

# Stormwater Charge Credit Application Guidance Manual

September 23, 2015

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## 1. Introduction

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The Stormwater Charge Credit Application Guidance Manual is intended to provide general information and assistance associated with the stormwater charge application process and is not intended to be all-inclusive. Other reference material and stormwater related engineering experience may be required to fulfil the requirements of the application procedure.

The Stormwater Team looks forward to working with local business, property owners, engineering and design professionals in reviewing and approving your future credit applications.

Sincerely,

The Stormwater Team

## 2. Stormwater Credit Program Information

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### 2.1 Objective

The key objective of the Stormwater Credit Program is to recognize property owners who have implemented stormwater and/or pollution prevention best management practices (“BMPs”) to reduce impacts to the City’s stormwater infrastructure by controlling the quantity and quality of stormwater leaving their property.

### 2.2 Principles

The Stormwater Credit Program is designed according to the following guiding principles:

- Available to every non-residential and multi-residential property (including those considered “mixed-use”) in Mississauga, unless otherwise exempt from stormwater charges or receiving a subsidy to offset stormwater charges.
- A clear linkage exists between the credit amounts provided and cost savings to the City’s stormwater program resulting from the implementation of BMPs.
- Property owners have the flexibility to pursue practices that suit the needs of and opportunities on their property.

### 2.3 Credit Program Basics

Stormwater credits are effective for a maximum term of five (5) years from the date of approval, subject to compliance with terms and conditions, and may be renewed for subsequent five (5) year terms.

While the initial credit application is focused on demonstrating the design and performance of BMPs, the renewal application is focused on demonstrating that these BMPs are properly maintained and in a state of good repair.

If credit-approved BMPs are added, expanded, reduced, deleted or in any way modified such that their level of performance relative to their approved credit amount has changed, credit holders must follow the Credit Update Application process.

### 3. Stormwater Credit Program Framework

#### 3.1 Program Eligibility

All multi-residential and non-residential properties (including mixed-use properties) are eligible for the credit program, except for any portion thereof which is receiving an exemption or subsidy reduction to the stormwater charge. Single residential properties are not eligible for the credit program.

Property owners/managers/tenants may use the online estimator tool to find out whether they are categorized as a multi-residential or non-residential parcel. If you have any questions about your eligibility, please call 3-1-1 (or 905-615-4311 from outside Mississauga). Participation in the credit program is by application only.

Stormwater credits may be applied to the net billable units on a given parcel (i.e. the gross billing units less any legal or technical exemptions). Billing units that are subsidized by a municipal stormwater subsidy are not eligible for credits.

#### 3.2 Credit Schedule

Stormwater credits are available in each of four categories, which align with the overarching objectives of the City's stormwater program (Table 1). Detailed descriptions and examples of the interpretation of these evaluation criteria are provided as Appendices 2 and 3, respectively.

**Table 1. Stormwater Credit Categories**

Category	Evaluation Criteria	Total Credit (50% Maximum)	
Peak Flow Reduction	Percent reduction of the 100-year post development flow to pre-development conditions of the site	Up to 40%	To a total of no more than 50%
Water Quality Treatment	Consistent with Provincial criteria for enhanced treatment	Up to 10%	
Runoff Volume Reduction	Percent capture of first 15 mm of rainfall during a single rainfall event	Up to 15%	
Pollution Prevention	Develop and implement a pollution prevention plan	Up to 5%	

A maximum of 50% credit can be achieved by a property owner or operator. The 50% cap reflects the maximum proportion of the City's stormwater program in terms of cost that may be beneficially impacted by on-site BMPs. The balance of the City's program requires funding regardless of BMPs that may be in place on private and public lands.

The weighting of credits available in each category has been derived from the relative proportion of spending on each objective within the City's stormwater program budget in a typical year and over the 10-year capital plan, based on information available at the time of the *City of Mississauga Stormwater Financing Study*, dated April 2013. The credits available in each category add up to more than the maximum of 50%. This reflects the slight variability in the weighting of each category from year-to-year

in the stormwater program and allows some flexibility for the Applicant to customize the credit to reflect the stormwater needs and opportunities of a property.

### 3.3 Credit-eligible Best Management Practices

This credit program is performance-based, rather than technology-based. This means that credits are awarded based on how well a property's BMPs achieve performance criteria (i.e. those listed in Table 1), rather than credits awarded based on a prescriptive set of practices (e.g. X% credit for a green roof of X size). Performance-based programs encourage creativity, provide flexibility and enable property owners to pursue technologies best suited for their properties and particular needs, as permitted by existing by-laws, codes and regulations.

The City recognizes that some property owners may be unfamiliar with BMP technologies that may be credit-eligible. The following is a sample list of common practices:

- Infiltration galleries
- Permeable pavement
- Rainwater cisterns
- Enhanced vegetated swales
- Constructed wetlands
- Stormwater ponds
- Rain gardens/bio-retention systems
- Roof gardens/green roofs
- Oil-grit separators
- Pollution prevention plan

Many of the BMPs listed above could be eligible for more than one type of credit. For example, the City recognizes that a BMP may provide both peak flow reduction and runoff volume reduction. In such cases, performance related to both categories can be applied for. The cumulative maximum credit available to a property is 50%.

Eligibility of a BMP will be contingent on proof of function and on-going maintenance through self-certification reports and City inspections. If the approved BMP is not functioning as intended or removed for any reason, the applicable credit(s) may be cancelled.

Drainage to any stormwater management facility, for which maintenance is funded through the Stormwater Charge program, located within the municipal right-of-way or within a permanent easement in favour of the City of Mississauga is not eligible for a credit.

