Kitchener's Stormwater Utility

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City of Kitchener

Urban-Basement Flood
Symposium & RAIN Presentation
September 19, 2013

Presentation Agenda

1. Introduction
2. Stormwater Funding Review
3. Stormwater Rate
4. Stormwater Credits: Residential and Non Residential Programs
5. Lessons Learned
6. Recognition

Kitchener, Ontario

- 1 hour west of Toronto
- Population – 229,400
- Local municipal council within the two tier Region of Waterloo
- Grand River Watershed

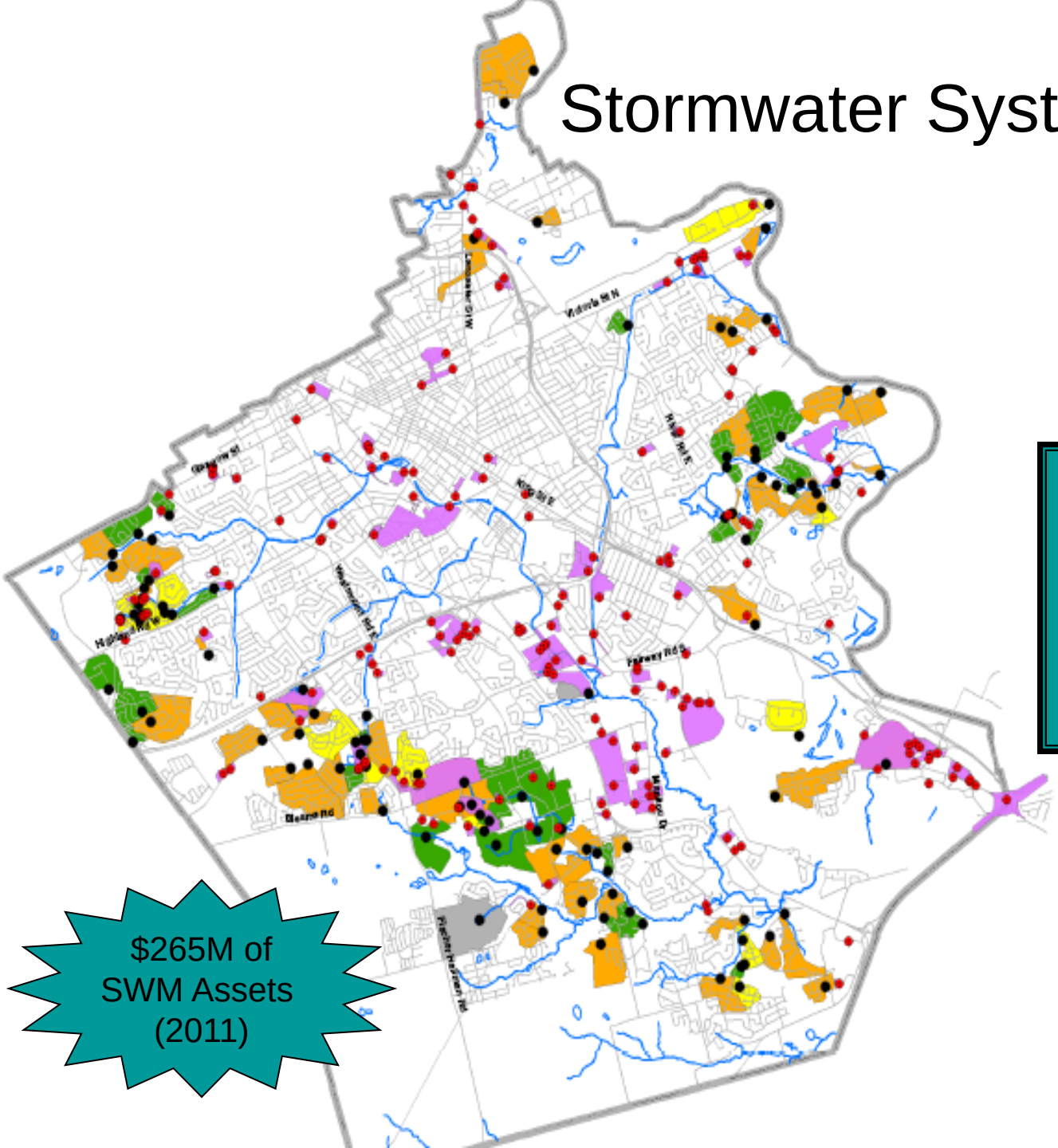
Typical Challenges for Stormwater Management

- Growth and development
- Flooding and erosion
- Property damage and Increased liability
- Water quality degradation
- Source water protection
- Historic urban areas
- Inadequate inspection & maintenance
- Heightened regulatory requirements
- Climate Change






Stormwater System



- 137 square kilometres
- 100 km open watercourses
- 700 km of sewers
- 10000 catchbasins
- 100 SWM ponds

$265M of SWM Assets (2011)

Service Level Study (2005 - 2009)

Sustainable Service Level = $ 13.0M

$4.1M INCREASE

Current Service Level = $ 8.9M

STORMWATER FUNDING REVIEW

Funding Mechanism Review

- Stormwater has historically been funded through property taxes.
- Inequality as the amount property owners pay through property taxes may not = the amount of service they use.
- Residential property taxpayers subsidize tax exempt properties and large commercial/industrial properties
- Inconsistent funding source – competition for stormwater infrastructure funding.

Funding Mechanism Comparison

Funding Method	Dedicated Funding Source	Fair & Equitable Allocation	Tax Exempt Property Contrib-utions	Incentives for On-Site Stormwater Management	Effort to Administrate
1. Stormwater Rate	Yes	Yes	Yes	Yes	High
2. Dedicated Tax Levy	Yes	No	No	No	Low/ Medium
3. Stormwater Flat Fee	Yes	Partly - if tiered	Yes	Possibly	Medium
4. Status Quo	No	No	No	No	Low

Council Approval (June 2010)

- Reduce property tax base budgets and shift costs to the stormwater utility
- Stormwater Rate schedule effective January 1, 2011
- $4M increase to the annual capital and operating budget
- Addresses fairness - rate structure based on impervious area measurements
- Develop a stormwater credit policy for properties that manage stormwater on-site

STORMWATER RATE

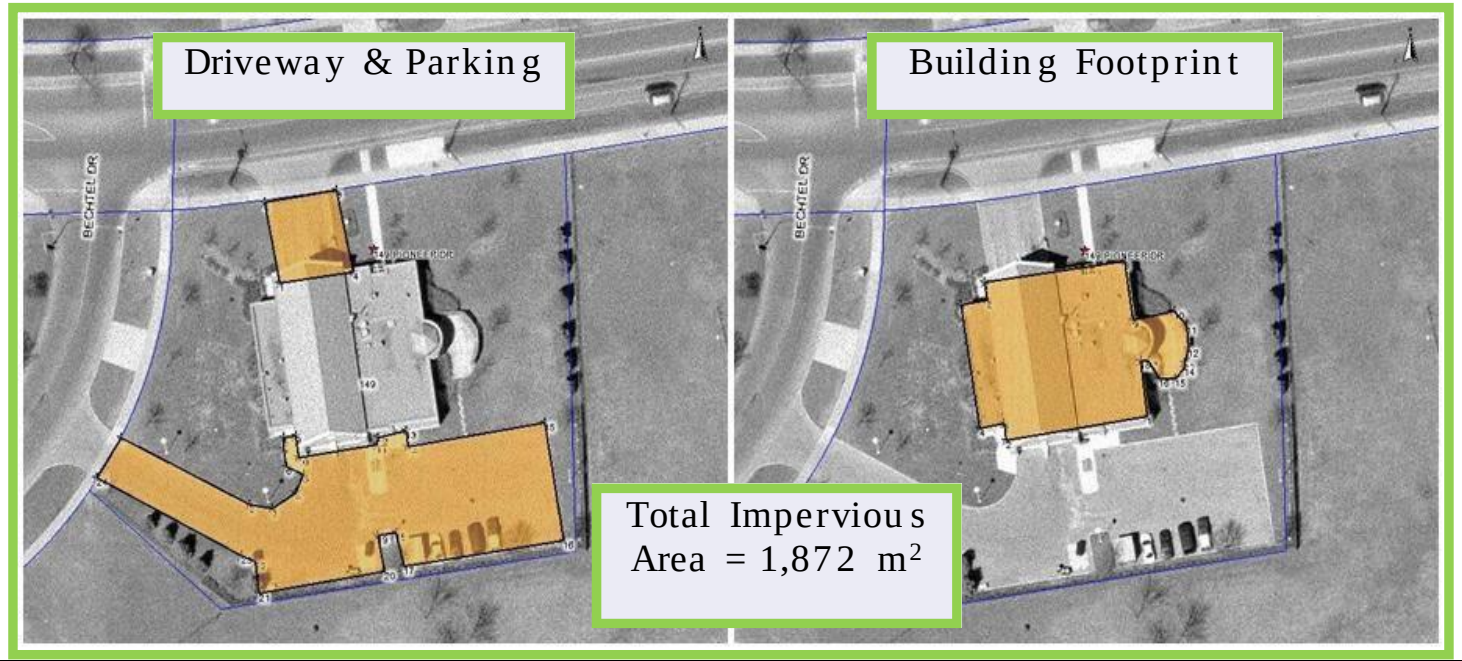
Billing System Implementation

1. Update GIS impervious area mapping for each property
2. Assign SWM rate codes to each property.
3. Link GIS rate codes to City billing accounts
4. Update the City's corporate tax and utility billing software (CIS).
5. First SWM utility bills issued in February 2011.

Calculation Methodology

Stormwater rate based on measured impervious area:

- Driveways & parking areas (but not public right-of-way)
- Building footprint (rooftop area)
- Other hard surfaces (patios, sidewalks, private roads, etc.)



