

**1. RESIDENTIAL STORMWATER RETROFIT PILOT PROGRAM: RAIN READY
OTTAWA**

**PROGRAMME PILOTE DE MODERNISATION DES INSTALLATIONS DE
GESTION DES EAUX PLUVIALES RÉSIDENIELLES : *PARÉS POUR LA
PLUIE OTTAWA***

COMMITTEE RECOMMENDATIONS

That Council:

- 1. Approve the pilot Residential Stormwater Retrofit Program as described in this report to support the objectives of the Pinecrest/Westboro and Eastern Subwatersheds Stormwater Retrofit Plans.**
- 2. Delegate the authority to the General Manager of Planning, Infrastructure and Economic Development or designate to implement the pilot program as outlined in this report and to execute all agreements associated with this program.**
- 3. Direct staff to report back to Committee and Council in 2023 on the results of the pilot program with recommendations for a continued program.**

RECOMMANDATIONS DU COMITÉ

Que le Conseil :

- 1. Approuve le Programme pilote de modernisation des installations de gestion des eaux pluviales résidentielles, décrit dans le présent**

rapport, afin d'appuyer les objectifs des plans de modernisation de la gestion des eaux pluviales des sous-bassins hydrographiques de l'Est et du ruisseau Pinecrest/Westboro.

- 2. Délègue au directeur général de Planification, Infrastructure et Développement économique ou à son mandataire le pouvoir de mettre en œuvre le programme pilote décrit dans le présent rapport et de signer toutes les ententes qui y sont associées.**
- 3. Enjoigne au personnel de faire rapport en 2023 au Comité et au Conseil sur les résultats du programme pilote et de soumettre des recommandations relativement à la mise en place d'un programme permanent.**

DOCUMENTATION

1. Director's Report, Infrastructure Services, Planning, Infrastructure and Economic Development Department, dated 3 February 2021 (ACS2021-PIE-EDP-0008).

Rapport de la Directrice, Service de l'infrastructure, Direction générale des services de la planification, de l'infrastructure et du développement économique, daté le 3 février 2021 (ACS2021-PIE-EDP-0008).

2. Extract of Draft Minutes, Standing Committee on Environmental Protection, Water and Waste Management, 16 February 2021.

Extrait de l'ébauche du procès-verbal, Comité permanent de la protection de l'environnement, de l'eau et de la gestion des déchets, le 16 février 2021.

**STANDING COMMITTEE ON
ENVIRONMENTAL PROTECTION,
WATER AND WASTE MANAGEMENT**

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**COMITÉ PERMANENT DE LA
PROTECTION DE
L'ENVIRONNEMENT, DE L'EAU ET
DE LA GESTION DES DÉCHETS
RAPPORT 14
LE 24 FÉVRIER 2021**

**REPORT 14
24 FEBRUARY 2021**

**Report to
Rapport au:**

**Standing Committee on Environmental Protection, Water and Waste Management
Comité permanent de la protection de l'environnement, de l'eau et de la gestion
des déchets**

16 February 2021 / 16 février 2021

**and Council
et au Conseil**

24 February 2021 / 24 février 2021

Submitted on February 3, 2021

Soumis le 3 février 2021

Submitted by

Soumis par:

Carina Duclos,

Director / Directrice

**Infrastructure Services / Services de la planification Planning, Infrastructure and
Economic Development Department / Direction générale de la planification, de
l'infrastructure et du développement économique**

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**Ward: CITY WIDE / À L'ÉCHELLE DE
LA VILLE**

File Number: ACS2021-PIE-EDP-0008

SUBJECT: Residential Stormwater Retrofit Pilot Program: Rain Ready Ottawa

REPORT 14
24 FEBRUARY 2021

OBJET: Programme pilote de modernisation des installations de gestion des eaux pluviales résidentielles : *Parés pour la pluie Ottawa*

REPORT RECOMMENDATIONS

That the Standing Committee on Environmental Protection, Water and Waste Management recommend that Council:

1. Approve the pilot Residential Stormwater Retrofit Program as described in this report to support the objectives of the Pinecrest/Westboro and Eastern Subwatersheds Stormwater Retrofit Plans.
2. Delegate the authority to the General Manager of Planning, Infrastructure and Economic Development or designate to implement the pilot program as outlined in this report and to execute all agreements associated with this program.
3. Direct staff to report back to Committee and Council in 2023 on the results of the pilot program with recommendations for a continued program.

RECOMMANDATIONS DU RAPPORT

Que le Comité permanent de la *protection* de l'environnement, de l'eau et de la gestion des déchets recommande ce qui suit au Conseil :

1. Approuver le Programme pilote de modernisation des installations de gestion des eaux pluviales résidentielles, décrit dans le présent rapport, afin d'appuyer les objectifs des plans de modernisation de la gestion des eaux pluviales des sous-bassins hydrographiques de l'Est et du ruisseau Pinecrest/Westboro.
2. Déléguer au directeur général de Planification, Infrastructure et Développement économique ou à son mandataire le pouvoir de mettre en œuvre le programme pilote décrit dans le présent rapport et de signer toutes les ententes qui y sont associées.
3. Enjoindre au personnel de faire rapport en 2023 au Comité et au Conseil sur les résultats du programme pilote et de soumettre des

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recommandations relativement à la mise en place d'un programme permanent.

EXECUTIVE SUMMARY

Assumption and Analysis

This report responds to Council direction with respect to the Ottawa River Action Plan ([ACS2010-ICS-ESD-0007](#)), and Stormwater Management Retrofit Plans for Pinecrest/Westboro ([ACS2011-ICS-PGM-0114](#)) and Eastern Subwatersheds ([ACS2019-PIE-IS-0002](#)) directing staff to develop a program that supports the widespread adoption of stormwater practices on private residential property.

The proposed Residential Stormwater Retrofit Program – Rain Ready Ottawa – is based on: 1) a three-year outreach pilot in neighbourhoods near Westboro Beach; 2) a comprehensive review of 75 similar programs in North America; and 3) lessons learned from other City of Ottawa water incentive programs for homeowners. The program is proposed to be launched in 2021, with results and recommendations to be brought to Standing Committee on Environmental Protection, Water and Waste Management (SCEPWWM) Committee and Council in 2023.

The proposed program includes a multi-faceted approach to engage and incentivize residents and build landscape industry capacity to design, install and maintain stormwater management features on residential property. The program is targeted to homeowners in priority stormwater retrofit areas, with information and education available more broadly across the City. A communications and outreach plan will support the overall program. Four parallel components will be utilized to reduce barriers to implementation, improve the quality of projects (and their stormwater management benefit), and boost the total number of projects. Together, they provide a diversity of tactics that can be scaled up in order to meet Ottawa's long-term stormwater retrofit targets.

The four program components are:

1. Fusion Landscape Professional Program

The Fusion Landscape Professional program is an existing landscaper training and certification program offered by Landscape Ontario in conjunction with Credit Valley

Conservation in Peel and York Regions. Bringing the program to Ottawa will build industry knowledge and installation capacity for stormwater management within landscape designs. It will also build a list of certified local landscapers for homeowners to draw upon to complete projects on their properties.

2. Residential Home Assessment Program

The residential home assessment program will reduce knowledge barriers by recommending specific practices to manage stormwater at each home. During the free home assessments, trained assessors will promote best management practices with benefits to homeowners and the City. Residents will be provided with information and guidance supporting them to take action on their property.

3. Community Engagement Initiatives

Community-engagement initiatives are designed to engage residents at the neighbourhood level, and target retrofit activities in priority areas in Eastern and Pinecrest/Westboro subwatersheds. Community engagement will advance outreach efforts and build relationships with community partners through activities such as attending community events, installing demonstration rain gardens, and supporting community rain barrel sales.

4. Financial Incentives

A new Grants and Contributions Program, *Rain Ready Ottawa*, will provide a set of incentives to reduce the financial barriers to the implementation of stormwater management practices on residential properties. Incentives will partially cover the cost of the following practices:

- Downspout redirection
- Rain gardens
- Soakaway pits
- Permeable paving
- Certified landscape design

Financial incentives will be limited by maximums for individual practices and a global maximum of \$5,000 per household. The practices will be based on the [Low Impact Development Stormwater Management Planning and Design Guide](#) (STEP LID manual) by the Sustainable Technologies Evaluation Program (STEP). The STEP LID manual provides science-based recommendations for best practices related to stormwater management.

Home assessments, financial incentives and targeted community outreach will be prioritized to properties in the Pinecrest/ Westboro and Eastern Subwatersheds, in order to meet the targets of the two Stormwater Management Retrofit Plans. Educational materials and certified landscape professionals will support the adoption of these practices city-wide.

The program will be administered by the City with external support for the Home Assessment and Fusion Landscape Programs.

Financial Implications

The pilot project budget is \$750,000 to be funded from existing funds in 909131 2018 Stormwater Management Retrofit.

Given the purpose of this pilot is to recommend a long-term program, funding will be included in the relevant Long-Range Financial Plan and annual budgets starting in 2024, subject to the recommendations of the completed pilot and the availability of funds.

Public Consultation/Input

The proposed Residential Stormwater Retrofit Program is based on lessons from an initial pilot in neighbourhoods near Pinecrest Creek and Westboro Beach. Public consultation and input during this phase included a survey of more than 450 residents on barriers and motivators to managing stormwater on their property, as well as through a Community Advisory Group consisting of local community and environmental organizations.

