



Enhancing our communities



876 Hurontario Street

FUNCTIONAL SERVICING & STORMWATER MANAGEMENT BRIEF

Dr. Christine Magalhaes Dentistry Professional Corporation

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Issue	Date	Description
1	July 3, 2026	First Submission
2	September 3, 2026	Second Submission

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1 Introduction

Tatham Engineering Limited was retained by Dr. Christine Magalhaes Dentistry Professional Corporation to prepare this Functional Servicing & *Stormwater Management Brief* in support of the proposed redevelopment at 876 Hurontario Street in the Town of Collingwood.

1.1 REPORT PURPOSE

The objective of this brief is to review the servicing and drainage requirements for the proposed redevelopment and present a comprehensive strategy for water supply and distribution, sanitary servicing, and stormwater management. Specifically, the report addresses the following:

- the domestic water demand and fire flow requirements of the proposed development;
- the sanitary sewage flows generated by the proposed development; and
- the stormwater management strategy, including:
 - water quality controls;
 - water quantity controls; and
 - erosion and sediment control.

1.2 REFERENCES & STANDARDS

The following references and standards were used in the preparation of this report:

- *Amended Town of Collingwood Development Standards (2022)*;
- *MECP Design Guidelines for Drinking Water Systems (2008)*;
- *Ontario Building Code (2024)*; and
- *Stormwater Management Planning and Design Manual*. Ministry of the Environment, Conservation and Parks, 2003.



2 Development Site

2.1 LOCATION

The site is located at 876 Hurontario Street (see Figure 1) and is legally described as Part of Block M and Part of James Street (closed by By-Law 31-83, Instrument No. RO818281), Registered Plan 334.

2.2 EXISTING CONDITIONS

The property is currently zoned C-5 (Highway Commercial), has a total area of approximately 0.35 ha, and is developed with an existing dwelling, a gravel parking lot, and landscaped lawn areas.

The site is relatively flat and generally slopes away from the existing dwelling. Drainage from the east side of the property is directed toward two catch basins within the Hurontario Street right-of-way, while drainage from the west side is conveyed off-site to the north and west. The site is surrounded by commercial properties that are also zoned C-5 (Highway Commercial).

Municipal water and sanitary servicing are available within the Hurontario Street right-of-way, and the existing dwelling is serviced by connections to both systems.

2.3 PROPOSED DEVELOPMENT PLAN

The proposed development includes the following components:

- Renovations to the existing building, including interior and exterior improvements and a second-storey addition. The building footprint will change only slightly due to the proposed front entrance porch;
- A paved parking area surrounding the building, including 18 parking spaces, one of which will be a Type A accessible parking stall; and
- An enhanced grass swale that will provide the necessary stormwater management for the proposed development.

The layout of the proposed development is shown on the Site Plan (Drawing SP.1), included in this submission.



3 Water Supply

3.1 EXISTING INFRASTRUCTURE

An existing 200 mm diameter watermain is located along the west side of Hurontario Street fronting the site. The existing building is supplied by a 19 mm diameter water service extended from this watermain. An existing municipal fire hydrant is located within the Hurontario Street frontage of the property.

3.2 WATER DEMANDS ASSESSMENT

Water demands for the development were calculated using the dental office design use in Ontario Building Code Table 8.2.1.3.-B (2024). Supporting calculations are included in Appendix A and are summarized below.

- Average Day Demand - 1.78 m³/day
- Maximum Day Demand - 3.55 m³/day
- Maximum Day Plus Fire Flow Demand - 75.04 L/s
- Peak Hour Demand - 0.08 L/s

Based on Average Day Demand, the average day SDU equivalent water demand for the development is 1,780 L/day / 260 L/cap/day / 2.9 cap/SDU = 2.4 SDU.

Based on Maximum Day Demand, the maximum day SDU equivalent water demand for the development is 3,550 L/day / 260 L/cap/day / 1.77 MDD/ADD / 2.9 cap/SDU = 2.7 SDU.

3.3 PROPOSED INFRASTRUCTURE

The existing 19 mm diameter water service will be removed and replaced with a new 38 mm diameter water service connected to the existing 200 mm diameter watermain on Hurontario Street. The new service will supply domestic water to the proposed addition and full dental office. Fire protection will continue to be provided by the existing municipal fire hydrant located along the site frontage.