Residential Billing Chart

Type Code	Description	Basis for Charge	Monthly Charge per Property	Annual Charge per Property
1	Residential Single Detached Small	Detached homes with building footprint size of 105 m^2 or less	$5.92	$71.04
2	Residential Single Detached Medium	Detached homes with building footprint size between 106-236 m^2	$9.87	$118.44
3	Residential Single Detached Large	Detached homes with building footprint size of 237 m^2 or more	$12.98	$155.76
4	Residential Townhouse / Semi-Detached	Per dwelling unit	$7.05	$84.60
5	Residential Condominium	Per dwelling unit	$3.94	$47.28
6	Multi-Residential (2-5 Units)	Per building	$7.91	$94.92
			$11.86	$142.32
			$15.80	$189.60
			$19.76	$237.12
7	Multi-Residential (>5 Units)	Per property (according to number of dwelling units)	Charge = (# units) × ($1.98/month) ***See Note 2***	Charge = (# units) × ($23.76/year) ***See Note 2***

Single Detached Medium

Building Footprint:	226 m^2
Monthly Charge:	$9.73
Annual Charge:	$116.76

Rate Code 2

Non Residential Billing Chart

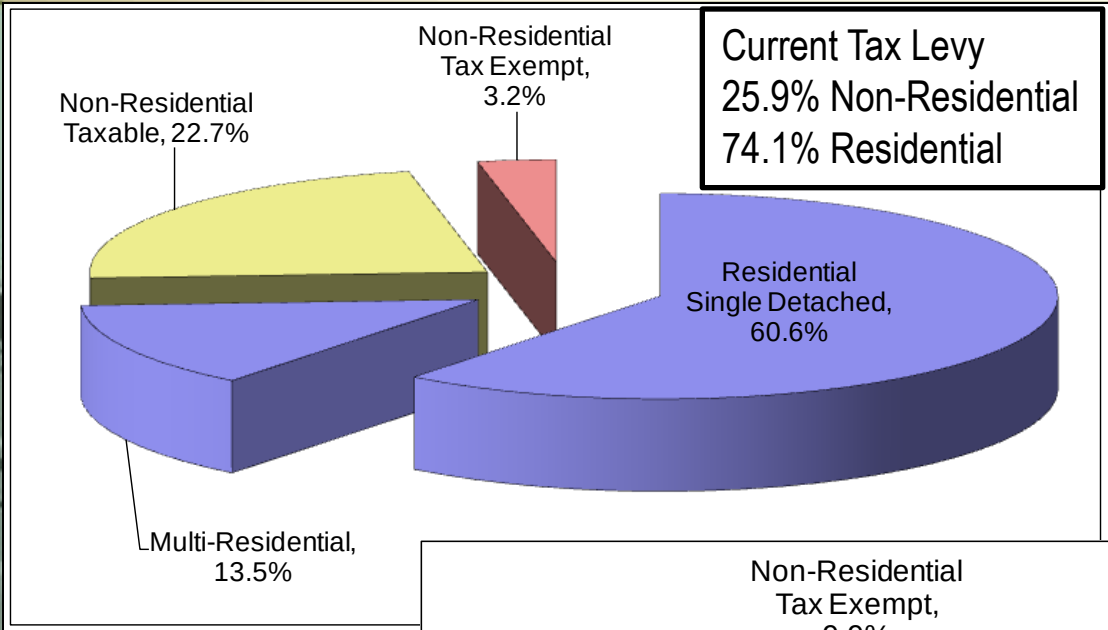
Type Code	Description	Basis for Charge	Monthly Charge per Property	Annual Charge per Property
8	**Non-Residential Smallest**	26-1,057 m^2 of impervious area	$18.90	**$226.80**
9	**Non-Residential Small**	1,052 m – 1,640 m^2 of impervious area	$50.52	**$606.24**
10	**Non-Residential Medium-Low**	1,641- 7,676 m^2 of impervious area	$132.38	**$1,588.56**
11	**Non-Residential Medium-high**	7,677 – 16,324 m^2 of impervious area	$386.43	**$4,637.16**
12	**Non-Residential Large**	16,325 – 39,034 m^2 of impervious area	$936.58	**$11,238.96**
13	**Non-Residential Largest**	39,035 m^2 or greater of impervious area	$2,010.62	**$24,127.44**

Non-Res Largest

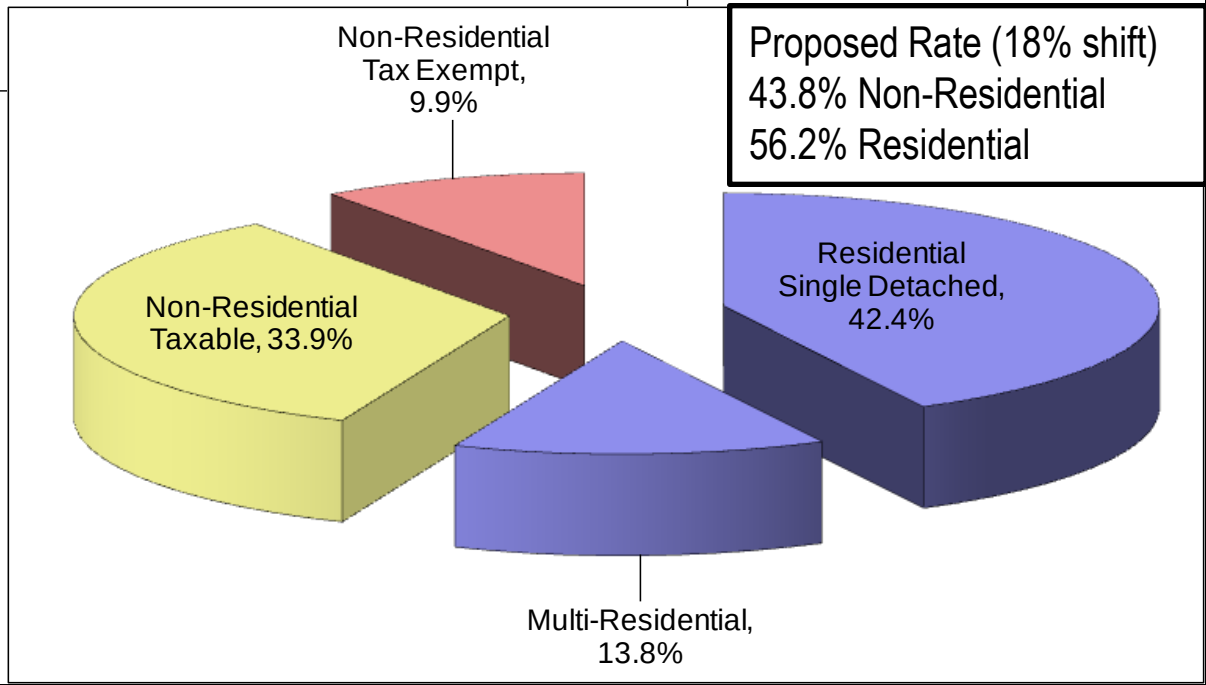
Impervious Area:	74,336 m^2
Monthly Charge:	$1,980.91
Annual Charge:	$23,770.92

Rate Code 13

Revenue Distribution



Current Tax Levy
25.9% Non-Residential
74.1% Residential



Proposed Rate (18% shift)
43.8% Non-Residential
56.2% Residential

STORMWATER CREDITS INTRODUCTION AND, POLICY DEVELOPMENT

What Are SW Credits?

Encouragement to Manage Stormwater

Implementation of Best Management Practices

Receive Financial Rebates and Environmental Benefits

SWM Credit Policy Development

- Review and collect background information
- Develop credit policy alternatives
- Present policy alternatives to public (September 2011)
- Evaluate policy alternatives
- Present preferred alternative to public (November 2011)
- Seek Council approval of proposed policy (January 2012)

Credit Policy Alternatives

There were 5 alternatives under consideration:

1. Do Nothing (no credit program)
2. Multi-res and Non-res Credits
3. Residential Credits
4. Residential Rebates

5a. Combination (Options 2 & 3)

5b. Combination (Options 2 & 4)

Preferred alternative: Credits for both non residential and residential property owners

COMMUNICATIONS AND COMMUNITY OUTREACH

Public Communication

New stormwater user rate coming in 2011!

The City of Kitchener is transferring stormwater* management funding from property taxes to a user-fee program, effective Jan. 1, 2011. This new stormwater user fee will appear on your monthly utility bill beginning in February 2011. The average single dwelling homeowner will be charged approximately $10.50/per month for stormwater management.

All properties including non-residential properties will see the new user fee on their utility bill based on the rate category their property is in. This approach is the most fair and equitable way to fund stormwater management since the properties that use the system more also pay more.

* *Stormwater is water that flows across the land and is routed into drainage systems and then on to our natural areas.*

Why is the new rate important?

The new user rate will allow the city to improve its stormwater service levels by:

- Keeping pollutants out of our stormwater system - leading to better protection of our source water.
- Preventing local flooding and pollution from reaching our creeks and streams - preserving their health and vitality.
- Accelerating needed improvements to the lo stormwater management system, including V Park Lake.

Where do I get more inform

For more information on the city's new storm rate, please:

- Visit www.kitchener.ca/stormwater
- E-mail revenuecustomerservice@kitchener.c
- Call 519-741-2450

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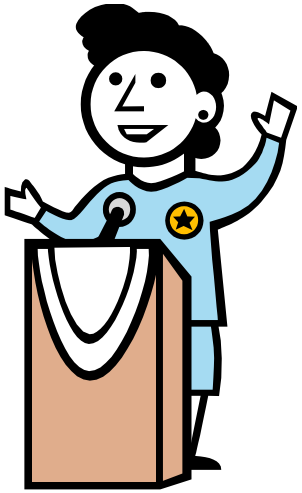


… investment in source water
… protecting the environment
… consistency in our billing rules

Victoria Park Lake

The Lowdown on the Clean-up

Welcome to the Victoria Park Lake improvements project email update!

Next steps

Construction will focus on site preparation during the initial phase. Please keep your distance from the work area for your own safety.

