



File: 26029

FUNCTIONAL SERVICING REPORT

Barrick Dunsire Apartments – Port Colborne May 2026

INTRODUCTION

Upper Canada Consultants has been retained to undertake and provide a Functional Servicing Report to address the servicing needs and requirements as part of a Zoning Bylaw Application Submission for the proposed development. The site is situated south of Barrick Road and east of West Side Road (Highway 58) on lands previously known municipally as 484 Barrick Road. The site is limited by a Significant Woodlot to the south. The development site was historically agricultural lands however has more recently been vacant land.

The proposed development site is approximately 4.3 hectares and shall consist of six 6-storey, 62-unit residential apartment buildings (372 units), a 1-storey commercial building (approximately 558m²) and a 2-storey parkade structure. The site will include associated asphalt road/parking lot, concrete curb, catch basins, storm sewers, stormwater management facility, sanitary sewers, and watermain.

The objectives of this study are as follows:

1. Identify domestic and fire protection water service needs for the site;
2. Identify sanitary servicing needs for the site; and,
3. Identify stormwater management needs for the site.



WATER SERVICING

The following watermain are located in close proximity to the proposed development site:

- 400mm diameter PVC municipal watermain on the west side of West Side Road (Highway 58)
- 300mm diameter municipal watermain on Barrick Road

It is proposed to construct a 250mm diameter service off West Side Road (Highway 58) to provide both domestic water supply and fire protection for the proposed development.

Furthermore, the following hydrants are situated in proximity to the subject property, listed in order of increasing distance from the site:

- Fronting #341 West Side Road (west side)
- Fronting #311 West Side Road (west side)
- Northeast corner of Barrick Road and Hawthorne Boulevard (north side)
- Fronting #455 Barrick Road (north side)

Due to the size of the development site and specifications of the internal structures, on-site private hydrants will be required to provide sufficient fire protection for the proposed buildings. As the buildings will be 6-storeys in height, they will require internal fire suppression systems (sprinklers) with associated fire department connections per the Ontario Building Code. It is expected that at least three (3) private hydrants will be required on this site under the current development strategy.

Per the provided Site Plan, each of the residential buildings will be constructed with 31 1-bedroom suites and 31 2-bedroom suites. Per the 2022 Regional DC Background study, 2+ bedroom apartments have a population density of approximately 1.991 persons per unit (ppu), with 1 bedroom apartments having a density of 1.214ppu. To be conservative, this report has utilized a density of 1.8ppu resulting in a total population of 670 persons based on 372 units. Per the 2021 Regional Water Master Servicing Plan Update (MSPU), 240 L/cap/day is attributed as the average residential daily demand. However, a more conservative value of 270 L/cap/day has been utilized in accordance with the MECP Water Design Guidelines. Additionally, a commercial allowance of 28 m³/ha/day has been attributed to the commercial land uses. Additionally, peaking factors of 1.8 and 2.7 can be used for maximum daily and peak hourly rates. Therefore, the average day, maximum day, and peak hour domestic requirements will be 2.11L/s, 3.80L/s, and 5.70L/s, respectively.

As part of this approval, a preliminary Fire Underwriters Survey (FUS) Calculation has been conducted and included in Appendix A to determine the minimum fire flow requirement based on the preliminary design for the development at this time. The calculation utilizes key parameters such as the type of construction, combustibility of contents and proximity



to adjacent structures to determine the minimum fire flow required to provide adequate fire protection.

Calculations were conducted for Building #4 (worst case scenario residential/commercial building) and the parking garage. Building #4 was determined to require a fire flow of **83.3L/s** assuming ordinary construction, full internal sprinkler systems, and protected vertical openings in accordance with the National Building Code. The 2-storey parkade has been calculated as an open-air parking garage and was calculated to require a fire flow of **150L/s** assuming fire-resistive construction practices and combustible contents.

The following hydrant data was provided by the City of Port Colborne.

Table 1. Municipal Hydrant Data					
Hydrant Location	Static (PSI)	Residual (PSI)	Actual Flow (GPM)	Theoretical Flow @20psi GPM (Lps)	Date Tested (y/m/d)
#341 West Side Road	50	43	1350	2962 (186)	2023/05/31
#311 West Side Road	53	45	1390	2987 (188)	2023/05/31
Barrick/Hawthorne	46	39	1307	2655 (167)	2023/05/31
#455 Barrick Road	50	39	1216	2090 (131)	2023/05/31

Therefore, with the provided hydrant data, it is expected that the existing municipal watermain system will have sufficient capacity to provide the necessary domestic and fire water supply for the development.

A preliminary Site Servicing Plan has been included in Appendix E that outlines the expected servicing design for the development. It is expected that the watermain and sanitary connections on West Side Road will be constructed simultaneously, and in such a manner that two-way traffic is always maintained though reduced to a single lane. Full design including sizing information will be provided at detailed design.



SANITARY SERVICING

The following sanitary sewers are located in close proximity to the proposed development:

- 200mm diameter municipal sanitary sewer on West Side Road (Highway 58) conveying flows southerly, ultimately to Steele Street SPS
- 250mm diameter municipal sanitary sewer on Barrick Road conveying flows westerly, ultimately to Omer Avenue SPS
- 250mm diameter municipal sanitary sewer on Steele Street conveying flows southerly, ultimately to Steele Street SPS

The proposed development will discharge wastewater flows to the existing 200mm diameter municipal sanitary sewer on West Side Road (Highway 58), directly fronting the site. A 200mm diameter sanitary service will extend from the property to the connection at the municipal sewer, ensuring adequate conveyance capacity for the development. An analysis of the on-site sanitary system has determined this outlet to have sufficient depth to provide a gravity outlet for all buildings on site.

A peak sanitary outflow calculation has been completed for the development site and downstream municipal system and included in Appendix B. The analysis uses a population density of 1.8 persons per apartment unit with 255L/cap/day for residential flow, and 28m³/ha/day for the commercial building with 0.28L/s/ha for infiltration flow. The development will discharge a peak wet weather flow of 8.96L/s to the downstream municipal system.

Per the overall system analysis, the sanitary sewers on Northland Avenue will experience surcharging with the additional flow from the proposed development – under the condition that the Northland Estates Subdivision is fully developed. Therefore, it is expected that the sanitary sewer on Northland Avenue will be upgraded through cost sharing with the City of Port Colborne through City development charges.

As part of the development of the adjacent Northland Estates Subdivision development, it is expected that peak sanitary flows will surpass the capacity (25.2L/s) of the Steele Street Regional Sanitary Pumping Station (SPS). This will trigger design upgrades to begin on the station. It is expected that the upgrades to the SPS will be complete prior to this development moving to full buildout and near initial occupancies and construction.

A preliminary Site Servicing Plan has been included in Appendix E that outlines the expected servicing design for the development. It is expected that the watermain and sanitary connections on West Side Road will be constructed simultaneously, and in such a manner that two-way traffic is always maintained though reduced to a single lane. A gravity outlet will be provided to all buildings on site, although some basements may be required to be pumped. Further details will be provided through Site Plan Application submissions.



STORMWATER MANAGEMENT PLAN

As part of the site development, the following is a summary of the Stormwater Management Plan.

The criteria provided by the City of Port Colborne, Region of Niagara and Ministry of Transportation for this development includes the requirement to control future development stormwater flows to allowable levels from this site for up to and including the 100-year design storm event. It is also required to improve stormwater quality levels to MECP Normal Protection (70% TSS removal) levels prior to discharge to the existing storm sewer on West Side Road (Highway 58).

To limit future stormwater flows to allowable levels, typically a control is placed on the outlet from the site that may include an orifice and site stormwater storage. To improve stormwater quality, typically a stormwater oil/grit separator or other ETV verified device provides the required TSS (Total Suspended Solids) removal for this type of development.

Existing Conditions

The majority of the subject development site has historically been vacant open lands owned and maintained by the Christian Life Assembly church at the southwest corner of the intersection of Barrick Road and West Side Road. The proposed north development entrance to Barrick Road has historically been a Single Residential Dwelling known municipally as #434 Barrick Road.

The existing site topography directs stormwater flows in a southerly direction at a approximate 1.0% grade, with internal subcatchments discharging flows to three (3) separate outlets. As shown on the Existing Overall Storm Drainage Area Plan (Figure 1), the outlets are located as follows:

- Outlet A - Existing culvert inlet at the southwest corner of the site discharging to the 525mm diameter storm sewer on the east side of West Side Road conveying flows south;
- Outlet B - Ditch inlet at northeast corner of Barrick Road and Northland Avenue intersection, discharging flows to the West Side Road storm sewer system; and
- Outlet C - East site limit towards Steele Street.

Drainage Areas EX20 consists of the front roof area and parking lot of the Christian Life Assembly that directs flows northerly, up to and including the 5 year design storm event, to the storm sewer on Barrick Road. During major storm events, overland stormwater flows are directed south towards Drainage Area EX10. During all storm events, stormwater flows from Drainage Area EX10 are directed to a culvert inlet to the West Side Road (Highway 58) storm sewer system located across from #311 West Side Road.



Drainage Area EX30 conveys stormwater flows southwesterly through the significant woodlot to the roadside ditch along West Side Road, ultimately discharging to a ditch inlet located at the northeast corner of the Barrick Road and Northland Avenue intersection.

Drainage Area EX40 conveys stormwater flows easterly through the adjacent residential properties and continuing east to Steele Street. Weighted Impervious calculations have been completed for most of the existing and future drainage areas and included in Appendix C.

Per documentation provided by the City of Port Colborne, the proposed development site is included in the overall drainage area for the Trunk Storm Sewer System on Franklin Avenue, Shamrock Avenue and Bartok Crescent, discharging stormwater flows to a stormwater management facility north of 70 Rosedale Avenue and to the Welland Recreational Canal.

Per the soil mapping conducted by the Ontario Ministry of Agriculture, Food and Agribusiness, the site contains Sandy Clayey Silt with a high bedrock elevation. Geotechnical analysis conducted by Soil-Mat (2025) confirmed this analysis, noting bedrock depths at 0.3-0.8m across the site. During test pit analysis, all pits were observed to be dry and the water table is anticipated at approximately 3-4m below the surface within the bedrock – below anticipated depths of construction.

Proposed Conditions

The 4.31-hectare proposed development will result in the construction of six 6-storey residential apartment buildings, an additional commercial building and an associated parking lot occupying the majority of the subject property. The site will be constructed with an internal storm sewer system conveying stormwater flows to a stormwater management facility to be located at the southwest corner of the site.

A Future Overall Storm Drainage Area Plan has been included in Appendix C outlining the future stormwater conditions for the proposed development area. These areas have been modelled to establish peak flows and volumes once development has been completed at the proposed site. Modelling has been conducted for fully developed conditions.

As in the existing conditions, Drainage Area A20 consists of the Christian Life Assembly parking lot that conveys major stormwater flows (less 5 year flows) southerly towards the development area. Drainage Area A10 consists of the majority site area that will capture stormwater flows within the on-site storm sewer system, ultimately conveying flows to the stormwater management facility. Drainage Area A11 will direct flows towards the West Side Road (Highway 58) road allowance, bypassing the on-site stormwater management facility and the associated peak flow controls. All stormwater flows from these drainage areas will be directed to West Side Road at Outlet A. As discussed further in the report, flows will discharge either directly to the storm sewer, or overland to the roadway.



Drainage Area A40 consists of the remaining external lands along the southeast perimeter portion of the site conveying flows directly to the adjacent residential properties.

Stormwater Quantity Analysis

A MIDUSS model was created to assess the existing and future development peak flows and stormwater volumes generated at the subject site. All stormwater flows were calculated for the 2, 5, 10, 25, and 100 year design storm events using the MTO IDF Curves for the City of Port Colborne. Table 2 below outlines the IDF Curves used in this report.

Table 2. Rainfall Data			
Design Storm (Return Period)	Chicago Distribution Parameters		
	a	b	c
25mm	512.000	6.00	0.800
2 Year	397.149	0.00	0.699
5 Year	524.867	0.00	0.699
10 Year	608.845	0.00	0.699
25 Year	715.568	0.00	0.699
100 Year	871.279	0.00	0.699
$Intensity \ (mm/hr) = \frac{a}{(t_d + b)^c}$			

Input parameters for the computer model for both existing and future conditions are outlined in Table 3. The results of this modelling are shown in Table 4, where the peak flows and volumes are modelled for existing conditions, and future conditions without stormwater management.



Table 3. Hydrologic Parameters

Table 3. Hydrologic Parameters					
Area No.	Area (ha)	Length (m)	Slope (%)	SCS CN	Percent Impervious
Existing Conditions					
EX10	3.06	145	1.0%	74	7.5%
EX20	0.34	50	1.0%	74	92.0%
EX30	0.65	65	1.0%	74	1.0%
EX40	2.02	115	1.0%	74	4.5%
6.07		Total Area			
Future Conditions					
A10	5.26	190	1.0%	74	75.0%
A11	0.40	50	1.0%	74	1.0%
A20	0.34	50	1.0%	74	92.0%
A40	0.08	10	2.0%	74	5.0%
6.08		Total Area			

Table 4. Peak Flow and Volume Comparison

Design Storm	Peak Flow (L/s)			Volume (m ³)		
	Existing	Future	Change	Existing	Future	Change
Outlet A – West Side Road (west)						
2 Year	32	530	+1,556%	227	1,255	+1,028
5 Year	49	699	+1,327%	391	1,756	+1,365
10 Year	63	815	+1,194%	523	2,096	+1,573
25 Year	93	962	+934%	706	2,531	+1,825
100 Year	124	1,045	+743%	871	2,942	+2,071
Outlet B – West Side Road (south)						
2 Year	5	0	-100%	38	0	-38
5 Year	11	0	-100%	71	0	-71
10 Year	17	0	-100%	96	0	-96
25 Year	28	0	-100%	131	0	-131
100 Year	36	0	-100%	164	0	-164
Outlet C – Steele Street (easterly)						
2 Year	14	1	-93%	136	5	-131
5 Year	28	3	-89%	241	10	-231
10 Year	43	4	-91%	321	13	-308
25 Year	68	6	-91%	433	17	-416
100 Year	87	8	-91%	539	21	-518
Note: Future flows are calculated in this chart without peak flow quantity controls						



Therefore, as seen in previous Table 4, the proposed development strategy will result in significantly reduced peak stormwater flows to Outlets B and C and no further quantity controls will be required for these outlets. However, peak flows to Outlet A will significantly increase and will therefore require peak flow controls prior to discharge to the West Side Road (Highway 58) stormwater system.

Stormwater Management Facility

To confirm the feasibility of the proposed stormwater management approach for this submission, a preliminary stormwater management design has been prepared and modelled. The purpose of this preliminary analysis is to demonstrate the viability of the proposed development and its' ability to accommodate the required stormwater management controls. It is anticipated that refinements and modifications to the design may occur during the detailed design stage, which will be submitted as part of future Site Plan Approval applications. As such, the following design should be considered preliminary in nature and subject to confirmation through detailed design.

For this development, a storm sewer will be constructed to an existing manhole as part of the 525mm diameter storm sewer on West Side Road at Outlet 'A'. A control structure manhole will be constructed just east of the 14m MTO setback within the development site, just downstream of the proposed Dry Pond facility. A concrete (non-tamperable) Weir Wall will be constructed within the control structure manhole to provide the necessary peak flow quantity controls prior to discharge to the West Side Road (Highway 58) storm sewer.

Table 5 below provides the breakdown of peak stormwater flows discharging to Outlet A under existing and future conditions per the stormwater calculations. The allowable future peak flows have been further broken down to differentiate the maximum peak flows able to discharge to the storm sewer vs. the total peak flows discharging to the overall road allowance. As noted, peak flows to the West Side Road (Highway 58) storm sewer have been modelled to discharge a maximum allowable peak flow rate of 56L/s representing the existing 5 year flow rate plus an additional 15% to represent the full flow capacity of the system under surcharged conditions.