The program was further developed with input from City staff through an inter-departmental Technical Advisory Committee (TAC). External stakeholders were engaged through consultation meetings in December 2020. Staff consulted with

community organizations, local environmental groups, the Conservation Authorities and members of the landscape professional industry.

RÉSUMÉ

Hypothèse et analyse

Le présent rapport fait suite à une directive du Conseil relativement au Plan d'action de la rivière des Outaouais ([ACS2010-ICS-ESD-0007](#)), au Plan de modernisation de la gestion des eaux pluviales du ruisseau Pinecrest/Westboro ([ACS2011-ICS-PGM-0114](#)) et au Plan de modernisation de la gestion des eaux pluviales des sous-bassins hydrographiques de l'Est ([ACS2019-PIE-IS-0002](#)). Il enjoint au personnel d'élaborer un programme appuyant l'adoption généralisée de pratiques de gestion des eaux pluviales sur les propriétés résidentielles privées.

Le Programme de modernisation des installations de gestion des eaux pluviales résidentielles proposé – *Parés pour la pluie Ottawa* – se fonde sur les éléments suivants : 1) un programme pilote de sensibilisation sur trois ans dans les quartiers situés près de la plage Westboro; 2) un examen détaillé des 75 programmes similaires menés en Amérique du Nord; et 3) les leçons tirées des autres programmes de sensibilisation à la gestion de l'eau de la Ville d'Ottawa destinés aux propriétaires fonciers. Le programme serait lancé en 2021 et devrait donner lieu à des résultats et à des recommandations qui seront soumises au CPPEEGD et au Conseil en 2023.

Le programme proposé comprend une approche à volets multiples pour engager et sensibiliser les résidents, et pour améliorer la capacité du secteur de l'aménagement paysager dans la conception, l'installation et l'entretien des éléments de gestion des eaux pluviales sur les propriétés résidentielles. Ce programme cible les propriétaires fonciers des secteurs prioritaires pour la modernisation des installations de gestion des eaux pluviales, et permet d'informer et de sensibiliser la population en général sur le territoire municipal. Un plan de communications et de sensibilisation viendra soutenir le programme dans son ensemble. Quatre éléments seront utilisés en parallèle pour réduire les obstacles à la mise en œuvre du programme, améliorer la qualité des projets (et leurs avantages sur la gestion des eaux pluviales) et augmenter le nombre total de projets. Ensemble, ces éléments offrent une variété de tactiques qui peuvent être

intensifiées pour atteindre les objectifs à long terme d'Ottawa en matière de modernisation des installations de gestion des eaux pluviales.

Les quatre éléments du programme sont les suivants :

1. Programme professionnel Fusion Landscape

Le programme professionnel Fusion Landscape est un programme de formation et d'accréditation pour paysagistes, offert par Landscape Ontario en collaboration avec l'Office de protection de la nature de la vallée de la Credit des régions de Peel et de York. L'application de ce programme à Ottawa permettra d'améliorer la connaissance de l'industrie et sa capacité à intégrer des éléments de gestion des eaux pluviales dans la conception des paysages. Ce programme permettra par ailleurs de dresser une liste de paysagistes accrédités locaux, que les propriétaires pourront consulter pour réaliser des projets sur leurs biens-fonds.

2. Programme d'évaluation des résidences

Le programme d'évaluation des résidences permettra de réduire les obstacles à la connaissance en recommandant des pratiques précises de gestion des eaux pluviales pour chaque résidence. Au cours d'évaluations gratuites des résidences, des évaluateurs formés en la matière feront la promotion des pratiques exemplaires de gestion, qui sont à la fois utiles aux propriétaires et à la Ville. Les résidents recevront de l'information et des orientations pour prendre les mesures adéquates sur leur propriété.

3. Initiatives de participation communautaire

Les initiatives de participation communautaire ont pour objet de sensibiliser les résidents à l'échelle de leur quartier et de cibler des activités de modernisation dans les secteurs prioritaires des sous-bassins hydrographiques de l'Est et du ruisseau Pinecrest/Westboro. La participation communautaire contribuera aux efforts de sensibilisation et renforcera les liens avec les partenaires communautaires, grâce à des activités comme des événements communautaires, l'aménagement de jardins pluviaux de démonstration et l'aide à la vente de citernes pluviales communautaires.

4. Incitations financières

Un nouveau programme de subventions et de contributions, *Parés pour la pluie Ottawa*, proposera une série d'incitations afin de réduire les obstacles financiers à l'application des pratiques de gestion des eaux de pluie sur les propriétés résidentielles. Ces incitations couvriront en partie le coût des pratiques suivantes :

- Réorientation des tuyaux de descente pluviale
- Jardins pluviaux
- Puits filtrants
- Revêtement de chaussée perméable
- Aménagement paysager accrédité

Les incitations financières seront limitées à des montants maximaux pour chaque intervention et à un montant global maximal de 5 000 \$ par ménage. Les pratiques seront fondées sur le [Manuel de conception et de planification de la gestion des égouts pluviaux et de la gestion écologique des eaux pluviales](#) (manuel STEP LID) du Programme d'évaluation des technologies durables (Sustainable Technologies Evaluation Program) (STEP). Le manuel STEP LID contient des recommandations fondées sur la science pour l'application de pratiques exemplaires en matière de gestion des eaux pluviales.

L'évaluation des résidences, les incitations financières et la sensibilisation communautaire ciblée seront d'abord destinées aux propriétés occupant les sous-bassins hydrographiques de l'Est et du ruisseau Pinecrest/Westboro, afin d'atteindre les objectifs des deux plans de modernisation de la gestion des eaux pluviales. Du matériel pédagogique et des paysagistes professionnels accrédités permettront d'appuyer l'adoption de ces pratiques à l'échelle de la ville.

Le programme sera administré par la Ville avec un soutien externe pour ce qui concerne les programmes d'évaluation des résidences et Fusion Landscape.

Répercussions financières

Le projet, dont le budget s'élève à 750 000 \$, sera financé à même les fonds du numéro de compte 909131, programme de modernisation des installations de gestion des eaux pluviales de 2018.

Puisque ce programme pilote a pour objet de recommander un programme à long terme, le financement sera intégré aux budgets du Plan financier à long terme et aux budgets annuels à compter de 2024, sous réserve des recommandations qui suivront l'achèvement du programme pilote et de la disponibilité des fonds.

Consultation publique et commentaires

Le Programme de modernisation des installations de gestion des eaux pluviales résidentielles proposé est fondé sur les leçons tirées d'un précédent programme pilote mené dans les quartiers situés près du ruisseau Pinecrest et de la plage Westboro. Les activités de consultation du public et de sollicitation de commentaires organisées pendant cette phase comprenaient un sondage mené auprès de plus de 450 résidents au sujet des obstacles et des sources de motivation entourant la gestion des eaux pluviales sur leur propriété, ainsi que la création d'un groupe consultatif communautaire composé de représentants d'organisations communautaires et environnementales.

Le programme a été peaufiné grâce à l'intervention du personnel de la Ville, par l'intermédiaire d'un comité consultatif technique interservices. Des parties prenantes externes ont été mises à contribution lors de réunions de consultation tenues en décembre 2020. Le personnel a en outre consulté des organisations communautaires, des groupes environnementaux locaux, les offices de protection de la nature et des représentants de l'industrie des paysagistes professionnels.

BACKGROUND

The proposed Residential Stormwater Retrofit Program responds to direction in several Council-approved plans.

Ottawa River Action Plan

On February 1st, 2010 Council approved the Ottawa River Action Plan (ORAP) ([ACS2010-ICS-ESD-0007](#)) to protect the health of the Ottawa River and its tributaries.

The \$250 million plan consists of 17 actions including the development and implementation of Stormwater Management Retrofit Plans in Pinecrest Creek / Westboro and Eastern Subwatersheds to improve water quality, reduce erosion and flood risk, and enhance degraded aquatic habitat.

A map of the priority areas for Stormwater Management Retrofit is included in Document 1.

Pinecrest Creek / Westboro Stormwater Retrofit Plan

The Pinecrest Creek / Westboro Stormwater Retrofit Plan ([ACS2011-ICS-PGM-0114](#)) was approved by Council on September 20th, 2011. The purpose of the Retrofit Study was to recommend a combination of measures to meet the stormwater goals, including to:

- Improve water quality in Pinecrest Creek and the Ottawa River;
- Reduce flooding and erosion along the Creek;
- Improve the health of the Creek; and
- Reduce closures at Westboro Beach

The approved Retrofit Plan included a mix of lot-level, conveyance and end-of-pipe solutions on private and public property. A 50-year time frame was suggested allowing for retrofits within the rights-of-way and on City-owned properties to be completed 'opportunistically' i.e., when roadways, underground services, City buildings and parking lots require renewal. This time frame also recognized the considerable challenge of engaging enough participation from residential and other private property owners. The 50-year life cycle cost of the preferred Retrofit Plan was estimated at \$43 million.

The Pinecrest Retrofit Plan further recommended the development of an awareness and engagement campaign to identify and address the barriers to stormwater management implementation on residential properties to support the targets of the preferred scenario.