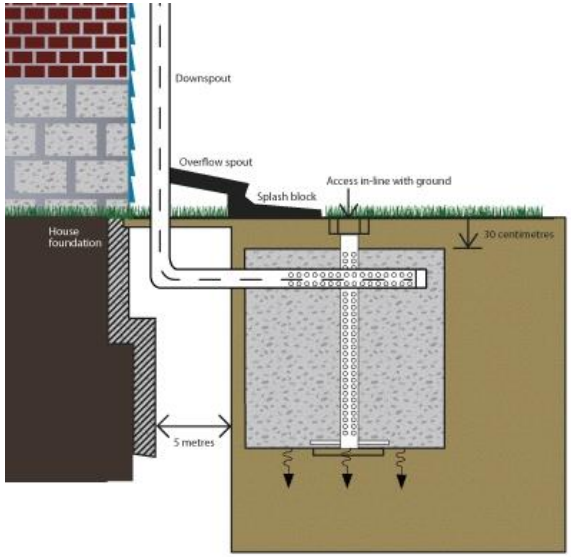
http://www.kitchener.ca/stormwater

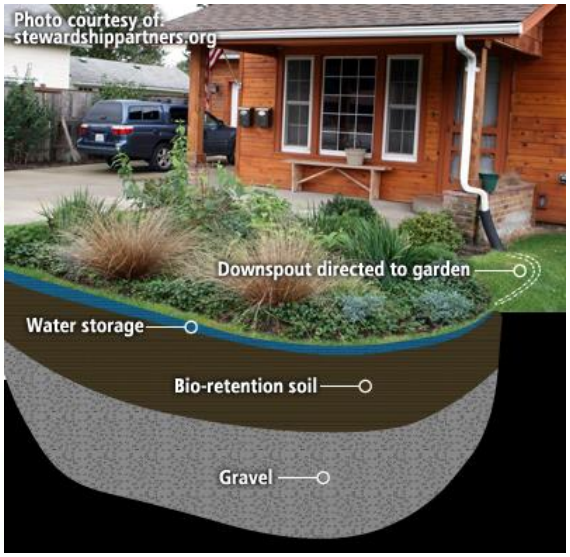
Community Outreach

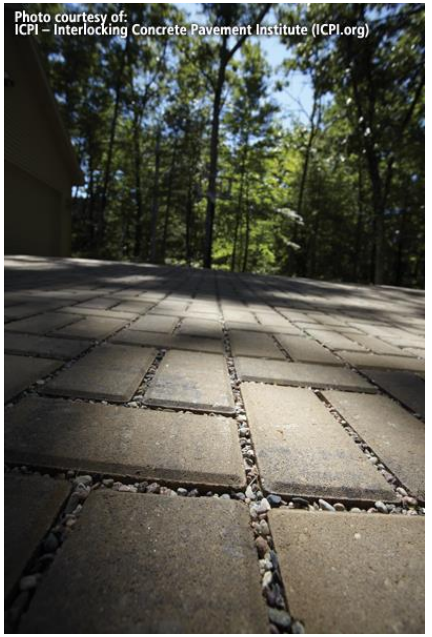
- RAIN is a joint program of Green communities Canada and it's members, including REEP green solutions
- The RAIN program provides information and resources to property owners for on-site stormwater management
- Made possible through funding from MOE Showcasing Water Innovation Fund.

RESIDENTIAL STORMWATER CREDIT PROGRAM

Approved Best Management Practices (BMPs)



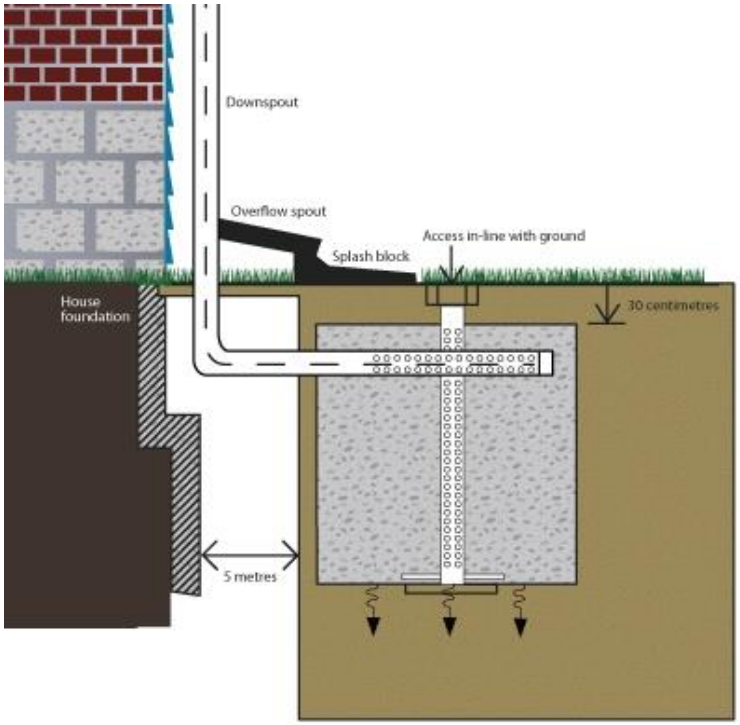




Rain Garden Under Construction

Rain Garden During Rainfall

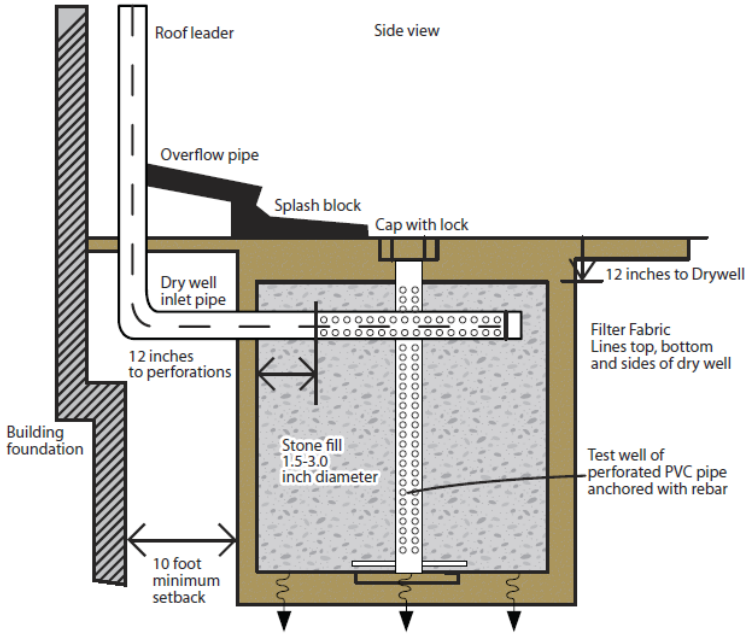
Infiltration Gallery



Infiltration galleries are stone-filled (golf ball size) excavations where stormwater runoff collects and then infiltrates into the ground.

