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CONSULTANTS LTD

STORMWATER MANAGEMENT REPORT

580 Hazelhurst Road, Mississauga

Project #: 25-1071
Prepared for: Armstrong Planning
Date: November 13, 2025

Report Version: 01

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November 13, 2025

Armstrong Planning
1600 Steeles Avenue West, Suite 318
Vaughan, Ontario L4K 4M2

Attention: Davin McCully, RPP, Manager, Planning and Project Management

SUBJECT: STORMWATER MANAGEMENT REPORT, 580 HAZELHURST ROAD, MISSISSAUGA

EnVision Consultants Ltd. is pleased to present the enclosed Stormwater Management Report for the above-noted property. This report provides the conceptual stormwater management strategies for this development.

We thank you for utilizing EnVision for this assignment. If there are any questions regarding the enclosed report, please do not hesitate to contact us.

Yours sincerely,

Alex Williams, P.Eng.
Director – Land Development
awilliams@envisionconsultants.ca

QUALITY MANAGEMENT

ISSUE	FIRST ISSUE	REVISION 1	REVISION 2
PROJECT NUMBER	25-1071		
PROJECT REFERENCE	Stormwater Management Report, 580 Hazelhurst Road, Mississauga		
VERSION NO.	01		
REMARKS	SPA		
PREPARED BY	Michael Basciano, P.Eng.		
SIGNATURE			
REVIEWED BY	Alex Williams, P.Eng.		
SIGNATURE			
DATE	November 13, 2025		

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1. INTRODUCTION

EnVision Consultants Ltd. (EnVision) was retained by Armstrong Planning (the 'Client') to prepare a Stormwater Management Report for the property located at 580 Hazelhurst Road, Mississauga (the 'Site'). It is our understanding that this assessment has been requested in support of the Site Plan Approval (SPA) for the proposed Site including the development of a recycling facility. This report provides the conceptual framework for stormwater management for this development.

1.1. SITE LOCATION

The proposed Site is a 1.52 ha parcel of land located in the City of Mississauga. It is situated within the Clearview Creek subwatershed, which falls under the jurisdiction of Credit Valley Creek Conservation Authority (CVC). Under existing conditions, the property contains a one-storey building situated on a predominantly gravel-surfaced lot used as an industrial storage facility. The Site is bounded by Hazelhurst Road to the east, existing industrial storage facilities to the north and south, and a woodlot to the west. The Site location is illustrated in Figure 1.

1.2. STORMWATER MANAGEMENT OBJECTIVES

The objectives of the Stormwater Management Report are to:

- Determine the stormwater management needs specific to the site to ensure compliance with the City of Mississauga and CVC SWM guidelines.
- Assess different stormwater management methods that align with both the City's regulations and the requirements of the conservation authority and propose a preferred approach.
- Create a stormwater management report outlining the selected strategy, including technical details for the justification and sizing of the proposed stormwater management facilities.

1.3. DESIGN CRITERIA

The City of Mississauga issued the Development Requirements Manual (April 2025) to provide guidance on the management of stormwater rainfall and runoff for developments within the City. Furthermore, the Site is located within the Clearview Creek subwatershed, which is under the jurisdiction of the CVC. The CVC issued the Stormwater Management Guideline (July 2022) which is also referenced during SWM analysis and design for the proposed development.

A summary of the of the stormwater management criteria applied for this project are as follows:

1.3.1. QUANTITY CONTROL

The City of Mississauga Development Requirements state sites situated in Clearview Creek require 100-year post-development to 2-year pre-development quantity control. Therefore, in the post-development conditions, flows shall not exceed the pre-development 2-year level.

1.3.2. QUALITY CONTROL

The City of Mississauga SWM Guidelines require 80% total suspended solids (TSS) removal to provide enhanced (Level 1) protection for this site.

1.3.3. RUNOFF VOLUME REDUCTION (WATER BALANCE)

The runoff volume reduction requirement per the DARC comments provided for this Site is retention of the first 5 mm of runoff, managed by use of infiltration, evapotranspiration, re-use or filtration.

1.3.4. EROSION CONTROL

The City of Mississauga's Development Requirements Manual includes no particular requirement for erosion control; however, it is mentioned that the implementation of runoff volume reduction strategies will assist in mitigating erosive forces from stormwater runoff on streams and watercourses during frequent storms.

LEGEND

LIMIT OF PROPERTY

CLIENT

ARMSTRONG PLANNING

TITLE

580 HAZELHURST ROAD

LOCATION PLAN

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Checked	M.B.	Drawn	S.W.
Date	NOV 2025	Proj. No.	25-1071
Scale	1:2500	Figure No.	1

2. EXISTING CONDITIONS

2.1. GENERAL

The 1.52 ha property contains an existing one-storey building situated on a gravel-surfaced lot. The proposed development area is a 0.40 ha parcel located on the southern portion of the property. The existing runoff coefficient of the catchment was approximated to have a value of 0.62. Based on the topographic survey, it was examined that runoff produced on the southern portion of the Site flows over land in the eastward direction towards Hazelhurst Road. Runoff generated on the northern portion of the Site is directed to existing storm infrastructure conveying flows to the municipal storm sewer on Hazelhurst Road. Existing conditions are illustrated in Figure 2.

2.2. RAINFALL INFORMATION

Rainfall information for the site was calculated using the following equation as outlined by City of Mississauga SWM Guidelines:

$$I = \frac{A}{(t_c + B)^C}$$

Where, I = Rainfall intensity (mm/hr)

t_c = Time of concentration (minutes)

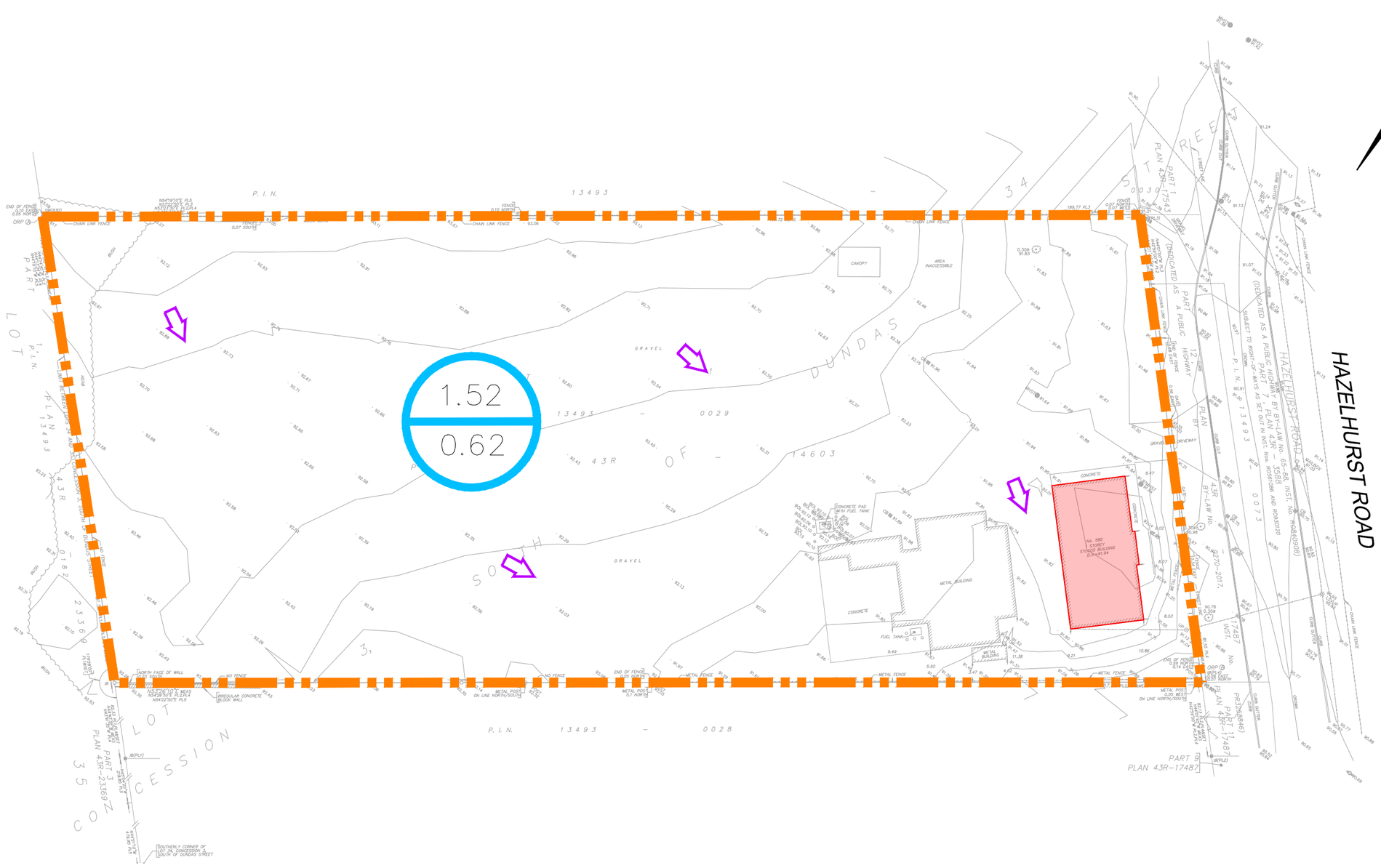
A, B, C = Parameters as defined in City of Mississauga SWM Guidelines (tabularized below)

An initial time of concentration (t_c) of 15 minutes is recommended as per City of Mississauga SWM Guidelines.

Table 2.1: Rainfall Parameters

RETURN PERIOD	2-YEAR	5-YEAR	10-YEAR	25-YEAR	50-YEAR	100-YEAR
A	610	820	1010	1160	1300	1450
B	4.6	4.6	4.6	4.6	4.7	4.9
C	0.78	0.78	0.78	0.78	0.78	0.78

Per City of Mississauga Development Requirements Manual (April 2025)



LEGEND

- LIMIT OF PROPERTY
- IMPERVIOUS ROOF AREA
- SOFTSCAPE SURFACE
- GRAVEL SURFACE
- OVERLAND FLOW ROUTE
- 0.08 / 0.53 — CATCHMENT AREA (ha) / RUNOFF COEFFICIENT
- CATCHMENT BOUNDARY

CLIENT: ARMSTRONG PLANNING

TITLE: 580 HAZELHURST ROAD

EXISTING CONDITIONS

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Scale: 1:750	Figure No.: 2

2.3. ALLOWABLE FLOW RATES

The City of Mississauga SWM Guidelines indicate that for developments within Clearview Creek, post-development flows up to the 100-year storm shall be controlled down to the 2-year pre-development level.

As noted in Note 2 of page 8-22 of the City of Mississauga Development Requirements: where "pre-development" is listed as a part of the quantity control requirement, the pre-development runoff coefficient shall not exceed 0.50. The existing runoff coefficient is estimated to be 0.62, thus, a coefficient of 0.50 will govern for the computation of allowable flow rates.

Based on the existing site conditions and previously discussed rainfall parameters, the Rational Method is used to calculate peak flows for the 2- through 100-year storm events. Post-development allowable flow rate calculations for the Site are provided in Appendix A, with the results summarized in Table 2.2.

Table 2.2: Existing Peak Flow Rates and Allowable Discharge Rate

RETURN PERIOD	RUNOFF COEFFICIENT, C*	RAINFALL INTENSITY, I (mm/hr)	EXISTING PEAK FLOW RATE, Q (m^3/s)**	ALLOWABLE FLOW RATE, Q (m^3/s)
2-Year	0.50	59.89	0.1278	0.1278
5-Year	0.50	80.51	0.1718	
10-Year	0.50	99.17	0.2116	
25-Year	0.50	113.89	0.2674	
50-Year	0.50	127.13	0.3256	
100-Year	0.50	140.69	0.3753	

**Maximum runoff coefficient of 0.50 used to compute allowable flow rates*

***Adjustment factors of 1.1, 1.2, 1.25 applied to 25-year, 50-year and 100-year return periods, respectively*

3. PROPOSED CONDITIONS

3.1. GENERAL

The proposed development is a recycling facility consisting of a retained one-storey building, a proposed one-storey building, two scale houses with associated at-grade structures, and associated at-grade vehicular and landscaped areas. Vehicular access to the Site is provided on the east side of Site via Hazelhurst Road. Stormwater generated on the Site will be conveyed to an underground cistern, which will discharge to the Hazelhurst Road municipal storm sewer. Post-development conditions and stormwater catchments are illustrated in Figure 3, while proposed land-use types and their associated runoff coefficients are summarized below in Table 3.1.

Table 3.1: Proposed Area Breakdown

LAND-USE	AREA (m^2)	RUNOFF COEFFICIENT, C	% IMPERVIOUS	% COVERAGE
Roof Area	3,171	0.90	100%	21%
Impervious At-Grade	3,621	0.90	100%	24%
Gravel	6,497	0.60	54%	43%
Softscape At-Grade	1,424	0.25	0%	13%
Overall	15,245	0.69	68%	100%

3.2. WATER QUANITITY

As the proposed site will outlet flows to Hazelhurst Road, post-development discharge shall not exceed the pre-development 2-year flow rate, as discussed in Section 2.3. Runoff will be controlled by a proposed underground cistern, which will discharge to the municipal system.

A HydroCAD model of the project was developed and utilized to determine the required storage volume for the Site, and to calculate discharge rates achieved by the proposed flow controls for all storm events. The Modified Rational Method (a subroutine of the HydroCAD software) was used for this modelling exercise. Adjustment factors of 1.1, 1.2, and 1.25 were applied to runoff coefficients of sub catchments for the 25-, 50-, and 100-year storm events, respectively.

Modeling results for the proposed cistern are presented in Table 3.2, while a summary of the total Site results is provided in Table 3.3. Full hydrologic model output is included in Appendix C.

A GreenStorm ST system was selected to control flows from the west portion of the development area. This cistern is designed with a footprint of 450 m^2 and a height of 1.01 m, providing an effective active storage of 419 m^3 (with a tank porosity of 0.96).

The proposed cistern is equipped with a 260 mm orifice plate to ensure discharge does not exceed the allowable release rate. Modelling results are summarized in Table 3.2.

Table 3.2: Summary of Modelling Results – West Cistern

STORM EVENT	PEAK ELEVATION IN CISTERN (m)	UTILIZED STORAGE* (m^3)	PEAK FLOW RATE (m^3/s)
2-Year	0.335	144.5	0.0572
5-Year	0.435	188.0	0.0727
10-Year	0.532	230.0	0.0849
25-Year	0.674	291.1	0.1002
50-Year	0.789	340.8	0.1110
100-Year	0.908	392.1	0.1212

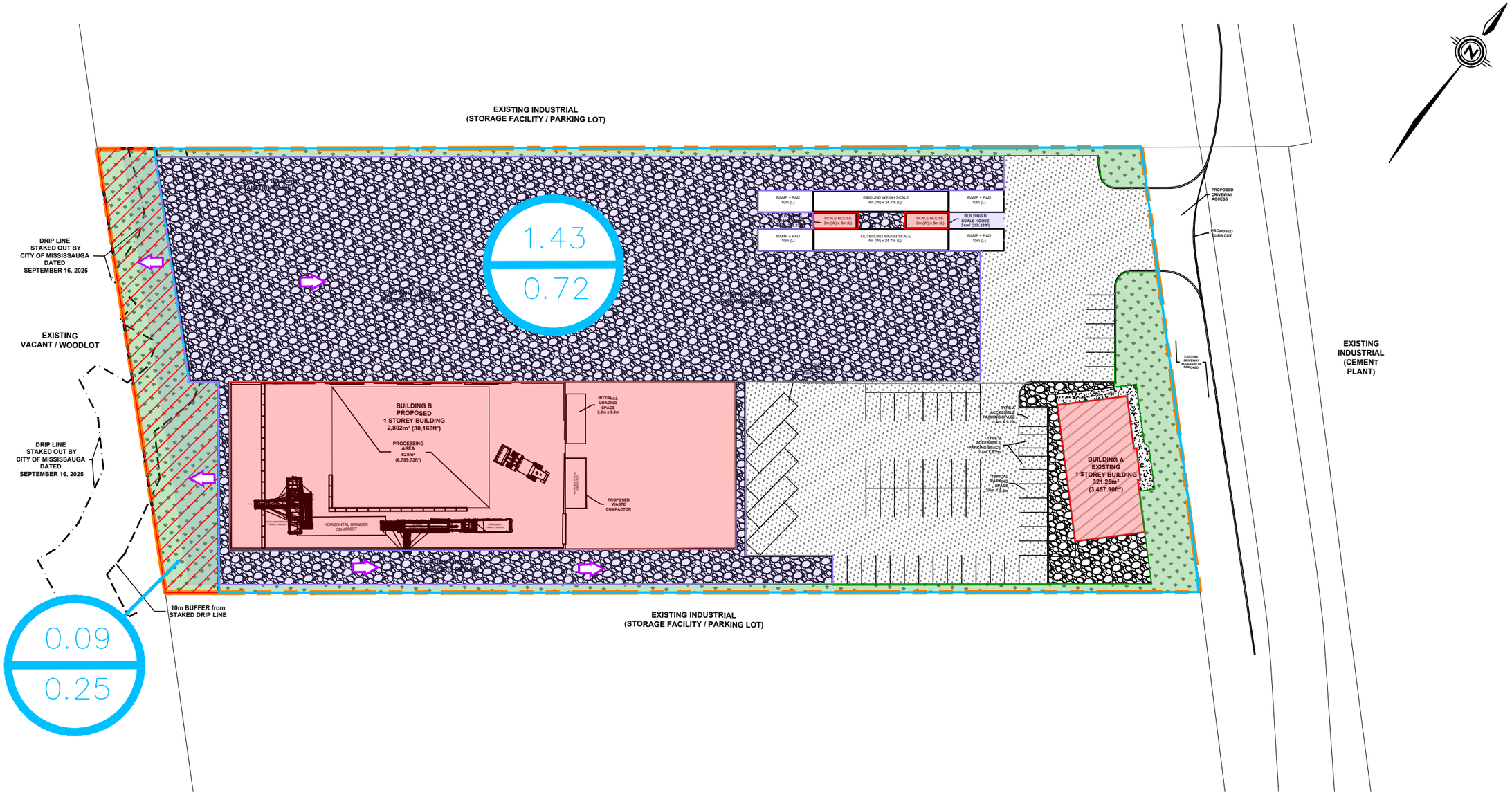
**Utilized storage volumes are modelled including a full sump volume.*

Table 3.3: Summary of Modelling Results – Total Site Flows

STORM EVENT	CISTERN PEAK FLOW (m^3/s)	UNCONTROLLED PEAK FLOW (m^3/s)	TOTAL SITE PEAK FLOW* (m^3/s)	ALLOWABLE FLOW RATE (m^3/s)
2-Year	0.0572	0.0038	0.0584	0.1278
5-Year	0.0727	0.0051	0.0742	
10-Year	0.0849	0.0063	0.0869	
25-Year	0.1002	0.0081	0.1027	
50-Year	0.1110	0.0097	0.1139	
100-Year	0.1212	0.0114	0.1246	

**Total Site peak flow rates may not necessarily equal the sum of individual peak flow rates, as peak times may vary.*

As seen above in Table 3.4, the post-development peak flow rates, including discharge from the cistern and uncontrolled flows, do not exceed allowable flow rate of 0.1278 m^3/s.



LEGEND

- LIMIT OF PROPERTY
- LIMIT OF DEVELOPMENT
- ROOF AREA
- PERVIOUS SURFACE
- UNCONTROLLED AREA
- IMPERVIOUS AT-GRADE
- GRAVEL SURFACE
- 0.08 / 0.53 — CATCHMENT AREA (ha) / IMPERVIOUSNESS (%)
- CATCHMENT BOUNDARY
- OVERLAND FLOW ROUTE

CLIENT

ARMSTRONG PLANNING

TITLE

580 HAZELHURST ROAD

POST-DEVELOPMENT CONDITIONS

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Scale	1:750	Figure No.	3

3.3. WATER QUALITY

Enhanced (Level 1) protection is required for the proposed development. In accordance with the City of Mississauga (SWM) Guidelines, 80% total suspended solids (TSS) removal is necessary to achieve this level of protection. To provide enhanced water quality treatment, a water quality unit is proposed upstream of the cistern. A Jellyfish JF6-4-1 unit (or approved equivalent treatment) has been selected to meet this requirement. This device is capable of providing 80% TSS removal, as indicated in the sizing report. Details and sizing parameters of the selected water quality unit are provided in Appendix B.

3.4. RUNOFF VOLUME REDUCTION (WATER BALANCE)

As indicated in DARC comments provided for this Site, the first 5 mm of runoff shall be retained onsite and managed through infiltration for water balance purposes. It is assumed that softscape and gravel areas can abstract 5 mm of rainfall, where the retained volume will be returned to the atmosphere by way of evapotranspiration. The remaining portions of the Site consist of impervious surfaces, which are assumed to have an initial abstraction of 0 mm.

A summary of land-use types and the abstracted volume for the 5 mm storm event is provided in Table 3.4.

Table 3.4: Proposed Land-Use Water Balance Breakdown

LAND-USE	AREA (m^2)	INITIAL ABSTRACTION (m)	VOLUME ABSTRACTED (m^3)	5 mm VOLUME (m^3)	WATER BALANCE (m^3)
Roof Area	3,171	0.000	0.0	15.9	15.9
Impervious At-Grade	3,621	0.000	0.0	18.1	18.1
Gravel	6,497	0.005	32.5	32.5	0.0
Softscape At-Grade	1,956	0.005	9.8	9.8	0.0
Total Site Area	15,245	-	42.3	76.2	34.0

The water balance requirement for the proposed development is the retention and reuse of approximately 34.0 m³ of runoff generated from the 5 mm rainfall event. As part of the analysis, a range of Low Impact Development (LID) strategies were reviewed to determine the feasibility of meeting this requirement onsite.

A comprehensive review of potential LID measures was undertaken, including infiltration-based systems (bioretention, permeable pavement, infiltration galleries), surface or subsurface storage with reuse, rainwater harvesting, green roofs, and irrigation-based reuse. However, due to several limiting factors inherent to the site's operational requirements and physical constraints, the implementation of these measures is not practicable:

- High groundwater table: Geotechnical information indicated in the Geotechnical Investigation, G2S Environmental Consulting Inc. (September 2024) shows shallow groundwater conditions between 0.24 m to 0.76 m below grade, that restricts the depth and functionality of infiltration systems. Infiltration-based LIDs would not achieve the required drawdown or provide reliable long-term performance under these groundwater conditions.
- Heavy truck traffic and industrial use: The site is designed to support continuous movement of heavy vehicles and equipment associated with a recycling facility. As such, permeable pavements, bioswales, or other LID facilities within traffic or loading areas would not be feasible.
- Limited landscaped/open space: The proposed development provides minimal non-traffic, non-operational areas; therefore, siting green infrastructure or dedicated stormwater reuse systems is significantly constrained.
- Operational restrictions on water reuse: Options such as irrigation reuse or grey-water reuse were assessed; however, the facility has no meaningful irrigation demand, no process applications that could utilize harvested runoff, and no practical means to integrate reuse systems into daily operations.

Given the physical, operational, and functional constraints, the implementation of LID measures to achieve the 5 mm water balance target is not practicable for this development. However, because the site is largely unchanged and maintains similar surface conditions to the existing gravel yard, the post-development water balance remains relatively consistent with existing conditions. The proposed stormwater management strategy therefore focuses on meeting all remaining applicable City and CVC criteria including quantity and quality control.

3.5. EROSION CONTROL

The City of Mississauga Development Guidelines state no particular requirement for erosion control; however, it is mentioned that the implementation of runoff volume reduction strategies will assist in mitigating erosive forces from stormwater runoff on streams and watercourses during frequent storms.

4. CLOSING

4.1. CONCLUSIONS

Based on the information obtained through the stormwater management analysis, EnVision presents the following conclusions and recommendations for the proposed development at 580 Hazelhurst Road.

4.1.1. QUANTITY CONTROL

An underground stormwater cistern is incorporated into the design to provide quantity control for the Site. The GreenStorm ST system is designed with a footprint of 450 m^2, height of 1.01 m, and an effective active storage volume of 419 m^3. The proposed strategy ensures that post-development peak flows do not exceed the pre-development 2-year flow rate of 0.1278 m^3/s.

4.1.2. QUALITY CONTROL

A Jellyfish JF6-4-1 water treatment unit is proposed upstream of the west cistern to treat runoff and meet the 80% TSS removal target for enhanced (Level 1) protection for the Site.

4.1.3. RUNOFF VOLUME REDUCTION (WATER BALANCE)

Due to the site's high groundwater table, heavy truck operations, limited available landscape area, and lack of practical reuse demand, water balance requirement cannot be feasibly achieved through LID measures. However, majority of the gravel surface onsite remains unchanged, resulting in a post-development hydrologic response that closely reflects existing conditions.

4.1.4. EROSION CONTROL

No particular erosion control methods are stated in the City of Mississauga Development Guidelines outside of the water balance requirements. Erosion and sediment control measures will be applied during construction.

4.2. CERTIFICATION AND SIGNATURES

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Reviewed by

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4.3. QUALIFIER

EnVision prepared this report solely for the use of the intended recipient in accordance with the professional services agreement. In the event a contract has not been executed, the parties agree that the EnVision General Terms and Conditions, which were provided prior to the preparation of this report, shall govern their business relationship.

The report is intended to be used in its entirety. No excerpts may be taken to be representative of the findings in the assessment. The conclusions presented in this report are based on work performed by trained, professional and technical staff, in accordance with their reasonable interpretation of current and accepted engineering and scientific practices at the time the work was performed.

The content and opinions contained in the report are based on the observations and/or information available to EnVision at the time of preparation, using investigation techniques and engineering analysis methods consistent with those ordinarily exercised by EnVision and other engineering/scientific practitioners working under similar conditions, and subject to the same time, financial and physical constraints applicable to this project.

EnVision disclaims any obligation to update this report if, after the date of this report, any conditions appear to differ significantly from those presented in this report; however, EnVision reserves the right to amend or supplement this report based on additional information, documentation or evidence.

EnVision makes no other representations whatsoever concerning the legal significance of its findings. The intended recipient is solely responsible for the disclosure of any information contained in this report. If a third party makes use of, relies on, or makes decisions in accordance with this report, said third party is solely responsible for such use, reliance or decisions. EnVision does not accept responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken by said third party based on this report.

EnVision has provided services to the intended recipient in accordance with the professional services agreement between the parties and in a manner consistent with that degree of care, skill and diligence normally provided by members of the same profession performing the same or comparable services in respect of projects of a similar nature in similar circumstances. It is understood and agreed by EnVision and the recipient of this report that EnVision provides no warranty, express or implied, of any kind. Without limiting the generality of the foregoing, it is agreed and understood by EnVision and the recipient of this report that EnVision makes no representation or warranty whatsoever as to the sufficiency of its scope of work for the purpose sought by the recipient of this report.

In preparing this report, EnVision has relied in good faith on information provided by others, as noted in the report. EnVision has reasonably assumed that the information provided is correct and EnVision is not responsible for the accuracy or completeness of such information.

Unless otherwise agreed in writing by EnVision, the Report shall not be used to express or imply warranty as to the suitability of the site for a particular purpose. EnVision disclaims any responsibility for consequential financial effects on transactions or property values, or requirements for follow-up actions or costs.

This limitations statement is considered an integral part of this report.

APPENDIX A:

Stormwater Management Calculations

ENVISION	Project:	580 Hazelhurst Road	No.:	25-1071
	By:	MB	Date:	2025-11-11
	Checked:	AW	Page:	1
Stormwater Management Calculations	Existing Peak Discharge Rate			

Rational Method is undertaken to calculate existing runoff rate: $Q = 0.0028CiA$

Where: Q = Peak flow rate (cubic metres/second)
C = Runoff coefficient
i = Rainfall intensity (mm/hour)
A = Catchment area (hectares)

Exisiting land use types and area measurements are as follows:

Existing Land Use	Area (m^2)	Runoff C	Coverage
Impervious Area	1,127	0.90	7%
Gravel	14,119	0.60	93%
Total:	**15,245**	**0.62**	**100%**

Catchment Area, A:	**1.52**	ha
Runoff Coefficient:	**0.62**	

Rainfall intensity is calculated as follows: $i = \frac{A}{(t_c+B)^C}$

Where: i = Rainfall intensity (mm/hour)
t_c = Duration (minutes)
A, B, C = Parameters as defined in City of Mississauga Development Requirements Manual (page 8-1)

Return Period (Yrs)	2	5	10	25	50	100
A	610	820	1010	1160	1300	1450
B	4.6	4.6	4.6	4.6	4.7	4.9
C	0.78	0.78	0.78	0.78	0.78	0.78
Runoff Coefficient*	0.62	0.62	0.62	0.68	0.75	0.78
t_c (min)**	15	15	15	15	15	15
t_c (hrs)	0.250	0.250	0.250	0.250	0.250	0.250
i (mm/hr)	59.89	80.51	99.17	113.89	127.13	140.69
Q (m^3/sec)	**0.1591**	**0.2138**	**0.2634**	**0.3327**	**0.4052**	**0.4671**

*Adjustment factors of 1.1, 1.2 and 1.25 are applied to 25, 50 and 100-year events respectively, per City of Mississauga Development Requirements Manual (page 8-2)

**Recommended time of concentration is 15 minutes

ENVISION	Project:	580 Hazelhurst Road	No.:	25-1071
	By:	MB	Date:	2025-11-11
	Checked:	AW	Page:	2
Stormwater Management Calculations	Allowable Peak Discharge Rate			

Rational Method is undertaken to calculate existing runoff rate: $Q = 0.0028CiA$

Where: Q = Peak flow rate (cubic metres/second)
C = Runoff coefficient
i = Rainfall intensity (mm/hour)
A = Catchment area (hectares)

Exisiting land use types and area measurements are as follows:

Existing Land Use	Area (m^2)	Runoff C	Coverage
Impervious Area	1,127	0.90	7%
Gravel	14,119	0.60	93%
Total:	**15,245**	**0.62**	**100%**

Catchment Area, A:	**1.52**	ha
Runoff Coefficient*:	**0.50**	

*Maximum Runoff coefficient of 0.50 shall be used as per City of Mississauga Development Requirements (pg 8-22 note 2)

Rainfall intensity is calculated as follows: $i = \frac{A}{(t_c+B)^C}$

Where: i = Rainfall intensity (mm/hour)
t_c = Duration (minutes)
A, B, C = Parameters as defined in City of Mississauga Development Requirements Manual (page 8-1)

Return Period (Yrs)	2	5	10	25	50	100
A	610	820	1010	1160	1300	1450
B	4.6	4.6	4.6	4.6	4.7	4.9
C	0.78	0.78	0.78	0.78	0.78	0.78
Runoff Coefficient*	0.50	0.50	0.50	0.55	0.60	0.63
t_c (min)**	15	15	15	15	15	15
t_c (hrs)	0.250	0.250	0.250	0.250	0.250	0.250
i (mm/hr)	59.89	80.51	99.17	113.89	127.13	140.69
Q (m^3/sec)	**0.1278**	**0.1718**	**0.2116**	**0.2674**	**0.3256**	**0.3753**

*Adjustment factors of 1.1, 1.2 and 1.25 are applied to 25, 50 and 100-year events respectively, per City of Mississauga Development Requirements Manual (page 8-2)

**Recommended time of concentration is 15 minutes

The site is located in the Clearview Creek subwatershed; as per City of Mississauga SWM guidelines, 100-year post-development to 2-year pre-development control is required.