Table 5. Allowable Peak Flow Analysis				
Design Storm	Existing Peak Flows (L/s)	Future Peak Flows (L/s)		
		Allowable		Proposed (to road allowance)
		To Sewer	Overall To Road Allowance	
2 Year	32	32	32	31
5 Year	49	49	49	44
10 Year	63	56	63	51
25 Year	93	56	93	63
100 Year	124	56	124	89



Per previous Table 5, peak stormwater flows under the proposed stormwater management plan discharging to the West Side Road (Highway 58) stormwater system will be restricted to allowable levels for all modelled storm events.

The concrete (non-tamperable) Weir Wall within the control manhole will have a 127mm (5") diameter orifice at the base of wall elevation of 182.23m. A second 100mm (4") diameter orifice would be constructed at an elevation of 183.00m with the top of wall elevation to be constructed at an elevation at 183.50m. As shown in the Stage-Storage-Discharge Calculation Sheet in Appendix C, peak flows discharging from the control structure have been restricted to a maximum of 56L/s.

The stormwater management 'dry pond' facility will be constructed just upstream of the control manhole with a base elevation of 182.30m and top of pond elevation at 184.00m. Due to the lack of available grade on the site, both the headwall discharging flows into the facility and the outlet ditch inlet will be constructed at an elevation of 182.30m. A depressed channel will be constructed between the two structures to provide a dedicated path for stormwater flows and will act as an erosion control measure, however the channel will be completely flat.

During major storm events, peak stormwater flows reaching levels surpassing the capacity of the control structure manhole will discharge from a trapezoidal overflow weir at the top of the dry pond facility. The overflow weir will have a base elevation at 183.70m and continue to the top of pond elevation at 184.00m. Flows from the overflow weir will discharge overland directly to the road allowance and overtop the curb.

The dry pond has been sized to provide sufficient stormwater storage capacity for the development, however it is expected that the remaining upstream storm sewers will also provide additional stormwater storage.

Table 6 below outlines the peak stormwater characteristics experienced by the proposed on-site stormwater management facility during the modelled storm events.

Table 6. Stormwater Management Facility Characteristics			
Design Storm	Peak Outflow	Volume	Elevation
2 Year	29	941	183.02
5 Year	41	1,304	183.25
10 Year	47	1,556	183.39
25 Year	53	1,901	183.59
100 Year	84	2,159	183.73

An internal storm sewer system will be constructed that will direct stormwater flows from the site to the dry pond facility. The storm sewers will be sized to accommodate flows up to and including the 5 year design storm event.



During major storm events greater than the 5 year storm, overland flows unable to enter the on-site storm sewer system will be directed towards the dry pond facility. No overland flows from within the parking lot area will be directed out to the West Side Road road allowance. During extreme storm events, the pond has been designed with an overflow weir directing flows out to the West Side Road (Highway 58) road allowance, as occurs under existing conditions.

Quality Assessment

As stated previously, it will be required to improve stormwater to Normal Protection (70% TSS removal) levels prior to discharge from the site. For this development, it is proposed to use an oil/grit separator to provide the necessary quality enhancements. Additionally, due to the design of the proposed on-site dry pond SWM facility, quality enhancements will inherently be provided through a treatment train process.

Modelling has been conducted using the Hydroworks software for a HydroDome OGS unit. The contributing drainage area to the proposed oil/grit separator is approximately 5.26 hectares with an impervious coverage of approximately 75%. The modelling for a Hydroworks unit has indicated that an HydroDome HD10 OGS will provide 73% TSS overall removal and capture 99% of the stormwater flows. Therefore, the Hydroworks HD10 is proposed for this site development. Output calculations for the quality assessment can be found in Appendix D.



Maintenance of Stormwater Management Facility

The function of the proposed stormwater quality protection facility, a stormwater oil/grit separator, will require maintenance on an annual basis. The following is a summary of the maintenance activities required.

Regular inspections of the stormwater Maintenance Hole (MH) oil/grit interceptor will indicate whether maintenance is required or not. They should be made after every significant storm during the first two years of operation to ensure that it is functioning properly. This will translate into an average of six inspections per year.

Points of regular inspections are as follows:

- Is there sediment in the separator sump? The level of sediment can be measured from the surface without entry into the oil/grit separator via a dipstick tube equipped with a ball valve (Sludge Judge) or with a graduated pole with a flat plate attached to the bottom.
- Is there oil in the separator sump? This can be checked from the surface by inserting a dipstick in the 150mm vent tube. The presence of oil is usually indicated by an oily sheen, frothing or unusual colouring. The separator should be cleaned in the event of a major spill contamination.
- Is there debris or trash at the inlet weir and drop pipe? This can be observed from the surface without entry into the separator. Clogging at the inlet drop pipe will cause stormwater to bypass the sedimentation section and continue downstream without treatment.

Completion of the Inspection Report (a sample report is included in Appendix D for reference purposes). These reports will provide details about the operation and maintenance requirements for this type of stormwater quality device. After an evaluation period (usually 2 years) this information will be used to maximize efficiency and minimize the costs of operation and maintenance for the maintenance hole oil/grit separator.

Typically, stormwater MH oil/grit separators are cleaned out using vacuum pumping. No entry into the unit is required for maintenance. Cleaning should occur annually or whenever the accumulation reaches sediment storage specified by the manufacturer and after any major spills have occurred. Oil levels greater than 2.5 centimeters should be removed immediately by a licensed waste management firm.

Generally, the sediment removed from the separator will not be contaminated to the point that it would be classified as hazardous waste. However, the sediment should be tested to determine the disposal options. The Ministry of Environment, Conservation and Parks publishes sediment disposal guidelines which should be consulted for up-to-date information pertaining to the exact parameters and acceptable levels for the various



disposal options. The preferred option is an off-site disposal, arranged by a licensed waste management firm.

The future owners of a Hydroworks facility are provided with an Owner's Manual upon installation, which explains the function, maintenance requirements and procedures for the facility with extensive use. It is recommended to follow the manufacturers instructions to allow the oil/grit separator to perform as intended. A Sample Oil/Grit Separator Inspection Report has been included in Appendix D.



CONCLUSIONS AND RECOMMENDATIONS

Therefore, based on the above comments and design calculations provided for this site, the following summarizes the servicing for this site.

1. The existing 400mm diameter watermain on West Side Road (Highway 58) will have sufficient capacity to provide both domestic and fire protection water supply.
2. The existing 200mm diameter municipal sanitary sewer on West Side Road (Highway 58) will have adequate capacity although the downstream sewer system on Northland Avenue will require upsizing through cost sharing with the City.
3. Stormwater quantity controls will be provided to allowable conditions up to and including the 100-year design storm event.
4. During extreme storm events, on-site stormwater flows will be directed to the Dry Pond Stormwater Management Facility and be directed westerly to West Side Road (Highway 58).
5. Stormwater quality protection will be provided by to Normal Protection (70% TSS removal) levels through treatment train by a Oil/Grit Separator and the Dry Pond facility.

Based on the above and the accompanying calculations, there exists adequate municipal servicing for this development. We trust the above comments and enclosed calculations are satisfactory for approval. If you have any questions or require additional information, please do not hesitate to contact our office.

Yours very truly,

Kurt Tiessen, P.Eng.
Revised May 13, 2026
Encl.



**UPPER CANADA
CONSULTANTS**
ENGINEERS / PLANNERS

Functional Servicing Report
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APPENDICES



**UPPER CANADA
CONSULTANTS**
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Functional Servicing Report
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APPENDIX A

Fire Underwriters Survey Calculations

Fire Underwriters Survey

Water Supply for Public Fire Protection (2020) Calculations

Barrick Dunsire Apartments

Required Fire Flow in Litres per Minute	F=	5,000	(L/m)
		83.33	(L/s)
		1,321	(USgmp)

Type of Construction	C=	1.00
Ordinary Construction (brick or other masonry walls, combustibile floor and interior).		

Total Floor Area in square metres (including all stories, excluding basements at least 50% below grade)	A=	1063	(m2)
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Total Number of Floors - (1 floor + 25% floor area above and below)	1.5
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2. Combustibility of Contents (may not reduce fire flow demand below 2,000 L/min)	=	-15%
Limited Combustible		

3. Sprinkler Systems		
Is there a complete automatic sprinkler protection system per NFPA (Yes/No).	Yes	-30%
Water supply standard for both system and fire department hose lines (Yes/No).	Yes	-10%
Is system fully monitored (Yes/No).	Yes	-10%
Total Sprinkler Reduction to Overall Fire Flow Demand	-50%	

4. Spacial Separation of Neighbouring Structures (within 45 metres)		
Location of Building:	BUILDING #4	
Distance to Nearest Building to the North	25.0 m	10%
Distance to Nearest Building to the South	23.9 m	10%
Distance to Nearest Building to the East	30.0 m	0%
Distance to Nearest Building to the West	27.9 m	10%
Total Spacial Separation to Adjacent Structures	30%	

Additions	
Is roof wood shingles or shakes (Yes/No).	

Fire Underwriters Survey

Water Supply for Public Fire Protection (2020) Calculations

Barrick Dunsire Apartments

Required Fire Flow in Litres per Minute

F=

9,000	(L/m)
150.00	(L/s)
2,378	(USgmp)

Type of Construction

Fire-Resistive Construction (fully protected, frame, floors, roof).

C=

0.60

Total Floor Area in square metres

A=

2099

(m2)

Total Number of Floors - (use largest floor area only)

1

2. Combustibility of Contents (may not reduce fire flow demand below 2,000 L/min)

Combustible

=

0%

3. Sprinkler Systems

Is there a complete automatic sprinkler protection system per NFPA (Yes/No).

No

0%

Water supply standard for both system and fire department hose lines (Yes/No).

No

0%

Is system fully monitored (Yes/No).

No

0%

Total Sprinkler Reduction to Overall Fire Flow Demand

0%

4. Spacial Separation of Neighbouring Structures (within 45 metres)

Location of Building:

Parking Garage

Distance to Nearest Building to the North	4.0 m	20%
Distance to Nearest Building to the South	28.0 m	10%
Distance to Nearest Building to the East	27.8 m	10%
Distance to Nearest Building to the West	23.9 m	10%

Total Spacial Separation to Adjacent Structures

50%

Additions

Is roof wood shingles or shakes (Yes/No).

No



**UPPER CANADA
CONSULTANTS**
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APPENDIX B

Sanitary Sewer Calculations

UPPER CANADA CONSULTANTS											SANITARY SEWER DESIGN SHEET																					
3-30 HANNOVER DRIVE											STEELE STREET SPS OVERALL SANITARY SEWER ANALYSIS																					
ST.CATHARINES, ONTARIO																																
L2W 1A3																																
EXISTING CONDITIONS																																
DESIGN FLOWS					INFILTRATION RATE:					0.28 L / s / ha (RESIDENTIAL)					SEWER DESIGN																	
RESIDENTIAL:					255 LITRES/PERSON/DAY					0.28 L / s / ha (COMMERCIAL/INSTITUTIONAL)					PIPE ROUGHNESS:					0.013 FOR MANNING'S EQUATION												
COMMERCIAL					28 m ³ / HA / DAY PER MECP					POPULATION DENSITY:					2.4 PERSONS / UNIT (EXISTING DEVELOPMENT)					PIPE SIZES:					1.016 IMPERIAL EQUIVALENT FACTOR							
COM/INST. PEAKING FACTOR					1.5					2.4 PERSONS / UNIT (NEW DVLPM T - NON APTMT)					PERCENT FULL:					TOTAL PEAK FLOW / CAPACITY												
					1.8 PERSONS / UNIT (NEW DVLPM T - APARTMENT)																											
MUNICIPALITY:					CITY OF PORT COLBORNE																											
PROJECT :					BARRICK DUNSIRE																											
PROJECT NO:					26029																											
					$M = 1 + \frac{14}{4 + P^{0.5}}$ Where P = design population in thousands																											
LOCATION			AREA		RESIDENTIAL						COMMERCIAL/INSTITUTIONAL			Accumulated			DESIGN FLOW															
Location and Description	From M.H	To M.H.	Increment (hectares)	Accumulated (hectares)	Number of Units	Population Density (pph)	Population Increment	Total Population	Peaking Factor	Total Flow (L/s)	Area	Flow (L/s)	Dry Weather Flow (L/s)	Infiltration Flow (L/s)	Total Peak Flow (L/s)	Pipe Diameter (mm)	Pipe Length (m)	Pipe Slope (%)	Full Flow Velocity (m/s)	Full Flow Capacity (L/s)	Percent Full											
~~BSX - Barrick Road~~		~~660~~	~~7.69~~																													
~~B1a - Barrick Road~~		~~660~~	~~0.41~~	~~0.41~~	~~16~~	~~93.7~~	~~38~~	~~38~~	~~4.34~~	~~0.49~~			~~0.49~~	~~0.11~~	~~0.61~~	~~200~~	~~90.0~~	~~0.40~~	~~0.67~~	~~21.64~~	~~2.9%~~											
~~B1b - Barrick Road~~		~~660~~	~~0.56~~	~~0.56~~	~~12~~	~~51.4~~	~~29~~	~~29~~	~~4.36~~	~~0.37~~			~~0.37~~	~~0.16~~	~~0.53~~	~~200~~	~~90.0~~	~~0.40~~	~~0.67~~	~~21.64~~	~~2.4%~~											
B1 - Barrick Road	660	662	1.83	1.83	16	21.0	38	38	4.34	0.49			0.49	0.51	1.00	250	111.5	0.28	0.65	32.83	3.1%											
B2 - Barrick Road	662	661	1.17	3.00	10	20.5	24	62	4.29	0.79			0.79	0.84	1.63	250	130.4	0.24	0.60	30.39	5.4%											
B3 - Barrick Road	661	663	1.05	4.05	8	18.3	19	82	4.27	1.03			1.03	1.13	2.16	250	119.2	0.58	0.93	47.25	4.6%											
B4 - West Side Road	663	664	0.65	4.70	1	3.7	2	84	4.26	1.06			1.06	1.32	2.37	200	81.8	0.22	0.49	16.05	14.8%											
B5 - West Side Road	664	650	0.57	5.27	6	25.3	14	98	4.25	1.23			1.23	1.48	2.71	200	91.7	0.61	0.82	26.72	10.1%											
X2 - Barrick Dunsire	TO WSR		4.33		372	154.6	670	670	3.91	7.72	0.06	0.03	7.75	1.21	8.96	200	10.0	0.61	0.82	26.72	33.5%											
B6 - West Side Road	650	651	0.66	10.26	5	18.2	12	780	3.87	8.90			8.93	2.87	11.80	200	91.9	0.36	0.63	20.53	57.5%											
B7 - West Side Road	651	646	0.47	10.73	1	5.1	2	782	3.87	8.93			8.95	3.00	11.96	200	90.9	0.40	0.67	21.64	55.3%											
B8 - West Side Road	646	619	0.24	10.97	0	0	0	782	3.87	8.93			8.95	3.07	12.03	200	91.1	0.50	0.75	24.19	49.7%											
X1 - Port Colborne Mall	EX	620	4.13	4.13							4.13	2.01	2.03	1.16	3.16	200																
~~EX - External Northland Est.~~		~~PROP~~	~~4.24~~																													
NEC - Northland Est. Condo (Mixed Use)	PROP		0.69	0.69	50	173.9	120	120	4.22	1.49	0.69	0.34	1.83	0.19	2.02																	
NE - Northland Estates Sub	PROP	620	8.89	9.58	233	62.9	559	679	3.90	7.82			8.16	2.68	10.84	200	100.0	0.40	0.67	21.64	50.1%											
Northland Avenue	620	619		13.71				679					2.34	3.84	6.18	200	19.0	0.40	0.67	21.64	28.6%											
S1 - Northland Avenue	619	621	0.17	24.85				1462	3.69	15.91			18.28	6.96	25.24	200	66.1	0.50	0.75	24.19	104.3%											
S2 - Northland Avenue	621	622	1.21	26.06	19	37.7	46	1507	3.68	16.36			18.73	7.30	26.03	200	23.8	0.50	0.75	24.19	107.6%											
S3 - Northland Avenue	622	623	0.53	26.59	8	36.2	19	1526	3.67	16.55			18.92	7.45	26.37	200	26.5	0.45	0.71	22.95	114.9%											
S4 - Northland Avenue	623	624	2.08	28.67	93	107.3	223	1750	3.63	18.75			21.12	8.03	29.14	200	70.8	0.51	0.75	24.44	119.3%											
S5 - Northland Avenue	624	626	1.04	29.71	1	2.3	2	1752	3.63	18.77			21.14	8.32	29.46	200	81.5	0.93	1.02	33.00	89.3%											
S6 - Northland Avenue	626	625	1.20	30.91	4	8.0	10	1762	3.63	18.86			21.23	8.65	29.89	200	90.9	0.50	0.75	24.19	123.5%											
S7 - Northland Avenue	625	627	0.17	31.08	1	14.1	2	1764	3.63	18.89			21.26	8.70	29.96	200	60.4	1.80	1.42	45.91	65.3%											
C1 - Steele Street	671	659	0.97	0.97	6	14.8	14	14	4.40	0.19			0.19	0.27	0.46	250	79.9	0.80	1.10	55.49	0.8%											
C2 - Steele Street	659	654	1.69	2.66	7	9.9	17	31	4.35	0.40			0.40	0.74	1.15	250	81.3	1.50	1.50	75.98	1.5%											
C3 - Steele Street	654	649	1.88	4.54	7	8.9	17	48	4.32	0.61			0.61	1.27	1.88	250	93.9	0.66	0.99	50.40	3.7%											
C4 - Steele Street	649	648	1.24	5.78	8	15.5	19	67	4.29	0.85			0.85	1.62	2.47	250	94.1	0.78	1.08	54.79	4.5%											
C5 - Steele Street	648	627	1.29	7.07	8	14.9	19	86	4.26	1.09			1.09	1.98	3.07	300	97.4	0.15	0.54	39.07	7.8%											
S8 - Steele Street	627	614	0.21	38.36	2	22.9	5	1855	3.61	19.77			22.14	10.74	32.88	300	44.7	0.49	0.97	70.62	46.6%											
X4 - Royal Road		614	2.15	2.15	22	24.6	53	53	4.31	0.67			0.67	0.60	1.27	200																
S9 - Steele Street	614	813	0.35	40.86	3	20.6	7	1915	3.60	20.35			22.72	11.44	34.16	300	50.3	0.54	1.02	74.13	46.1%											
S10 - Steele Street	813	810	0.77	41.63	10	31.2	24	1939	3.60	20.58		2.37	22.95	11.66	34.61	300	96.4	0.48	0.96	69.89	49.5%											
** Analysis terminates at Steele Street Pumping Station **																																
** All sewer lengths and slopes taken from City provided GIS **																																
** If cells are stricken, values have not been included in peak flows of downstream sewers																																