The service-sizing calculations provided in Appendix A demonstrate that the proposed 38 mm diameter water service has sufficient capacity to serve the proposed dental office in accordance with the OBC.



4 Wastewater Servicing

4.1 EXISTING INFRASTRUCTURE

An existing 200 mm diameter sanitary sewer is located along the center line of Hurontario Street fronting the site. The location of the existing sanitary service from the building to the municipal sewer is known, however, its diameter has not been confirmed. Based on the age of the existing dwelling, the service has been conservatively assumed to have a minimum diameter of 100 mm for capacity assessment.

4.2 WASTEWATER GENERATION ASSESSMENT

Wastewater generation for the proposed addition and full dental office was calculated using the dental office design use in Ontario Building Code Table 8.2.1.3.-B (2024). Supporting wastewater generation calculations are included in Appendix B and are summarized below.

- Average Day Flow - 1.78 m³/day
- Peak Flow - 0.09 L/s

Based on Average Day flow, the average day SDU equivalent wastewater flow for the development is 1,780 L/day / 260 L/cap/day / 2.9 cap/SDU = 2.4 SDU.

4.3 SERVICING STRATEGY

The existing sanitary service will be retained and used to convey wastewater from the proposed addition and the full dental office to the existing 200 mm diameter sanitary sewer on Hurontario Street. For assessment purposes, the service has been conservatively evaluated as a minimum 100 mm diameter connection.

The service-sizing calculations included in Appendix A demonstrate that a 100 mm diameter sanitary service is sufficient to accommodate the projected wastewater flow from the proposed dental office in accordance with the OBC. Accordingly, the existing service is considered suitable for continued use, subject to confirmation of its diameter and condition during detailed design or construction.



5 Stormwater Management

5.1 EXISTING CONDITION HYDROLOGY

Existing drainage conditions were determined through interpretation of the site survey and are illustrated on the Pre-Development Drainage Plan (Drawing DP-1), included in this submission. A runoff coefficient of 0.45 was calculated for existing conditions, with detailed supporting calculations provided in Appendix C.

Existing peak flows from the 0.35 ha site were quantified using the Modified Rational Method. Rainfall data specific to the property were obtained from the Town of Collingwood Development Standards. The resulting peak flows for the 1:2-year through 1:100-year storm events are summarized in Table 1, with detailed calculations provided in Appendix C.

Table 1: Existing Condition Peak Flow Rates

STORM	PEAK FLOW RATE
1:2-year	0.034 m ³ /s
1:5-year	0.045 m ³ /s
1:10-year	0.052 m ³ /s
1:25-year	0.067 m ³ /s
1:50-year	0.081 m ³ /s
1:100-year	0.093 m ³ /s

5.2 STORMWATER MANAGEMENT PLAN

The following stormwater management (SWM) plan has been developed to address the guidelines and design criteria of the Town of Collingwood and the Nottawasaga Valley Conservation Authority (NVCA). The proposed measures will control post-development runoff, provide the required water quality treatment, and maintain appropriate drainage patterns for the site.

5.2.1 Design Criteria

The proposed stormwater management plan has been developed to satisfy the following design criteria:



- Post-development peak flow rates from the site will be controlled to be at or below existing-condition peak flow rates for the 1:2-year through 1:100-year design storms.
- The SWM plan will provide Level 1 (Enhanced) water quality treatment in accordance with Provincial criteria, equivalent to 80% total suspended solids (TSS) removal for site runoff.

5.2.2 Proposed Grading

Under post-development conditions, pre-development Area 101 (0.35 ha) will be divided into two drainage areas. Area 201 (0.14 ha) will include the existing dwelling, asphalt parking lot, and enhanced swale. Runoff from this area will be conveyed by sheet flow across the parking lot to the enhanced swale along the north side of the site, where it will receive treatment before discharging through a Hickenbottom outlet surrounded by rip-rap protection.

Area 202 (0.21 ha) will consist of the grassed areas surrounding the developed portion of the site and will drain to the existing catch basins within the Hurontario Street right-of-way.

5.2.3 Stormwater Management Facility

An enhanced swale will be constructed to provide enhanced-level water quality treatment and quantity control for storm events up to and including the 100-year design storm.