The Eastern Subwatersheds Stormwater Management Retrofit Study

The Eastern Subwatersheds Stormwater Management Retrofit Study ([ACS2019-PIE-IS-0002](#)) was approved in June 18th, 2019. It included the same key steps as the Pinecrest study. The identified preferred retrofit scenario included targets for lot-level measures, conveyance measures, and remediation of priority creek erosion sites.

Recommendations for lot-level measures included:

- The first five years of implementation will focus on the design and initial implementation of a community engagement plan to promote lot level measures on private residential properties.
- A target of 30 per cent was set for the percentage of private properties (industrial, commercial, institutional and residential) that will undergo stormwater retrofit
- Lot level measures will also be implemented on City property on an opportunistic basis, i.e., when City buildings and parking lots need renewal.

Water, Wastewater and Stormwater Rate Structure

On October 18th, 2016 Council approved a revised Water, Wastewater and Stormwater Rate Structure ([ACS2016-CSD-FIN-0008](#)) and directed staff to review municipal best management practices in private property stormwater management (Motion EC 11/01) as part of the approval:

THEREFORE BE IT RESOLVED that the Environment Committee recommend that Council direct staff to review municipal best management practices for credits for stormwater management controls on individual properties, including those that recognize rain barrels, trees, cisterns, permeable driveways, and/or other engineered landscape controls, and report back on their findings as part of the next term of Council's long-range financial plan for rate-supported programs.

DISCUSSION

This report responds to Council direction and proposes a program that will encourage and incentivize widespread lot-level stormwater retrofits on residential properties in Ottawa's priority stormwater management retrofit areas. The proposed program is

based on a comprehensive review of 75 similar programs in North America as well as other City of Ottawa water programs for homeowners. It is proposed to be launched in 2021 with results and recommendations to be brought to SCEPWWM Committee and Council in 2023.

1.0 Context

Uncontrolled stormwater degrades the health of waterways, contributes to beach closures, and causes flooding and erosion that threatens infrastructure and property. Ottawa is addressing stormwater management (SWM) through lot-level, conveyance, and end-of-pipe solutions, which together form the 'treatment train' to manage runoff. In greenfield development, conveyance and end-of-pipe SWM measures such as stormwater ponds are incorporated as a matter of course. However, in older areas developed with limited stormwater management, 'on-site' management is a key part of the 'treatment train' due to limited space for conventional practices such as stormwater ponds. To manage the cost of implementing stormwater management practices in the right-of-way these retrofits must be completed opportunistically as existing infrastructure approaches end of life and stormwater retrofits can be integrated with infrastructure renewal and road reconstruction plans. A further consideration is land use and property ownership. In the Pinecrest/ Westboro and Eastern subwatershed areas for example, 43 per cent and 16 per cent of the total area are residential lands and a further 12.7 per cent and 7 per cent are industrial, commercial and institutional lands respectively. Thus, retrofitting private properties offers the most cost-effective opportunity in the medium term for increased stormwater management in Ottawa.

As outlined above, in 2010 Council approved the [Ottawa River Action Plan](#) (ORAP) with 17 projects to protect the health of the Ottawa River and its tributaries.

ORAP included recommendations to undertake and implement two stormwater retrofit studies in the Pinecrest Creek–Westboro and Eastern Subwatersheds area of Ottawa. Completed and approved by Council in 2011 and 2019 respectively, the two retrofit studies evaluated local stormwater issues and modelled the impacts and costs of various retrofit scenarios. In both cases, Council approved retrofit scenarios with ambitious targets for the adoption of residential stormwater practices. These residential retrofit measures include downspout redirection, and the installation of rain barrels, rain gardens, soakaway pits or infiltration trenches, and permeable driveways, walkways or other hardscaping.

Both retrofit plans laid out 50-year targets for the implementation of private property stormwater practices. To achieve the established stormwater objectives, about 30 per cent of homes in the Eastern Subwatersheds would need to undergo retrofit actions – this translates to approximately 14,700 homes. In Pinecrest-Westboro, targets were set for individual practices (Table 1) but are similar to those in the Eastern Subwatersheds.

Table 1. Stormwater Management (SWM) retrofit targets in Pinecrest-Westboro.

Residential SWM Practice	50-year target
Downspout redirections	2,639 (increase of 7% to 23% of homes)
Rain barrels	9,425 (two barrels at 25% of homes)
Rain gardens	1,885 (10% of homes)
Permeable paving	16.16 ha (15% household driveways)
Infiltration trenches	942 (5% of homes)

The challenge of meeting the considerable targets set out in the two retrofit studies is compounded by the general challenge of motivating environmental behaviour change. People's decision-making on environmental actions is complex and depends on the barriers to acting and the perceived benefits of acting (motivators). Behaviour change also tends to be slow. As a comparison, the rate of waste diversion from the landfill in Ottawa increased from 33 per cent to 44 per cent between 2009 and 2018. Even relatively minor knowledge barriers about what goes where can prevent the large-scale adoption of waste diversion.

The benefits of acting (motivators) must also be relatable to the diverse and shifting priorities of residents. Residents motivated by environmental concerns may respond very differently to a given program than residents motivated by aesthetic concerns. This creates the need for diverse communication and engagement efforts. Barriers to engaging in environmental programs typically include limited physical ability, financial resources, know-how, time-limitations and access to tools and materials. Motivators can include aesthetic improvements, financial incentives, and environmental benefits. Motivators can be external, like pressure from friends, family or neighbours, or internal

such as the feeling that a given action is what one ought to do. Therefore, widespread stormwater retrofit action on residential properties is unlikely without reducing or eliminating barriers and effectively promoting the diverse benefits.

The City has taken initial steps to encourage homeowners to better manage stormwater on their property. As part of the Pinecrest Creek–Westboro Retrofit Plan, a RAIN pilot project was undertaken from 2017-2019 in a limited number of neighbourhoods near Westboro Beach. The pilot project focused on raising awareness and promoting stormwater management through communications, outreach and the establishment of a demonstration rain garden. While the pilot gained insight into barriers and motivators as well as effective messaging, it did not incentivize practices nor track installations of SWM practices by residents (see Section 2.1 Lessons from the Pinecrest Neighbourhood RAIN Pilot Program).

This report proposes a program that builds on the RAIN pilot project and lessons from other jurisdictions and other relevant City of Ottawa residential water programs. The program is built around a set of incentives designed to reduce the financial barriers to implementing stormwater management practices on residential properties. A home assessment program and an industry training program are included to further reduce barriers related to skills and knowledge. A community-engagement program targets communications and outreach to increase uptake in priority neighbourhoods.

2.0 Background Research - Learning from other Programs

The proposed Residential Stormwater Retrofit Program was developed based on a comprehensive review of relevant programs including:

- A summary of the Pinecrest Neighbourhood RAIN pilot program and the survey results (Document 2)
- A Summary of City of Ottawa Water-related Incentive Programs for Private Property Owners (Document 3)
- A Review of Residential Stormwater Information and Incentive Programs in Canada and the U.S. (Document 4)

- A Summary of Best Management Practices for Residential Stormwater Management (Document 5)

Staff also consulted with internal and external stakeholders to seek feedback on the proposed program (refer to CONSULTATION section below for details).

2.1 Lessons from the Pinecrest Neighbourhood RAIN Pilot Program

The Pinecrest Neighbourhood RAIN Pilot Project was undertaken in 2017-2019 to support the implementation of Pinecrest Creek-Westboro Stormwater Management Retrofit plan. The project's goals were to develop and evaluate outreach messaging and tactics and investigate barriers and motivations related to implementing stormwater management practices on residential properties. The project also created a demonstration rain garden and built a contact list of interested members of the public for future use.

The pilot project created educational signage along trails adjacent to Pinecrest Creek and established a dedicated web page (ottawa.ca/rain) and social media channels to promote home stormwater management. Community outreach included educational booths at community events, neighbourhood tours of rain gardens, home stormwater assessments and educational workshops. In total 1800 people were engaged through in-person interactions, and more than 6,000 people were reached through online communications (Table 2). A demonstration rain garden with signage was also built in partnership with a local organization to support on-going educational site visits at a public site in Westboro.

The project was implemented with the support of a local environmental organization (EnviroCentre) and used existing branding and resources developed by Green Communities Canada (GCC) through their [RAIN Program](#). The 'Slow it down. Soak it up. Keep it Clean.' messages were simple to understand and remember.

Table 2. Pinecrest Creek / Westboro pilot project activities and results.