## 4. Application Process

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### 4.1 Application Types

There are three types of credit applications:

1. **New Credit Application** – (1) applying for a credit on a property with an existing BMP for the first time; (2) applying for a pre-approved credit for a proposed BMP; or, (3) applying subsequent to the cancellation of a credit approval.
2. **Credit Update Application** – when an approved credit needs to be updated to reflect a change to the approved BMPs.
3. **Credit Renewal Application** – when an approved credit is about to expire or has expired no more than one year prior.

In all cases, an application package consisting of a completed application form and all required supporting documentation must be submitted. Supporting documentation must be prepared by a Professional Engineer registered in the Province of Ontario and qualified in municipal engineering and stormwater management. The report, including relevant supporting information, shall meet the City of Mississauga's development requirements, or generally accepted professional practices where City of Mississauga requirements currently do not exist, for development applications seeking approvals for storm drainage and stormwater management. Full supporting documentation requirements are outlined in Appendix 1. The application review process is discussed in detail under section 4.3.

The Applicant is solely responsible for costs incurred in the preparation of the required documentation and/or the submission of the credit application. There is currently no application fee.

### 4.2 Application Form

The application form must be filled out as part of the process of applying for Stormwater credits. At the time of writing this Guidance Manual, the City will accept completed application forms online or by mail and/or supporting documentation in either hard-copy or digital (PDF) format.

- [Apply Online](#)
- [Download Printable Application](#)

The following are explanations of terms used on the Credit Application Form:

- Registered Owner and Authorized Agent for any Other Registered Owners – this is to be chosen if the applicant is the owner of the property and has permission to act on behalf of any other owners of the property;
- Authorized Agent for All Registered Owners – this is to be chosen if the applicant is not an owner of the property and has permission to act on the behalf of all the owners of the property;

- Property ID Number(s) – this number is created for every parcel of land in Mississauga by the City’s Geomatics Section. The Property ID Number can be found for a specific address using the online [Stormwater Charge Estimator](#);
- Status of BMPs:
  - Existing – BMP is constructed and operational at the time of applying;
  - Proposed as Retrofit – BMP is proposed to be implemented into a developed site;
  - Proposed with New Development – BMP is proposed to be implemented into a site undergoing re-development.

### 4.3 Review Timelines

The review of an application is a two-step process:

1. Assessment for application completeness; and
2. Technical review of application.

The Stormwater Charge Program Coordinator will notify the Applicant of receipt of an application and will conduct an initial screening to ensure application completeness. Applicants may be requested to provide additional information. If an Applicant fails to provide the necessary information, the application will be rejected. The City may also conduct a site inspection, as described in the “Inspections during Application Review” section below.

Complete applications will be registered and Applicants will be notified. An application is deemed complete when the applicant has filled out all appropriate sections of the application form and submitted the relevant reports and documentation which support how the stormwater BMPs achieve credits.

The technical review of an application is expected to be completed within thirty (30) calendar days of the registration date. Credit approval may be awarded or additional information or clarification on matters from the Applicant may be requested during this time. In the event the review results in a request for additional information or clarification on matters from the Applicant, a new thirty (30) calendar day period will be re-set upon receipt of all information requested.

### 4.4 Effective Date of Approved Credit

#### **Credit applications received by December 31, 2016**

Approved credits that result from applications received by December 31, 2016 will be retroactive to the first date of billing (i.e. the first date of stormwater charge accrual on the account; as early as January 1, 2016) or the date on which the qualified BMPs were put into service, as determined by the Program Coordinator, whichever is later. Applications must be deemed complete to satisfy these timing criteria.

#### **Credit applications received from January 1, 2017 onward**

Approved credits that result from applications received on or after January 1, 2017 will be retroactive to the date of receipt of the complete applications, from which the approved credits were based on, or the date on which the qualified BMPs were put into service, as determined by the Program Coordinator, whichever is later.



For credit applications submitted in advance of construction or implementation of the BMPs, such as during the land development approval process (in conjunction with the stormwater review for the site) or in advance of a proposed site retrofit or re-development, a credit may be conditionally pre-approved. A credit in this case will become effective upon demonstration by the Applicant or property owner or operator to the satisfaction of the Program Coordinator that the pre-approved BMPs have been constructed and/or implemented and are in service.

#### **4.5 Stormwater Charges Billed while Credit Application is Under Review**

A pending credit request application shall not constitute a valid reason for non-payment of the currently-assessed stormwater charge. Any stormwater charge bill that is received during the credit application review process must be paid in full.

## 5. Terms and Conditions of Credit Approval

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Stormwater credit approvals will be subject to terms and conditions, including the expectations for the operation and maintenance of the credit-approved BMPs, requirements for inspection and maintenance logs, and other matters. Site specific terms and conditions may be imposed, depending on the nature of the property, its use and its BMPs.

Credit-holders are expected to comply with the terms and conditions of the credit approval, including the BMP operation and maintenance plan detailed in report and other supporting documentation to the credit application, and must retain on file and make available upon request specified information throughout the entire term of the credit program. Further details are provided in Appendix 1.

Stormwater credit pre-approval applications for proposed works will be reviewed in a similar way to the credit approval applications for existing BMPs; however, they are subject to additional terms and conditions. An engineer's certification of operation and construction will be a mandatory submission that occurs after pre-approval has been given and prior to credits turning effective. For a credit pre-approval application, construction of the proposed BMP must be completed and certification must be submitted within five (5) years of the granted pre-approval or the application will become invalid. Should a BMP differ in design and construction from the drawings and reports that were used to pre-approve the credit, an applicant will be required to submit updated supporting documentation with their engineer's certification of operation.

