6	0	16	1.90	160	3.55	1.8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.26	1.90	0.6	2.5	73.3	200	PVC	SDR 35	0.40	21.1	**11.68%**	0.67	0.37
R21A	21	20	0.30	0	7	0	19	3.49	266	3.48	3.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.30	3.49	1.2	4.1	64.7	200	PVC	SDR 35	0.40	21.1	**19.62%**	0.67	0.43
R20A	20	4	0.30	0	7	0	19	3.79	285	3.47	3.2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.30	3.79	1.2	4.5	67.8	200	PVC	SDR 35	0.95	32.7	**13.62%**	1.03	0.60

Stantec

SUBDIVISION:
Summerside PH2/3

DATE: 4/24/2026
REVISION: 1
DESIGN BY: JP
CHECKED BY: DT

SANITARY SEWER DESIGN SHEET
(City of Ottawa)

FILE NUMBER: 160401737

DESIGN PARAMETERS

MAX PEAK FACTOR (RES.)=	4.0	AVG. DAILY FLOW / PERSON	280 l/p/day	MINIMUM VELOCITY	0.60 m/s
MIN PEAK FACTOR (RES.)=	2.0	COMMERCIAL	28,000 l/ha/day	MAXIMUM VELOCITY	3.00 m/s
PEAKING FACTOR (INDUSTRIAL):	2.4	INDUSTRIAL (HEAVY)	55,000 l/ha/day	MANNINGS n	0.013
PEAKING FACTOR (ICI >20%):	1.5	INDUSTRIAL (LIGHT)	35,000 l/ha/day	BEDDING CLASS	B
PERSONS / SINGLE	3.4	INSTITUTIONAL	28,000 l/ha/day	MINIMUM COVER	2.50 m
PERSONS / TOWNHOME	2.7	INFILTRATION	0.33 l/s/Ha	HARMON CORRECTION FACTOR	0.8
PERSONS / APARTMENT	1.8				

LOCATION			RESIDENTIAL AREA AND POPULATION									COMMERCIAL		INDUSTRIAL (L)	
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (ha)	UNITS SINGLE	UNITS TOWN	UNITS APT	POP.	CUMULATIVE AREA (ha)	CUMULATIVE POP.	PEAK FACT.	PEAK FLOW (l/s)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)
R4B, R4A, G4A	4	3	0.50	0	10	0	27	11.80	754	3.30	8.1	0.00	2.52	0.00	0.00
R3A, R3B	3	2	0.72	3	15	0	51	12.52	805	3.29	8.6	0.00	2.52	0.00	0.00
R2B, R2A	2	1	0.74	10	4	0	45	13.26	850	3.28	9.0	0.00	2.52	0.00	0.00
R41AA	41A	41	0.22	4	0	0	14	0.22	14	3.72	0.2	0.00	0.00	0.00	0.00
R44B	44	43	0.07	1	0	0	3	0.07	3	3.76	0.0	0.00	0.00	0.00	0.00
R43A	43	42	0.32	7	0	0	24	0.39	27	3.69	0.3	0.00	0.00	0.00	0.00
R42A	42	41	0.32	7	0	0	24	0.71	51	3.65	0.6	0.00	0.00	0.00	0.00
R41A	41	40	0.40	9	0	0	31	1.34	95	3.60	1.1	0.00	0.00	0.00	0.00
R40A, R40B	40	35	0.44	11	0	0	37	1.78	133	3.57	1.5	0.00	0.00	0.00	0.00
R44A	44	38	0.82	16	0	0	54	0.82	54	3.65	0.6	0.00	0.00	0.00	0.00
	38	37	0.00	0	0	0	0	0.82	54	3.65	0.6	0.00	0.00	0.00	0.00
R37A	37	36	0.35	6	0	0	20	1.18	75	3.62	0.9	0.00	0.00	0.00	0.00
R42B	42	39	0.54	12	0	0	41	0.54	41	3.67	0.5	0.00	0.00	0.00	0.00
R39A	39	36	0.28	6	0	0	20	0.82	61	3.64	0.7	0.00	0.00	0.00	0.00
R36A	36	35	0.34	6	0	0	20	2.34	156	3.55	1.8	0.00	0.00	0.00	0.00
R35B, R35A	35	1	0.24	3	0	0	10	4.36	299	3.46	3.4	0.00	0.00	0.00	0.00
	1	1A	0.00	0	0	0	0	17.62	1149	3.21	11.9	0.00	2.52	0.00	0.00

LOCATION			INDUSTRIAL (H)		INSTITUTIONAL		GREEN / UNUSED		C+I+I	INFILTRATION			TOTAL	PIPE								
AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	AREA (ha)	ACCU. AREA (ha)	PEAK FLOW (l/s)	TOTAL AREA (ha)	ACCU. AREA (ha)	INFILT. FLOW (l/s)	FLOW (l/s)	LENGTH (m)	DIA (mm)	MATERIAL	CLASS	SLOPE (%)	CAP. (FULL) (l/s)	CAP. V PEAK FLOW (%)	VEL. (FULL) (m/s)	VEL. (ACT.) (m/s)
R4B, R4A, G4A	4	3	0.00	0.00	0.00	0.00	1.67	1.67	0.8	2.17	15.99	5.3	14.2	120.0	300	PVC	SDR 35	0.20	42.9	**32.98%**	0.61	0.46
R3A, R3B	3	2	0.00	0.00	0.00	0.00	0.00	1.67	0.8	0.72	16.71	5.5	14.9	120.0	300	PVC	SDR 35	0.20	42.9	**34.72%**	0.61	0.47
R2B, R2A	2	1	0.00	0.00	0.00	0.00	0.00	1.67	0.8	0.74	17.45	5.8	15.6	111.6	300	PVC	SDR 35	0.20	42.9	**36.32%**	0.61	0.47
R41AA	41A	41	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.22	0.22	0.1	0.2	32.2	200	PVC	SDR 35	0.65	27.0	**0.88%**	0.85	0.23
R44B	44	43	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.07	0.07	0.0	0.1	11.2	200	PVC	SDR 35	0.65	27.0	**0.24%**	0.85	0.13
R43A	43	42	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.32	0.39	0.1	0.5	70.4	200	PVC	SDR 35	0.35	19.8	**2.30%**	0.62	0.21
R42A	42	41	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.32	0.71	0.2	0.8	78.4	200	PVC	SDR 35	0.35	19.8	**4.23%**	0.62	0.26
R41A	41	40	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.40	1.34	0.4	1.6	54.3	200	PVC	SDR 35	0.35	19.8	**7.84%**	0.62	0.31
R40A, R40B	40	35	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.44	1.78	0.6	2.1	63.2	200	PVC	SDR 35	0.35	19.8	**10.71%**	0.62	0.34
R44A	44	38	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.82	0.82	0.3	0.9	107.2	200	PVC	SDR 35	0.40	21.1	**4.32%**	0.67	0.27
	38	37	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.00	0.82	0.3	0.9	11.0	200	PVC	SDR 35	0.40	21.1	**4.32%**	0.67	0.27
R37A	37	36	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.35	1.18	0.4	1.3	70.6	200	PVC	SDR 35	0.40	21.1	**5.99%**	0.67	0.30
R42B	42	39	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.54	0.54	0.2	0.7	73.7	200	PVC	SDR 35	0.40	21.1	**3.14%**	0.67	0.25
R39A	39	36	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.28	0.82	0.3	1.0	46.5	200	PVC	SDR 35	0.40	21.1	**4.70%**	0.67	0.28
R36A	36	35	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.34	2.34	0.8	2.6	78.4	200	PVC	SDR 35	0.40	21.1	**12.15%**	0.67	0.37
R35B, R35A	35	1	0.00	0.00	0.00	0.00	0.00	0.00	0.0	0.24	4.36	1.4	4.8	81.4	200	PVC	SDR 35	1.40	39.6	**12.12%**	1.24	0.69
	1	1A	0.00	0.00	0.00	0.00	0.00	1.67	0.8	0.00	21.81	7.2	20.0	11.1	300	PVC	SDR 35	0.20	42.9	**46.48%**	0.61	0.51
															300							

Appendix C Stormwater Management

C.1 Storm Sewer Design Sheet

Stantec

Mer Bleue School

STORM SEWER DESIGN SHEET
(City of Ottawa)

DATE: 2026-06-10
REVISION: 1
DESIGNED BY: MW
CHECKED BY: DT

FILE NUMBER: **160402258**

DESIGN PARAMETERS
$I = a / (t+b)^c$ (As per City of Ottawa Guidelines, 2012)

	1:2 yr	1:5 yr	1:10 yr	1:100 yr
a =	732.951	998.071	1174.184	1735.688
b =	6.199	6.053	6.014	6.014
c =	0.810	0.814	0.816	0.820

MANNING'S n = 0.013 BEDDING CLASS = B
MINIMUM COVER: 2.00 m
TIME OF ENTRY 10 min

LOCATION / DRAINAGE AREA

AREA ID NUMBER	FROM M.H.	TO M.H.	AREA (2-YEAR) (ha)	AREA (5-YEAR) (ha)	AREA (10-YEAR) (ha)	AREA (100-YEAR) (ha)	AREA (ROOF) (ha)	C (2-YEAR) (-)	C (5-YEAR) (-)	C (10-YEAR) (-)	C (100-YEAR) (-)	A x C (2-YEAR) (ha)	ACCUM AxC (2YR) (ha)	A x C (5-YEAR) (ha)	ACCUM. AxC (5YR) (ha)	A x C (10-YEAR) (ha)	ACCUM. AxC (10YR) (ha)	A x C (100-YEAR) (ha)	ACCUM. AxC (100YR) (ha)
L203B	203B	203	0.18	0.00	0.00	0.00	0.00	0.80	0.00	0.00	0.00	0.147	0.147	0.000	0.000	0.000	0.000	0.000	0.000
L203A, L203B	203	202	0.32	0.00	0.00	0.00	0.00	0.70	0.00	0.00	0.00	0.225	0.372	0.000	0.000	0.000	0.000	0.000	0.000
L206B	206B	206	0.34	0.00	0.00	0.00	0.00	0.22	0.00	0.00	0.00	0.074	0.074	0.000	0.000	0.000	0.000	0.000	0.000
L206A, L206B	206	205	0.32	0.00	0.00	0.00	0.00	0.43	0.00	0.00	0.00	0.137	0.211	0.000	0.000	0.000	0.000	0.000	0.000
L205A	205	204	0.35	0.00	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.106	0.317	0.000	0.000	0.000	0.000	0.000	0.000
	204	202	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.317	0.000	0.000	0.000	0.000	0.000	0.000
L202A	202	200	0.11	0.00	0.00	0.00	0.00	0.75	0.00	0.00	0.00	0.085	0.774	0.000	0.000	0.000	0.000	0.000	0.000
L200A, L200B	200	147A	0.20	0.00	0.00	0.00	0.00	0.79	0.00	0.00	0.00	0.161	0.934	0.000	0.000	0.000	0.000	0.000	0.000
	147A	147	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.000	0.934	0.000	0.000	0.000	0.000	0.000	0.000
C134A, L219A, L133A-B, L148A	147	147B	0.38	0.07	0.00	0.00	0.00	0.67	0.70	0.00	0.00	0.255	1.189	0.049	0.049	0.000	0.000	0.000	0.000

DRAINAGE AREA (continued) / PIPE SELECTION

FROM M.H.	TO M.H.	T of C (min)	$I_{2\text{-YEAR}}$ (mm/h)	$I_{5\text{-YEAR}}$ (mm/h)	$I_{10\text{-YEAR}}$ (mm/h)	$I_{100\text{-YEAR}}$ (mm/h)	$Q_{CONTROL}$ (L/s)	ACCUM. $Q_{CONTROL}$ (L/s)	Q_{ACT} (CIA/360) (L/s)	LENGTH (m)	PIPE WIDTH OR DIAMETE (mm)	PIPE HEIGHT (mm)	PIPE SHAPE (-)	MATERIAL (-)	CLASS (-)	SLOPE %	Q_{CAP} (FULL) (L/s)	% FULL (-)	VEL. (FULL) (m/s)	VEL. (ACT) (m/s)	TIME OF FLOW (min)
203B	203	10.00	76.81	104.19	122.14	178.56	0.0	0.0	31.3	14.2	200	200	CIRCULAR	PVC	-	1.00	33.3	**93.98%**	1.05	1.08	0.22
203	202	10.22	75.97	103.05	120.79	176.58	0.0	0.0	78.5	112.7	450	450	CIRCULAR	CONCRETE	-	0.20	132.0	**59.45%**	0.80	0.72	2.59
		12.81																			
206B	206	10.00	76.81	104.19	122.14	178.56	0.0	0.0	15.7	40.6	200	200	CIRCULAR	PVC	-	0.50	23.5	**67.02%**	0.74	0.69	0.98
206	205	10.98	73.24	99.29	116.37	170.07	0.0	0.0	42.9	64.0	300	300	CIRCULAR	PVC	-	0.40	60.6	**70.79%**	0.86	0.82	1.31
205	204	12.29	69.02	93.49	109.54	160.06	0.0	0.0	60.8	45.3	375	375	CIRCULAR	PVC	-	0.30	90.6	**67.05%**	0.86	0.80	0.94
204	202	13.22	66.30	89.77	105.16	153.63	0.0	0.0	58.4	33.0	375	375	CIRCULAR	PVC	-	0.30	90.3	**64.67%**	0.86	0.79	0.70
		13.92																			
202	200	13.92	64.44	87.22	102.16	149.21	0.0	0.0	138.5	38.6	600	600	CIRCULAR	CONCRETE	-	0.15	248.1	**55.81%**	0.85	0.75	0.85
200	147A	14.77	62.31	84.30	98.72	144.17	0.0	0.0	161.7	42.0	600	600	CIRCULAR	CONCRETE	-	0.15	248.1	**65.19%**	0.85	0.79	0.89
147A	147	15.66	60.25	81.49	95.42	139.32	0.0	0.0	156.4	12.8	600	600	CIRCULAR	CONCRETE	-	0.25	320.3	**48.83%**	1.10	0.93	0.23
147	147B	15.89	59.75	80.79	94.60	138.12	0.0	0.0	208.3	25.1	675	675	CIRCULAR	CONCRETE	-	0.20	392.2	**53.12%**	1.06	0.92	0.45
		16.34									675	675									