Activity	Description	Engagement
Dedicated Social Media	A bilingual Facebook page was maintained with information on home stormwater practices and give-away contests. Some paid promotions were used to boost content and extend reach.	Reach = 6083 Clicks = 605 Engagements = 337
Community Booths	EnviroCentre distributed information and answered questions at various local events using novel communications tools such as a miniature demonstration house.	Estimated 1800 in-person engagements
Neighbourhood Tours	Bus-based and walking tours were conducted in neighbourhoods to showcase various stormwater technologies.	79 people attended the tours
Home Visit Workshops	Led by Green Communities Canada staff, detailed home stormwater management assessments were conducted at homes of interested residents with additional homeowners observing.	28 participants during six home visits
Workshops	Workshops focusing on rain garden benefits and construction techniques were delivered at community locations and gardening centres.	About 12 participants
Demonstration Sites	One rain garden was established, and two rain barrels were installed at two community sites.	Unknown
Quiz	The quiz included a series of multiple-	287 respondents

	choice questions on stormwater issues and solutions. Its purpose was more to prompt dialogue than measure levels of awareness.	
Survey	The questionnaire collected information on current practices, challenges and ways to encourage homeowners to adopt stormwater management practices.	454 respondents

Survey instruments were used to gauge residents' knowledge of stormwater issues and solutions and understand their barriers and motivations to make landscape improvements. A small incentive – the chance to win an umbrella – was used to encourage residents to complete the survey. While discussions revealed that residents were familiar with some practices such as rain barrels, most were unaware about stormwater challenges and specific solutions like rain gardens or soak away pits. Eighty-five per cent of the 454 respondents were interested or very interested in reducing runoff from their property. The strongest motivating factor for residents was a pride in their properties, followed by inspiration from media sources (TV, magazines). Few residents were motivated by flooding risks or environmental reasons.

Residents selected financial incentives above other types of help, but personalized advice and 'how-to' guides were also commonly desired.

Through the pilot, valuable lessons were learned, including the challenge of attracting residents to events, workshops and other meaningful engagement activities. This emphasized the importance of leveraging community events rather than trying to attract an audience through one-off events, as well as establishing more demonstration sites to showcase a range of practices. The pilot showed that even small incentives were effective to motivate behaviour (such as taking a survey) and that financial incentives were likely key to encouraging widespread adoption of SWM practices.

In a follow-up survey sent to 354 people who had participated in project activities, 73 per cent of the 42 people who responded indicated they had taken some action in the last two years to manage stormwater on their property. This included moving their downspout, installing a rain barrel or adding greenspace. Future projects should use

realistic timeframes to measure the adoption of practices, as it takes time to translate awareness and knowledge into action.

A summary of the RAIN pilot program and the survey results is provided in Document 2.

2.2 Review of City of Ottawa Water-related Residential Incentive Programs

The City of Ottawa has several incentive programs for residents that address water issues. These include the Ottawa Rural Clean Water Program (ORCWP), Lead Pipe Replacement Program (LPRP), Residential Compassionate Grant Program (RCGP), and Residential Preventative Plumbing Program (RPPP). In these programs, financial incentives are used to encourage activities that are beneficial to the environment, private properties and/or human health.

The proposed Residential Stormwater Retrofit Program has been designed based on the experience of these long-standing programs.

The Lead Pipe Replacement program offers a flat incentive of \$1,000, intended to cover about 20 per cent of homeowner-born costs of replacing lead laterals. The Residential Protective Plumbing Program (RPPP) offers fixed rebates for several activities related to the installation of backwater valves. Rebates range from \$500 to \$1,750 for installation in addition to \$180 for required permits and inspection. An additional rebate of \$1,250 is available for a sump pump with backup power. The Residential Compassionate Grant Program provides \$1,000 to residents who experience sewer backups due to significant rainfall at least three times over a 15-year period. The Ottawa Rural Clean Water Program shares the cost of water quality improvement practices on farms and other rural properties. Rebates range from \$500 to \$15,000 per practice, covering 50 per cent-90 per cent of costs. The Ottawa Rural Clean Water Program provides a higher proportion of the costs for practices prioritized by the City. Annual budgets of these programs range from \$200,000 to \$1 million.

The Lead Pipe, Residential Protective Plumbing and Compassionate Grant Programs are delivered by City staff, whereas the Rural Clean Water Program is delivered by the Conservation Authorities on behalf of the City. All programs use home visits to assess and approve applications except for the lead pipe replacement program which relies only on proof of work and an application to replace the resident-owned portion of the

pipe. A home visit and lead test are conducted if the resident intends to apply for a full replacement, including the City-owned portion of the pipe.

The Lead Pipe Replacement Program was updated in September 2019 to provide a fixed incentive instead of a rebate of expenditures based on receipts. This change streamlined program administration by reducing the approval burden on City staff and eliminating the requirement to seek three quotes from contractors, which burdens residents and contractors alike. The Residential Protective Plumbing Program also uses a fixed incentive model.

The four programs primarily use ottawa.ca for promotion, with some targeted outreach. Low awareness among residents contributes to low program uptake and under subscription in some programs. A more fulsome communications and outreach strategy could extend the reach and impact of these programs.

A summary of these programs is provided in Document 3: Summary of City of Ottawa Water-related Incentive Programs for Private Property Owners.

2.3 Review of Residential Stormwater Programs in North America

Staff conducted a comprehensive review of residential stormwater programs in jurisdictions outside of Ottawa to inform the development of this program. In total, 75 stormwater management programs were investigated which varied in their structure and style. Most programs focused on outdoor interventions such as rain gardens and rain barrels, while a few included indoor interventions like backwater valves and sump pumps. Several programs focused on a single technology, most frequently rain barrels. Other programs were highly integrated and offered support for many practices, both indoors and outdoors.

Almost two-thirds of the programs included financial incentives. Programs varied in both the types of home stormwater practices supported and the incentive levels for those practices. Rain barrels – one of the least expensive practices– were the most common to be incentivized, followed by rain gardens. Incentives for permeable paving, backwater valves and downspout disconnection were less common (Table 3).

Table 3. Stormwater management practices and associated incentives.

Practice	Typical low incentive	Typical high incentives
Rain barrels	Rain barrels subsidized to a total cost of \$50 (Kingston)	\$10 rain barrels (Guelph) Free rain barrels including an inspection and installation (Philadelphia Water Department)
Disconnected downspouts	Mandatory disconnection with \$500 incentive available only to seniors and residents with disabilities (Toronto).	Costs and materials covered to a maximum of \$1,400 (Kidd Creek Sustainable Neighbourhood Action Program)
Rain gardens	Up to \$500 rebate (Thunder Bay, ON)	75% up to \$10,000 for a full landscape makeover including a rain garden (Lake Wilcox Sustainable Neighbourhood Action Plan – Lake Simcoe and Region Conservation Authority) 100% rebate up to \$4,000 USD (Chesapeake Bay area)
Soakaway pits	75% up to \$650 (Barrie, ON – only applies to sump drainage)	50% up to \$2,500 (Hamilton Conservation) 100% rebate up to \$4,000 USD (Chesapeake Bay area)
Permeable pavement	45% of the residential stormwater charge (~\$30 per year)	50% up to \$2,500 (Hamilton Conservation) 100% rebate up to \$4,000 USD (Chesapeake Bay area)

Staff and consultants from 24 programs were interviewed to gain further insight into the challenges and strengths of individual programs. Key lessons include:

- Financial incentives are an essential factor in encouraging program adoption, but not the only factor.
- Multi-faceted program promotion is important for raising awareness and encouraging wide-spread adoption of practices
- Communication that resonates broadly with potential participants is more effective (e.g. appealing to homeowner pride rather than detailed environmental benefits)
- One-off rebates are more efficient and effective than stormwater charge reductions due to the upfront investment required by homeowners
- Programs that promote several practices are more efficient than single-practice programs because they have a broader appeal and can lead to increasing adoption of practices by participants
- Home visits and assessments are useful to raise homeowner understanding and encourage commitment, as well as ensuring the appropriateness of individual practices for the site
- Building capacity within the landscaping industry is important for the long-term viability of any program and for the normalization of stormwater management practices (rain gardens etc.)

A common challenge across programs is encouraging enough people to take action to meet stormwater objectives. Programs varied in their uptake by residents, with some programs leading to only a few stormwater practice installations per year while others result in dozens and even hundreds of installations per year.

Thunder Bay's [rain garden incentive program](#), for example, shows that even relatively small incentives can motivate residents to engage. Their \$500 incentive consistently attracts 20 projects per year, maxing out their \$10,000 annual budget. Larger-scale programs like [Philadelphia's Rain Check](#) program have engaged in significant promotion and incentives for years and sees dozens of rain gardens, hundreds of

stormwater planters and rain barrels, as well as thousands of square feet of permeable, paving each year. Philadelphia's relatable and recognizable outreach efforts have also helped buoy program participation even in years when budgets have declined.

Jurisdictions like Guelph, Waterloo, and Peel have seen success with their home assessment programs which are popular among residents and generate applications for their residential stormwater management programs. Peel Region also engages in extensive landscaper training and certification, which ensures that projects are completed to a high standard and that the industry understands the rationale behind residential stormwater management.

Many programs use rebates to incentivize action as opposed to credits against the annual municipal stormwater charge. Programs that offer credits typically offer comparatively low incentives, but they recur on an annual basis. In Kitchener and Waterloo, credit amounts increase with increasing amounts of managed run-off. A typical 220L rain barrel would entitle a resident to a credit of \$29/year and would allow a resident to recuperate the cost of a rain barrel quickly. However, to receive a maximum incentive of 45 per cent of the stormwater charge (\$68.85/year), a resident is required to have storage and infiltration capacity for over 3200L which would be considerably more costly to implement, extending the 'pay-back' period beyond a reasonable timeframe. Additionally, the credit model does not help address financial barriers associated with the up-front costs of installation practices. Residential stormwater credit programs are also costly to administer as they require an assessment of changes in runoff for each individual property.