The enhanced swale will be a linear facility located along the north side of the site. The swale will have a depth of 0.45 m and a total storage volume of 31.8 m³.

A Hickenbottom outlet, surrounded by rip-rap protection, outletting to an existing catch basin within the Hurontario Street right-of-way. Larger storms are conveyed by an overflow spillway to the Hurontario Street right-of-way.

Interior side slopes will be a maximum of 2.5:1, and exterior side slopes will tie into existing grade at a maximum of 3:1.

5.2.4 Proposed Drainage Conditions

The proposed drainage conditions for the 0.35 ha site are illustrated on the Post-Development Drainage Plan (Drawing DP-2), included in this submission.

Catchment 201, which spans approximately 0.14 ha, encompasses the developed portion of the site, including the existing dwelling, asphalt parking lot, and enhanced swale. The site has been graded to convey runoff from this catchment by sheet flow to the enhanced swale for both quantity storage and quality treatment.

Catchment 202, with an area of approximately 0.21 ha, consists of uncontrolled landscaped areas around the perimeter of the developable portion of the site. This area will drain overland without



direct quantity or quality control. To account for this uncontrolled drainage, the enhanced swale has been overcontrolled to maintain total site peak flows at or below existing-condition levels.

5.2.5 Water Quantity Control

The enhanced swale is designed to reduce post-development peak flows to at or below existing-condition levels. To demonstrate this, a Modified Rational Method analysis was completed to quantify proposed-condition peak flows and account for attenuation provided by the enhanced swale.

Detailed calculations for the proposed-condition runoff coefficients and Modified Rational Method analysis are included in Appendix C.

Table 2 summarizes the controlled, uncontrolled, and total peak flows from the site. Table 3 summarizes the performance of the SWMF.

Table 2: Proposed Condition Peak Flow Rates

DESIGN STORM	PEAK FLOW (CONTROLLED) CATCHMENT 201 (m ³ /s)	PEAK FLOW (UNCONTROLLED) CATCHMENT 202 (m ³ /s)	PEAK FLOW (TOTAL) (m ³ /s)
1:2-year	0.016	0.018	0.034 (0.034)
1:5-year	0.018	0.024	0.042 (0.045)
1:10-year	0.019	0.027	0.046 (0.052)
1:25-year	0.023	0.035	0.058 (0.067)
1:50-year	0.030	0.043	0.073 (0.081)
1:100-year	0.035	0.049	0.084 (0.093)

Note: *Values shown in parentheses* denote the corresponding existing-condition peak flow rates.



Table 3: SWMF Stage-Storage-Discharge

DESIGN STORM	DISCHARGE (m ³ /s)	PROVIDED STORAGE VOLUME (m ³)	WATER SURFACE ELEVATION (m)
1:2-year	0.016	9	195.00
1:5-year	0.018	16	195.10
1:10-year	0.019	21	195.15
1:25-year	0.023	22	195.16
1:50-year	0.030	24	195.18
1:100-year	0.035	26	195.20

As demonstrated in Tables 2 and 3, the proposed enhanced swale will reduce proposed-condition peak flows to at or below existing-condition levels for the 1:2-year through 1:100-year design storms.

5.2.6 Water Quality Control

The site is required to provide enhanced-level water quality treatment, equivalent to 80% total suspended solids (TSS) removal. This objective will be addressed by the enhanced swale.

Enhanced Grass Swale

According to the Sustainable Technologies Evaluation Program (STEP) guidance for enhanced swales, vegetated swales have a reported median TSS removal efficiency of 76%. The proposed facility incorporates a flat bottom with negligible longitudinal slope, a maximum operating depth of 0.45 m, and an extended flow path. These features are intended to increase residence time, reduce flow velocity, and promote settling relative to a conventional sloped swale.

The water quality treatment is further enhanced by the discharge configuration through a Hickenbottom outlet surrounded by riprap protection. This outlet dissipates flow energy, reduces erosion potential, and provides additional treatment during discharge from the facility. Based on the combination of these design features, the flat-bottomed geometry, low flow velocities, and energy dissipation at the outlet, the proposed enhanced swale is expected to achieve TSS removal rates exceeding 80%, thereby satisfying the enhanced-level water quality treatment requirement.