C.2 PCSWMM Input File (100yr 3hr Chicago)

```
[TITLE]
;;Project Title/Notes

[OPTIONS]
;;Option             Value
FLOW_UNITS           LPS
INFILTRATION         HORTON
FLOW_ROUTING         DYNWAVE
LINK_OFFSETS         ELEVATION
MIN_SLOPE            0
ALLOW_PONDING        YES
SKIP_STEADY_STATE    NO

START_DATE           05/05/2026
START_TIME           00:00:00
REPORT_START_DATE    05/05/2026
REPORT_START_TIME    00:00:00
END_DATE             05/05/2026
END_TIME             12:00:00
SWEEP_START          01/01
SWEEP_END            12/31
DRY_DAYS             0
REPORT_STEP          00:01:00
WET_STEP             00:01:00
DRY_STEP             00:01:00
ROUTING_STEP         1
RULE_STEP            00:00:00

INERTIAL_DAMPING     PARTIAL
NORMAL_FLOW_LIMITED  BOTH
FORCE_MAIN_EQUATION  H-W
VARIABLE_STEP        0
LENGTHENING_STEP     0
MIN_SURFAREA         0
MAX_TRIALS           8
HEAD_TOLERANCE       0.0015
SYS_FLOW_TOL         5
LAT_FLOW_TOL         5
MINIMUM_STEP         0.5
```

```
THREADS              8

[EVAPORATION]
;;Data Source    Parameters
;;-------------- ----------------
CONSTANT         0.0
DRY_ONLY         NO

[RAINGAGES]
;;Name           Format    Interval SCF      Source
;;-------------- --------- -------- -------- ----------
RG1              INTENSITY 0:10     1.0      TIMESERIES 100C

[SUBCATCHMENTS]
;;Name           Rain Gage        Outlet           Area     %Imperv  Width    %Slope   CurbLen  SnowPack

;;-------------- ---------------- ---------------- -------- -------- -------- -------- --------
----------------
BLDGA            RG1              BLDG-S           0.483493 100      108.79   1.5      0

C134A            RG1              C134A-S          0.073487 71.429   34       2        0

L129A            RG1              L129A-S          0.115952 64.286   64       2        0

L129A2           RG1              L129A-S          0.05213  7.14     54.4     4        0

L133A            RG1              L133A-S          0.105755 64.286   61       2        0

L133A2           RG1              L133A-S          0.056933 14.29    60       4        0

L133B            RG1              L133B-S          0.10376  71.429   57       2        0

L133B2           RG1              L133B-S          0.028186 28.57    62.6     4        0

L148A            RG1              L148A-S          0.054992 71.429   36       2        0

L200A            RG1              L200A-S          0.095917 85.714   46.1     2        0

L200B            RG1              L200B-S          0.107938 82.857   47.1     2        0
```

```
L201A            RG1              L201A-S          0.09524  100      38.4     2        0

L202A            RG1              L202A-S          0.112801 78.571   59.7     2        0

L203A            RG1              L203A-S          0.322012 71.429   89.1     3        0

L203B            RG1              L203B-S          0.01959  85.714   20.1     3        0

L203C            RG1              L203C-S          0.163562 85.714   58       3        0

L205A            RG1              204              0.354047 14.286   79.661   2        0

L206A            RG1              204              0.318658 32.857   71.698   3        0

L206B            RG1              204              0.335287 2.857    75.44    2        0

POND             RG1              POND-S           0.457162 0        165      33       0

UNC-1            RG1              JEROME_JODOIN    0.044039 35.71    45.2     4        0

UNC-2            RG1              JEROME_JODOIN    0.0147   95.714   15.6     3        0

[SUBAREAS]
;;Subcatchment   N-Imperv   N-Perv     S-Imperv   S-Perv     PctZero    RouteTo    PctRouted
;;-------------- ---------- ---------- ---------- ---------- ---------- ---------- ----------
BLDGA            0.013      0.25       1.57       4.67       0          OUTLET
C134A            0.013      0.25       1.57       4.67       0          OUTLET
L129A            0.013      0.25       1.57       4.67       0          OUTLET
L129A2           0.013      0.25       1.57       4.67       0          OUTLET
L133A            0.013      0.25       1.57       4.67       0          OUTLET
L133A2           0.013      0.25       1.57       4.67       0          OUTLET
L133B            0.013      0.25       1.57       4.67       0          OUTLET
L133B2           0.013      0.25       1.57       4.67       0          OUTLET
L148A            0.013      0.25       1.57       4.67       0          OUTLET
L200A            0.013      0.25       1.57       4.67       0          OUTLET
L200B            0.013      0.25       1.57       4.67       0          OUTLET
L201A            0.013      0.25       1.57       4.67       0          OUTLET
```

```
L202A            0.013      0.25       1.57       4.67       0          OUTLET
L203A            0.013      0.25       1.57       4.67       0          OUTLET
L203B            0.013      0.25       1.57       4.67       0          OUTLET
L203C            0.013      0.25       1.57       4.67       0          OUTLET
L205A            0.013      0.25       1.57       4.67       0          OUTLET
L206A            0.013      0.25       1.57       4.67       0          OUTLET
L206B            0.013      0.25       1.57       4.67       0          OUTLET
POND             0.013      0.25       1.57       4.67       0          OUTLET
UNC-1            0.013      0.25       1.57       4.67       0          OUTLET
UNC-2            0.013      0.25       1.57       4.67       0          OUTLET

[INFILTRATION]
;;Subcatchment   Param1     Param2     Param3     Param4     Param5
;;-------------- ---------- ---------- ---------- ---------- ----------
BLDGA            76.2       13.2       4.14       7          0
C134A            76.2       13.2       4.14       7          0
L129A            76.2       13.2       4.14       7          0
L129A2           76.2       13.2       4.14       7          0
L133A            76.2       13.2       4.14       7          0
L133A2           76.2       13.2       4.14       7          0
L133B            76.2       13.2       4.14       7          0
L133B2           76.2       13.2       4.14       7          0
L148A            76.2       13.2       4.14       7          0
L200A            76.2       13.2       4.14       7          0
L200B            76.2       13.2       4.14       7          0
L201A            76.2       13.2       4.14       7          0
L202A            76.2       13.2       4.14       7          0
L203A            76.2       13.2       4.14       7          0
L203B            76.2       13.2       4.14       7          0
L203C            76.2       13.2       4.14       7          0
L205A            76.2       13.2       4.14       7          0
L206A            76.2       13.2       4.14       7          0
L206B            76.2       13.2       4.14       7          0
POND             76.2       13.2       4.14       7          0
UNC-1            76.2       13.2       4.14       7          0
UNC-2            76.2       13.2       4.14       7          0

[OUTFALLS]
;;Name           Elevation  Type       Stage Data       Gated    Route To
```

```
;;-------------- ---------- ---------- ---------------- -------- ----------------
B20              84.71      FREE                        NO
JEROME_JODOIN    87.8       FREE                        NO
JEROME_JODOIN_2  87.6       FREE                        NO
OF_MJ            87.25      FREE                        NO
OVFL             86         FREE                        NO

[STORAGE]
;;Name           Elev.    MaxDepth   InitDepth  Shape      Curve Name/Params            SurDepth Fevap
Psi      Ksat     IMD
;;-------------- -------- ---------- ----------- ---------- ---------------------------- -------- --------
-------- -------- --------
129              85.08    2.49       0          FUNCTIONAL 0         0         1.13     0        0
133              84.93    2.52       0          FUNCTIONAL 0         0         1.13     0        0
134              85.35    2.3        0          FUNCTIONAL 0         0         1.13     0        0
147              84.07    3.276      0.77       FUNCTIONAL 0         0         1.13     0        0
147A             85.08    2.499      0          FUNCTIONAL 0         0         1.13     0        0
147-DS           84.04    3.24       0.8        FUNCTIONAL 0         0         1.13     0        0
148              84.73    2.72       0.11       FUNCTIONAL 0         0         1.13     0        0
200              85.225   2.394      0          FUNCTIONAL 0         0         1.13     0        0
201              85.498   1.872      0          FUNCTIONAL 0         0         1.13     0        0
202              85.308   2.198      0          FUNCTIONAL 0         0         1.13     0        0
203              85.68    2.243      0          FUNCTIONAL 0         0         1.13     0        0
204              85.63    2.18       0          TABULAR    204_V                        0        0
BLDG-S           100      0.3        0          TABULAR    BLDG_V                       0        0
C134A-S          85.97    1.78       0          FUNCTIONAL 0         0         0        0        0
C134A-S1         87.56    0.4        0          FUNCTIONAL 0         0         0        0        0
L129A-S          85.71    1.78       0          FUNCTIONAL 0         0         0        0        0
L129A-S1         87.44    0.4        0          FUNCTIONAL 0         0         0        0        0
L133A-S          85.75    1.78       0          FUNCTIONAL 0         0         0        0        0
L133A-S1         87.39    0.4        0          FUNCTIONAL 0         0         0        0        0
L133B-S          85.7     1.78       0          FUNCTIONAL 0         0         0        0        0
L133B-S1         87.33    0.4        0          FUNCTIONAL 0         0         0        0        0
L147A-S1         87.25    0.4        0          FUNCTIONAL 0         0         0        0        0
L148A-S          85.7     1.78       0          FUNCTIONAL 0         0         0        0        0
L148A-S1         87.37    0.4        0          FUNCTIONAL 0         0         0        0        0
L200A-S          85.85    1.88       0          TABULAR    L200A_V                      0        0
L200B-S          86.01    1.88       0          TABULAR    L200B_V                      0        0
L201A-S          85.99    1.88       0          TABULAR    L201A_V                      0        0
```

```
L202A-S          86       1.88       0          TABULAR    L202A_V                      0        0
L203A-S          85.96    1.88       0          TABULAR    L203A_V                      0        0
L203B-S          86.27    1.88       0          TABULAR    L203B_V                      0        0
L203C-S          86.14    1.88       0          TABULAR    L203C_V                      0        0
POND-S           84.35    1.65       0.49       TABULAR    POND_V                       0        0

[CONDUITS]
;;Name           From Node        To Node          Length     Roughness  InOffset   OutOffset  InitFlow
MaxFlow
;;-------------- ---------------- ---------------- ---------- ---------- ---------- ---------- ----------
----------
129-133          129              133              66.03      0.013      85.08      84.93      0          0

133-147          133              147              119.76     0.013      84.93      84.45      0          0

134-129          134              129              34.31      0.013      85.35      85.23      0          0

147-147-DS       147              147-DS           11.8       0.013      84.07      84.04      0          0

147A-147         147A             147              12.77      0.013      85.08      85.049     0          0

147-POND-S       147              POND-S           25.105     0.013      84.4       84.35      0          0

148-147          148              147              34.27      0.013      84.73      84.6       0          0

200-147A         200              147A             41.994     0.013      85.225     85.16      0          0

201-200          201              200              16.094     0.013      85.498     85.45      0          0

202-200          202              200              38.571     0.013      85.308     85.25      0          0

203-202          203              202              112.653    0.013      85.68      85.458     0          0

C134A-S1-C134A-S C134A-S1         C134A-S          16.41      0.013      87.56      85.97      0          0

C134A-S-L129A-S1 C134A-S          L129A-S1         20.25      0.013      85.97      87.44      0          0

L129A-S1-L129A-S L129A-S1         L129A-S          33.08      0.013      87.44      85.71      0          0
```

```
L129A-S-L133A-S1 L129A-S          L133A-S1         33.83      0.013      85.71      87.39      0          0

L133A-S1-L133A-S L133A-S1         L133A-S          28.87      0.013      87.39      85.75      0          0

L133A-S-L133B-S1 L133A-S          L133B-S1         31.08      0.013      85.75      87.33      0          0

L133B-S1-L133B-S L133B-S1         L133B-S          28.33      0.013      87.33      85.7       0          0

L133B-S-L147A-S1 L133B-S          L147A-S1         30.5       0.013      85.7       87.25      0          0

L148A-S1-L148A-S L148A-S1         L148A-S          19.75      0.013      87.37      85.7       0          0

L148A-S-L147A-S1 L148A-S          L147A-S1         16.76      0.013      85.7       87.25      0          0


[ORIFICES]
;;Name           From Node        To Node          Type         Offset     Qcoeff     Gated    CloseTime
;;-------------- ---------------- ---------------- ------------ ---------- ---------- -------- ----------
204-O            204              202              SIDE         85.63      0.572      NO       0
C134A-IC1        C134A-S          134              SIDE         85.97      0.572      NO       0
C134A-IC2        C134A-S          134              SIDE         85.98      0.572      NO       0
L129A-IC1        L129A-S          129              SIDE         85.74      0.572      NO       0
L129A-IC2        L129A-S          129              SIDE         85.71      0.572      NO       0
L133A-IC1        L133A-S          133              SIDE         85.78      0.572      NO       0
L133A-IC2        L133A-S          133              SIDE         85.75      0.572      NO       0
L133B-IC1        L133B-S          133              SIDE         85.73      0.572      NO       0
L133B-IC2        L133B-S          133              SIDE         85.7       0.572      NO       0
L148A-IC1        L148A-S          148              SIDE         85.7       0.572      NO       0
L148A-IC2        L148A-S          148              SIDE         85.7       0.572      NO       0
L200A-O          L200A-S          200              SIDE         85.85      0.572      NO       0
L200B-O          L200B-S          200              SIDE         86.01      0.572      NO       0
L201A-O          L201A-S          201              SIDE         85.99      0.572      NO       0
L202A-O          L202A-S          202              SIDE         86         0.572      NO       0
L203A-O          L203A-S          203              SIDE         85.96      0.572      NO       0
L203B-O          L203B-S          203              SIDE         86.27      0.572      NO       0
L203C-O          L203C-S          203              SIDE         86.14      0.572      NO       0
POND-O           POND-S           B20              SIDE         84.84      0.572      NO       0

[WEIRS]
;;Name           From Node        To Node          Type         CrestHt    Qcoeff     Gated    EndCon
EndCoeff   Surcharge  RoadWidth  RoadSurf   Coeff. Curve
;;-------------- ---------------- ---------------- ------------ ---------- ---------- -------- --------
---------- ---------- ---------- ---------- ----------------