A comprehensive review of programs is provided in Document 4: Review of Residential Stormwater Information and Incentive Programs in Canada and USA

2.4 Best Management Practices for Residential Stormwater Management

Residential stormwater practices that were part of the modelling completed for the Pinecrest Creek /Westboro and Eastern Subwatersheds Stormwater Retrofits Plans include rain barrels, downspout redirections, rain gardens, soakaway trenches/pits, and permeable paving. Several other practices were reflected in the modelling such as the narrowing of streets and installation of oil and grit separators, but these were not considered suitable for residential properties.

A review of residential practices was conducted to confirm the feasibility of including practices in the proposed City-supported program and to better understand the costs associated with each practice. Academic literature, report and policy literature, and information from other programs were considered. The review found that there was widespread agreement that downspout redirection offers a simple, effective solution to stormwater run-off and provides a high return on investment in terms of run-off reductions. Run-off can also be effectively managed by rain gardens and soakaway pits which cost a similar amount per unit volume reduction. Permeable pavement requires the most maintenance and is the highest cost technology for addressing stormwater concerns on residential properties, however, it shows promise for use in areas where other technologies are infeasible.

A summary of this research and description of each practice is included in Document 5: Summary of Best Management Practices for Residential Stormwater Management - Review of performance and costs

3.0 Proposed Residential Stormwater Management Program

3.1 Program Overview

Overall Goal: Develop and test a program that promotes the adoption of lot-level home stormwater management practices and can be scaled to meet the long-term targets established in the Stormwater Management Retrofit Plans.

Objectives:

1. Build homeowner awareness of stormwater management practices and provide the information required to undertake lot-level improvement projects
2. Build industry capacity to implement projects and normalize home stormwater management practices
3. Reduce financial barriers to action in the priority stormwater retrofit areas through an incentive program
4. Encourage uptake in the priority stormwater retrofit areas through targeted community outreach

The proposed Residential Stormwater Retrofit Program – Rain Ready Ottawa – is based on: 1) a three-year outreach pilot in neighbourhoods near Westboro Beach; 2) a comprehensive review of 75 similar programs in North America; and 3) lessons learned from other City of Ottawa water incentive programs for homeowners. The program is proposed to be launched in Q1/Q2 of 2021 with results and recommendations to be brought to SCEPWWM Committee and Council in 2023.

The proposed program includes a multi-faceted approach to engage and incentivize residents and build landscape industry capacity to design, install and maintain stormwater management features on residential property. The program is targeted to homeowners in priority stormwater retrofit areas, with information and education available more broadly across the City. A communications and outreach plan will support the overall program. Four parallel components will be utilized to reduce barriers to implementation, improve the quality of projects (and their stormwater management benefit), and boost the total number of projects. Together, they provide a diversity of tactics that can be scaled up in order to meet Ottawa's long-term stormwater retrofit targets.

The four components are:

1. Fusion Landscape Professional Program

The Fusion Landscape Professional program is an existing landscaper training and certification program offered by Landscape Ontario in conjunction with Credit Valley Conservation in Peel and York Regions. Bringing the program to Ottawa will build industry knowledge and installation capacity for stormwater management in landscape designs. It will also build a list of certified local landscapers for homeowners to draw upon to complete projects on their properties.

2. Residential Home Assessment Program

The residential home assessment program will reduce knowledge barriers by recommending specific practices to manage stormwater at each home. During the free home assessments, trained assessors will promote stormwater best management practices with benefits to homeowners and the City. Residents will be provided with information and guidance supporting them to take action on their property.

3. Community Engagement Initiatives

Community-engagement initiatives are designed to engage residents at the neighbourhood level, and target retrofit activities in priority areas in Eastern and Pinecrest/Westboro subwatersheds. Community engagement will advance outreach efforts and build relationships with community partners through activities such as attending community events, installing demonstration rain gardens, and supporting community rain barrel sales.

4. Financial Incentives

A new Grants and Contributions Program, *Rain Ready Ottawa*, will provide a set of incentives to reduce the financial barriers to implementation of stormwater management practices on residential properties in priority retrofit areas. Rebates will partially cover the cost of the following practices:

- Downspout redirection
- Rain gardens
- Soakaway pits
- Permeable paving
- Certified landscape design

Financial incentives will be limited by maximums for individual practices and a global maximum of \$5,000 per household. The practices will follow the [Low Impact Development Stormwater Management Planning and Design Guide](#) (STEP LID manual) by the Sustainable Technologies Evaluation Program (STEP). The STEP LID manual provides science-based recommendations for best management practices related to stormwater management.

Home assessments, financial incentives and targeted community outreach will be prioritized to properties in the Pinecrest/ Westboro and Eastern Subwatersheds, in order to meet the targets of the two Stormwater Management Retrofit Plans (see the map in Document 1). Educational materials and certified landscape professionals will support the adoption of these practices City-wide.

Table 4. Program eligibility

Resident location	Education and Outreach	Home Assessment Program*	Fusion Landscape Consultation*	Installation Incentives*
Residents in Pinecrest Creek / Westboro and Eastern Subwatersheds Priority stormwater retrofit areas	✓	✓	✓	✓
Residents in remaining stormwater retrofit areas	✓	✓	✓	✗
Residents in all of Ottawa and surrounding areas	✓	✗	✗	✗

* Incentives and home visits under the home assessment program and/or Fusion Landscape Consultations both inside and outside of priority stormwater retrofit areas are subject to available funds.

The program will be administered by the City with external support for the Home Assessment and Fusion Landscape Programs.

Figure 1 shows how residents can be introduced to the proposed program and how those residents navigate the program. The following sections provide greater detail of each of the program components.

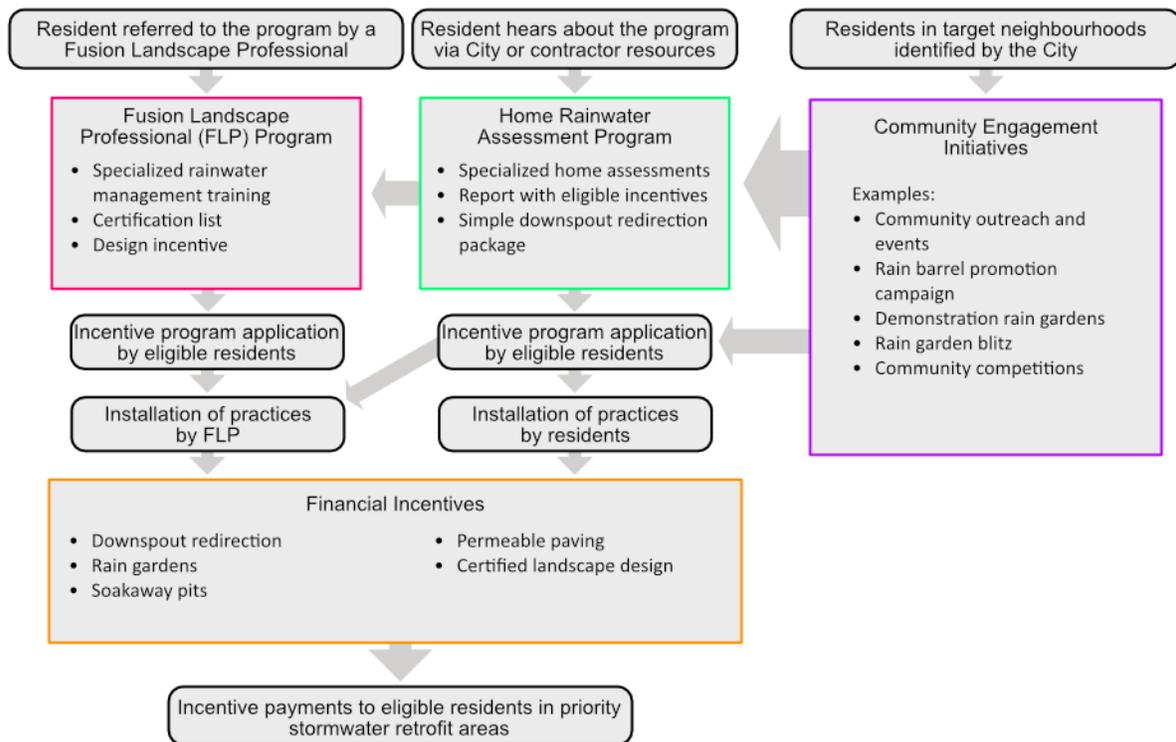


Figure 1. Summary of Proposed Residential Stormwater Retrofit Program

3.2 Program Details

3.2.1 Fusion Landscape Professional Program

The City of Ottawa will work with Landscape Ontario to offer the established Fusion Landscape Professional (FLP) Program that was developed by Landscape Ontario and Credit Valley Conservation for use in Peel and York Regions. The program is unique within Canada for offering extensive training directly to the landscape industry in order to build capacity and help normalize the installation of stormwater management retrofits in holistic landscape design. The multi-day program trains landscapers in all elements of project design, installation and maintenance, as well as marketing. It includes sessions on local context, including relevant By-laws and policies, stormwater management considerations and available incentives.

The training will be delivered annually by Landscape Ontario at a nominal cost to landscape companies that offer services in Ottawa. Landscape Ontario will also

manage the examination and certification process and maintain lists of certified landscape companies. The City of Ottawa will contribute of up to a maximum of \$60,000 plus applicable taxes for the period of February 1, 2021 to December 31, 2023 to Landscape Ontario to subsidize the training and certification costs in 2021, 2022 and 2023 as outlined in Table 7 of this report.