5.2.7 Operations and Maintenance

To support the long-term performance of the proposed stormwater management measures, the enhanced swale, Hickenbottom outlet, riprap protection, and associated drainage features should be inspected regularly and following major storm events. Maintenance activities should include removing accumulated sediment and debris, repairing erosion or localized settlement, and restoring vegetation as necessary to maintain the intended drainage function and treatment performance.

5.2.8 Siltation Control & Erosion Control Plan

All construction activities, including topsoil stripping, material stockpiling, building construction, and grading operations, will incorporate siltation and erosion control measures. A comprehensive erosion and sediment control plan (Drawing SW-1 included in this submission) has been prepared to illustrate these measures during construction.

To minimize erosion, sedimentation, and associated environmental impacts during construction, the following principles will be applied:

- Limit disturbance activities to the minimum necessary.
- Expose the smallest possible land area to erosion for the shortest possible duration.
- Implement erosion control measures immediately, as required.
- Establish sediment control measures prior to the commencement of construction activities.
- Conduct regular inspections of erosion and sediment control measures and complete repairs or maintenance as required.
- Inspect and maintain the enhanced swale, Hickenbottom outlet, and riprap protection regularly during and after construction, as required.

The proposed grading and building construction will be completed in a manner that minimizes erosion and ensures that sediment control facilities manage any erosion that occurs.

Additional measures that may be implemented during construction to control erosion, sediment, and pollution include the following:

- Erect silt control fencing below grading operations to control sediment movement.
- Revegetating disturbed areas to support long-term siltation and erosion control.



6 Summary

This report outlines the functional servicing and stormwater management strategy for the proposed redevelopment at 876 Hurontario Street in support of the Site Plan Control application. The servicing strategy is summarized as follows:

- The existing 19 mm diameter water service will be removed and replaced with a new 38 mm diameter service connected to the existing 200 mm diameter watermain on Hurontario Street to service the development. Fire protection will continue to be provided by the existing municipal hydrant along the Hurontario Street frontage.
- The existing sanitary service will be used to convey wastewater to the existing 200 mm diameter sanitary sewer in Hurontario Street. The service has been conservatively assessed as a minimum 100 mm diameter connection and is suitable for the projected wastewater flow, subject to confirmation of its diameter and condition during detailed design or construction.
- An enhanced swale will provide water quantity and enhanced-level water quality control for runoff from the developed portion of the site. The facility will attenuate total post-development peak flows to at or below existing-condition rates for the 1:2-year through 1:100-year design storms and will support the required 80% total suspended solids removal objective.
- A Hickenbottom outlet with riprap protection will discharge controlled flows toward an existing catch basin within the Hurontario Street right-of-way, while an overflow spillway will provide safe conveyance of larger storm events.

Based on the analyses completed and the proposed servicing and stormwater management measures described herein, the redevelopment is expected to satisfy the applicable water supply, wastewater servicing, stormwater quantity, water quality, and erosion and sediment control objectives for the site, subject to review and acceptance by the Town of Collingwood.





Source: Simcoe Maps

876 Hurontario Street
Figure 1: Site Location



Appendix A: Water Supply Calculations

Project Details

876 Hurontario Street	126065
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Prepared By

Kyle Latter	Sept 3, 2026
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Municipality

Town of Collingwood

Checked By

Andrew Overholt	Sept 3, 2026
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Dentist Office Demand

Number of Wet Service Chairs * Wet Service Chair Demand

$$\begin{aligned}
 &= 3 \text{ Wet Service Chair} * 275 \text{ L/day/Wet Service Chair} \\
 &= 825 \text{ L/day}
 \end{aligned}$$

AND

Number of Dry Service Chairs * Dry Service Chair Demand

$$\begin{aligned}
 &= 5 \text{ Dry Service Chair} * 190 \text{ L/day/Dry Service Chair} \\
 &= 950 \text{ L/day}
 \end{aligned}$$

$$\begin{aligned}
 \text{Total Dentist Office Demand} &= 825 \text{ L/day} + 950 \text{ L/day} \\
 &= \mathbf{1775} \text{ L/day} = \mathbf{1.78} \text{ m}^3/\text{day}
 \end{aligned}$$

Commercial/Industrial/ Institutional Flow

Land Use	Dentist Office			Total
Average Day Demand (m ³ /day)	1.78			1.78
Reference	Ontario Building Code (2024) Table 8.2.1.3.-B			

Fire Demand

Max Required Fire Demand (L/s)	75
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Based on Town of Collingwood Development Standards (2026).