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## 6. Site Inspections

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### 6.1 Inspections during Application Review

As part of the credit application review process, the Program Coordinator or designate may contact the Applicant with a requested date to conduct a site inspection to verify that any constructed BMPs are in conformance with the documentation provided and that these measures are operating in accordance with documented performance criteria. The results of an inspection will be taken into consideration as part of the application review.

If the Applicant fails to respond to the Program Coordinator or designate by telephone, email or in writing to coordinate a site inspection date within thirty (30) calendar days, the credit application will be considered closed. The inspection must proceed within sixty (60) calendar days of the initial request. If the Applicant is unable to provide a date to facilitate the inspection within this time frame, the credit application will be considered closed.

### 6.2 Compliance Inspections

Each Applicant that has received a credit for a BMP has the responsibility to regularly inspect, maintain and repair the BMP to ensure that it is functioning as designed as agreed to in the terms and conditions.

In addition, the City reserves the right according to By-law 0135-2015, as amended or any successor by-law, to conduct site inspections and may, at any reasonable time, enter and inspect any property. The intent of the inspections will be to assess whether the BMP is being maintained as stipulated in the operation and maintenance agreement, the conditions on-site are consistent with the documentation provided in the latest credit application, and that the BMP is operating in accordance with performance criteria as documented in applicable documents. As a result of a site inspection, credits may be suspended, reduced or cancelled.

At any point during the term of a credit, the Program Coordinator or designate may contact the credit holder with a requested date to conduct the site inspection. City staff performing inspections may request to see operation and maintenance documents which credit holders are required to retain for a minimum of five (5) years. The inspection will result in a grading of either "passed," "suspended" or "failed". Sites that are "suspended" will be given a sixty (60) calendar day period to take remedial action to bring their property up to a passing standard. Failure to take required actions within sixty (60) calendar days will result in a failed inspection and termination of credit.

If the credit holder fails to respond to the Program Coordinator by telephone, email or in writing regarding the site inspection request within thirty (30) calendar days, the credit will be cancelled. If the credit holder wishes to request an alternate inspection date, it must be within thirty (30) calendar days of the initial date requested by the Program Coordinator. The inspection must proceed within sixty (60) calendar days of the initial request. If the credit holder is unable to provide a date to facilitate the inspection within this time frame then the inspection will be considered failed and the credit will be cancelled.

Although the City reserves the right to conduct detailed field measurements and monitoring to verify performance, it is anticipated that inspections will typically involve visual evaluations, informal interviews, and review of maintenance logs and other documents.

## **7. Credit Update Application**

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The holder of a stormwater credit is responsible for notifying the Program Coordinator in writing if the BMPs undergo a material change, meaning an alteration, improvement, deficiency, or failure that impacts how the BMPs operate and was not expressly anticipated and addressed by the parties in the credit application process. Material change means both actions taken by a property owner and those occurring through lack of action by a property owner or unrelated to the actions of the property owner.

No later than three (3) months after any material change has been undertaken or occurs, the holder of a stormwater credit must submit a credit update application to the City. Late submission of the application may result in a discontinuance of the credit amount. The City shall have full and absolute discretion to adjust (increase or decrease) the credit amount.

## **8. Credit Renewal Application**

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Credit holders are advised to submit a complete credit renewal application at least six (6) months prior to the expiration date should they wish to seek a renewal of their existing stormwater credits without experiencing a gap in the credit approval. Applications received after this date may not be processed and approved in time before the previously approved credit expires. In such circumstances, the account holder will not receive credit towards the stormwater charge during the period in which the previously approved credit has expired and the renewal application has not yet been reviewed and approved. The approved credit renewal shall be effective upon the expiration date of the original credit, or as otherwise determined by the Program Coordinator.

In general, credit holders wishing to renew their credit shall provide evidence that acceptable operation and maintenance practices have taken place and that the BMPs are in a state of good repair. Details on supporting documentation requirements for Credit Renewal Applications are provided in Appendix 1.

## 9. Penalties

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### **Credit Suspension, Reduction or Cancellation**

As described in By-law No. 0135-2015, the stormwater credit may be suspended, reduced or cancelled by the City under the following circumstances:

1. Failure of the Applicant (or applicable property owner) to make stormwater charge payments as billed by the Region of Peel;
2. Failure of the Applicant (or applicable property owner) to meet the terms and conditions of the credit approval;
3. Submission of inaccurate or false information by the Applicant (or applicable property owner);
4. Failure of the Applicant (or applicable property owner) to maintain a BMP measure as required by the terms and conditions of the credit approval;
5. Failure of a BMP measure to operate or meet the performance criteria as documented in the Applicant's credit application or credit update or renewal application and/or its supporting documentation and/or the terms and conditions for the credit approval, update or renewal; or,
6. Failure to submit a complete credit renewal application.

In the circumstance that a BMP is found to be in a state of disrepair or no longer functions as approved, the Applicant shall reimburse to the City the entire amount of the credit received in respect of the property since the date that the application was approved, updated or renewed or since the previous inspection by the City, whichever is later. If the credit has been cancelled, the Applicant may not re-apply for a credit for a period of twelve (12) months.

### **Suspension**

If a property fails inspection, the credit may be suspended and the credit holder will have sixty (60) calendar days to repair, clean, fix, or otherwise correct deficiencies, and schedule an inspection with the Program Coordinator. If a credit holder fails to demonstrate action and reasonable progress to correct the deficiencies and schedule a re-inspection within sixty (60) calendar days, the credit will be cancelled. Suspension period extensions may be granted at the discretion of the Commissioner of Transportation and Works or her/his designate.