Ottawa homeowners seeking a professional to complete stormwater management retrofits on their property will be encouraged to use professionals certified through the Fusion Landscape Professional Program. Residents in all stormwater retrofit areas will be eligible for a subsidized consultation performed by a Fusion Landscape Professional. The number of subsidized consultations will be capped on an annual basis based on program funds. Additionally, residents within priority retrofit areas that employ a Fusion-certified landscaping company are eligible for incentives to support both the design of a 'Fusion landscape' and installation of relevant practices (see incentives section below).

Eligibility

To be eligible for the Fusion Landscape Professional Program training and certification, landscape companies must be a member of Landscape Ontario and have one of the following certifications: Horticultural Technician, Landscape Designer, Irrigation Technician or Landscape Professional. Companies that are members of the Ottawa Chapter of Landscape Ontario will be eligible for a subsidized training cost.

3.2.2 Home Rainwater Assessment Program

The residential home assessment program will reduce knowledge barriers by providing advice specific to each home. During the free home assessments, trained assessors will promote stormwater best management practices with benefits to homeowners and the City.

Upon homeowner request, a short visit (~1 hour) to the residence will be conducted by a trained contractor. The contractor will assess the home and surrounding landscape and recommend practices that could improve stormwater management. There is no cost to the homeowner for the home assessment and no obligation to engage in the practices recommended during the assessment. Residents will be provided with information, guidance and inexpensive materials such as splash pads and downspout extenders,

allowing them to take action at their homes immediately. Homeowners who are eligible for incentives will also be provided relevant information on incentives available to help them take more substantial action towards properly managing stormwater on their properties. Home assessments that do not result in uptake of practices represent an educational opportunity.

The homeowner will receive a written report that includes recommendations and available incentives where applicable. Using a standardized template, the report will include images, mapping and data (as appropriate) that evaluate existing conditions, clearly explain the assessment process, and identify recommended improvements. The incentives listed in home assessment report will remain valid for 24 months. The homeowner can then submit an application to the City of Ottawa for one or more rebates via an online form. City staff will review and approve the application (subject to available funds) and notify residents. Residents may then commence work.

Homeowners may complete the work themselves or hire a landscaper. Residents will be referred to a list of certified Fusion Landscape Professionals (trained via the industry stream described above).

Upon completion of the work (either by the residents or a landscaper), eligible residents will file for incentive payment with the City of Ottawa via an online form. The resident must complete the entirety of any individual project to receive the related incentive (e.g. a claim cannot be made for a half-built rain garden for half the incentive).

The home assessment program will be administered by a third-party contractor (the Program Administrator). They will be responsible for:

- Developing and delivering the non-technical home assessment training, including how to conduct a home assessment, assess program and incentive eligibility and complete the home assessment report.
- Ensuring the recruitment of an appropriate number of home assessors
- Managing participant in-take and assessing eligibility
- Confirming completion of work where required

- Developing and implementing a communication and outreach plan to promote the program
- Maintaining a database on project characteristics and costs
- Ensuring consistent quality of home assessments
- Annual reporting including numbers of requested home visits, number of completed visits, practices recommended and other relevant details

Individual home assessments will be conducted by trained individuals who are either staff or sub-contractors of the Program Administrator. Technical training (stormwater management practices) will be provided through the Fusion Landscape Program and non-technical training (home assessment process) will be provided by the contracted organization. Home assessors will be responsible for:

- Acquiring all requisite training and keeping it up to date
- Attending the home and investigating current conditions visually and with the help of homeowner testimony
- Communicating effectively with homeowners
- Determining effective practices for improving stormwater management at the home
- Determining participant eligibility for incentives under the program
- Providing information on practices and resources that will help homeowners
- Ensuring residents have all relevant information on local by-laws such as the Site Alteration By-law
- Preparing the home assessment report and reviewing each report for accuracy and completeness
- Delivering each home assessment report to the resident and City of Ottawa program staff

- Help residents implement quick fixes to stormwater management issues such as installing downspout extenders

Eligibility

Homeowners are eligible for a free home assessment if:

- They are the owner of a ground-oriented home that could benefit from the practices offered through the proposed program, or
- They reside in such a home and have the express permission of the homeowner, and
- The home is within the stormwater priority areas of the City of Ottawa (green areas in

- Document 1 – Map of Ottawa indicating stormwater retrofit areas (bright green and pink).
- Source: Infrastructure Master Plan..

Homeowners outside of the stormwater priority retrofit areas, but within remaining stormwater retrofit areas of the City (pink areas in Document 1) will be eligible for a Home Assessment consultation subject to available funds. The Home Assessment consultation will advise on suitable practices and refer homeowners to certified professionals.

3.2.3 Community Outreach and Engagement

Community engagement initiatives are campaign-style programs that encourage peer-to-peer learning and engagement. Based on community-based social marketing principles, community engagement will take advantage of trusted local networks and peer-to-peer advocacy for stormwater management practices.

Since this program stream is designed to be responsive to overall program needs and opportunities, outreach activities will be developed on an on-going basis. Community engagement initiatives will be targeted to the priority areas of Pinecrest Creek/Westboro and the Eastern Subwatersheds.

Examples of community engagement include:

- A partnership to promote rain barrel use through fundraising events for community groups
- Community participation in rain garden demonstration projects
- Attending community events
- Targeted neighborhood campaigns or 'blitz' on downspout redirection

A brief example of such an initiative is provided below.

Rain barrel promotion

To promote the use of rain barrels and encourage best management practices for operating them, the City of Ottawa will partner with *rainbarrel.ca* and community groups

in the Pinecrest Creek/Westboro and Eastern Subwatersheds. Rainbarrel.ca helps local groups run fundraisers in which rain barrels are sold for \$55 and the fundraising groups make \$10 on each rain barrel sold. The City of Ottawa will support groups seeking to run fundraisers in priority retrofit areas by providing:

- Educational resources on the proper installation and use of rain barrels.
- Promotional material for Rain Ready Ottawa
- Prizes such as soaker hoses, rain barrel stands, a Wi-Fi-connected smart valves
- Social media boosting

The City may also explore the feasibility of an opt-in alert via the Ottawa app that reminds residents to empty their rain barrels the day prior to a forecasted rain event.

Eligibility

Community-engagement initiatives will be targeted to the priority stormwater retrofit areas of the Eastern Subwatersheds and Pinecrest Creek/Westboro. Outreach will be conducted to community organizations, community associations and groups of residents within these areas.

3.2.4 Residential Incentives

Research from the Ottawa RAIN pilot and from programs across North America confirmed that the upfront costs associated with installing stormwater management practices can be a deterrent to action for many residents. Incentives are key to reduce the barriers to implementation of stormwater management practices on residential properties.

The proposed Grants and Contributions, Rain Ready Ottawa, program will provide rebates for five stormwater management practices as outlined in Table 5 and detailed in Document 6. Maximum financial incentives will be limited for individual practices and total household incentives (maximum incentive of \$5,000). Incentive rates and calculation methods will remain the same for single residential units and multi-residential units, but the incentive maximums and total maximums for multi-residential units will be evaluated on a case-by-case basis based on lot-size and imperviousness.

Specific rebate amounts and formulas may be adjusted by up to 25 per cent during the pilot program based on project uptake.

Another barrier to uptake in residential programs can be complex or lengthy application procedures. The program's incentives are therefore designed to be intuitive, simple and reduce administrative burden. For rain gardens and soak-away pits, incentives will be based on the recommended size of the practice (e.g. rain garden) to manage available runoff. This allows applicants to either undertake the work themselves (subject to an inspection) or hire a contractor. This makes receipts unnecessary, reducing the burden on residents and City staff. Receipts are required for practices such as downspout redirection where the incentive is calculated as a proportion of actual materials and labour. Incentives are estimated to rebate between a quarter and half of the costs paid by residents, with greater incentives being applied to low-cost/high-reward practices such as downspout redirection and practices with high co-benefits such as rain gardens. The incentive rates are based on the scan of practices in jurisdictions beyond Ottawa (Document 4).

Table 5 Eligible Residential Incentives.

Practice	Eligible applications	Proposed Incentives
Downspout disconnection	Redirection of downspouts away from impervious areas connected to a storm or combined sewer drain, to permeable areas.	75% of materials and labour up to \$1,000. Additional first year bonus of 25% (\$1,000 cap still applies)
Rain garden	A shallow depression with loose soils and non-invasive, native vegetation that allows water to infiltrate into the ground and reduces run-off.	Fixed incentive of \$75/m ² of rain garden not to exceed 20% of the directly connected impervious area (m ²) up to a maximum \$2,500 including incentives related to soakaway pits (if applicable)

Soakaway pit	A below-ground pit of permeable material that allows water to infiltrate into the ground in order to reduce run-off.	Fixed incentive related to directly connected impervious area. DCIA (m ²) * \$10/m ² up to a maximum of \$2,500 including incentives related to rain gardens (if applicable)
Permeable pavements	Permeable interlocking concrete pavers, gravel stabilizing grid, pervious concrete, porous asphalt.	Fixed incentive related to the permeable installation size. Area (m ²) * \$50/m ² to a maximum of \$5,000
Certified Landscape Design Support	Design services provided by Fusion Landscape Professionals.	Fixed incentive of \$500

Eligibility and Claims Procedure

Residents eligible to receive rebates for planned actions will be required to apply using an on-line form at Ottawa.ca. Applications must include a Home Assessment reports or a quote or design provided by an FLP.

