

Environment & Sustainability Standing Committee
January 9, 2014

TO: Chair and Members of Environment & Sustainability Standing Committee

Original Signed

SUBMITTED BY: _____
Jane Fraser, Director, Planning & Infrastructure

DATE: December 3, 2013

SUBJECT: Clean Nova Scotia RainYards' 2013 Final Report

ORIGIN

- Regional Council, January 10, 2012 – Item 11.2.1
- Environment & Sustainability Standing Committee, January 10, 2013 – Item 6.3.2
- Environment & Sustainability Standing Committee, February 7, 2013 – Item 7.1.3
- Regional Council, March 19, 2013 – Item 11.4.1

LEGISLATIVE AUTHORITY

HRM Charter, 79, Power to Spend Money: (1) (p) preventing or decreasing flooding.

RECOMMENDATION

It is recommended that:

- 1) The Environment and Sustainability Standing Committee accept the attached RainYards Final Report for 2013; and
- 2) The Environment and Sustainability Standing Committee forward a copy of the report to the Regional Watershed Advisory Board for its information.

BACKGROUND

Halifax Regional Council directed staff to initiate a partnership agreement for a two-year RainYards Project, as proposed by Clean Nova Scotia in Attachment A of the staff report dated January 21, 2013, with the previously allocated funding of \$50,000 from Operating Account D948-Sustainable Community Projects.

DISCUSSION

Clean Nova Scotia completed the first year of a two-year partnership agreement to implement the RainYards stormwater management program. A total of 104 households participated in the 2013 program and CNS's internal program evaluation demonstrates a positive response to the program, its use by program recipients, and measurable impact on stormwater diversion. HRM and Clean Nova Scotia staff will implement recommendations from experience to-date to enhance the 2014 program implementation.

FINANCIAL IMPLICATIONS

No financial implications are associated with this report. Program funding has been pre-approved from D948-Sustainable Community Projects.

COMMUNITY ENGAGEMENT

There was no community engagement in the preparation of this report. Clean Nova Scotia directly engaged over 100 households in the delivery of the RainYards project and reached additional residents through educational workshops.

ENVIRONMENTAL IMPLICATIONS

The RainYards program is designed to help residents and neighbourhoods understand the implications of stormwater and to take actions on their properties to delay and/or divert rainfall from reaching the public stormwater system.

ALTERNATIVES

1. The Committee could choose not to accept the attached report. This alternative is not recommended.
2. The Committee could choose not to forward a copy of the report to the Regional Watersheds Advisory Board. This alternative is not recommended.
3. This report is the recommended alternative.

ATTACHMENTS

Attachment A: Clean Nova Scotia Rain Yards Stormwater Management Program 2013 Final report

A copy of this report can be obtained online at <http://www.halifax.ca/commcoun/index.html> then choose the appropriate Community Council and meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

Report Prepared by: Cameron Deacoff, Environmental Performance Officer, 490-1926

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Report Approved by: Richard MacLellan, Manager, Energy & Environment, 490-6056

RainYards

Stormwater Management Program

2013 Final Report



Submitted on November 26, 2013

Proudly supported by:





About Clean Nova Scotia

Clean Nova Scotia is a not-for-profit organization that provides education-based programs and services to help people consider the environment in the choices they make. We offer a host of programs, services, and resources, focused in the areas of water stewardship, energy efficiency, waste reduction, climate change, and sustainable transportation. Founded in 1988, Clean Nova Scotia is proud to provide leadership and knowledge in environmental practices and sustainability development.

RainYards Summary

AN INNOVATIVE PROGRAM

Clean Nova Scotia's RainYards is the first property specific stormwater education program in Nova Scotia. It delivers information and site specific solutions directly to homeowners through on-site home assessments performed by knowledgeable staff. A complimentary rain barrel is also provided to participants, who have the option to have a Clean Nova Scotia staff member physically install the rain barrel for them at their home.