Peaking Factors

Land Use	Dentist Office			
Max Day Factor	2.0			
Peak Hour Factor	4.0			
Reference	Peaking Factors from MECP Design Guide for Drinking Water Systems 2008 Secion 3.4.4.			

Total Design Flows

Average Day Demand (m ³ /day)	1.78	Peak Hour Demand (L/s)	0.08
Maximum Day Demand (m ³ /day)	3.55	Maximum Day + Fire Demand (L/s)	75.04

Additional Notes

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OBC SANITARY AND WATER SERVICE SIZING

Project Details

876 Hurontario Street	126065	KRL	September 3, 2026
Municipality		Checked By	
Town of Collingwood		AO	September 3, 2026

Sanitary Service Sizing

Fixtures	Number	Sanitary Hydraulic Load For Fixture OBC Table 7.4.9.3 (Fixture Units)	Total Sanitary Hydraulic Load (Fixture Units)
Water Closet	2	4	8
Sink	2	1	2
Dental Unit, Cuspidor	8	1	8
Dental Lavatory	8	1	8
Sink	1	1.5	1.5
		Total	27.5

Notes & References

Per A- Table 7.4.10.5, the maximum probable drainage rate for 27.5 fixture units is approximately 33 gal/min or 2.1 L/s
 Per Table 7.4.10.6.-C, the maximum permitted hydraulic load drained to a horizontal 100 mm (4") sanitary drainage pipe with a 1 in 50 (2%) slope is 240 fixture units. Therefore, the 4" service is sufficient.

Water Service Sizing

Fixtures	Number	Water Hydraulic Load For Fixture OBC Table 7.6.3.2.A and 7.6.3.2.C (Fixture Units)	Total Water Hydraulic Load (Fixture Units)
Water Closet	2	2.2	4.4
Sink	2	2	4
Dental Unit, Cuspidor	8	1	8
Dental Lavatory	8	2	16
Kitchen Sink	1	2	2
		Total	34.4

Notes & References

Per OBC Table A-7.6.3.1, a 1 1/2" (38mm) service which is +/- 30 m long can service 151 fixture units for system pressure above 60psi.

Appendix B: Wastewater Generation Calculations

Wastewater Flow Design Worksheet

Project Details

876 Hurontario Street	126065
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Prepared By

Kyle Latter	Sept 3, 2026
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Municipality

Town of Collingwood

Checked By

Andrew Overholt	Sept 3, 2026
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Dentist Office Demand

Number of Wet Service Chairs * Wet Service Chair Demand

$$\begin{aligned}
 &= 3 \text{ Wet Service Chair} * 275 \text{ L/day/Wet Service Chair} \\
 &= 825 \text{ L/day}
 \end{aligned}$$

AND

Number of Dry Service Chairs * Dry Service Chair Demand

$$\begin{aligned}
 &= 5 \text{ Dry Service Chair} * 190 \text{ L/day/Dry Service Chair} \\
 &= 950 \text{ L/day}
 \end{aligned}$$

$$\begin{aligned}
 \text{Total Dentist Office Demand} &= 825 \text{ L/day} + 950 \text{ L/day} \\
 &= \mathbf{1775} \text{ L/day} = \mathbf{1.78} \text{ m}^3/\text{day}
 \end{aligned}$$

Commercial/Industrial/ Institutional Flow

Land Use	Dentist Office			Total
Average Day Flow (m ³ /day)	1.78			1.78
Reference	1 Ontario Building Code (2024) Table 8.2.1.3.-B			

Peaking Factors

Land Use	Residential (Harmon)	Dentist Office		
Peaking Factor ⁴	4.00	4.0		
Reference	2			