Proposed areas measurements and land use types for the development area are as follows:

Land Use	Area (m^2)	Runoff C	Impervious
Roof Area	3,171	0.90	100%
Impervious At-Grade	3,621	0.90	100%
Gravel	6,497	0.60	54%
Softscape At-Grade	1,956	0.25	0%
Total Area:	**15,245**	**0.69**	**68%**

For the purposes of water balance calculations, no initial abstraction is assumed for impervious surfaces.

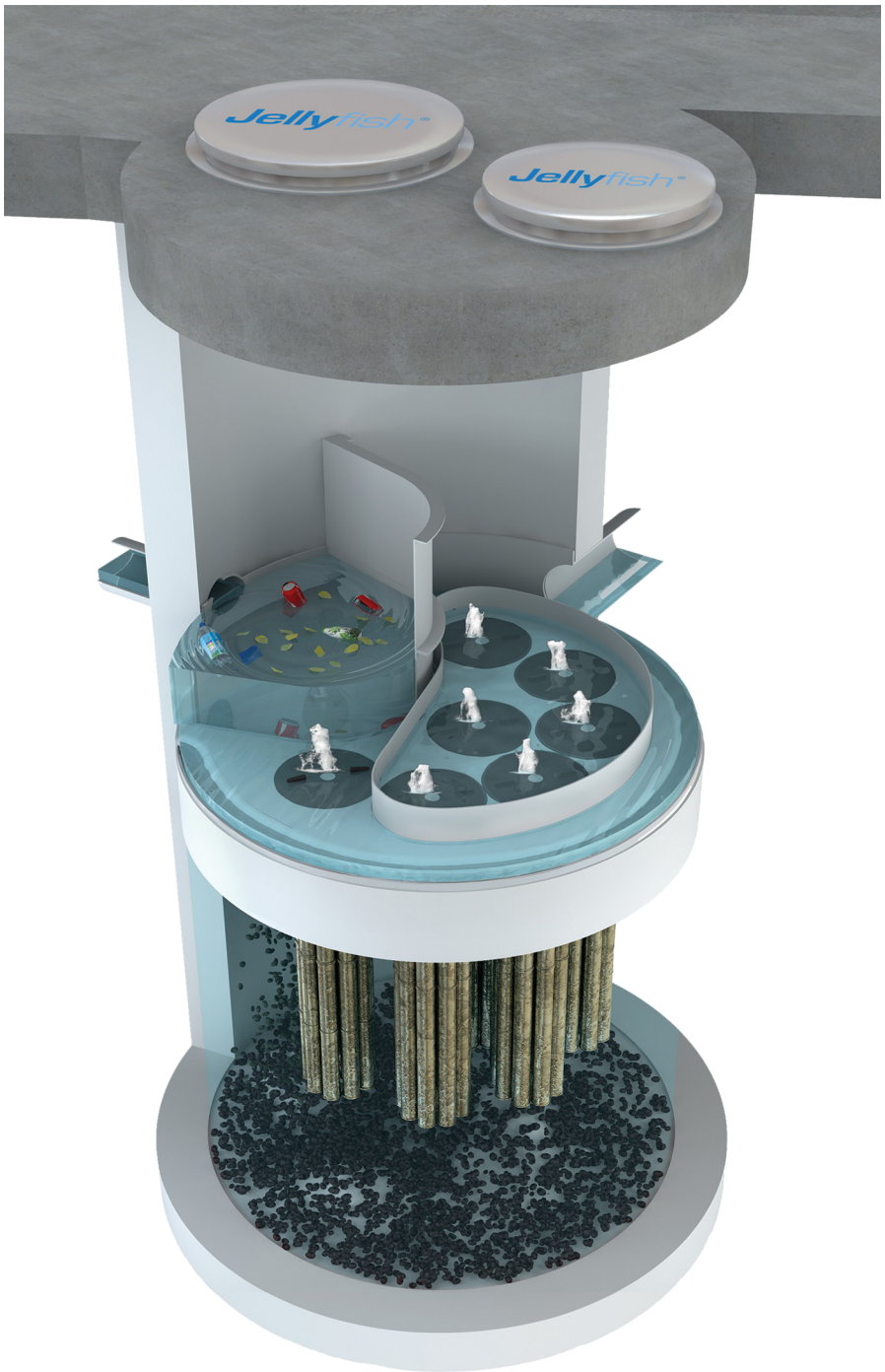
Surface Type	Area (m^2)	Initial Abstraction (m)	Volume Abstracted (m^3)	5mm Volume (m^3)	Water Balance (m^3)
Roof Area	3,171	0.000	0.0	15.9	15.9
Impervious At-Grade	3,621	0.000	0.0	18.1	18.1
Gravel	6,497	0.005	32.5	32.5	0.0
Softscape At-Grade	1,956	0.005	9.8	9.8	0.0
Total Area:	**15,245**	**-**	**42.3**	**76.2**	**34.0**

Therefore, 34 m3 of runoff is produced from 5 mm of rainfall, which will need to be retained and reused onsite.

APPENDIX B:

Water Quality Unit Supporting Documentation

Jellyfish® Filter
Owner's Manual



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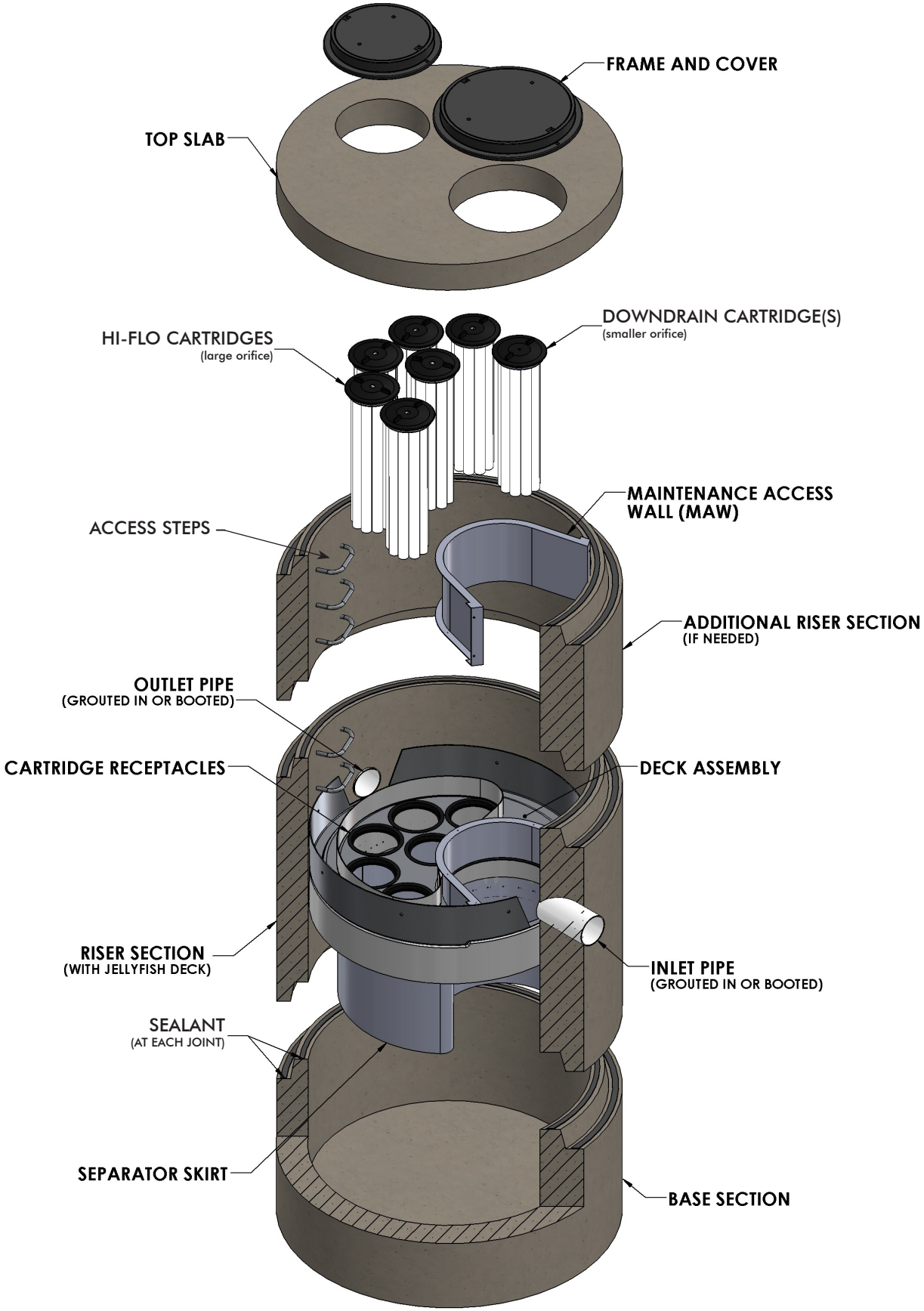

FRAME AND COVER
TOP SLAB
DOWNDRAIN CARTRIDGE(S)
(smaller orifice)
HI-FLO CARTRIDGES
(large orifice)
MAINTENANCE ACCESS
WALL (MAW)
ACCESS STEPS
ADDITIONAL RISER SECTION
(IF NEEDED)
OUTLET PIPE
(GROUTED IN OR BOOTED)
CARTRIDGE RECEPTACLES
DECK ASSEMBLY
RISER SECTION
(WITH JELLYFISH DECK)
INLET PIPE
(GROUTED IN OR BOOTED)
SEALANT
(AT EACH JOINT)
SEPARATOR SKIRT
BASE SECTION

WARNINGS / CAUTION

1. FALL PROTECTION may be required.
2. WATCH YOUR STEP if standing on the Jellyfish Filter Deck at any time; Great care and safety must be taken while walking or maneuvering on the Jellyfish Filter Deck. Attentive care must be taken while standing on the Jellyfish Filter Deck at all times to prevent stepping onto a lid, into or through a cartridge hole or slipping on the deck.
3. The Jellyfish Filter Deck can be SLIPPERY WHEN WET.
4. If the Top Slab, Covers or Hatches have not yet been installed, or are removed for any reason, great care must be taken to NOT DROP ANYTHING ONTO THE JELLYFISH FILTER DECK. The Jellyfish Filter Deck and Cartridge Receptacle Rings can be damaged under high impact loads. *This type of activity voids all warranties. All damaged items to be replaced at owner's expense*.
5. Maximum deck load 2 persons, total weight 250 lbs. per person.

Safety Notice

Jobsite safety is a topic and practice addressed comprehensively by others. The inclusions here are intended to be reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply on any given site or project. The knowledge and applicability of those responsibilities is the Contractor's responsibility and outside the scope of Imbrium® Systems.

Confined Space Entry

Secure all equipment and perform all training to meet applicable local and OSHA regulations regarding confined space entry. It is the Contractor's or entry personnel's responsibility to proceed safely at all times.

Personal Safety Equipment

Contractor is responsible to provide and wear appropriate personal protection equipment as needed including, but not limited to safety boots, hard hat, reflective vest, protective eyewear, gloves and fall protection equipment as necessary. Make sure all equipment is **staffed with trained and/or certified personnel**, and all equipment is checked for proper operation and safety features prior to use.

- Fall protection equipment
- Eye protection
- Safety boots
- Ear protection
- Gloves
- Ventilation and respiratory protection
- Hard hat
- Maintenance and protection of traffic plan

Thank You for purchasing the Jellyfish® Filter!

Imbrium® Systems would like to thank you for selecting the Jellyfish Filter to meet your project's stormwater treatment needs. With proper inspection and maintenance, the Jellyfish Filter is designed to deliver ongoing, high levels of stormwater pollutant removal.

If you have any questions, please feel free to call us or e-mail us at info@imbriumsystems.com.

Imbrium Systems
USA: 301.279.8827 | 888.279.8826
CAD: 416.960.9900 | 800.565.4801
INT'L: +1.416.960.9900

Jellyfish Filter Patents

The Jellyfish Filter is protected by one or more of the following patents:

U.S. Patent No. 8,123,935; U.S. Patent No. 8,287,726; U.S. Patent No. 8,221,618
Australia Patent No. 2008,286,748
Canadian Patent No. 2,696,482
Korean Patent No. 10-1287539
New Zealand Patent No. 583,461; New Zealand Patent No. 604,227
South African Patent No. 2010,01068
**other patents pending*

Table of Contents

Chapter 1

1.0 – Owner Specific Jellyfish Filter Product Information

Below you will find your specific Jellyfish Filter unit information to help you easily inspect, maintain and order parts for your system.

Owner Name:	
Phone Number:	
Site Address:	
Site GPS Coordinates/unit location:	
Unit Location Description:	
Jellyfish Filter Model No.:	
Cartridge Installation Date:	
No. of Hi-Flo Cartridges	
Length of Hi-Flo Cartridges:	
Lid Orifice Diameter on Hi-Flo Cartridge:	
No. of Draindown Cartridges:	
Length of Draindown Cartridges:	
Lid Orifice Diameter on Draindown Cartridge:	
No. of Blank Cartridge Lids:	
Online System (Yes/No):	
Offline System (Yes/No):	

Notes:

Chapter 2

2.0 – Jellyfish Filter System Operations and Functions

The Jellyfish Filter is an engineered stormwater quality treatment technology that removes a high level and wide variety of stormwater pollutants. Each Jellyfish Filter cartridge consists of multiple membrane - encased filter elements ("filtration tentacles") attached to a cartridge head plate. The filtration tentacles provide a large filtration surface area, resulting in high flow and high pollutant removal capacity.

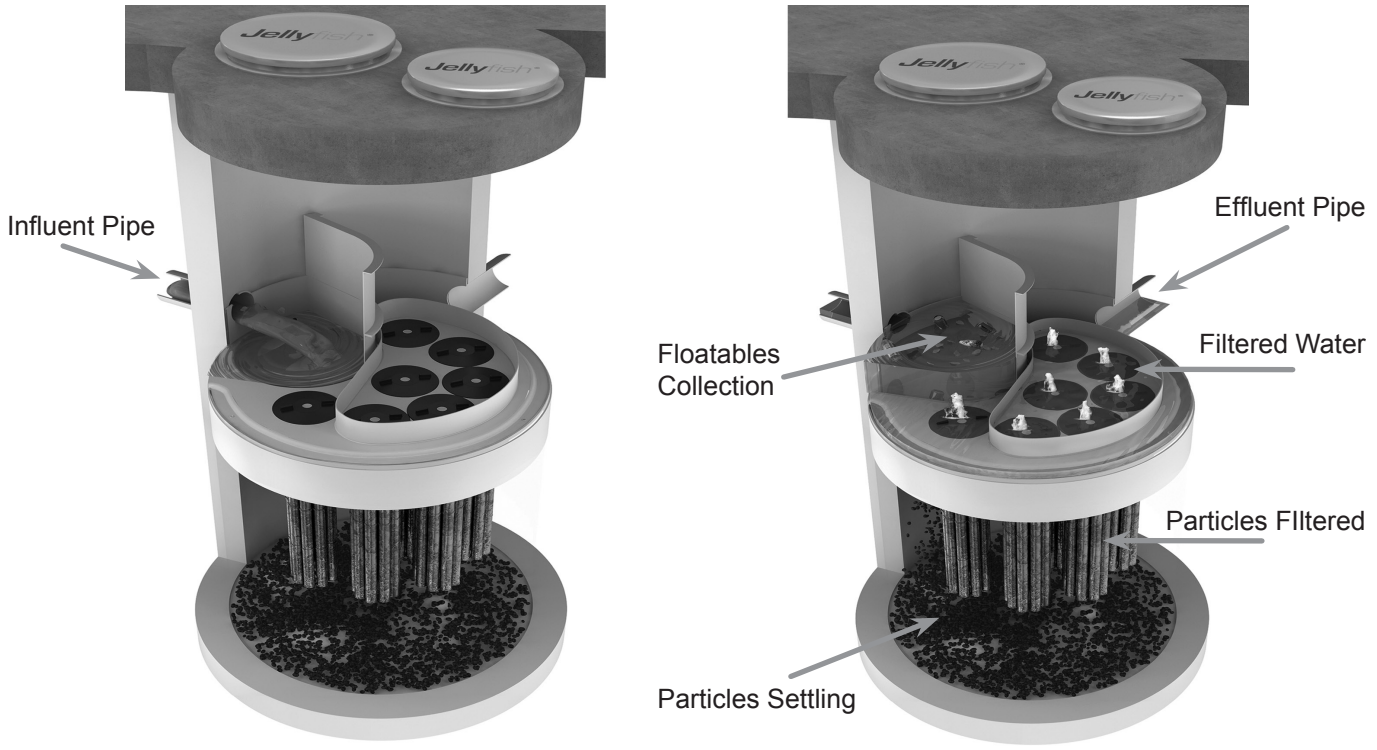
The Jellyfish Filter functions are depicted in **Figure 1** below.

FIGURE 1

Jellyfish Filter Treatment Functions

Membrane Filtration

Section View with Maintenance Access Wall (MAW) Cutaway



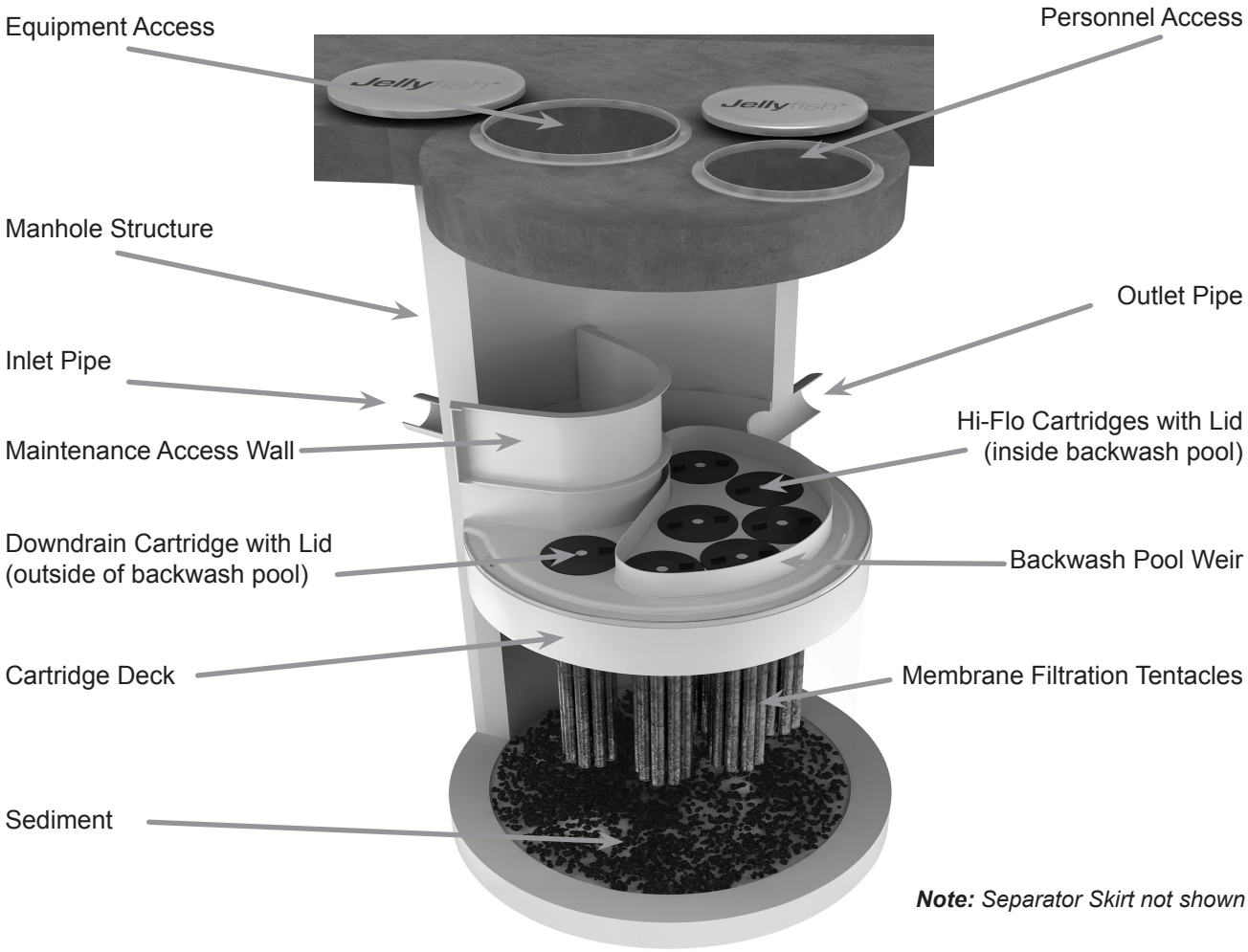
Jellyfish Filter cartridges are backwashed after each peak storm event, which removes accumulated sediment from the membranes. This backwash process extends the service life of the cartridges and increases the time between maintenance events.

For additional details on the operation and pollutant capabilities of the Jellyfish Filter please refer to additional details on our website at www.imbriumsystems.com.

2.1 – Components and Cartridges

The Jellyfish Filter and components are depicted in Figure 2 below.

FIGURE 2 **Jellyfish Filter Components**



Note: *Separator Skirt not shown*

Tentacles are available in various lengths as depicted in Table 1 below.

Table 1 – Cartridge Lengths / Weights and Cartridge Lid Orifice Diameters

Cartridge Lengths	Dry Weight	Hi-Flo Orifice Diameter	Draindown Orifice Diameter
15 inches (381 mm)	10 lbs (4.5 kg)	35 mm	20 mm
27 inches (686 mm)	14.5 lbs (6.6 kg)	45 mm	25 mm
40 inches (1,016 mm)	19.5 lbs (8.9 kg)	55 mm	30 mm
54 inches (1,372 mm)	25 lbs (11.4 kg)	70 mm	35 mm

A Jellyfish membrane filtration cartridge is depicted in Figure 3 below.

FIGURE 3

Jellyfish Membrane Filtration Cartridge

2.2 – Jellyfish Membrane Filtration Cartridge Assembly

The Jellyfish Filter utilizes multiple membrane filtration cartridges. Each cartridge consists of removable cylindrical filtration "tentacles" attached to a cartridge head plate. Each filtration tentacle has a threaded pipe nipple and o-ring. To attach, insert the top pipe nipples with the o-ring through the head plate holes and secure with locking nuts. Locking nuts to be hand tighten and checked with a wrench as shown below.

2.3 – Jellyfish Membrane Filtration Cartridge Installation

- After the upstream catchment and site have stabilized, remove any accumulated sediment and debris from the Jellyfish Filter structure and upstream diversion structure (if applicable). Failure to address this step completely will reduce the time between required maintenance.
- Descend to the cartridge deck (see Safety Notice and page 3).
- Lower the Jellyfish membrane filtration cartridges into the cartridge receptacles within the cartridge deck. A filter cartridge should be placed into each of the draindown cartridge receptacles outside the backwash pool weir. It is possible dependent on the Jellyfish Filter model purchased that not all cartridge receptacles will be filled with a filter cartridge. In that case, a blank headplate and blank cartridge lid (has no orfice) would be installed.

Cartridge Assembly

Avoid snagging the cartridge membranes on the recpticle lip when inserting the Jellyfish membrane filtration cartridges into the cartridge receptacles. Use a gentle twisting or sideways motion to clear any potential snag. Do not force the tentacles down into the cartridge receptacle, as this may damage the membranes. Apply downward pressure on the cartridge head plate to seat the rim gasket (thick circular gasket surrounding the circumference of the head plate) into the cartridge receptacle.

- Examine the cartridge lids to differentiate lids with a small orifice, a large orifice, and no orifice.
  - Lids with a small orifice are to be inserted into the draindown cartridge receptacles, outside of the backwash pool weir.
  - Lids with a large orifice are to be inserted into the hi-flo cartridge receptacles within the backwash pool weir.
  - Lids with no orifice (blank cartridge lids) and a blank headplate are to be inserted into unoccupied cartridge receptacles.
- **To install a cartridge lid, align the cartridge lid male threads with the cartridge receptacle female threads. Firmly twist the cartridge lid clockwise a minimum 110º to seat the filter cartridge snugly in place, with a proper watertight seal.**

Chapter 3

3.0 – Inspection and Maintenance Overview

The primary purpose of the Jellyfish Filter is to capture and remove pollutants from stormwater runoff. As with any filtration system, captured pollutants must be removed to maintain the filter's maximum treatment performance. Regular inspection and maintenance are required to insure proper functioning of the system.

Maintenance frequencies and requirements are site specific and vary depending on pollutant loading. Maintenance activities may be required in the event of an upstream chemical spill or due to excessive sediment loading from site erosion or extreme runoff events. It is a good practice to inspect the system after major storm events.

Inspection activities are typically conducted from surface observations and include:

- Observe if standing water is present
- Observe if there is any physical damage to the deck or cartridge lids
- Observe the amount of debris in the Maintenance Access Wall (MAW)

Maintenance activities typically include:

- Removal of oil, floatable trash and debris
- Removal of collected sediments from manhole sump
- Rinsing and re-installing the filter cartridges
- Replace filter cartridge tentacles, as needed.

It is recommended that Jellyfish Filter inspection and maintenance be performed by professionally trained individuals, with experience in stormwater maintenance and disposal services. Maintenance procedures may require manned entry into the Jellyfish structure. Only professional maintenance service providers trained in confined space entry procedures should enter the vessel. Procedures, safety and damage prevention precautions, and other information, included in these guidelines, should be reviewed and observed prior to all inspection and maintenance activities.

3.1 – Inspection

3.1.1 – Timing

Inspection of the Jellyfish Filter is key in determining the maintenance requirements for, and to develop a history of the site's pollutant loading characteristics. In general, inspections should be performed at the times indicated below; *or per the approved project stormwater quality documents (if applicable), whichever is more frequent.*

- Post-construction inspection is required prior to putting the Jellyfish Filter into service. All construction debris or construction-related sediment within the device must be removed, and any damage to system components repaired.
- A minimum of two inspections during the first year of operation to assess the sediment and floatable pollutant accumulation, and to ensure proper functioning of the system.

- Inspection frequency in subsequent years is based on the inspection and maintenance plan developed in the first year of operation. Minimum frequency should be once per year.
- Inspection is recommended after each major storm event.
- Immediately after an upstream oil, fuel or other chemical spill.

3.1.2 – Inspection Tools and Equipment

The following equipment and tools are typically required when performing a Jellyfish Filter inspection:

- Access cover lifting tool
- Sediment probe (clear hollow tube with check valve)
- Tape measure
- Flashlight
- Camera
- Inspection and maintenance log documentation
- Safety cones and caution tape
- Hard hat, safety shoes, safety glasses, and chemical-resistant gloves

3.1.3 – Inspection Procedure

The following procedure is recommended when performing inspections:

- Provide traffic control measures as necessary.
- Inspect the MAW for floatable pollutants such as trash, debris, and oil sheen.
- Measure oil and sediment depth by lowering a sediment probe through the MAW opening until contact is made with the floor of the structure. Retrieve the probe, record sediment depth, and presences of any oil layers and repeat in multiple locations within the MAW opening. **Sediment depth of 12 inches or greater indicates maintenance is required**.
- Inspect cartridge lids. Missing or damaged cartridge lids to be replaced.
- Inspect the MAW, cartridge deck, and backwash pool weir for cracks or broken components. If damaged, repair is required.
- **Dry weather inspections:** inspect the cartridge deck for standing water.
  - No standing water under normal operating condition.
  - Standing water **inside** the backwash pool, but not outside the backwash pool, this condition indicates that the filter cartridges need to be rinsed.
  - Standing water **outside** the backwash pool may indicate a backwater condition caused by high water elevation in the receiving water body, or possibly a blockage in downstream infrastructure.
- **Wet weather inspections:** observe the rate and movement of water in the unit. Note the depth of water above deck elevation within the MAW.
  - **Less than 6 inches**, flow should be exiting the cartridge lids of each of the draindown cartridges (i.e. cartridges located outside the backwash pool).
  - **Greater than 6 inches**, flow should be exiting the cartridge lids of each of the draindown cartridges and each of the hi-flo cartridges (i.e. cartridges located inside the backwash pool), and water should be overflowing the backwash pool weir.
  - **18 inches or greater** and relatively little flow is exiting the cartridge lids and outlet pipe, this condition indicates that the filter cartridges are occluded with sediment and need to be rinsed.

The depth of sediment and oil can be measured from the surface by using a sediment probe or dipstick tube equipped with a ball check valve and inserted through the Jellyfish Filter's maintenance access wall opening. The large opening provides convenient access for inspection and vacuum removal of water and pollutants.

3.2 – Maintenance

3.2.1 – Maintenance Requirements

Required maintenance for Jellyfish Filter units is based upon results of the most recent inspection, historical maintenance records, or the site specific water quality management plan; whichever is more frequent. In general, maintenance requires some combination of the following:

- **Sediment removal for depths reaching 12 inches or greater, or within 3 years of the most recent sediment cleaning, whichever occurs sooner.**
- Floatable trash, debris, and oil must be removed.
- Filter cartridges rinsed and re-installed as required by the most recent inspection results, or within 12 months of the most recent filter rinsing, whichever occurs first.
- Replace filter cartridge if rinsing does not remove accumulated sediment from the tentacles, or if tentacles are damaged or missing. It is recommended that tentacles should remain in service no longer than 5 years before replacement.
- Damaged or missing cartridge deck components must be repaired or replaced as indicated by results of the most recent inspection.
- The unit must be cleaned out and filter cartridges inspected immediately after an upstream oil, fuel, or chemical spill. Filter cartridge tentacles should be replaced if damaged by the spill.

3.2.2 – Maintenance Tools and Equipment

The following equipment and tools are typically required when performing Jellyfish Filter maintenance:

- Vacuum truck
- Ladder
- Garden hose and low pressure sprayer
- Rope or cord to lift filter cartridges from the cartridge deck to the surface
- Adjustable pliers for removing filter cartridge tentacles from cartridge head plate
- Plastic tub or garbage can for collecting effluent from rinsed filter cartridge tentacles
- Access cover lifting tool
- Sediment probe (clear hollow tube with check valve)
- Tape measure
- Flashlight
- Camera
- Inspection and maintenance log documentation
- Safety cones and caution tape
- Hard hats, safety shoes, safety glasses, chemical-resistant gloves, and hearing protection for service providers
- Proper safety equipment for confined space entry
- Replacement filter cartridge tentacles if required

3.2.3 – Maintenance Procedure

The following procedures are recommended when maintaining the Jellyfish Filter:

- Provide traffic control measures as necessary.
- Open all covers and hatches. Use ventilation equipment as required, according to confined space entry procedures.
- **Caution:** Dropping objects onto the cartridge deck may cause damage.
- Perform **Inspection Procedure** prior to maintenance activity.
- To access the cartridge deck for filter cartridge service, descend the ladder and step directly onto the deck. **Caution:** Do not step onto the maintenance access wall (MAW) or backwash pool weir, as damage may result. Note that the cartridge deck may be slippery.