APPENDIX C

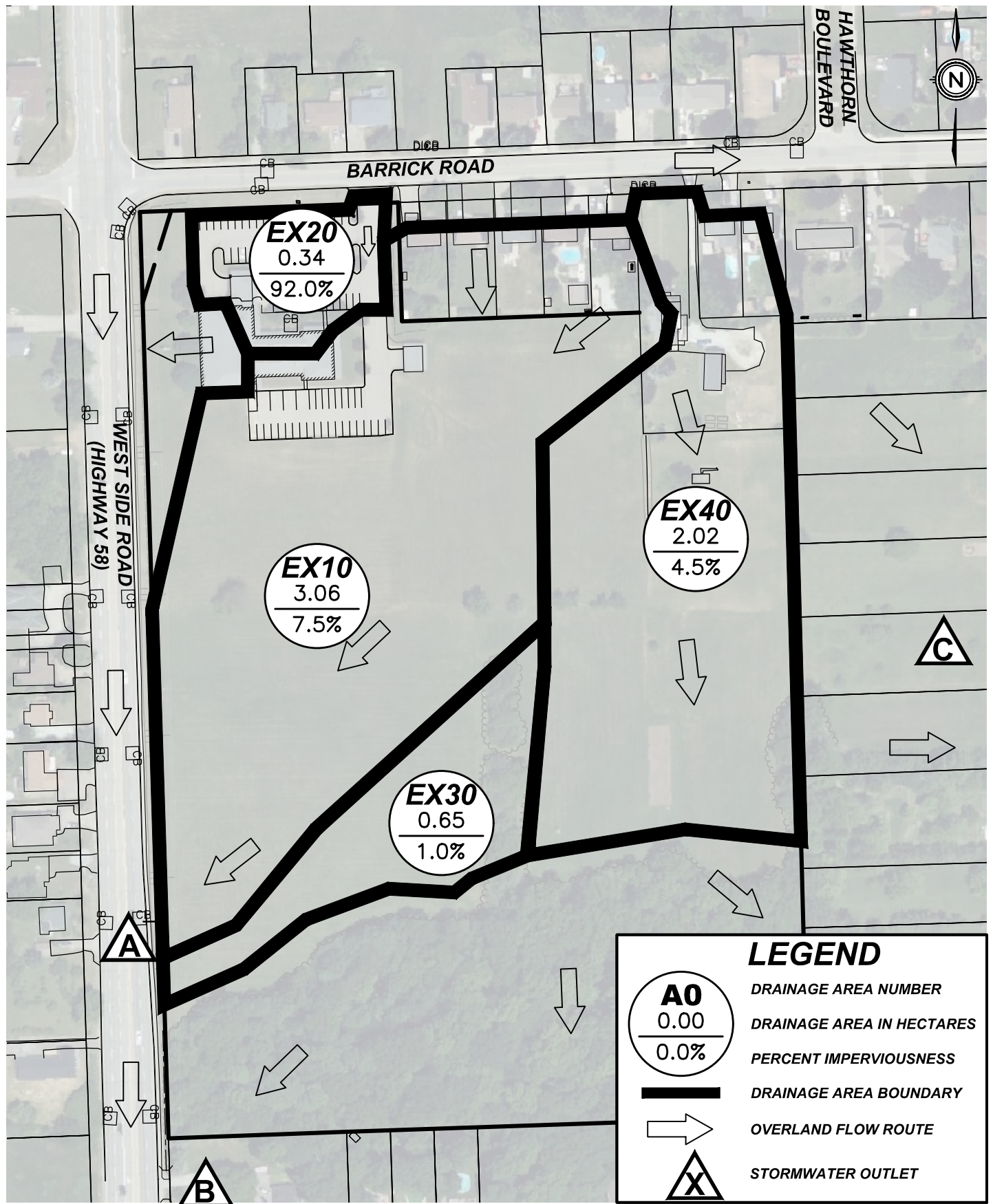
Figure 1 – Existing Overall Storm Drainage Area Plan

Figure 2 – Future Overall Storm Drainage Area Plan

Weighted Percent Impervious Calculation Sheet

Stage-Storage-Discharge Calculation Sheet

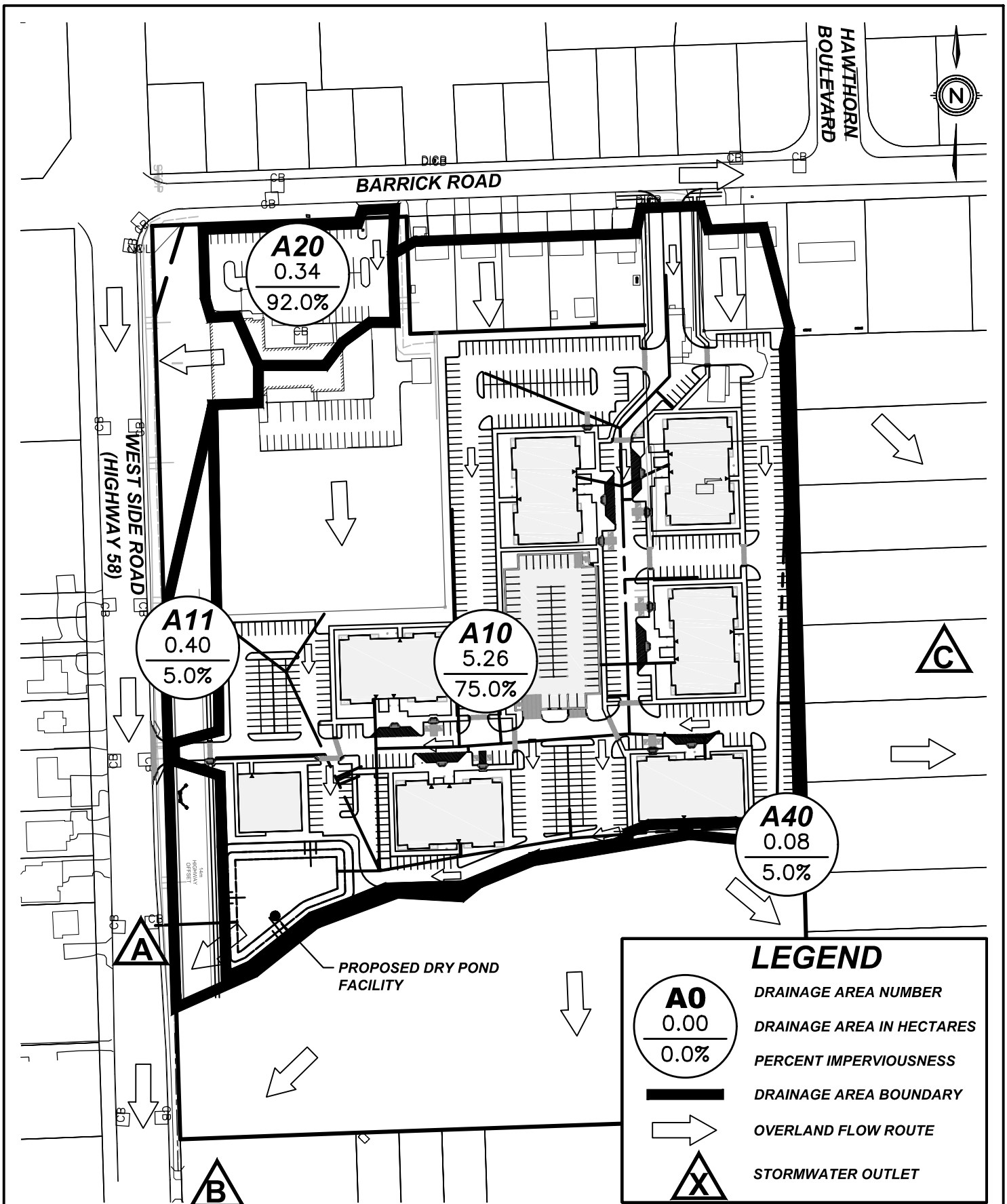
MIDUSS Output Files



**UPPER CANADA
CONSULTANTS**
ENGINEERS / PLANNERS

**BARRICK DUNSIRE
APARTMENTS**
CITY OF PORT COLBORNE
EXISTING STORM DRAINAGE AREA PLAN

DATE	2026-05-01
SCALE	1:2,000 m
REF No.	26029
DWG No.	FIGURE 1



LEGEND

A0	DRAINAGE AREA NUMBER
0.00	DRAINAGE AREA IN HECTARES
0.0%	PERCENT IMPERVIOUSNESS
	DRAINAGE AREA BOUNDARY
	OVERLAND FLOW ROUTE
	STORMWATER OUTLET



**UPPER CANADA
CONSULTANTS**
ENGINEERS / PLANNERS

**BARRICK DUNSIRE
APARTMENTS**
CITY OF PORT COLBORNE
FUTURE STORM DRAINAGE AREA PLAN

DATE	2026-05-01
SCALE	1:2,000 m
REF No.	26029
DWG No.	FIGURE 2

Weighted Imperviousness Percentage Calculation Worksheet

Project Name:	Barrick - Dunsire Apartments
Project Number:	26029
Date:	May 2026
Person:	K.Tiessen, P.Eng.

EX10 - EXISTING CONDITIONS

	<i>Footprint</i>	<i>Runoff Coefficient</i>	<i>Effective Impervious Area</i>
Parking Lot, Rooftop & Driveways	2282.0 m ²	0.90	2053.8 m ²
Landscape/Vacant Lands	28345.0 m ²	0.20	5669.0 m ²
TOTAL CATCHMENT IMPERVIOUS AREAS			7,723 m ²
TOTAL CATCHMENT AREA			30,627 m ²
	EFFECTIVE RUNOFF COEFFICIENT		0.25
	EFFECTIVE PERCENT IMPERVIOUSNESS		7.5%

EX20/A20 - EXISTING & FUTURE CONDITIONS

	<i>Footprint</i>	<i>Runoff Coefficient</i>	<i>Effective Impervious Area</i>
Parking Lot, Rooftop & Driveways	3138.2 m ²	0.90	2824.4 m ²
Landscape/Vacant Lands	297.1 m ²	0.20	59.4 m ²
TOTAL CATCHMENT IMPERVIOUS AREAS			2,884 m ²
TOTAL CATCHMENT AREA			3,435 m ²
	EFFECTIVE RUNOFF COEFFICIENT		0.84
	EFFECTIVE PERCENT IMPERVIOUSNESS		91.4%

EX40 - EXISTING CONDITIONS

	<i>Footprint</i>	<i>Runoff Coefficient</i>	<i>Effective Impervious Area</i>
Parking Lot, Rooftop	535.0 m ²	0.90	481.5 m ²
Gravel Driveway	538.0 m ²	0.70	376.6 m ²
Landscape/Vacant Lands	19160.0 m ²	0.20	3832.0 m ²
TOTAL CATCHMENT IMPERVIOUS AREAS			4,690 m ²
TOTAL CATCHMENT AREA			20,233 m ²
	EFFECTIVE RUNOFF COEFFICIENT		0.23
	EFFECTIVE PERCENT IMPERVIOUSNESS		4.5%

A10 - PROPOSED CONDITIONS

	<i>Footprint</i>	<i>Runoff Coefficient</i>	<i>Effective Impervious Area</i>
Internal Landscape Area	6452.0 m ²	0.20	1290.4 m ²
External Rearyard/Landscape Area	10250.0 m ²	0.20	2050.0 m ²
External Rooftop, Parking Lot Area	3074.0 m ²	0.90	2766.6 m ²
Dry Pond	1800.0 m ²	0.20	360.0 m ²
Internal Buildings, Asphalt, Concrete	30988.0 m ²	0.90	27889.2 m ²
TOTAL CATCHMENT IMPERVIOUS AREAS			33,066 m ²
TOTAL CATCHMENT AREA			46,112 m ²
	EFFECTIVE RUNOFF COEFFICIENT		0.72
	EFFECTIVE PERCENT IMPERVIOUSNESS		73.9%