Following the visit, homeowners receive a detailed homeowner report, which includes a site diagram of problem area as well as observations and recommendations for decreasing stormwater runoff into municipal systems and nearby lakes and streams. The program served 104 homeowners in the Oathill Lake community of Dartmouth, NS through the summer of 2013.

The program's objectives are to:

1. Reduce flooding and runoff of stormwater into the overburdened municipal stormwater management infrastructure through retrofits and landscape changes.
2. Educate and empower homeowners on methods to mitigate stormwater runoff on their properties.
3. Educate homeowners on methods to protect their homes and communities from overflow events.

100% of surveyed program participants **would recommend the RainYards program** to others.



HOMEOWNER CONSULTATION & REPORTS

The backbone of the RainYards program is providing homeowners with one-on-one consultation. This provides residents with the opportunity to ask questions and discuss issues, and the Clean Nova Scotia staff member a chance to assess the particular interests and abilities of the homeowner that can influence recommendations for the property. The result is a custom tailored report for the homeowner which is provided approximately two weeks after the site visit.



The homeowner report includes a detailed diagram of the participant's property with indications of where recommended property changes could be implemented. It also provides background information on the recommended changes, including "how to" style information, and links to additional resources.

SUMMARY

This report details the site conditions and recommendations for your property based on our RainYards assessment. A site diagram is included to help guide retrofit placement.

- 1) Our pre-inspection survey indicates that you encourage water conservation and a manageable and sustainable flow of stormwater on your property through the addition of appropriate vegetation for the dry conditions on the front of your property.
- 2) Conditions of concern on your property include:
 - how to best use stormwater runoff (gardens, rain gardens, ponds, etc); and
 - where to install rain barrel on the property.

Site Diagram

Legend:

- Drive ways/allways
- Building
- Downspout
- Property line edges
- Deciduous trees & shrubs
- Dry areas
- Grass
- Slope
- Garden
- Wet areas
- Rain barrel (proposed location)
- Patio stones

Figure 1. Sample section of a RainYards Homeowner Report, including a home site diagram (at right).

RAIN BARRELS

In addition to one-on-one consultation and a custom stormwater report for each homeowner, the RainYards program also provides free rain barrels to participants. New to the program in 2013, homeowners also had the option to have Clean Nova Scotia staff physically install the rain barrel on their property for them. This service was added to the program based on recommendations from the pilot program's evaluation at the end of 2012. Of the 104 participants in 2013, 65 had a rain barrel installed as part of the program.





The program offered two types of rain barrels to homeowners to provide flexibility. One was a 210L barrel made of hard plastic, and the other was a 400L collapsible barrel.



Figure 2: 400L collapsible barrel



Figure 3: 210L hard plastic barrel

In Nova Scotia, 100 rain barrels could divert an estimated **956,102 litres** of rain water from June – October, 2013.

WORKSHOPS

The 2013 program also included two stormwater workshops. The first was a “kick-off” event in the Oathill Lake community held in early June. Residents were invited to come learn about stormwater and the RainYards program. They also had a chance to register for the program and to paint their own rain barrel, which was later installed at their home during a site visit.

The second workshop was held at the Halifax Seaport Farmer’s Market in August. This was an educational workshop focusing on providing participants with information on stormwater, and stormwater mitigation techniques they can use on their properties. Topics included how to make and use a rain barrel, how to install a French drain, and how to select plants appropriate for a rain garden. Participants were also given handouts with more detailed information.

DELIVERY AREA

RainYards was designed as a community-based model, which means it is implemented in a relatively concentrated geographic area that has a clear social community within it. This approach not only improves the program’s environmental impact (by focusing in specific areas), but also fosters a sense of community pride and responsibility around stormwater management. Furthermore, research indicates that community members are more likely to change their behaviour if they perceive that others in their community are changing their behaviour as well.