Infiltration Gallery vs. Rain Barrel

Example of Infiltration Gallery



Amount of rain water stored in an average infiltration gallery = 21 rain barrels

Infiltration Galleries

Infiltration Trench

Permeable Pavers

Permeable Pavers

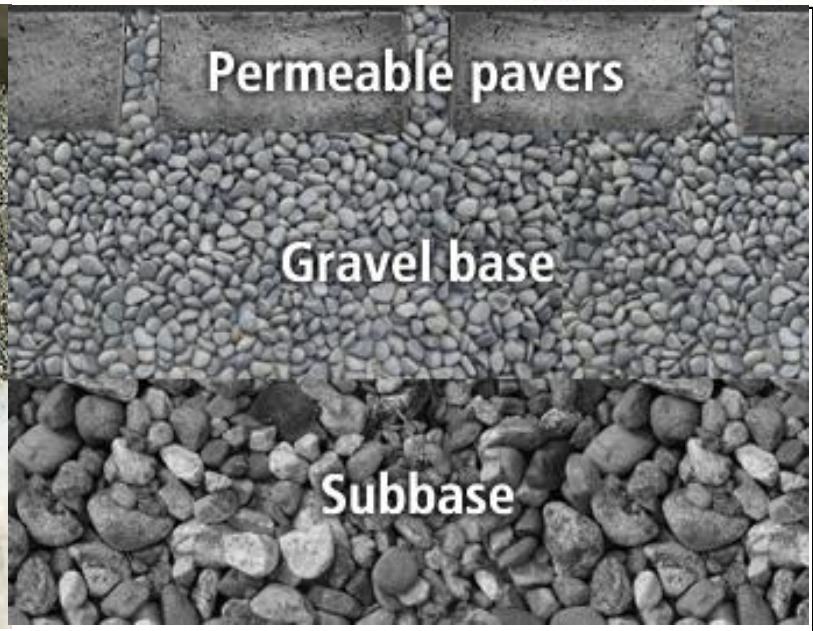
Traditional Interlocking Pavers

Permeable vs. Impermeable

Permeable pavers use an Open Graded Base

Traditional Pavers use a Dense Graded Base

Permeable Pavers - Design



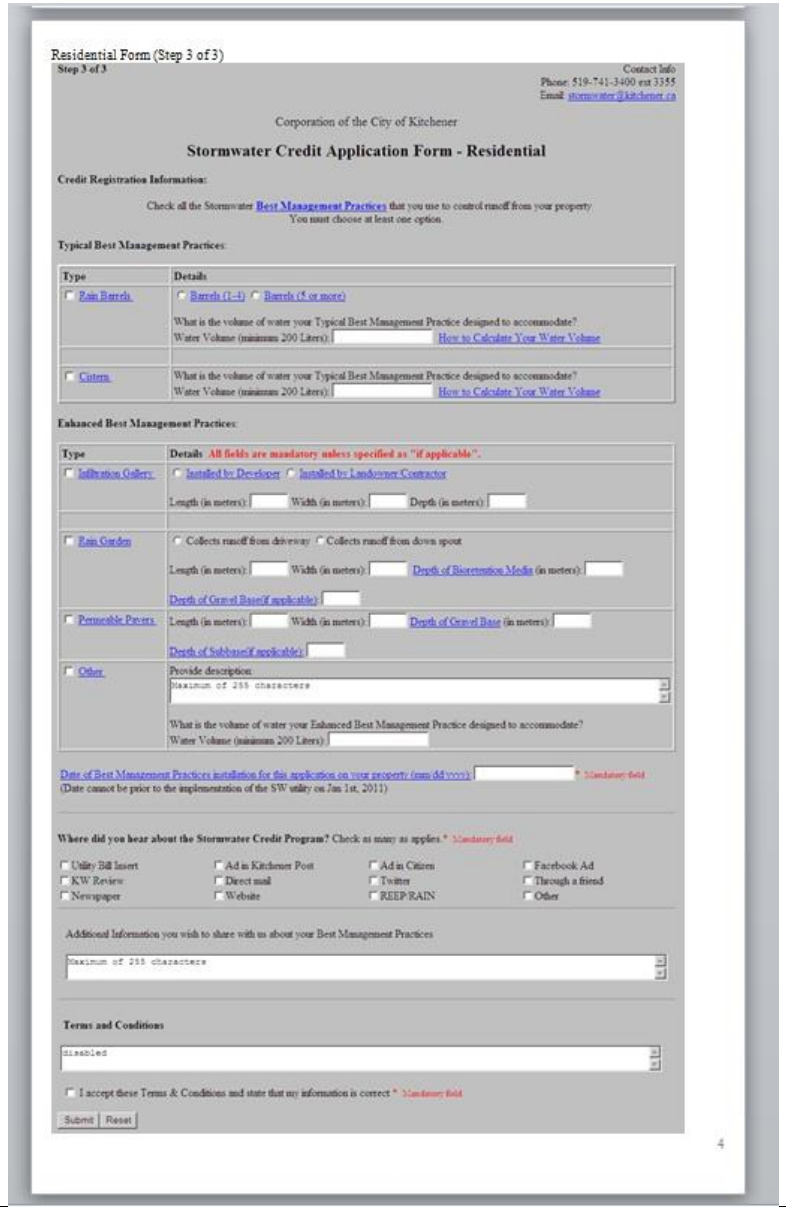
- Permeable pavers are installed over a high void ration base to store runoff and promote long term infiltration.

Credit Structure

Residential BMP Credit Values

Credit Type	Volume Captured	Examples	Credit
Basic Residential Credit	200 - 800 L	1-4 rain barrels small cistern	20%
Normal Residential Credit	801 - 3200 L	Small Rain garden Medium sized cistern	30%
Enhanced Residential Credit	3201 L or more	large cistern infiltration gallery	45%

Residential Hardcopy Stormwater Credit Application



Residential Form (Step 3 of 3)

Step 3 of 3

Contact Info
Phone: 519-741-3400 ext 3355
Email: stormwater@kitchener.ca

Corporation of the City of Kitchener

Stormwater Credit Application Form - Residential

Credit Registration Information:

Check all the Stormwater Best Management Practices that you use to control runoff from your property
You must choose at least one option.

Typical Best Management Practices:

Type	Details
Rain Barrels	Barrels (1–4) Barrels (5 or more) What is the volume of water your Typical Best Management Practice designed to accommodate? Water Volume (minimum 200 Liters): How to Calculate Your Water Volume
Cistern	What is the volume of water your Typical Best Management Practice designed to accommodate? Water Volume (minimum 200 Liters): How to Calculate Your Water Volume

Enhanced Best Management Practices:

Type	Details All fields are mandatory unless specified as "if applicable".
Infiltration Gallery	Installed by Developer Installed by Landowner Contractor Length (in meters): Width (in meters): Depth (in meters):
Rain Garden	Collects runoff from driveway Collects runoff from down spout Length (in meters): Width (in meters): Depth of Bioretention Media (in meters): Depth of Gravel Base(if applicable):
Permeable Pavers	Length (in meters): Width (in meters): Depth of Gravel Base (in meters): Depth of Subbase(if applicable):
Other	Provide description: Maximum of 255 characters What is the volume of water your Enhanced Best Management Practice designed to accommodate? Water Volume (minimum 200 Liters):

Date of Best Management Practices installation for this application on your property: (mm/dd/yyyy) * Mandatory field
(Date cannot be prior to the implementation of the SW utility on Jan 1st, 2011)

Where did you hear about the Stormwater Credit Program? Check as many as applies * Mandatory field

Utility Bill Insert	Ad in Kitchener Post	Ad in Citizen	Facebook Ad
KW Review	Direct mail	Twitter	Through a friend
Newspaper	Website	REEP/RAIN	Other

Additional Information you wish to share with us about your Best Management Practices

Maximum of 255 characters

Terms and Conditions

disabled

I accept these Terms & Conditions and state that my information is correct * Mandatory field

Submit | Reset

4

Residential Online Application

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Contact Information
Phone: 519-741-3400 ext 3355
Email: stormwater@kitchener.ca

Residential Stormwater Credit Application Form

Step 3

Rain Barrels

What are they?
A rain barrel is used to collect and temporarily store rainwater for re-use in the garden. Rain barrels typically hold 200 litres of rainwater yet can range from 150-300 litres in size.

How do they work?
Rain barrels are connected to your roof's downspout(s) and collect the rainwater that lands on your roof. Generally, the only maintenance that's required is to empty rain barrels between rainfalls and to flip them upside down during freezing temperatures to avoid damaging the hose connections.

What are the benefits?
Rain barrels capture rain that can be used to water your plants, while saving on water bills. They are cost effective and easy to maintain. Rain barrels help to reduce your impact on the city's stormwater management system and help protect our rivers and creeks. The more rain barrels you have the greater the benefits.

(click image to enlarge)

Do you have one or more Rain Barrels?

○ Yes ◉ No

Back Continue

Residential Online Application

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Contact Information
Phone: 519-741-3400 ext 3355
Email: stormwater@kitchener.ca

Residential Stormwater Credit Application Form

Step 7

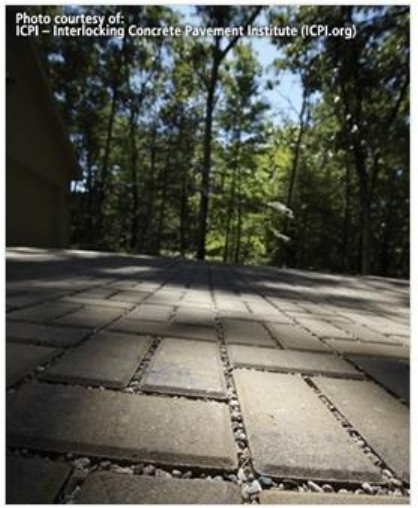
Permeable Pavers

What are they?
Permeable pavers are an alternative to traditional pavement or interlocking brick and are becoming more commin for use in residential driveways and patios.

How do they work?
Permeable pavers are designed in a way that allows rainwater to drain between the paver stones into an under-layer of gravel. The difference between traditional paving stones and permeable pavers is a slightly larger spacing between stones and rather than a fine sand mix between the stones, a looser gravel mix is used that allows water to be absorbed rather than running off the hard surface. Once in the gravel base, rainwater then slowly absorbs into the ground and gradually makes its way down to the water table where it is known as groundwater.

Note:
Inspections will be conducted to confirm your permeable pavers meet the necessary criteria. Traditional interlocking stone is not the same as permeable pavers. Interlocking stone driveways that use sand in the joints, lack the spacing between the stones and do not have at least 0.3 metres (1 foot) of loose stone beneath them to store stormwater, are not eligible for stormwater credits.

What are the benefits?
Permeable pavers provide an attractive alternative to traditional driveways and patios while also increasing the amount of water that gets absorbed into the ground, rather than running off your driveway into storm sewers. In the Region of Waterloo, 80% of our drinking water is supplied from groundwater and permeable pavers help to replenish our groundwater resources. Permeable pavers also help to reduce your impact on the city's stormwater management system and help protect our rivers and creeks.



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Do you have Permeable Pavers?

◎ Yes ◎ No

Back Continue

Residential Online Application

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Contact Information
Phone: 519-741-3400 ext 3355
Email: stormwater@kitchener.ca

Residential Stormwater Credit Application Form

Step 9, Part 1

Permeable Pavers

You told us you have permeable pavers. Please tell us the dimensions of your permeable paver area.

Dimensions of Your Permeable Paver Area

Length:
(from 1.3 to 20 metres)

Width:
(from 1.3 to 20 metres)

Depth of Gravel Base:
(from 0.3 to 0.6 metres)

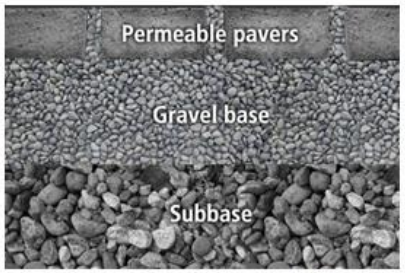
Depth of Subbase:
(from 0 to 0.3 metres, if there is no subbase enter 0)

Note:

- In order to qualify for the stormwater credit your permeable driveway must have small gaps between the pavers that are filled with stone and a gravel storage layer beneath. The spaces between the pavers allow water to drain through to the gravel base (and subbase) where stormwater is retained on your property and is absorbed into the ground. Patio stone driveways or other systems that lack these components do not qualify for the stormwater credits. If you are unsure about your system, please contact the city to discuss or arrange a site visit.
- If you do not know the depth of the gravel base or subbase for your permeable pavement system, enter 0.3m for depth of the base, and 0 for the depth of the subbase.