3.2.4 – Filter Cartridge Rinsing Procedure

- Remove a cartridge lid.
- Remove the cartridge from the receptacle using the lifting loops in the cartridge head plate. **Caution:** Should

a snag occur, do not force the cartridge upward as damage to the tentacles may result. Rotate the cartridge with a slight sideways motion to clear the snag and continue removing the cartridge.

- Thread a rope or cord through the lifting loops and lift the filter cartridge from the cartridge deck to the top surface outside the structure.
- **Caution:** Immediately replace and secure the lid on the exposed empty receptacle as a safety precaution. Never expose more than one empty cartridge receptacle.
- Repeat the filter cartridge removal procedure until all of the cartridges are located at the top surface outside the structure.
- Disassemble the tentacles from each filter cartridge by rotating counter-clockwise. Remove the tentacles from the cartridge head plate.
- Position a receptacle in a plastic tub or garbage can such that the rinse water is captured. Using a low-pressure garden hose sprayer, direct a wide-angle water spray at a downward 45° angle onto the tentacle membrane, sweeping from top to bottom along the length of the tentacle. Rinse until all sediment is removed from the membrane. **Caution:** Do not use a high pressure sprayer or focused stream of water on the membrane. Excessive water pressure may damage the membrane. Turn membran upside down and pour out any residual rinsewater to ensure center of tentacle is clear of any sediment.

Rinsing of dirty filter cartridge tentacles with a low-pressure garden hose sprayer, and using a plastic garbage container to capture rinse water.

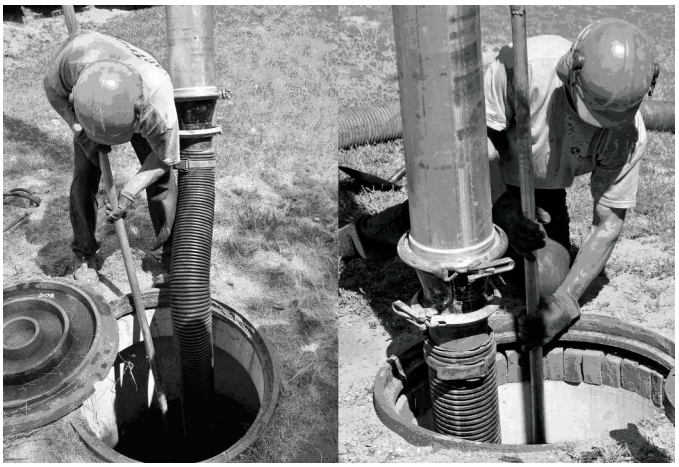
- Remove rinse water from rinse tub or garbage can using a vacuum hose as needed.
- Slip the o-ring over the tentacle nipple and reassemble onto the cartridge head plate; hand-tighten.
- If rinsing is ineffective in removing sediment from the tentacles, or if tentacles are damaged, provisions must be made to replace the spent or damaged tentacles with new tentacles. Contact Imbrium Systems to order replacement tentacles.
- Lower a rinsed filter cartridge to the cartridge deck. Remove the cartridge lid on a receptacle and carefully lower the filter cartridge into the receptacle until the head plate gasket is seated squarely on the lip of the receptacle. **Caution:** Should a snag occur when lowering the cartridge into the receptacle, do not force the cartridge downward; damage may occur. Rotate the cartridge with a slight sideways motion to clear the snag and complete the installation.
- Replace the cartridge lid on the exposed receptacle. Rinse away any accumulated grit from the receptacle threads if needed to get a proper fit. **Align the cartridge lid male threads with the cartridge receptacle female threads. Firmly twist the cartridge lid clockwise a minimum 110º to seat the filter cartridge snugly in place, with a proper watertight seal**.
- Repeat cartridge installation until all cartridges are installed.

3.2.5 – Vacuum Cleaning Procedure

- **Caution:** Perform vacuum cleaning of the Jellyfish Filter only after filter cartridges have been removed from the system. Access the lower chamber for vacuum cleaning **only through the maintenance access wall (MAW) opening**, being careful not to damage the flexible plastic separator skirt that is attached to the underside of the deck. The separator skirt surrounds the filter cartridge zone, and could be torn if contacted by the wand. **Do not lower the vacuum wand through a cartridge receptacle**, as damage to the receptacle will result.
  - To remove floatable trash, debris, and oil, lower the vacuum hose into the MAW opening and vacuum floatable pollutants off the surface of the water. Alternatively, floatable solids may be removed by a net or skimmer.
  - Using a vacuum hose, remove the water from the lower chamber to the sanitary sewer, if permitted by the local regulating authority, or into a separate containment tank.
  - Remove the sediment from the bottom of the unit through the MAW opening.
  - For larger diameter Jellyfish Filter manholes (8-ft, 10-ft, 12-ft diameter), complete sediment removal may be facilitated by removing a cartridge lid from an empty receptacle and inserting a jetting wand (not a vacuum wand) through the receptacle. Use the sprayer to rinse loosened sediment toward the vacuum hose in the MAW opening, being careful not to damage the receptacle..
  - After the unit is clean, re-fill the lower chamber with water if required by the local jurisdiction, and re-install filter cartridges.
  - Dispose of sediment, floatable trash and debris, oil, spent tentacles, and water according to local regulatory requirements.

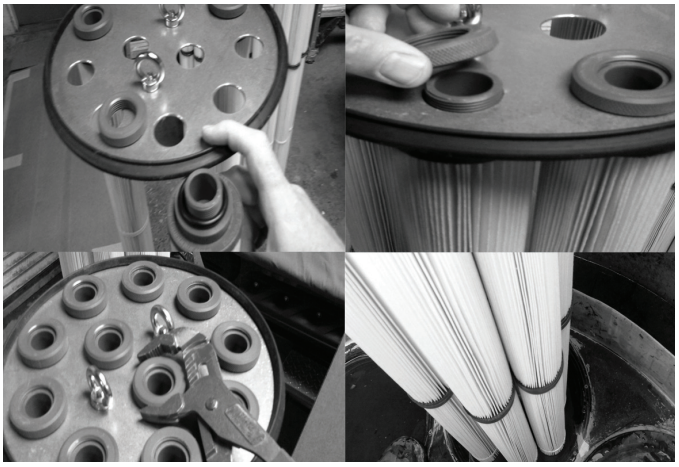
3.2.6 – Chemical Spills

- **Caution**: If a chemical spill has been captured by the Jellyfish Filter, do not attempt maintenance. Immediately contact the local hazard response agency.



A maintenance worker stationed on the surface uses a vacuum hose to evacuate water, sediment, and floatables from the Jellyfish Filter by inserting the vacuum wand through the maintenance access wall opening.

A view of a Jellyfish Filter cartridge deck from the surface showing all the cartridge lids intact and no standing water on the deck (left image), and inspection of the flexible separator skirt from inside the maintenance access wall opening (right image).



Assembly of a Jellyfish Filter cartridge (left) and installation of a filter cartridge into a cartridge receptacle in the deck (right).

3.3 – Disposal Procedures

Disposal requirements for recovered pollutants and spent filtration tentacles may vary depending on local guidelines. In most areas the sediment and spent filtration tentacles, once dewatered, can be disposed of in a sanitary landfill. It is not anticipated that the sediment would be classified as hazardous waste.

Petroleum-based pollutants captured by the Jellyfish Filter, such as oil and fuels, should be removed and disposed of by a licensed waste management company.

Although the Jellyfish Filter captures virtually all free oil, a sheen may still be present at the MAW. A rainbow or sheen can be visible at oil concentrations of less than 10 mg/L (ppm).

Chapter 4

4.0 – Recommended Safety Procedures

Jobsite safety is a topic and a practice addressed comprehensively by others. The inclusions here are merely reminders to whole areas of Safety Practice that are the responsibility of the Owner(s), Manager(s) and Contractor(s). OSHA and Canadian OSH, and Federal, State/Provincial, and Local Jurisdiction Safety Standards apply.

4.1 – Confined Space/Personal Safety Equipment/Warning and Cautions

Please see reference on Page 3.

Chapter 5

5.0 – Jellyfish Filter Replacement Parts

Jellyfish membrane filtration cartridges, cartridge components, cartridge lids, other replacement parts can be ordered by contacting Imbrium Systems at:

United States: 888-279-8826 or 301-279-8827

Canada/International: 800-565-4801 or +1-416-960-9900

info@imbriumsystems.com

5.1 – Jellyfish Filter Replacement Parts List

Note: Jellyfish Cartridges and/or Filtration tentacles are available in the following lengths:

• 15 Inch (381 mm) • 27 Inch (686 mm) • 40 Inch (1,016 mm) • 54 Inch (1,372 mm)

- Jellyfish Cartridge (specify length). Includes head plate with lifting loops, rim gasket, eleven (11) filtration tentacles, eleven (11) o-rings, and eleven (11) locking nuts
- Standard Head plate
- Blank head plate
- Rim gasket (for head plate)
- Locking nuts (for tentacles)
- O-rings (for tentacles)
- Cartridge lids are available with the following orifice sizes: 70mm, 55mm, 45mm, 35mm, 30mm, 25mm, 30mm, blank lid (no orifice)
- Maintenance Access Wall (MAW) extension (18-inch segment)

** Nothing in this catalog should be construed as an expressed warranty or implied warranties, including the warranties of merchantability and of fitness for any particular purpose.*

Jellyfish Filter Inspection and Maintenance Log

Owner: _____ Jellyfish Model No.:_____

Location: _____ GPS Coordinates: _____

Land Use: Commercial:_____ Industrial: _____ Service Station:_____

Road/Highway:____ Airport: _____ Residential: _____ Parking Lot:_____

Date/Time:						
Inspector:						
Maintenance Contractor:						
Visible Oil Present: (Y/N)						
Oil Quantity Removed						
Floatable Debris Present: (Y/N)						
Floatable Debris removed: (Y/N)						
Water Depth in Backwash Pool						
Draindown Cartridges externally rinsed and re-commissioned: (Y/N)						
New tentacles put on Cartridges: (Y/N)						
Hi-Flo cartridges externally rinsed and recommissioned (Y/N):						
New tentacles put on Hi-Flo Cartridges: (Y/N)						
Sediment Depth Measured: (Y/N)						
Sediment Depth (inches or mm):						
Sediment Removed: (Y/N)						
Cartridge Lids intact: (Y/N)						
Observed Damage:						
Comments:						

STANDARD PERFORMANCE SPECIFICATION
STORMWATER QUALITY – MEMBRANE FILTRATION TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

This section specifies requirements for selecting, sizing, and designing an underground stormwater quality membrane filtration treatment device that removes pollutants from stormwater runoff through the unit operations of sedimentation, floatation, and membrane filtration.

1.2 REFERENCE STANDARDS & PROCEDURES

ISO 14034:2016 Environmental Management – Environmental Technology Verification (ETV)

1.3 SUBMITTALS

1.3.1 All submittals, including sizing reports & shop drawings, shall be submitted upon request with each order to the contractor then forwarded to the Engineer of Record for review and acceptance. Shop drawings shall detail all OGS components, elevations, and sequence of construction.

1.3.2 Alternative devices shall have features identical to or greater than the specified device, including: filtration surface area, treatment chamber diameter, treatment chamber wet volume, sediment storage volume, and oil storage volume.

1.3.3 Unless directed otherwise by the Engineer of Record, filtration treatment device product substitutions or alternatives submitted within ten days prior to project bid shall not be accepted. All alternatives or substitutions submitted shall be signed and sealed by a local registered Professional Engineer, based on the exact same criteria detailed in Section 3, in entirety, subject to review and approval by the Engineer of Record.

PART 2 – PRODUCTS

2.1 GENERAL

2.1.1 Maintenance Access to Captured Pollutants The filter device shall contain an opening(s) that provides maintenance access for removal of accumulated floatable pollutants and sediment, removal of and replacement of filter cartridges, cleaning of the sump, and rinsing of the internal components. Access shall have a minimum clear vertical clear space over all of the filter cartridges. Filter cartridges shall be able to be lifted straight vertically out of their installed placement for the entire length of the cartridge.

2.1.2 Pollutant Storage: The Filter device shall include a sump for sediment storage, and a protected volume for the capture and storage of petroleum hydrocarbons and buoyant gross pollutants.

PART 3 – PERFORMANCE

3.1 GENERAL

3.1.1 Verification – The stormwater quality filter treatment device shall have been field tested in accordance with either TARP Tier II Protocol (TARP, 2003) and New Jersey Tier II Stormwater Test Requirements – Amendments to TARP Tier II Protocol (NJDEP, 2009) or Washington State Technology Assessment Protocol – Ecology (TAPE), 2011 or later version. The field test shall have been verified in accordance with ISO 14034:2016 Environmental Management – Environmental Technology Verification (ETV). See Section 3.2 of this specification for field test performance requirements.

3.2 FIELD TEST PERFORMANCE

The field test (as specified in section 3.1.1)shall have monitored a minimum of twenty (20) TARP or TAPE qualifying storm events, and report at **minimum** the following results:

3.2.1 Suspended Solids Removal - The stormwater quality filter treatment device shall have ISO 14034 ETV verified load based median TSS removal efficiency of at least 85% and load based median SSC removal efficiency of at least 98%.

3.2.2 Runoff Volume – The stormwater quality filter treatment device shall be engineered, designed, and sized to treat a minimum of 90 percent of the annual runoff volume determined from use of a minimum 15-year rainfall data set.

3.2.3 Fine Particle Removal - The stormwater quality filter treatment device shall have demonstrated the ability to capture fine particles as indicated by a minimum median removal efficiency of 75% for the particle fraction less than 25 microns, and an effluent d_{50} of 15 microns or lower for all monitored storm events.

3.2.4 Turbidity Reduction - The stormwater quality filter treatment device shall have demonstrated the ability to reduce turbidity such that effluent turbidity is 15 NTU or lower.

3.2.5 Nutrients & Metals – The stormwater quality filter treatment device shall have ISO 14034 ETV Verified minimum load based removal efficiencies for the following:

3.2.5.1 Total Phosphorus (TP) Removal - Median TP removal efficiency of at least 49%.

3.2.5.2 Total Nitrogen (TN) Removal - Median TN removal efficiency of at least 39%.

3.2.5.3 Total Zinc (Zn) Removal - Median Zn removal efficiency of at least 69%.

3.2.5.4 Total Copper (Cu) Removal - Median Cu removal efficiency of at least 91%.

END OF SECTION

STANDARD OFFLINE
Jellyfish Filter Sizing Report

Project Information

Date	Monday, November 10, 2025
Project Name	580 Hazelhurst
Project Number	
Location	Ottawa

Jellyfish Filter Design Overview

This report provides information for the sizing and specification of the Jellyfish Filter. When designed properly in accordance to the guidelines detailed in the Jellyfish Filter Technical Manual, the Jellyfish Filter will exceed the performance and longevity of conventional horizontal bed and granular media filters.

Please see ***www.ImbriumSystems.com*** *for more information.*

Jellyfish Filter System Recommendation

The Jellyfish Filter model JF6-4-1 is recommended to meet the water quality objective by treating a flow of 22.7 L/s, which meets or exceeds 90% of the average annual rainfall runoff volume based on 42 years of OTTAWA CDA rainfall data for this site. This model has a sediment capacity of 256 kg, which meets or exceeds the estimated average annual sediment load.

Jellyfish Model	Number of High-Flo Cartridges	Number of Draindown Cartridges	Manhole Diameter (m)	Treatment Flow Rate (L/s)	Sediment Capacity (kg)
JF6-4-1	4	1	1.8	22.7	256

The Jellyfish Filter System

The patented Jellyfish Filter is an engineered stormwater quality treatment technology featuring unique membrane filtration in a compact stand-alone treatment system that removes a high level and wide variety of stormwater pollutants. Exceptional pollutant removal is achieved at high treatment flow rates with minimal head loss and low maintenance costs. Each lightweight Jellyfish Filter cartridge contains an extraordinarily large amount of membrane surface area, resulting in superior flow capacity and pollutant removal capacity.

Maintenance

Regular scheduled inspections and maintenance is necessary to assure proper functioning of the Jellyfish Filter. The maintenance interval is designed to be a minimum of 12 months, but this will vary depending on site loading conditions and upstream pretreatment measures. Quarterly inspections and inspections after all storms beyond the 5-year event are recommended until enough historical performance data has been logged to comfortably initiate an alternative inspection interval.

Please see ***www.ImbriumSystems.com*** *for more information.*

Thank you for the opportunity to present this information to you and your client.

Performance

Jellyfish efficiently captures a high level of Stormwater pollutants, including:

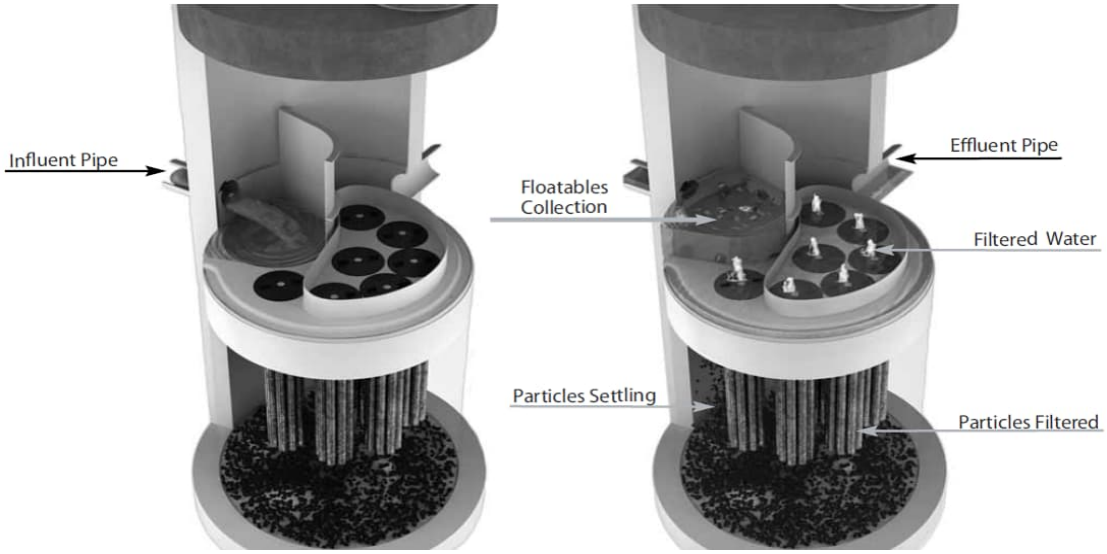
- ☑ 89% of the total suspended solids (TSS) load, including particles less than 5 microns
- ☑ 77% TP removal & 51% TN removal
- ☑ 90% Total Copper, 81% Total Lead, 70% Total Zinc
- ☑ Particulate-bound pollutants such as nutrients, toxic metals, hydrocarbons and bacteria
- ☑ Free oil, Floatable trash and debris

Field Proven Peformance

The Jellyfish filter has been field-tested on an urban site with 25 TAPE qualifying rain events and field monitored according to the TAPE field test protocol, demonstrating:

- A median TSS removal efficiency of 90%, and a median SSC removal of 99%;
- The ability to capture fine particles as indicated by an effluent d50 median of 3 microns for all monitotred storm events, and a median effluent turbidity of 5 NTUs;
- A median Total Phosphorus removal of 77%, and a median Total Nitrogen removal of 51%.

Jellyfish Filter Treatment Functions



Pre-treatment and Membrane Filtration

Jellyfish® Filter

Project Information

Date:	Monday, November 10, 2025
Project Name:	580 Hazelhurst
Project Number:	
Location:	Ottawa

Designer Information

Company:	Michael Basciano
Contact:	Envision Consultants
Phone #:	905-677-0202

Notes

Rainfall

Name:	OTTAWA CDA
State:	ON
ID:	5976
Record:	1960 to 2001
Co-ords:	45°23'N, 75°43'W

Drainage Area

Total Area:	1.37 ha
Imperviousness:	60%

Upstream Detention

Peak Release Rate:	n/a
Pretreatment Credit:	n/a

Design System Requirements

Flow Loading	90% of the Average Annual Runoff based on 42 years of OTTAWA CDA rainfall data:	**19.6 L/s**
Sediment Loading	Treating 90% of the average annual runoff volume, 3380 m³, with a suspended sediment concentration of 60 mg/L.	**203 kg**

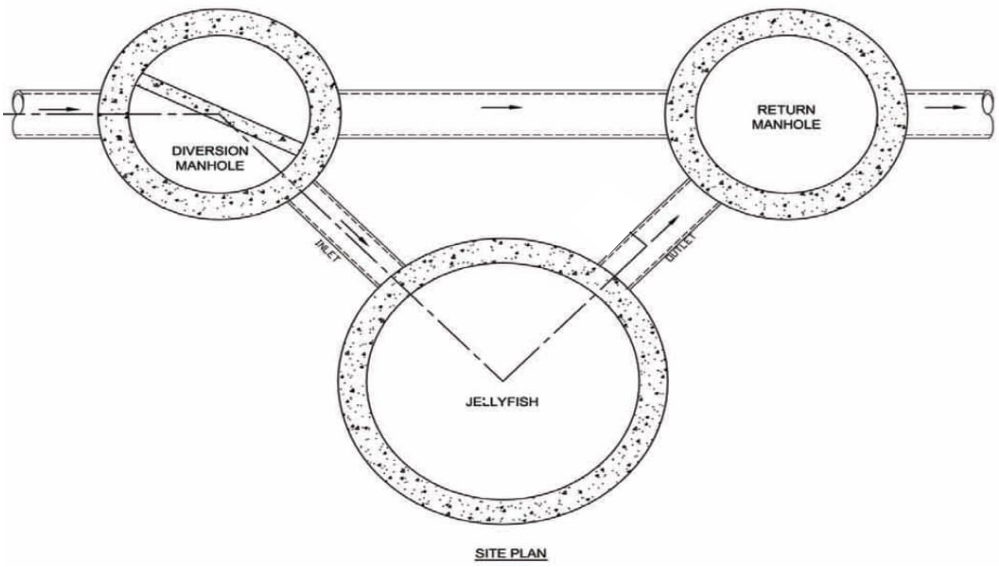
Recommendation

The Jellyfish Filter model JF6-4-1 is recommended to meet the water quality objective by treating a flow of 22.7 L/s, which meets or exceeds 90% of the average annual rainfall runoff volume based on 42 years of OTTAWA CDA rainfall data for this site. This model has a sediment capacity of 256 kg, which meets or exceeds the estimated average annual sediment load.

Jellyfish Model	Number of High-Flo Cartridges	Number of Draindown Cartridges	Manhole Diameter (m)	Wet Vol Below Deck (L)	Sump Storage (m³)	Oil Capacity (L)	Treatment Flow Rate (L/s)	Sediment Capacity (kg)
JF4-1-1	1	1	1.2	2313	0.34	379	7.6	85
JF4-2-1	2	1	1.2	2313	0.34	379	12.6	142
JF6-3-1	3	1	1.8	5205	0.79	848	17.7	199
JF6-4-1	**4**	**1**	**1.8**	**5205**	**0.79**	**848**	**22.7**	**256**
JF6-5-1	5	1	1.8	5205	0.79	848	27.8	313
JF6-6-1	6	1	1.8	5205	0.79	848	28.6	370
JF8-6-2	6	2	2.4	9252	1.42	1469	35.3	398
JF8-7-2	7	2	2.4	9252	1.42	1469	40.4	455
JF8-8-2	8	2	2.4	9252	1.42	1469	45.4	512
JF8-9-2	9	2	2.4	9252	1.42	1469	50.5	569
JF8-10-2	10	2	2.4	9252	1.42	1469	50.5	626
JF10-11-3	11	3	3.0	14456	2.21	2302	63.1	711
JF10-12-3	12	3	3.0	14456	2.21	2302	68.2	768
JF10-12-4	12	4	3.0	14456	2.21	2302	70.7	796
JF10-13-4	13	4	3.0	14456	2.21	2302	75.7	853
JF10-14-4	14	4	3.0	14456	2.21	2302	78.9	910
JF10-15-4	15	4	3.0	14456	2.21	2302	78.9	967
JF10-16-4	16	4	3.0	14456	2.21	2302	78.9	1024
JF10-17-4	17	4	3.0	14456	2.21	2302	78.9	1081
JF10-18-4	18	4	3.0	14456	2.21	2302	78.9	1138
JF10-19-4	19	4	3.0	14456	2.21	2302	78.9	1195
JF12-20-5	20	5	3.6	20820	3.2	2771	113.6	1280
JF12-21-5	21	5	3.6	20820	3.2	2771	113.7	1337
JF12-22-5	22	5	3.6	20820	3.2	2771	113.7	1394
JF12-23-5	23	5	3.6	20820	3.2	2771	113.7	1451
JF12-24-5	24	5	3.6	20820	3.2	2771	113.7	1508
JF12-25-5	25	5	3.6	20820	3.2	2771	113.7	1565
JF12-26-5	26	5	3.6	20820	3.2	2771	113.7	1622
JF12-27-5	27	5	3.6	20820	3.2	2771	113.7	1679

Jellyfish Filter Design Notes

- Typically the Jellyfish Filter is designed in an offline configuration, as all stormwater filter systems will perform for a longer duration between required maintenance services when designed and applied in off-line configurations. Depending on the design parameters, an optional internal bypass may be incorporated into the Jellyfish Filter, however note the inspection and maintenance frequency should be expected to increase above that of an off-line system. Speak to your local representative for more information.



Jellyfish Filter Typical Layout

- Typically, 18 inches (457 mm) of driving head is designed into the system, calculated as the difference in elevation between the top of the diversion structure weir and the invert of the Jellyfish Filter outlet pipe. Alternative driving head values can be designed as 12 to 24 inches (305 to 610mm) depending on specific site requirements, requiring additional sizing and design assistance.
- Typically, the Jellyfish Filter is designed with the inlet pipe configured 6 inches (150 mm) above the outlet invert elevation. However, depending on site parameters this can vary to an optional configuration of the inlet pipe entering the unit below the outlet invert elevation.
- The Jellyfish Filter can accommodate multiple inlet pipes within certain restrictions.
- While the optional inlet below deck configuration offers 0 to 360 degree flexibility between the inlet and outlet pipe, typical systems conform to the following:

Model Diameter (m)	Minimum Angle Inlet / Outlet Pipes	Minimum Inlet Pipe Diameter (mm)	Minimum Outlet Pipe Diameter (mm)
1.2	62º	150	200
1.8	**59º**	**200**	**250**
2.4	52º	250	300
3.0	48º	300	450
3.6	40º	300	450

- The Jellyfish Filter can be built at all depths of cover generally associated with conventional stormwater conveyance systems. For sites that require minimal depth of cover for the stormwater infrastructure, the Jellyfish Filter can be applied in a shallow application using a hatch cover. The general minimum depth of cover is 36 inches (915 mm) from top of the underslab to outlet invert.
- If driving head caclulations account for water elevation during submerged conditions the Jellyfish Filter will function effectively under submerged condtions.
- Jellyfish Filter systems may incorporate grated inlets depending on system configuration.
- For sites with water quality treatment flow rates or mass loadings that exceed the design flow rate of the largest standard Jellyfish Filter manhole models, systems can be designed that hydraulically connect multiple Jellyfish Filters in series or alternatively Jellyfish Vault units can be designed.

STANDARD SPECIFICATION
STORMWATER QUALITY – MEMBRANE FILTRATION TREATMENT DEVICE

PART 1 – GENERAL

1.1 WORK INCLUDED

Specifies requirements for construction and performance of an underground stormwater quality membrane filtration treatment device that removes pollutants from stormwater runoff through the unit operations of sedimentation, floatation, and membrane filtration.

1.2 REFERENCE STANDARDS

ASTM C 891: Specification for Installation of Underground Precast Concrete Utility Structures
ASTM C 478: Specification for Precast Reinforced Concrete Manhole Sections
ASTM C 443: Specification for Joints for Concrete Pipe and Manholes, Using Rubber Gaskets
ASTM D 4101: Specification for Copolymer steps construction

CAN/CSA-A257.4-M92
Joints for Circular Concrete Sewer and Culvert Pipe, Manhole Sections and Fittings Using Rubber Gaskets

CAN/CSA-A257.4-M92
Precast Reinforced Circular Concrete Manhole Sections, Catch Basins and Fittings

Canadian Highway Bridge Design Code

1.3 SHOP DRAWINGS

Shop drawings for the structure and performance are to be submitted with each order to the contractor. Contractor shall forward shop drawing submittal to the consulting engineer for approval. Shop drawings are to detail the structure's precast concrete and call out or note the fiberglass (FRP) internals/components.

1.4 PRODUCT SUBSTITUTIONS

No product substitutions shall be accepted unless submitted 10 days prior to project bid date, or as directed by the engineer of record. Submissions for substitutions require review and approval by the Engineer of Record, for hydraulic performance, impact to project designs, equivalent treatment performance, and any required project plan and report (hydrology/hydraulic, water quality, stormwater pollution) modifications that would be required by the approving jurisdictions/agencies. Contractor to coordinate with the Engineer of Record any applicable modifications to the project estimates of cost, bonding amount determinations, plan check fees for changes to approved documents, and/or any other regulatory requirements resulting from the product substitution.

1.5 HANDLING AND STORAGE

Prevent damage to materials during storage and handling.

PART 2 – PRODUCTS

2.1 GENERAL

2.1.1 The device shall be a cylindrical or rectangular, all concrete structure (including risers), constructed from precast concrete riser and slab components or monolithic precast structure(s), installed to conform to ASTM C 891 and to any required state highway, municipal or local specifications; whichever is more stringent. The device shall be watertight.

2.1.2 Cartridge Deck The cylindrical concrete device shall include a fiberglass deck. The rectangular concrete device shall include a coated aluminum deck. In either instance, the insert shall be bolted and sealed watertight inside the precast concrete chamber. The deck shall serve as: (a) a horizontal divider between the lower treatment zone and the upper treated effluent zone; (b) a deck for attachment of filter cartridges such that the membrane filter elements of each cartridge extend into the lower treatment zone; (c) a platform for maintenance workers to service the filter cartridges (maximum manned weight = 450 pounds (204 kg)); (d) a conduit for conveyance of treated water to the effluent pipe.

2.1.3 Membrane Filter Cartridges Filter cartridges shall be comprised of reusable cylindrical membrane filter elements connected to a perforated head plate. The number of membrane filter elements per cartridge shall be a minimum of eleven 2.75-inch (70-mm) diameter elements. The length of each filter element shall be a minimum 15 inches (381 mm). Each cartridge shall be fitted into the cartridge deck by insertion into a cartridge receptacle that is permanently mounted into the cartridge deck. Each cartridge shall be secured by a cartridge lid that is threaded onto the receptacle, or similar mechanism to secure the cartridge into the deck. The maximum treatment flow rate of a filter cartridge shall be controlled by an orifice in the cartridge lid, or on the individual cartridge itself, and based on a design flux rate (surface loading rate) determined by the maximum treatment flow rate per unit of filtration membrane surface area. The maximum design flux rate shall be 0.21 gpm/ft² (0.142 lps/m²).