147-W            147-DS           OVFL             TRANSVERSE   86         1.67       NO       0        0
       YES
204-W            204              JEROME_JODOIN_2  TRANSVERSE   87.6       1.67       NO       0        0
       YES
L147A-W          L147A-S1         OF_MJ            TRANSVERSE   87.25      1.67       NO       0        0
       YES
L200A-W          L200A-S          L201A-S          TRANSVERSE   87.53      1.67       NO       0        0
       YES
L200B-W          L200B-S          L200A-S          TRANSVERSE   87.54      1.67       NO       0        0
       YES
L201A-W          L201A-S          L133B-S          TRANSVERSE   87.52      1.67       NO       0        0
       YES
L202A-W          L202A-S          L201A-S          TRANSVERSE   87.54      1.67       NO       0        0
       YES
L203A-W          L203A-S          L202A-S          TRANSVERSE   87.55      1.67       NO       0        0
       YES
L203B-W          L203B-S          JEROME_JODOIN    TRANSVERSE   87.8       1.67       NO       0        0
       YES
L203C-W          L203C-S          L203A-S          TRANSVERSE   87.76      1.67       NO       0        0
       YES
W1               BLDG-S           L201A-S          TRANSVERSE   100.15     1.67       NO       0        0
       YES

[OUTLETS]
;;Name           From Node        To Node          Offset     Type             QTable/Qcoeff    Qexpon
Gated
;;-------------- ---------------- ---------------- ---------- ---------------- ---------------- ----------
--------
BLDG-O           BLDG-S           201              100        TABULAR/HEAD     BLDG-O
NO

[XSECTIONS]
;;Link           Shape        Geom1            Geom2      Geom3      Geom4      Barrels    Culvert
;;-------------- ------------ ---------------- ---------- ---------- ---------- ---------- ----------
129-133          CIRCULAR     0.45             0          0          0          1
```

```
133-147          CIRCULAR     0.45             0          0          0          1
134-129          CIRCULAR     0.3              0          0          0          1
147-147-DS       CIRCULAR     0.75             0          0          0          1
147A-147         CIRCULAR     0.675            0          0          0          1
147-POND-S       CIRCULAR     0.675            0          0          0          1
148-147          CIRCULAR     0.3              0          0          0          1
200-147A         CIRCULAR     0.6              0          0          0          1
201-200          CIRCULAR     0.375            0          0          0          1
202-200          CIRCULAR     0.6              0          0          0          1
203-202          CIRCULAR     0.45             0          0          0          1
C134A-S1-C134A-S IRREGULAR    18mROW
C134A-S-L129A-S1 IRREGULAR    18mROW
L129A-S1-L129A-S IRREGULAR    18mROW_SCHOOL
L129A-S-L133A-S1 IRREGULAR    18mROW_SCHOOL
L133A-S1-L133A-S IRREGULAR    18mROW_SCHOOL
L133A-S-L133B-S1 IRREGULAR    18mROW_SCHOOL
L133B-S1-L133B-S IRREGULAR    18mROW_SCHOOL
L133B-S-L147A-S1 IRREGULAR    18mROW_SCHOOL
L148A-S1-L148A-S IRREGULAR    18mROW
L148A-S-L147A-S1 IRREGULAR    18mROW
204-O            CIRCULAR     0.127            0          0          0
C134A-IC1        CIRCULAR     0.083            0          0          0
C134A-IC2        CIRCULAR     0.083            0          0          0
L129A-IC1        CIRCULAR     0.083            0          0          0
L129A-IC2        CIRCULAR     0.083            0          0          0
L133A-IC1        CIRCULAR     0.083            0          0          0
L133A-IC2        CIRCULAR     0.083            0          0          0
L133B-IC1        CIRCULAR     0.083            0          0          0
L133B-IC2        CIRCULAR     0.083            0          0          0
L148A-IC1        CIRCULAR     0.083            0          0          0
L148A-IC2        CIRCULAR     0.083            0          0          0
L200A-O          CIRCULAR     0.095            0          0          0
L200B-O          CIRCULAR     0.095            0          0          0
L201A-O          CIRCULAR     0.095            0          0          0
L202A-O          CIRCULAR     0.095            0          0          0
L203A-O          CIRCULAR     0.178            0          0          0
L203B-O          CIRCULAR     0.083            0          0          0
L203C-O          CIRCULAR     0.127            0          0          0
POND-O           CIRCULAR     0.108            0          0          0
```

```
147-W            RECT_OPEN    0.3              1.2        0          0
204-W            RECT_OPEN    0.1              6          0          0
L147A-W          RECT_OPEN    0.3              8.5        0          0
L200A-W          RECT_OPEN    0.1              6          0          0
L200B-W          RECT_OPEN    0.1              6          0          0
L201A-W          RECT_OPEN    0.1              6          0          0
L202A-W          RECT_OPEN    0.1              6          0          0
L203A-W          RECT_OPEN    0.1              6          0          0
L203B-W          RECT_OPEN    0.1              6          0          0
L203C-W          RECT_OPEN    0.1              6          0          0
W1               RECT_OPEN    0.1              10         0          0

[TRANSECTS]
;;Transect Data in HEC-2 format
;
NC 0.25     0.25     0.013
X1 18mROW            7        4.75     13.25    0.0      0.0      0.0      0.0      0.0
GR 0.3      0        0.15     4.75     0        4.75     0.13     9        0        13.25
GR 0.15     13.25    0.3      18
;
NC 0.25     0.25     0.013
X1 18mROW_SCHOOL     7        4.75     14.25    0.0      0.0      0.0      0.0      0.0
GR 0.275    0        0.18     4.75     0.03     4.75     0.1575   9        0        14.25
GR 0.15     14.25    0.23     18

[LOSSES]
;;Link           Kentry     Kexit      Kavg       Flap Gate  Seepage
;;-------------- ---------- ---------- ---------- ---------- ----------
129-133          0          0.06       0          NO         0
133-147          0          1.32       0          NO         0
134-129          0          1.32       0          NO         0
147A-147         0          1.32       0          NO         0
148-147          0          1.32       0          NO         0
200-147A         0          0.296      0          NO         0
201-200          0          1.151      0          NO         0
202-200          0          0.022      0          NO         0
203-202          0          0.486      0          NO         0

[CURVES]
```

```
;;Name           Type       X-Value    Y-Value
;;-------------- ---------- ---------- ----------
BLDG-O           Rating     0          0
BLDG-O                      0.025      5.4
BLDG-O                      0.05       10.7
BLDG-O                      0.075      14.7
BLDG-O                      0.1        18.8
BLDG-O                      0.125      22.8
BLDG-O                      0.15       26.8

204_V            Storage    0          0.36
204_V                       0.469999   0.36
204_V                       0.47       86.2
204_V                       1.47       86.2
204_V                       1.47001    0.36
204_V                       1.67       0.36
204_V                       1.72       23
204_V                       1.77       119.8
204_V                       1.82       299.2
204_V                       1.87       558.9
204_V                       1.92       921.8
204_V                       1.97       1411.5

BLDG_V           Storage    0          0
BLDG_V                      0.025      108
BLDG_V                      0.05       432
BLDG_V                      0.075      972
BLDG_V                      0.1        1728
BLDG_V                      0.125      2700
BLDG_V                      0.15       3887

L200A_V          Storage    0          0.36
L200A_V                     1.38       0.36
L200A_V                     1.68       360.3
L200A_V                     1.88       360.3

L200B_V          Storage    0          0.36
L200B_V                     1.38       0.36
L200B_V                     1.54       262.7
L200B_V                     1.88       262.7

L201A_V          Storage    0          0.36
L201A_V                     1.38       0.36
L201A_V                     1.53       180.4
L201A_V                     1.88       180.4

L202A_V          Storage    0          0.36
L202A_V                     1.38       0.36
L202A_V                     1.55       223.4
L202A_V                     1.88       223.4

L203A_V          Storage    0          0.36
L203A_V                     1.38       0.36
L203A_V                     1.59       290.3
L203A_V                     1.88       290.3

L203B_V          Storage    0          0.36
L203B_V                     1.38       0.36
L203B_V                     1.53       62.8
L203B_V                     1.88       62.8

L203C_V          Storage    0          0.36
L203C_V                     1.38       0.36
L203C_V                     1.55       126.5
L203C_V                     1.88       126.5

POND_V           Storage    0          0
POND_V                      0.49       0
POND_V                      0.490001   1150
POND_V                      1.49       1200

[TIMESERIES]
;;Name           Date       Time       Value
;;-------------- ---------- ---------- ----------
100C                        0:00       0
100C                        0:10       6.05
100C                        0:20       7.54
100C                        0:30       10.16
```

```
100C                        0:40       15.97
100C                        0:50       40.65
100C                        1:00       178.56
100C                        1:10       54.05
100C                        1:20       27.32
100C                        1:30       18.24
100C                        1:40       13.74
100C                        1:50       11.06
100C                        2:00       9.29
100C                        2:10       8.02
100C                        2:20       7.08
100C                        2:30       6.35
100C                        2:40       5.76
100C                        2:50       5.28
100C                        3:00       4.88

[REPORT]
;;Reporting Options
INPUT      YES
CONTROLS   NO
SUBCATCHMENTS ALL
NODES ALL
LINKS ALL

[TAGS]
Link       C134A-S1-C134A-S MJ
Link       C134A-S-L129A-S1 MJ
Link       L129A-S1-L129A-S MJ
Link       L129A-S-L133A-S1 MJ
Link       L133A-S1-L133A-S MJ
Link       L133A-S-L133B-S1 MJ
Link       L133B-S1-L133B-S MJ
Link       L133B-S-L147A-S1 MJ
Link       L148A-S1-L148A-S MJ
Link       L148A-S-L147A-S1 MJ

[MAP]
DIMENSIONS       383823.75795     5033453.82165    384088.52905     5033742.99735
UNITS            Meters
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[COORDINATES]
;;Node           X-Coord            Y-Coord
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B20              384016.747         5033726.945
JEROME_JODOIN    383905.321         5033548.07
JEROME_JODOIN_2  383934.373         5033473.985
OF_MJ            384051.817         5033695.151
OVFL             384052.729         5033701.523
129              383861.046         5033622.676
133              383922.091         5033647.834
134              383846.351         5033653.685
147              384032.8           5033694
147A             384035.301         5033680.972
147-DS           384049.522         5033700.213
148              384019.807         5033725.181
200              384025.7           5033640
201              384009.718         5033642.2
202              384015.2           5033603
203              383912.2           5033558
204              384044.8           5033589
BLDG-S           383990.139         5033635.955
C134A-S          383858.587         5033642.556
C134A-S1         383851.265         5033656.028
L129A-S          383899.954         5033642.917
L129A-S1         383864.201         5033629.037
L133A-S          383950.378         5033664.069
L133A-S1         383923.931         5033653.153
L133B-S          384005.716         5033686.931
L133B-S1         383978.072         5033675.671
L147A-S1         384039.558         5033690.364
L148A-S          384031.254         5033710.647
L148A-S1         384023.907         5033727.416
L200A-S          384039.271         5033657.155
L200B-S          384049.871         5033632.758
L201A-S          384006.46          5033649.247
L202A-S          384016.219         5033626.364
L203A-S          383989.792         5033597.692
L203B-S          383907.79          5033567.004
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L203C-S          383941.245         5033560.715
POND-S           384010.1           5033705

[VERTICES]
;;Link           X-Coord            Y-Coord
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C134A-IC2        383853.265         5033643.619
L129A-IC2        383895.988         5033638.617
L133A-IC2        383946.887         5033660.422
L133B-IC2        383991.353         5033677.956
L148A-IC1        384025.992         5033713.935
204-W            384008.33          5033508.666
L202A-W          384012.888         5033643.968
L203C-W          383974.005         5033575.313

[POLYGONS]
;;Subcatchment   X-Coord            Y-Coord
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BLDGA            383898.223         5033616.562
BLDGA            383898.223         5033616.562
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BLDGA            383927.799         5033628.751
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BLDGA            383925.92          5033633.441
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BLDGA            383908.815         5033578.788
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BLDGA            383900.201         5033600.485
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BLDGA            383892.362         5033612.411
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C134A            383863.078         5033621.891
C134A            383845.89          5033627.761
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C134A            383842.894         5033633.541
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C134A	383858.024	5033659.314
C134A	383858.024	5033659.314
C134A	383862.427	5033648.633
C134A	383862.427	5033648.633
C134A	383864.772	5033643.431
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C134A	383868.259	5033636.978
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L129A2	383906.606	5033620.016

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POND             384021.882         5033700.317
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POND             383864.772         5033643.431
POND             383862.427         5033648.633
POND             383862.427         5033648.633
POND             383858.024         5033659.314
UNC-1            383880.352         5033615.734
UNC-1            383892.45          5033612.198
UNC-1            383896.75          5033601.766
UNC-1            383900.201         5033600.485
UNC-1            383908.815         5033578.788
UNC-1            383898.538         5033574.643
UNC-1            383880.352         5033615.734
UNC-2            383910.86          5033545.051
UNC-2            383904.618         5033560.06
UNC-2            383904.618         5033560.06
UNC-2            383909.827         5033562.375
UNC-2            383909.827         5033562.375
UNC-2            383912.208         5033557.372
UNC-2            383912.208         5033557.372
UNC-2            383917.842         5033559.187
UNC-2            383917.842         5033559.187
UNC-2            383919.163         5033547.778
UNC-2            383919.163         5033547.778
UNC-2            383910.86          5033545.051

;;Storage Node   X-Coord            Y-Coord
;;-------------- ------------------ ------------------

[SYMBOLS]
;;Gage           X-Coord            Y-Coord
;;-------------- ------------------ ------------------
```