Homeowners are eligible for financial incentives if:

- They are the owner of a ground-oriented home or have the express permission of the owner of the home within the priority stormwater retrofit areas of the City of Ottawa (an online map will enable homeowners to easily identify if they are within the eligible green areas on

- Document 1 – Map of Ottawa indicating stormwater retrofit areas (bright green and pink).
- Source: Infrastructure Master Plan.
- Practices were recommended as a result of participation in the Home Assessment Program or a consultation with an FLP
- Practices have been installed to the satisfaction of the home assessment contractor or FLP (as required)
- The homeowner agrees to terms and conditions specified in the applications procedure

Terms and conditions will be developed related to eligibility, resident requirements and responsibilities, in consultation with Legal Services and in alignment with the Grants and Contributions Policy and Procedures. An appeal process will be established for residents that are deemed ineligible.

Applications by homeowners will be made online via a purpose-built form. The General Manager of Planning, Infrastructure and Economic Development Department, or designate, will approve or deny individual applications and notify residents of their resulting application status. Applications will be evaluated on a first-come-first-served basis.

Residents are responsible for filing a claim for any incentive that they have been approved for. The City will develop a simple form that allows residents to claim incentive amounts based on the work completed on their properties as described in Document 6.

Applications and claims larger than \$1,000 will be subject to an inspection to ensure claim accuracy and installation quality. Where rebates cover the direct costs of materials and professional services related to installation of practices, residents must submit receipts in addition to photographic proof of work and a completed claim form. Where rebates are related to the size of the installation and the directly connected impervious area (DCIA), residents must attest to completion of the project, provide photographic proof of work and a completed rain claim form. Installations of rain gardens, soakaway pits, and permeable pavements that are not completed by an FLP, will be subject to a follow up visit by a Home Assessment contractor to ensure claim

accuracy and installation compliance with the STEP LID guide. See Document 6 for additional details.

The City of Ottawa will administer incentive payments to residents. For practices without mandatory inspections, the City of Ottawa or a designated contractor will perform random 'spot checks' to ensure that practices are properly installed.

3.2.5 Communications and Outreach

A detailed communications and outreach plan will support all aspects of the proposed program including the incentives and the three supporting component programs (Fusion Landscape Professional Program, Home Assessment Program, and Community-Engagement Initiatives). The communications plan will include the overarching objectives of:

- Normalizing home stormwater management practices with Ottawa residents
- Increasing the number of lot-level home stormwater management practices implemented in Ottawa

The communications plan will:

- Outline engagement strategies and techniques for reaching external audiences (e.g. residents, community groups, and media)
 - Social media advertising
 - Neighbourhood fliers
 - Press conferences/ local media events
- Outline the use of internal resources such as a dedicated program webpage at Ottawa.ca and social media channels
- Set targets for the social media growth
- Outline social media usage, style, and content
- Guide key messages for communications to residents

All communications planning will be implemented in coordination with Public Information and Media Relations (PIMR).

3.3 Program Implementation

The Rain Ready Program is planned as a three-year pilot starting in 2021. The program will launch in the spring with initial training of the Fusion Landscape Professional Program, the development and launch of the Home Assessment Program and program promotion. Community-engagement initiatives will be developed and conducted on an ongoing basis. A review of the program will be conducted in 2023 based on the first two years, with a report to SCEPWWM Committee and Council in Q3 2023 (Table 6). The pilot will be managed and administered by the City with external support for the delivery of the Home Assessment Program and Fusion Landscape Professional Program. Additional partnerships will be developed as needed for targeted community outreach and engagement.

An internal TAC will continue to provide feedback on the program through-out the pilot and support the program review. This will include staff from stormwater planning and operations as well as staff that deliver other water-related residential outreach and incentive programs.

An external Public Advisory committee will be formed composed of environmental organizations, representative community associations, Conservation Authorities, and landscape industry organizations. This group will continue to provide feedback on the program throughout the pilot, including identifying opportunities for communications and outreach.

Table 6. Key tasks and timeline for proposed program phases.

Key Tasks	Timeline
Program Launch	
Program development and contracting	Feb-March
Fusion Landscape Professional program training	March-April
Launch of Home Assessment and Incentives programs	May-June

Program Delivery	Q2 2021 -Q4 2023
Program Review and Report to SCEPWWM Committee and Council	Q2-Q3 2023
Finalization of claims	Q1 2024

3.3.1 Budget

The project budget is \$750,000 to be funded from existing Stormwater Management Retrofit capital accounts. Table 7. Project budget.

Program Component	Budget
Fusion Landscape Professional Program	\$60,000
Residential Home Assessment Program	\$195,000
Community Engagement Program	\$75,000
Residential Incentives (Grants and Contribution Program, <i>Rain Ready Ottawa</i>)	\$340,000
Communications	\$10,000
Sub-total	\$680,000
Contingency	\$70,000
Total	\$750,000

This budget allows for an estimated 126 projects to be completed in three years, most of which (~80 per cent) are anticipated to be in the priority stormwater retrofit areas. Consistent with other Ontario-based home assessment programs, it is assumed that about 40 per cent of home assessments will result in an eligible incentive claim of about \$2,000 for DIY projects and \$4,000 for projects undertaken by Fusion Landscape Professionals (Table 8). Outside of priority retrofit areas, where installation incentives are not available, it is assumed that about 20 per cent of home assessments - either

through the Rain Ready Ottawa Home Assessment program, or through Certified Landscape Professional consultations - will result in an installed project.

The pilot program is designed to show how the component programs can contribute to meeting the targets set out in Ottawa's stormwater retrofit plans. The overall size of the program will require expansion and investment in order to reach the 50-year targets (Table 1). Under the current assumptions, the proposed program could contribute meaningfully to meeting longer-term targets if the program was expanded to have a budget like other residential incentive programs at the City of Ottawa (\$1 million per year). Some projects are assumed to occur without a program incentive or as a result of the education and outreach efforts. The Eastern Subwatershed Stormwater Retrofit Study assumes a social marketing program of \$1 million per year in addition covering 20 per cent of the capital costs of implementing stormwater management practices on residential properties.

Table 8. Program targets.

Program targets	2021	2022	2023	Total
Assessments				
Certified Landscape Professional Home Consultations	15	20	20	55
Rain Ready Ottawa Home Assessments	50	65	80	195
Installations				
Priority Area Projects (incentivized)	27	36	40	103
Remaining Retrofit Area Projects (not incentivized)	6	8	9	23
Total installed projects	33	44	49	126

Given the purpose of this pilot is to recommend a long-term program, funding will need to be included in the relevant Long-Range Financial Plan and annual budgets starting in 2024, subject to the recommendations of the completed pilot.

3.3.2 Risk management

The proposed program presents several risks including low uptake, high uptake, and interruptions due to worsening Covid-19 conditions. Table 9 provides more information on anticipated risks as well as planned mitigation actions.

Table 9. High level risk and planned mitigation actions.

Risk Description	Planned Mitigation
<p>1) Stay at home orders related to Covid-19 remain in place for an extended period, preventing effective in-person engagement including home assessments and community outreach activities.</p> <p>Likelihood: H, Impact: M</p>	<p>Home Assessments will be modified to provide appropriate distance between Home Assessors and residents. Due to the outdoor nature of the home assessment, the risk of virus transmission is low and can be appropriately mitigated through the use of personal protective equipment.</p> <p>Pivot to online-only promotional activities (primarily social media). Clearly communicate what can be done and how (curb-side pick-up etc.).</p> <p>This option is likely to lower the quality of engagements but may present opportunities to increase program reach by lowering the cost of communications.</p>
<p>2) Lack of support to use City funds to support incentive programming for home stormwater management.</p> <p>Likelihood: L Impact: H</p>	<p>While a voluntary program with increased public engagement may be possible, it will be very difficult to reach the established targets for private property measures. This was a key finding from the initial RAIN pilot in Pinecrest Creek / Westboro. Potential to seek external funding to</p>

	support planned incentives.
<p>3) Low program uptake prevents substantial implementation of stormwater management retrofits</p> <p>Likelihood: M, Impact: M</p>	<p>In the case of program uptake that is significantly lower than expectations, investigations into the root cause of low uptake will be performed. Increased communications efforts, incentive level adjustment, and a more streamlined enrollment process all might help boost program uptake. Adjustments will be made as feasible throughout the pilot with more substantial recommendations brought forward at the end of the pilot.</p>
<p>4) High program uptake exceeds the available program funding</p> <p>Likelihood: M, Impact: H</p>	<p>High program uptake would create a financial liability for the City and over-extend program funds. To mitigate this risk a program cap on home assessments and program enrollments in the incentive program are proposed. Uptake will be reviewed annually, and adjustments to funding caps of specific program measures introduced if needed to ensure funds.</p>
<p>5) Program uptake is low in the priority retrofit areas of the City.</p> <p>Likelihood: M, Impact: M</p>	<p>Home Assessments and installation incentives will be prioritized in the Pinecrest/ Westboro and Eastern subwatershed priority areas. The community engagement program is also intended to focus project communications in these areas.</p>
<p>6) Long-term funding is not available to continue the program beyond the pilot.</p> <p>Likelihood: L, Impact: H</p>	<p>A long-term program is required to meet the targets identified in the Pinecrest and Eastern Retrofit Plans, and address stormwater runoff issues in other parts of the City. Program funding estimates should be included in Long Range Financial Plan (starting in 2024) and refined following the evaluation of the pilot.</p>
<p>7) Poorly installed resident-led</p>	<p>All applications must conform with a Home</p>