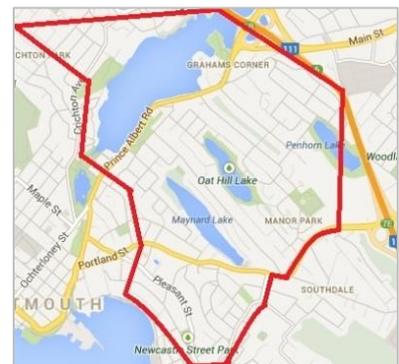


Figure 4: RainYards area 2013

RainYards provided 104 home assessments to the Oathill Lake Community in Dartmouth, NS. The relatively small area ensured greater coverage and more effective, visible results.



The Oathill Lake Community was selected for the program because of its location within the Oathill Lake and Banook Lake watersheds. Most of the selected community is not on a combined sewer system, which means excess runoff from heavy rainfall is either piped directly into Oathill Lake, or it overflows naturally into Oathill or Banook Lakes. The small piece of the community that is on a combined sewer is also contributing to environmental degradation and increased water treatment costs as stormwater is sent to the same facility as wastewater for treatment. During heavy rains, these facilities are often above capacity resulting in combined-sewer overflow (CSOs) events where untreated wastewater and stormwater are released directly into the harbour. In addition, the Oathill Lake Conservation Society, a well-respected and networked community group in the area, is a supporter of the program, and worked with us to help promote the program among area residents.

The program was a resounding success, with 90% of surveyed participants reporting they were planning to implement, or had already implemented, some or all of the recommendations from their RainYards report including French drains, rain gardens and re-grading properties to slope away from homes.

EVALUATION

Clean Nova Scotia staff reached out to all participants by phone to complete a follow up survey. Approximately 20% of participants also received an in-person follow up visit so we could get an even better understanding of what changes they made/did not make, and why they made these choices. In general, our evaluations focus on identifying two things:

1. ways we can improve our program delivery.
2. the benefits and barriers homeowners face when making these types of retrofits and landscape changes.

This information allows us to continually adapt and evolve the program to maximize its ability to drive behaviour change among homeowners. Results from this year's evaluation can be found in the results section later in this report.

FUNDER RECOGNITION

The 2013 program was funded by the Halifax Regional Municipality, the Halifax Port Authority, Halifax Water, and the Intact Insurance Foundation.

Funders were recognized in all communications related to the RainYards program, including our website, press releases, brochures, information packages, and verbal recognition at all program related events. We also included funder logos on the rain barrels* installed on homeowner properties, and in the reports provided to homeowners.

**The Intact Insurance Foundation logo was not included on program rain barrels, as notification of funding came after the rain barrels and stickers had already been ordered.*



Program Results

STATISTICS

During the 2013 RainYards season,:

- 104 households in the Oathill Lake Community took part in the program.
- 99 complimentary rain barrels were distributed to homeowners.
- 65 rain barrels were physically installed by Clean Nova Scotia staff.
- 49 hard plastic rain barrels (210L) and 50 collapsible rain barrels (400L) were used in the program.

ESTIMATED STORMWATER IMPACT

The average home will fill a 210 L rain barrel during a 7.96 mm rain fall and a 400 L rain barrel during a 14.48 mm rain fall. Since the amount diverted will depend on the frequency and size of a precipitation event the amount slowed by rain barrels will vary from month to month (Table 1). By tracking these amounts it is possible to determine how much water the installed rain barrels will slow over the course of a year.

If all of the rain barrels had been installed by June 1st, they could have collected up to 956,102L of rainwater so far, and prevented the immediate run-off of that water into the combined sewer-stormwater system (Table 1).