Example Illustration of Dimensions to Be Measured

(click image to enlarge)



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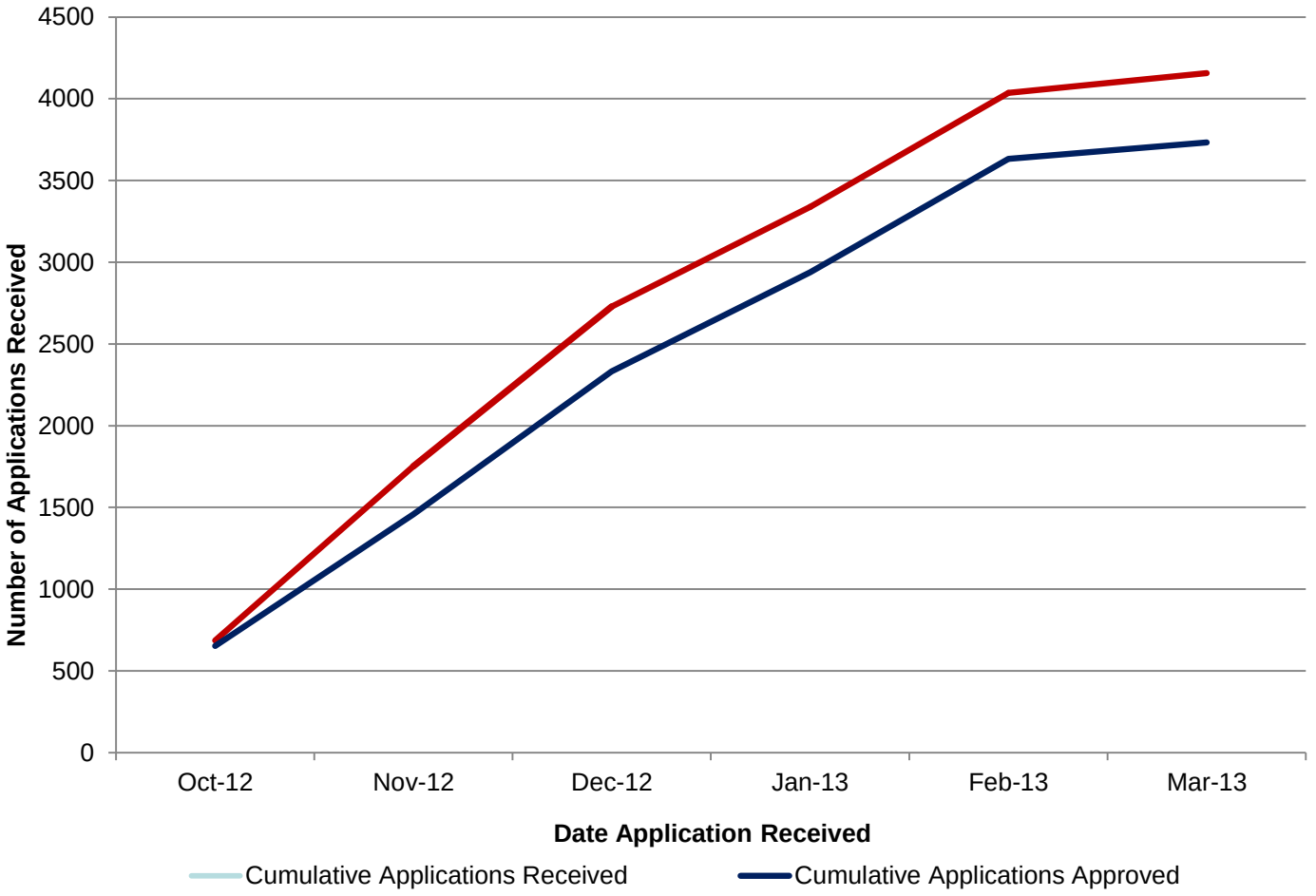
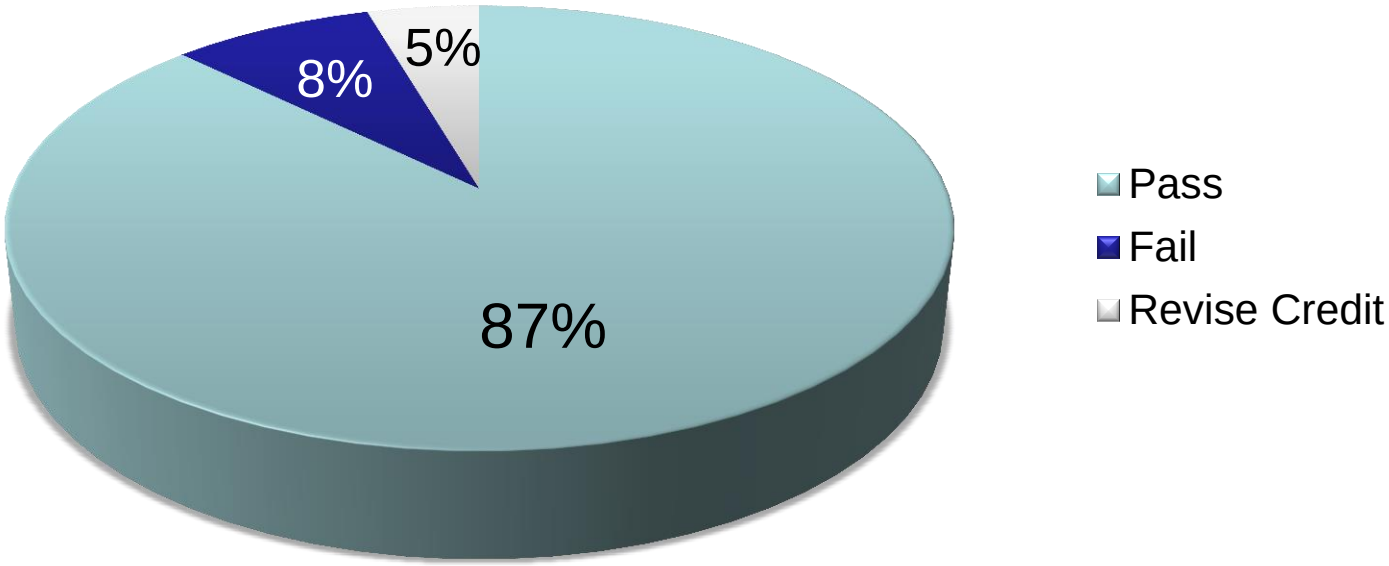
Residential Credit Policy Uptake