C.3 PCSWMM Output File (100yr 3hr Chicago)

EPA STORM WATER MANAGEMENT MODEL - VERSION 5.2 (Build 5.2.4)

****
Element Count
****
Number of rain gages 1
Number of subcatchments ... 22
Number of nodes 37
Number of links 52
Number of pollutants 0
Number of land uses 0

****
Raingage Summary
****

Name	Data Source	Data Type	Recording Interval
RG1	100C	INTENSITY	10 min.

****
Subcatchment Summary
****

Name	Area	Width	%Imperv	%Slope	Rain Gage	Outlet
BLDGA	0.48	108.79	100.00	1.5000	RG1	BLDG-S
C134A	0.07	34.00	71.43	2.0000	RG1	C134A-S
L129A	0.12	64.00	64.29	2.0000	RG1	L129A-S
L129A2	0.05	54.40	7.14	4.0000	RG1	L129A-S
L133A	0.11	61.00	64.29	2.0000	RG1	L133A-S
L133A2	0.06	60.00	14.29	4.0000	RG1	L133A-S
L133B	0.10	57.00	71.43	2.0000	RG1	L133B-S
L133B2	0.03	62.60	28.57	4.0000	RG1	L133B-S
L148A	0.05	36.00	71.43	2.0000	RG1	L148A-S
L200A	0.10	46.10	85.71	2.0000	RG1	L200A-S
L200B	0.11	47.10	82.86	2.0000	RG1	L200B-S
L201A	0.10	38.40	100.00	2.0000	RG1	L201A-S
L202A	0.11	59.70	78.57	2.0000	RG1	L202A-S
L203A	0.32	89.10	71.43	3.0000	RG1	L203A-S
L203B	0.02	20.10	85.71	3.0000	RG1	L203B-S
L203C	0.16	58.00	85.71	3.0000	RG1	L203C-S
L205A	0.35	79.66	14.29	2.0000	RG1	204
L206A	0.32	71.70	32.86	3.0000	RG1	204
L206B	0.34	75.44	2.86	2.0000	RG1	204
POND	0.46	165.00	0.00	33.0000	RG1	POND-S
UNC-1	0.04	45.20	35.71	4.0000	RG1	JEROME_JODOIN
UNC-2	0.01	15.60	95.71	3.0000	RG1	JEROME_JODOIN

****
Node Summary
****

Name	Type	Invert Elev.	Max. Depth	Ponded Area	External Inflow
B20	OUTFALL	84.71	0.00	0.0	
JEROME_JODOIN	OUTFALL	87.80	0.00	0.0	
JEROME_JODOIN_2	OUTFALL	87.60	0.00	0.0	
OF_MJ	OUTFALL	87.25	0.00	0.0	
OVFL	OUTFALL	86.00	0.00	0.0	
129	STORAGE	85.08	2.49	0.0	
133	STORAGE	84.93	2.52	0.0	
134	STORAGE	85.35	2.30	0.0	
147	STORAGE	84.07	3.28	0.0	
147A	STORAGE	85.08	2.50	0.0	
147-DS	STORAGE	84.04	3.24	0.0	
148	STORAGE	84.73	2.72	0.0	
200	STORAGE	85.22	2.39	0.0	
201	STORAGE	85.50	1.87	0.0	
202	STORAGE	85.31	2.20	0.0	
203	STORAGE	85.68	2.24	0.0	
204	STORAGE	85.63	2.18	0.0	

BLDG-S	STORAGE	100.00	0.30	0.0
C134A-S	STORAGE	85.97	1.78	0.0
C134A-S1	STORAGE	87.56	0.40	0.0
L129A-S	STORAGE	85.71	1.78	0.0
L129A-S1	STORAGE	87.44	0.40	0.0
L133A-S	STORAGE	85.75	1.78	0.0
L133A-S1	STORAGE	87.39	0.40	0.0
L133B-S	STORAGE	85.70	1.78	0.0
L133B-S1	STORAGE	87.33	0.40	0.0
L147A-S1	STORAGE	87.25	0.40	0.0
L148A-S	STORAGE	85.70	1.78	0.0
L148A-S1	STORAGE	87.37	0.40	0.0
L200A-S	STORAGE	85.85	1.88	0.0
L200B-S	STORAGE	86.01	1.88	0.0
L201A-S	STORAGE	85.99	1.88	0.0
L202A-S	STORAGE	86.00	1.88	0.0
L203A-S	STORAGE	85.96	1.88	0.0
L203B-S	STORAGE	86.27	1.88	0.0
L203C-S	STORAGE	86.14	1.88	0.0
POND-S	STORAGE	84.35	1.65	0.0

****
Link Summary
****

Name	From Node	To Node	Type	Length	%Slope	Roughness
129-133	129	133	CONDUIT	66.0	0.2272	0.0130
133-147	133	147	CONDUIT	119.8	0.4008	0.0130
134-129	134	129	CONDUIT	34.3	0.3498	0.0130
147-147-DS	147	147-DS	CONDUIT	11.8	0.2542	0.0130
147A-147	147A	147	CONDUIT	12.8	0.2428	0.0130
147-POND-S	147	POND-S	CONDUIT	25.1	0.1992	0.0130
148-147	148	147	CONDUIT	34.3	0.3793	0.0130
200-147A	200	147A	CONDUIT	42.0	0.1548	0.0130
201-200	201	200	CONDUIT	16.1	0.2982	0.0130
202-200	202	200	CONDUIT	38.6	0.1504	0.0130
203-202	203	202	CONDUIT	112.7	0.1971	0.0130
C134A-S1-C134A-S	C134A-S1	C134A-S	CONDUIT	16.4	9.7350	0.0130
C134A-S-L129A-S1	C134A-S	L129A-S1	CONDUIT	20.2	-7.2785	0.0130
L129A-S1-L129A-S	L129A-S1	L129A-S	CONDUIT	33.1	5.2369	0.0130
L129A-S-L133A-S1	L129A-S	L133A-S1	CONDUIT	33.8	-4.9721	0.0130
L133A-S1-L133A-S	L133A-S1	L133A-S	CONDUIT	28.9	5.6898	0.0130
L133A-S-L133B-S1	L133A-S	L133B-S1	CONDUIT	31.1	-5.0902	0.0130
L133B-S1-L133B-S	L133B-S1	L133B-S	CONDUIT	28.3	5.7632	0.0130
L133B-S-L147A-S1	L133B-S	L147A-S1	CONDUIT	30.5	-5.0885	0.0130
L148A-S1-L148A-S	L148A-S1	L148A-S	CONDUIT	19.8	8.4861	0.0130
L148A-S-L147A-S1	L148A-S	L147A-S1	CONDUIT	16.8	-9.2880	0.0130
204-O	204	202	ORIFICE			
C134A-IC1	C134A-S	134	ORIFICE			
C134A-IC2	C134A-S	134	ORIFICE			
L129A-IC1	L129A-S	129	ORIFICE			
L129A-IC2	L129A-S	129	ORIFICE			
L133A-IC1	L133A-S	133	ORIFICE			
L133A-IC2	L133A-S	133	ORIFICE			
L133B-IC1	L133B-S	133	ORIFICE			
L133B-IC2	L133B-S	133	ORIFICE			
L148A-IC1	L148A-S	148	ORIFICE			
L148A-IC2	L148A-S	148	ORIFICE			
L200A-O	L200A-S	200	ORIFICE			
L200B-O	L200B-S	200	ORIFICE			
L201A-O	L201A-S	201	ORIFICE			
L202A-O	L202A-S	202	ORIFICE			
L203A-O	L203A-S	203	ORIFICE			
L203B-O	L203B-S	203	ORIFICE			
L203C-O	L203C-S	203	ORIFICE			
POND-O	POND-S	B20	ORIFICE			
147-W	147-DS	OVFL	WEIR			
204-W	204	JEROME_JODOIN_2	WEIR			
L147A-W	L147A-S1	OF_MJ	WEIR			
L200A-W	L200A-S	L201A-S	WEIR			
L200B-W	L200B-S	L200A-S	WEIR			
L201A-W	L201A-S	L133B-S	WEIR			
L202A-W	L202A-S	L201A-S	WEIR			
L203A-W	L203A-S	L202A-S	WEIR			
L203B-W	L203B-S	JEROME_JODOIN	WEIR			
L203C-W	L203C-S	L203A-S	WEIR			
W1	BLDG-S	L201A-S	WEIR			

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BLDG-O           BLDG-S           201              OUTLET
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Cross Section Summary
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Conduit	Shape	Full Depth	Full Area	Hyd. Rad.	Max. Width	No. of Barrels	Full Flow
129-133	CIRCULAR	0.45	0.16	0.11	0.45	1	135.90
133-147	CIRCULAR	0.45	0.16	0.11	0.45	1	180.51
134-129	CIRCULAR	0.30	0.07	0.07	0.30	1	57.19
147-147-DS	CIRCULAR	0.75	0.44	0.19	0.75	1	561.37
147A-147	CIRCULAR	0.68	0.36	0.17	0.68	1	414.19
147-POND-S	CIRCULAR	0.68	0.36	0.17	0.68	1	375.16
148-147	CIRCULAR	0.30	0.07	0.07	0.30	1	59.56
200-147A	CIRCULAR	0.60	0.28	0.15	0.60	1	241.58
201-200	CIRCULAR	0.38	0.11	0.09	0.38	1	95.76
202-200	CIRCULAR	0.60	0.28	0.15	0.60	1	238.11
203-202	CIRCULAR	0.45	0.16	0.11	0.45	1	126.57
C134A-S1-C134A-S	18mROW	0.30	2.71	0.14	18.00	1	17944.94
C134A-S-L129A-S1	18mROW	0.30	2.71	0.14	18.00	1	15516.49
L129A-S1-L129A-S	18mROW_SCHOOL	0.28	2.35	0.12	18.00	1	10297.71
L129A-S-L133A-S1	18mROW_SCHOOL	0.28	2.35	0.12	18.00	1	10034.01
L133A-S1-L133A-S	18mROW_SCHOOL	0.28	2.35	0.12	18.00	1	10733.77
L133A-S-L133B-S1	18mROW_SCHOOL	0.28	2.35	0.12	18.00	1	10152.48
L133B-S1-L133B-S	18mROW_SCHOOL	0.28	2.35	0.12	18.00	1	10802.73
L133B-S-L147A-S1	18mROW_SCHOOL	0.28	2.35	0.12	18.00	1	10150.79
L148A-S1-L148A-S	18mROW	0.30	2.71	0.14	18.00	1	16754.34
L148A-S-L147A-S1	18mROW	0.30	2.71	0.14	18.00	1	17528.11

```
****************
Transect Summary
****************

Transect 18mROW
Area:
          0.0004     0.0017     0.0039     0.0069     0.0109
          0.0156     0.0213     0.0278     0.0352     0.0434
          0.0525     0.0625     0.0734     0.0851     0.0977
          0.1112     0.1255     0.1407     0.1568     0.1737
          0.1915     0.2101     0.2290     0.2478     0.2666
          0.2858     0.3059     0.3268     0.3486     0.3712
          0.3947     0.4190     0.4441     0.4701     0.4969
          0.5245     0.5530     0.5823     0.6125     0.6435
          0.6754     0.7081     0.7416     0.7760     0.8113
          0.8473     0.8842     0.9220     0.9606     1.0000
Hrad:
          0.0200     0.0400     0.0600     0.0800     0.1000
          0.1200     0.1400     0.1600     0.1800     0.2000
          0.2200     0.2400     0.2600     0.2800     0.3000
          0.3200     0.3400     0.3600     0.3800     0.4000
          0.4200     0.4464     0.4858     0.5250     0.5641
          0.6026     0.6384     0.6718     0.7027     0.7314
          0.7579     0.7823     0.8049     0.8257     0.8448
          0.8625     0.8787     0.8936     0.9073     0.9199
          0.9314     0.9420     0.9517     0.9606     0.9688
          0.9762     0.9830     0.9892     0.9949     1.0000
Width:
          0.0218     0.0436     0.0654     0.0872     0.1090
          0.1308     0.1526     0.1744     0.1962     0.2179
          0.2397     0.2615     0.2833     0.3051     0.3269
          0.3487     0.3705     0.3923     0.4141     0.4359
          0.4577     0.4722     0.4722     0.4722     0.4722
          0.4933     0.5144     0.5356     0.5567     0.5778
          0.5989     0.6200     0.6411     0.6622     0.6833
          0.7044     0.7256     0.7467     0.7678     0.7889
          0.8100     0.8311     0.8522     0.8733     0.8944
          0.9156     0.9367     0.9578     0.9789     1.0000

Transect 18mROW_SCHOOL
Area:
          0.0002     0.0009     0.0019     0.0034     0.0054
          0.0078     0.0110     0.0152     0.0201     0.0259
          0.0326     0.0402     0.0486     0.0578     0.0680
          0.0789     0.0908     0.1035     0.1171     0.1315
          0.1468     0.1629     0.1799     0.1978     0.2165
```

```
            0.2361     0.2565     0.2780     0.3008     0.3245
            0.3487     0.3735     0.3990     0.4256     0.4534
            0.4824     0.5127     0.5442     0.5770     0.6111
            0.6464     0.6829     0.7203     0.7583     0.7970
            0.8363     0.8762     0.9169     0.9581     1.0000
Hrad:
            0.0213     0.0427     0.0640     0.0853     0.1067
            0.1268     0.1428     0.1583     0.1744     0.1913
            0.2090     0.2273     0.2461     0.2652     0.2847
            0.3044     0.3244     0.3445     0.3647     0.3851
            0.4055     0.4261     0.4467     0.4674     0.4881
            0.5089     0.5297     0.5504     0.5722     0.6107
            0.6477     0.6830     0.7168     0.7481     0.7766
            0.8022     0.8253     0.8460     0.8645     0.8811
            0.8958     0.9089     0.9215     0.9337     0.9455
            0.9570     0.9683     0.9791     0.9897     1.0000
Width:
            0.0102     0.0204     0.0306     0.0407     0.0509
            0.0667     0.0870     0.1074     0.1278     0.1481
            0.1685     0.1889     0.2093     0.2296     0.2500
            0.2704     0.2907     0.3111     0.3315     0.3519
            0.3722     0.3926     0.4130     0.4333     0.4537
            0.4741     0.4944     0.5252     0.5525     0.5668
            0.5812     0.5955     0.6140     0.6436     0.6732
            0.7028     0.7324     0.7620     0.7916     0.8212
            0.8508     0.8778     0.8931     0.9083     0.9236
            0.9389     0.9542     0.9694     0.9847     1.0000


****************
Analysis Options
****************
Flow Units ............... LPS
Process Models:
  Rainfall/Runoff ........ YES
  RDII ................... NO
  Snowmelt ............... NO
  Groundwater ............ NO
  Flow Routing ........... YES
```

```
  Ponding Allowed ........ YES
  Water Quality .......... NO
Infiltration Method ...... HORTON
Flow Routing Method ...... DYNWAVE
Surcharge Method ......... EXTRAN
Starting Date ............ 05/05/2026 00:00:00
Ending Date .............. 05/05/2026 12:00:00
Antecedent Dry Days ...... 0.0
Report Time Step ......... 00:01:00
Wet Time Step ............ 00:01:00
Dry Time Step ............ 00:01:00
Routing Time Step ........ 1.00 sec
Variable Time Step ....... NO
Maximum Trials ........... 8
Number of Threads ........ 8
Head Tolerance ........... 0.001500 m


**************************        Volume         Depth
Runoff Quantity Continuity     hectare-m            mm
**************************     ---------       -------
Total Precipitation ......         0.252        71.667
Evaporation Loss .........         0.000         0.000
Infiltration Loss ........         0.080        22.884
Surface Runoff ...........         0.169        48.070
Final Storage ............         0.003         0.782
Continuity Error (%) .....        -0.096


**************************        Volume        Volume
Flow Routing Continuity        hectare-m      10^6 ltr
**************************     ---------     ---------
Dry Weather Inflow .......         0.000         0.000
Wet Weather Inflow .......         0.169         1.690
Groundwater Inflow .......         0.000         0.000
RDII Inflow ..............         0.000         0.000
External Inflow ..........         0.000         0.000
External Outflow .........         0.085         0.847
Flooding Loss ............         0.000         0.000
```

```
  Evaporation Loss .........         0.000         0.000
  Exfiltration Loss ........         0.000         0.000
  Initial Stored Volume ....         0.002         0.023
  Final Stored Volume ......         0.084         0.843
  Continuity Error (%) .....         1.348


  *************************
  Highest Continuity Errors
  *************************
  Node 147-DS (29.06%)
  Node 133 (6.02%)
  Node 129 (4.49%)
  Node 148 (3.24%)
  Node 203 (2.24%)


  ********************************
  Highest Flow Instability Indexes
  ********************************
  Link 204-O (32)
  Link L200A-O (2)


  *********************************
  Most Frequent Nonconverging Nodes
  *********************************
  Convergence obtained at all time steps.


  *************************
  Routing Time Step Summary
  *************************
  Minimum Time Step           :     1.00 sec
  Average Time Step           :     1.00 sec
  Maximum Time Step           :     1.00 sec
  % of Time in Steady State   :     0.00
  Average Iterations per Step :     2.00
  % of Steps Not Converging   :     0.01
```

```
  ***************************
  Subcatchment Runoff Summary
  ***************************
```