### **Cancellation**

Customers whose credits have been cancelled may not have them reinstated and will be required to submit a new credit application. A credit re-application may be submitted no earlier than a year after the date on which the credit was cancelled.

### **Appeals**

A reduction or cancellation of a Stormwater Credit may be appealed by the Applicant in writing to the Commissioner of Transportation and Works. The decision of the Commissioner of Transportation and Works shall be considered final and binding.

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## Appendix 1: Supporting Documentation for Applications

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### A1.1 New Credit and Credit Update Applications

To apply for a new credit or to update an existing approved credit for new and/or existing BMPs, the Applicant must provide a completed application form and the information listed below, as applicable, to the Program Coordinator.

**1. Stormwater Management Report** certified by a qualified Professional Engineer and accompanied by a letter, signed by the author of the report, which allows the City of Mississauga to make reliance on the findings and conclusions presented in the report. This report is expected to be generally consistent with current City of Mississauga development requirements for on-site stormwater management reports and must include details outlining the credit percentage applied for and how the BMPs achieve the credit requirements, and other relevant information.

a. **Site plan and/or related engineering drawings and details** should conform to the City's development requirements with the following information to be shown as a minimum:

- Location;
- Property boundaries;
- Easements;
- Topographic details;
- Locations and outlines of all structures, including buildings, parking, driveways and other impervious areas;
- Drainage areas, including internal drainage patterns and areas, as well as external drainage areas draining to the site; and
- Stormwater BMP and/or related drainage details.

b. Hydrologic and hydraulic calculations and/or modelling results to support Peak Flow Reduction, Water Quality Treatment and/or Runoff Volume Reduction credit categories.

### 2. Pollution Prevention Plans

Every Pollution Prevention Plan must be consistent with the requirements under the [Storm Sewer By-Law 259-05, as amended or any successor by-law](#). Materials and documentation developed must be prepared or confirmed by a qualified Professional Engineer.

### 3. Operation and Maintenance Plan

- a. Proposed inspection and documentation plan;
- b. Proposed maintenance and documentation plan;
- c. Details on the procedures to be performed; and
- d. Inspection and maintenance records must be kept on file by the Applicant or site owner/operator for the duration of the approved credit and be made available to City staff upon request.

### 4. Engineer's Certification of Operation

This certification must be in the form of a letter addressed to the Program Coordinator, signed and stamped by a qualified Professional Engineer. It must include the following:



- a. Certification that all BMPs have been constructed in accordance with the submitted drawings and that they are operational; and
- b. Confirmation of the date(s) that all BMPs were implemented into service.

Note that in a case of a pre-approval application, this certification will not be submitted with the above listed reports and drawings, but instead submitted after the BMP has been constructed. A template for the certification letter has been provided in A1.3.

## **A1.2 Credit Renewal Applications**

To renew a previously approved credit, the Applicant must provide a completed application form and the information listed below, as applicable, to the Program Coordinator.

1. A report certified by a qualified professional engineer providing the following information:
  - Confirmation that the performance of all BMPs remains consistent with the previously approved credit application;
  - Confirmation that all BMPs are in a state of good repair;
  - Inspection and maintenance logs, including:
    - Dates of inspection and maintenance activities;
    - Names, titles, and qualifications of personnel conducting the inspections and/or maintenance;
    - Condition of each BMP, including its functional components;
    - Any other item that could affect the proper function of the BMP;
    - Description of the need for maintenance;
    - Description of maintenance performed; and
  - Updates to the inspection and/or maintenance plans, as required.

### A1.3 Engineering Certification Template

Date:

To: City of Mississauga  
Transportation and Works Department  
201 City Centre Drive, Suite 800  
Mississauga, Ontario  
L5B 2T4 Fax: 905-615-3405

Attn: Stormwater Charge Coordinator, Transportation and Works

**RE: BMP CERTIFICATION**  
(Credit Application Number)  
(Municipal Address, Property ID)  
(Description of BMP)

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(Company name) has served as the engineering consultant for the certification of the (description of BMP) at the above noted address. This letter will confirm that I/We have inspected the (BMP) on the above noted lands and do hereby certify that the all systems have been designed and constructed in accordance with (Drawing No. \_\_\_\_, dated \_\_\_\_ and Functional Servicing Report, dated \_\_\_\_).

We further certify that all BMP systems are completed and operational in accordance with sound engineering practices and principles and are based on guidance from the CVC and TRCA Low Impact Development Design Manual.

Further, I/We hereby confirm that the (BMP) has been implemented into service and is operational as of (date).

Should you have any questions or concerns regarding the letter please do not hesitate to contact this office at\_\_.

Yours truly,

(Name of company)

(P. Eng Signature)  
(print name)

P.Eng. Stamp

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## Appendix 2: Credit Evaluation Criteria

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### A2.1 Peak Flow Reduction (up to 40%)

#### Evaluation criteria

Based on the percent reduction of the 100-year post-development flow to pre-development conditions of the site.

#### Points of clarification

- a. "the site" means the impervious area(s) of the property; and
- b. "pre-development conditions" means the 100-year flow from a theoretical "raw" land condition of the site, with an assumed runoff coefficient of 0.25.

#### Evaluation metric

This credit shall be assessed using a methodology whereby controlling the 100-year post-development flow rate to the 100-year pre-development flow rate from the entire impervious surface area of the site would represent a full 40% credit and the fraction of that target met would be multiplied by 40% to determine the credit amount awarded for peak flow reduction. Self-certification shall be provided by way of a report certified by a Professional Engineer that includes supporting calculations.