Stage Storage Discharge Calculation Sheet														
Project Name:		Barrick Dunsire Apartments												
Project No.:		26029												
Date:		May 2026												
		FUTURE SEWERS		DRY POND VOLUME	TOTAL STORAGE VOLUME	Base Orifice		Upper Orifice		Slot Weir	Control Structure - Total Outflow	Trapezoidal Overflow Weir		Total Outflow
Controlling Rim Elev:	184.00	PIPES	MH's			Dia (m) = 0.127		Dia (m) = 0.100		Width (m) = 1.500 Invert (m) = 183.50		Side Slopes Z = 0.10		
Invert:		300.00	300.00			Cd = 0.60		Cd = 0.60				Base Width = 0.50		
Pipe Diameter:		0.457				Invert (m) = 182.23		Invert (m) = 183.00				Cd = 1.84		
Structure/Pipe Length:		1.00	1200x600mm							Invert (m) = 183.70		DISCHARGE		
Elevation (m)		(m³)	(m³)	(m³)	Total (m³)	Orifice (m³/s)		Orifice (m³/s)		Slot Weir (m³/s)	(m³/s)	(m³/s)	(L/s)	
184.00	100 Yr	180.00	85.00	2418.0	2683.0	0.044		0.020		0.976	0.056	0.468	523.8	
183.90		170.00	80.00	2235.0	2485.0	0.042		0.019		0.698	0.056	0.251	306.8	
183.80		160.00	75.00	2056.0	2291.0	0.041		0.018		0.454	0.056	0.087	143.3	
183.70		150.00	65.00	1882.0	2097.0	0.040		0.017		0.247	0.056	0.000	56.0	
183.60	25 Yr	140.00	60.00	1713.0	1913.0	0.038		0.015		0.087	0.056	-	56.0	
183.50	10 Yr	130.00	55.00	1549.0	1734.0	0.037		0.014		-	0.050	-	50.4	
183.40		120.00	50.00	1389.0	1559.0	0.035		0.012		-	0.047	-	47.1	
183.30		110.00	45.00	1234.0	1389.0	0.033		0.010		-	0.044	-	43.5	
183.20		95.00	40.00	1084.0	1219.0	0.032		0.008		-	0.039	-	39.3	
183.10	2 Yr	85.00	35.00	939.0	1059.0	0.030		0.004		-	0.034	-	33.7	
183.00		75.00	30.00	799.0	904.0	0.028		-		-	0.028	-	27.9	
182.90		65.00	25.00	663.0	753.0	0.026		-		-	0.026	-	25.8	
182.80		52.00	21.00	534.0	607.0	0.023		-		-	0.023	-	23.5	
182.70		40.00	17.00	413.0	470.0	0.021		-		-	0.021	-	20.9	
182.60		30.00	13.00	299.0	342.0	0.018		-		-	0.018	-	18.0	
182.50		19.00	9.00	192.0	220.0	0.014		-		-	0.014	-	14.5	
182.40		12.00	5.00	93.0	110.0	0.010		-		-	0.010	-	9.8	
182.30		5.00	2.00	0.0	7.0	0.003		-		-	0.003	-	3.1	
182.23		0.00	-		0.0	-		-		-	0.000	-	0.0	



MIDUSS OUTPUT FILE – EXISTING CONDITIONS

```
Output File (4.7) EX.OUT      opened 2026-05-07 13:12
Units used are defined by G = 9.810
144 288 10.000 are MAXDT MAXHYD & DTMIN values
Licensee: UPPER CANADA CONSULTANTS
35 COMMENT
4 line(s) of comment
BARRICK DUNSIRE APARTMENTS - PORT COLBORNE
STORMWATER MANAGEMENT PLAN
EXISTING CONDITIONS
MAY 2026
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 2 YEAR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
397.149 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
34.451 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** EX10 - AREA TO WEST SIDE ROAD **
4 CATCHMENT
10.000 ID No. 99999
3.060 Area in hectares
145.000 Length (PERV) metres
1.000 Gradient (%)
7.500 Per cent Impervious
145.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.032 .000 .000 .000 c.m/s
.165 .839 .215 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2269322E+03 c.m
35 COMMENT
1 line(s) of comment
** EX30 - AREA TO SOUTHERLY WEST SIDE ROAD **
4 CATCHMENT
30.000 ID No. 99999
.650 Area in hectares
65.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
65.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.005 .000 .000 .000 c.m/s
.165 .849 .171 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .3838188E+02 c.m
35 COMMENT
1 line(s) of comment
** EX40 - AREA TO STEELE STREET **
4 CATCHMENT
40.000 ID No. 99999
2.020 Area in hectares
115.000 Length (PERV) metres
1.000 Gradient (%)
4.500 Per cent Impervious
115.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.014 .000 .000 .000 c.m/s
.165 .831 .195 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1355093E+03 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 5YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
524.867 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
45.530 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** EX10 - AREA TO WEST SIDE ROAD **
4 CATCHMENT
10.000 ID No. 99999
3.060 Area in hectares
145.000 Length (PERV) metres
1.000 Gradient (%)
7.500 Per cent Impervious
145.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.049 .000 .000 .000 c.m/s
.234 .861 .281 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .3912048E+03 c.m
35 COMMENT
1 line(s) of comment
** EX30 - AREA TO SOUTHERLY WEST SIDE ROAD **
4 CATCHMENT
30.000 ID No. 99999
.650 Area in hectares
65.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
65.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.011 .000 .000 .000 c.m/s
.234 .880 .240 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .7110220E+02 c.m
35 COMMENT
1 line(s) of comment
** EX40 - AREA TO STEELE STREET **
4 CATCHMENT
40.000 ID No. 99999
2.020 Area in hectares
115.000 Length (PERV) metres
1.000 Gradient (%)
4.500 Per cent Impervious
115.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
```



```
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.028 .000 .000 .000 c.m/s
.234 .872 .263 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2414468E+03 c.m

35 COMMENT
1 line(s) of comment
** EX20/A20 - CHURCH PARKING LOT **

4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.064 .000 .000 .000 c.m/s
.234 .874 .822 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1272984E+03 c.m

14 START
1 1=Zero; 2=Define

35 COMMENT
3 line(s) of comment
*****
** 10YR DESIGN STORM EVENT *****
*****

2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
608.845 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
52.815 mm Total depth

3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction

35 COMMENT
1 line(s) of comment
** EX20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **

4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.076 .000 .000 .000 c.m/s
.273 .887 .838 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1505184E+03 c.m

15 ADD RUNOFF
.076 .076 .000 .000 c.m/s

35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **

12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .012 c.m/s 7.3 c.m
No flow diverted
.076 .076 .064 .000 c.m/s

22 FILE HYDROGRAPH
1 1=READ; 2=WRITE
12 DIV00001.010 is Filename
2 1=Overland; 2=Inflow; 3=Outflow; 4=Temp'ary
.076 .012 .064 .000 c.m/s

27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .7339458E+01 c.m

35 COMMENT
1 line(s) of comment

** EX10 - AREA TO WEST SIDE ROAD **

4 CATCHMENT
10.000 ID No. 99999
3.060 Area in hectares
145.000 Length (PERV) metres
1.000 Gradient (%)
7.500 Per cent Impervious
145.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.063 .012 .064 .000 c.m/s
.274 .880 .319 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .5159803E+03 c.m

15 ADD RUNOFF
.063 .063 .064 .000 c.m/s

27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .5233198E+03 c.m

35 COMMENT
1 line(s) of comment
** EX30 - AREA TO SOUTHERLY WEST SIDE ROAD **

4 CATCHMENT
30.000 ID No. 99999
.650 Area in hectares
65.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
65.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.017 .063 .064 .000 c.m/s
.274 .891 .280 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .9607172E+02 c.m

35 COMMENT
1 line(s) of comment
** EX40 - AREA TO STEELE STREET **

4 CATCHMENT
40.000 ID No. 99999
2.020 Area in hectares
115.000 Length (PERV) metres
1.000 Gradient (%)
4.500 Per cent Impervious
115.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.043 .063 .064 .000 c.m/s
.274 .890 .301 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .3214242E+03 c.m

14 START
1 1=Zero; 2=Define

35 COMMENT
3 line(s) of comment
*****
** 25YR DESIGN STORM EVENT *****
*****

2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
715.568 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
62.073 mm Total depth

3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction

35 COMMENT
1 line(s) of comment
** EX20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **

4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
```



```
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.092 .000 .064 .000 c.m/s
.319 .900 .853 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1801081E+03 c.m
15 ADD RUNOFF
.092 .092 .064 .000 c.m/s
35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .028 c.m/s 16.7 c.m
No flow diverted
.092 .092 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.025 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.092 .028 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1668661E+02 c.m
35 COMMENT
1 line(s) of comment
** EX10 - AREA TO WEST SIDE ROAD **
4 CATCHMENT
10.000 ID No. 99999
3.060 Area in hectares
145.000 Length (PERV) metres
1.000 Gradient (%)
7.500 Per cent Impervious
145.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.091 .028 .064 .000 c.m/s
.319 .899 .363 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .6888351E+03 c.m
15 ADD RUNOFF
.091 .093 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .7055217E+03 c.m
35 COMMENT
1 line(s) of comment
** EX30 - AREA TO SOUTHERLY WEST SIDE ROAD **
4 CATCHMENT
30.000 ID No. 99999
.650 Area in hectares
65.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
65.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.028 .093 .064 .000 c.m/s
.318 .902 .324 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1308428E+03 c.m
35 COMMENT
1 line(s) of comment
** EX40 - AREA TO STEELE STREET **
4 CATCHMENT
40.000 ID No. 99999
2.020 Area in hectares
115.000 Length (PERV) metres
1.000 Gradient (%)
4.500 Per cent Impervious
115.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.068 .093 .064 .000 c.m/s
.319 .906 .345 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .4329594E+03 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 100 YEAR DESIGN STORM EVENT **
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
980.000 Coefficient a
3.700 Constant b (min)
.732 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
70.157 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** EX20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.096 .000 .064 .000 c.m/s
.353 .909 .865 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2062546E+03 c.m
15 ADD RUNOFF
.096 .096 .064 .000 c.m/s
35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .032 c.m/s 19.5 c.m
No flow diverted
.096 .096 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.100 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.096 .032 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1948349E+02 c.m
35 COMMENT
1 line(s) of comment
** EX10 - AREA TO WEST SIDE ROAD **
4 CATCHMENT
10.000 ID No. 99999
3.060 Area in hectares
145.000 Length (PERV) metres
1.000 Gradient (%)
7.500 Per cent Impervious
145.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.124 .032 .064 .000 c.m/s
.355 .910 .397 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .8512994E+03 c.m
```



```
15  ADD RUNOFF
    .124      .124      .064      .000 c.m/s
27  HYDROGRAPH DISPLAY
5    is # of Hyeto/Hydrograph chosen
    Volume = .8707829E+03 c.m
35  COMMENT
1    line(s) of comment
    ** EX30 - AREA TO SOUTHERLY WEST SIDE ROAD **
4    CATCHMENT
30.000  ID No. 99999
    .650  Area in hectares
65.000  Length (PERV) metres
1.000  Gradient (%)
1.000  Per cent Impervious
65.000  Length (IMPERV)
    .000  %Imp. with Zero Dpth
    1    Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
    .250  Manning "n"
74.000  SCS Curve No or C
    .100  Ia/S Coefficient
8.924  Initial Abstraction
    1    Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .036      .124      .064      .000 c.m/s
    .355      .911      .360      C perv/imperv/total
27  HYDROGRAPH DISPLAY
4    is # of Hyeto/Hydrograph chosen
    Volume = .1643306E+03 c.m
35  COMMENT
1    line(s) of comment
    ** EX40 - AREA TO STEELE STREET **
4    CATCHMENT
40.000  ID No. 99999
    2.020  Area in hectares
115.000  Length (PERV) metres
1.000  Gradient (%)
4.500  Per cent Impervious
115.000  Length (IMPERV)
    .000  %Imp. with Zero Dpth
    1    Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
    .250  Manning "n"
74.000  SCS Curve No or C
    .100  Ia/S Coefficient
8.924  Initial Abstraction
    1    Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
    .087      .124      .064      .000 c.m/s
    .355      .914      .380      C perv/imperv/total
27  HYDROGRAPH DISPLAY
4    is # of Hyeto/Hydrograph chosen
    Volume = .5386716E+03 c.m
20  MANUAL
```



MIDUSS OUTPUT FILE – FUTURE CONDITIONS

– NO SWM

```
Output File (4.7) NOSWM.OUT   opened 2026-05-01   9:24
Units used are defined by G =   9.810
144 288 10.000 are MAXDT MAXHYD & DTMIN values
Licensee: UPPER CANADA CONSULTANTS
35 COMMENT
4 line(s) of comment
BARRICK DUNSIRE APARTMENTS - PORT COLBORNE
STORMWATER MANAGEMENT PLAN
FUTURE CONDITIONS
MAY 2026
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 2 YEAR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
397.149 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
34.451 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.527 .000 .000 .000 c.m/s
.165 .850 .679 C perv/imperv/total
15 ADD RUNOFF
.527 .527 .000 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.527 .527 .527 .000 c.m/s
17 COMBINE
1 Junction Node No.
.527 .527 .527 .527 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
5.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.003 .000 .527 .527 c.m/s
.165 .847 .199 C perv/imperv/total
15 ADD RUNOFF
.003 .003 .527 .527 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep

0 No. of sub-reaches
.003 .003 .003 .527 c.m/s
17 COMBINE
1 Junction Node No.
.003 .003 .003 .530 c.m/s
18 CONFLUENCE
1 Junction Node No.
.003 .530 .003 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1254600E+04 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A30 - EAST PERIMETER LANDS TO STEELE ST **
4 CATCHMENT
30.000 ID No. 99999
.080 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
5.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.001 .000 .003 .000 c.m/s
.164 .796 .196 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .5391175E+01 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 5YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
524.867 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
45.530 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.692 .000 .003 .000 c.m/s
.234 .875 .714 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1710142E+04 c.m
15 ADD RUNOFF
.692 .692 .003 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.692 .692 .692 .000 c.m/s
17 COMBINE
1 Junction Node No.
.692 .692 .692 .692 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
```



```
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
5.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.008 .000 .692 .692 c.m/s
.234 .874 .266 C perv/imperv/total
15 ADD RUNOFF
.008 .008 .692 .692 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.008 .008 .008 .692 c.m/s
17 COMBINE
1 Junction Node No.
.008 .008 .008 .699 c.m/s
18 CONFLUENCE
1 Junction Node No.
.008 .699 .008 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1755600E+04 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A30 - EAST PERIMETER LANDS TO STEELE ST **
4 CATCHMENT
30.000 ID No. 99999
.080 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
5.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.003 .000 .008 .000 c.m/s
.233 .815 .262 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .9551249E+01 c.m
35 COMMENT
1 line(s) of comment
** EX20/A20 - CHURCH PARKING LOT **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.064 .000 .008 .000 c.m/s
.234 .874 .822 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1272984E+03 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 10YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
608.845 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
52.815 mm Total depth

3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.076 .000 .008 .000 c.m/s
.273 .887 .838 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1505184E+03 c.m
15 ADD RUNOFF
.076 .076 .008 .000 c.m/s
35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .012 c.m/s 7.3 c.m
No flow diverted
.076 .076 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ; 2=WRITE
12 DIV00001.010 is Filename
2 1=Overland; 2=Inflow; 3=Outflow; 4=Temp'ary
.076 .012 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .7339458E+01 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.805 .012 .064 .000 c.m/s
.274 .881 .729 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2025624E+04 c.m
15 ADD RUNOFF
.805 .805 .064 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.805 .805 .805 .000 c.m/s
17 COMBINE
1 Junction Node No.
.805 .805 .805 .805 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
5.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
```



```
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.013 .000 .805 .805 c.m/s
.273 .887 .304 C perv/imperv/total
15 ADD RUNOFF
.013 .013 .805 .805 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.013 .013 .013 .805 c.m/s
17 COMBINE
1 Junction Node No.
.013 .013 .013 .815 c.m/s
18 CONFLUENCE
1 Junction Node No.
.013 .815 .013 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .2096400E+04 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A30 - EAST PERIMETER LANDS TO STEELE ST **
4 CATCHMENT
30.000 ID No. 99999
.000 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
5.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.004 .000 .013 .000 c.m/s
.273 .822 .300 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1268716E+02 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 25YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
715.568 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
62.073 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.092 .000 .013 .000 c.m/s
.319 .900 .853 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1801078E+03 c.m
15 ADD RUNOFF
.092 .092 .013 .000 c.m/s
35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERS
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .028 c.m/s 16.7 c.m
No flow diverted
.092 .092 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.025 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.092 .028 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1668661E+02 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.946 .028 .064 .000 c.m/s
.320 .886 .744 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2430131E+04 c.m
15 ADD RUNOFF
.946 .946 .064 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.946 .946 .946 .000 c.m/s
17 COMBINE
1 Junction Node No.
.946 .946 .946 .946 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
5.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.019 .000 .946 .946 c.m/s
.319 .900 .348 C perv/imperv/total
15 ADD RUNOFF
.019 .019 .946 .946 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.019 .019 .019 .946 c.m/s
17 COMBINE
1 Junction Node No.
.019 .019 .019 .962 c.m/s
18 CONFLUENCE
1 Junction Node No.
.019 .962 .019 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .2538800E+04 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
```



```
1  Line(s) of comment
** A30 - EAST PERIMETER LANDS TO STEELE ST **
4  CATCHMENT
30.000 ID No. 99999
.080 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
5.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.006 .000 .019 .000 c.m/s
.315 .831 .341 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1692225E+02 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 Line(s) of comment
*****
** 100 YEAR DESIGN STORM EVENT **
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
980.000 Coefficient a
3.700 Constant b (min)
.732 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
70.157 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 Line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.096 .000 .019 .000 c.m/s
.353 .909 .865 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2062546E+03 c.m
15 ADD RUNOFF
.096 .096 .019 .000 c.m/s
35 COMMENT
1 Line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .032 c.m/s 19.5 c.m
No flow diverted
.096 .096 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.100 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.096 .032 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1948349E+02 c.m
35 COMMENT
1 Line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.008 .000 .024 .000 c.m/s
.349 .837 .374 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2097069E+02 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 Line(s) of comment
*****
** 100 YEAR DESIGN STORM EVENT - 24 HOUR *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.008 .000 .024 .000 c.m/s
.349 .837 .374 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2815627E+04 c.m
15 ADD RUNOFF
1.024 1.024 .064 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
1.024 1.024 1.024 .000 c.m/s
17 COMBINE
1 Junction Node No.
1.024 1.024 1.024 1.024 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 Line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
5.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.024 .000 1.024 1.024 c.m/s
.353 .909 .381 C perv/imperv/total
15 ADD RUNOFF
.024 .024 1.024 1.024 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.024 .024 .024 1.024 c.m/s
17 COMBINE
1 Junction Node No.
.024 .024 .024 1.045 c.m/s
18 CONFLUENCE
1 Junction Node No.
.024 1.045 .024 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .2941199E+04 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
1 Line(s) of comment
** A30 - EAST PERIMETER LANDS TO STEELE ST **
4 CATCHMENT
30.000 ID No. 99999
.080 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
5.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.008 .000 .024 .000 c.m/s
.349 .837 .374 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2097069E+02 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
3 Line(s) of comment
*****
** 100 YEAR DESIGN STORM EVENT - 24 HOUR *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
```



```
980.000 Coefficient a
3.700 Constant b (min)
.732 Exponent c
.450 Fraction to peak r
1440.000 Duration 1440 min
114.472 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.099 .000 .024 .000 c.m/s
.499 .939 .904 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .3514841E+03 c.m
15 ADD RUNOFF
.099 .099 .024 .000 c.m/s
35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .035 c.m/s 20.9 c.m
No flow diverted
.099 .099 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ; 2=WRITE
12 DIV00001.101 is Filename
2 1=Overland; 2=Inflow; 3=Outflow; 4=Temp'ary
.099 .035 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .2085932E+02 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
1.056 .035 .064 .000 c.m/s
.499 .936 .827 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .4975587E+04 c.m
15 ADD RUNOFF
1.056 1.056 .064 .000 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
1.056 1.056 1.056 .000 c.m/s
17 COMBINE
1 Junction Node No.
1.056 1.056 1.056 1.056 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
5.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.041 .000 1.056 1.056 c.m/s
.499 .939 .521 C perv/imperv/total
15 ADD RUNOFF
.041 .041 1.056 1.056 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.041 .041 .041 1.056 c.m/s
17 COMBINE
1 Junction Node No.
.041 .041 .041 1.097 c.m/s
18 CONFLUENCE
1 Junction Node No.
.041 1.097 .041 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .5227803E+04 c.m
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A30 - EAST PERIMETER LANDS TO STEELE ST **
4 CATCHMENT
30.000 ID No. 99999
.080 Area in hectares
10.000 Length (PERV) metres
2.000 Gradient (%)
5.000 Per cent Impervious
10.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.011 .000 .041 .000 c.m/s
.492 .892 .512 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .4685067E+02 c.m
20 MANUAL
```