Each membrane filter cartridge shall allow for manual installation and removal. Each filter cartridge shall have filtration membrane surface area and dry installation weight as follows (if length of filter cartridge is between those listed below, the surface area and weight shall be proportionate to the next length shorter and next length longer as shown below):

Filter Cartridge Length (in / mm)	Minimum Filtration Membrane Surface Area (ft2 / m2)	Maximum Filter Cartridge Dry Weight (lbs / kg)
15	106 / 9.8	10.5 / 4.8
27	190 / 17.7	15.0 / 6.8
40	282 / 26.2	20.5 / 9.3
54	381 / 35.4	25.5 / 11.6

2.1.4 Backwashing Cartridges The filter device shall have a weir extending above the cartridge deck, or other mechanism, that encloses the high flow rate filter cartridges when placed in their respective cartridge receptacles within the cartridge deck. The weir, or other mechanism, shall collect a pool of filtered water during inflow events that backwashes the high flow rate cartridges when the inflow

event subsides. All filter cartridges and membranes shall be reusable and allow for the use of filtration membrane rinsing procedures to restore flow capacity and sediment capacity; extending cartridge service life.

2.1.5 Maintenance Access to Captured Pollutants The filter device shall contain an opening(s) that provides maintenance access for removal of accumulated floatable pollutants and sediment, removal of and replacement of filter cartridges, cleaning of the sump, and rinsing of the deck. Access shall have a minimum clear vertical clear space over all of the filter cartridges. Filter cartridges shall be able to be lifted straight vertically out of the receptacles and deck for the entire length of the cartridge.

2.1.6 Bend Structure The device shall be able to be used as a bend structure with minimum angles between inlet and outlet pipes of 90-degrees or less in the stormwater conveyance system.

2.1.7 Double-Wall Containment of Hydrocarbons The cylindrical precast concrete device shall provide double-wall containment for hydrocarbon spill capture by a combined means of an inner wall of fiberglass, to a minimum depth of 12 inches (305 mm) below the cartridge deck, and the precast vessel wall.

2.1.8 Baffle The filter device shall provide a baffle that extends from the underside of the cartridge deck to a minimum length equal to the length of the membrane filter elements. The baffle shall serve to protect the membrane filter elements from contamination by floatables and coarse sediment. The baffle shall be flexible and continuous in cylindrical configurations, and shall be a straight concrete or aluminum wall in rectangular configurations.

2.1.9 Sump The device shall include a minimum 24 inches (610 mm) of sump below the bottom of the cartridges for sediment accumulation, unless otherwise specified by the design engineer. Depths less than 24 inches may have an impact on the total performance and/or longevity between cartridge maintenance/replacement of the device.

2.2 PRECAST CONCRETE SECTIONS

All precast concrete components shall be manufactured to a minimum live load of HS-20 truck loading or greater based on local regulatory specifications, unless otherwise modified or specified by the design engineer, and shall be watertight.

2.3 JOINTS All precast concrete manhole configuration joints shall use nitrile rubber gaskets and shall meet the requirements of ASTM C443, Specification C1619, Class D or engineer approved equal to ensure oil resistance. Mastic sealants or butyl tape are not an acceptable alternative.

2.4 GASKETS Only profile neoprene or nitrile rubber gaskets in accordance to CSA A257.3-M92 will be accepted. Mastic sealants, butyl tape or Conseal CS-101 are not acceptable gasket materials.

2.5 FRAME AND COVER Frame and covers must be manufactured from cast-iron or other composite material tested to withstand H-20 or greater design loads, and as approved by the

local regulatory body. Frames and covers must be embossed with the name of the device manufacturer or the device brand name.

2.6 DOORS AND HATCHES If provided shall meet designated loading requirements or at a minimum for incidental vehicular traffic.

2.7 CONCRETE All concrete components shall be manufactured according to local specifications and shall meet the requirements of ASTM C 478.

2.8 FIBERGLASS The fiberglass portion of the filter device shall be constructed in accordance with the following standard: ASTM D-4097: Contact Molded Glass Fiber Reinforced Chemical Resistant Tanks.

2.9 STEPS Steps shall be constructed according to ASTM D4101 of copolymer polypropylene, and be driven into preformed or pre-drilled holes after the concrete has cured, installed to conform to applicable sections of state, provincial and municipal building codes, highway, municipal or local specifications for the construction of such devices.

2.10 INSPECTION All precast concrete sections shall be inspected to ensure that dimensions, appearance and quality of the product meet local municipal specifications and ASTM C 478.

PART 3 – PERFORMANCE

3.1 GENERAL

3.1.1 Verification – The stormwater quality filter must be verified in accordance with ISO 14034:2016 Environmental management – Environmental technology verification (ETV).

3.1.2 Function - The stormwater quality filter treatment device shall function to remove pollutants by the following unit treatment processes; sedimentation, floatation, and membrane filtration.

3.1.3 Pollutants - The stormwater quality filter treatment device shall remove oil, debris, trash, coarse and fine particulates, particulate-bound pollutants, metals and nutrients from stormwater during runoff events.

3.1.4 Bypass - The stormwater quality filter treatment device shall typically utilize an external bypass to divert excessive flows. Internal bypass systems shall be equipped with a floatables baffle, and must avoid passage through the sump and/or cartridge filtration zone.

3.1.5 Treatment Flux Rate (Surface Loading Rate) – The stormwater quality filter treatment device shall treat 100% of the required water quality treatment flow based on a maximum design treatment flux rate (surface loading rate) across the membrane filter cartridges of 0.21 gpm/ft² (0.142 lps/m²).

3.2 FIELD TEST PERFORMANCE

At a minimum, the stormwater quality filter device shall have been field tested and verified with a minimum 25 TARP qualifying storm events and field monitoring shall have been conducted according to the TARP 2009 NJDEP TARP field test protocol, and have received NJCAT verification.

3.2.1 Suspended Solids Removal - The stormwater quality filter treatment device shall have demonstrated a minimum median TSS removal efficiency of 85% and a minimum median SSC removal efficiency of 95%.

3.2.2 Runoff Volume – The stormwater quality filter treatment device shall be engineered, designed, and sized to treat a minimum of 90 percent of the annual runoff volume determined from use of a minimum 15-year rainfall data set.

3.2.3 Fine Particle Removal - The stormwater quality filter treatment device shall have demonstrated the ability to capture fine particles as indicated by a minimum median removal efficiency of 75% for the particle fraction less than 25 microns, an effluent d_{50} of 15 microns or lower for all monitored storm events.

3.2.4 Turbidity Reduction - The stormwater quality filter treatment device shall have demonstrated the ability to reduce the turbidity from influent from a range of 5 to 171 NTU to an effluent turbidity of 15 NTU or lower.

3.2.5 Nutrient (Total Phosphorus & Total Nitrogen) Removal - The stormwater quality filter treatment device shall have demonstrated a minimum median Total Phosphorus removal of 55%, and a minimum median Total Nitrogen removal of 50%.

3.2.6 Metals (Total Zinc & Total Copper) Removal - The stormwater quality filter treatment device shall have demonstrated a minimum median Total Zinc removal of 55%, and a minimum median Total Copper removal of 85%.

3.3 INSPECTION and MAINTENANCE

The stormwater quality filter device shall have the following features:

3.3.1 Durability of membranes are subject to good handling practices during inspection and maintenance (removal, rinsing, and reinsertion) events, and site specific conditions that may have heavier or lighter loading onto the cartridges, and pollutant variability that may impact the membrane structural integrity. Membrane maintenance and replacement shall be in accordance with manufacturer's recommendations.

3.3.2 Inspection which includes trash and floatables collection, sediment depth determination, and visible determination of backwash pool depth shall be easily conducted from grade (outside the structure).

3.3.3 Manual rinsing of the reusable filter cartridges shall promote restoration of the flow capacity and sediment capacity of the filter cartridges, extending cartridge service life.

3.3.4 The filter device shall have a minimum 12 inches (305 mm) of sediment storage depth, and a minimum of 12 inches between the top of the sediment storage and bottom of the filter cartridge tentacles, unless otherwise specified by the design engineer. Variances may have an impact on the total performance and/or longevity between cartridge maintenance/replacement of the device.

3.3.5 Sediment removal from the filter treatment device shall be able to be conducted using a standard maintenance truck and vacuum apparatus, and a minimum one point of entry to the sump that is unobstructed by filter cartridges.

3.3.6 Maintenance access shall have a minimum clear height that provides suitable vertical clear space over all of the filter cartridges. Filter cartridges shall be able to be lifted straight vertically out of the receptacles and deck for the entire length of the cartridge.

3.3.7 Filter cartridges shall be able to be maintained without the requirement of additional lifting equipment.

PART 4 – EXECUTION

4.1 INSTALLATION

4.1.1 PRECAST DEVICE CONSTRUCTION SEQUENCE

The installation of a watertight precast concrete device should conform to ASTM C 891 and to any state highway, municipal or local specifications for the construction of manholes, whichever is more stringent. Selected sections of a general specification that are applicable are summarized below.

4.1.1.1 The watertight precast concrete device is installed in sections in the following sequence:

- aggregate base
- base slab
- treatment chamber and cartridge deck riser section(s)
- bypass section
- connect inlet and outlet pipes
- concrete riser section(s) and/or transition slab (if required)
- maintenance riser section(s) (if required)
- frame and access cover

4.1.2 The precast base should be placed level at the specified grade. The entire base should be in contact with the underlying compacted granular material. Subsequent sections, complete with joint seals, should be installed in accordance with the precast concrete manufacturer's recommendations.

4.1.3 Adjustment of the stormwater quality treatment device can be performed by lifting the upper sections free of the excavated area, re-leveling the base, and re-installing the sections. Damaged sections and gaskets should be repaired or replaced as necessary to restore original condition and watertight seals. Once the stormwater quality treatment device has been constructed, any/all lift holes must be plugged watertight with mortar or non-shrink grout.

4.1.4 Inlet and Outlet Pipes Inlet and outlet pipes should be securely set into the device using approved pipe seals (flexible boot connections, where applicable) so that the structure is watertight, and such that any pipe intrusion into the device does not impact the device functionality.

4.1.5 Frame and Cover Installation Adjustment units (e.g. grade rings) should be installed to set the frame and cover at the required elevation. The adjustment units should be laid in a full bed of mortar with successive units being joined using sealant recommended by the manufacturer. Frames for the cover should be set in a full bed of mortar at the elevation specified.

4.2 MAINTENANCE ACCESS WALL
In some instances the Maintenance Access Wall, if provided, shall require an extension attachment and sealing to the precast wall and cartridge deck at the job site, rather than at the precast facility. In this instance, installation of these components shall be performed according to instructions provided by the manufacturer.

4.3 FILTER CARTRIDGE INSTALLATION Filter cartridges shall be installed in the cartridge deck only after the construction site is fully stabilized and in accordance with the manufacturer's guidelines and recommendations. Contractor to contact the manufacturer to schedule cartridge delivery and review procedures/requirements to be completed to the device prior to installation of the cartridges and activation of the system.

PART 5 – QUALITY ASSURANCE

5.1 FILTER CARTRIDGE INSTALLATION Manufacturer shall coordinate delivery of filter cartridges and other internal components with contractor. Filter cartridges shall be delivered and installed complete after site is stabilized and unit is ready to accept cartridges. Unit is ready to accept cartridges after is has been cleaned out and any standing water, debris, and other materials have been removed. Contractor shall take appropriate action to protect the filter cartridge receptacles and filter cartridges from damage during construction, and in accordance with the manufacturer's recommendations and guidance. For systems with cartridges installed prior to full site stabilization and prior to system activation, the contractor can plug inlet and outlet pipes to prevent stormwater and other influent from entering the device. Plugs must be removed during the activation process.

5.2 INSPECTION AND MAINTENANCE

5.2.1 The manufacturer shall provide an Owner's Manual upon request.

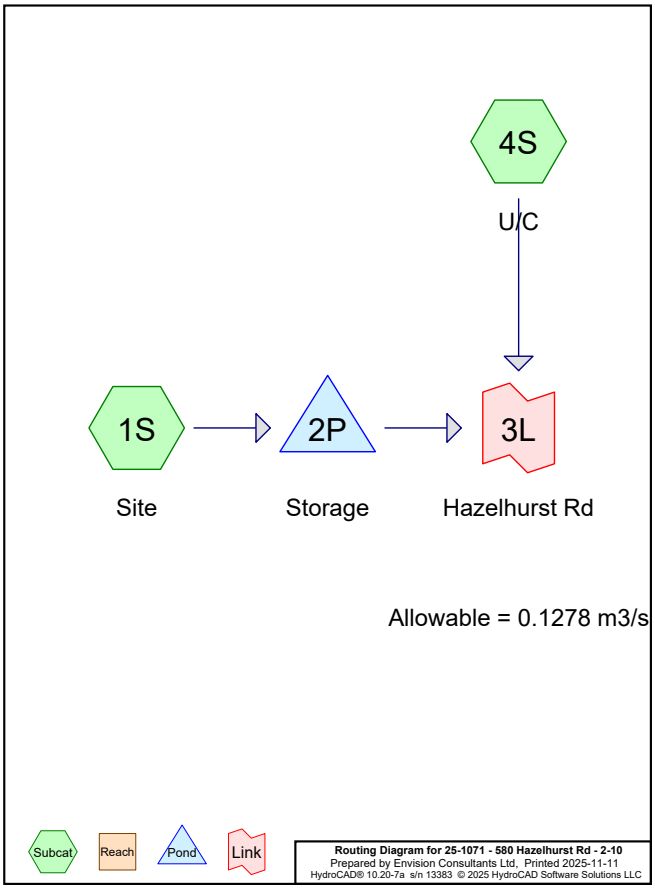
5.2.2 After construction and installation, and during operation, the device shall be inspected and cleaned as necessary based on the manufacturer's recommended inspection and maintenance guidelines and the local regulatory agency/body.

5.3 REPLACEMENT FILTER CARTRIDGES When replacement membrane filter elements and/or other parts are required, only membrane filter elements and parts approved by the manufacturer for use with the stormwater quality filter device shall be installed.

END OF SECTION

APPENDIX C:

Hydrologic Model Output



Area Listing (all nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
6,497.0	0.60	Gravel (1S)
3,621.0	0.90	Impervious At-Grade (1S)
3,171.0	0.90	Roof Area (1S)
915.0	0.25	Softscape (4S)
1,041.0	0.25	Softscape At-Grade (1S)
15,245.0	**0.69**	**TOTAL AREA**

Time span=0.00-4.00 hrs, dt=0.01 hrs, 401 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Site Runoff Area=14,330.0 m² 0.00% Impervious Runoff Depth=15 mm
Tc=15.0 min C=0.72 Runoff=0.0992 m³/s 208.3 m³

Subcatchment4S: U/C Runoff Area=915.0 m² 0.00% Impervious Runoff Depth=5 mm
Tc=15.0 min C=0.25 Runoff=0.0022 m³/s 4.6 m³

Pond 2P: Storage Peak Elev=0.335 m Storage=144.5 m³ Inflow=0.0992 m³/s 208.3 m³
Outflow=0.0572 m³/s 195.7 m³

Link 3L: Hazelhurst Rd Inflow=0.0586 m³/s 200.3 m³
Primary=0.0586 m³/s 200.3 m³

Total Runoff Area = 15,245.0 m² Runoff Volume = 212.9 m³ Average Runoff Depth = 14 mm
100.00% Pervious = 15,245.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 1S: Site

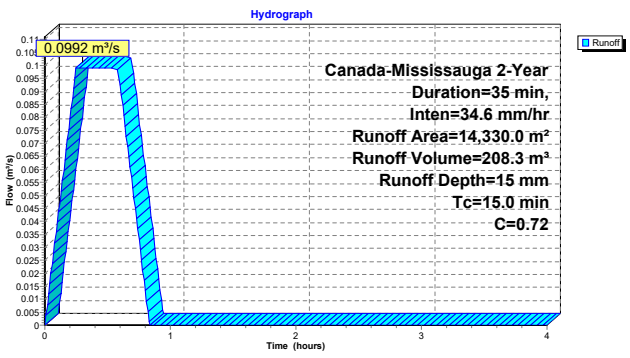
Runoff = 0.0992 m³/s @ 0.25 hrs, Volume= 208.3 m³, Depth= 15 mm
Routed to Pond 2P : Storage

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 2-Year Duration=35 min, Inten=34.6 mm/hr

Area (m²)	C	Description
3,171.0	0.90	Roof Area
3,621.0	0.90	Impervious At-Grade
6,497.0	0.60	Gravel
1,041.0	0.25	Softscape At-Grade
14,330.0	0.72	Weighted Average
14,330.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 1S: Site



Hydrograph for Subcatchment 1S: Site

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0079	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0159	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0238	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0317	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0397	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0476	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0555	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0635	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0714	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0793	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0873	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0952**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0992**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0992	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0992	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0992	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0992	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0992	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0992	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0992	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0992	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0992	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0992	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0992	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0992	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0992	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0992	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0992	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0992	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0926	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0846	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0767	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0688	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0608	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0529	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0450	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0370	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0291	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0212	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0132	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0053	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Subcatchment 4S: U/C

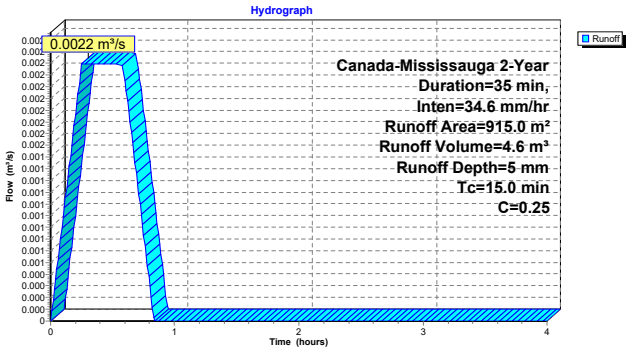
Runoff = 0.0022 m³/s @ 0.25 hrs, Volume= 4.6 m³, Depth= 5 mm
Routed to Link 3L : Hazelhurst Rd

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 2-Year Duration=35 min, Inten=34.6 mm/hr

Area (m²)	C	Description
915.0	0.25	Softscape
915.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 4S: U/C



Hydrograph for Subcatchment 4S: U/C

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0002	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0004	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0005	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0007	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0009	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0011	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0012	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0014	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0016	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0018	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0019	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0021**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0022**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0022	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0022	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0022	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0022	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0022	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0022	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0022	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0022	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0022	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0022	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0022	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0022	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0022	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0022	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0022	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0022	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0021	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0019	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0017	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0015	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0013	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0012	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0010	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0008	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0006	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0005	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0003	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0001	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Pond 2P: Storage

Inflow Area = 14,330.0 m², 0.00% Impervious, Inflow Depth = 15 mm for 2-Year event
Inflow = 0.0992 m³/s @ 0.25 hrs, Volume= 208.3 m³
Outflow = 0.0572 m³/s @ 0.69 hrs, Volume= 195.7 m³, Atten= 42%, Lag= 26.3 min
Primary = 0.0572 m³/s @ 0.69 hrs, Volume= 195.7 m³
Routed to Link 3L : Hazelhurst Rd

Routing by Stor-Ind method, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Starting Elev= 0.040 m Surf.Area= 432.0 m² Storage= 17.3 m³
Peak Elev= 0.335 m @ 0.69 hrs Surf.Area= 432.0 m² Storage= 144.5 m³ (127.3 m³ above start)

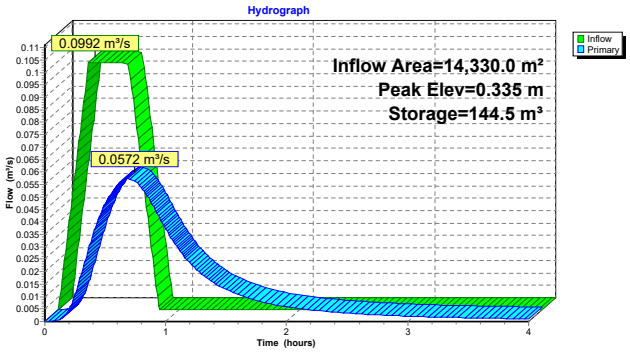
Plug-Flow detention time= 44.3 min calculated for 178.0 m³ (85% of inflow)
Center-of-Mass det. time= 37.7 min (62.7 - 25.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	436.3 m³	**1.00 mW x 450.00 mL x 1.01 mH Prismatoid**x 0.96

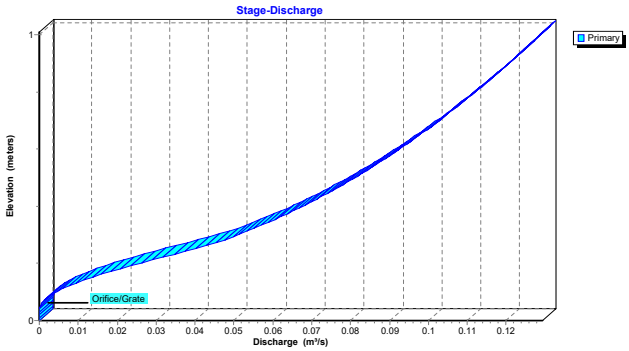
Device	Routing	Invert	Outlet Devices
#1	Primary	0.040 m	**260 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.0572 m³/s @ 0.69 hrs HW=0.335 m (Free Discharge)
↑—1=Orifice/Grate (Orifice Controls 0.0572 m³/s @ 1.08 m/s)

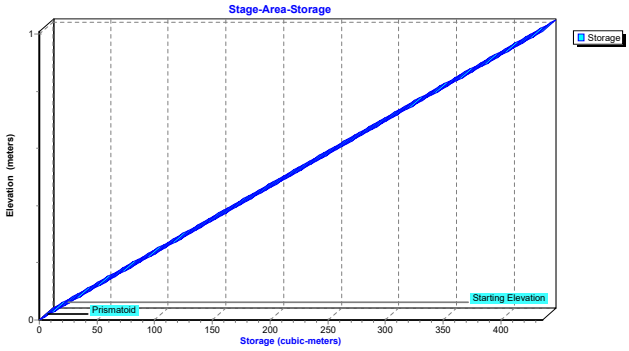
Pond 2P: Storage



Pond 2P: Storage



Pond 2P: Storage



Hydrograph for Pond 2P: Storage

Time (hours)	Inflow (m³/s)	Storage (cubic-meters)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	17.3	0.040	0.0000
0.10	0.0397	24.4	0.056	0.0004
0.20	**0.0793**	45.1	0.104	0.0049
0.30	**0.0992**	75.0	0.174	0.0189
0.40	0.0992	100.9	0.234	0.0351
0.50	0.0992	121.6	0.281	0.0475
0.60	0.0926	**138.6**	**0.321**	**0.0548**
0.70	0.0529	**144.5**	**0.334**	**0.0572**
0.80	0.0132	136.2	0.315	0.0538
0.90	0.0000	119.0	0.275	0.0461
1.00	0.0000	104.0	0.241	0.0371
1.10	0.0000	92.1	0.213	0.0294
1.20	0.0000	82.7	0.191	0.0234
1.30	0.0000	75.1	0.174	0.0189
1.40	0.0000	68.9	0.159	0.0155
1.50	0.0000	63.8	0.148	0.0128
1.60	0.0000	59.6	0.138	0.0108
1.70	0.0000	56.0	0.130	0.0091
1.80	0.0000	53.0	0.123	0.0078
1.90	0.0000	50.3	0.117	0.0068
2.00	0.0000	48.0	0.111	0.0059
2.10	0.0000	46.0	0.107	0.0052
2.20	0.0000	44.3	0.102	0.0046
2.30	0.0000	42.7	0.099	0.0041
2.40	0.0000	41.3	0.096	0.0037
2.50	0.0000	40.0	0.093	0.0033
2.60	0.0000	38.9	0.090	0.0030
2.70	0.0000	37.8	0.088	0.0028
2.80	0.0000	36.9	0.085	0.0025
2.90	0.0000	36.0	0.083	0.0023
3.00	0.0000	35.2	0.082	0.0021
3.10	0.0000	34.5	0.080	0.0019
3.20	0.0000	33.8	0.078	0.0018
3.30	0.0000	33.2	0.077	0.0017
3.40	0.0000	32.6	0.076	0.0016
3.50	0.0000	32.1	0.074	0.0015
3.60	0.0000	31.6	0.073	0.0014
3.70	0.0000	31.1	0.072	0.0013
3.80	0.0000	30.7	0.071	0.0012
3.90	0.0000	30.2	0.070	0.0011
4.00	0.0000	29.8	0.069	0.0011

Stage-Discharge for Pond 2P: Storage

Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)
0.000	0.0000	0.260	0.0422	0.520	0.0835	0.780	0.1102
0.005	0.0000	0.265	0.0435	0.525	0.0841	0.785	0.1107
0.010	0.0000	0.270	0.0448	0.530	0.0847	0.790	0.1111
0.015	0.0000	0.275	0.0460	0.535	0.0852	0.795	0.1116
0.020	0.0000	0.280	0.0472	0.540	0.0858	0.800	0.1120
0.025	0.0000	0.285	0.0482	0.545	0.0864	0.805	0.1124
0.030	0.0000	0.290	0.0493	0.550	0.0870	0.810	0.1129
0.035	0.0000	0.295	0.0502	0.555	0.0876	0.815	0.1133
0.040	0.0000	0.300	0.0509	0.560	0.0881	0.820	0.1138
0.045	0.0000	0.305	0.0518	0.565	0.0887	0.825	0.1142
0.050	0.0001	0.310	0.0528	0.570	0.0892	0.830	0.1146
0.055	0.0003	0.315	0.0537	0.575	0.0898	0.835	0.1151
0.060	0.0005	0.320	0.0546	0.580	0.0904	0.840	0.1155
0.065	0.0008	0.325	0.0556	0.585	0.0909	0.845	0.1159
0.070	0.0011	0.330	0.0564	0.590	0.0914	0.850	0.1164
0.075	0.0015	0.335	0.0573	0.595	0.0920	0.855	0.1168
0.080	0.0019	0.340	0.0582	0.600	0.0925	0.860	0.1172
0.085	0.0024	0.345	0.0590	0.605	0.0931	0.865	0.1176
0.090	0.0030	0.350	0.0599	0.610	0.0936	0.870	0.1181
0.095	0.0036	0.355	0.0607	0.615	0.0941	0.875	0.1185
0.100	0.0043	0.360	0.0615	0.620	0.0947	0.880	0.1189
0.105	0.0050	0.365	0.0623	0.625	0.0952	0.885	0.1193
0.110	0.0057	0.370	0.0631	0.630	0.0957	0.890	0.1197
0.115	0.0065	0.375	0.0639	0.635	0.0962	0.895	0.1201
0.120	0.0074	0.380	0.0647	0.640	0.0967	0.900	0.1206
0.125	0.0083	0.385	0.0654	0.645	0.0972	0.905	0.1210
0.130	0.0092	0.390	0.0662	0.650	0.0978	0.910	0.1214
0.135	0.0102	0.395	0.0669	0.655	0.0983	0.915	0.1218
0.140	0.0112	0.400	0.0677	0.660	0.0988	0.920	0.1222
0.145	0.0122	0.405	0.0684	0.665	0.0993	0.925	0.1226
0.150	0.0133	0.410	0.0691	0.670	0.0998	0.930	0.1230
0.155	0.0144	0.415	0.0698	0.675	0.1003	0.935	0.1234
0.160	0.0156	0.420	0.0706	0.680	0.1008	0.940	0.1238
0.165	0.0168	0.425	0.0713	0.685	0.1013	0.945	0.1242
0.170	0.0180	0.430	0.0719	0.690	0.1018	0.950	0.1246
0.175	0.0192	0.435	0.0726	0.695	0.1022	0.955	0.1250
0.180	0.0205	0.440	0.0733	0.700	0.1027	0.960	0.1254
0.185	0.0218	0.445	0.0740	0.705	0.1032	0.965	0.1258
0.190	0.0231	0.450	0.0747	0.710	0.1037	0.970	0.1262
0.195	0.0244	0.455	0.0753	0.715	0.1042	0.975	0.1266
0.200	0.0258	0.460	0.0760	0.720	0.1046	0.980	0.1270
0.205	0.0271	0.465	0.0766	0.725	0.1051	0.985	0.1274
0.210	0.0285	0.470	0.0773	0.730	0.1056	0.990	0.1278
0.215	0.0299	0.475	0.0779	0.735	0.1061	0.995	0.1282
0.220	0.0313	0.480	0.0786	0.740	0.1065	1.000	0.1286
0.225	0.0327	0.485	0.0792	0.745	0.1070	1.005	0.1289
0.230	0.0341	0.490	0.0798	0.750	0.1075	1.010	**0.1293**
0.235	0.0354	0.495	0.0804	0.755	0.1079		
0.240	0.0368	0.500	0.0811	0.760	0.1084		
0.245	0.0382	0.505	0.0817	0.765	0.1088		
0.250	0.0396	0.510	0.0823	0.770	0.1093		
0.255	0.0409	0.515	0.0829	0.775	0.1098		

Stage-Area-Storage for Pond 2P: Storage

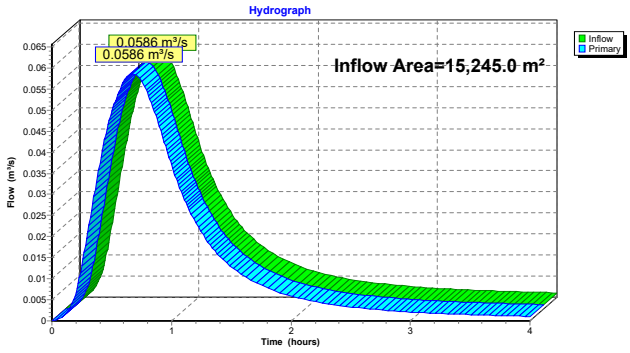
Elevation (meters)	Storage (cubic-meters)	Elevation (meters)	Storage (cubic-meters)
0.000	0.0	0.520	224.6
0.010	4.3	0.530	229.0
0.020	8.6	0.540	233.3
0.030	13.0	0.550	237.6
0.040	17.3	0.560	241.9
0.050	21.6	0.570	246.2
0.060	25.9	0.580	250.6
0.070	30.2	0.590	254.9
0.080	34.6	0.600	259.2
0.090	38.9	0.610	263.5
0.100	43.2	0.620	267.8
0.110	47.5	0.630	272.2
0.120	51.8	0.640	276.5
0.130	56.2	0.650	280.8
0.140	60.5	0.660	285.1
0.150	64.8	0.670	289.4
0.160	69.1	0.680	293.8
0.170	73.4	0.690	298.1
0.180	77.8	0.700	302.4
0.190	82.1	0.710	306.7
0.200	86.4	0.720	311.0
0.210	90.7	0.730	315.4
0.220	95.0	0.740	319.7
0.230	99.4	0.750	324.0
0.240	103.7	0.760	328.3
0.250	108.0	0.770	332.6
0.260	112.3	0.780	337.0
0.270	116.6	0.790	341.3
0.280	121.0	0.800	345.6
0.290	125.3	0.810	349.9
0.300	129.6	0.820	354.2
0.310	133.9	0.830	358.6
0.320	138.2	0.840	362.9
0.330	142.6	0.850	367.2
0.340	146.9	0.860	371.5
0.350	151.2	0.870	375.8
0.360	155.5	0.880	380.2
0.370	159.8	0.890	384.5
0.380	164.2	0.900	388.8
0.390	168.5	0.910	393.1
0.400	172.8	0.920	397.4
0.410	177.1	0.930	401.8
0.420	181.4	0.940	406.1
0.430	185.8	0.950	410.4
0.440	190.1	0.960	414.7
0.450	194.4	0.970	419.0
0.460	198.7	0.980	423.4
0.470	203.0	0.990	427.7
0.480	207.4	1.000	432.0
0.490	211.7	1.010	**436.3**
0.500	216.0		
0.510	220.3		