### A2.2 Water Quality Treatment (up to 10%)

#### Evaluation criteria

Consistent with Provincial criteria for enhanced treatment - note that the current reference for Provincial criteria for enhanced treatment is the Stormwater Management Planning and Design Manual, March 2003, Ontario Ministry of the Environment.

#### Evaluation metric

The percentage allocated for this credit is based on the percentage of impervious area that is directed to an approved on-site quality control BMP that provides enhanced treatment. Self-certification shall be provided by way of a report certified by a Professional Engineer.

### A2.3 Runoff Volume Reduction (up to 15%)

#### Evaluation criteria

Based on the percent capture of first 15 mm of rainfall during a single rainfall event.

#### Points of clarification

- a. "capture" means for on-site retention and/or reuse;
- b. Only applies to rainfall landing on the impervious area(s) of the property; and
- c. "single rainfall event" means a period of rainfall activity defined by preceding and following periods of at least 24 hours without measurable rainfall.

**Evaluation metric**

The percentage allocated for this credit is based on the runoff volume reduction achieved over the impervious surfaces of the site using a sliding scale of 1% per mm achieved. Self-certification shall be provided by way of a report certified by a Professional Engineer.

**A2.4 Pollution Prevention (up to 5%)****Evaluation criteria**

Develop and implement a pollution prevention plan.

**Points of clarification**

Every Pollution Prevention Plan must be consistent with the requirements under Schedule 'A' of the Storm Sewer By-Law 259-05, as amended or any successor by-law.

**Evaluation metric**

Percentage allocated for this credit shall be based on approval of the pollution prevention plan and achievement of distinct milestones of the plan. An approved pollution prevention plan must contain all components as identified in Schedule 'A' of the Storm Sewer By-Law 259-05, as amended or any successor by-law.

**Table A.2 Pollution Prevention Metric**

<b>Credit percentage</b>	<b>Level Achieved</b>
1%	Implemented 20% of Pollution Prevention (P2) Plan
2%	40% of P2 Plan implemented
3%	60% of P2 Plan implemented
4%	80% of P2 Plan implemented
5%	100% of P2 Plan implemented

## Appendix 3: Examples

### Example 1:

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Industrial	0.6	0.1	0.2	0.3

### NOTES

- Site recently constructed as a prestige industrial property with sloped roof
- Applicant considered options to pursue stormwater charge credits during the development approvals process
- An underground stormwater storage tank is proposed to control the 100-year post-development flow to pre-development levels
- Once the construction was complete the credit application was submitted
- Stormwater letter brief outlines that:
  - Roof flows are uncontrolled
  - Maximum credit (40%) would be achieved if post-development site flows were 29 l/s

Storm event	Pre-development flows	Existing conditions flows	Proposed conditions flows
100-year	29 l/s	<b>111 l/s</b>	<b>48 l/s</b>

### CREDIT REQUEST

Category	Credit Request
Peak Flow Reduction	40
Water Quality Treatment	0
Runoff Volume Reduction	0
Pollution Prevention	0
Total (max 50%) →	40

### SUBMITTALS

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Calculations
  - b. Drawing illustrating the proposal
  - c. Cross-section of proposed underground storage tank
3. Certification letter, signed and sealed by a Professional Engineer, confirming the tank has been installed as designed

**Example 1: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed and all supporting documentation is included.

**PEAK FLOW REDUCTION: 31% (OF 40% MAX.)**

**Evaluation:** The proposed condition flows require approximately 55m<sup>3</sup> of stormwater quantity storage. The tank satisfies the storage requirements and the engineer's certification confirms the tank was built as designed.

For every 2.0 l/s increase in flow over 29 l/s the credit is reduced by 1% (e.g. [111-29]/40). For credit purposes, target flow of 48 l/s represents ~9% credit reduction (e.g. [48-29]/2.0) so is awarded 31% in this category.

**WATER QUALITY TREATMENT: 0% (OF 10% MAX.)**

**Evaluation:** No credit requested.

**RUNOFF VOLUME REDUCTION: 0% (OF 15% MAX.)**

**Evaluation:** No credit requested.

**POLLUTION PREVENTION: 0% (OF 5% MAX.)**

**Evaluation:** No credit requested.

Category	Credit Request	Credit Assessment
Peak Flow Reduction	40	31
Water Quality Treatment	0	0
Runoff Volume Reduction	0	0
Pollution Prevention	0	0
<b>Total (max 50%) →</b>	<b>40</b>	<b>31</b>

**Example 2:**

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Commercial	2	0.5	0.5	1

**NOTES**

- Site constructed approximately fifteen (15) years ago
- Applicant is proposing to construct an infiltration gallery that will capture roof drainage as well as store for quantity control
- The gallery utilizes a series of plastic chambers that can hold up to 100m<sup>3</sup> of stormwater and includes a pre-treatment chamber to settle out large materials that could block or impair the function of the infiltration gallery
- The infiltration gallery will be setback from the building to meet Building Code requirements
- A control device will be provided on the infiltration gallery to allow it to detain flows from larger storms, as well as hold back water for infiltration during more frequent storms
- Stormwater letter brief outlines that:
  - 100m<sup>3</sup> of stormwater storage equates to 10mm of runoff volume reduction (100m<sup>3</sup>/10000m<sup>2</sup>) over the impervious area
  - Maximum credit (40%) would be achieved if post-development site flows were 100 l/s

Storm event	Pre-development flows	Existing conditions flows	Proposed conditions flows
100-year	100 l/s	<b>370 l/s</b>	<b>100 l/s</b>