MIDUSS OUTPUT FILE – FUTURE CONDITIONS

– with SWM

```
Output File (4.7) SWM.OUT      opened 2026-05-07 16:54
Units used are defined by G = 9.810
144 288 10.000 are MAXDT MAXHYD & DTMIN values
Licensee: UPPER CANADA CONSULTANTS
COMMENT
35 4 line(s) of comment
BARRICK DUNSIRE APARTMENTS - PORT COLBORNE
STORMWATER MANAGEMENT PLAN
FUTURE CONDITIONS
MAY 2026
COMMENT
3 3 line(s) of comment
*****
** 25MM STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
512.000 Coefficient a
6.000 Constant b (min)
.800 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
25.035 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.375 .000 .000 .000 c.m/s
.098 .806 .629 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .8259195E+03 c.m
15 ADD RUNOFF
.375 .375 .000 .000 c.m/s
10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .019 c.m/s
Maximum Depth = 182.801 metres
Maximum Storage = 641. c.m
.375 .375 .019 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 2 YEAR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
397.149 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
34.451 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.375 .000 .000 .000 c.m/s
.098 .806 .629 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .8259195E+03 c.m
15 ADD RUNOFF
.375 .375 .000 .000 c.m/s
10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .019 c.m/s
Maximum Depth = 182.801 metres
Maximum Storage = 641. c.m
.375 .375 .019 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 2 YEAR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
524.867 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
45.530 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.375 .000 .000 .000 c.m/s
.098 .806 .629 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1229221E+04 c.m
15 ADD RUNOFF
.527 .527 .019 .000 c.m/s
10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .029 c.m/s
Maximum Depth = 183.023 metres
Maximum Storage = 941. c.m
.527 .527 .029 .000 c.m/s
17 COMBINE
1 Junction Node No.
.527 .527 .029 .029 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.003 .000 .029 .029 c.m/s
.165 .847 .172 C perv/imperv/total
15 ADD RUNOFF
.003 .003 .029 .029 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.003 .003 .003 .029 c.m/s
17 COMBINE
1 Junction Node No.
.003 .003 .003 .031 c.m/s
18 CONFLUENCE
1 Junction Node No.
.003 .031 .003 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 5YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
524.867 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
45.530 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
```



```
4  CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.692 .000 .003 .000 c.m/s
.234 .875 .714 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1710589E+04 c.m
15 ADD RUNOFF
.692 .692 .003 .000 c.m/s

10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .041 c.m/s
Maximum Depth = 183.247 metres
Maximum Storage = 1304. c.m
.692 .692 .041 .000 c.m/s

17 COMBINE
1 Junction Node No.
.692 .692 .041 .041 c.m/s

14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **

4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.007 .000 .041 .041 c.m/s
.234 .874 .240 C perv/imperv/total

15 ADD RUNOFF
.007 .007 .041 .041 c.m/s

9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.007 .007 .007 .041 c.m/s

17 COMBINE
1 Junction Node No.
.007 .007 .007 .044 c.m/s

18 CONFLUENCE
1 Junction Node No.
.007 .044 .007 .000 c.m/s

35 COMMENT
1 line(s) of comment
** EX20/A20 - CHURCH PARKING LOT **

4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.064 .044 .007 .000 c.m/s
.234 .874 .822 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1272984E+03 c.m

14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 10YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
608.845 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
52.815 mm Total depth

3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **

4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.076 .000 .007 .000 c.m/s
.273 .887 .838 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1505184E+03 c.m
15 ADD RUNOFF
.076 .076 .007 .000 c.m/s

35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .012 c.m/s 7.3 c.m
No flow diverted
.076 .076 .064 .000 c.m/s

22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.010 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.076 .012 .064 .000 c.m/s

27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .7339458E+01 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **

4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.805 .012 .064 .000 c.m/s
.274 .881 .729 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2025810E+04 c.m
15 ADD RUNOFF
.805 .805 .064 .000 c.m/s

10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
```



```
Peak Outflow = .047 c.m/s
Maximum Depth = 183.394 metres
Maximum Storage = 1556. c.m
.805 .805 .047 .000 c.m/s
17 COMBINE
1 Junction Node No.
.805 .805 .047 .047 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.013 .000 .047 .047 c.m/s
.273 .887 .279 C perv/imperv/total
15 ADD RUNOFF
.013 .013 .047 .047 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.013 .013 .013 .047 c.m/s
17 COMBINE
1 Junction Node No.
.013 .013 .013 .051 c.m/s
18 CONFLUENCE
1 Junction Node No.
.013 .051 .013 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 25YR DESIGN STORM EVENT *****
*****
2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
715.568 Coefficient a
.000 Constant b (min)
.699 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
62.073 mm Total depth
3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction
35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.092 .000 .013 .000 c.m/s
.319 .900 .853 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .1801079E+03 c.m
15 ADD RUNOFF
.092 .092 .013 .000 c.m/s
35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .028 c.m/s 16.7 c.m
No flow diverted
.092 .092 .064 .000 c.m/s
22 FILE HYDROGRAPH
1 1=READ; 2=WRITE
12 DIV00001.025 is Filename
2 1=Overland; 2=Inflow; 3=Outflow; 4=Temp'ary
.092 .028 .064 .000 c.m/s
27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1668661E+02 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.946 .028 .064 .000 c.m/s
.320 .886 .744 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2430179E+04 c.m
15 ADD RUNOFF
.946 .946 .064 .000 c.m/s
10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .053 c.m/s
Maximum Depth = 183.589 metres
Maximum Storage = 1901. c.m
.946 .946 .053 .000 c.m/s
17 COMBINE
1 Junction Node No.
.946 .946 .053 .053 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.019 .000 .053 .053 c.m/s
.319 .900 .325 C perv/imperv/total
15 ADD RUNOFF
.019 .019 .053 .053 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.019 .019 .019 .053 c.m/s
17 COMBINE
1 Junction Node No.
.019 .019 .019 .063 c.m/s
18 CONFLUENCE
1 Junction Node No.
.019 .063 .019 .000 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 100 YEAR DESIGN STORM EVENT **
*****
2 STORM
```



```
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
980.000 Coefficient a
3.700 Constant b (min)
.732 Exponent c
.450 Fraction to peak r
240.000 Duration 1440 min
70.157 mm Total depth

3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction

35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.096 .000 .019 .000 c.m/s
.353 .909 .865 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2062546E+03 c.m
15 ADD RUNOFF
.096 .096 .019 .000 c.m/s

35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .032 c.m/s 19.5 c.m
.096 .096 .064 .000 c.m/s

22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.100 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.096 .032 .064 .000 c.m/s

27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .1948349E+02 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
1.024 .032 .064 .000 c.m/s
.355 .899 .763 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .2815653E+04 c.m
15 ADD RUNOFF
1.024 1.024 .064 .000 c.m/s

10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .084 c.m/s
Maximum Depth = 183.732 metres
Maximum Storage = 2159. c.m
1.024 1.024 .084 .000 c.m/s

17 COMBINE
1 Junction Node No.
1.024 1.024 .084 .084 c.m/s

14 START
```

```
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.024 .000 .084 .084 c.m/s
.353 .909 .359 C perv/imperv/total

15 ADD RUNOFF
.024 .024 .084 .084 c.m/s

9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.024 .024 .024 .084 c.m/s

17 COMBINE
1 Junction Node No.
.024 .024 .024 .089 c.m/s

18 CONFLUENCE
1 Junction Node No.
.024 .089 .024 .000 c.m/s

14 START
1 1=Zero; 2=Define
35 COMMENT
3 line(s) of comment
*****
** 100 YEAR DESIGN STORM EVENT - 24 HOUR *****
*****

2 STORM
1 1=Chicago;2=Huff;3=User;4=Cdn1hr;5=Historic
980.000 Coefficient a
3.700 Constant b (min)
.732 Exponent c
.450 Fraction to peak r
1440.000 Duration 1440 min
114.472 mm Total depth

3 IMPERVIOUS
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.015 Manning "n"
98.000 SCS Curve No or C
.100 Ia/S Coefficient
.518 Initial Abstraction

35 COMMENT
1 line(s) of comment
** A20 - CHURCH PARKING LOT MINUS 5 YEAR FLOWS **
4 CATCHMENT
20.000 ID No. 99999
.340 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
92.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.099 .000 .024 .000 c.m/s
.499 .939 .904 C perv/imperv/total

27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .3514841E+03 c.m
15 ADD RUNOFF
.099 .099 .024 .000 c.m/s

35 COMMENT
1 line(s) of comment
** DIVERSION OF 5YR FLOW **
12 DIVERT
1 U/S Node No. 99999
.064 Threshold Discharge
.064 Max. Outflow reqd.
Qmax & Vol.Diverted = .035 c.m/s 20.9 c.m
.099 .099 .064 .000 c.m/s

22 FILE HYDROGRAPH
1 1=READ: 2=WRITE
12 DIV00001.101 is Filename
2 1=Overland: 2=Inflow: 3=Outflow: 4=Temp'ary
.099 .035 .064 .000 c.m/s
```



27 HYDROGRAPH DISPLAY
5 is # of Hyeto/Hydrograph chosen
Volume = .2085932E+02 c.m
35 COMMENT
1 line(s) of comment
** A10 - INTERNAL SITE AREA TO DRY POND **
4 CATCHMENT
10.000 ID No. 99999
5.260 Area in hectares
190.000 Length (PERV) metres
1.000 Gradient (%)
75.000 Per cent Impervious
190.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
1.056 .035 .064 .000 c.m/s
.499 .936 .827 C perv/imperv/total
27 HYDROGRAPH DISPLAY
4 is # of Hyeto/Hydrograph chosen
Volume = .4975587E+04 c.m
15 ADD RUNOFF
1.056 1.056 .064 .000 c.m/s
10 POND
7 Depth - Discharge - Volume sets
182.230 .000 .0
182.400 .00100 110.0
183.000 .0280 904.0
183.300 .0440 1389.0
183.700 .0560 2097.0
183.800 .143 2291.0
184.000 .524 2683.0
Peak Outflow = .222 c.m/s
Maximum Depth = 183.841 metres
Maximum Storage = 2372. c.m
1.056 1.056 .222 .000 c.m/s
17 COMBINE

1 Junction Node No.
1.056 1.056 .222 .222 c.m/s
14 START
1 1=Zero; 2=Define
35 COMMENT
1 line(s) of comment
** A11 - WEST SIDE ROAD FRONTAGE - UNCONTROLLED **
4 CATCHMENT
11.000 ID No. 99999
.400 Area in hectares
50.000 Length (PERV) metres
1.000 Gradient (%)
1.000 Per cent Impervious
50.000 Length (IMPERV)
.000 %Imp. with Zero Dpth
1 Option 1=SCS CN/C; 2=Horton; 3=Green-Ampt; 4=Repeat
.250 Manning "n"
74.000 SCS Curve No or C
.100 Ia/S Coefficient
8.924 Initial Abstraction
1 Option 1=Trianglr; 2=Rectanglr; 3=SWM HYD; 4=Lin. Reserv
.042 .000 .222 .222 c.m/s
.499 .939 .504 C perv/imperv/total
15 ADD RUNOFF
.042 .042 .222 .222 c.m/s
9 ROUTE
.000 Conduit Length
.000 No Conduit defined
.000 Zero lag
.000 Beta weighting factor
.000 Routing timestep
0 No. of sub-reaches
.042 .042 .042 .222 c.m/s
17 COMBINE
1 Junction Node No.
.042 .042 .042 .243 c.m/s
18 CONFLUENCE
1 Junction Node No.
.042 .243 .042 .000 c.m/s
20 MANUAL