Infiltration

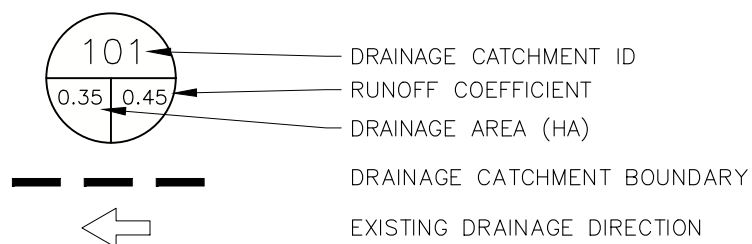
Building Area (ha)	0.02	Infiltration(L/s/ha)	0.23	Infiltration (L/s)	0.01
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Total Design Flows

Average Day Flow (m ³ /day)	1.78	Peak Flow (L/s)	0.09
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Additional Notes

Appendix C: Hydrologic Analysis



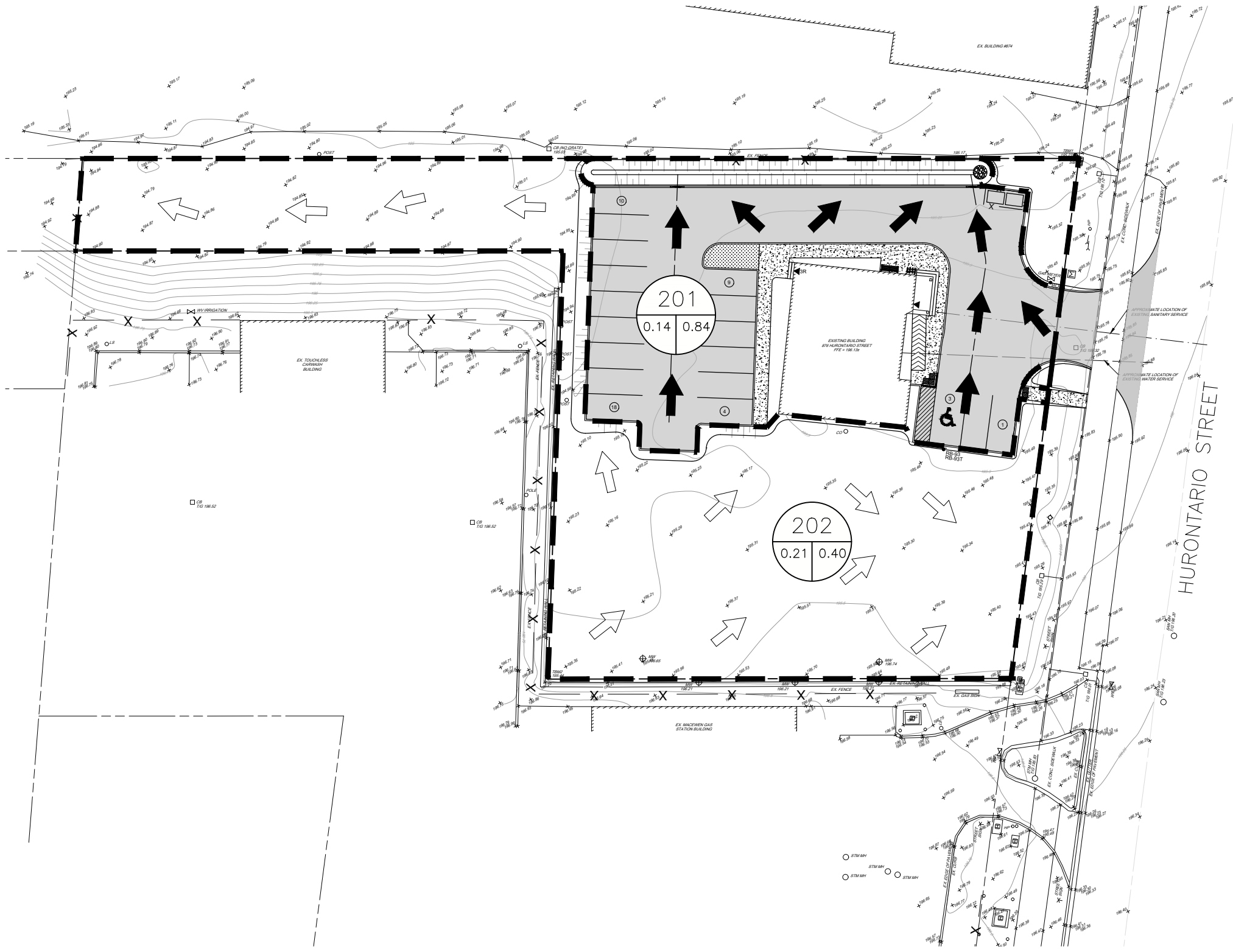
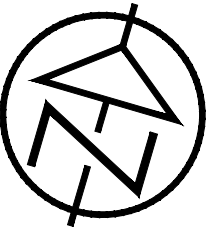
PROJECT TITLE	876 HURONTARIO STREET PRE-DEVELOPMENT DRAINAGE PLAN TOWN OF COLLINGWOOD
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DRAWING