**CREDIT REQUEST**

Category	Credit Request
Peak Flow Reduction	40
Water Quality Treatment	10
Runoff Volume Reduction	10
Pollution Prevention	0
<b>Total (max 50%) →</b>	<b>50</b>

**SUBMITTALS**

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Calculations
  - b. Drawing illustrating the infiltration gallery location
  - c. Cross-section of proposed infiltration gallery
  - d. Geotechnical information relating to soil permeability
3. Certification letter, signed and sealed by a Professional Engineer, confirming the infiltration gallery has been installed as designed

**Example 2: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed and all supporting documentation is included.

**PEAK FLOW REDUCTION: 40% (OF 40% MAX.)**

**Evaluation:** The proposed condition flows require approximately 230m<sup>3</sup> of stormwater quantity storage. The gallery satisfies the storage requirements and the engineer's certification confirms the gallery was built as designed.

**WATER QUALITY TREATMENT: 0% (OF 10% MAX.)**

**Evaluation:** The pre-treatment chamber is related to the infiltration system function but does not come with substantiation of the ability to remove 80% total suspended solids. It is recognized that the pre-treatment chamber is necessary for the proper function of the infiltration gallery, but in lieu of an approved BMP, no credit is provided in this category.

**RUNOFF VOLUME REDUCTION: 10% (OF 15% MAX.)**

**Evaluation:** Based on the documentation reviewed, there is agreement that the proposed measures equate to a 10mm reduction of runoff volume over the impervious area.

**POLLUTION PREVENTION: 0% (OF 5% MAX.)**

**Evaluation:** No credit requested.

Category	Credit Request	Credit Assessment
Peak Flow Reduction	40	40
Water Quality Treatment	10	0
Runoff Volume Reduction	10	10
Pollution Prevention	0	0
<b>Total (max 50%) →</b>	<b>50</b>	<b>50</b>



**Example 3A:**

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Office	12	4	5	9

**NOTES**

- Site constructed approximately twenty (20) years ago and drains to a downstream municipal stormwater pond that provides water quantity control to pre-development levels
- There are no stormwater management measures on the existing site itself
- Applicant proposing to install permeable pavers in all parking stalls without changing site grading
- Area of parking stalls is 2.5ha (50% of the 5 ha paved area)
- Roof top flow controls will be implemented on the building
- Stormwater letter brief outlines that:
  - Runoff co-efficient for parking stalls is 0.50 compared to conventional pavement which is 0.95
  - Target 100-year predevelopment flow would require reduction of 2.4 cms
  - Actual 100-year flow reduction of 1.7 cms (3.3 – 1.6) is approximately 70% toward full credit (0.7 x 40% = ~28%)

Storm event	Pre-development flows	Existing conditions flows	Proposed conditions flows
100-year	0.9 cms	<b>3.3 cms</b>	<b>1.6 cms</b>

**CREDIT REQUEST**

Category	Credit Request
Peak Flow Reduction	28
Water Quality Treatment	0
Runoff Volume Reduction	0
Pollution Prevention	0
<b>Total (max 50%)→</b>	<b>28</b>

**SUBMITTALS**

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Calculations
  - b. Drawing illustrating the proposal
  - c. Cross-section of proposed permeable paver construction
3. Certification letter, signed and sealed by a Professional Engineer, confirming the permeable pavers have been installed as designed

**Example 3A: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed and all supporting documentation is included.

**PEAK FLOW REDUCTION: 28% (OF 40% MAX.)**

**Evaluation:** City supports 0.5 for runoff co-efficient of permeable pavers on the presumption of proper installation. No credit provided for the downstream stormwater pond as it is municipal infrastructure. Credit is assessed on the basis of on-site measures only and the documentation reviewed supports a credit of 28% in this category.

**WATER QUALITY TREATMENT: 0% (OF 10% MAX.)**

**Evaluation:** No credit requested.

**RUNOFF VOLUME REDUCTION: 0% (OF 15% MAX.)**

**Evaluation:** No credit requested.

**POLLUTION PREVENTION: 0% (OF 5% MAX.)**

**Evaluation:** No credit requested.

Category	Credit Request	Credit Assessment
Peak Flow Reduction	28	28
Water Quality Treatment	0	0
Runoff Volume Reduction	0	0
Pollution Prevention	0	0
Total (max 50%) →	28	28

**Example 3B:**

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Office	12	4	5	9

**NOTES**

- Site constructed approximately twenty (20) years ago and drains to a downstream municipal stormwater pond that provides water quantity control to pre-development levels
- There are no stormwater management measures on the existing site itself
- Applicant proposing to install permeable pavers in all parking stalls and will re-grade site to direct surface flows from asphalt areas toward permeable pavers and allow for surface ponding
- Area of parking stalls is 2.5ha (50% of the 5 ha paved area)
- Roof top flow controls will be implemented on the building
- Orifice tube will be installed to restrict flows to 100-year pre-development levels
- Stormwater letter brief and supporting material outlines that:
  - Runoff co-efficient for parking stalls is 0.50 compared to conventional pavement which is 0.95
  - Target 100-year predevelopment flow would require reduction of 2.4 cms
  - Surface ponding may occur on approximately 20% of the paved area
  - On-site soils can accommodate infiltration
  - A minimum void storage space of 450m<sup>3</sup> is available within the granular bedding of the permeable pavers, which equates to 5mm of the impervious area

Storm event	Pre-development flows	Existing conditions flows	Proposed conditions flows
100-year	0.9 cms	<b>3.3 cms</b>	<b>0.9 cms</b>