**UPPER CANADA
CONSULTANTS**
ENGINEERS / PLANNERS

Functional Servicing Report
Barrick Dunsire Apartments
UCC File No. 26029

APPENDIX D

**Hydroworks HD10 OGS – Modelling Output File
Sample Inspection Report**



```
*****
*   Storm Water Management Sizing Model   *
*   Hydroworks, LLC                       *
*   Version 4.4                           *
*
*   Continuous Simulation Program          *
*   Based on SWMM 4.4H                    *
*   Hydroworks, LLC                       *
*   Graham Bryant                         *
*   2003 - 2021                           *
*****
Developed by
*****
*   Hydroworks, LLC                       *
*   Metcalf & Eddy, Inc.                  *
*   University of Florida                  *
*   Water Resources Engineers, Inc.        *
*   (Now Camp Dresser & McKee, Inc.)      *
*   Modified SWMM 4.4                     *
*****
Distributed and Maintained by
*****
*   Hydroworks, LLC                       *
*   888-290-7900                          *
*   www.hydroworks.com                   *
*****
*   If any problems occur executing this  *
*   model, contact Mr. Graham Bryant at   *
*   Hydroworks, LLC by phone at 888-290-7900 *
*   or by e-mail: support@hydroworks.com  *
*****
*   This model is based on EPA SWMM 4.4    *
*   "Nature is full of infinite causes which *
*   have never occurred in experience" da Vinci *
*****
*   Entry made to the Rain Block           *
*   Created by the University of Florida - 1988 *
*   Updated by Oregon State University, March 2000 *
*****
```

Barrick Dunsire Apartments, Port Colborne
Copyright Hydroworks, LLC, 2024
HydroDome Simulation

```
#####
# Precipitation Block Input Commands #
#####
Station Name..... St. Catherines A
Station Location..... Ontario
Station, ISTA..... 7287
Beginning date, IYBEG (Yr/Mo/Dy)..... 1971/ 1/ 1
Ending date, IYEND (Yr/Mo/Dy)..... 2005/12/31
Minimum interevent time, MIT..... 1
Number of ranked storms, NPTS..... 10
NWS format, IFORM (See text)..... 1
Print storm summary, ISUM (0-No 1-Yes) 0
Print all rainfall, IYEAR (0-No 1-Yes) 0
Save storm event data on NSCRAT(1).... 0
(IFILE =0 -Do not save, =1 -Save data)
IDECID 0 - Create interface file
1 - Create file and analyze
2 - Synoptic analysis..... 2
Plotting position parameter, A..... 0.40
Storm event statistics, NOSTAT..... 1100

KODEA (from optional group B0)..... 2
= 0, Do not include NCDC cumulative values.
= 1, Average NCDC cumulative values.
= 2, Use NCDC cumulative value as inst. rain.
KODEPR (from optional group B0)..... 0
Print NCDC special codes in event summary:
= 0, only on days with events.
= 1, on all days with codes present.
Codes: A = accumulated value, I = incomplete value,
M = missing value, 0 = other code present

*****
* Precipitation output created using the Rain block *
* Number of precipitation stations... 1 *
*****
ocation Station Number
-----
1. 7287
```

STATION ID ON PRECIP. DATA INPUT FILE = 7287
REQUESTED STATION ID = 7287 CHECK TO BE SURE THEY MATCH.



```

Snowmelt parameter - ISNOW..... 0
Number of rain gages - NRGAG..... 1
Horton infiltration equation used - INFILM..... 2
Maximum infiltration volume is limited to RMAXINF input on subcatchment lines.
Infiltration volume regenerates during non rainfall periods.
Quality is simulated - KWALTY..... 1
VAP is negative. Evaporation will be set to zero
    during time steps with rainfall.
Read evaporation data on line(s) F1 (F2) - IVAP.. 1
Hour of day at start of storm - NHR..... 1
Minute of hour at start of storm - NMN..... 1
Time TZERO at start of storm (hours)..... 1.017
Use Metric units for I/O - METRIC..... 1
====> Ft-sec units used in all internal computations
Runoff input print control... 0
Runoff graph plot control... 1
Runoff output print control... 0
Print headers every 50 lines - NOHEAD (0=yes, 1=no) 0
Print land use load percentages -LANDUPR (0=no, 1=yes) 0
Limit number of groundwater convergence messages to 10000 (if simulated)
Month, day, year of start of storm is: 1/ 1/1971
Wet time step length (seconds)..... 300.
Dry time step length (seconds)..... 900.
Wet/Dry time step length (seconds)... 450.
Simulation length is..... 20051231.0 Yr/Mo/Dy
Percent of impervious area with zero detention depth 25.0
Horton infiltration model being used
Rate for regeneration of infiltration = REGEN * DECAy
DECAy is read in for each subcatchment
REGEN = ..... 0.01000
*****
* Processed Precipitation will be read from file *
*****

```

```
#####
#           Data Group F1           #
# Evaporation Rate (mm/day)        #
#####
```

JAN.	FEB.	MAR.	APR.	MAY	JUN.	JUL.	AUG.	SEP.	OCT.	NOV.	DEC.
0.00	0.00	0.00	2.54	2.54	3.81	3.81	3.81	2.54	2.54	0.00	0.00

```
*****
*           CHANNEL AND PIPE DATA           *
*****
```

Input equen umber	NAMEG: Channel ID #	Drains to NGTO:	Channel Type	Width (m)	Length (m)	Invert Slope (m/m)	L Side Slope (m/m)	R Side Slope (m/m)	Intial Depth (m)	Max Depth (m)	Mann- ings "N"	Full Flow (cms)
1	201	200	Dummv	0.0	0.0	0.0000	0.0000	0.0000	0.0	0.0	0.0000	0.00E+00

* SUBCATCHMENT DATA *

NOTE. SEE LATER TABLE FOR OPTIONAL SUBCATCHMENT PARAMETERS

REPORT NO.	SUBCATCHMENT NO.	CHANNEL OR INLET	WIDTH (M)	AREA (HA)	PERCENT IMPERV.	SLOPE (M/M)	RESISTANCE IMPERV.	FACTOR PERV.	DEPRES. IMPERV.	STORAGE (MM) PERV.	INFILTRATION RATE (MM/HR)	DECAY RATE (1/SEC)	GAGE NO.	
											MAXIMUM	MINIMUM		
101.60000	300	200	162.17	5.26	75.00	0.0200	0.015	0.250	0.510	5.080	63.50	10.16	0.00055	1

TOTAL NUMBER OF SUBCATCHMENTS...	1
TOTAL TRIBUTARY AREA (HECTARES).	5.26
IMPERVIOUS AREA (HECTARES).....	3.95
PERVIOUS AREA (HECTARES).....	1.32
TOTAL WIDTH (METERS).....	162.17



PERCENT IMPERVIOUSNESS..... 75.00

* GROUNDWATER INPUT DATA *

SUB- CATCH NUMBER	CHANNEL OR INLET	ELEVATIONS					FLOW CONSTANTS				
		GROUND (M)	BOTTOM (M)	STAGE (M)	BC (M)	TW (M)	A1 (MM/HR-M^B1)	B1	A2 (MM/HR-M^B2)	B2	A3 (MM/HR-M^2)
0	602	3.05	0.00	0.00	0.61	0.61	3.484E-04	2.600	0.000E+00	1.000	0.00E+00

* GROUNDWATER INPUT DATA (CONTINUED) *

SUBCAT. NO.	POROSITY	SATURATED HYDRAULIC		WILTING POINT	FIELD CAPACITY	INITIAL MOISTURE	MAX. DEEP PERCOLATION (mm/hr)	PERCOLATION PARAMETERS		ET PARAMETERS	
		CONDUCTIVITY (mm/hr)						HCO	PCO	DEPTH OF ET (m)	FRACTION OF ET TO UPPER ZONE
0	.4000	127.000		.1500	.3000	.3000	5.080E-02	10.00	4.57	4.27	0.350

* Arrangement of Subcatchments and Channel/Pipes *

* See second subcatchment output table for connectivity *
* of subcatchment to subcatchment flows.

Channel
or Pipe
201
No Tributary Channel/Pipes
No Tributary Subareas....

INLET
200
Tributary Channel/Pipes... 201
Tributary Subareas..... 300

* Hydrographs will be stored for the following 1 INLETS *

200

Quality Simulation #

General Quality Control Data Groups #
#####

Description	Variable	Value
Number of quality constituents....	NQS.....	1
Number of land uses.....	JLAND.....	1
Standard catchbasin volume.....	CBVOL.....	1.22 cubic meters
Erosion is not simulated.....	IROS.....	0
DRY DAYS PRIOR TO START OF STORM...	DRYDAY.....	3.00 DAYS
DRY DAYS REQUIRED TO RECHARGE CATCHBASIN CONCENTRATION TO INITIAL VALUES.....	DRYBSN.....	5.00 DAYS
DUST AND DIRT STREET SWEEPING EFFICIENCY.....	REFFDD.....	0.300
DAY OF YEAR ON WHICH STREET SWEEPING BEGINS.....	KLNBGN.....	120
DAY OF YEAR ON WHICH STREET SWEEPING ENDS.....	KLNEND.....	270

Land use data on data group J2 #
#####

AND USE LNAME)	BUILDUP EQUATION TYPE (METHOD)	FUNCTIONAL DEPENDENCE OF BUILDUP PARAMETER(JACGUT)	LIMITING BUILDUP QUANTITY (DDLIM)	BUILDUP POWER (DDPOW)	BUILDUP COEFF. (DDFACT)	CLEANING INTERVAL IN DAYS (CLFREQ)	AVAIL. FACTOR FRACTION (AVSWP)	DAYS SINCE LAST SWEEPING (DSLCL)
Urban De	EXPONENTIAL(1)	AREA(1)	2.802E+01	0.500	67.250	30.000	0.300	30.000

Constituent data on data group J3 #
#####

Constituent units.....	Total Su
Type of units.....	mg/l
KALC.....	0
Type of buildup calc....	2
KWASH.....	EXPONENTIAL(2)
Type of washoff calc....	0
KACGUT.....	POWER EXPONEN.(0)
	1



Dependence of buildup... AREA(1)
LINKUP..... 0
Linkage to snowmelt..... NO SNOW LINKAGE
Buildup param 1 (QFACT1)... 28.020
Buildup param 2 (QFACT2)... 0.500
Buildup param 3 (QFACT3)... 67.250
Buildup param 4 (QFACT4)... 0.000
Buildup param 5 (QFACT5)... 0.000
Washoff power (WASHPO)... 1.100
Washoff coef. (RCOEF)... 0.086
Init catchb conc (CBFACT) 100.000
Precip. conc. (CONCRM)... 0.000
Street sweep effc (REFF) 0.300
Remove fraction (REMOVE)... 0.000
1st order QDECAV, 1/day... 0.000
Land use number..... 1

* Constant Groundwater Quality Concentration(s) *

Total Susp has a concentration of.. 0.0000 mg/l

* REMOVAL FRACTIONS FOR SELECTED CHANNEL/PIPES *
* FROM J7 LINES *

CHANNEL/ CONSTITUENT
PIPE Total Susp

201 0.000

* Subcatchment surface quality on data group L1 *

	Land No. Usage	Land Use No.	Total Gutter Length Km	Number of Catch- Basins	Input Loading load/ha Total Su
1	300 Urban De	1	0.32	2.00	0.0E+00
Totals (Loads in kg or other)			0.32	2.00	0.0E+00

* DATA GROUP M1 *

TOTAL NUMBER OF PRINTED GUTTERS/INLETS...NPRNT.. 1
NUMBER OF TIME STEPS BETWEEN PRINTINGS...INTERV.. 0
STARTING AND STOPPING PRINTOUT DATES..... 0 0

* DATA GROUP M3 *

CHANNEL/INLET PRINT DATA GROUPS..... -200

* Rainfall from Nat. Weather Serv. file *
* in units of hundredths of an inch *

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Rainfall Station St. Catherines A
State/Province Ontario

Rainfall Depth Summary (mm)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
1971.	31.	0.	0.	0.	0.	0.	126.	93.	52.	60.	29.	0.	391.
1972.	0.	0.	0.	47.	65.	100.	39.	115.	63.	90.	1.	0.	521.
1973.	0.	0.	0.	103.	77.	71.	53.	29.	63.	139.	0.	0.	534.
1974.	0.	0.	0.	67.	105.	62.	50.	31.	74.	37.	110.	0.	536.
1975.	0.	0.	0.	0.	0.	94.	78.	76.	73.	56.	59.	6.	442.
1976.	0.	0.	0.	119.	136.	87.	101.	60.	72.	73.	13.	1.	662.
1977.	0.	0.	0.	94.	29.	69.	57.	150.	230.	71.	0.	1.	701.
1978.	0.	0.	0.	72.	43.	72.	43.	86.	156.	95.	0.	0.	567.
1979.	0.	0.	0.	84.	92.	33.	91.	88.	84.	129.	71.	0.	673.
1980.	0.	0.	0.	81.	39.	122.	60.	32.	79.	96.	45.	0.	554.
1981.	0.	0.	0.	91.	71.	106.	122.	61.	123.	91.	84.	0.	749.
1982.	0.	0.	0.	28.	65.	97.	36.	66.	82.	25.	143.	0.	544.
1983.	0.	0.	0.	78.	100.	65.	55.	106.	75.	122.	92.	0.	694.
1984.	0.	0.	0.	31.	113.	136.	19.	51.	144.	24.	44.	0.	562.
1985.	0.	0.	67.	32.	52.	64.	40.	94.	42.	109.	0.	1.	501.
1986.	0.	0.	0.	93.	113.	60.	85.	83.	98.	80.	43.	65.	719.
1987.	0.	2.	11.	77.	42.	80.	122.	97.	99.	71.	94.	34.	730.
1988.	0.	0.	41.	71.	42.	21.	110.	82.	70.	68.	75.	5.	585.



1989.	0.	0.	13.	63.	137.	108.	36.	45.	89.	73.	84.	0.	647.
1990.	0.	2.	38.	99.	124.	44.	68.	95.	56.	112.	96.	0.	735.
1991.	0.	0.	86.	124.	67.	31.	85.	57.	79.	64.	61.	28.	682.
1992.	0.	0.	29.	127.	56.	92.	185.	116.	77.	47.	103.	38.	869.
1993.	3.	0.	7.	83.	56.	86.	32.	61.	71.	92.	80.	38.	610.
1994.	0.	0.	44.	88.	105.	124.	48.	77.	117.	15.	0.	15.	633.
1995.	112.	23.	16.	48.	37.	60.	123.	66.	8.	137.	94.	0.	724.
1998.	0.	0.	0.	0.	51.	54.	64.	29.	9.	0.	1.	0.	207.
1999.	0.	0.	0.	79.	59.	35.	61.	58.	116.	78.	0.	0.	487.
2000.	0.	0.	0.	123.	134.	216.	51.	0.	0.	0.	10.	0.	534.
2001.	0.	0.	0.	56.	88.	45.	25.	30.	81.	129.	0.	0.	454.
2002.	0.	0.	0.	73.	104.	64.	53.	49.	52.	65.	8.	0.	468.
2003.	0.	0.	0.	10.	163.	77.	81.	64.	67.	73.	2.	0.	537.
2004.	0.	0.	0.	131.	126.	99.	115.	40.	88.	17.	0.	0.	616.
2005.	0.	0.	0.	38.	42.	78.	53.	120.	112.	0.	0.	0.	443.

Total Rainfall Depth for Simulation Period 19310. (mm)

Rainfall Intensity Analysis (mm/hr)

(mm/hr)	(#)	(%)	(mm)	(%)
2.50	21481	74.6	6454.	33.4
5.00	3585	12.4	3088.	16.0
7.50	1973	6.8	2886.	14.9
10.00	575	2.0	1233.	6.4
12.50	389	1.4	1070.	5.5
15.00	194	0.7	660.	3.4
17.50	210	0.7	846.	4.4
20.00	66	0.2	306.	1.6
22.50	92	0.3	487.	2.5
25.00	39	0.1	232.	1.2
27.50	37	0.1	246.	1.3
30.00	34	0.1	245.	1.3
32.50	29	0.1	228.	1.2
35.00	5	0.0	42.	0.2
37.50	10	0.0	90.	0.5
40.00	10	0.0	97.	0.5
42.50	12	0.0	124.	0.6
45.00	9	0.0	99.	0.5
47.50	1	0.0	12.	0.1
50.00	3	0.0	37.	0.2
>50.00	49	0.2	829.	4.3

Total # of Intensities 28803

Daily Rainfall Depth Analysis (mm)

(mm)	(#)	(%)	(mm)	(%)
2.50	1077	38.9	1247.	6.5
5.00	507	18.3	1850.	9.6
7.50	326	11.8	2006.	10.4
10.00	226	8.2	1958.	10.1
12.50	150	5.4	1672.	8.7
15.00	111	4.0	1495.	7.7
17.50	100	3.6	1620.	8.4
20.00	67	2.4	1260.	6.5
22.50	45	1.6	958.	5.0
25.00	37	1.3	881.	4.6
27.50	23	0.8	609.	3.2
30.00	20	0.7	575.	3.0
32.50	20	0.7	631.	3.3
35.00	12	0.4	405.	2.1
37.50	8	0.3	290.	1.5
40.00	9	0.3	350.	1.8
42.50	4	0.1	165.	0.9
45.00	4	0.1	173.	0.9
47.50	2	0.1	91.	0.5
50.00	4	0.1	192.	1.0
>50.00	15	0.5	882.	4.6

Total # Days with Rain 2767

* End of time step DO-loop in Runoff *

Final Date (Mo/Day/Year) = 1/ 1/2006
Total number of time steps = 2056995
Final Julian Date = 2006001
Final time of day = 2. seconds.
Final time of day = 0.00 hours.
Final running time = 306816.0000 hours.
Final running time = 12784.0000 days.