Summary for Link 3L: Hazelhurst Rd

Inflow Area = 15,245.0 m², 0.00% Impervious, Inflow Depth > 13 mm for 2-Year event
Inflow = 0.0586 m³/s @ 0.67 hrs, Volume= 200.3 m³
Primary = 0.0586 m³/s @ 0.67 hrs, Volume= 200.3 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs

Link 3L: Hazelhurst Rd



Hydrograph for Link 3L: Hazelhurst Rd

Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)	Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	**0.000**	0.0000	2.60	0.0030	0.000	0.0030
0.05	0.0005	0.000	0.0005	2.65	0.0029	0.000	0.0029
0.10	0.0012	0.000	0.0012	2.70	0.0028	0.000	0.0028
0.15	0.0030	0.000	0.0030	2.75	0.0026	0.000	0.0026
0.20	0.0067	0.000	0.0067	2.80	0.0025	0.000	0.0025
0.25	0.0131	0.000	0.0131	2.85	0.0024	0.000	0.0024
0.30	0.0211	0.000	0.0211	2.90	0.0023	0.000	0.0023
0.35	0.0294	0.000	0.0294	2.95	0.0022	0.000	0.0022
0.40	0.0373	0.000	0.0373	3.00	0.0021	0.000	0.0021
0.45	0.0441	0.000	0.0441	3.05	0.0020	0.000	0.0020
0.50	0.0497	0.000	0.0497	3.10	0.0019	0.000	0.0019
0.55	0.0535	0.000	0.0535	3.15	0.0019	0.000	0.0019
0.60	0.0569	0.000	0.0569	3.20	0.0018	0.000	0.0018
0.65	**0.0584**	0.000	**0.0584**	3.25	0.0017	0.000	0.0017
0.70	**0.0584**	0.000	**0.0584**	3.30	0.0017	0.000	0.0017
0.75	0.0569	0.000	0.0569	3.35	0.0016	0.000	0.0016
0.80	0.0541	0.000	0.0541	3.40	0.0016	0.000	0.0016
0.85	0.0502	0.000	0.0502	3.45	0.0015	0.000	0.0015
0.90	0.0461	0.000	0.0461	3.50	0.0015	0.000	0.0015
0.95	0.0415	0.000	0.0415	3.55	0.0014	0.000	0.0014
1.00	0.0371	0.000	0.0371	3.60	0.0014	0.000	0.0014
1.05	0.0330	0.000	0.0330	3.65	0.0013	0.000	0.0013
1.10	0.0294	0.000	0.0294	3.70	0.0013	0.000	0.0013
1.15	0.0262	0.000	0.0262	3.75	0.0012	0.000	0.0012
1.20	0.0234	0.000	0.0234	3.80	0.0012	0.000	0.0012
1.25	0.0210	0.000	0.0210	3.85	0.0011	0.000	0.0011
1.30	0.0189	0.000	0.0189	3.90	0.0011	0.000	0.0011
1.35	0.0171	0.000	0.0171	3.95	0.0011	0.000	0.0011
1.40	0.0155	0.000	0.0155	4.00	0.0011	0.000	0.0011
1.45	0.0141	0.000	0.0141				
1.50	0.0128	0.000	0.0128				
1.55	0.0117	0.000	0.0117				
1.60	0.0108	0.000	0.0108				
1.65	0.0099	0.000	0.0099				
1.70	0.0091	0.000	0.0091				
1.75	0.0085	0.000	0.0085				
1.80	0.0078	0.000	0.0078				
1.85	0.0073	0.000	0.0073				
1.90	0.0068	0.000	0.0068				
1.95	0.0063	0.000	0.0063				
2.00	0.0059	0.000	0.0059				
2.05	0.0056	0.000	0.0056				
2.10	0.0052	0.000	0.0052				
2.15	0.0049	0.000	0.0049				
2.20	0.0046	0.000	0.0046				
2.25	0.0044	0.000	0.0044				
2.30	0.0041	0.000	0.0041				
2.35	0.0039	0.000	0.0039				
2.40	0.0037	0.000	0.0037				
2.45	0.0035	0.000	0.0035				
2.50	0.0033	0.000	0.0033				
2.55	0.0032	0.000	0.0032				

Time span=0.00-4.00 hrs, dt=0.01 hrs, 401 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Site Runoff Area=14,330.0 m² 0.00% Impervious Runoff Depth=20 mm
Tc=15.0 min C=0.72 Runoff=0.1333 m³/s 280.0 m³

Subcatchment4S: U/C Runoff Area=915.0 m² 0.00% Impervious Runoff Depth=7 mm
Tc=15.0 min C=0.25 Runoff=0.0030 m³/s 6.2 m³

Pond 2P: Storage Peak Elev=0.435 m Storage=188.0 m³ Inflow=0.1333 m³/s 280.0 m³
Outflow=0.0727 m³/s 266.7 m³

Link 3L: Hazelhurst Rd Inflow=0.0744 m³/s 272.9 m³
Primary=0.0744 m³/s 272.9 m³

Total Runoff Area = 15,245.0 m² Runoff Volume = 286.2 m³ Average Runoff Depth = 19 mm
100.00% Pervious = 15,245.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 1S: Site

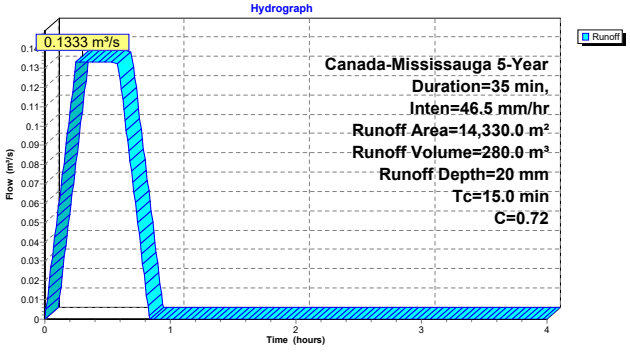
Runoff = 0.1333 m³/s @ 0.25 hrs, Volume= 280.0 m³, Depth= 20 mm
Routed to Pond 2P : Storage

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 5-Year Duration=35 min, Inten=46.5 mm/hr

Area (m²)	C	Description
3,171.0	0.90	Roof Area
3,621.0	0.90	Impervious At-Grade
6,497.0	0.60	Gravel
1,041.0	0.25	Softscape At-Grade
14,330.0	0.72	Weighted Average
14,330.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 1S: Site



Hydrograph for Subcatchment 1S: Site

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0107	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0213	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0320	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0427	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0533	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0640	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0747	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0853	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0960	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.1067	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.1173	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.1280**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.1333**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.1333	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.1333	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.1333	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.1333	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.1333	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.1333	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.1333	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.1333	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.1333	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.1333	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.1333	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.1333	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.1333	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.1333	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.1333	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.1333	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.1244	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.1138	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.1031	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0924	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0818	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0711	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0604	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0498	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0391	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0284	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0178	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0071	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Subcatchment 4S: U/C

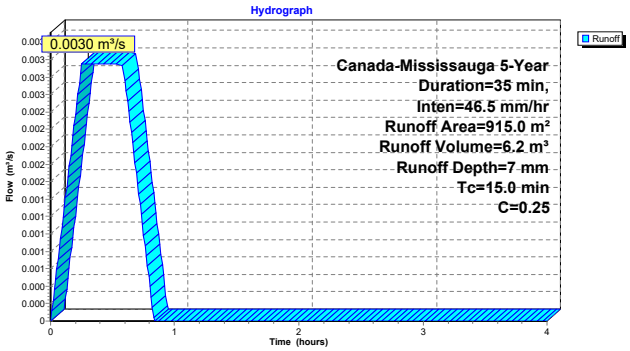
Runoff = 0.0030 m³/s @ 0.25 hrs, Volume= 6.2 m³, Depth= 7 mm
Routed to Link 3L : Hazelhurst Rd

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 5-Year Duration=35 min, Inten=46.5 mm/hr

Area (m²)	C	Description
915.0	0.25	Softscape
915.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 4S: U/C



Hydrograph for Subcatchment 4S: U/C

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0002	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0005	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0007	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0009	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0012	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0014	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0017	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0019	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0021	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0024	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0026	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0028**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0030**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0030	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0030	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0030	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0030	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0030	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0030	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0030	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0030	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0030	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0030	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0030	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0030	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0030	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0030	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0030	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0030	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0028	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0025	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0023	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0020	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0018	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0016	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0013	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0011	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0009	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0006	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0004	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0002	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Pond 2P: Storage

Inflow Area = 14,330.0 m², 0.00% Impervious, Inflow Depth = 20 mm for 5-Year event
Inflow = 0.1333 m³/s @ 0.25 hrs, Volume= 280.0 m³
Outflow = 0.0727 m³/s @ 0.70 hrs, Volume= 266.7 m³, Atten= 45%, Lag= 26.8 min
Primary = 0.0727 m³/s @ 0.70 hrs, Volume= 266.7 m³
Routed to Link 3L : Hazelhurst Rd

Routing by Stor-Ind method, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Starting Elev= 0.040 m Surf.Area= 432.0 m² Storage= 17.3 m³
Peak Elev= 0.435 m @ 0.70 hrs Surf.Area= 432.0 m² Storage= 188.0 m³ (170.7 m³ above start)

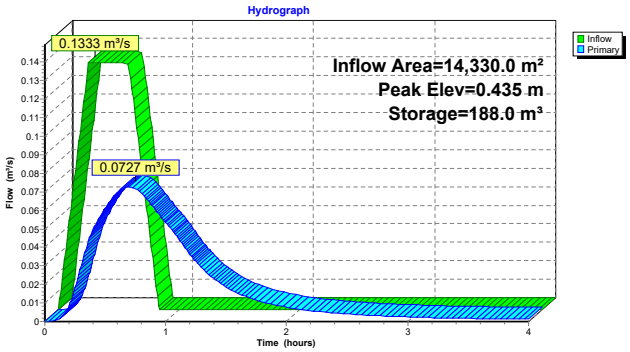
Plug-Flow detention time= 41.7 min calculated for 248.8 m³ (89% of inflow)
Center-of-Mass det. time= 36.8 min (61.8 - 25.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	436.3 m³	**1.00 mW x 450.00 mL x 1.01 mH Prismatoid**x 0.96

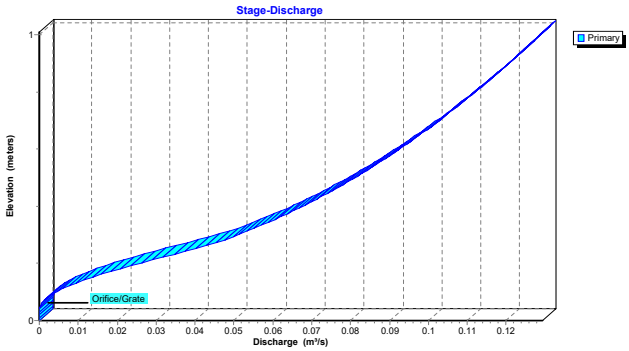
Device	Routing	Invert	Outlet Devices
#1	Primary	0.040 m	**260 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.0727 m³/s @ 0.70 hrs HW=0.435 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.0727 m³/s @ 1.37 m/s)

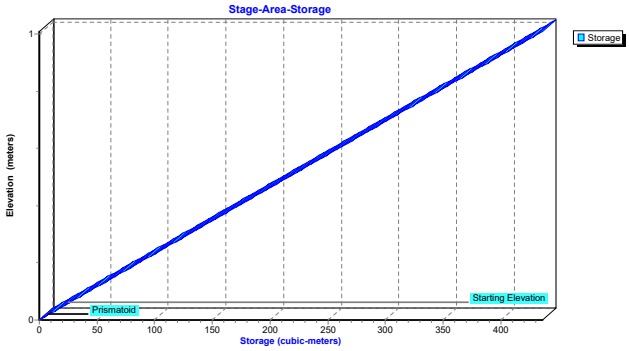
Pond 2P: Storage



Pond 2P: Storage



Pond 2P: Storage



Hydrograph for Pond 2P: Storage

Time (hours)	Inflow (m³/s)	Storage (cubic-meters)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	17.3	0.040	0.0000
0.10	0.0533	26.8	0.062	0.0006
0.20	**0.1067**	54.4	0.126	0.0084
0.30	**0.1333**	93.3	0.216	0.0302
0.40	0.1333	126.6	0.293	0.0498
0.50	0.1333	154.5	0.358	0.0611
0.60	0.1244	178.6	0.413	0.0696
0.70	0.0711	**188.0**	**0.435**	**0.0727**
0.80	0.0178	178.2	0.413	0.0695
0.90	0.0000	155.7	0.360	0.0616
1.00	0.0000	135.0	0.313	0.0533
1.10	0.0000	117.3	0.271	0.0451
1.20	0.0000	102.7	0.238	0.0362
1.30	0.0000	91.0	0.211	0.0287
1.40	0.0000	81.8	0.189	0.0229
1.50	0.0000	74.4	0.172	0.0185
1.60	0.0000	68.3	0.158	0.0152
1.70	0.0000	63.3	0.147	0.0126
1.80	0.0000	59.2	0.137	0.0106
1.90	0.0000	55.7	0.129	0.0090
2.00	0.0000	52.7	0.122	0.0077
2.10	0.0000	50.1	0.116	0.0067
2.20	0.0000	47.8	0.111	0.0058
2.30	0.0000	45.8	0.106	0.0052
2.40	0.0000	44.1	0.102	0.0046
2.50	0.0000	42.5	0.098	0.0041
2.60	0.0000	41.2	0.095	0.0037
2.70	0.0000	39.9	0.092	0.0033
2.80	0.0000	38.8	0.090	0.0030
2.90	0.0000	37.7	0.087	0.0027
3.00	0.0000	36.8	0.085	0.0025
3.10	0.0000	35.9	0.083	0.0023
3.20	0.0000	35.2	0.081	0.0021
3.30	0.0000	34.4	0.080	0.0019
3.40	0.0000	33.8	0.078	0.0018
3.50	0.0000	33.1	0.077	0.0017
3.60	0.0000	32.6	0.075	0.0016
3.70	0.0000	32.0	0.074	0.0015
3.80	0.0000	31.5	0.073	0.0014
3.90	0.0000	31.0	0.072	0.0013
4.00	0.0000	30.6	0.071	0.0012

Stage-Discharge for Pond 2P: Storage

Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)
0.000	0.0000	0.260	0.0422	0.520	0.0835	0.780	0.1102
0.005	0.0000	0.265	0.0435	0.525	0.0841	0.785	0.1107
0.010	0.0000	0.270	0.0448	0.530	0.0847	0.790	0.1111
0.015	0.0000	0.275	0.0460	0.535	0.0852	0.795	0.1116
0.020	0.0000	0.280	0.0472	0.540	0.0858	0.800	0.1120
0.025	0.0000	0.285	0.0482	0.545	0.0864	0.805	0.1124
0.030	0.0000	0.290	0.0493	0.550	0.0870	0.810	0.1129
0.035	0.0000	0.295	0.0502	0.555	0.0876	0.815	0.1133
0.040	0.0000	0.300	0.0509	0.560	0.0881	0.820	0.1138
0.045	0.0000	0.305	0.0518	0.565	0.0887	0.825	0.1142
0.050	0.0001	0.310	0.0528	0.570	0.0892	0.830	0.1146
0.055	0.0003	0.315	0.0537	0.575	0.0898	0.835	0.1151
0.060	0.0005	0.320	0.0546	0.580	0.0904	0.840	0.1155
0.065	0.0008	0.325	0.0556	0.585	0.0909	0.845	0.1159
0.070	0.0011	0.330	0.0564	0.590	0.0914	0.850	0.1164
0.075	0.0015	0.335	0.0573	0.595	0.0920	0.855	0.1168
0.080	0.0019	0.340	0.0582	0.600	0.0925	0.860	0.1172
0.085	0.0024	0.345	0.0590	0.605	0.0931	0.865	0.1176
0.090	0.0030	0.350	0.0599	0.610	0.0936	0.870	0.1181
0.095	0.0036	0.355	0.0607	0.615	0.0941	0.875	0.1185
0.100	0.0043	0.360	0.0615	0.620	0.0947	0.880	0.1189
0.105	0.0050	0.365	0.0623	0.625	0.0952	0.885	0.1193
0.110	0.0057	0.370	0.0631	0.630	0.0957	0.890	0.1197
0.115	0.0065	0.375	0.0639	0.635	0.0962	0.895	0.1201
0.120	0.0074	0.380	0.0647	0.640	0.0967	0.900	0.1206
0.125	0.0083	0.385	0.0654	0.645	0.0972	0.905	0.1210
0.130	0.0092	0.390	0.0662	0.650	0.0978	0.910	0.1214
0.135	0.0102	0.395	0.0669	0.655	0.0983	0.915	0.1218
0.140	0.0112	0.400	0.0677	0.660	0.0988	0.920	0.1222
0.145	0.0122	0.405	0.0684	0.665	0.0993	0.925	0.1226
0.150	0.0133	0.410	0.0691	0.670	0.0998	0.930	0.1230
0.155	0.0144	0.415	0.0698	0.675	0.1003	0.935	0.1234
0.160	0.0156	0.420	0.0706	0.680	0.1008	0.940	0.1238
0.165	0.0168	0.425	0.0713	0.685	0.1013	0.945	0.1242
0.170	0.0180	0.430	0.0719	0.690	0.1018	0.950	0.1246
0.175	0.0192	0.435	0.0726	0.695	0.1022	0.955	0.1250
0.180	0.0205	0.440	0.0733	0.700	0.1027	0.960	0.1254
0.185	0.0218	0.445	0.0740	0.705	0.1032	0.965	0.1258
0.190	0.0231	0.450	0.0747	0.710	0.1037	0.970	0.1262
0.195	0.0244	0.455	0.0753	0.715	0.1042	0.975	0.1266
0.200	0.0258	0.460	0.0760	0.720	0.1046	0.980	0.1270
0.205	0.0271	0.465	0.0766	0.725	0.1051	0.985	0.1274
0.210	0.0285	0.470	0.0773	0.730	0.1056	0.990	0.1278
0.215	0.0299	0.475	0.0779	0.735	0.1061	0.995	0.1282
0.220	0.0313	0.480	0.0786	0.740	0.1065	1.000	0.1286
0.225	0.0327	0.485	0.0792	0.745	0.1070	1.005	0.1289
0.230	0.0341	0.490	0.0798	0.750	0.1075	1.010	**0.1293**
0.235	0.0354	0.495	0.0804	0.755	0.1079		
0.240	0.0368	0.500	0.0811	0.760	0.1084		
0.245	0.0382	0.505	0.0817	0.765	0.1088		
0.250	0.0396	0.510	0.0823	0.770	0.1093		
0.255	0.0409	0.515	0.0829	0.775	0.1098		

Stage-Area-Storage for Pond 2P: Storage

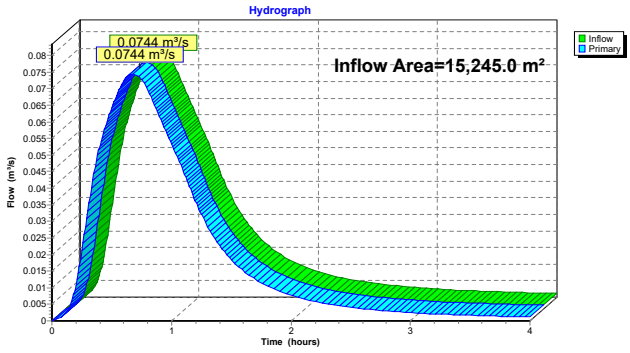
Elevation (meters)	Storage (cubic-meters)	Elevation (meters)	Storage (cubic-meters)
0.000	0.0	0.520	224.6
0.010	4.3	0.530	229.0
0.020	8.6	0.540	233.3
0.030	13.0	0.550	237.6
0.040	17.3	0.560	241.9
0.050	21.6	0.570	246.2
0.060	25.9	0.580	250.6
0.070	30.2	0.590	254.9
0.080	34.6	0.600	259.2
0.090	38.9	0.610	263.5
0.100	43.2	0.620	267.8
0.110	47.5	0.630	272.2
0.120	51.8	0.640	276.5
0.130	56.2	0.650	280.8
0.140	60.5	0.660	285.1
0.150	64.8	0.670	289.4
0.160	69.1	0.680	293.8
0.170	73.4	0.690	298.1
0.180	77.8	0.700	302.4
0.190	82.1	0.710	306.7
0.200	86.4	0.720	311.0
0.210	90.7	0.730	315.4
0.220	95.0	0.740	319.7
0.230	99.4	0.750	324.0
0.240	103.7	0.760	328.3
0.250	108.0	0.770	332.6
0.260	112.3	0.780	337.0
0.270	116.6	0.790	341.3
0.280	121.0	0.800	345.6
0.290	125.3	0.810	349.9
0.300	129.6	0.820	354.2
0.310	133.9	0.830	358.6
0.320	138.2	0.840	362.9
0.330	142.6	0.850	367.2
0.340	146.9	0.860	371.5
0.350	151.2	0.870	375.8
0.360	155.5	0.880	380.2
0.370	159.8	0.890	384.5
0.380	164.2	0.900	388.8
0.390	168.5	0.910	393.1
0.400	172.8	0.920	397.4
0.410	177.1	0.930	401.8
0.420	181.4	0.940	406.1
0.430	185.8	0.950	410.4
0.440	190.1	0.960	414.7
0.450	194.4	0.970	419.0
0.460	198.7	0.980	423.4
0.470	203.0	0.990	427.7
0.480	207.4	1.000	432.0
0.490	211.7	1.010	**436.3**
0.500	216.0		
0.510	220.3		

Summary for Link 3L: Hazelhurst Rd

Inflow Area = 15,245.0 m², 0.00% Impervious, Inflow Depth > 18 mm for 5-Year event
Inflow = 0.0744 m³/s @ 0.68 hrs, Volume= 272.9 m³
Primary = 0.0744 m³/s @ 0.68 hrs, Volume= 272.9 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs

Link 3L: Hazelhurst Rd



Hydrograph for Link 3L: Hazelhurst Rd

Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)	Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	**0.000**	0.0000	2.60	0.0037	0.000	0.0037
0.05	0.0007	0.000	0.0007	2.65	0.0035	0.000	0.0035
0.10	0.0018	0.000	0.0018	2.70	0.0033	0.000	0.0033
0.15	0.0047	0.000	0.0047	2.75	0.0031	0.000	0.0031
0.20	0.0108	0.000	0.0108	2.80	0.0030	0.000	0.0030
0.25	0.0211	0.000	0.0211	2.85	0.0029	0.000	0.0029
0.30	0.0331	0.000	0.0331	2.90	0.0027	0.000	0.0027
0.35	0.0443	0.000	0.0443	2.95	0.0026	0.000	0.0026
0.40	0.0528	0.000	0.0528	3.00	0.0025	0.000	0.0025
0.45	0.0588	0.000	0.0588	3.05	0.0024	0.000	0.0024
0.50	0.0641	0.000	0.0641	3.10	0.0023	0.000	0.0023
0.55	0.0687	0.000	0.0687	3.15	0.0022	0.000	0.0022
0.60	0.0724	0.000	0.0724	3.20	0.0021	0.000	0.0021
0.65	**0.0741**	0.000	**0.0741**	3.25	0.0020	0.000	0.0020
0.70	**0.0742**	0.000	**0.0742**	3.30	0.0019	0.000	0.0019
0.75	0.0728	0.000	0.0728	3.35	0.0019	0.000	0.0019
0.80	0.0699	0.000	0.0699	3.40	0.0018	0.000	0.0018
0.85	0.0657	0.000	0.0657	3.45	0.0017	0.000	0.0017
0.90	0.0616	0.000	0.0616	3.50	0.0017	0.000	0.0017
0.95	0.0574	0.000	0.0574	3.55	0.0016	0.000	0.0016
1.00	0.0533	0.000	0.0533	3.60	0.0016	0.000	0.0016
1.05	0.0494	0.000	0.0494	3.65	0.0015	0.000	0.0015
1.10	0.0451	0.000	0.0451	3.70	0.0015	0.000	0.0015
1.15	0.0405	0.000	0.0405	3.75	0.0014	0.000	0.0014
1.20	0.0362	0.000	0.0362	3.80	0.0014	0.000	0.0014
1.25	0.0322	0.000	0.0322	3.85	0.0013	0.000	0.0013
1.30	0.0287	0.000	0.0287	3.90	0.0013	0.000	0.0013
1.35	0.0256	0.000	0.0256	3.95	0.0012	0.000	0.0012
1.40	0.0229	0.000	0.0229	4.00	0.0012	0.000	0.0012
1.45	0.0206	0.000	0.0206				
1.50	0.0185	0.000	0.0185				
1.55	0.0167	0.000	0.0167				
1.60	0.0152	0.000	0.0152				
1.65	0.0138	0.000	0.0138				
1.70	0.0126	0.000	0.0126				
1.75	0.0115	0.000	0.0115				
1.80	0.0106	0.000	0.0106				
1.85	0.0097	0.000	0.0097				
1.90	0.0090	0.000	0.0090				
1.95	0.0083	0.000	0.0083				
2.00	0.0077	0.000	0.0077				
2.05	0.0072	0.000	0.0072				
2.10	0.0067	0.000	0.0067				
2.15	0.0063	0.000	0.0063				
2.20	0.0058	0.000	0.0058				
2.25	0.0055	0.000	0.0055				
2.30	0.0052	0.000	0.0052				
2.35	0.0049	0.000	0.0049				
2.40	0.0046	0.000	0.0046				
2.45	0.0043	0.000	0.0043				
2.50	0.0041	0.000	0.0041				
2.55	0.0039	0.000	0.0039				

Time span=0.00-4.00 hrs, dt=0.01 hrs, 401 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Site Runoff Area=14,330.0 m² 0.00% Impervious Runoff Depth=24 mm
Tc=15.0 min C=0.72 Runoff=0.1642 m³/s 344.8 m³

Subcatchment4S: U/C Runoff Area=915.0 m² 0.00% Impervious Runoff Depth=8 mm
Tc=15.0 min C=0.25 Runoff=0.0036 m³/s 7.6 m³

Pond 2P: Storage Peak Elev=0.532 m Storage=230.0 m³ Inflow=0.1642 m³/s 344.8 m³
Outflow=0.0849 m³/s 330.9 m³

Link 3L: Hazelhurst Rd Inflow=0.0870 m³/s 338.5 m³
Primary=0.0870 m³/s 338.5 m³

Total Runoff Area = 15,245.0 m² Runoff Volume = 352.5 m³ Average Runoff Depth = 23 mm
100.00% Pervious = 15,245.0 m² 0.00% Impervious = 0.0 m²

Summary for Subcatchment 1S: Site

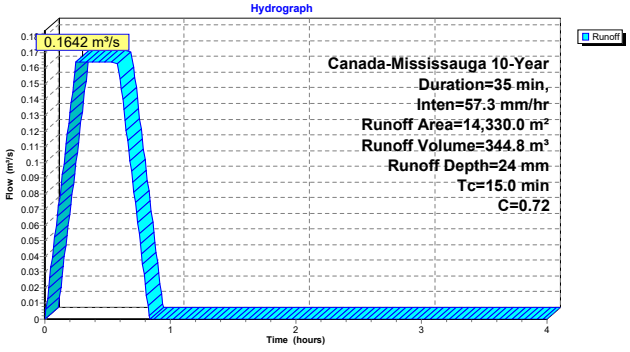
Runoff = 0.1642 m³/s @ 0.25 hrs, Volume= 344.8 m³, Depth= 24 mm
Routed to Pond 2P : Storage

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 10-Year Duration=35 min, Inten=57.3 mm/hr

Area (m²)	C	Description
3,171.0	0.90	Roof Area
3,621.0	0.90	Impervious At-Grade
6,497.0	0.60	Gravel
1,041.0	0.25	Softscape At-Grade
14,330.0	0.72	Weighted Average
14,330.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 1S: Site



Hydrograph for Subcatchment 1S: Site

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0131	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0263	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0394	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0525	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0657	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0788	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0920	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.1051	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.1182	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.1314	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.1445	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.1576**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.1642**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.1642	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.1642	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.1642	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.1642	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.1642	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.1642	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.1642	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.1642	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.1642	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.1642	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.1642	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.1642	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.1642	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.1642	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.1642	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.1642	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.1533	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.1401	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.1270	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.1139	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.1007	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0876	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0744	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0613	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0482	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0350	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0219	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0088	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Subcatchment 4S: U/C

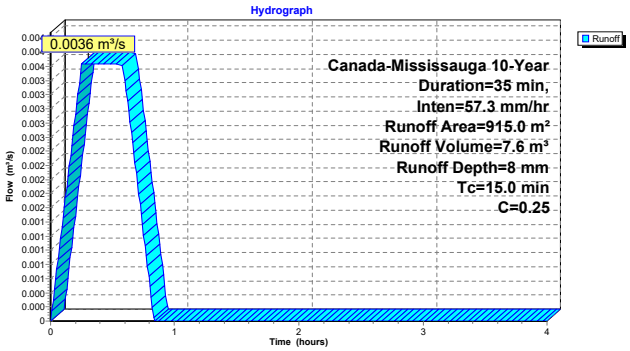
Runoff = 0.0036 m³/s @ 0.25 hrs, Volume= 7.6 m³, Depth= 8 mm
Routed to Link 3L : Hazelhurst Rd

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 10-Year Duration=35 min, Inten=57.3 mm/hr

Area (m²)	C	Description
915.0	0.25	Softscape
915.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 4S: U/C



Hydrograph for Subcatchment 4S: U/C

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0003	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0006	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0009	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0012	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0015	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0017	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0020	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0023	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0026	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0029	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0032	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0035**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0036**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0036	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0036	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0036	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0036	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0036	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0036	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0036	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0036	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0036	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0036	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0036	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0036	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0036	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0036	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0036	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0036	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0034	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0031	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0028	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0025	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0022	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0019	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0017	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0014	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0011	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0008	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0005	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0002	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Pond 2P: Storage

Inflow Area = 14,330.0 m², 0.00% Impervious, Inflow Depth = 24 mm for 10-Year event
Inflow = 0.1642 m³/s @ 0.25 hrs, Volume= 344.8 m³
Outflow = 0.0849 m³/s @ 0.70 hrs, Volume= 330.9 m³, Atten= 48%, Lag= 27.2 min
Primary = 0.0849 m³/s @ 0.70 hrs, Volume= 330.9 m³
Routed to Link 3L : Hazelhurst Rd

Routing by Stor-Ind method, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Starting Elev= 0.040 m Surf.Area= 432.0 m² Storage= 17.3 m³
Peak Elev= 0.532 m @ 0.70 hrs Surf.Area= 432.0 m² Storage= 230.0 m³ (212.7 m³ above start)