**CREDIT REQUEST**

Category	Credit Request
Peak Flow Reduction	40
Water Quality Treatment	0
Runoff Volume Reduction	5
Pollution Prevention	0
<b>Total (max 50%) →</b>	<b>45</b>

**SUBMITTALS**

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Calculations
  - b. Drawing illustrating the proposal
  - c. Cross-section of proposed permeable paver construction
  - d. Geotechnical information relating to soil permeability
3. Certification letter, signed and sealed by a Professional Engineer, confirming the permeable pavers have been installed as designed

**Example 3B: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed and all supporting documentation is included.

**PEAK FLOW REDUCTION: 40% (OF 40% MAX.)**

**Evaluation:** City supports 0.5 for runoff co-efficient of permeable pavers on the presumption of proper installation. No credit provided for the downstream stormwater pond as it is municipal infrastructure. Credit is assessed on the basis of on-site measures only and the documentation reviewed supports a credit of 40% in this category.

**WATER QUALITY TREATMENT: 0% (OF 10% MAX.)**

**Evaluation:** No credit requested.

**RUNOFF VOLUME REDUCTION: 5% (OF 15% MAX.)**

**Evaluation:** Based on the documentation reviewed, there is agreement that the proposed measures equate to a 5mm reduction of runoff volume over the impervious area.

**POLLUTION PREVENTION: 0% (OF 5% MAX.)**

**Evaluation:** No credit requested.

Category	Credit Request	Credit Assessment
Peak Flow Reduction	40	40
Water Quality Treatment	0	0
Runoff Volume Reduction	5	5
Pollution Prevention	0	0
Total (max 50%)→	45	45

**Example 4:**

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Warehouse	7	3	3.5	6.5

**NOTES**

- Site was constructed approximately ten (10) years ago with an oil-grit separator on-site
- The operation involves the supply of non-hazardous materials related to automotive parts fabrication
- The property manager retained a contractor to clean-out the oil-grit separator 2 years ago and has since kept semi-annual inspection logs
- A protocol has been established for the handling of all materials on-site and employees are required to attend mandatory training
- The protocol has been formalized into a Pollution Prevention Plan which is kept on-site for the site supervisor
- At the time of the credit application, the training sessions have reached approximately half of the employees but will take another year to cycle through everyone
- Stormwater letter brief outlines that:
  - The oil-grit separator was designed to remove 80% of total suspended solids from the entire site

**CREDIT REQUEST**

Category	Credit Request
Peak Flow Reduction	0
Water Quality Treatment	10
Runoff Volume Reduction	0
Pollution Prevention	5
Total (max 50%) →	15

**SUBMITTALS**

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Drawing showing the location of the oil-grit separator
  - b. Specifications of the oil-grit separator from the manufacturer, if possible
  - c. Documentation from the contractor regarding the cleanout and/or inspection logs
3. Certification letter, signed and sealed by a Professional Engineer, confirming the oil-grit separator is performing as specified
4. Pollution prevention plan including sign-off sheets pertaining to employee in-house training

**Example 4: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed, as necessary, and all supporting documentation is included.

**PEAK FLOW REDUCTION: 0% (OF 40% MAX.)**

**Evaluation:** No credit requested.

**WATER QUALITY TREATMENT: 10% (OF 10% MAX.)**

**Evaluation:** The only documentation from the Contractor that the property manager was able to find was the invoice for the work. However, the inspection logs were made available which suggested that the oil-grit separator was in a functional state. In addition, the engineer's certification backed up the inspection logs. On this basis, full credit is supported in this category.

**RUNOFF VOLUME REDUCTION: 0% (OF 15% MAX.)**

**Evaluation:** No credit requested.

**POLLUTION PREVENTION: 3% (OF 5% MAX.)**

**Evaluation:** The practices that the property manager has implemented are consistent with the requirements for pollution prevention. However, the mandatory training is still to disseminate to half of the employees. On this basis, credit is awarded as follows:

- 3% for 60% implementation

Category	Credit Request	Credit Assessment
Peak Flow Reduction	0	0
Water Quality Treatment	10	10
Runoff Volume Reduction	0	0
Pollution Prevention	5	3
<b>Total (max 50%) →</b>	<b>15</b>	<b>13</b>

**Example 5:**

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Park	6	0.2	0.3	0.5

**NOTES**

- Site was constructed approximately 5 years ago and includes green gabion retaining feature and low impact development elements including permeable paver parking stalls and a bioretention system
- Site design evolved from a conventional neighbourhood park to retain a wetland feature, in collaboration with the conservation authority, and incorporates numerous sustainable design elements and educational signage
- Park Operations staff have been working alongside conservation authority staff to maintain the low impact development features
- Permeable paver parking stalls are placed on an area of 1,000m<sup>2</sup>
- Stormwater letter brief outlines that:
  - Bioretention system provides quality treatment for the entire 3,000m<sup>2</sup> parking lot
  - Pathways throughout the park drain over grassed areas
  - Runoff co-efficient for parking stalls is 0.50 compared to conventional pavement which is 0.95
  - Target 100-year predevelopment flow would require reduction of 0.15 cms
  - Actual 100-year flow reduction of 0.03 cms (0.20 – 0.17) is approximately 20% toward full credit (0.20 x 40% = ~8%)

Storm event	Pre-development flows	Existing conditions flows	Proposed conditions flows
100-year	0.05 cms	<b>0.20 cms</b>	<b>0.17 cms</b>

**CREDIT REQUEST**

Category	Credit Request
Peak Flow Reduction	8
Water Quality Treatment	10
Runoff Volume Reduction	0
Pollution Prevention	0
<b>Total (max 50%) →</b>	<b>18</b>

**SUBMITTALS**

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Calculations
  - b. Drawing illustrating the low impact development feature locations
  - c. Cross-section of permeable paver construction
  - d. Cross-sections and specifications associated with the bio-retention system
3. Certification letter, signed and sealed by a Professional Engineer, confirming the measures have been installed as designed

**Example 5: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed, as necessary, and all supporting documentation is included.