4,157 applications received in first 6 months

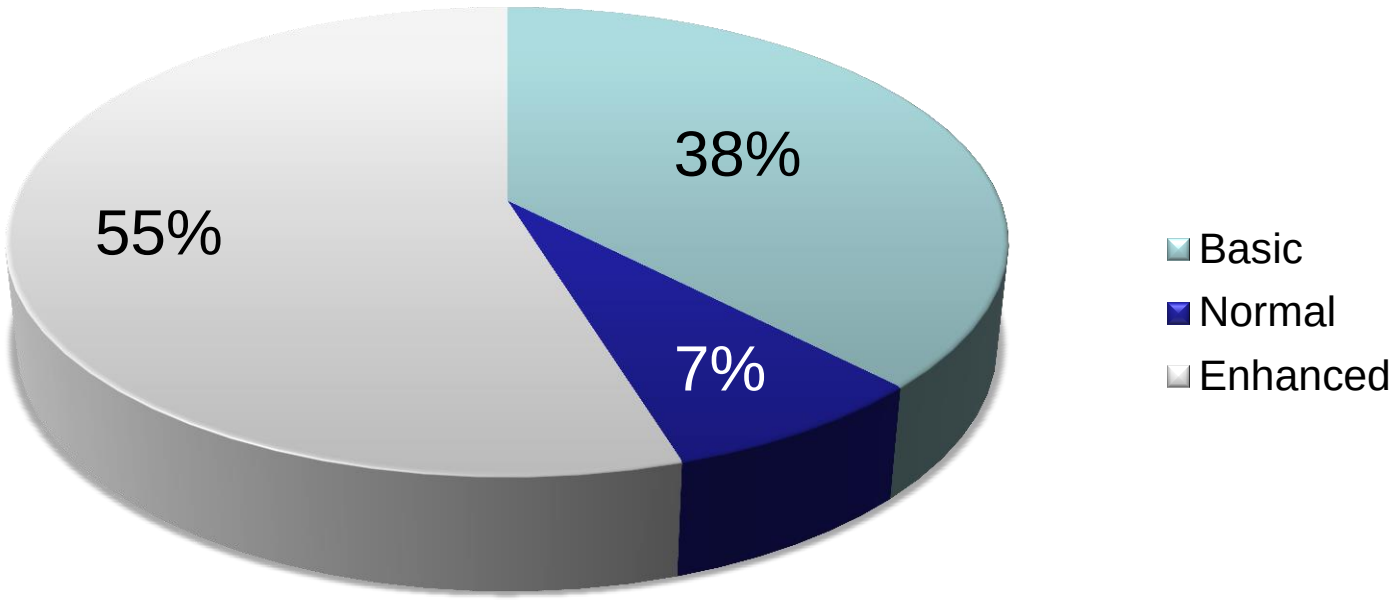


Pass Rate

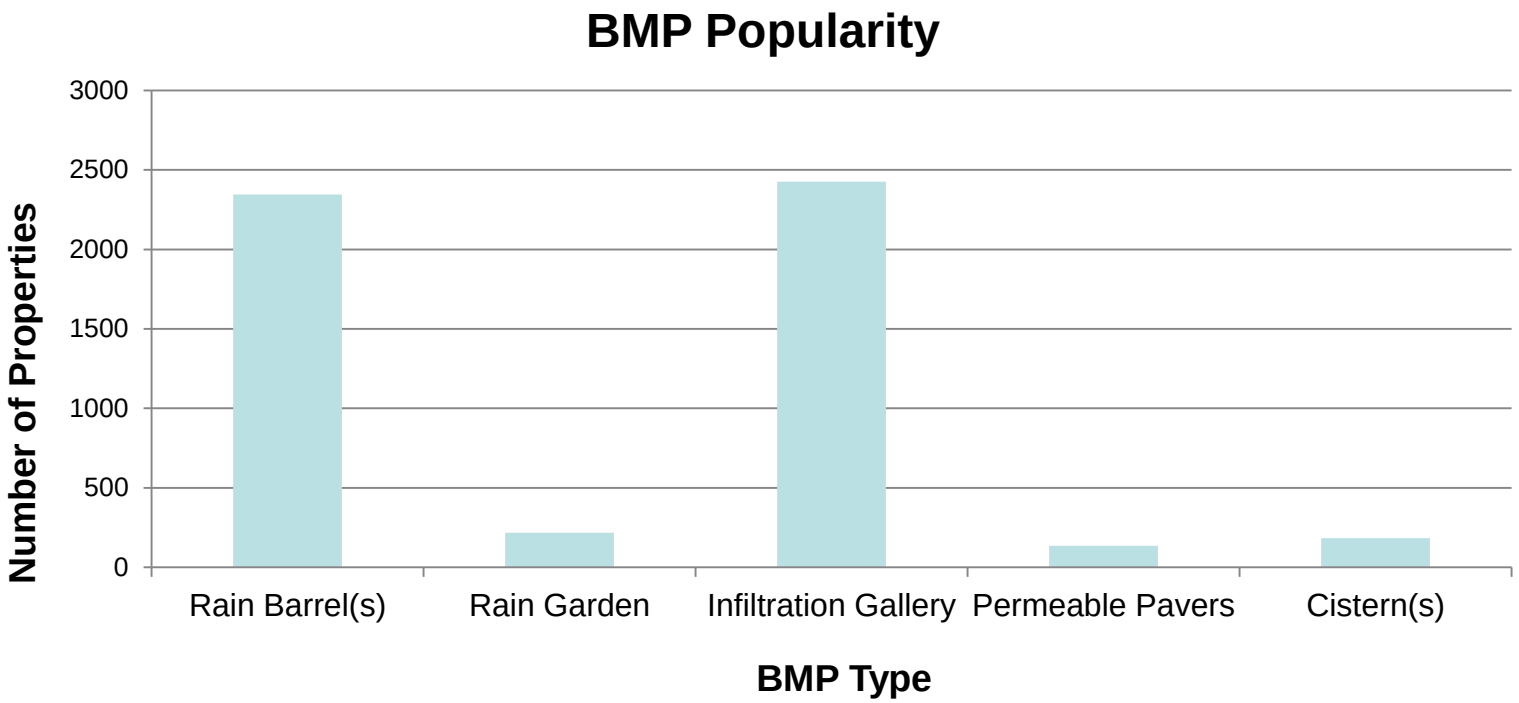


- 662 inspections completed from May 15, 2013 - August 16, 2013
- 17% of all residential participants received an inspection

Credit Levels



BMP Types

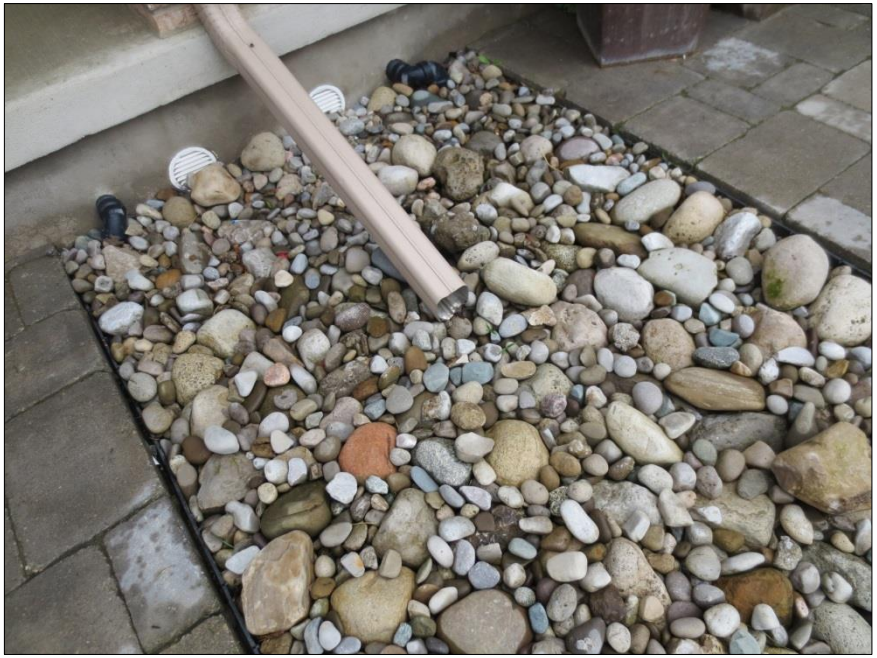

BMP Popularity
Number of Properties
3000
2500
2000
1500
1000
500
0
Rain Barrel(s)
Rain Garden
Infiltration Gallery
Permeable Pavers
Cistern(s)
BMP Type

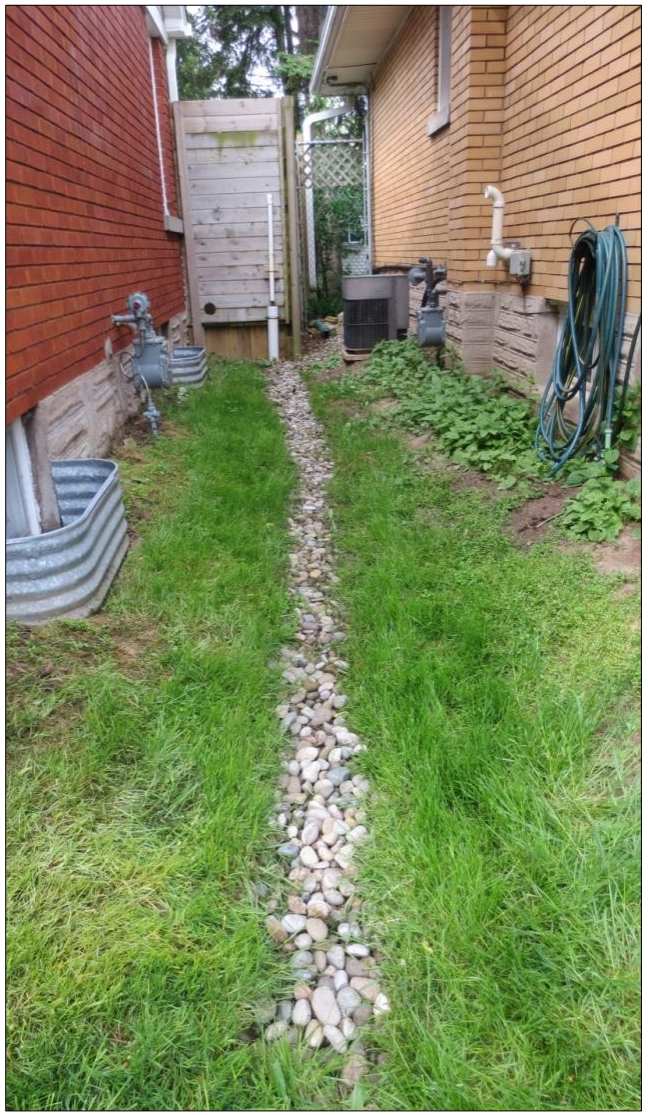
Local Examples (Inspections)

Local Examples (Inspections)

Local Examples (Inspections)

Local Examples (Inspections)





Local Examples (Inspections)

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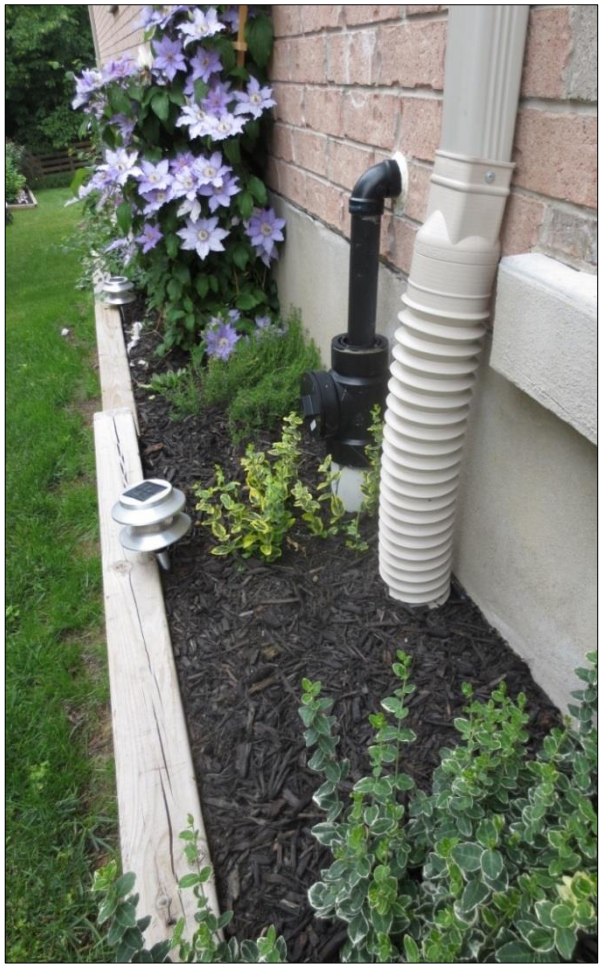
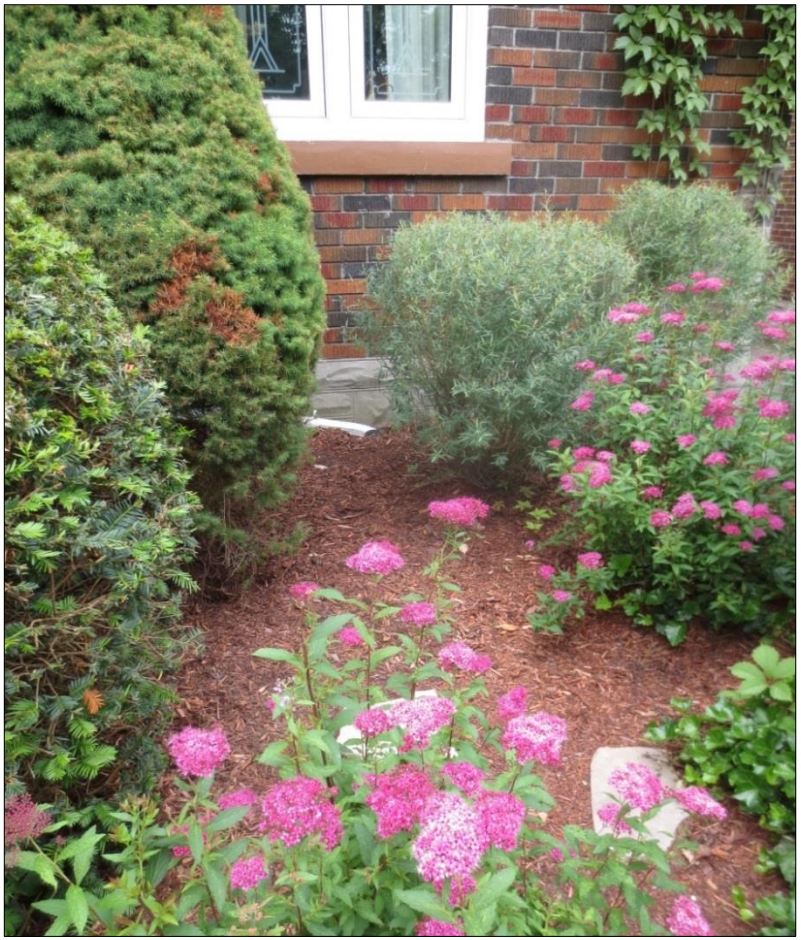


Local Examples (Inspections)



Residential Credit Program: Lessons Learned

- As much an education opportunity as it is about providing incentives to retrofit
- A good communications strategy and community outreach work are necessary to make the program successful
- An online application that links directly to city billing software is highly recommended to cut down staff time

Residential Credit Program: Lessons Learned

- Inspections necessary to keep program honest
- Promotes awareness of potential solutions to drainage problems and alternative landscaping techniques.
- Green minded people, doityourself, seniors and gardeners are early adopters
- BMP's direct water away from the home foundation and reduce sw directed to pipes by promoting groundwater recharge.