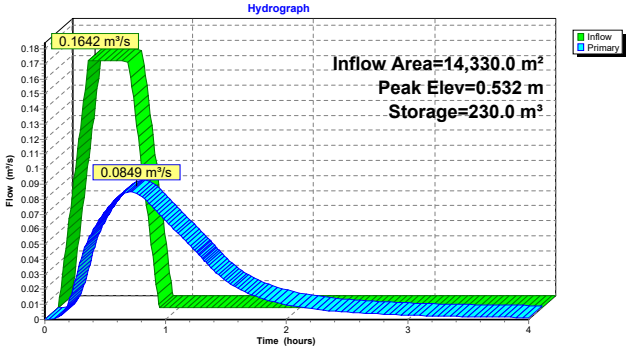
Plug-Flow detention time= 41.6 min calculated for 313.6 m³ (91% of inflow)
Center-of-Mass det. time= 37.2 min (62.2 - 25.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	436.3 m³	**1.00 mW x 450.00 mL x 1.01 mH Prismatoid**x 0.96

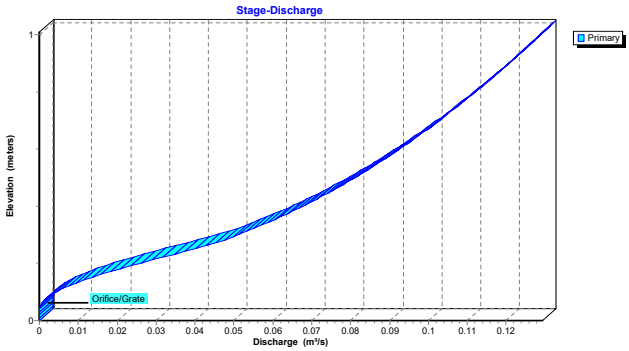
Device	Routing	Invert	Outlet Devices
#1	Primary	0.040 m	**260 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.0849 m³/s @ 0.70 hrs HW=0.532 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.0849 m³/s @ 1.60 m/s)

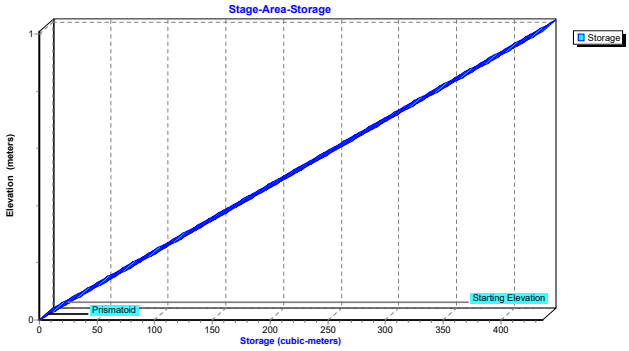
Pond 2P: Storage



Pond 2P: Storage



Pond 2P: Storage



Hydrograph for Pond 2P: Storage

Time (hours)	Inflow (m³/s)	Storage (cubic-meters)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	17.3	0.040	0.0000
0.10	0.0657	29.0	0.067	0.0009
0.20	**0.1314**	62.7	0.145	0.0123
0.30	**0.1642**	109.5	0.254	0.0405
0.40	0.1642	150.3	0.348	0.0595
0.50	0.1642	185.6	0.430	0.0719
0.60	0.1533	216.7	0.502	0.0813
0.70	0.0876	**230.0**	**0.532**	**0.0849**
0.80	0.0219	219.4	0.508	0.0820
0.90	0.0000	192.6	0.446	0.0741
1.00	0.0000	167.4	0.388	0.0658
1.10	0.0000	145.2	0.336	0.0575
1.20	0.0000	126.0	0.292	0.0495
1.30	0.0000	109.7	0.254	0.0406
1.40	0.0000	96.6	0.224	0.0323
1.50	0.0000	86.3	0.200	0.0257
1.60	0.0000	78.0	0.180	0.0206
1.70	0.0000	71.3	0.165	0.0168
1.80	0.0000	65.8	0.152	0.0138
1.90	0.0000	61.2	0.142	0.0115
2.00	0.0000	57.4	0.133	0.0098
2.10	0.0000	54.2	0.125	0.0083
2.20	0.0000	51.4	0.119	0.0072
2.30	0.0000	48.9	0.113	0.0063
2.40	0.0000	46.8	0.108	0.0055
2.50	0.0000	45.0	0.104	0.0049
2.60	0.0000	43.3	0.100	0.0043
2.70	0.0000	41.8	0.097	0.0039
2.80	0.0000	40.5	0.094	0.0035
2.90	0.0000	39.3	0.091	0.0031
3.00	0.0000	38.3	0.089	0.0029
3.10	0.0000	37.3	0.086	0.0026
3.20	0.0000	36.4	0.084	0.0024
3.30	0.0000	35.6	0.082	0.0022
3.40	0.0000	34.8	0.081	0.0020
3.50	0.0000	34.1	0.079	0.0019
3.60	0.0000	33.5	0.077	0.0017
3.70	0.0000	32.9	0.076	0.0016
3.80	0.0000	32.3	0.075	0.0015
3.90	0.0000	31.8	0.074	0.0014
4.00	0.0000	31.3	0.072	0.0013

Stage-Discharge for Pond 2P: Storage

Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)
0.000	0.0000	0.260	0.0422	0.520	0.0835	0.780	0.1102
0.005	0.0000	0.265	0.0435	0.525	0.0841	0.785	0.1107
0.010	0.0000	0.270	0.0448	0.530	0.0847	0.790	0.1111
0.015	0.0000	0.275	0.0460	0.535	0.0852	0.795	0.1116
0.020	0.0000	0.280	0.0472	0.540	0.0858	0.800	0.1120
0.025	0.0000	0.285	0.0482	0.545	0.0864	0.805	0.1124
0.030	0.0000	0.290	0.0493	0.550	0.0870	0.810	0.1129
0.035	0.0000	0.295	0.0502	0.555	0.0876	0.815	0.1133
0.040	0.0000	0.300	0.0509	0.560	0.0881	0.820	0.1138
0.045	0.0000	0.305	0.0518	0.565	0.0887	0.825	0.1142
0.050	0.0001	0.310	0.0528	0.570	0.0892	0.830	0.1146
0.055	0.0003	0.315	0.0537	0.575	0.0898	0.835	0.1151
0.060	0.0005	0.320	0.0546	0.580	0.0904	0.840	0.1155
0.065	0.0008	0.325	0.0556	0.585	0.0909	0.845	0.1159
0.070	0.0011	0.330	0.0564	0.590	0.0914	0.850	0.1164
0.075	0.0015	0.335	0.0573	0.595	0.0920	0.855	0.1168
0.080	0.0019	0.340	0.0582	0.600	0.0925	0.860	0.1172
0.085	0.0024	0.345	0.0590	0.605	0.0931	0.865	0.1176
0.090	0.0030	0.350	0.0599	0.610	0.0936	0.870	0.1181
0.095	0.0036	0.355	0.0607	0.615	0.0941	0.875	0.1185
0.100	0.0043	0.360	0.0615	0.620	0.0947	0.880	0.1189
0.105	0.0050	0.365	0.0623	0.625	0.0952	0.885	0.1193
0.110	0.0057	0.370	0.0631	0.630	0.0957	0.890	0.1197
0.115	0.0065	0.375	0.0639	0.635	0.0962	0.895	0.1201
0.120	0.0074	0.380	0.0647	0.640	0.0967	0.900	0.1206
0.125	0.0083	0.385	0.0654	0.645	0.0972	0.905	0.1210
0.130	0.0092	0.390	0.0662	0.650	0.0978	0.910	0.1214
0.135	0.0102	0.395	0.0669	0.655	0.0983	0.915	0.1218
0.140	0.0112	0.400	0.0677	0.660	0.0988	0.920	0.1222
0.145	0.0122	0.405	0.0684	0.665	0.0993	0.925	0.1226
0.150	0.0133	0.410	0.0691	0.670	0.0998	0.930	0.1230
0.155	0.0144	0.415	0.0698	0.675	0.1003	0.935	0.1234
0.160	0.0156	0.420	0.0706	0.680	0.1008	0.940	0.1238
0.165	0.0168	0.425	0.0713	0.685	0.1013	0.945	0.1242
0.170	0.0180	0.430	0.0719	0.690	0.1018	0.950	0.1246
0.175	0.0192	0.435	0.0726	0.695	0.1022	0.955	0.1250
0.180	0.0205	0.440	0.0733	0.700	0.1027	0.960	0.1254
0.185	0.0218	0.445	0.0740	0.705	0.1032	0.965	0.1258
0.190	0.0231	0.450	0.0747	0.710	0.1037	0.970	0.1262
0.195	0.0244	0.455	0.0753	0.715	0.1042	0.975	0.1266
0.200	0.0258	0.460	0.0760	0.720	0.1046	0.980	0.1270
0.205	0.0271	0.465	0.0766	0.725	0.1051	0.985	0.1274
0.210	0.0285	0.470	0.0773	0.730	0.1056	0.990	0.1278
0.215	0.0299	0.475	0.0779	0.735	0.1061	0.995	0.1282
0.220	0.0313	0.480	0.0786	0.740	0.1065	1.000	0.1286
0.225	0.0327	0.485	0.0792	0.745	0.1070	1.005	0.1289
0.230	0.0341	0.490	0.0798	0.750	0.1075	1.010	**0.1293**
0.235	0.0354	0.495	0.0804	0.755	0.1079		
0.240	0.0368	0.500	0.0811	0.760	0.1084		
0.245	0.0382	0.505	0.0817	0.765	0.1088		
0.250	0.0396	0.510	0.0823	0.770	0.1093		
0.255	0.0409	0.515	0.0829	0.775	0.1098		

Stage-Area-Storage for Pond 2P: Storage

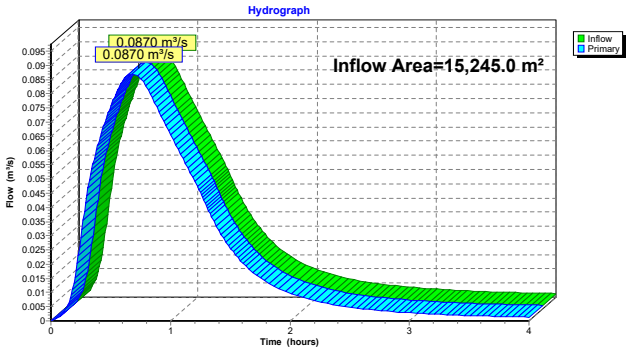
Elevation (meters)	Storage (cubic-meters)	Elevation (meters)	Storage (cubic-meters)
0.000	0.0	0.520	224.6
0.010	4.3	0.530	229.0
0.020	8.6	0.540	233.3
0.030	13.0	0.550	237.6
0.040	17.3	0.560	241.9
0.050	21.6	0.570	246.2
0.060	25.9	0.580	250.6
0.070	30.2	0.590	254.9
0.080	34.6	0.600	259.2
0.090	38.9	0.610	263.5
0.100	43.2	0.620	267.8
0.110	47.5	0.630	272.2
0.120	51.8	0.640	276.5
0.130	56.2	0.650	280.8
0.140	60.5	0.660	285.1
0.150	64.8	0.670	289.4
0.160	69.1	0.680	293.8
0.170	73.4	0.690	298.1
0.180	77.8	0.700	302.4
0.190	82.1	0.710	306.7
0.200	86.4	0.720	311.0
0.210	90.7	0.730	315.4
0.220	95.0	0.740	319.7
0.230	99.4	0.750	324.0
0.240	103.7	0.760	328.3
0.250	108.0	0.770	332.6
0.260	112.3	0.780	337.0
0.270	116.6	0.790	341.3
0.280	121.0	0.800	345.6
0.290	125.3	0.810	349.9
0.300	129.6	0.820	354.2
0.310	133.9	0.830	358.6
0.320	138.2	0.840	362.9
0.330	142.6	0.850	367.2
0.340	146.9	0.860	371.5
0.350	151.2	0.870	375.8
0.360	155.5	0.880	380.2
0.370	159.8	0.890	384.5
0.380	164.2	0.900	388.8
0.390	168.5	0.910	393.1
0.400	172.8	0.920	397.4
0.410	177.1	0.930	401.8
0.420	181.4	0.940	406.1
0.430	185.8	0.950	410.4
0.440	190.1	0.960	414.7
0.450	194.4	0.970	419.0
0.460	198.7	0.980	423.4
0.470	203.0	0.990	427.7
0.480	207.4	1.000	432.0
0.490	211.7	1.010	**436.3**
0.500	216.0		
0.510	220.3		

Summary for Link 3L: Hazelhurst Rd

Inflow Area = 15,245.0 m², 0.00% Impervious, Inflow Depth > 22 mm for 10-Year event
Inflow = 0.0870 m³/s @ 0.68 hrs, Volume= 338.5 m³
Primary = 0.0870 m³/s @ 0.68 hrs, Volume= 338.5 m³, Atten= 0%, Lag= 0.0 min

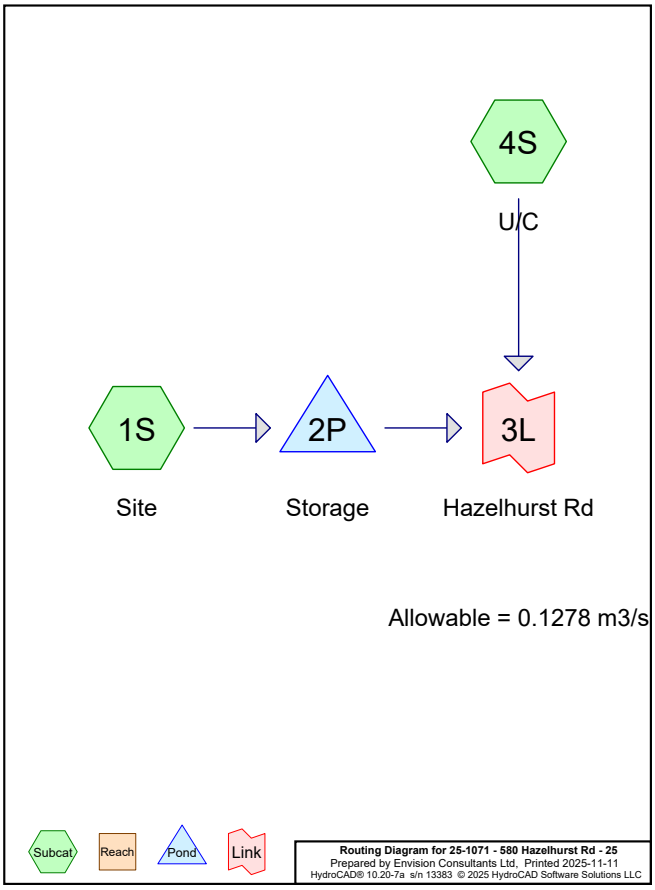
Primary outflow = Inflow, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs

Link 3L: Hazelhurst Rd



Hydrograph for Link 3L: Hazelhurst Rd

Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)	Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	**0.000**	0.0000	2.60	0.0043	0.000	0.0043
0.05	0.0008	0.000	0.0008	2.65	0.0041	0.000	0.0041
0.10	0.0024	0.000	0.0024	2.70	0.0039	0.000	0.0039
0.15	0.0065	0.000	0.0065	2.75	0.0037	0.000	0.0037
0.20	0.0152	0.000	0.0152	2.80	0.0035	0.000	0.0035
0.25	0.0291	0.000	0.0291	2.85	0.0033	0.000	0.0033
0.30	0.0442	0.000	0.0442	2.90	0.0031	0.000	0.0031
0.35	0.0550	0.000	0.0550	2.95	0.0030	0.000	0.0030
0.40	0.0631	0.000	0.0631	3.00	0.0029	0.000	0.0029
0.45	0.0698	0.000	0.0698	3.05	0.0027	0.000	0.0027
0.50	0.0755	0.000	0.0755	3.10	0.0026	0.000	0.0026
0.55	0.0805	0.000	0.0805	3.15	0.0025	0.000	0.0025
0.60	0.0847	0.000	0.0847	3.20	0.0024	0.000	0.0024
0.65	**0.0866**	0.000	**0.0866**	3.25	0.0023	0.000	0.0023
0.70	**0.0869**	0.000	**0.0869**	3.30	0.0022	0.000	0.0022
0.75	0.0855	0.000	0.0855	3.35	0.0021	0.000	0.0021
0.80	0.0825	0.000	0.0825	3.40	0.0020	0.000	0.0020
0.85	0.0783	0.000	0.0783	3.45	0.0019	0.000	0.0019
0.90	0.0741	0.000	0.0741	3.50	0.0019	0.000	0.0019
0.95	0.0700	0.000	0.0700	3.55	0.0018	0.000	0.0018
1.00	0.0658	0.000	0.0658	3.60	0.0017	0.000	0.0017
1.05	0.0617	0.000	0.0617	3.65	0.0017	0.000	0.0017
1.10	0.0575	0.000	0.0575	3.70	0.0016	0.000	0.0016
1.15	0.0534	0.000	0.0534	3.75	0.0016	0.000	0.0016
1.20	0.0495	0.000	0.0495	3.80	0.0015	0.000	0.0015
1.25	0.0452	0.000	0.0452	3.85	0.0015	0.000	0.0015
1.30	0.0406	0.000	0.0406	3.90	0.0014	0.000	0.0014
1.35	0.0363	0.000	0.0363	3.95	0.0014	0.000	0.0014
1.40	0.0323	0.000	0.0323	4.00	0.0013	0.000	0.0013
1.45	0.0288	0.000	0.0288				
1.50	0.0257	0.000	0.0257				
1.55	0.0230	0.000	0.0230				
1.60	0.0206	0.000	0.0206				
1.65	0.0186	0.000	0.0186				
1.70	0.0168	0.000	0.0168				
1.75	0.0152	0.000	0.0152				
1.80	0.0138	0.000	0.0138				
1.85	0.0126	0.000	0.0126				
1.90	0.0115	0.000	0.0115				
1.95	0.0106	0.000	0.0106				
2.00	0.0098	0.000	0.0098				
2.05	0.0090	0.000	0.0090				
2.10	0.0083	0.000	0.0083				
2.15	0.0077	0.000	0.0077				
2.20	0.0072	0.000	0.0072				
2.25	0.0067	0.000	0.0067				
2.30	0.0063	0.000	0.0063				
2.35	0.0059	0.000	0.0059				
2.40	0.0055	0.000	0.0055				
2.45	0.0052	0.000	0.0052				
2.50	0.0049	0.000	0.0049				
2.55	0.0046	0.000	0.0046				



Area Listing (all nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
6,497.0	0.66	Gravel (1S)
3,621.0	0.99	Impervious At-Grade (1S)
3,171.0	0.99	Roof Area (1S)
915.0	0.28	Softscape (4S)
1,041.0	0.28	Softscape At-Grade (1S)
15,245.0	**0.76**	**TOTAL AREA**

Time span=0.00-4.00 hrs, dt=0.01 hrs, 401 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Site Runoff Area=14,330.0 m² 47.40% Impervious Runoff Depth=30 mm
Tc=15.0 min C=0.79 Runoff=0.2155 m³/s 426.6 m³

Subcatchment4S: U/C Runoff Area=915.0 m² 0.00% Impervious Runoff Depth=11 mm
Tc=15.0 min C=0.28 Runoff=0.0049 m³/s 9.7 m³

Pond 2P: Storage Peak Elev=0.673 m Storage=290.6 m³ Inflow=0.2155 m³/s 426.6 m³
Outflow=0.1000 m³/s 411.9 m³

Link 3L: Hazelhurst Rd Inflow=0.1026 m³/s 421.5 m³
Primary=0.1026 m³/s 421.5 m³

Total Runoff Area = 15,245.0 m² Runoff Volume = 436.3 m³ Average Runoff Depth = 29 mm
55.45% Pervious = 8,453.0 m² 44.55% Impervious = 6,792.0 m²

Summary for Subcatchment 1S: Site

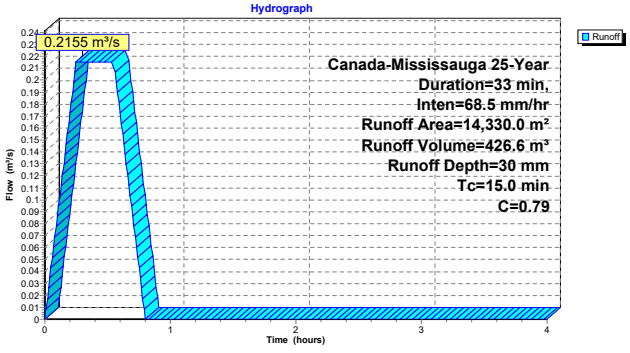
Runoff = 0.2155 m³/s @ 0.25 hrs, Volume= 426.6 m³, Depth= 30 mm
Routed to Pond 2P : Storage

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 25-Year Duration=33 min, Inten=68.5 mm/hr

Area (m²)	C	Description
3,171.0	0.99	Roof Area
3,621.0	0.99	Impervious At-Grade
6,497.0	0.66	Gravel
1,041.0	0.28	Softscape At-Grade
14,330.0	0.79	Weighted Average
7,538.0		52.60% Pervious Area
6,792.0		47.40% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 1S: Site



Hydrograph for Subcatchment 1S: Site

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0172	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0345	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0517	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0689	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0862	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.1034	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.1207	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.1379	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.1551	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.1724	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.1896	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.2068**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.2155**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.2155	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.2155	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.2155	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.2155	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.2155	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.2155	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.2155	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.2155	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.2155	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.2155	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.2155	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.2155	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.2155	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.2155	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.2068	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.1896	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.1724	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.1551	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.1379	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.1207	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.1034	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0862	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0689	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0517	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0345	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0172	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0000	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0000	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Subcatchment 4S: U/C

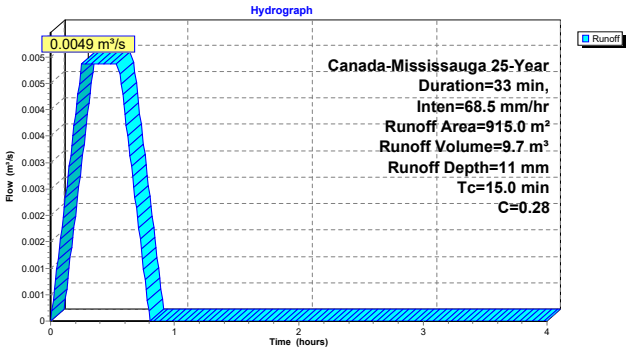
Runoff = 0.0049 m³/s @ 0.25 hrs, Volume= 9.7 m³, Depth= 11 mm
Routed to Link 3L : Hazelhurst Rd

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 25-Year Duration=33 min, Inten=68.5 mm/hr

Area (m²)	C	Description
915.0	0.28	Softscape
915.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 4S: U/C



Hydrograph for Subcatchment 4S: U/C

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0004	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0008	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0012	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0016	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0020	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0023	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0027	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0031	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0035	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0039	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0043	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0047**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0049**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0049	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0049	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0049	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0049	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0049	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0049	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0049	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0049	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0049	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0049	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0049	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0049	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0049	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0049	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0047	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0043	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0039	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0035	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0031	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0027	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0023	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0020	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0016	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0012	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0008	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0004	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0000	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0000	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Pond 2P: Storage

Inflow Area = 14,330.0 m², 47.40% Impervious, Inflow Depth = 30 mm for 25-Year event
Inflow = 0.2155 m³/s @ 0.25 hrs, Volume= 426.6 m³
Outflow = 0.1000 m³/s @ 0.68 hrs, Volume= 411.9 m³, Atten= 54%, Lag= 26.0 min
Primary = 0.1000 m³/s @ 0.68 hrs, Volume= 411.9 m³
Routed to Link 3L : Hazelhurst Rd

Routing by Stor-Ind method, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Starting Elev= 0.040 m Surf.Area= 432.0 m² Storage= 17.3 m³
Peak Elev= 0.673 m @ 0.68 hrs Surf.Area= 432.0 m² Storage= 290.6 m³ (273.3 m³ above start)

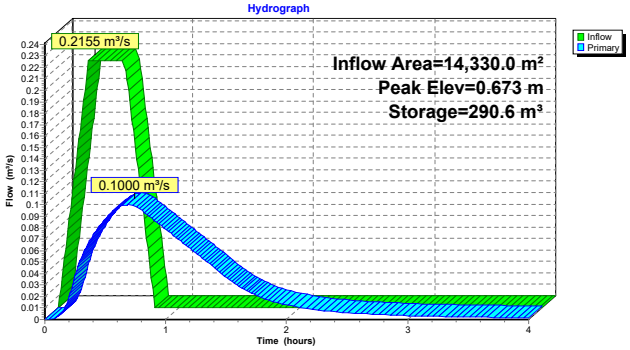
Plug-Flow detention time= 41.6 min calculated for 393.6 m³ (92% of inflow)
Center-of-Mass det. time= 38.5 min (62.5 - 24.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	436.3 m³	**1.00 mW x 450.00 mL x 1.01 mH Prismatoid**x 0.96

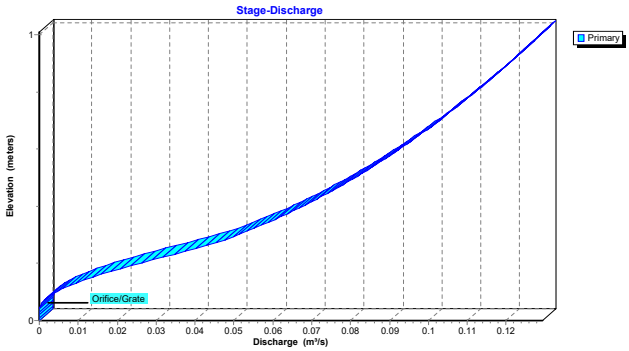
Device	Routing	Invert	Outlet Devices
#1	Primary	0.040 m	**260 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.1000 m³/s @ 0.68 hrs HW=0.673 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.1000 m³/s @ 1.88 m/s)

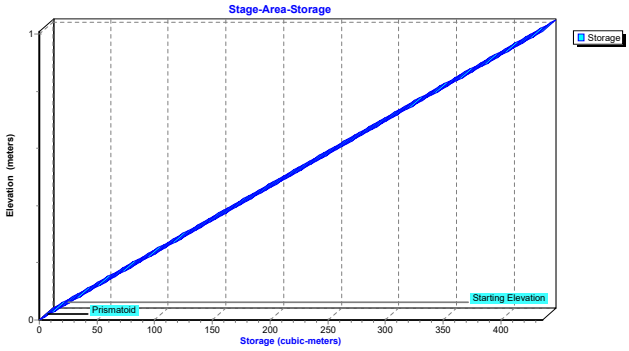
Pond 2P: Storage



Pond 2P: Storage



Pond 2P: Storage



Hydrograph for Pond 2P: Storage

Time (hours)	Inflow (m³/s)	Storage (cubic-meters)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	17.3	0.040	0.0000
0.10	0.0862	32.7	0.076	0.0016
0.20	**0.1724**	76.2	0.176	0.0196
0.30	**0.2155**	136.3	0.316	0.0538
0.40	0.2155	190.7	0.441	0.0735
0.50	0.2155	239.2	0.554	0.0874
0.60	0.1724	**279.4**	**0.647**	**0.0974**
0.70	0.0862	**290.2**	**0.672**	**0.1000**
0.80	0.0000	270.4	0.626	0.0953
0.90	0.0000	237.6	0.550	0.0870
1.00	0.0000	207.8	0.481	0.0787
1.10	0.0000	180.9	0.419	0.0704
1.20	0.0000	157.1	0.364	0.0621
1.30	0.0000	136.2	0.315	0.0538
1.40	0.0000	118.3	0.274	0.0457
1.50	0.0000	103.5	0.240	0.0367
1.60	0.0000	91.7	0.212	0.0291
1.70	0.0000	82.3	0.191	0.0232
1.80	0.0000	74.8	0.173	0.0188
1.90	0.0000	68.7	0.159	0.0154
2.00	0.0000	63.6	0.147	0.0127
2.10	0.0000	59.4	0.138	0.0107
2.20	0.0000	55.9	0.129	0.0091
2.30	0.0000	52.8	0.122	0.0078
2.40	0.0000	50.2	0.116	0.0068
2.50	0.0000	48.0	0.111	0.0059
2.60	0.0000	46.0	0.106	0.0052
2.70	0.0000	44.2	0.102	0.0046
2.80	0.0000	42.6	0.099	0.0041
2.90	0.0000	41.2	0.095	0.0037
3.00	0.0000	40.0	0.093	0.0033
3.10	0.0000	38.8	0.090	0.0030
3.20	0.0000	37.8	0.088	0.0027
3.30	0.0000	36.9	0.085	0.0025
3.40	0.0000	36.0	0.083	0.0023
3.50	0.0000	35.2	0.082	0.0021
3.60	0.0000	34.5	0.080	0.0019
3.70	0.0000	33.8	0.078	0.0018
3.80	0.0000	33.2	0.077	0.0017
3.90	0.0000	32.6	0.075	0.0016
4.00	0.0000	32.1	0.074	0.0015