* Extrapolation Summary for Watersheds *
* # Steps ==> Total Number of Extrapolated Steps *
* # Calls ==> Total Number of OVERLND Calls *



Subcatch	# Steps	# Calls	Subcatch	# Steps	# Calls	Subcatch	# Steps	# Calls
300	6288359	1677917						

* Extrapolation Summary for Channel/Pipes *
* # Steps ==> Total Number of Extrapolated Steps *
* # Calls ==> Total Number of GUTNR Calls *

Chan/Pipe	# Steps	# Calls	Chan/Pipe	# Steps	# Calls	Chan/Pipe	# Steps	# Calls
201	0	0						

* Continuity Check for Surface Water *

	cubic meters	Millimeters over Total Basin
Total Precipitation (Rain plus Snow)	1013202.	19263.
Total Infiltration	252548.	4801.
Total Evaporation	92298.	1755.
Surface Runoff from Watersheds	670925.	12756.
Total Water remaining in Surface Storage	0.	0.
Infiltration over the Pervious Area...	252548.	19206.

Infiltration + Evaporation + Surface Runoff + Snow removal + Water remaining in Surface Storage + Water remaining in Snow Cover.....	1015771.	19312.
Total Precipitation + Initial Storage.	1013202.	19263.

The error in continuity is calculated as

* Precipitation + Initial Snow Cover *
* - Infiltration - *
*Evaporation - Snow removal - *
*Surface Runoff from Watersheds - *
*Water in Surface Storage - *
*Water remaining in Snow Cover *

* Precipitation + Initial Snow Cover *

Error..... -0.254 Percent

* Continuity Check for Channel/Pipes *

	cubic meters	Millimeters over Total Basin
Initial Channel/Pipe Storage.....	0.	0.
Final Channel/Pipe Storage.....	0.	0.
Surface Runoff from Watersheds.....	670925.	12756.
Baseflow.....	0.	
Groundwater Subsurface Inflow.....	0.	0.
Evaporation Loss from Channels.....	0.	0.
Channel/Pipe/Inlet Outflow.....	670925.	12756.
Initial Storage + Inflow.....	670925.	12756.
Final Storage + Outflow.....	670925.	12756.

* Final Storage + Outflow + Evaporation - *		
* Watershed Runoff - Groundwater Inflow - *		
* Initial Channel/Pipe Storage *		
* ----- *		
* Final Storage + Outflow + Evaporation *		

Error.....	0.000 Percent	

* Continuity Check for Subsurface Water *

	cubic meters	Millimeters over Subsurface Basin
Total Infiltration	0.	0.
Total Upper Zone ET	0.	0.
Total Lower Zone ET	0.	0.
Total Groundwater flow	0.	0.
Total Deep percolation	0.	0.
Initial Subsurface Storage	48096.	914.
Final Subsurface Storage	48096.	914.
Upper Zone ET over Pervious Area	0.	0.
Lower Zone ET over Pervious Area	0.	0.

* Infiltration + Initial Storage - Final *
* Storage - Upper and Lower Zone ET - *



* Groundwater Flow - Deep Percolation *
* ----- *
* Infiltration + Initial Storage *

Error 0.000 Percent

SUMMARY STATISTICS FOR SUBCATCHMENTS
=====

SUBCATCH- MENT NO.	GUTTER OR INLET NO.	AREA (HA)	PERCENT IMPER.	TOTAL SIMULATED RAINFALL (MM)	PERVIOUS AREA			IMPERVIOUS AREA		TOTAL SUBCATCHMENT AREA		
					TOTAL RUNOFF DEPTH (MM)	TOTAL LOSSES (MM)	PEAK RUNOFF RATE (CMS)	RUNOFF DEPTH (MM)	PEAK RUNOFF RATE (CMS)	RUNOFF DEPTH (MM)	PEAK RUNOFF RATE (CMS)	PEAK UNIT RUNOFF (MM/HR)
300	200	5.26	75.01	9262.47	54.300	*****	0.213	16984.299	2.062	12751.800	2.275	157.005

*** NOTE *** IMPERVIOUS AREA STATISTICS AGGREGATE IMPERVIOUS AREAS WITH AND WITHOUT DEPRESSION STORAGE

SUMMARY STATISTICS FOR CHANNEL/PIPES
=====

CHANNEL NUMBER	FULL FLOW (CMS)	FULL VELOCITY (M/S)	FULL DEPTH (M)	MAXIMUM COMPUTED INFLOW (CMS)	MAXIMUM COMPUTED OUTFLOW (CMS)	MAXIMUM COMPUTED DEPTH (M)	MAXIMUM COMPUTED VELOCITY (M/S)	TIME OF OCCURRENCE DAY HR.	LENGTH OF SURCHARGE (HOUR)	MAXIMUM SURCHARGE VOLUME (CU-M)	RATIO OF MAX. TO FULL FLOW	RATIO OF MAX. DEPTH TO FULL DEPTH
201				0.00				1/ 0/1900	0.00			
200				2.27				8/14/1972	14.25			

TOTAL NUMBER OF CHANNELS/PIPES = 2

*** NOTE *** THE MAXIMUM FLOWS AND DEPTHS ARE CALCULATED AT THE END OF THE TIME INTERVAL

Runoff Quality Summary Page #
If NDIM = 0 Units for: loads mass rates #
METRIC = 1 lb lb/sec #
METRIC = 2 kg kg/sec #
If NDIM = 1 Loads are in units of quantity #
and mass rates are quantity/sec #
If NDIM = 2 loads are in units of concentration #
times volume and mass rates have units#
of concentration times volume/second #
#####

Total Su NDIM = 0
METRIC = 2

Total Su

Inputs

1. INITIAL SURFACE LOAD..... 115.
2. TOTAL SURFACE BUILDUP..... 88338.
3. INITIAL CATCHBASIN LOAD..... 0.
4. TOTAL CATCHBASIN LOAD..... 0.
5. TOTAL CATCHBASIN AND
SURFACE BUILDUP (2+4)..... 88338.

Remaining Loads

6. LOAD REMAINING ON SURFACE... 41.
7. REMAINING IN CATCHBASINS... 0.
8. REMAINING IN CHANNEL/PIPES.. 0.

Removals

9. STREET SWEEPING REMOVAL.... 7652.
10. NET SURFACE BUILDUP (2-9)... 80685.
11. SURFACE WASHOFF..... 80619.
12. CATCHBASIN WASHOFF..... 0.
13. TOTAL WASHOFF (11+12)..... 80619.
14. LOAD FROM OTHER CONSTITUENTS 0.
15. PRECIPITATION LOAD..... 0.
15a. SUM SURFACE LOAD (13+14+15). 80619.
16. TOTAL GROUNDWATER LOAD..... 0.
16a. TOTAL I/I LOAD..... 0.
17. NET SUBCATCHMENT LOAD
(15a-15b-15c-15d+16a).... 80619.
>>Removal in channel/pipes (17a, 17b):
17a. REMOVE BY BMP FRACTION..... 0.
17b. REMOVE BY 1st ORDER DECAY... 0.
18. TOTAL LOAD TO INLETS..... 80618.
19. FLOW WT'D AVE. CONCENTRATION mg/l
(INLET LOAD/TOTAL FLOW)..... 120.

Percentages

20. STREET SWEEPING (9/2)..... 9.
21. SURFACE WASHOFF (11/2)..... 91.



22. NET SURFACE WASHOFF(11/10)...	100.
23. WASHOFF/SUBCAT LOAD(11/17)...	100.
24. SURFACE WASHOFF/INLET LOAD (11/18).....	100.
25. CATCHBASIN WASHOFF/ SUBCATCHMENT LOAD (12/17)...	0.
26. CATCHBASIN WASHOFF/ INLET LOAD (12/18).....	0.
27. OTHER CONSTITUENT LOAD/ SUBCATCHMENT LOAD (14/17)...	0.
28. INSOLUBLE FRACTION/ INLET LOAD (14/18).....	0.
29. PRECIPITATION/ SUBCATCHMENT LOAD (15/17)...	0.
30. PRECIPITATION/ INLET LOAD (15/18).....	0.
31. GROUNDWATER LOAD/ SUBCATCHMENT LOAD (16/17)...	0.
32. GROUNDWATER LOAD/ INLET LOAD (16/18).....	0.
32a. INFILTRATION/INFLOW LOAD/ SUBCATCHMENT LOAD (16a/17)...	0.
32b. INFILTRATION/INFLOW LOAD/ INLET LOAD (16a/18).....	0.
32c. CH/PIPE BMP FRACTION REMOVAL/ SUBCATCHMENT LOAD (17a/17)...	0.
32d. CH/PIPE 1st ORDER DECAY REMOVAL/ SUBCATCHMENT LOAD (17b/17)...	0.
33. INLET LOAD SUMMATION ERROR (18+6a+17a+17b-17)/17.....	0.

CAUTION. Due to method of quality routing (Users Manual, Appendix IX)
quality routing through channel/pipes is sensitive to the time step.
Large "Inlet Load Summation Errors" may result.
These can be reduced by adjusting the time step(s).
Note: surface accumulation during dry time steps at end of simulation is
not included in totals. Buildup is only performed at beginning of
wet steps or for street cleaning.

* TSS Particle Size Distribution *				

Diameter (um)	%	Specific Gravity	Settling Velocity (m/s)	Critical Peclet Number
2.	5.0	2.65	0.000003	0.054484
5.	5.0	2.65	0.000017	0.061150
8.	10.0	2.65	0.000043	0.067744
20.	15.0	2.65	0.000267	0.093400
50.	10.0	2.65	0.001629	0.152500
75.	5.0	2.65	0.003548	0.196250
100.	10.0	2.65	0.006044	0.235000
150.	15.0	2.65	0.012234	0.297500
250.	15.0	2.65	0.026615	0.391296
500.	5.0	2.65	0.060604	0.602917
1000.	5.0	2.65	0.111334	0.928988

* Summary of TSS Removal *				

TSS Removal based on Lab Performance Curve

Model #	Low Q Treated (cms)	High Q Treated (cms)	Runoff Treated (%)	TSS Removed (%)
Unavailabl	0.380	0.380	98.7	36.3
HD 4	0.380	0.380	98.7	45.9
HD 5	0.380	0.380	98.7	53.0
HD 6	0.380	0.380	98.7	58.9
HD 7	0.380	0.380	98.7	63.3
HD 8	0.380	0.380	98.7	67.1
HD 10	0.380	0.380	98.7	73.2
HD 12	0.380	0.380	98.7	77.8

* Summary of Annual Flow Treatmnet & TSS Removal *				

HD 8 Year	Flow Vol (m3)	Flow Treated (m3)	TSS In (kg)	TSS Rem (kg)	TSS Out (kg)	TSS Byp (kg)	Flow Treated (%)	TSS Removal (%)
1971.	153087.	143696.	1571.	1013.	559.	30.	93.9	63.2
1972.	195787.	180492.	2088.	1431.	657.	88.	92.2	65.8
1973.	195772.	195669.	2257.	1514.	743.	2.	99.9	67.0



1974.	199891.	196817.	2335.	1676.	660.	31.	98.5	70.8
1975.	170381.	166184.	2038.	1349.	689.	30.	97.5	65.2
1976.	253465.	248184.	2588.	1758.	830.	49.	97.9	66.7
1977.	271251.	265157.	2489.	1554.	935.	48.	97.8	61.3
1978.	216896.	216854.	2423.	1570.	854.	1.	100.0	64.8
1979.	259511.	254625.	2664.	1798.	866.	37.	98.1	66.6
1980.	208240.	206384.	2579.	1738.	841.	13.	99.1	67.0
1981.	289009.	287090.	2847.	1987.	860.	10.	99.3	69.5
1982.	203746.	203492.	2328.	1636.	692.	2.	99.9	70.2
1983.	269032.	266354.	2967.	2007.	960.	37.	99.0	66.8
1984.	215973.	215973.	2304.	1530.	775.	0.	100.0	66.4
1985.	187695.	187695.	2259.	1554.	706.	0.	100.0	68.8
1986.	274830.	274277.	3106.	2147.	958.	8.	99.8	69.0
1987.	284402.	281344.	3112.	2112.	1000.	16.	98.9	67.5
1988.	227045.	224631.	2585.	1805.	780.	4.	98.9	69.7
1989.	251920.	247282.	2474.	1724.	750.	28.	98.2	68.9
1990.	285405.	284196.	3209.	2263.	946.	18.	99.6	70.1
1991.	267379.	264473.	2931.	2021.	910.	24.	98.9	68.4
1992.	340045.	338674.	3476.	2285.	1191.	14.	99.6	65.5
1993.	229999.	229999.	2881.	2054.	827.	0.	100.0	71.3
1994.	245979.	234807.	2318.	1511.	807.	83.	95.5	62.9
1995.	287553.	283636.	2822.	1856.	966.	60.	98.6	64.4
1998.	71986.	71986.	1092.	734.	358.	0.	100.0	67.2
1999.	179876.	178939.	2236.	1501.	735.	6.	99.5	67.0
2000.	209791.	208675.	1945.	1188.	757.	10.	99.5	60.7
2001.	164283.	164283.	1809.	1304.	504.	0.	100.0	72.1
2002.	170947.	170947.	2133.	1484.	649.	0.	100.0	69.6
2003.	194964.	194537.	2179.	1449.	730.	3.	99.8	66.4
2004.	234580.	234580.	2257.	1495.	762.	0.	100.0	66.2
2005.	168467.	161417.	1683.	1039.	644.	43.	95.8	60.2
HD 10								
Year	Flow Vol (m3)	Flow Treated (m3)	TSS In (kg)	TSS Rem (kg)	TSS Out (kg)	TSS Byp (kg)	Flow Treated (%)	TSS Removal (%)
1971.	153087.	143696.	1571.	1124.	447.	30.	93.9	70.2
1972.	195787.	180492.	2088.	1555.	533.	88.	92.2	71.5
1973.	195772.	195669.	2257.	1651.	606.	2.	99.9	73.1
1974.	199891.	196817.	2335.	1807.	528.	31.	98.5	76.4
1975.	170381.	166184.	2038.	1475.	563.	30.	97.5	71.3
1976.	253465.	248184.	2588.	1920.	668.	49.	97.9	72.8
1977.	271251.	265157.	2489.	1716.	773.	48.	97.8	67.7
1978.	216896.	216854.	2423.	1724.	700.	1.	100.0	71.1
1979.	259511.	254625.	2664.	1964.	701.	37.	98.1	72.7
1980.	208240.	206384.	2579.	1901.	678.	13.	99.1	73.3
1981.	289009.	287090.	2847.	2156.	691.	10.	99.3	75.5
1982.	203746.	203492.	2328.	1766.	563.	2.	99.9	75.8
1983.	269032.	266354.	2967.	2186.	780.	37.	99.0	72.8
1984.	215973.	215973.	2304.	1673.	631.	0.	100.0	72.6
1985.	187695.	187695.	2259.	1686.	573.	0.	100.0	74.6
1986.	274830.	274277.	3106.	2331.	775.	8.	99.8	74.9
1987.	284402.	281344.	3112.	2303.	809.	16.	98.9	73.6
1988.	227045.	224631.	2585.	1954.	631.	4.	98.9	75.5
1989.	251920.	247282.	2474.	1874.	601.	28.	98.2	74.9
1990.	285405.	284196.	3209.	2441.	768.	18.	99.6	75.6
1991.	267379.	264473.	2931.	2194.	737.	24.	98.9	74.2
1992.	340045.	338674.	3476.	2512.	964.	14.	99.6	72.0
1993.	229999.	229999.	2881.	2221.	660.	0.	100.0	77.1
1994.	245979.	234807.	2318.	1669.	649.	83.	95.5	69.5
1995.	287553.	283636.	2822.	2034.	789.	60.	98.6	70.6
1998.	71986.	71986.	1092.	808.	284.	0.	100.0	74.0
1999.	179876.	178939.	2236.	1634.	602.	6.	99.5	72.9
2000.	209791.	208675.	1945.	1328.	617.	10.	99.5	67.9
2001.	164283.	164283.	1809.	1407.	402.	0.	100.0	77.8
2002.	170947.	170947.	2133.	1607.	526.	0.	100.0	75.3
2003.	194964.	194537.	2179.	1590.	589.	3.	99.8	72.8
2004.	234580.	234580.	2257.	1636.	620.	0.	100.0	72.5
2005.	168467.	161417.	1683.	1158.	525.	43.	95.8	67.1
HD 12								
Year	Flow Vol (m3)	Flow Treated (m3)	TSS In (kg)	TSS Rem (kg)	TSS Out (kg)	TSS Byp (kg)	Flow Treated (%)	TSS Removal (%)
1971.	153087.	143696.	1571.	1200.	371.	30.	93.9	74.9
1972.	195787.	180492.	2088.	1646.	442.	88.	92.2	75.7
1973.	195772.	195669.	2257.	1766.	491.	2.	99.9	78.2
1974.	199891.	196817.	2335.	1913.	422.	31.	98.5	80.8
1975.	170381.	166184.	2038.	1580.	458.	30.	97.5	76.4
1976.	253465.	248184.	2588.	2042.	546.	49.	97.9	77.4
1977.	271251.	265157.	2489.	1845.	644.	48.	97.8	72.7
1978.	216896.	216854.	2423.	1841.	582.	1.	100.0	76.0
1979.	259511.	254625.	2664.	2081.	583.	37.	98.1	77.1
1980.	208240.	206384.	2579.	2019.	560.	13.	99.1	77.9
1981.	289009.	287090.	2847.	2285.	562.	10.	99.3	80.0
1982.	203746.	203492.	2328.	1871.	458.	2.	99.9	80.3
1983.	269032.	266354.	2967.	2323.	643.	37.	99.0	77.4
1984.	215973.	215973.	2304.	1785.	519.	0.	100.0	77.5
1985.	187695.	187695.	2259.	1792.	468.	0.	100.0	79.3
1986.	274830.	274277.	3106.	2474.	632.	8.	99.8	79.5
1987.	284402.	281344.	3112.	2451.	662.	16.	98.9	78.3
1988.	227045.	224631.	2585.	2077.	508.	4.	98.9	80.2
1989.	251920.	247282.	2474.	1986.	488.	28.	98.2	79.4