Subcatchment	Total Precip mm	Total Runon mm	Total Evap mm	Total Infil mm	Imperv Runoff mm	Perv Runoff mm	Total Runoff mm	Total Runoff 10^6 ltr	Peak Runoff LPS	Runoff Coeff
BLDGA	71.67	0.00	0.00	0.00	70.16	0.00	70.16	0.34	239.65	0.979
C134A	71.67	0.00	0.00	12.66	50.14	7.84	57.98	0.04	34.20	0.809
L129A	71.67	0.00	0.00	15.83	45.14	9.79	54.92	0.06	52.93	0.766
L129A2	71.67	0.00	0.00	41.15	5.01	25.47	30.48	0.02	20.60	0.425
L133A	71.67	0.00	0.00	15.82	45.14	9.80	54.93	0.06	48.40	0.767
L133A2	71.67	0.00	0.00	37.93	10.02	23.56	33.58	0.02	23.25	0.469
L133B	71.67	0.00	0.00	12.63	50.15	7.87	58.02	0.06	48.61	0.810
L133B2	71.67	0.00	0.00	31.36	20.04	19.92	39.96	0.01	12.52	0.558
L148A	71.67	0.00	0.00	12.61	50.15	7.89	58.05	0.03	25.90	0.810
L200A	71.67	0.00	0.00	6.28	60.17	3.97	64.14	0.06	46.53	0.895
L200B	71.67	0.00	0.00	7.56	58.16	4.75	62.91			

								0.07	51.99	0.878
L201A	71.67	0.00	0.00	0.00	70.18	0.00	70.18	0.07	47.24	0.979
L202A	71.67	0.00	0.00	9.45	55.16	5.93	61.09	0.07	53.90	0.852
L203A	71.67	0.00	0.00	12.72	50.14	7.77	57.91	0.19	147.42	0.808
L203B	71.67	0.00	0.00	6.25	60.18	4.01	64.19	0.01	9.52	0.896
L203C	71.67	0.00	0.00	6.29	60.17	3.97	64.13	0.10	79.29	0.895
L205A	71.67	0.00	0.00	40.30	10.03	21.14	31.17	0.11	75.87	0.435
L206A	71.67	0.00	0.00	30.85	23.07	17.29	40.36	0.13	100.26	0.563
L206B	71.67	0.00	0.00	46.03	2.00	23.60	25.61	0.09	54.44	0.357
POND	71.67	0.00	0.00	44.36	0.00	27.37	27.37	0.13	174.33	0.382
UNC-1	71.67	0.00	0.00	28.37	25.06	17.76	42.82	0.02	19.34	0.597
UNC-2	71.67	0.00	0.00	1.87	67.21	1.21	68.42	0.01	7.25	0.955

****

Node Depth Summary

****

Node	Type	Average Depth Meters	Maximum Depth Meters	Maximum HGL Meters	Time of Max Occurrence days hr:min	Reported Max Depth Meters
B20	OUTFALL	0.00	0.00	84.71	0 00:00	0.00
JEROME_JODOIN	OUTFALL	0.00	0.00	87.80	0 00:00	0.00
JEROME_JODOIN_2	OUTFALL	0.00	0.00	87.60	0 00:00	0.00
OF_MJ	OUTFALL	0.00	0.00	87.25	0 00:00	0.00
OVFL	OUTFALL	0.00	0.00	86.00	0 00:00	0.00
129	STORAGE	0.57	0.79	85.87	0 03:31	0.79
133	STORAGE	0.71	0.94	85.87	0 03:28	0.94
134	STORAGE	0.33	0.52	85.87	0 03:31	0.52
147	STORAGE	1.56	1.80	85.87	0 03:29	1.80
147A	STORAGE	0.59	0.79	85.87	0 03:33	0.79
147-DS	STORAGE	1.59	1.83	85.87	0 03:29	1.83
148	STORAGE	0.90	1.14	85.87	0 03:30	1.14
200	STORAGE	0.46	0.65	85.88	0 03:32	0.65
201	STORAGE	0.22	0.38	85.88	0 03:32	0.38
202	STORAGE	0.39	0.57	85.88	0 03:32	0.57
203	STORAGE	0.09	0.38	86.06	0 01:10	0.38
204	STORAGE	0.37	1.92	87.55	0 01:39	1.92
BLDG-S	STORAGE	0.04	0.15	100.15	0 01:35	0.15
C134A-S	STORAGE	0.02	0.19	86.16	0 01:16	0.19
C134A-S1	STORAGE	0.00	0.00	87.56	0 00:00	0.00
L129A-S	STORAGE	0.08	0.24	85.95	0 01:23	0.24
L129A-S1	STORAGE	0.00	0.00	87.44	0 00:00	0.00
L133A-S	STORAGE	0.06	0.25	86.00	0 01:22	0.25
L133A-S1	STORAGE	0.00	0.00	87.39	0 00:00	0.00
L133B-S	STORAGE	0.08	0.24	85.94	0 01:21	0.24
L133B-S1	STORAGE	0.00	0.00	87.33	0 00:00	0.00
L147A-S1	STORAGE	0.00	0.00	87.25	0 00:00	0.00
L148A-S	STORAGE	0.07	0.17	85.87	0 03:34	0.17
L148A-S1	STORAGE	0.00	0.00	87.37	0 00:00	0.00
L200A-S	STORAGE	0.08	1.52	87.37	0 01:11	1.52
L200B-S	STORAGE	0.09	1.51	87.52	0 01:11	1.51
L201A-S	STORAGE	0.08	1.53	87.52	0 01:11	1.53
L202A-S	STORAGE	0.09	1.53	87.53	0 01:11	1.53
L203A-S	STORAGE	0.07	1.59	87.55	0 01:11	1.59
L203B-S	STORAGE	0.01	0.52	86.79	0 01:10	0.52
L203C-S	STORAGE	0.08	1.62	87.76	0 01:11	1.62
POND-S	STORAGE	1.28	1.52	85.87	0 03:28	1.52

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Node Inflow Summary

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Node	Type	Maximum Lateral Inflow LPS	Maximum Total Inflow LPS	Time of Max Occurrence days hr:min	Lateral Inflow Volume 10^6 ltr	Total Inflow Volume 10^6 ltr	Flow Balance Error Percent
B20	OUTFALL	0.00	22.95	0 03:28	0	0.818	0.000
JEROME_JODOIN	OUTFALL	26.59	26.59	0 01:10	0.0289	0.0289	0.000
JEROME_JODOIN_2	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
OF_MJ	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
OVFL	OUTFALL	0.00	0.00	0 00:00	0	0	0.000 ltr
129	STORAGE	0.00	22.97	0 01:20	0	0.13	4.698
133	STORAGE	0.00	44.36	0 01:12	0	0.288	6.401
134	STORAGE	0.00	10.54	0 01:16	0	0.0426	2.253
147	STORAGE	0.00	315.39	0 01:22	0	1.51	1.074
147A	STORAGE	0.00	274.94	0 01:14	0	1.22	0.356
147-DS	STORAGE	0.00	1.26	0 01:08	0	0.00396	40.959
148	STORAGE	0.00	9.42	0 01:12	0	0.0526	3.348
200	STORAGE	0.00	275.40	0 01:13	0	1.23	0.614
201	STORAGE	0.00	48.17	0 01:23	0	0.406	0.099
202	STORAGE	0.00	185.35	0 01:13	0	0.694	-0.229
203	STORAGE	0.00	126.08	0 01:10	0	0.305	2.286
204	STORAGE	230.57	230.57	0 01:10	0.325	0.325	0.030
BLDG-S	STORAGE	239.65	239.65	0 01:10	0.339	0.339	-0.000
C134A-S	STORAGE	34.20	34.20	0 01:10	0.0426	0.0426	0.001
C134A-S1	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr
L129A-S	STORAGE	73.54	73.54	0 01:10	0.0796	0.0844	0.001
L129A-S1	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr
L133A-S	STORAGE	71.65	71.65	0 01:10	0.0772	0.0792	0.001
L133A-S1	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr
L133B-S	STORAGE	61.13	61.13	0 01:10	0.0715	0.0783	0.000
L133B-S1	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr
L147A-S1	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr
L148A-S	STORAGE	25.90	25.90	0 01:10	0.0319	0.042	0.004
L148A-S1	STORAGE	0.00	0.00	0 00:00	0	0	0.000 ltr
L200A-S	STORAGE	46.53	46.53	0 01:10	0.0615	0.0616	0.021
L200B-S	STORAGE	51.99	51.99	0 01:10	0.0679	0.0679	0.030
L201A-S	STORAGE	47.24	47.24	0 01:10	0.0668	0.0669	0.019
L202A-S	STORAGE	53.90	53.90	0 01:10	0.0689	0.0689	0.020
L203A-S	STORAGE	147.42	147.42	0 01:10	0.186	0.186	0.022
L203B-S	STORAGE	9.52	9.52	0 01:10	0.0126	0.0126	0.000
L203C-S	STORAGE	79.29	79.29	0 01:10	0.105	0.105	0.015
POND-S	STORAGE	174.33	455.87	0 01:10	0.125	1.6	0.173

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Node Surcharge Summary
****

No nodes were surcharged.

****
Node Flooding Summary
****

No nodes were flooded.

****
Storage Volume Summary
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Storage Unit	Average Volume 1000 m	Avg Pcnt Full	Evap Pcnt Loss	Exfil Pcnt Loss	Maximum Volume 1000 m	Max Pcnt Full	Time of Max Occurrence days hr:min	Maximum Outflow LPS
129	0.001	23.0	0.0	0.0	0.001	31.8	0 03:31	21.49
133	0.001	28.1	0.0	0.0	0.001	37.4	0 03:28	40.03
134	0.000	14.5	0.0	0.0	0.001	22.7	0 03:31	11.16
147	0.002	47.5	0.0	0.0	0.002	55.0	0 03:29	310.20
147A	0.001	23.6	0.0	0.0	0.001	31.8	0 03:33	274.78
147-DS	0.002	49.0	0.0	0.0	0.002	56.6	0 03:29	0.37
148	0.001	33.0	0.0	0.0	0.001	42.0	0 03:30	8.54
200	0.001	19.4	0.0	0.0	0.001	27.3	0 03:32	274.94
201	0.000	11.6	0.0	0.0	0.000	20.5	0 03:32	48.98
202	0.000	17.7	0.0	0.0	0.001	26.0	0 03:32	184.82
203	0.000	4.2	0.0	0.0	0.000	17.1	0 01:10	125.95

204	0.018	2.4	0.0	0.0	0.162	22.2	0	01:39	43.78
BLDG-S	0.039	3.0	0.0	0.0	0.198	15.1	0	01:35	26.85
C134A-S	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	10.54
C134A-S1	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	0.00
L129A-S	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	11.84
L129A-S1	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	0.00
L133A-S	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	12.05
L133A-S1	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	0.00
L133B-S	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	11.66
L133B-S1	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	0.00
L147A-S1	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	0.00
L148A-S	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	9.42
L148A-S1	0.000	0.0	0.0	0.0	0.000	0.0	0	00:00	0.00
L200A-S	0.000	0.2	0.0	0.0	0.013	9.9	0	01:11	21.81
L200B-S	0.000	0.4	0.0	0.0	0.015	13.9	0	01:11	21.76
L201A-S	0.000	0.5	0.0	0.0	0.014	18.0	0	01:11	21.87
L202A-S	0.000	0.5	0.0	0.0	0.016	17.2	0	01:11	21.90
L203A-S	0.001	0.5	0.0	0.0	0.031	26.8	0	01:11	77.05
L203B-S	0.000	0.0	0.0	0.0	0.000	0.7	0	01:10	9.45
L203C-S	0.000	0.8	0.0	0.0	0.020	37.9	0	01:11	40.05
POND-S	0.921	67.4	0.0	0.0	1.213	88.7	0	03:28	22.95

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Outfall Loading Summary
****

Outfall Node	Flow Freq Pcnt	Avg Flow LPS	Max Flow LPS	Total Volume 10^6 ltr
B20	95.11	19.91	22.95	0.818
JEROME_JODOIN	23.89	2.80	26.59	0.029
JEROME_JODOIN_2	0.00	0.00	0.00	0.000
OF_MJ	0.00	0.00	0.00	0.000
OVFL	0.00	0.00	0.00	0.000
System	23.80	22.72	36.55	0.847