NON-RESIDENTIAL STORMWATER CREDIT PROGRAM

Approved Best Management Practices (BMPs)

Quantity

Quality

Education

Quantity (Flood Reduction)

Quantity Control Pond

Parking Lot Storage

Rooftop Storage

Infiltration Gallery

Underground Storage

Quality (Pollutant Reduction)

Quality Control Pond

Oil/Grit Separator

Filter Strip

Paved Sweeping Plan

Salt Management

BMPs & Credit Values

Credit Type	BMP Examples	Maximum Credit
Quantity **(Flood Prevention)**	• Quantity control pond • Parking lot storage • Rooftop storage • Underground Storage • Infiltration gallery	**25%**
Quality **(Pollution Reduction)**	• Quality control pond • Oil/grit separator • Filter strip • Paved area sweeping program • Salt management program	**15% - Enhanced** **10% - Normal** **5% - Basic**
Education	• Employee • Customer	**5%**
		Total: 45%

Application Form

Credit Registration Information:

Check all boxes that apply for the stormwater best management practices (BMP) currently in use. To learn more about how the stormwater credits are calculated please see the Frequently Asked Questions section of this package.

Quantity Control Credit:

Quantity Control Pond (can combine with quality)	
Parking Lot Storage	
Infilitration Gallery	
Rooftop Storage	
Underground Storage	
Other (provide description):_____	

How many square metres of impervious area drain to the quantity control?: _____

Quality Control Credit:

Quality Control Pond (can combine with quality)	
Oil Grit Separator	
Filter Strip	
Paved Area Sweeping Program	
Salt Management Plan	
Other (provide description):_____	

Choose the Level of Quality Control Achieved

Enhanced	
Normal	
Basic	

To review the requirements for the paved area sweeping program please see the attached insert.
To review the requirements for the salt management plan please see the attached insert.

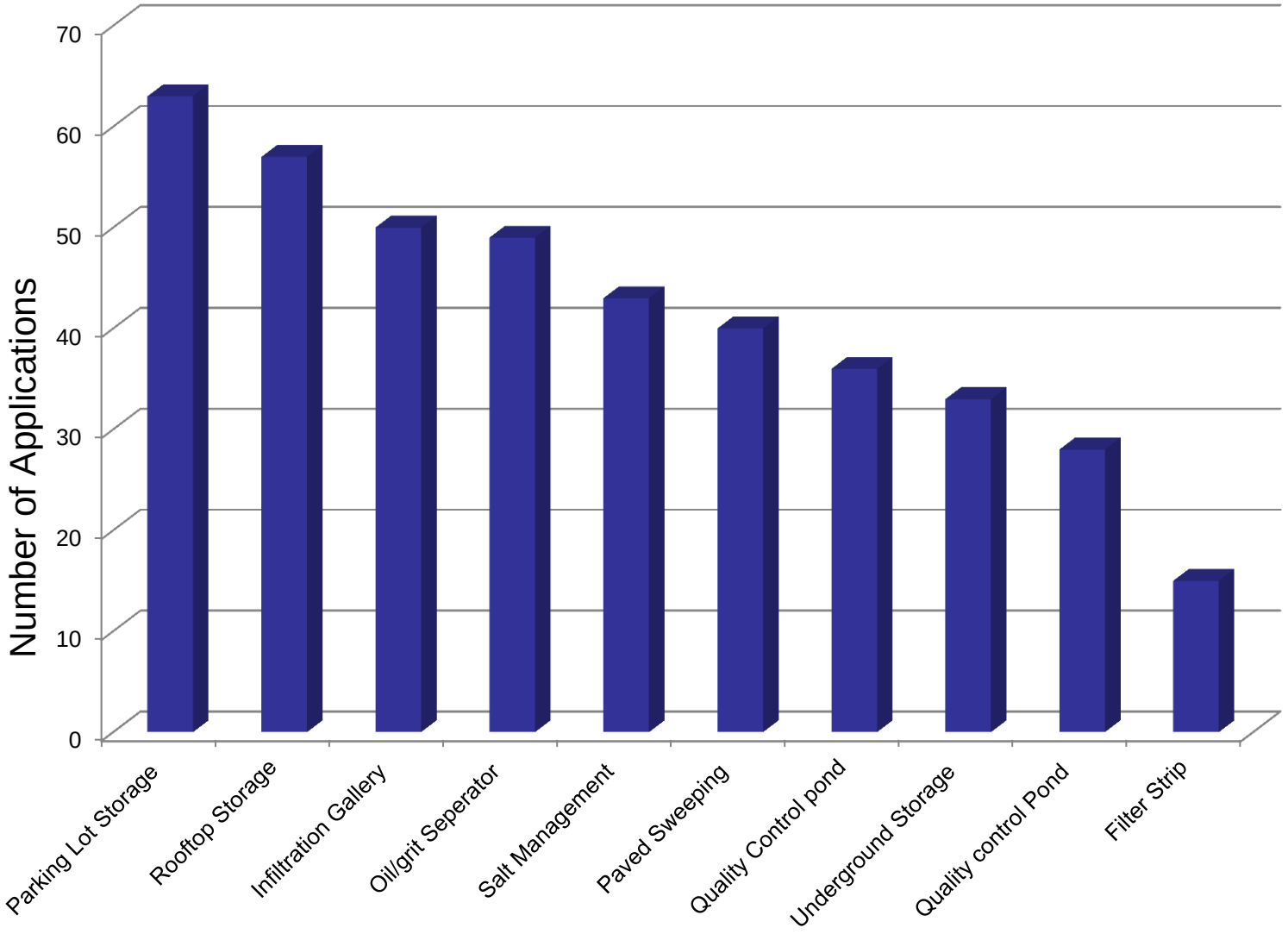
How many square metres of impervious area drain to the quality control? _____

Education Credit:

Employee Education Program	
Customer Education Program	
Student Education Program	

To review the requirements for the employee, customer or student education program please see the attached insert.

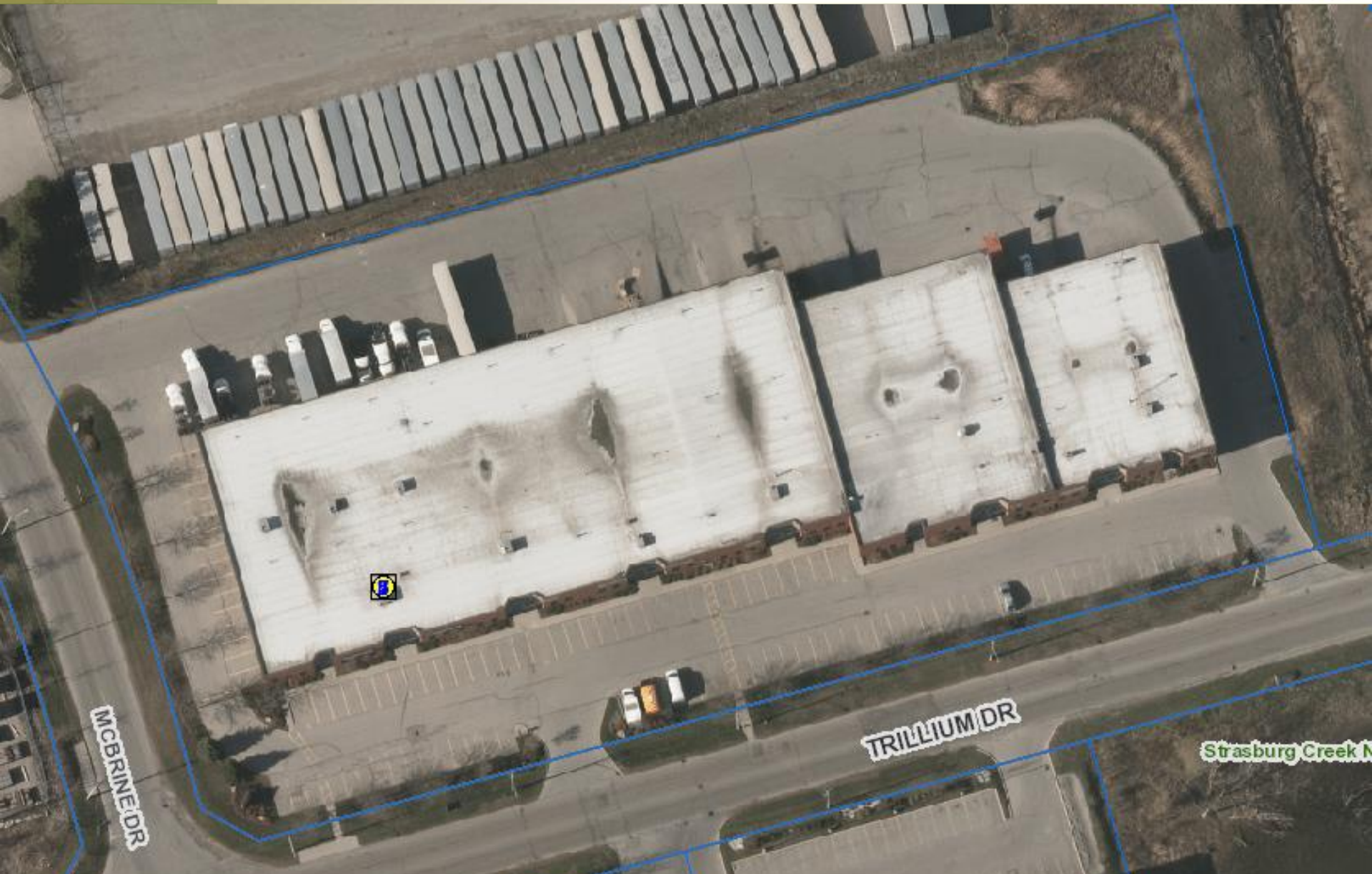
Popularity of BMPs Among Non-Res Applicants