**PEAK FLOW REDUCTION: 8% (OF 40% MAX.)**

**Evaluation:** City supports 0.5 for runoff co-efficient of permeable pavers on the presumption of proper installation. No credit provided for the retained wetland feature as it serves primarily an ecological function rather than serve as a stormwater quantity control facility. Credit is assessed on the basis of on-site measures and the documentation reviewed supports a credit of 8% in this category.

**WATER QUALITY TREATMENT: 4% (OF 10% MAX.)**

**Evaluation:** There was no formal low impact development design modifications associated with the grassed areas adjacent to the pathways and so there is no credit consideration for the pathway drainage. The bioretention system is actively maintained by Park Operations in collaboration with the conservation authority, who are also monitoring the feature. On the basis of the design reviewed and certified "as-constructed" by the engineer, the bioretention system is considered an acceptable BMP. Credit is given in this category pro-rated to the area for which treatment is provided as it drains approximately 40% of the impervious area.

**RUNOFF VOLUME REDUCTION: 0% (OF 15% MAX.)**

**Evaluation:** No credit requested.

**POLLUTION PREVENTION: 0% (OF 5% MAX.)**

**Evaluation:** No credit requested.

Category	Credit Request	Credit Assessment
Peak Flow Reduction	8	8
Water Quality Treatment	10	4
Runoff Volume Reduction	0	0
Pollution Prevention	0	0
Total (max 50%)→	18	12



**Example 6:**

Land Use	Site Area (ha)	Building Area (ha)	Paved Area (ha)	Total Impervious Area (ha)
Fire Station	2	0.2	0.2	0.4

**NOTES**

- Site was constructed approximately 3 years ago to replace an aging facility and co-locates fire services with a paramedic station
- The design incorporates numerous low impact development and sustainable features site as it aimed to certify the facility as a LEED building
- Extensive green roof covers 2/3 of the building area. This type of green roof has a soil depth of 3-6 inches and supports sedums and ground cover
- Permeable pavers cover 90% of the paved area
- Surface runoff from the site is conveyed to surrounding enhanced grassed swales
- Park Operations staff assist with the maintenance of the on-site low impact development features
- Stormwater letter brief outlines that:
  - Enhanced grassed swale provides quality treatment for the entire site
  - 20m<sup>3</sup> of surface volume available within the enhanced grassed swales to allow for infiltration and evapotranspiration. This volume equates to 5mm of the impervious area
  - Runoff co-efficient for parking stalls is 0.50 compared to conventional pavement which is 0.90
  - Runoff co-efficient for the extensive green roof is proposed as 0.75 compared to 0.95
  - Target 100-year predevelopment flow would require reduction of 0.11 cms
  - Actual 100-year flow reduction of 0.04 cms (0.15 – 0.11) is approximately 38% toward full credit (0.38 x 40% = ~15%)

Storm event	Pre-development flows	Existing conditions flows	Proposed conditions flows
100-year	0.04 cms	<b>0.15 cms</b>	<b>0.11 cms</b>

**CREDIT REQUEST**

Category	Credit Request
Peak Flow Reduction	15
Water Quality Treatment	10
Runoff Volume Reduction	5
Pollution Prevention	0
<b>Total (max 50%)→</b>	<b>30</b>

**SUBMITTALS**

1. Credit application form
2. Stormwater letter brief, signed and sealed by a Professional Engineer, summarizing the above points that also includes:
  - a. Calculations
  - b. Drawing illustrating the low impact development feature locations
  - c. Cross-section of proposed permeable paver construction
  - d. Cross-sections and specifications associated with the enhanced grassed swale
  - e. Cross-section of proposed permeable paver construction
3. Certification letter, signed and sealed by a Professional Engineer, confirming the measures have been installed as designed

**Example 6: (cont'd)****CREDIT ASSESSMENT**

Submittals have all been signed/sealed, as necessary, and all supporting documentation is included.

**PEAK FLOW REDUCTION: 15% (OF 40% MAX.)**

**Evaluation:** City supports 0.5 for runoff co-efficient of permeable pavers on the presumption of proper installation and similarly supports 0.75 for the extensive green roof. Credit is assessed on the basis of on-site measures and the documentation reviewed supports a credit of 15% in this category.

**WATER QUALITY TREATMENT: 10% (OF 10% MAX.)**

**Evaluation:** The external site works, including the enhanced grassed swale, are actively maintained by Park Operations. On the basis of the design reviewed and certified as constructed by the engineer, the enhanced grassed swale is considered an acceptable BMP. Full credit is given in this category.

**RUNOFF VOLUME REDUCTION: 5% (OF 15% MAX.)**

**Evaluation:** Based on the documentation reviewed, there is agreement that the proposed measures equate to a 5mm reduction of runoff volume over the impervious area. Evapotranspiration was considered the key driver of on-site retention and so soil permeability was not considered critical in this instance.

**POLLUTION PREVENTION: 0% (OF 5% MAX.)**

**Evaluation:** No credit requested.

Category	Credit Request	Credit Assessment
Peak Flow Reduction	15	15
Water Quality Treatment	10	10
Runoff Volume Reduction	5	5
Pollution Prevention	0	0
Total (max 50%) →	30	30