****
Link Flow Summary
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Link	Type	Maximum |Flow| LPS	Time of Max Occurrence days	hr:min	Maximum |Veloc| m/sec	Max/ Full Flow	Max/ Full Depth
129-133	CONDUIT	21.49	0	01:12	0.51	0.16	1.00
133-147	CONDUIT	40.03	0	01:38	0.31	0.22	1.00
134-129	CONDUIT	11.16	0	01:20	0.63	0.20	1.00
147-147-DS	CONDUIT	1.26	0	01:08	0.00	0.00	1.00
147A-147	CONDUIT	274.78	0	01:14	1.21	0.66	1.00
147-POND-S	CONDUIT	309.40	0	01:22	0.86	0.82	1.00
148-147	CONDUIT	8.54	0	01:14	0.12	0.14	1.00
200-147A	CONDUIT	274.94	0	01:14	1.21	1.14	1.00
201-200	CONDUIT	48.98	0	01:28	0.83	0.51	1.00
202-200	CONDUIT	184.82	0	01:13	0.80	0.78	0.98
203-202	CONDUIT	125.95	0	01:10	1.02	1.00	0.75
C134A-S1-C134A-S	CHANNEL	0.00	0	00:00	0.00	0.00	0.32
C134A-S-L129A-S1	CHANNEL	0.00	0	00:00	0.00	0.00	0.32
L129A-S1-L129A-S	CHANNEL	0.00	0	00:00	0.00	0.00	0.44
L129A-S-L133A-S1	CHANNEL	0.00	0	00:00	0.00	0.00	0.44
L133A-S1-L133A-S	CHANNEL	0.00	0	00:00	0.00	0.00	0.45
L133A-S-L133B-S1	CHANNEL	0.00	0	00:00	0.00	0.00	0.45
L133B-S1-L133B-S	CHANNEL	0.00	0	00:00	0.00	0.00	0.43
L133B-S-L147A-S1	CHANNEL	0.00	0	00:00	0.00	0.00	0.43
L148A-S1-L148A-S	CHANNEL	0.00	0	00:00	0.00	0.00	0.28
L148A-S-L147A-S1	CHANNEL	0.00	0	00:00	0.00	0.00	0.28
204-O	ORIFICE	43.78	0	01:39			1.00
C134A-IC1	ORIFICE	5.36	0	01:16			1.00
C134A-IC2	ORIFICE	5.18	0	01:16			1.00
L129A-IC1	ORIFICE	5.68	0	01:23			1.00
L129A-IC2	ORIFICE	6.16	0	01:23			1.00
L133A-IC1	ORIFICE	5.79	0	01:22			1.00
L133A-IC2	ORIFICE	6.26	0	01:22			1.00

L133B-IC1	ORIFICE	5.59	0	01:21	1.00
L133B-IC2	ORIFICE	6.07	0	01:21	1.00
L148A-IC1	ORIFICE	4.71	0	01:12	1.00
L148A-IC2	ORIFICE	4.71	0	01:12	1.00
L200A-O	ORIFICE	21.81	0	01:11	1.00
L200B-O	ORIFICE	21.76	0	01:11	1.00
L201A-O	ORIFICE	21.87	0	01:11	1.00
L202A-O	ORIFICE	21.90	0	01:11	1.00
L203A-O	ORIFICE	77.05	0	01:13	1.00
L203B-O	ORIFICE	9.45	0	01:10	1.00
L203C-O	ORIFICE	40.05	0	01:11	1.00
POND-O	ORIFICE	22.95	0	03:28	1.00
147-W	WEIR	0.00	0	00:00	0.00
204-W	WEIR	0.00	0	00:00	0.00
L147A-W	WEIR	0.00	0	00:00	0.00
L200A-W	WEIR	0.00	0	00:00	0.00
L200B-W	WEIR	0.00	0	00:00	0.00
L201A-W	WEIR	0.00	0	00:00	0.00
L202A-W	WEIR	0.00	0	00:00	0.00
L203A-W	WEIR	0.00	0	00:00	0.00
L203B-W	WEIR	0.00	0	00:00	0.00
L203C-W	WEIR	0.00	0	00:00	0.00
W1	WEIR	0.05	0	01:35	0.00
BLDG-O	DUMMY	26.80	0	01:30	

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Flow Classification Summary
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	Adjusted	----------	Fraction of	Time in	Flow Class	----------			
	/Actual		Up	Down	Sub	Sup	Up	Down	Norm	Inlet
Conduit	Length	Dry	Dry	Dry	Crit	Crit	Crit	Crit	Ltd	Ctrl
129-133	1.00	0.03	0.00	0.00	0.97	0.00	0.00	0.00	0.05	0.00
133-147	1.00	0.00	0.04	0.00	0.96	0.00	0.00	0.00	0.06	0.00
134-129	1.00	0.04	0.00	0.00	0.89	0.00	0.00	0.07	0.01	0.00
147-147-DS	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
147A-147	1.00	0.04	0.00	0.00	0.88	0.00	0.00	0.08	0.00	0.00
147-POND-S	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
148-147	1.00	0.00	0.00	0.00	1.00	0.00	0.00	0.00	0.00	0.00
200-147A	1.00	0.03	0.00	0.00	0.91	0.00	0.00	0.05	0.00	0.00
201-200	1.00	0.03	0.00	0.00	0.91	0.00	0.00	0.06	0.00	0.00
202-200	1.00	0.03	0.00	0.00	0.96	0.00	0.00	0.01	0.01	0.00
203-202	1.00	0.03	0.00	0.00	0.91	0.00	0.00	0.06	0.37	0.00
C134A-S1-C134A-S	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
C134A-S-L129A-S1	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L129A-S1-L129A-S	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L129A-S-L133A-S1	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L133A-S1-L133A-S	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L133A-S-L133B-S1	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L133B-S1-L133B-S	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L133B-S-L147A-S1	1.00	0.03	0.97	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L148A-S1-L148A-S	1.00	0.07	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00
L148A-S-L147A-S1	1.00	0.07	0.93	0.00	0.00	0.00	0.00	0.00	0.00	0.00