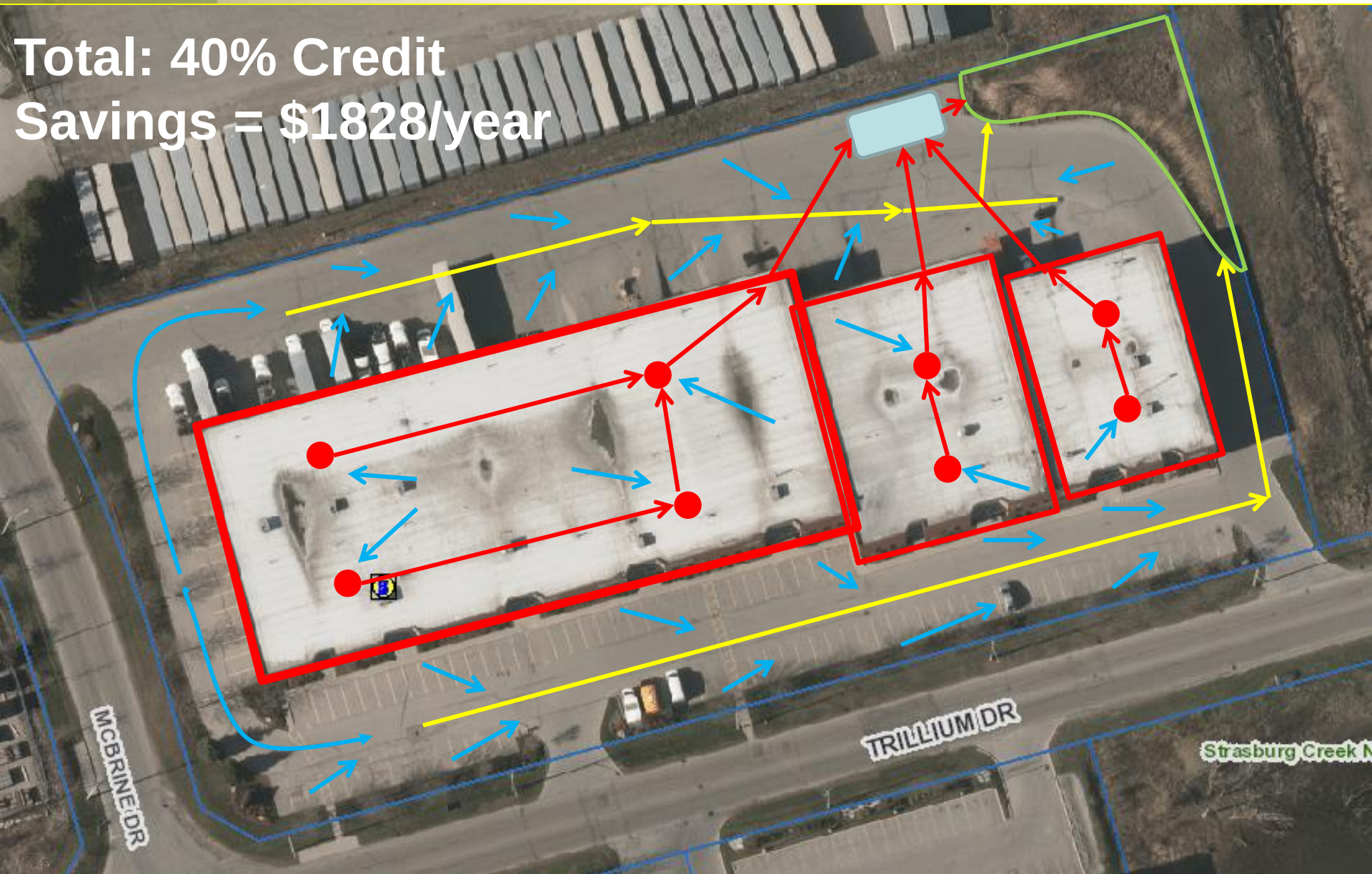
Credit Criteria

Creditable area is defined by the amount of impervious area draining to a BMP

550 Trillium Dr



550 Trillium Dr.



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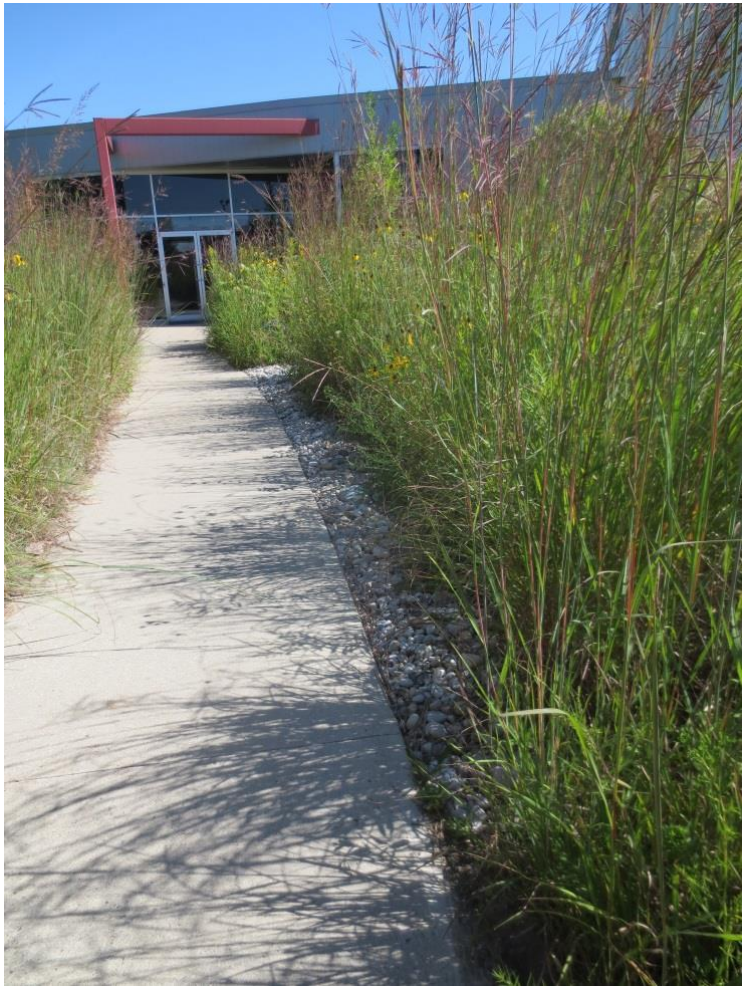


Non Residential Credit Program: Lessons Learned

- Ideal to promote the credit program during the municipal site development process – harder to implement sw controls once built
- Incentives to retrofit increase for properties with large amounts of impervious area (high rates)
- Essential to send targeted mail to properties with City approved BMP's on site

Non Residential Credit Program: Lessons Learned

- Meeting site development requirements may not mean full stormwater credits:
  - Building expansions
  - Cash in lieu rather than on site controls
  - Site drains to a downstream sw facility
  - Etc.
- In these cases stormwater credits received will be less than the maximum

Non Residential Credit Program: Lessons Learned

- A good communications strategy and community outreach work are necessary to make the program successful

- Considering to offer property owners the option to leverage sw fees in order to spread capital costs of new sw infrastructure

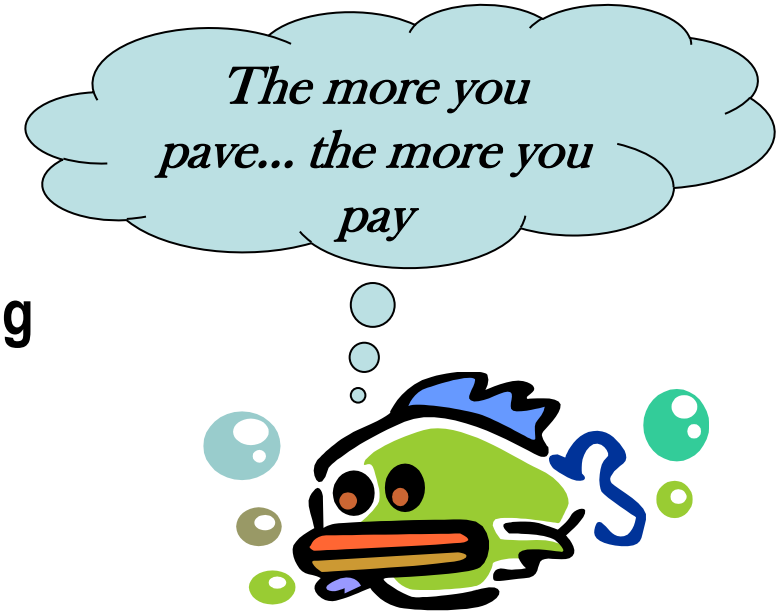
Recognition

Stormwater Utility Recognition

- August 2011 - Peter J. Marshall Municipal Innovation award from the Association of Municipalities of Ontario for the implementation of its stormwater utility
- January 2012 - Kitchener, along with other project partners, was awarded Showcasing Water Innovations Grants totaling almost $2M
- February 2012 - Ontario Good Roads Association Best Practices Award for the new Stormwater Utility Rate
- March 2013 – Council of the Federation Excellence in Water Stewardship Award

Thank You!

Contact Information



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