DP.1

DATE	2026 06 24	DRAWN BY	KRL	SCALE	1:500	PROJECT	126065
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Drawing Path: I:\2026 Projects\126065 - 876 Hurontario Street, Collingwood\CAD\Design\Sheets\126065-DP02.dwg, Plotted: Aug 31, 2026



LEGEND

- 201
0.30 0.57
- DRAINAGE CATCHMENT ID
— RUNOFF COEFFICIENT
— DRAINAGE AREA (HA)
- DRAINAGE CATCHMENT BOUNDARY
- ↑ EXISTING DRAINAGE DIRECTION
↓ PROPOSED DRAINAGE DIRECTION



PROJECT TITLE
876 HURONTARIO STREET
POST-DEVELOPMENT DRAINAGE PLAN
TOWN OF COLLINGWOOD

DRAWING
DP.2
PROJECT 126065

DATE 2026 06 08 DRAWN BY KRL SCALE 1:500



Project: 876 Hurontario Street
Date: June. 24, 2026
File No.: 126065
Designed By: KRL
Checked By: AO
Subject: Enhanced Swale Volume Table

PANORAMA SUBDIVISION - SWM POND

Bottom Elev. 194.80
 Perm. Pool Elev. 194.80
 Top of Bank 195.25
 Stage 0.05

Elev.	Depth	Main Cell			Total
		Area	Avg. Area	Live	Accum. Total
(m)	(m)	(m ²)	(m ²)	(m ³)	(m ³)
194.80	0.00	21	0	0	0.0
194.85	0.05	32	27	1	1.3
194.90	0.10	43	37	2	3.2
194.95	0.15	54	48	2	5.6
195.00	0.20	65	59	3	8.6
195.05	0.25	76	70	4	12.1
195.10	0.30	87	82	4	16.2
195.15	0.35	98	93	5	20.8
195.20	0.40	110	104	5	26.0
195.25	0.45	121	116	6	31.8



Project: 876 Hurontario Street
Date: September. 3, 2026
File No.: 126065
Designed By: KRL
Checked By: AO
Subject: Enhanced Swale Discharge Table

ORIFICE CONTROL

Low Flow Orifice

Orifice/Pipe Size (mm) 110
 Cross-sectional Area (sq.m) 0.009503
 Orifice Coefficient 0.63
 Invert Elevation (m) 194.65

WEIR CONTROL

Overflow

Weir Width (m) 0.60
 Sill elevation (m) 195.15
 Weir Coefficient 1.70
 Weir Side Slopes (H:V) 5.0
 Downstream Weir Length (m) 0.15

CONTROL STRUCTURE CONFIGURATION

Water Level	Outlet Structure				Total Flow
	Low Flow Orifice		Overflow Weir		
	Head	Discharge	Head	Discharge	
(m)	(m)	(cms)	(m)	(cms)	(cms)
194.80	0.150	0.010	0.000	0.000	0.010
194.85	0.200	0.012	0.000	0.000	0.012
194.90	0.250	0.013	0.000	0.000	0.013
194.95	0.300	0.015	0.000	0.000	0.015
195.00	0.350	0.016	0.000	0.000	0.016
195.05	0.400	0.017	0.000	0.000	0.017
195.10	0.450	0.018	0.000	0.000	0.018
195.15	0.500	0.019	0.000	0.000	0.019
195.20	0.550	0.020	0.050	0.016	0.036
195.25	0.600	0.021	0.100	0.059	0.080

Additional Notes:

NVCA Weir Flow Calculation Applied For Weir Flow Below Circular Orifice Centroid

$$Q_w = 1.65 \left[\left(\frac{\pi (D^2)}{4} \right) (2 \cos^{-1} \left[\frac{((D/2) - d)}{(D/2)} \right] * (180/\pi) \right) / 360 - ((D/2 - d)(D - d^2)^{0.5}) / d \right] d^{1.5}$$