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Conduit Surcharge Summary
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				Hours	Hours
	---------	Hours Full	--------	Above Full	Capacity
Conduit	Both Ends	Upstream	Dnstream	Normal Flow	Limited
129-133	9.90	9.90	10.61	0.01	0.01
133-147	10.61	10.61	11.07	0.01	0.01
134-129	7.28	7.28	9.90	0.01	0.01
147-147-DS	12.00	12.00	12.00	0.01	0.01
147A-147	4.89	4.89	5.58	0.01	0.01
147-POND-S	10.86	10.86	10.87	0.01	0.01
148-147	10.89	10.89	11.07	0.01	0.01
200-147A	3.04	3.04	4.77	0.37	0.01
201-200	0.63	0.63	3.04	0.01	0.01
202-200	0.01	0.01	2.21	0.01	0.01

```
Analysis begun on:  Tue Jun  9 12:25:08 2026
Analysis ended on:  Tue Jun  9 12:25:10 2026
Total elapsed time: 00:00:02
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C.4 Roof Drain Details and Rooftop Storage Calculation Sheet

Project #160402258, Mer Bleue Elementary School
Roof Drain Design Sheet, Area ROOF-A
Standard Watts Accutrol Weir w/ Single Notch Roof Drain

Rating Curve				Volume Estimation				
Elevation (m)	Discharge Rate (cu.m/s)	Outlet Discharge (cu.m/s)	Storage (cu. m)	Elevation (m)	Area (sq. m)	Volume (cu. m) Increment	Volume (cu. m) Accumulated	Water Depth (m)
0.000	0.0000	0.0000	0	0.000	0	0	0	0.000
0.025	0.0003	0.0054	1	0.025	108	1	1	0.025
0.050	0.0006	0.0107	7	0.050	432	6	7	0.050
0.075	0.0009	0.0147	24	0.075	972	17	24	0.075
0.100	0.0011	0.0188	58	0.100	1728	33	58	0.100
0.125	0.0013	0.0228	112	0.125	2700	55	112	0.125
0.150	0.0016	0.0268	194	0.150	3887	82	194	0.150

Drawdown Estimate			
Total Volume (cu.m)	Total Time (sec)	Vol (cu.m)	Detention Time (hr)
0.0	0.0	0.0	0
6.3	587.4	6.3	0.16315
23.4	1159.4	17.1	0.48522
56.7	1774.0	33.3	0.97801
111.6	2408.6	54.9	1.64707
193.5	3054.2	81.9	2.49547

Rooftop Storage Summary

Total Building Area (sq.m)		4834.93
Assume Available Roof Area (sq.	80%	3887.28372
Roof Imperviousness		0.99
Roof Drain Requirement (sq.m/Notch)		232
Number of Roof Notches*		17
Max. Allowable Depth of Roof Ponding (m)		0.15
Max. Allowable Storage (cu.m)		194
Estimated 100 Year Drawdown Time (h)		2.4

* As per Ontario Building Code section OBC 7.4.10.4.(2)(c).

* Note: Number of drains can be reduced if multiple-notch drain used.

Adjustable Accutrol Weir Flow Rate Settings From Watts Drain Catalogue					
Head (m)	L/s				
	Open	75%	50%	25%	Closed
0.025	0.3154	**0.3154**	0.3154	0.3154	0.3154
0.05	0.6308	**0.6308**	0.6308	0.6308	0.3154
0.075	0.9462	**0.8674**	0.7885	0.7097	0.3154
0.1	1.2617	**1.104**	0.9462	0.7885	0.3154
0.125	1.5771	**1.3405**	1.104	0.8674	0.3154
0.15	1.8925	**1.5771**	1.2617	0.9462	0.3154

Calculation Results

	2yr	100yr	Available
Qresult (cu.m/s)	0.018	0.026	-
Depth (m)	0.093	0.146	0.150
Volume (cu.m)	47.8	179.7	194.4
Draintime (hrs)	0.8	2.4	

WATTS® DRAINAGE	Adjustable Accutrol Weir Tag: ____________	Adjustable Flow Control for Roof Drains

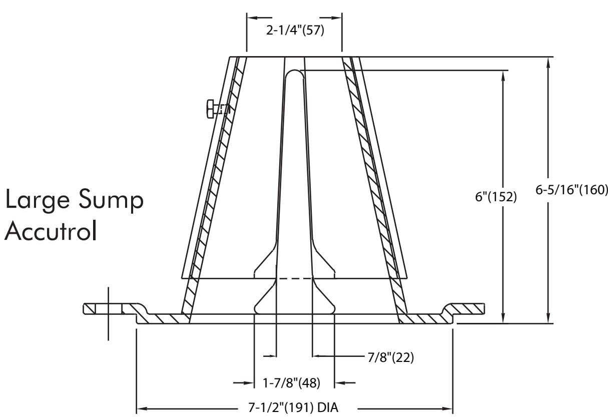
ADJUSTABLE ACCUTROL(for Large Sump Roof Drains only)

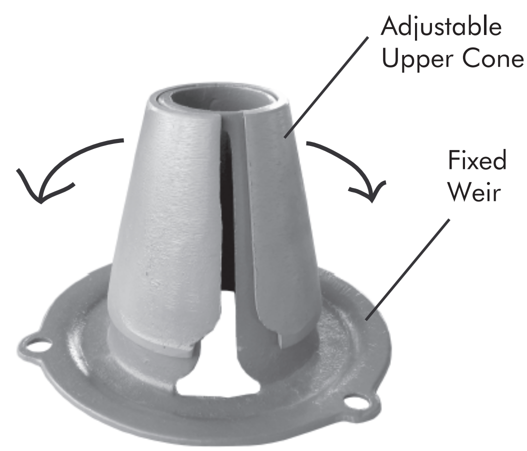
For more flexibility in controlling flow with heads deeper than 2", Watts Drainage offers the Adjustable Accutrol. The Adjustable Accutrol Weir is designed with a single parabolic opening that can be covered to restrict flow above 2" of head to less than 5 gpm per inch, up to 6" of head. To adjust the flow rate for depths over 2" of head, set the slot in the adjustable upper cone according to the flow rate required. Refer to Table 1 below.
Note: Flow rates are directly proportional to the amount of weir opening that is exposed.

EXAMPLE:

For example, if the adjustable upper cone is set to cover 1/2 of the weir opening, flow rates above 2" of head will be restricted to 2-1/2 gpm per inch of head.

Therefore, at 3" of head, the flow rate through the Accutrol Weir that has 1/2 the slot exposed will be:
[5 gpm(per inch of head) x 2 inches of head] + 2-1/2 gpm(for the third inch of head) = 12-1/2 gpm.





1/2 Weir Opening Exposed Shown Above

TABLE 1. Adjustable Accutrol Flow Rate Settings

Weir Opening Exposed	Head of Water 1"	2"	3"	4"	5"	6"
	Flow Rate (gallons per minute)					
Fully Exposed	5	10	15	20	25	30
3/4	5	10	13.75	17.5	21.25	25
1/2	5	10	12.5	15	17.5	20
1/4	5	10	11.25	12.5	13.75	15
Closed	5	10	10	10	10	10

Job Name ____________ Contractor ____________

Job Location ____________ Contractor's P.O. No. ____________

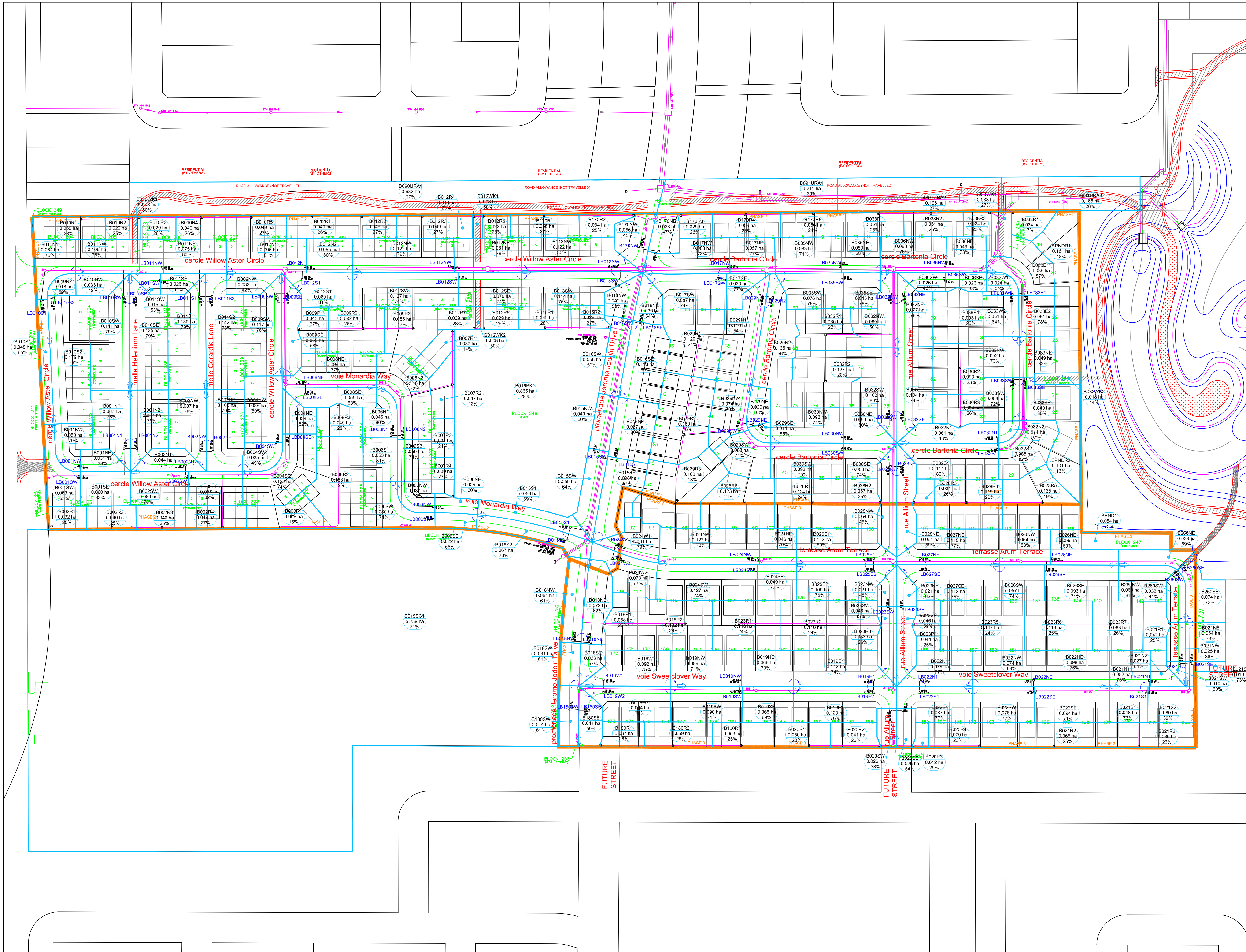
Engineer ____________ Representative ____________

CANADA

WATTS DRAINAGE

CANADA: 5435 North Service Road, Burlington, ON, L7L 5H7 TEL: 905-332-6718 TOLL-FREE: 1-888-208-8927 Website: www.wattsdrainage.ca

C.5 Storm Excerpts from Background Reports



LEGEND :

- LIMITS OF SUBDIVISION
- MAJOR SYSTEM SUBCATCHMENT BOUNDARY TO LOW POINTS AND OTHER AREAS
- MAJOR SYSTEM FLOW DIRECTION
- FIRST DIRECTION OF EXCESS MAJOR SYSTEM FLOW AT LOW POINT
- LB033SE — LOW POINT
- B033SE — SUB-CATCHMENT ID
- 0,049 ha — SUB-CATCHMENT AREA
- 80% — TOTAL IMPERVIOUSNESS

SCALE : 0 25 50 75 100 125m

J.F. Sabourin & Associates Inc.
WATER RESOURCES AND ENVIRONMENTAL CONSULTANTS
OTTAWA (613) 836-3884
GATINEAU (819) 243-6858

CLIENT : DSEL david schaeffer engineering ltd
600 ALDEN ROAD., SUITE 500
MARKHAM, ONTARIO., L3R 0E7
(905) 475-3080

PROJECT :
SUMMERSIDE WEST PHASES 2 AND 3

BY	DATE	DESCRIPTION	BY

PROPOSED MAJOR SYSTEM

FIGURE 3

DESIGNED:
DRAWN: LP
VERIFIED: JFS
APPROVED: JFS

DRAWING REF.
1102-13\201512 Subm6\Design\CAD\JFSA Figures.dwg

DATE	PROJECT No.
Dec/16	1102-13

STORM SEWER CALCULATION SHEET (RATIONAL METHOD)

Manning 0.013 Return Frequency = 5 years

LOCATION			AREA (Ha)							FLOW					ICD DATA				DESIGN FLOW	SEWER DATA								
			R=	R=	R=		R=	R=	R=	Indiv.	Accum.	Time of	Rainfall	Peak Flow	No.	Type	Flow	Accum.		DIA. (mm)	DIA. (mm)	TYPE	SLOPE	LENGTH	CAPACITY	VELOCITY	TIME OF	RATIO
Location	From Node	To Node	0.40	0.54	0.57	0.70	0.71	0.73	0.74	2.78 AC	2.78 AC	Conc.	Intensity	Q (l/s)			Q (l/s)	Flow		(actual)	(nominal)		(%)	(m)	(l/s)	(m/s)	FLOW (min.)	Q/Q full
rue Allium Street																												
				0.09						0.14	0.14																	
	20	23		0.09			0.07			0.27	0.41	10.00	104.19	43					43	300	300	PVC	0.50	33.0	68	0.97	0.57	0.62
To rue Allium Street, Pipe 23 - 28											0.41	10.57																
terrasse Arum Terrace																												
	24	15					0.14			0.28	0.28	10.00	104.19	29					29	600	600	CONC	0.25	47.0	307	1.09	0.72	0.09
To promenade Jerome Jodoin Drive, Pipe 15 - 16											0.28	10.72																
	24	25					0.35			0.69	0.69	10.00	104.19	72					72	375	375	PVC	0.30	57.5	96	0.87	1.10	0.75
	25	28					0.22			0.43	1.13	11.10	98.71	111					111	450	450	PVC	0.25	78.0	143	0.90	1.45	0.78
To rue Allium Street, Pipe 28 - 32											1.13	12.55																
Contribution From Future Residential							0.05			0.10	0.10																	
	21	260		0.04			0.06			0.18	0.28	10.00	104.19	29					29	300	300	PVC	0.35	68.0	57	0.81	1.40	0.50
Contribution From Future Residential							0.05			0.10	0.38																	
	260	26					0.16			0.32	0.69	11.40	97.34	67					67	375	375	PVC	0.30	11.5	96	0.87	0.22	0.70
	26	27					0.27			0.53	1.22	11.62	96.35	118					118	450	450	PVC	0.25	91.5	143	0.90	1.70	0.83
	27	28					0.23			0.45	1.68	13.32	89.40	150					150	600	600	CONC	0.15	75.5	238	0.84	1.50	0.63
To rue Allium Street, Pipe 28 - 32											1.68	14.82																
rue Allium Street																												
Contribution From voie Sweetclover Way, Pipe 19 - 23										0.43		11.55																
Contribution From voie Sweetclover Way, Pipe 22 - 23										1.59		13.28																
Contribution From rue Allium Street, Pipe 20 - 23										0.41		10.57																
				0.29						0.44	2.87																	
	23	28		0.40			0.13			0.86	3.72	13.28	89.55	333					333	900	900	CONC	0.12	76.0	627	0.99	1.28	0.53
To rue Allium Street, Pipe 28 - 32											3.72	14.57																
Contribution From terrasse Arum Terrace, Pipe 25 - 28										1.13		12.55																
Contribution From terrasse Arum Terrace, Pipe 27 - 28										1.68		14.82																
Contribution From rue Allium Street, Pipe 23 - 28										3.72		14.57																
				0.29						0.44	6.96																	
	28	32		0.30			0.13			0.71	7.67	14.82	84.15	645					645	1050	1050	CONC	0.12	67.5	946	1.09	1.03	0.68
To rue Allium Street, Pipe 32 - 36 (50%)											3.83	15.85																
To cercle Bartonia Circle, Pipe 32 - 31 (50%)											3.83	15.85																
Contribution From rue Allium Street, Pipe 28 - 32 (50%)										3.83		15.85																
Contribution From cercle Bartonia Circle, Pipe 30 - 32 (50%)										0.28		11.51																
	32	36		0.21			0.36			1.03	5.14	15.85	80.91	416					416	1200	1200	CONC	0.12	105.0	1351	1.19	1.47	0.31
To cercle Bartonia Circle, Pipe 36 - 37											5.14	17.31																

Definitions:
Q = 2.78 AIR, where
Q = Peak Flow in Litres per second (L/s)
A = Areas in hectares (ha)
I = Rainfall Intensity (mm/h)
R = Runoff Coefficient

Notes:
1) Ottawa Rainfall-Intensity Curve
2) Min. Velocity = 0.80 m/sec

Designed: K.M.	PROJECT:	SUMMERSIDE WEST PHASES 2 & 3	
Checked: Z.L.	LOCATION:	City of Ottawa	
Dwg. Reference: Storm Drainage Plan, Dwg. No. 41 & 42	File Ref: 15-808	Date: July, 2016	Sheet No. 2 of 3

808_Aug0916_StmDesignsheet.xls

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
																			2	85.47	0.737	74.2	36.2	84.733
																			1	85.44	0.703	74.2	49.2	84.737
																			58	85.58	0.841	74.2	59.6	84.739
																			59	85.58	0.844	74.2	47.6	84.736
																			60	85.58	0.846	74.2	38.7	84.734
																			61	85.58	0.849	74.2	28.2	84.731
																			52	85.52	0.792	74.2	16.8	84.728
																			5	85.42	0.694	74.2	7.2	84.726
B18	B15	84.062	83.801	525	N/A	87.0	0.3	0.013	87.640	87.712	1.088	0.236	0.25	1.1	0.406	0.97	84.993	84.877	N/A	N/A	N/A			
B19	B18	84.399	84.137	450	N/A	105.0	0.3	0.013	87.353	87.640	0.896	0.143	0.16	1.1	0.276	0.92	85.125	84.993	164	85.60	0.475			
																			164	85.60	0.480	105.1	101.0	85.120
																			165	85.60	0.493	105.1	90.7	85.107
																			166	85.65	0.554	105.1	82.3	85.096
																			167	85.66	0.580	105.1	69.3	85.080
																			168	85.67	0.601	105.1	60.5	85.069
																			169	85.71	0.654	105.1	50.2	85.056
																			170	85.76	0.714	105.1	42.0	85.046
																			171	85.76	0.729	105.1	30.4	85.031
																			172	85.71	0.694	105.1	18.5	85.016
																			173	85.66	0.646	105.1	17.0	85.014
																			174	85.74	0.711	105.1	28.9	85.029
																			175	85.74	0.695	105.1	41.7	85.045
																			176	85.72	0.664	105.1	50.5	85.056
																			177	85.68	0.609	105.1	62.1	85.071
																			178	85.68	0.598	105.1	70.9	85.082
																			179	85.68	0.585	105.1	81.0	85.095
																			180	85.69	0.585	105.1	89.2	85.105
																			181	85.71	0.588	105.1	102.7	85.122
B19	B23	84.711	84.468	375	N/A	81.0	0.3	0.013	87.353	87.393	0.869	0.096	0.10	1.1	0.039	1.10	85.125	84.750	157	85.52	0.395			
																			157	85.52	0.727	77.3	8.9	84.793
																			158	85.61	0.748	77.3	23.1	84.862
																			159	85.61	0.692	77.3	34.7	84.918
																			160	85.58	0.618	77.3	43.6	84.962
																			161	85.64	0.620	77.3	55.6	85.020
																			162	85.64	0.578	77.3	64.4	85.062
																			163	85.64	0.517	77.3	76.9	85.123
																			182	85.68	0.563	77.3	75.6	85.117
																			183	85.68	0.618	77.3	64.4	85.062
																			184	85.65	0.630	77.3	55.6	85.020
																			185	85.64	0.678	77.3	43.6	84.962
																			186	85.64	0.722	77.3	34.7	84.918
																			187	85.60	0.738	77.3	23.1	84.862
																			188	85.58	0.787	77.3	8.9	84.793
B20	B23	84.708	84.543	300	N/A	33.0	0.5	0.013	87.490	87.393	0.967	0.068	0.03	0.4	-0.162	1.05	84.846	84.750	N/A	N/A	N/A			
B21	B22	84.772	84.631	450	N/A	56.5	0.3	0.013	87.485	87.527	0.896	0.143	0.08	0.5	0.056	1.00	85.278	85.240	147	85.69	0.412			
																			147	85.69	0.448	56.4	2.4	85.242
																			199	85.76	0.515	56.4	6.8	85.245

Table C-1A: Pipe Data and Hydraulic Simulation Results for the 100-Year, 3-Hour Chicago Storm

U/S MH	D/S MH	U/S Invert (m)	D/S Invert (m)	Pipe Dia. / Height (mm)	Pipe Width (mm)	Pipe Length (m)	Pipe Slope (%)	n	U/S MH Cover Elev. (m)	D/S MH Cover Elev. (m)	Design Vel. (m/s)	Design Flow (m^3/s)	Peak Pipe Flow (m^3/s)	Peak / Design Flow	Surcharge U/S (1) (m)	Time to Peak (h)	Max. U/S HGL (m)	Max. D/S HGL (m)	Lot Number	USF (m)	Freeboard (2) (m)	Interpolated HGL: Length HGL (m)	Interpolated HGL: Dist. From D/S MH (m)	Interpolated HGL: HGL (m)
																			200	85.70	0.446	56.4	21.2	85.254
																			201	85.70	0.440	56.4	29.6	85.260
																			202	85.74	0.470	56.4	45.0	85.270
																			203	86.16	0.884	56.4	52.7	85.276
																			144	85.71	0.441	56.4	42.4	85.269
																			145	85.70	0.441	56.4	28.6	85.259
																			146	85.69	0.440	56.4	15.0	85.250
B21	B260	84.841	84.603	300	N/A	68.0	0.4	0.013	87.485	87.291	0.809	0.057	0.05	0.9	0.137	1.05	85.278	85.066	N/A	N/A	N/A			
B22	B23	84.556	84.318	525	N/A	119.0	0.2	0.013	87.527	87.393	0.888	0.192	0.25	1.3	0.159	1.03	85.240	84.750	152	85.54	0.300			
																			152	85.54	0.549	119.1	58.6	84.991
																			153	85.58	0.625	119.1	49.8	84.955
																			154	85.60	0.694	119.1	38.0	84.906
																			155	85.60	0.728	119.1	29.7	84.872
																			156	85.56	0.739	119.1	17.3	84.821
																			189	85.61	0.789	119.1	17.3	84.821
																			190	85.61	0.738	119.1	29.7	84.872
																			191	85.60	0.694	119.1	38.0	84.906
																			192	85.59	0.643	119.1	48.0	84.947
																			193	85.58	0.598	119.1	56.3	84.982
																			194	85.62	0.583	119.1	69.8	85.037
																			195	85.64	0.569	119.1	78.1	85.071
																			196	85.66	0.532	119.1	91.8	85.128
																			197	85.76	0.590	119.1	102.1	85.170
																			198	85.76	0.534	119.1	115.7	85.226
																			148	85.69	0.494	119.1	108.4	85.196
																			149	85.66	0.507	119.1	98.0	85.153
																			150	85.60	0.512	119.1	82.2	85.088
																			151	85.58	0.534	119.1	72.0	85.046
B23	B28	83.943	83.852	900	N/A	76.0	0.1	0.013	87.393	87.294	0.986	0.627	0.46	0.7	-0.093	1.03	84.750	84.737	N/A	N/A	N/A			
B24	B15	84.256	84.138	600	N/A	47.0	0.3	0.013	87.726	87.712	1.086	0.307	0.16	0.5	0.020	0.95	84.876	84.877	94	85.86	0.984			
B24	B25	84.744	84.572	375	N/A	57.5	0.3	0.013	87.726	87.333	0.869	0.096	0.02	0.2	-0.243	1.15	84.876	84.836	123	85.54	0.664			
																			123	85.54	0.699	57.6	7.8	84.841
																			124	85.58	0.744	57.6	0.0	84.836
																			122	85.56	0.710	57.6	19.7	84.850
																			121	85.61	0.754	57.6	28.2	84.856
																			120	85.69	0.825	57.6	41.5	84.865
																			119	85.76	0.888	57.6	51.3	84.872
																			95	85.73	0.862	57.6	45.7	84.868
																			96	85.71	0.848	57.6	37.6	84.862
																			97	85.69	0.837	57.6	24.3	84.853
																			98	85.57	0.722	57.6	17.5	84.848
																			99	85.54	0.701	57.6	3.9	84.839
B25	B28	84.497	84.302	450	N/A	78.0	0.3	0.013	87.333	87.294	0.896	0.143	0.09	0.7	-0.111	1.20	84.836	84.737	130	85.38	0.544			
																			130	85.38	0.630	77.8	9.9	84.750
																			106	85.45	0.700	77.8	9.9	84.750
																			105	85.54	0.774	77.8	23.0	84.766
																			104	85.54	0.761	77.8	33.3	84.779

WATER QUALITY CONTROL

The Avalon West SWM Facility was designed to provide water quality treatment to an Enhanced Level of Protection. According to the MOE Stormwater Management Planning and Design Manual (march 2005), treatment volume is a function of drainage area, the type of facility, the urban imperviousness ratio and the "Protection Level". The Enhanced Level of Protection corresponds to storage volumes required for the long-term average removal of 80% of total suspended solids (TSS). The storage requirements suggested by the MOE Manual are summarized in the following table.