Stage-Discharge for Pond 2P: Storage

Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)
0.000	0.0000	0.260	0.0422	0.520	0.0835	0.780	0.1102
0.005	0.0000	0.265	0.0435	0.525	0.0841	0.785	0.1107
0.010	0.0000	0.270	0.0448	0.530	0.0847	0.790	0.1111
0.015	0.0000	0.275	0.0460	0.535	0.0852	0.795	0.1116
0.020	0.0000	0.280	0.0472	0.540	0.0858	0.800	0.1120
0.025	0.0000	0.285	0.0482	0.545	0.0864	0.805	0.1124
0.030	0.0000	0.290	0.0493	0.550	0.0870	0.810	0.1129
0.035	0.0000	0.295	0.0502	0.555	0.0876	0.815	0.1133
0.040	0.0000	0.300	0.0509	0.560	0.0881	0.820	0.1138
0.045	0.0000	0.305	0.0518	0.565	0.0887	0.825	0.1142
0.050	0.0001	0.310	0.0528	0.570	0.0892	0.830	0.1146
0.055	0.0003	0.315	0.0537	0.575	0.0898	0.835	0.1151
0.060	0.0005	0.320	0.0546	0.580	0.0904	0.840	0.1155
0.065	0.0008	0.325	0.0556	0.585	0.0909	0.845	0.1159
0.070	0.0011	0.330	0.0564	0.590	0.0914	0.850	0.1164
0.075	0.0015	0.335	0.0573	0.595	0.0920	0.855	0.1168
0.080	0.0019	0.340	0.0582	0.600	0.0925	0.860	0.1172
0.085	0.0024	0.345	0.0590	0.605	0.0931	0.865	0.1176
0.090	0.0030	0.350	0.0599	0.610	0.0936	0.870	0.1181
0.095	0.0036	0.355	0.0607	0.615	0.0941	0.875	0.1185
0.100	0.0043	0.360	0.0615	0.620	0.0947	0.880	0.1189
0.105	0.0050	0.365	0.0623	0.625	0.0952	0.885	0.1193
0.110	0.0057	0.370	0.0631	0.630	0.0957	0.890	0.1197
0.115	0.0065	0.375	0.0639	0.635	0.0962	0.895	0.1201
0.120	0.0074	0.380	0.0647	0.640	0.0967	0.900	0.1206
0.125	0.0083	0.385	0.0654	0.645	0.0972	0.905	0.1210
0.130	0.0092	0.390	0.0662	0.650	0.0978	0.910	0.1214
0.135	0.0102	0.395	0.0669	0.655	0.0983	0.915	0.1218
0.140	0.0112	0.400	0.0677	0.660	0.0988	0.920	0.1222
0.145	0.0122	0.405	0.0684	0.665	0.0993	0.925	0.1226
0.150	0.0133	0.410	0.0691	0.670	0.0998	0.930	0.1230
0.155	0.0144	0.415	0.0698	0.675	0.1003	0.935	0.1234
0.160	0.0156	0.420	0.0706	0.680	0.1008	0.940	0.1238
0.165	0.0168	0.425	0.0713	0.685	0.1013	0.945	0.1242
0.170	0.0180	0.430	0.0719	0.690	0.1018	0.950	0.1246
0.175	0.0192	0.435	0.0726	0.695	0.1022	0.955	0.1250
0.180	0.0205	0.440	0.0733	0.700	0.1027	0.960	0.1254
0.185	0.0218	0.445	0.0740	0.705	0.1032	0.965	0.1258
0.190	0.0231	0.450	0.0747	0.710	0.1037	0.970	0.1262
0.195	0.0244	0.455	0.0753	0.715	0.1042	0.975	0.1266
0.200	0.0258	0.460	0.0760	0.720	0.1046	0.980	0.1270
0.205	0.0271	0.465	0.0766	0.725	0.1051	0.985	0.1274
0.210	0.0285	0.470	0.0773	0.730	0.1056	0.990	0.1278
0.215	0.0299	0.475	0.0779	0.735	0.1061	0.995	0.1282
0.220	0.0313	0.480	0.0786	0.740	0.1065	1.000	0.1286
0.225	0.0327	0.485	0.0792	0.745	0.1070	1.005	0.1289
0.230	0.0341	0.490	0.0798	0.750	0.1075	1.010	**0.1293**
0.235	0.0354	0.495	0.0804	0.755	0.1079		
0.240	0.0368	0.500	0.0811	0.760	0.1084		
0.245	0.0382	0.505	0.0817	0.765	0.1088		
0.250	0.0396	0.510	0.0823	0.770	0.1093		
0.255	0.0409	0.515	0.0829	0.775	0.1098		

Stage-Area-Storage for Pond 2P: Storage

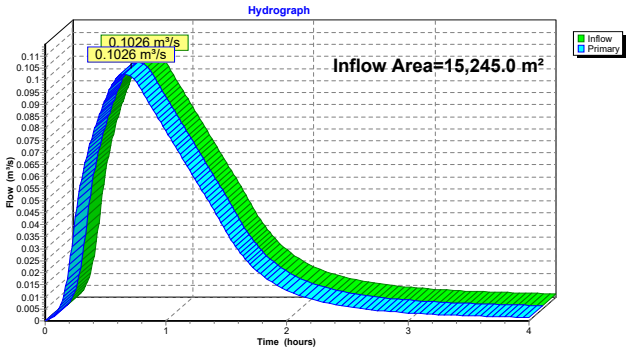
Elevation (meters)	Storage (cubic-meters)	Elevation (meters)	Storage (cubic-meters)
0.000	0.0	0.520	224.6
0.010	4.3	0.530	229.0
0.020	8.6	0.540	233.3
0.030	13.0	0.550	237.6
0.040	17.3	0.560	241.9
0.050	21.6	0.570	246.2
0.060	25.9	0.580	250.6
0.070	30.2	0.590	254.9
0.080	34.6	0.600	259.2
0.090	38.9	0.610	263.5
0.100	43.2	0.620	267.8
0.110	47.5	0.630	272.2
0.120	51.8	0.640	276.5
0.130	56.2	0.650	280.8
0.140	60.5	0.660	285.1
0.150	64.8	0.670	289.4
0.160	69.1	0.680	293.8
0.170	73.4	0.690	298.1
0.180	77.8	0.700	302.4
0.190	82.1	0.710	306.7
0.200	86.4	0.720	311.0
0.210	90.7	0.730	315.4
0.220	95.0	0.740	319.7
0.230	99.4	0.750	324.0
0.240	103.7	0.760	328.3
0.250	108.0	0.770	332.6
0.260	112.3	0.780	337.0
0.270	116.6	0.790	341.3
0.280	121.0	0.800	345.6
0.290	125.3	0.810	349.9
0.300	129.6	0.820	354.2
0.310	133.9	0.830	358.6
0.320	138.2	0.840	362.9
0.330	142.6	0.850	367.2
0.340	146.9	0.860	371.5
0.350	151.2	0.870	375.8
0.360	155.5	0.880	380.2
0.370	159.8	0.890	384.5
0.380	164.2	0.900	388.8
0.390	168.5	0.910	393.1
0.400	172.8	0.920	397.4
0.410	177.1	0.930	401.8
0.420	181.4	0.940	406.1
0.430	185.8	0.950	410.4
0.440	190.1	0.960	414.7
0.450	194.4	0.970	419.0
0.460	198.7	0.980	423.4
0.470	203.0	0.990	427.7
0.480	207.4	1.000	432.0
0.490	211.7	1.010	**436.3**
0.500	216.0		
0.510	220.3		

Summary for Link 3L: Hazelhurst Rd

Inflow Area = 15,245.0 m², 44.55% Impervious, Inflow Depth > 28 mm for 25-Year event
Inflow = 0.1026 m³/s @ 0.66 hrs, Volume= 421.5 m³
Primary = 0.1026 m³/s @ 0.66 hrs, Volume= 421.5 m³, Atten= 0%, Lag= 0.0 min

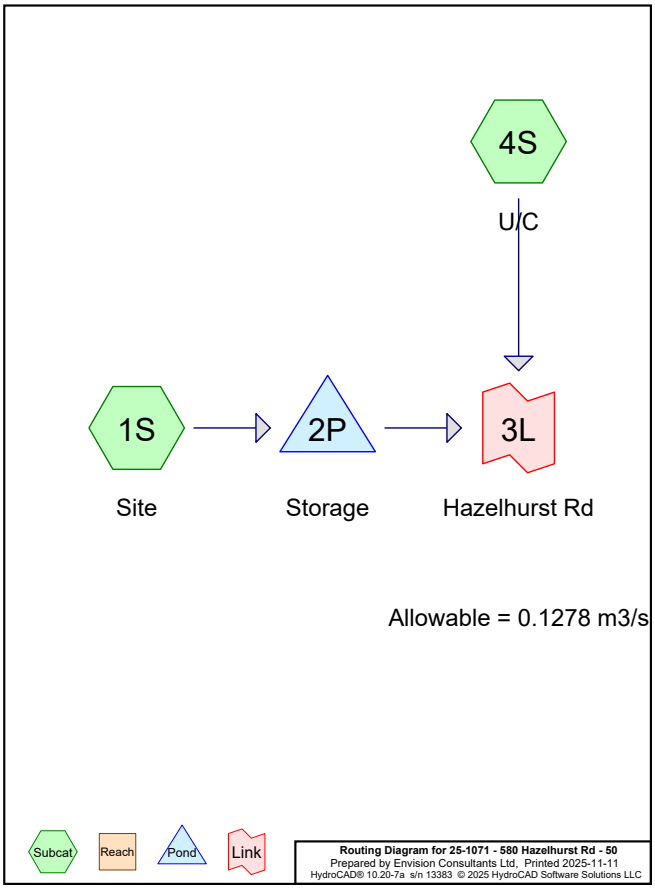
Primary outflow = Inflow, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs

Link 3L: Hazelhurst Rd



Hydrograph for Link 3L: Hazelhurst Rd

Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)	Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	**0.000**	0.0000	2.60	0.0052	0.000	0.0052
0.05	0.0011	0.000	0.0011	2.65	0.0049	0.000	0.0049
0.10	0.0035	0.000	0.0035	2.70	0.0046	0.000	0.0046
0.15	0.0101	0.000	0.0101	2.75	0.0043	0.000	0.0043
0.20	0.0235	0.000	0.0235	2.80	0.0041	0.000	0.0041
0.25	0.0432	0.000	0.0432	2.85	0.0039	0.000	0.0039
0.30	0.0587	0.000	0.0587	2.90	0.0037	0.000	0.0037
0.35	0.0696	0.000	0.0696	2.95	0.0035	0.000	0.0035
0.40	0.0784	0.000	0.0784	3.00	0.0033	0.000	0.0033
0.45	0.0858	0.000	0.0858	3.05	0.0031	0.000	0.0031
0.50	0.0923	0.000	0.0923	3.10	0.0030	0.000	0.0030
0.55	0.0980	0.000	0.0980	3.15	0.0029	0.000	0.0029
0.60	0.1013	0.000	0.1013	3.20	0.0027	0.000	0.0027
0.65	**0.1026**	0.000	**0.1026**	3.25	0.0026	0.000	0.0026
0.70	**0.1019**	0.000	**0.1019**	3.30	0.0025	0.000	0.0025
0.75	0.0995	0.000	0.0995	3.35	0.0024	0.000	0.0024
0.80	0.0953	0.000	0.0953	3.40	0.0023	0.000	0.0023
0.85	0.0911	0.000	0.0911	3.45	0.0022	0.000	0.0022
0.90	0.0870	0.000	0.0870	3.50	0.0021	0.000	0.0021
0.95	0.0828	0.000	0.0828	3.55	0.0020	0.000	0.0020
1.00	0.0787	0.000	0.0787	3.60	0.0019	0.000	0.0019
1.05	0.0745	0.000	0.0745	3.65	0.0019	0.000	0.0019
1.10	0.0704	0.000	0.0704	3.70	0.0018	0.000	0.0018
1.15	0.0662	0.000	0.0662	3.75	0.0017	0.000	0.0017
1.20	0.0621	0.000	0.0621	3.80	0.0017	0.000	0.0017
1.25	0.0579	0.000	0.0579	3.85	0.0016	0.000	0.0016
1.30	0.0538	0.000	0.0538	3.90	0.0016	0.000	0.0016
1.35	0.0499	0.000	0.0499	3.95	0.0015	0.000	0.0015
1.40	0.0457	0.000	0.0457	4.00	0.0015	0.000	0.0015
1.45	0.0411	0.000	0.0411				
1.50	0.0367	0.000	0.0367				
1.55	0.0327	0.000	0.0327				
1.60	0.0291	0.000	0.0291				
1.65	0.0260	0.000	0.0260				
1.70	0.0232	0.000	0.0232				
1.75	0.0208	0.000	0.0208				
1.80	0.0188	0.000	0.0188				
1.85	0.0170	0.000	0.0170				
1.90	0.0154	0.000	0.0154				
1.95	0.0140	0.000	0.0140				
2.00	0.0127	0.000	0.0127				
2.05	0.0116	0.000	0.0116				
2.10	0.0107	0.000	0.0107				
2.15	0.0098	0.000	0.0098				
2.20	0.0091	0.000	0.0091				
2.25	0.0084	0.000	0.0084				
2.30	0.0078	0.000	0.0078				
2.35	0.0073	0.000	0.0073				
2.40	0.0068	0.000	0.0068				
2.45	0.0063	0.000	0.0063				
2.50	0.0059	0.000	0.0059				
2.55	0.0055	0.000	0.0055				



Area Listing (all nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
6,497.0	0.72	Gravel (1S)
3,621.0	1.00	Impervious At-Grade (1S)
3,171.0	1.00	Roof Area (1S)
915.0	0.30	Softscape (4S)
1,041.0	0.30	Softscape At-Grade (1S)
15,245.0	**0.79**	**TOTAL AREA**

Time span=0.00-4.00 hrs, dt=0.01 hrs, 401 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Site Runoff Area=14,330.0 m² 47.40% Impervious Runoff Depth=35 mm
Tc=15.0 min C=0.82 Runoff=0.2402 m³/s 504.5 m³

Subcatchment4S: U/C Runoff Area=915.0 m² 0.00% Impervious Runoff Depth=13 mm
Tc=15.0 min C=0.30 Runoff=0.0056 m³/s 11.8 m³

Pond 2P: Storage Peak Elev=0.788 m Storage=340.5 m³ Inflow=0.2402 m³/s 504.5 m³
Outflow=0.1109 m³/s 488.8 m³

Link 3L: Hazelhurst Rd Inflow=0.1139 m³/s 500.6 m³
Primary=0.1139 m³/s 500.6 m³

Total Runoff Area = 15,245.0 m² Runoff Volume = 516.3 m³ Average Runoff Depth = 34 mm
55.45% Pervious = 8,453.0 m² 44.55% Impervious = 6,792.0 m²

Summary for Subcatchment 1S: Site

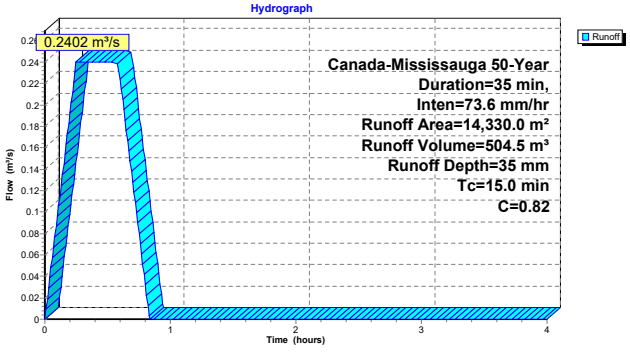
Runoff = 0.2402 m³/s @ 0.25 hrs, Volume= 504.5 m³, Depth= 35 mm
Routed to Pond 2P : Storage

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 50-Year Duration=35 min, Inten=73.6 mm/hr

Area (m²)	C	Description
3,171.0	1.00	Roof Area
3,621.0	1.00	Impervious At-Grade
6,497.0	0.72	Gravel
1,041.0	0.30	Softscape At-Grade
14,330.0	0.82	Weighted Average
7,538.0		52.60% Pervious Area
6,792.0		47.40% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 1S: Site



Hydrograph for Subcatchment 1S: Site

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0192	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0384	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0577	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0769	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0961	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.1153	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.1345	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.1538	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.1730	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.1922	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.2114	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.2306**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.2402**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.2402	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.2402	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.2402	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.2402	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.2402	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.2402	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.2402	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.2402	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.2402	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.2402	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.2402	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.2402	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.2402	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.2402	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.2402	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.2402	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.2242	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.2050	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.1858	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.1666	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.1473	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.1281	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.1089	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0897	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0705	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0513	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0320	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0128	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Subcatchment 4S: U/C

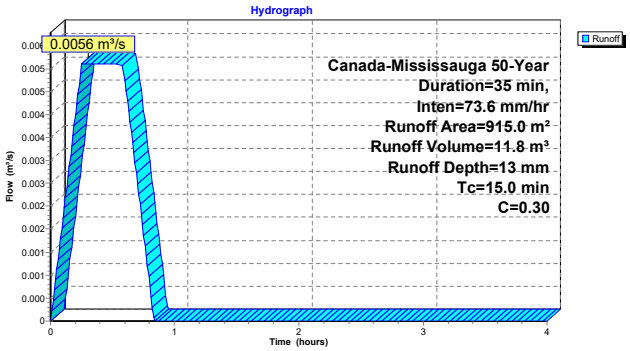
Runoff = 0.0056 m³/s @ 0.25 hrs, Volume= 11.8 m³, Depth= 13 mm
Routed to Link 3L : Hazelhurst Rd

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 50-Year Duration=35 min, Inten=73.6 mm/hr

Area (m²)	C	Description
915.0	0.30	Softscape
915.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 4S: U/C



Hydrograph for Subcatchment 4S: U/C

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0004	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0009	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0013	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0018	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0022	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0027	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0031	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0036	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0040	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0045	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0049	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0054**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0056**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0056	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0056	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0056	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0056	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0056	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0056	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0056	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0056	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0056	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0056	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0056	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0056	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0056	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0056	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0056	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0056	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0052	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0048	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0043	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0039	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0034	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0030	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0025	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0021	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0016	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0012	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0007	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0003	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0000	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0000	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0000	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Pond 2P: Storage

Inflow Area = 14,330.0 m², 47.40% Impervious, Inflow Depth = 35 mm for 50-Year event
Inflow = 0.2402 m³/s @ 0.25 hrs, Volume= 504.5 m³
Outflow = 0.1109 m³/s @ 0.72 hrs, Volume= 488.8 m³, Atten= 54%, Lag= 28.1 min
Primary = 0.1109 m³/s @ 0.72 hrs, Volume= 488.8 m³
Routed to Link 3L : Hazelhurst Rd

Routing by Stor-Ind method, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Starting Elev= 0.040 m Surf.Area= 432.0 m² Storage= 17.3 m³
Peak Elev= 0.788 m @ 0.72 hrs Surf.Area= 432.0 m² Storage= 340.5 m³ (323.2 m³ above start)

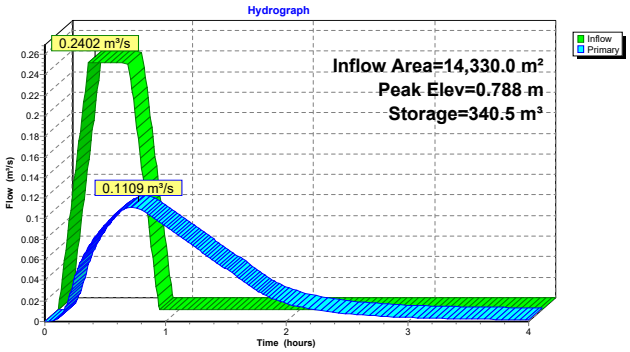
Plug-Flow detention time= 42.9 min calculated for 471.6 m³ (93% of inflow)
Center-of-Mass det. time= 39.7 min (64.7 - 25.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	436.3 m³	**1.00 mW x 450.00 mL x 1.01 mH Prismatoid**x 0.96

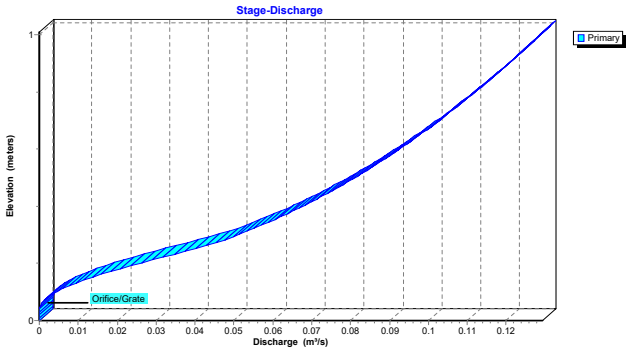
Device	Routing	Invert	Outlet Devices
#1	Primary	0.040 m	**260 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.1109 m³/s @ 0.72 hrs HW=0.788 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.1109 m³/s @ 2.09 m/s)

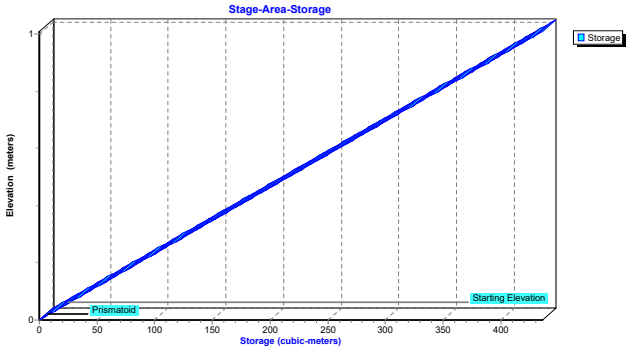
Pond 2P: Storage



Pond 2P: Storage



Pond 2P: Storage



Hydrograph for Pond 2P: Storage

Time (hours)	Inflow (m³/s)	Storage (cubic-meters)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	17.3	0.040	0.0000
0.10	0.0961	34.4	0.080	0.0019
0.20	**0.1922**	82.7	0.191	0.0235
0.30	**0.2402**	149.4	0.346	0.0592
0.40	0.2402	210.7	0.488	0.0795
0.50	0.2402	265.8	0.615	0.0942
0.60	0.2242	315.7	0.731	0.1057
0.70	0.1281	**339.9**	**0.787**	**0.1108**
0.80	0.0320	**329.0**	**0.762**	**0.1085**
0.90	0.0000	293.3	0.679	0.1007
1.00	0.0000	258.5	0.598	0.0924
1.10	0.0000	226.8	0.525	0.0841
1.20	0.0000	198.0	0.458	0.0758
1.30	0.0000	172.2	0.399	0.0675
1.40	0.0000	149.4	0.346	0.0592
1.50	0.0000	129.6	0.300	0.0510
1.60	0.0000	112.7	0.261	0.0425
1.70	0.0000	99.0	0.229	0.0338
1.80	0.0000	88.2	0.204	0.0269
1.90	0.0000	79.5	0.184	0.0215
2.00	0.0000	72.5	0.168	0.0175
2.10	0.0000	66.8	0.155	0.0144
2.20	0.0000	62.1	0.144	0.0120
2.30	0.0000	58.1	0.135	0.0101
2.40	0.0000	54.8	0.127	0.0086
2.50	0.0000	51.9	0.120	0.0074
2.60	0.0000	49.4	0.114	0.0064
2.70	0.0000	47.2	0.109	0.0056
2.80	0.0000	45.3	0.105	0.0050
2.90	0.0000	43.6	0.101	0.0044
3.00	0.0000	42.1	0.098	0.0040
3.10	0.0000	40.8	0.094	0.0036
3.20	0.0000	39.6	0.092	0.0032
3.30	0.0000	38.5	0.089	0.0029
3.40	0.0000	37.5	0.087	0.0027
3.50	0.0000	36.6	0.085	0.0024
3.60	0.0000	35.7	0.083	0.0022
3.70	0.0000	34.9	0.081	0.0020
3.80	0.0000	34.2	0.079	0.0019
3.90	0.0000	33.6	0.078	0.0018
4.00	0.0000	33.0	0.076	0.0016

Stage-Discharge for Pond 2P: Storage

Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)
0.000	0.0000	0.260	0.0422	0.520	0.0835	0.780	0.1102
0.005	0.0000	0.265	0.0435	0.525	0.0841	0.785	0.1107
0.010	0.0000	0.270	0.0448	0.530	0.0847	0.790	0.1111
0.015	0.0000	0.275	0.0460	0.535	0.0852	0.795	0.1116
0.020	0.0000	0.280	0.0472	0.540	0.0858	0.800	0.1120
0.025	0.0000	0.285	0.0482	0.545	0.0864	0.805	0.1124
0.030	0.0000	0.290	0.0493	0.550	0.0870	0.810	0.1129
0.035	0.0000	0.295	0.0502	0.555	0.0876	0.815	0.1133
0.040	0.0000	0.300	0.0509	0.560	0.0881	0.820	0.1138
0.045	0.0000	0.305	0.0518	0.565	0.0887	0.825	0.1142
0.050	0.0001	0.310	0.0528	0.570	0.0892	0.830	0.1146
0.055	0.0003	0.315	0.0537	0.575	0.0898	0.835	0.1151
0.060	0.0005	0.320	0.0546	0.580	0.0904	0.840	0.1155
0.065	0.0008	0.325	0.0556	0.585	0.0909	0.845	0.1159
0.070	0.0011	0.330	0.0564	0.590	0.0914	0.850	0.1164
0.075	0.0015	0.335	0.0573	0.595	0.0920	0.855	0.1168
0.080	0.0019	0.340	0.0582	0.600	0.0925	0.860	0.1172
0.085	0.0024	0.345	0.0590	0.605	0.0931	0.865	0.1176
0.090	0.0030	0.350	0.0599	0.610	0.0936	0.870	0.1181
0.095	0.0036	0.355	0.0607	0.615	0.0941	0.875	0.1185
0.100	0.0043	0.360	0.0615	0.620	0.0947	0.880	0.1189
0.105	0.0050	0.365	0.0623	0.625	0.0952	0.885	0.1193
0.110	0.0057	0.370	0.0631	0.630	0.0957	0.890	0.1197
0.115	0.0065	0.375	0.0639	0.635	0.0962	0.895	0.1201
0.120	0.0074	0.380	0.0647	0.640	0.0967	0.900	0.1206
0.125	0.0083	0.385	0.0654	0.645	0.0972	0.905	0.1210
0.130	0.0092	0.390	0.0662	0.650	0.0978	0.910	0.1214
0.135	0.0102	0.395	0.0669	0.655	0.0983	0.915	0.1218
0.140	0.0112	0.400	0.0677	0.660	0.0988	0.920	0.1222
0.145	0.0122	0.405	0.0684	0.665	0.0993	0.925	0.1226
0.150	0.0133	0.410	0.0691	0.670	0.0998	0.930	0.1230
0.155	0.0144	0.415	0.0698	0.675	0.1003	0.935	0.1234
0.160	0.0156	0.420	0.0706	0.680	0.1008	0.940	0.1238
0.165	0.0168	0.425	0.0713	0.685	0.1013	0.945	0.1242
0.170	0.0180	0.430	0.0719	0.690	0.1018	0.950	0.1246
0.175	0.0192	0.435	0.0726	0.695	0.1022	0.955	0.1250
0.180	0.0205	0.440	0.0733	0.700	0.1027	0.960	0.1254
0.185	0.0218	0.445	0.0740	0.705	0.1032	0.965	0.1258
0.190	0.0231	0.450	0.0747	0.710	0.1037	0.970	0.1262
0.195	0.0244	0.455	0.0753	0.715	0.1042	0.975	0.1266
0.200	0.0258	0.460	0.0760	0.720	0.1046	0.980	0.1270
0.205	0.0271	0.465	0.0766	0.725	0.1051	0.985	0.1274
0.210	0.0285	0.470	0.0773	0.730	0.1056	0.990	0.1278
0.215	0.0299	0.475	0.0779	0.735	0.1061	0.995	0.1282
0.220	0.0313	0.480	0.0786	0.740	0.1065	1.000	0.1286
0.225	0.0327	0.485	0.0792	0.745	0.1070	1.005	0.1289
0.230	0.0341	0.490	0.0798	0.750	0.1075	1.010	**0.1293**
0.235	0.0354	0.495	0.0804	0.755	0.1079		
0.240	0.0368	0.500	0.0811	0.760	0.1084		
0.245	0.0382	0.505	0.0817	0.765	0.1088		
0.250	0.0396	0.510	0.0823	0.770	0.1093		
0.255	0.0409	0.515	0.0829	0.775	0.1098		

Stage-Area-Storage for Pond 2P: Storage

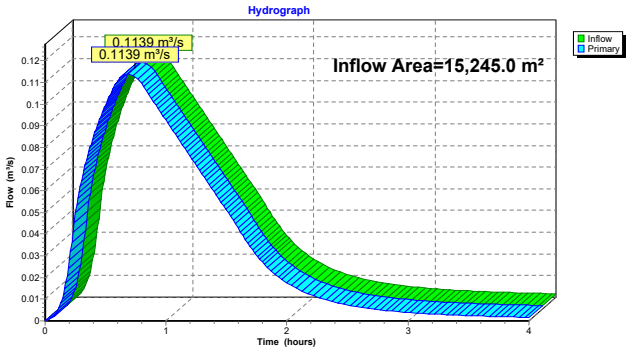
Elevation (meters)	Storage (cubic-meters)	Elevation (meters)	Storage (cubic-meters)
0.000	0.0	0.520	224.6
0.010	4.3	0.530	229.0
0.020	8.6	0.540	233.3
0.030	13.0	0.550	237.6
0.040	17.3	0.560	241.9
0.050	21.6	0.570	246.2
0.060	25.9	0.580	250.6
0.070	30.2	0.590	254.9
0.080	34.6	0.600	259.2
0.090	38.9	0.610	263.5
0.100	43.2	0.620	267.8
0.110	47.5	0.630	272.2
0.120	51.8	0.640	276.5
0.130	56.2	0.650	280.8
0.140	60.5	0.660	285.1
0.150	64.8	0.670	289.4
0.160	69.1	0.680	293.8
0.170	73.4	0.690	298.1
0.180	77.8	0.700	302.4
0.190	82.1	0.710	306.7
0.200	86.4	0.720	311.0
0.210	90.7	0.730	315.4
0.220	95.0	0.740	319.7
0.230	99.4	0.750	324.0
0.240	103.7	0.760	328.3
0.250	108.0	0.770	332.6
0.260	112.3	0.780	337.0
0.270	116.6	0.790	341.3
0.280	121.0	0.800	345.6
0.290	125.3	0.810	349.9
0.300	129.6	0.820	354.2
0.310	133.9	0.830	358.6
0.320	138.2	0.840	362.9
0.330	142.6	0.850	367.2
0.340	146.9	0.860	371.5
0.350	151.2	0.870	375.8
0.360	155.5	0.880	380.2
0.370	159.8	0.890	384.5
0.380	164.2	0.900	388.8
0.390	168.5	0.910	393.1
0.400	172.8	0.920	397.4
0.410	177.1	0.930	401.8
0.420	181.4	0.940	406.1
0.430	185.8	0.950	410.4
0.440	190.1	0.960	414.7
0.450	194.4	0.970	419.0
0.460	198.7	0.980	423.4
0.470	203.0	0.990	427.7
0.480	207.4	1.000	432.0
0.490	211.7	1.010	**436.3**
0.500	216.0		
0.510	220.3		

Summary for Link 3L: Hazelhurst Rd

Inflow Area = 15,245.0 m², 44.55% Impervious, Inflow Depth > 33 mm for 50-Year event
Inflow = 0.1139 m³/s @ 0.69 hrs, Volume= 500.6 m³
Primary = 0.1139 m³/s @ 0.69 hrs, Volume= 500.6 m³, Atten= 0%, Lag= 0.0 min

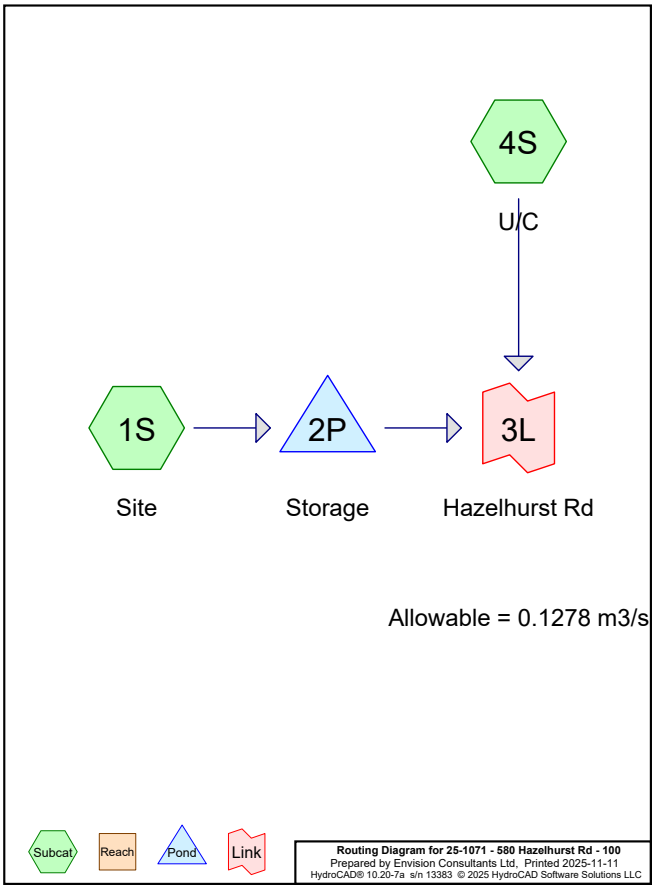
Primary outflow = Inflow, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs

Link 3L: Hazelhurst Rd



Hydrograph for Link 3L: Hazelhurst Rd

Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)	Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	**0.000**	0.0000	2.60	0.0064	0.000	0.0064
0.05	0.0013	0.000	0.0013	2.65	0.0060	0.000	0.0060
0.10	0.0042	0.000	0.0042	2.70	0.0056	0.000	0.0056
0.15	0.0122	0.000	0.0122	2.75	0.0053	0.000	0.0053
0.20	0.0279	0.000	0.0279	2.80	0.0050	0.000	0.0050
0.25	0.0497	0.000	0.0497	2.85	0.0047	0.000	0.0047
0.30	0.0648	0.000	0.0648	2.90	0.0044	0.000	0.0044
0.35	0.0760	0.000	0.0760	2.95	0.0042	0.000	0.0042
0.40	0.0851	0.000	0.0851	3.00	0.0040	0.000	0.0040
0.45	0.0929	0.000	0.0929	3.05	0.0038	0.000	0.0038
0.50	0.0998	0.000	0.0998	3.10	0.0036	0.000	0.0036
0.55	0.1059	0.000	0.1059	3.15	0.0034	0.000	0.0034
0.60	0.1109	0.000	0.1109	3.20	0.0032	0.000	0.0032
0.65	**0.1134**	0.000	**0.1134**	3.25	0.0030	0.000	0.0030
0.70	**0.1138**	0.000	**0.1138**	3.30	0.0029	0.000	0.0029
0.75	0.1124	0.000	0.1124	3.35	0.0028	0.000	0.0028
0.80	0.1093	0.000	0.1093	3.40	0.0027	0.000	0.0027
0.85	0.1048	0.000	0.1048	3.45	0.0025	0.000	0.0025
0.90	0.1007	0.000	0.1007	3.50	0.0024	0.000	0.0024
0.95	0.0965	0.000	0.0965	3.55	0.0023	0.000	0.0023
1.00	0.0924	0.000	0.0924	3.60	0.0022	0.000	0.0022
1.05	0.0882	0.000	0.0882	3.65	0.0021	0.000	0.0021
1.10	0.0841	0.000	0.0841	3.70	0.0020	0.000	0.0020
1.15	0.0799	0.000	0.0799	3.75	0.0020	0.000	0.0020
1.20	0.0758	0.000	0.0758	3.80	0.0019	0.000	0.0019
1.25	0.0716	0.000	0.0716	3.85	0.0018	0.000	0.0018
1.30	0.0675	0.000	0.0675	3.90	0.0018	0.000	0.0018
1.35	0.0633	0.000	0.0633	3.95	0.0017	0.000	0.0017
1.40	0.0592	0.000	0.0592	4.00	0.0016	0.000	0.0016
1.45	0.0550	0.000	0.0550				
1.50	0.0510	0.000	0.0510				
1.55	0.0470	0.000	0.0470				
1.60	0.0425	0.000	0.0425				
1.65	0.0380	0.000	0.0380				
1.70	0.0338	0.000	0.0338				
1.75	0.0301	0.000	0.0301				
1.80	0.0269	0.000	0.0269				
1.85	0.0240	0.000	0.0240				
1.90	0.0215	0.000	0.0215				
1.95	0.0194	0.000	0.0194				
2.00	0.0175	0.000	0.0175				
2.05	0.0158	0.000	0.0158				
2.10	0.0144	0.000	0.0144				
2.15	0.0131	0.000	0.0131				
2.20	0.0120	0.000	0.0120				
2.25	0.0110	0.000	0.0110				
2.30	0.0101	0.000	0.0101				
2.35	0.0093	0.000	0.0093				
2.40	0.0086	0.000	0.0086				
2.45	0.0080	0.000	0.0080				
2.50	0.0074	0.000	0.0074				
2.55	0.0069	0.000	0.0069				



Area Listing (all nodes)

Area (sq-meters)	C	Description (subcatchment-numbers)
6,497.0	0.75	Gravel (1S)
3,621.0	1.00	Impervious At-Grade (1S)
3,171.0	1.00	Roof Area (1S)
915.0	0.32	Softscape (4S)
1,041.0	0.32	Softscape At-Grade (1S)
15,245.0	**0.81**	**TOTAL AREA**

Time span=0.00-4.00 hrs, dt=0.01 hrs, 401 points
Runoff by Rational method, Rise/Fall=1.0/1.0 xTc
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Site Runoff Area=14,330.0 m² 47.40% Impervious Runoff Depth=41 mm
Tc=15.0 min C=0.84 Runoff=0.2538 m³/s 593.9 m³

Subcatchment4S: U/C Runoff Area=915.0 m² 0.00% Impervious Runoff Depth=16 mm
Tc=15.0 min C=0.32 Runoff=0.0062 m³/s 14.4 m³

Pond 2P: Storage Peak Elev=0.908 m Storage=392.1 m³ Inflow=0.2538 m³/s 593.9 m³
Outflow=0.1212 m³/s 577.0 m³

Link 3L: Hazelhurst Rd Inflow=0.1246 m³/s 591.5 m³
Primary=0.1246 m³/s 591.5 m³

Total Runoff Area = 15,245.0 m² Runoff Volume = 608.3 m³ Average Runoff Depth = 40 mm
55.45% Pervious = 8,453.0 m² 44.55% Impervious = 6,792.0 m²

Summary for Subcatchment 1S: Site

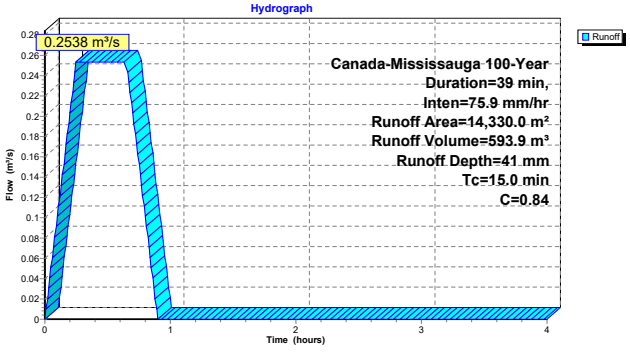
Runoff = 0.2538 m³/s @ 0.25 hrs, Volume= 593.9 m³, Depth= 41 mm
Routed to Pond 2P : Storage

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 100-Year Duration=39 min, Inten=75.9 mm/hr

Area (m²)	C	Description
3,171.0	1.00	Roof Area
3,621.0	1.00	Impervious At-Grade
6,497.0	0.75	Gravel
1,041.0	0.32	Softscape At-Grade
14,330.0	0.84	Weighted Average
7,538.0		52.60% Pervious Area
6,792.0		47.40% Impervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 1S: Site



Hydrograph for Subcatchment 1S: Site

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0203	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0406	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0609	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0812	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.1015	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.1218	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.1421	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.1624	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.1827	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.2030	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.2233	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.2436**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.2538**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.2538	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.2538	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.2538	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.2538	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.2538	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.2538	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.2538	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.2538	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.2538	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.2538	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.2538	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.2538	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.2538	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.2538	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.2538	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.2538	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.2538	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.2538	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.2538	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.2436	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.2233	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.2030	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.1827	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.1624	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.1421	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.1218	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.1015	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0812	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0609	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0406	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0203	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Subcatchment 4S: U/C

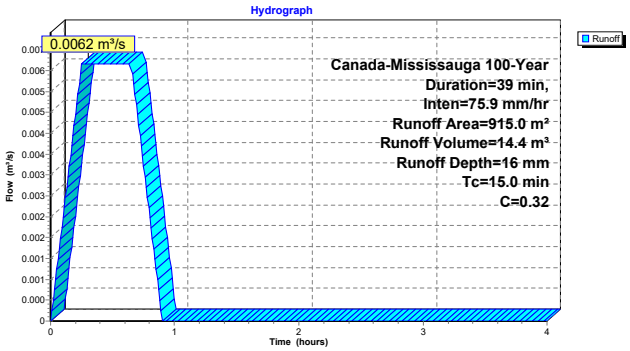
Runoff = 0.0062 m³/s @ 0.25 hrs, Volume= 14.4 m³, Depth= 16 mm
Routed to Link 3L : Hazelhurst Rd

Runoff by Rational method, Rise/Fall=1.0/1.0 xTc, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Canada-Mississauga 100-Year Duration=39 min, Inten=75.9 mm/hr

Area (m²)	C	Description
915.0	0.32	Softscape
915.0		100.00% Pervious Area

Tc (min)	Length (meters)	Slope (m/m)	Velocity (m/sec)	Capacity (m³/s)	Description
15.0					**Direct Entry,**

Subcatchment 4S: U/C



Hydrograph for Subcatchment 4S: U/C

Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)	Time (hours)	Runoff (m³/s)
0.00	0.0000	1.04	0.0000	2.08	0.0000	3.12	0.0000
0.02	0.0005	1.06	0.0000	2.10	0.0000	3.14	0.0000
0.04	0.0010	1.08	0.0000	2.12	0.0000	3.16	0.0000
0.06	0.0015	1.10	0.0000	2.14	0.0000	3.18	0.0000
0.08	0.0020	1.12	0.0000	2.16	0.0000	3.20	0.0000
0.10	0.0025	1.14	0.0000	2.18	0.0000	3.22	0.0000
0.12	0.0030	1.16	0.0000	2.20	0.0000	3.24	0.0000
0.14	0.0035	1.18	0.0000	2.22	0.0000	3.26	0.0000
0.16	0.0040	1.20	0.0000	2.24	0.0000	3.28	0.0000
0.18	0.0044	1.22	0.0000	2.26	0.0000	3.30	0.0000
0.20	0.0049	1.24	0.0000	2.28	0.0000	3.32	0.0000
0.22	0.0054	1.26	0.0000	2.30	0.0000	3.34	0.0000
0.24	**0.0059**	1.28	0.0000	2.32	0.0000	3.36	0.0000
0.26	**0.0062**	1.30	0.0000	2.34	0.0000	3.38	0.0000
0.28	0.0062	1.32	0.0000	2.36	0.0000	3.40	0.0000
0.30	0.0062	1.34	0.0000	2.38	0.0000	3.42	0.0000
0.32	0.0062	1.36	0.0000	2.40	0.0000	3.44	0.0000
0.34	0.0062	1.38	0.0000	2.42	0.0000	3.46	0.0000
0.36	0.0062	1.40	0.0000	2.44	0.0000	3.48	0.0000
0.38	0.0062	1.42	0.0000	2.46	0.0000	3.50	0.0000
0.40	0.0062	1.44	0.0000	2.48	0.0000	3.52	0.0000
0.42	0.0062	1.46	0.0000	2.50	0.0000	3.54	0.0000
0.44	0.0062	1.48	0.0000	2.52	0.0000	3.56	0.0000
0.46	0.0062	1.50	0.0000	2.54	0.0000	3.58	0.0000
0.48	0.0062	1.52	0.0000	2.56	0.0000	3.60	0.0000
0.50	0.0062	1.54	0.0000	2.58	0.0000	3.62	0.0000
0.52	0.0062	1.56	0.0000	2.60	0.0000	3.64	0.0000
0.54	0.0062	1.58	0.0000	2.62	0.0000	3.66	0.0000
0.56	0.0062	1.60	0.0000	2.64	0.0000	3.68	0.0000
0.58	0.0062	1.62	0.0000	2.66	0.0000	3.70	0.0000
0.60	0.0062	1.64	0.0000	2.68	0.0000	3.72	0.0000
0.62	0.0062	1.66	0.0000	2.70	0.0000	3.74	0.0000
0.64	0.0062	1.68	0.0000	2.72	0.0000	3.76	0.0000
0.66	0.0059	1.70	0.0000	2.74	0.0000	3.78	0.0000
0.68	0.0054	1.72	0.0000	2.76	0.0000	3.80	0.0000
0.70	0.0049	1.74	0.0000	2.78	0.0000	3.82	0.0000
0.72	0.0044	1.76	0.0000	2.80	0.0000	3.84	0.0000
0.74	0.0040	1.78	0.0000	2.82	0.0000	3.86	0.0000
0.76	0.0035	1.80	0.0000	2.84	0.0000	3.88	0.0000
0.78	0.0030	1.82	0.0000	2.86	0.0000	3.90	0.0000
0.80	0.0025	1.84	0.0000	2.88	0.0000	3.92	0.0000
0.82	0.0020	1.86	0.0000	2.90	0.0000	3.94	0.0000
0.84	0.0015	1.88	0.0000	2.92	0.0000	3.96	0.0000
0.86	0.0010	1.90	0.0000	2.94	0.0000	3.98	0.0000
0.88	0.0005	1.92	0.0000	2.96	0.0000	4.00	0.0000
0.90	0.0000	1.94	0.0000	2.98	0.0000		
0.92	0.0000	1.96	0.0000	3.00	0.0000		
0.94	0.0000	1.98	0.0000	3.02	0.0000		
0.96	0.0000	2.00	0.0000	3.04	0.0000		
0.98	0.0000	2.02	0.0000	3.06	0.0000		
1.00	0.0000	2.04	0.0000	3.08	0.0000		
1.02	0.0000	2.06	0.0000	3.10	0.0000		

Summary for Pond 2P: Storage

Inflow Area = 14,330.0 m², 47.40% Impervious, Inflow Depth = 41 mm for 100-Year event
Inflow = 0.2538 m³/s @ 0.25 hrs, Volume= 593.9 m³
Outflow = 0.1212 m³/s @ 0.78 hrs, Volume= 577.0 m³, Atten= 52%, Lag= 31.8 min
Primary = 0.1212 m³/s @ 0.78 hrs, Volume= 577.0 m³
Routed to Link 3L : Hazelhurst Rd

Routing by Stor-Ind method, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs
Starting Elev= 0.040 m Surf.Area= 432.0 m² Storage= 17.3 m³
Peak Elev= 0.908 m @ 0.78 hrs Surf.Area= 432.0 m² Storage= 392.1 m³ (374.8 m³ above start)

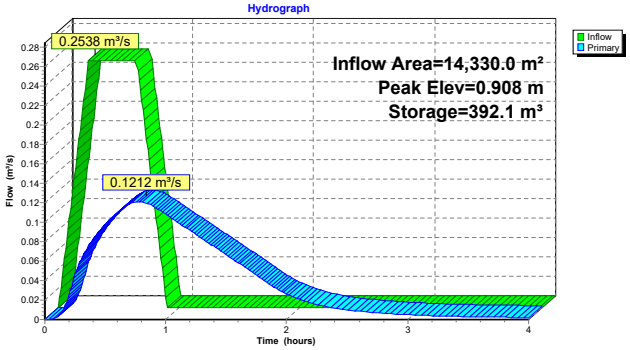
Plug-Flow detention time= 43.7 min calculated for 558.3 m³ (94% of inflow)
Center-of-Mass det. time= 41.0 min (68.0 - 27.0)

Volume	Invert	Avail.Storage	Storage Description
#1	0.000 m	436.3 m³	**1.00 mW x 450.00 mL x 1.01 mH Prismatoid**x 0.96

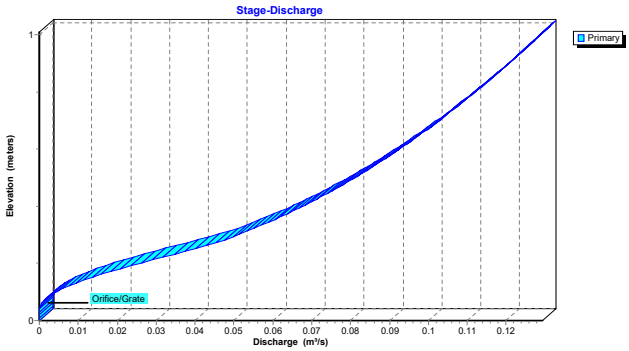
Device	Routing	Invert	Outlet Devices
#1	Primary	0.040 m	**260 mm Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.1212 m³/s @ 0.78 hrs HW=0.907 m (Free Discharge)
↑**1=Orifice/Grate** (Orifice Controls 0.1212 m³/s @ 2.28 m/s)

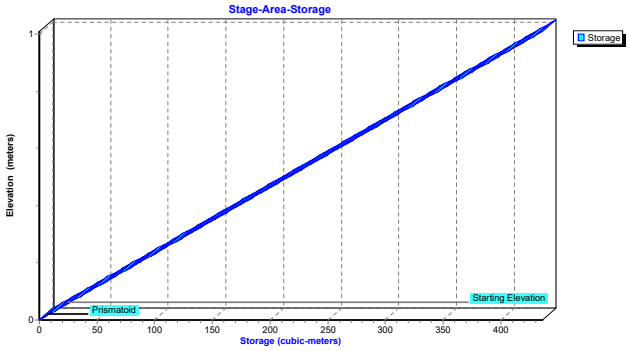
Pond 2P: Storage



Pond 2P: Storage



Pond 2P: Storage



Hydrograph for Pond 2P: Storage

Time (hours)	Inflow (m³/s)	Storage (cubic-meters)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	17.3	0.040	0.0000
0.10	0.1015	35.4	0.082	0.0021
0.20	**0.2030**	86.2	0.200	0.0256
0.30	**0.2538**	156.6	0.362	0.0619
0.40	0.2538	221.7	0.513	0.0827
0.50	0.2538	280.5	0.649	0.0977
0.60	0.2538	334.4	0.774	0.1097
0.70	0.2030	**379.9**	**0.880**	**0.1189**
0.80	0.1015	**391.4**	**0.906**	**0.1210**
0.90	0.0000	366.7	0.849	0.1163
1.00	0.0000	326.4	0.755	0.1080
1.10	0.0000	289.0	0.669	0.0997
1.20	0.0000	254.6	0.589	0.0914
1.30	0.0000	223.2	0.517	0.0831
1.40	0.0000	194.8	0.451	0.0748
1.50	0.0000	169.4	0.392	0.0665
1.60	0.0000	146.9	0.340	0.0582
1.70	0.0000	127.5	0.295	0.0501
1.80	0.0000	110.9	0.257	0.0414
1.90	0.0000	97.6	0.226	0.0329
2.00	0.0000	87.0	0.201	0.0262
2.10	0.0000	78.6	0.182	0.0210
2.20	0.0000	71.8	0.166	0.0171
2.30	0.0000	66.2	0.153	0.0140
2.40	0.0000	61.6	0.143	0.0117
2.50	0.0000	57.7	0.134	0.0099
2.60	0.0000	54.4	0.126	0.0085
2.70	0.0000	51.6	0.119	0.0073
2.80	0.0000	49.1	0.114	0.0063
2.90	0.0000	47.0	0.109	0.0056
3.00	0.0000	45.1	0.104	0.0049
3.10	0.0000	43.4	0.101	0.0043
3.20	0.0000	42.0	0.097	0.0039
3.30	0.0000	40.6	0.094	0.0035
3.40	0.0000	39.4	0.091	0.0032
3.50	0.0000	38.3	0.089	0.0029
3.60	0.0000	37.4	0.086	0.0026
3.70	0.0000	36.4	0.084	0.0024
3.80	0.0000	35.6	0.082	0.0022
3.90	0.0000	34.9	0.081	0.0020
4.00	0.0000	34.2	0.079	0.0019

Stage-Discharge for Pond 2P: Storage

Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)	Elevation (meters)	Primary (m³/s)
0.000	0.0000	0.260	0.0422	0.520	0.0835	0.780	0.1102
0.005	0.0000	0.265	0.0435	0.525	0.0841	0.785	0.1107
0.010	0.0000	0.270	0.0448	0.530	0.0847	0.790	0.1111
0.015	0.0000	0.275	0.0460	0.535	0.0852	0.795	0.1116
0.020	0.0000	0.280	0.0472	0.540	0.0858	0.800	0.1120
0.025	0.0000	0.285	0.0482	0.545	0.0864	0.805	0.1124
0.030	0.0000	0.290	0.0493	0.550	0.0870	0.810	0.1129
0.035	0.0000	0.295	0.0502	0.555	0.0876	0.815	0.1133
0.040	0.0000	0.300	0.0509	0.560	0.0881	0.820	0.1138
0.045	0.0000	0.305	0.0518	0.565	0.0887	0.825	0.1142
0.050	0.0001	0.310	0.0528	0.570	0.0892	0.830	0.1146
0.055	0.0003	0.315	0.0537	0.575	0.0898	0.835	0.1151
0.060	0.0005	0.320	0.0546	0.580	0.0904	0.840	0.1155
0.065	0.0008	0.325	0.0556	0.585	0.0909	0.845	0.1159
0.070	0.0011	0.330	0.0564	0.590	0.0914	0.850	0.1164
0.075	0.0015	0.335	0.0573	0.595	0.0920	0.855	0.1168
0.080	0.0019	0.340	0.0582	0.600	0.0925	0.860	0.1172
0.085	0.0024	0.345	0.0590	0.605	0.0931	0.865	0.1176
0.090	0.0030	0.350	0.0599	0.610	0.0936	0.870	0.1181
0.095	0.0036	0.355	0.0607	0.615	0.0941	0.875	0.1185
0.100	0.0043	0.360	0.0615	0.620	0.0947	0.880	0.1189
0.105	0.0050	0.365	0.0623	0.625	0.0952	0.885	0.1193
0.110	0.0057	0.370	0.0631	0.630	0.0957	0.890	0.1197
0.115	0.0065	0.375	0.0639	0.635	0.0962	0.895	0.1201
0.120	0.0074	0.380	0.0647	0.640	0.0967	0.900	0.1206
0.125	0.0083	0.385	0.0654	0.645	0.0972	0.905	0.1210
0.130	0.0092	0.390	0.0662	0.650	0.0978	0.910	0.1214
0.135	0.0102	0.395	0.0669	0.655	0.0983	0.915	0.1218
0.140	0.0112	0.400	0.0677	0.660	0.0988	0.920	0.1222
0.145	0.0122	0.405	0.0684	0.665	0.0993	0.925	0.1226
0.150	0.0133	0.410	0.0691	0.670	0.0998	0.930	0.1230
0.155	0.0144	0.415	0.0698	0.675	0.1003	0.935	0.1234
0.160	0.0156	0.420	0.0706	0.680	0.1008	0.940	0.1238
0.165	0.0168	0.425	0.0713	0.685	0.1013	0.945	0.1242
0.170	0.0180	0.430	0.0719	0.690	0.1018	0.950	0.1246
0.175	0.0192	0.435	0.0726	0.695	0.1022	0.955	0.1250
0.180	0.0205	0.440	0.0733	0.700	0.1027	0.960	0.1254
0.185	0.0218	0.445	0.0740	0.705	0.1032	0.965	0.1258
0.190	0.0231	0.450	0.0747	0.710	0.1037	0.970	0.1262
0.195	0.0244	0.455	0.0753	0.715	0.1042	0.975	0.1266
0.200	0.0258	0.460	0.0760	0.720	0.1046	0.980	0.1270
0.205	0.0271	0.465	0.0766	0.725	0.1051	0.985	0.1274
0.210	0.0285	0.470	0.0773	0.730	0.1056	0.990	0.1278
0.215	0.0299	0.475	0.0779	0.735	0.1061	0.995	0.1282
0.220	0.0313	0.480	0.0786	0.740	0.1065	1.000	0.1286
0.225	0.0327	0.485	0.0792	0.745	0.1070	1.005	0.1289
0.230	0.0341	0.490	0.0798	0.750	0.1075	1.010	**0.1293**
0.235	0.0354	0.495	0.0804	0.755	0.1079		
0.240	0.0368	0.500	0.0811	0.760	0.1084		
0.245	0.0382	0.505	0.0817	0.765	0.1088		
0.250	0.0396	0.510	0.0823	0.770	0.1093		
0.255	0.0409	0.515	0.0829	0.775	0.1098		

Stage-Area-Storage for Pond 2P: Storage

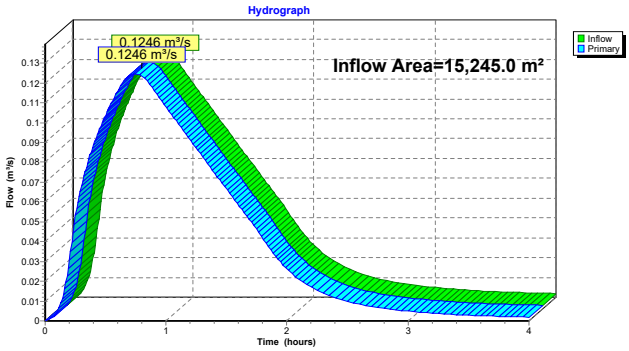
Elevation (meters)	Storage (cubic-meters)	Elevation (meters)	Storage (cubic-meters)
0.000	0.0	0.520	224.6
0.010	4.3	0.530	229.0
0.020	8.6	0.540	233.3
0.030	13.0	0.550	237.6
0.040	17.3	0.560	241.9
0.050	21.6	0.570	246.2
0.060	25.9	0.580	250.6
0.070	30.2	0.590	254.9
0.080	34.6	0.600	259.2
0.090	38.9	0.610	263.5
0.100	43.2	0.620	267.8
0.110	47.5	0.630	272.2
0.120	51.8	0.640	276.5
0.130	56.2	0.650	280.8
0.140	60.5	0.660	285.1
0.150	64.8	0.670	289.4
0.160	69.1	0.680	293.8
0.170	73.4	0.690	298.1
0.180	77.8	0.700	302.4
0.190	82.1	0.710	306.7
0.200	86.4	0.720	311.0
0.210	90.7	0.730	315.4
0.220	95.0	0.740	319.7
0.230	99.4	0.750	324.0
0.240	103.7	0.760	328.3
0.250	108.0	0.770	332.6
0.260	112.3	0.780	337.0
0.270	116.6	0.790	341.3
0.280	121.0	0.800	345.6
0.290	125.3	0.810	349.9
0.300	129.6	0.820	354.2
0.310	133.9	0.830	358.6
0.320	138.2	0.840	362.9
0.330	142.6	0.850	367.2
0.340	146.9	0.860	371.5
0.350	151.2	0.870	375.8
0.360	155.5	0.880	380.2
0.370	159.8	0.890	384.5
0.380	164.2	0.900	388.8
0.390	168.5	0.910	393.1
0.400	172.8	0.920	397.4
0.410	177.1	0.930	401.8
0.420	181.4	0.940	406.1
0.430	185.8	0.950	410.4
0.440	190.1	0.960	414.7
0.450	194.4	0.970	419.0
0.460	198.7	0.980	423.4
0.470	203.0	0.990	427.7
0.480	207.4	1.000	432.0
0.490	211.7	1.010	**436.3**
0.500	216.0		
0.510	220.3		

Summary for Link 3L: Hazelhurst Rd

Inflow Area = 15,245.0 m², 44.55% Impervious, Inflow Depth > 39 mm for 100-Year event
Inflow = 0.1246 m³/s @ 0.75 hrs, Volume= 591.5 m³
Primary = 0.1246 m³/s @ 0.75 hrs, Volume= 591.5 m³, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-4.00 hrs, dt= 0.01 hrs

Link 3L: Hazelhurst Rd



Hydrograph for Link 3L: Hazelhurst Rd

Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)	Time (hours)	Inflow (m³/s)	Elevation (meters)	Primary (m³/s)
0.00	0.0000	**0.000**	0.0000	2.60	0.0085	0.000	0.0085
0.05	0.0014	0.000	0.0014	2.65	0.0078	0.000	0.0078
0.10	0.0046	0.000	0.0046	2.70	0.0073	0.000	0.0073
0.15	0.0134	0.000	0.0134	2.75	0.0068	0.000	0.0068
0.20	0.0306	0.000	0.0306	2.80	0.0063	0.000	0.0063
0.25	0.0532	0.000	0.0532	2.85	0.0059	0.000	0.0059
0.30	0.0681	0.000	0.0681	2.90	0.0056	0.000	0.0056
0.35	0.0795	0.000	0.0795	2.95	0.0052	0.000	0.0052
0.40	0.0888	0.000	0.0888	3.00	0.0049	0.000	0.0049
0.45	0.0968	0.000	0.0968	3.05	0.0046	0.000	0.0046
0.50	0.1039	0.000	0.1039	3.10	0.0043	0.000	0.0043
0.55	0.1101	0.000	0.1101	3.15	0.0041	0.000	0.0041
0.60	0.1158	0.000	0.1158	3.20	0.0039	0.000	0.0039
0.65	0.1211	0.000	0.1211	3.25	0.0037	0.000	0.0037
0.70	0.1238	0.000	0.1238	3.30	0.0035	0.000	0.0035
0.75	**0.1246**	0.000	**0.1246**	3.35	0.0033	0.000	0.0033
0.80	0.1235	0.000	0.1235	3.40	0.0032	0.000	0.0032
0.85	0.1208	0.000	0.1208	3.45	0.0030	0.000	0.0030
0.90	0.1163	0.000	0.1163	3.50	0.0029	0.000	0.0029
0.95	0.1121	0.000	0.1121	3.55	0.0028	0.000	0.0028
1.00	0.1080	0.000	0.1080	3.60	0.0026	0.000	0.0026
1.05	0.1038	0.000	0.1038	3.65	0.0025	0.000	0.0025
1.10	0.0997	0.000	0.0997	3.70	0.0024	0.000	0.0024
1.15	0.0955	0.000	0.0955	3.75	0.0023	0.000	0.0023
1.20	0.0914	0.000	0.0914	3.80	0.0022	0.000	0.0022
1.25	0.0872	0.000	0.0872	3.85	0.0021	0.000	0.0021
1.30	0.0831	0.000	0.0831	3.90	0.0020	0.000	0.0020
1.35	0.0789	0.000	0.0789	3.95	0.0019	0.000	0.0019
1.40	0.0748	0.000	0.0748	4.00	0.0019	0.000	0.0019
1.45	0.0706	0.000	0.0706				
1.50	0.0665	0.000	0.0665				
1.55	0.0623	0.000	0.0623				
1.60	0.0582	0.000	0.0582				
1.65	0.0540	0.000	0.0540				
1.70	0.0501	0.000	0.0501				
1.75	0.0460	0.000	0.0460				
1.80	0.0414	0.000	0.0414				
1.85	0.0370	0.000	0.0370				
1.90	0.0329	0.000	0.0329				
1.95	0.0293	0.000	0.0293				
2.00	0.0262	0.000	0.0262				
2.05	0.0234	0.000	0.0234				
2.10	0.0210	0.000	0.0210				
2.15	0.0189	0.000	0.0189				
2.20	0.0171	0.000	0.0171				
2.25	0.0154	0.000	0.0154				
2.30	0.0140	0.000	0.0140				
2.35	0.0128	0.000	0.0128				
2.40	0.0117	0.000	0.0117				
2.45	0.0108	0.000	0.0108				
2.50	0.0099	0.000	0.0099				
2.55	0.0091	0.000	0.0091				