<p>installation of stormwater practices exacerbates flood risks to their or adjacent properties.</p> <p>Likelihood: L, Impact: M</p>	<p>Assessment report or Fusion Landscape design and be approved by City staff. The home assessment report will be conducted by a trained professional. It will provide detailed recommendations for eligible practices, including sizing, distance from foundations and grading. Special attention will be paid to compliance with the Site Alteration By-law Claims for projects above \$1000 will be subject to a final inspection. Installations completed without incentives will benefit from guidance available on Ottawa.ca or provided through Home Assessment or Fusion Landscape consultations.</p>
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3.4 Monitoring and Performance Measurement

Program success will be measured in several ways. Program enrollments, installation of practices and delivery of incentive payments will be recorded and monitored, in accordance with the Grants and Contribution Policy and Procedures. The pilot provides only three seasons of program monitoring and thus is limited in its ability to determine the impact on long-term stormwater management goals, but practices and procedures will be established that will facilitate the monitoring of a long-term program and its success.

Program review and recommendations will be made annually, in compliance with the Grants and Contribution Policy, with a full set of recommendations for a longer-term program completed at the end of the pilot program. In addition to a review of program effectiveness and impact, the 'end-of-pilot' reporting will include recommendations on whether and how to implement the program to meet the long-term stormwater retrofit objectives. Evaluation and impact assessment will include analysis of data, participant surveys and program manager insights. Longer-term operational recommendations will be developed in consultation with the Technical and Public Advisory Committees as well as program delivery partners.

RURAL IMPLICATIONS

The City's priority stormwater management retrofit areas are in older urban neighbourhoods. Rural residents will benefit from educational resources and access to certified, trained landscape professionals.

CONSULTATION

The proposed Residential Stormwater Retrofit Program is based on lessons from an initial educational pilot in neighbourhoods near Pinecrest Creek and Westboro Beach. Public consultation and input during this phase included a survey of more than 450 residents on barriers and motivators to managing stormwater on their property, as well as through an internal TAC and a Community Advisory Group consisting of local community and environmental organizations.

The program was further developed with input from City staff and targeted external stakeholders. An internal TAC was established with members from Planning Infrastructure and Economic Development (Asset Management - Infrastructure Planning and Water Resources, and Natural Systems and Rural Affairs) and Public Works and Environmental Services (Linear Rehabilitation and Grants Programs, Outreach and Communications, and Stormwater Services). This group met three times to discuss the lessons from the Pinecrest Creek/ Westboro Pilot and provide feedback on the proposed program. Staff also provided information about complementary City programs to ensure alignment.

External stakeholders including environmental organizations, community associations, Conservation Authorities, and landscape industry companies were consulted in December 2020.

On December 16, 2020, representatives from Ecology Ottawa, EnviroCentre, Ottawa Riverkeeper, Faith and the Common Good, Fletcher Wildlife Gardens, Ottawa Horticultural Society, Master Gardeners of Ottawa-Carleton, Federation of Citizen Associations, Community Associations for Environmental Sustainability (CAFES) and the three Conservation Authorities were invited to an online session to provide feedback on the proposed programs and incentive structure. Feedback from attendees of the consultation was positive. Attendees welcomed the program and found that it was well-aligned with their organizational goals. They supported the focus on industry capacity building in addition to working with homeowners, as well as the use of third-party design

standards. They noted the importance of the program in ensuring water-related sustainability as Ottawa continues to increase its intensification targets. Attendees expressed an interest in having the program extended beyond the priority retrofit areas to increase eligibility. They suggested the program consider the use of grey water, urban forestry strategies, salt use, and pollinator conservation.

Local landscape industry representatives were engaged through Landscape Ontario, the industry association representing landscape professionals. A survey was sent to about 150 members of the Ottawa Chapter of Landscape Ontario who undertake design, construction and maintenance to gauge interest in the Fusion Landscape training and certification program to Ottawa. All nine respondents indicated their interest.

Members were also invited to an online session on December 18, 2020 to provide feedback on the proposed Ottawa program including program structure, practices, incentives and the claims process. The four landscape professionals in attendance had heard of the Fusion Landscape Professional program and were excited to hear that there was interest in bringing it to Ottawa. Attendees were mostly motivated by the opportunities for professional development and learning how to effectively solve client issues related to stormwater such as drainage, flooding and icy driveways and walkways. They were very interested in the credibility that training programs bring to their industry and were pleased to see that a standardized and well-established program was being proposed in the region. They supported the proposed incentivized practices for homeowners and reinforced the importance of the initial consultation and design to provide qualified advice.

The internal TAC and external stakeholders will continue to provide feedback on the program throughout the pilot.

COMMENTS BY THE WARD COUNCILLORS

Educational resources will benefit homeowners in all parts of the City. Councillors in the priority Stormwater Retrofit Areas were sent a summary of the proposed program and offered a briefing.

ADVISORY COMMITTEE COMMENTS

Members of the Environmental Stewardship Advisory Committee (ESAC) were invited to the targeted stakeholder consultation in December.

LEGAL IMPLICATIONS

There are no legal impediments to Committee and Council's approval of the recommendations of this report.

RISK MANAGEMENT IMPLICATIONS

The key risks in this project include uptake rates (too high or too low) and the impacts of Covid-19 on in-person outreach and engagement.

These risks have been identified and explained in the report and will be managed by the appropriate staff.

ASSET MANAGEMENT IMPLICATIONS

Projects supported through this program will be privately owned and the responsibility of the property owner.

Reducing stormwater runoff from private properties potentially represents the most important component of the Council-approved plans for the City's priority stormwater retrofit areas. In the long-term, the cumulative effect of on-site stormwater management will help to reduce the impacts on receiving watercourses. Stormwater management retrofits may also help manage capacity in existing stormwater infrastructure and reduce risks of overland flooding in some areas.

FINANCIAL IMPLICATIONS

The pilot project budget is \$750,000 to be funded from existing funds in 909131 2018 Stormwater Management Retrofit. To facilitate financial management of this project, the \$750,000 project budget will be transferred from 909131 2018 Stormwater Management Retrofit to a new account.

Given the purpose of this pilot is to recommend a long-term program, funding will be included in the relevant Long-Range Financial Plan and annual budgets starting in

2024, subject to the recommendations of the completed pilot and the availability of funds.

ACCESSIBILITY IMPACTS

There are no anticipated accessibility impacts related to this report.

ENVIRONMENTAL IMPLICATIONS

The proposed program supports the goals of the Ottawa River Action Plan, Pinecrest Creek / Westboro Stormwater Management Retrofit Study and Eastern Subwatersheds Stormwater Management Retrofit Study. Better managing rainwater on residential property reduces stormwater runoff and thereby improves water quality and reduces erosion and flooding in receiving watercourses.

The project also supports the climate adaptation and resiliency goals of the Climate Change Master Plan by equipping residents to better manage stormwater and protect their property from localized flooding. The Climate Projections for the National Capital Region (2020) indicate there will be an increase in total annual precipitation by 5 per cent by 2030s and 8 per cent by 2050s under a high emission scenario. Well-designed on-site stormwater management will contribute to Ottawa's preparedness for changing climate conditions.

TECHNOLOGY IMPLICATIONS

Information Technology Services (ITS) has been consulted on the technological needs (form production, website updates) related to the implementation of the program. ITS will work with PIED climate and resiliency team to implement a solution to meet the technical needs of the project.

TERM OF COUNCIL PRIORITIES

The Rain Ready Ottawa Program contributes directly to Council's 2019- 2022 Strategic Priorities including:

- **Environmental Stewardship:** Grow and protect a healthy, beautiful, and vibrant city that can adapt to change.

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- **Sustainable Infrastructure:** Ensure sustainable infrastructure investment to meet the future growth and service needs of the city.
- **Service Excellence Through Innovation:** Deliver quality services that are innovative and continuously improve to meet the needs of individuals and communities.

SUPPORTING DOCUMENTATION

Document 1 Map of Ottawa indicating stormwater retrofit areas (bright green and pink)

Document 2 Pinecrest Neighbourhood RAIN Pilot Project: Final Report (including survey results)

Document 3 Summary of City of Ottawa Water-related Incentive Programs for Private Property Owners

Document 4 Review of Residential Stormwater Information and Incentive Programs in Canada and USA

Document 5 Summary of Best Management Practices for Residential Stormwater Management - Review of performance and costs

Document 6 Rain Ready Ottawa - Overview of Incentives and Claims Process

DISPOSITION

Planning, Infrastructure and Economic Development Department staff will implement the Rain Ready Ottawa program, as approved and in keeping with the City's Grants and Contribution Policy, and report back to SCEPWWM Committee and Council in 2023 with a recommendation for an ongoing program.

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Document 1 – Map of Ottawa indicating stormwater retrofit areas (bright green and pink).

Source: Infrastructure Master Plan.