Table 1. MOE Manual – Water Quality Volumes SWM Facility

Protection Level Enhanced					
Overall Removal Efficiency of TSS 80%					
Urban Drainage Tributary to SWM Facility (ha)	Imperviousness Ratio (Unit Storage for Wet Pond)	Permanent Storage (m^3)		Extended Detention Storage (m^3)	
		Required	Provided	Required	Provided
214.18*	58%†	33,626	110,786	8,593	23,213

Notes: * Excludes the SWM facility area of 11.96 ha and rural Area 1 of 103.4 ha.

† See **Appendix A** for calculations for the total weighted imperviousness.

The above calculation indicates that according to MOE Manual the required total storage for the facility is 42,219 m^3 (33,626 + 8,593 = 42,219 m^3 = 4.22 ha-m). The total water quality storage provided is 133,999 m^3 (13.40 ha-m), which consists of a permanent storage of 110,786 m^3 (11.08 ha-m) and 23213 m^3 (2.32 ha-m) of extended storage. The above summary indicates that the Avalon West SWM Facility will provide the required water quality control for the development of the Mattamy Bisson Lands. Water quality calculations are provided within **Appendix A** for reference.

WATER QUANTITY CONTROL

Pre-Development Conditions

As outlined within the Avalon West SWM Report, the pre-development evaluation of the McKinnons Creek watershed to Point C (refer to **Figure 1**) was undertaken and documented in the report "Supplementary Report to the Master Drainage Plan and Environmental Study Report" (CCL, May 2001), henceforth referred to as the 2001 MDP. As part of that study, the watershed was divided into a number of subwatersheds in order to provide peak flow estimates at a number of locations in McKinnons Creek. The subwatershed drainage boundaries were carried forward within the Avalon West SWM Report.

The pre-development evaluation was based on SWMHYMO computer model. The evaluation was undertaken using the following storm events:

- 2 year 24 hour SCS Type II storm event, 12 min time step (pre-OSDG[6] total precipitation);
- 5 year 24 hour SCS Type II storm event, 12 min time step (pre-OSDG[6] total precipitation); and

Appendix D External Reports

re: **Grading and Site Servicing Plans Review**
Proposed Elementary School
Jerome Jodoin Drive and Street 10 - Ottawa, Ontario

to: Pye & Richards - Temprano & Young Architects Inc. – **Isabel Richer** – isabel.richer@prty.ca
date: March 9, 2026
file: PG7671-MEMO.01 Revision 1

Further to your request and authorization, Paterson Group (Paterson) prepared the current memorandum to provide a grading and site servicing plans review for the proposed elementary school at the aforementioned site. The following memorandum should be read in conjunction with the Paterson Group geotechnical investigation report PG7671-1 dated October 21, 2025.

1.0 Grading Plan Review

Paterson reviewed Grading Plan Drawing with Project No. 160402258, Drawing No. GP-1, Sheet No. 4 of 8, Revision 1, dated February 12, 2026, prepared by Stantec for the aforementioned development.

Based on the field investigation results and the associated field investigation and testing undertaken in support of the larger development surrounding the proposed school, and due to the presence of the silty clay deposit, a permissible grade raise restriction is recommended for grading within 4 m of the proposed building in the above-noted geotechnical report.

Proposed Slab-on-Grade Building

However, this value should be modified to consider the loading associated with a slab-on-grade structure, where the ground surface is expected to be raised using crushed stone fill, as opposed to soil fill, which is lighter in density, and capped with a concrete slab that will support additional dead loads. For this scenario, a permissible grade raise restriction of **1.3 m** above the original ground surface is recommended for grading throughout the building footprint.

Based on our review of the above noted grading plan and considering the original ground surface elevation within the school area between 86.3 m and 86.4 m, the proposed grade within the footprint of the proposed school currently exceeds our permissible grade raise recommendations. Considering this grade raise exceedance, it is recommended that a minimum 400 mm thick layer of lightweight fill (LWF), such as expanded polystyrene (EPS) Type 22 geofoam blocks, be installed below the entire building footprint (i.e., within the sub-slab fill layer). The remainder of the exterior area surrounding the building footprint is graded within the currently recommended permissible grade raise restriction.

The entire surface of the LWF layer should be covered with a layer of polyethylene that is sealed at its overlaps and whose endlaps extend a minimum of 300 mm below the top of LWF surface. The LWF layer should be further covered by a layer of non-woven geotextile to mitigate the migration of sub-slab granulars into the joints between the blocks. The LWF layer should be placed across the entire building footprint and over the proposed footings.

Foundation plans were not available at the time of preparing this memorandum and are recommended to be circulated and reviewed by Paterson in conjunction with grading plans at a later stage of design to confirm appropriate design bearing resistance values for use by the project structural engineer. It is anticipated interior pad footings will be founded 1.4 to 1.8 m below the top of the interior floor slab such that the footings would be founded at an elevation that would support the *Brown Silty Clay* bearing resistance value identified in the aforementioned Geotechnical Report (i.e., 75 kPa at serviceability limit states, 140 kPa at ultimate limit states).

The LWF layer should be placed above the proposed footings, however, if accommodating this layer places the underside of a foundation below a geodetic elevation of 85.5 m, that portion of the foundation must be designed using a bearing resistance value associated with the *Firm Silty Clay* identified in the aforementioned Geotechnical Report (i.e., 60 kPa at serviceability limit states, 125 kPa at ultimate limit states). As noted above, it is recommended that Paterson completes a review of the future structural design drawings in conjunction with the grading plans to confirm the applicability of bearing resistance values across the building footprint.

The detailing of the LWF layer in design and contract drawings should be reviewed by Paterson during the detailed design phase and the placement of the LWF layer is recommended to be reviewed by Paterson field personnel at the time of construction.

Exterior Areas Beyond Building Footprint

The majority of the remainder of the area throughout the proposed school block is within the grade raise restrictions advised in the Geotechnical Report. The grade raise recommendations are exceeded throughout the center of the proposed soccer field by approximately 20 cm, however, given the localized exceedance, lack of settlement-sensitive services directly below the area of the exceedance (i.e., the 300 mm diameter storm sewer is located in an area where the grading is within the recommended grade raise restrictions) and landscaped nature of the proposed soccer field, this exceedance is considered minor and acceptable from a geotechnical perspective.

Protection of Footings Against Frost Action

Perimeter footings and/or pile caps and grade beams of heated structures are required to be insulated against the deleterious effects of frost action. A minimum 1.5 m thick soil cover or an equivalent thickness of soil cover and foundation insulation should be provided in this regard.

Based on our review of the above noted grading plan, the proposed founding depth of the perimeter footing for the proposed school building is considered acceptable and sufficient from a geotechnical perspective.

2.0 Site Servicing Plan Review

Paterson reviewed Site Servicing Plan Drawing with Project No. 160402258, Drawing No. SSP-1, Sheet No. 3 of 8, Revision 1, dated February 12, 2026, prepared by Stantec for the aforementioned development.

Lateral Support Zone Encroachment – Building Foundation

The bearing medium under footing-supported structures is required to be provided with adequate lateral support with respect to excavations and different foundation levels. Adequate lateral support is provided to a silty clay bearing medium when a plane extending down and out from the bottom edge of the footing at a minimum of 1.5H:1V, passes only through in situ soil or engineered fill of the same or higher capacity as the bearing soil.

Based on our review of the above-noted site service plans, all services within the subject site and along the street located at the north side of the subject site (future Street 10) will be constructed outside the lateral zones of the proposed footings of the building and are considered to be acceptable from a geotechnical perspective.

Frost Protection – Sewer Services

Based on our review of the above-noted site servicing plan, sanitary and stormwater sewers within the subject site and along the street located at the north side of the subject site (future Street 10) have been provided with sufficient soil cover of 2.1 m below the finished grade required for frost protection. It is recommended that all watermain pipes be installed in accordance with City of Ottawa guidelines, with sufficient soil cover of 2.4 m below the finished grade required for frost protection.

Furthermore, insufficient frost protection has been provided for the proposed subdrain and catch basin lead (CB Leads) pipes throughout the subject site. The subdrain and CB Leads are located within the 2.1 m frost zone. However, insulation for the proposed 250 mm perforated subdrain pipes and 200 to 300 mm CB Leads can be omitted based on the additional pipe bedding that will be provided to these segments of the sewer.

Clay Seals for Sewers

It is recommended that a clay seal be specified to be placed at all portions of sewers crossing the property boundary.

A clay seal is also recommended to be placed at the center of the 200 mm diameter and 50.7 m long sanitary alignment between manhole SAN 47B and SAN 47A. Two clay seals are also recommended for the 600 mm diameter storm sewer located bet manholes STM 147A and STM 101 placed midway between the center of the pipe segment and between each respective manhole. Clay seals should be a minimum of 1.5 m long in the trench direction, extend from the base of the trench (i.e., across the pipe bedding layer) and up to the subgrade for the overlying pavement structure or finished surface in landscaped areas, and match the width of the trench. The clay seals should consist of workable brown silty clay compacted to a minimum of 95% of the materials SPMDD and be reviewed by Paterson field personnel at the time of construction.

3.0 Landscaping Considerations

Tree Planting Considerations

In accordance with the City of Ottawa Tree Planting in Sensitive Marine Clay Soils (2017 Guidelines), Paterson completed a soils review of the site to determine applicable tree planting setbacks. Based on the results of the Atterberg limit testing described in the current Geotechnical Report, two tree planting setback areas have been identified. The two areas are identified below and have been outlined in *Drawing PG7671-2 - Tree Planting Setback Recommendations* attached to the end of this memorandum.

Area 1 – Low to Medium Sensitivity Area

The plasticity index was found to be less than 40% in all the tested clay samples within this area. In addition, based on the clay content found in the clay samples from the grain size distribution test results, moisture level and consistency, the silty clay across this area is considered to be a clay of low to medium potential for soil volume change.

The following tree planting setbacks are recommended for this portion of the clay deposit, and where trees are located near buildings founded on cohesive soils. It should be noted that footings supported by a deep foundation consisting of end-bearing piles will not be subject to tree planting setback restrictions.

- ❑ Large trees (mature height over 14 m) can be planted within these areas provided that a tree to foundation setback equal to the full mature height of the tree can be provided.

- ❑ Tree planting setback limits may be reduced to 4.5 m for small (mature tree height up to 7.5m) and medium size trees (mature tree height 7.5 m to 14 m), provided that the conditions noted below are met.

- A small tree must be provided with a minimum of 25 m^3 of available soil volume, while a medium tree must be provided with a minimum of 30 m^3 of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally uncompacted when backfilling in street tree planting locations.

- The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.

- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree), as noted on the Grading Plan.

Area 2 – High Sensitivity Area

The plasticity index was found to be greater than 40% in tested clay samples within this area. Based on this, the silty clay across this area is considered to be a clay of high potential for soil volume change. Based on this, the setbacks would consist of 7.5 m for small (mature height up to 7.5 m) and medium size trees (mature tree height 7.5 to 14 m), provided the conditions noted below are met at the time of landscape design:

- A small tree must be provided with a minimum of 25 m^3 of available soils volume while a medium tree must be provided with a minimum of 30 m^3 of available soil volume, as determined by the Landscape Architect. The developer is to ensure that the soil is generally uncompacted when backfilling in street tree planting locations.

- The tree species must be small (mature tree height up to 7.5 m) to medium size (mature tree height 7.5 m to 14 m) as confirmed by the Landscape Architect.

- Grading surrounding the tree must promote drainage to the tree root zone (in such a manner as not to be detrimental to the tree), as noted on the Grading Plan.

It is well documented in the literature, and it is our experience that fast-growing trees located near buildings founded on cohesive soils that shrink on drying can result in long-term differential settlements of the structures. Tree varieties that have the most pronounced effect on foundations are seen to consist of poplars, willows and some maples (i.e., Manitoba Maples) and, as such, they should not be considered in the landscaping design.

Soccer Field

It is recommended that drainage be provided for the soccer field. The drainage system should consist of 10 m center-to-center spaced, minimum 150 mm diameter corrugated perforated PVC pipe surrounded by a geosock and a minimum of 150 mm of 19 mm clear crushed stone around all of its sides. The pipes are recommended to be placed 1 m below finished grade and have a positive outlet, such as a gravity connection, to the storm sewer.

We trust that this information satisfies your requirements.

Best Regards,

Paterson Group Inc.

Jahangiri

Ghodratollah Jahangiri, M.A.Sc. EIT

LICENSED PROFESSIONAL ENGINEER
March 9, 2026
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Attachments:

- Drawing PG7671-2 - Tree Planting Setback Recommendations

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Stantec is a global leader in sustainable engineering, architecture, and environmental consulting. The diverse perspectives of our partners and interested parties drive us to think beyond what's previously been done on critical issues like climate change, digital transformation, and future-proofing our cities and infrastructure. We innovate at the intersection of community, creativity, and client relationships to advance communities everywhere, so that together we can redefine what's possible.

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