1990.	285405.	284196.	3209.	2593.	615.	18.	99.6	80.4
1991.	267379.	264473.	2931.	2335.	596.	24.	98.9	79.0
1992.	340945.	338674.	3476.	2676.	800.	14.	99.6	76.7
1993.	229999.	229999.	2881.	2349.	532.	0.	100.0	81.5
1994.	245979.	234807.	2318.	1779.	538.	83.	95.5	74.1
1995.	287553.	283636.	2822.	2166.	657.	60.	98.6	75.1
1998.	71986.	71986.	1092.	864.	228.	0.	100.0	79.1
1999.	179876.	178939.	2236.	1737.	499.	6.	99.5	77.5
2000.	209791.	208675.	1945.	1415.	530.	10.	99.5	72.3
2001.	164283.	164283.	1809.	1490.	319.	0.	100.0	82.4
2002.	170947.	170947.	2133.	1703.	430.	0.	100.0	79.8
2003.	194964.	194537.	2179.	1687.	492.	3.	99.8	77.3
2004.	234580.	234580.	2257.	1739.	518.	0.	100.0	77.0
2005.	168467.	161417.	1683.	1231.	451.	43.	95.8	71.4

*
* Summary of Toronto Rainfall Intensities *
*

Rainfall Intensity (mm/h)	Flow (L/s)	Percentage %
1.50	16.7	NaN
2.25	25.1	NaN
3.00	33.4	NaN
3.75	41.8	NaN
4.75	52.9	NaN
5.75	64.1	NaN
8.00	89.1	NaN
10.00	111.4	NaN
15.50	172.7	NaN
23.25	259.0	NaN

* Summary of Quantity and Quality Results at *
* Location 200 INFlow in cms. *
* Values are instantaneous at indicated time step *

Barrick Dunsire Apartments, Port Colborne
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Date	Time	Flow	Total Su
Mo/Da/Year	Hr:Min	cum/s	mg/l
Flow wtd means.....		0.002	120.
Flow wtd std devs..		0.012	65.
Maximum value.....		2.275	293.
Minimum value.....		0.000	0.
Total loads.....		670742.	80666.
		Cub-Met	KILOGRAM

==> Runoff simulation ended normally.

==> SWMM 4.4 simulation ended normally.
Always check output file for possible warning messages.

* SWMM 4.4 Simulation Date and Time Summary *

* Starting Date... May 8, 2026 *
* Time... 14: 8:10.992 *
* Ending Date... May 8, 2026 *
* Time... 14: 8:14. 40 *
* Elapsed Time... 0.051 minutes. *
* Elapsed Time... 3.048 seconds. *



SAMPLE INSPECTION REPORT

Owner:

Location:

Manhole Oil/Grit Separator:

Type of Inspection ☐ Monthly ☐ Annually ☐ Special

Inlet/Outlet Information

Inlet

Outlet

Clear of Debris ☐ Yes ☐ No ☐ Yes ☐ No

Build Up of Sediment ☐ Yes ☐ No ☐ Yes ☐ No

Action Taken:

Sediment Tank Information

A. Manhole Sump Depth: $\pm$ m from cover rim (to be as-constructed verified)

B. Measurement from Rim
to Sediment Level m

C. Depth of Sediment: m (A - B)

Note: If the measured depth of sediment is greater than **200mm** then sediment removal is required.

Presence of Contaminants

Oil ☐ Yes ☐ No Depth m

Foam ☐ Yes ☐ No Depth m

Action Taken:

Name of Regulatory Agency

Telephone No.:

Transaction No.:

Name of Licensed Waste Management Collector

Telephone No.:

Transaction No.:

Owner Notification ☐ Yes ☐ No

Other:

Time:

Date:

Name of Inspector:

Signed:

Date:

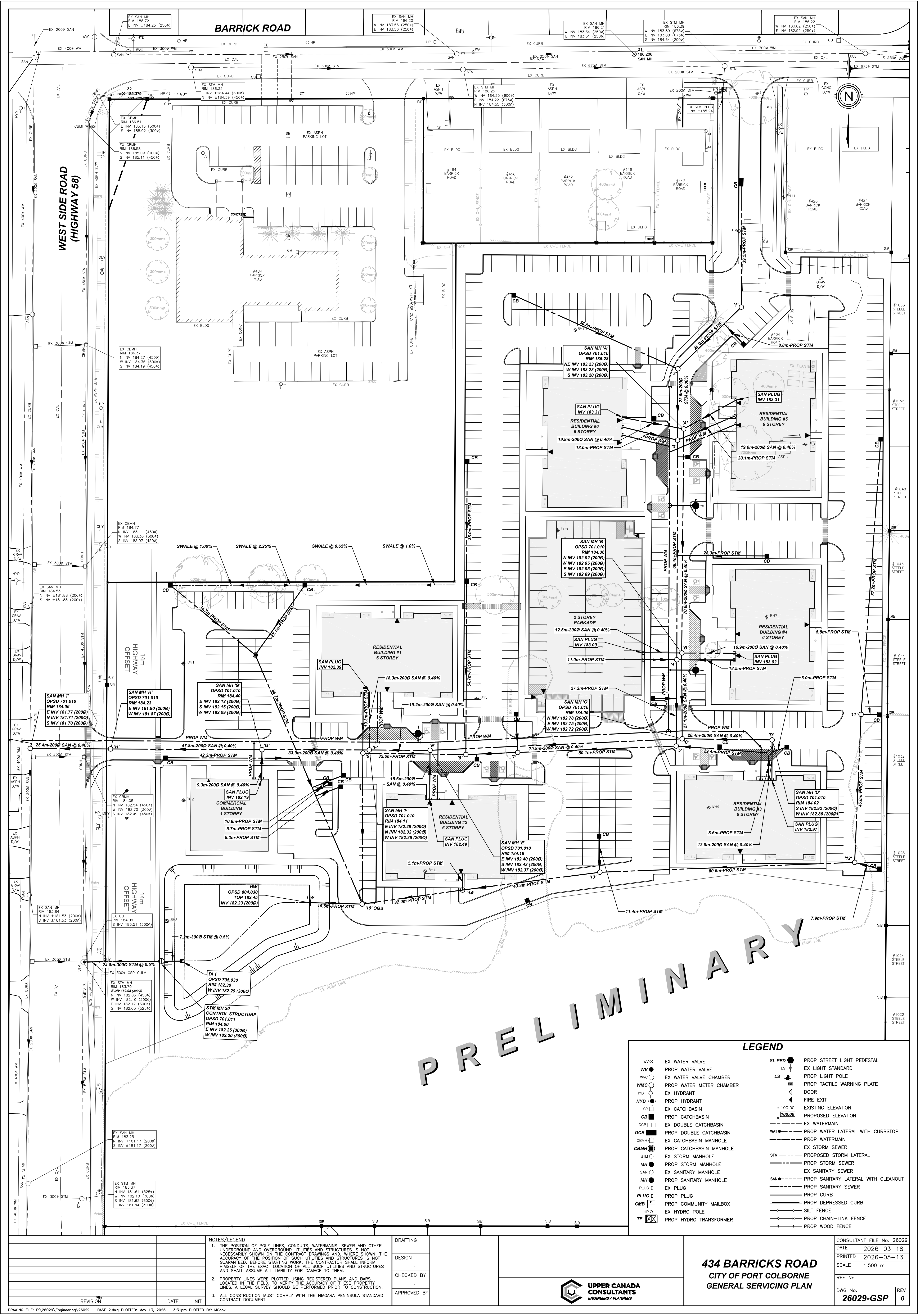


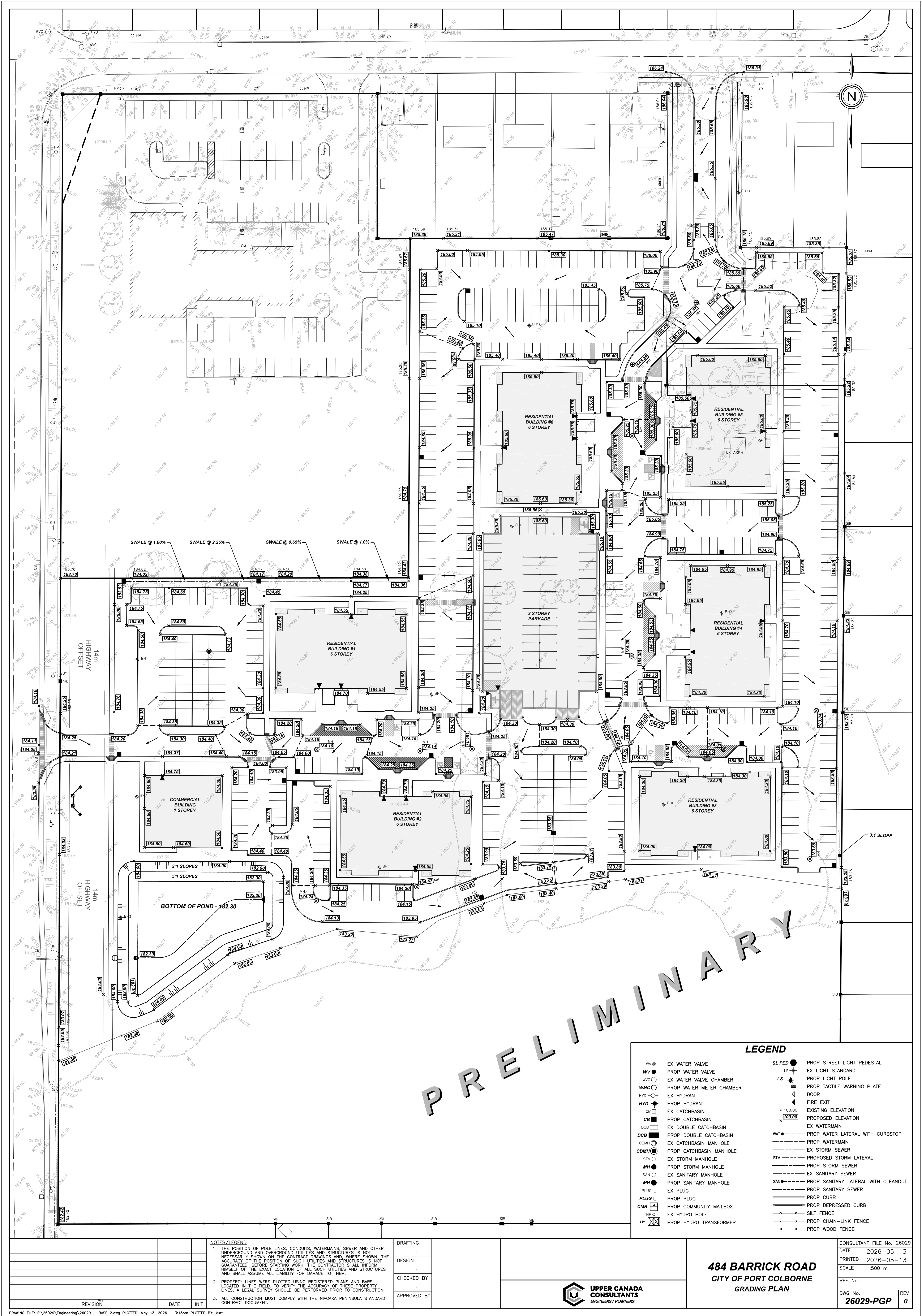
**UPPER CANADA
CONSULTANTS**
ENGINEERS / PLANNERS

Functional Servicing Report
Barrick Dunsire Apartments
UCC File No. 26029

APPENDIX E

**Preliminary Site Servicing Plan
Preliminary Grading Plan**





REVISION			NOTES/LEGEND	DRAFTING	DESIGN	CHECKED BY	APPROVED BY
NO.	DATE	INIT					

1. THE POSITION OF POLE LINES, CONDUITS, WATERMANS, SEWER AND OTHER UNDERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS AND, WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, THE CONTRACTOR SHALL INFORM HIMSELF OF THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND SHALL ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

2. PROPERTY LINES WERE PLOTTED USING REGISTERED PLANS AND BARS LOCATED IN THE FIELD, TO VERIFY THE ACCURACY OF THESE PROPERTY LINES, A LEGAL SURVEY SHOULD BE PERFORMED PRIOR TO CONSTRUCTION.

3. ALL CONSTRUCTION MUST COMPLY WITH THE NIAGARA PENINSULA STANDARD CONTRACT DOCUMENT.



UPPER CANADA
CONSULTANTS
ENGINEERS / PLANNERS

484 BARRICK ROAD
CITY OF PORT COLBORNE
GRADING PLAN

CONSULTANT FILE No. 26029	
DATE	2026-05-13
PRINTED	2026-05-13
SCALE	1:500 m
REF No.	
DWG No.	26029-PGP
REV	0