Where:

Q_w is weir flow (m³/s)
 D is orifice diameter (m)
 d is depth of flow above the invert (m)

Project Details

876 Hurontario Street	126065
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Municipality

Town of Collingwood

Prepared By

KRL	June 24, 2026
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Post-Development Analysis

Pre-Development Analysis

Catchment ID	101
Catchment Area (ha)	0.35
1:5-Year Runoff Coefficient	0.45
Time of Concentration (min)	10

Controlled Catchment

Uncontrolled Catchment

201	202
0.14	0.21
0.84	0.40
10	10

Rational Method Calculations

Design Storm		2	5	10	25	50	100	Design Storm		2	5	10	25	50	100
IDF Curve	A	807	1135	1387	1676	1973	2193	201	i (mm/hr)	78	102	118	138	153	168
	B	6.75	7.50	7.97	8.30	9.00	9.04		C	0.84	0.84	0.84	0.92	1.00	1.00
	C	0.83	0.84	0.85	0.86	0.87	0.87		Q (m ³ /s)	0.03	0.03	0.04	0.05	0.06	0.07
101	i (mm/hr)	78	102	118	138	153	168	202	i (mm/hr)	78	102	118	138	153	168
	C	0.45	0.45	0.45	0.50	0.54	0.56		C	0.40	0.40	0.40	0.44	0.48	0.50
	Q (m ³ /s)	0.03	0.05	0.05	0.07	0.08	0.09		Q (m ³ /s)	0.02	0.02	0.03	0.04	0.04	0.05

Peak Flow Summary (m³/s)

Storm	Q _{existing}	Q _{uncontrolled}	Q _{controlled}	Q _{total}	Q _{existing} - Q _{proposed}
2	0.034	0.018	0.016	0.034	0.000
5	0.045	0.024	0.018	0.042	0.003
10	0.052	0.027	0.019	0.046	0.006
25	0.067	0.035	0.023	0.058	0.009
50	0.081	0.043	0.030	0.073	0.009
100	0.093	0.049	0.035	0.084	0.009

Required Storage Volume Summary (m³)

Duration (min)	2	5	10	25	50	100
5	3	6	7	10	11	11
10	6	10	13	17	19	20
15	7	12	15	20	23	23
20	7	12	16	22	24	25
25	7	12	16	22	24	24
30	6	11	15	21	23	23
35	4	10	14	20	22	21
40	3	9	13	19	20	19
45	2	7	12	17	18	16
50	0	6	10	16	15	13
55	-2	4	8	14	12	9

Runoff Coefficient Calculations Post Development

Project Details

876 Hurontario Street, Collingwood	126065
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Prepared By

KRL	Jun. 15, 2026
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Checked By

AO	Jun. 15, 2026
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Data
Sources

Town of Collingwood, Development Standards, August 2022

Watershed:

NVCA

Impervious Area and Runoff Coefficient (C) for Catchment

Catchment ID		201	202		
Catchment Area		0.14	0.21		
Land Cover Category	C	Area (ha)	Area (ha)	Area (ha)	Area (ha)
Paved	0.90	0.11			
Roof	0.90	0.02			
Gravel	0.60				
Woodland	0.35				
Pasture/Lawns	0.40	0.02	0.21		
Meadows	0.38				
Cultivated	0.55				
Waterbody	0.05				
Runoff Coefficient (C)		0.84	0.40		

Runoff Coefficient Calculations Pre-Development

Project Details

876 Hurontario Street, Collingwood	126065
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Data Sources	Town of Collingwood, Development Standards, August 2022
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Watershed: NVCA

Impervious Area and Runoff Coefficient (C) for Catchment

Catchment ID		101			
Catchment Area		0.35			
Land Cover Category	C	Area (ha)	Area (ha)	Area (ha)	Area (ha)
Paved	0.90	0.01			
Roof	0.90	0.02			
Gravel	0.60	0.02			
Woodland	0.35				
Pasture/Lawns	0.40	0.30			
Meadows	0.38				
Cultivated	0.55				
Waterbody	0.05				
Runoff Coefficient (C)		0.45			