Table 1. Estimated rainwater diversion potential for 100 rain barrels in the Halifax Regional Municipality from July – October 2013

	June	July	Aug	Sep	Oct	Total (Jun-Oct)
Rain fall (mm)	173.6	110.9	67.3	122.3	131.2	605.3
Number of rain barrel filling rain falls (210 L)	6	4	2	3	2	17
Number of rain barrel filling rain falls (400 L)	3	2	1	1	1	8
Amount diverted by 50 rain barrels (220 L)	95,582	78,803	45,535	66,720	125,209	411,848
Amount diverted by 50 rain barrels (400 L)	136,381	107,541	65,580	87,818	146,933	544,254
Total diversion potential (L)	231,963	186,344	111,115	154,538	272,142	956,102



SURVEY RESULTS

All 104 participants were contacted for a post survey. Of the 42 participants who completed the survey, 60% completed the survey by phone, and 40% completed the survey in-person with a program officer who re-visited participant's home to administer the survey. Cumulative results from the survey are presented below.

Participants were asked to rate a number of items on a scale of one to five where one is poor and five is very good. A list of each item and the average rating is provided below.

- Overall experience with the RainYards program: 4.7
- Experience with Clean Nova Scotia staff: 4.9
- Usefulness of the RainYards report for understanding stormwater management on their property: 4.3
- Current understanding of stormwater management on their properties:
 - Prior to the program (pre-survey results): 2.7
 - After the program (post-survey results): 4.2

70% of respondents would not have made stormwater related changes to their properties without the RainYards program.

In addition, other summary survey data was collected, including:

- 70% of respondents would not have made stormwater related changes to their properties without the RainYards program.
- 90% of respondents have either already made changes to their properties based on their RainYards report, or are planning to.
- 100% of respondents would recommend the RainYards programs to others.



PARTICIPANT TESTIMONIES

The following are a few actual quotes from participants, gathered during the post-program survey.

- “I used the program as a planning tool for future renovations next year.”
- “Great program. It provides motivation.”
- “I would love to see this program run city-wide.”
- “Great idea. Keep it going, and expand!”
- “With two rain barrels and a new high efficient washing machine, my daily water use is down to 210L in the summer.”
- “I like that it was person-to-person, one-on-one attention.”
- “This was a great way to have someone look at the property and give suggestions, especially on difficult properties such as ours.”
- “Good info and good for people to be aware of how to manage rain on their property. Especially in a neighborhood like ours that have lots of rainwater problems.”

“I only used the city tap water **once** this summer because of the rain barrel.”

Recommendations

RainYards now has two years of experience and evaluation metrics to use to refine and improve the program. Based on this information, the following recommendations are proposed for the 2014 implementation of the program:

- Provide homeowners more time to implement recommended changes through the summer by starting the program in early April.
- Offer more stormwater workshops, and aim to hold them earlier in the season to avoid July and August, when event attendance drops due to vacation time.
- Continue offering installation of rain barrels to homeowners.
- Reduce barriers homeowners may encounter when trying to implement recommended changes by working with local garden centers and home renovation businesses. We would collaborate with them to ensure their staff become knowledgeable on how to



advise customers on stormwater mitigation techniques, and to encourage them to stock suitable products for the work (native plants, rain barrels, etc).

- Explore options to deliver the program on evenings and weekends to make it more accessible to homeowners who work standard hours.
- Expand the RainYards website to include more detailed information for homeowners about stormwater mitigation, including educational materials, “how to” information, and links to additional resources.
- Expand the program reach to more homeowners in the Halifax Regional Municipality, and potentially to homeowners in other municipalities struggling with stormwater issues.

Long-term Vision

Stormwater is a growing problem in Nova Scotia, especially in urbanized settings such as the Halifax Regional Municipality, and in communities that are geographically prone to flooding and stormwater accumulation such as Yarmouth and New Glasgow. With climate change scientists forecasting storms of increasing severity and frequency in the coming years, it is clear that investing in stormwater education and mitigation measures now is prudent.

Clean Nova Scotia’s RainYards program has shown that it can make substantial contributions to mitigating stormwater issues by providing homeowners with the education and resources needed to make stormwater-related retrofits and changes on their properties. The program is most valuable, however, when implemented in a large scale. Clean Nova Scotia would like to expand the reach of the program within HRM and beyond, which will have an exponentially stronger effect on the stormwater infrastructure and the environment in the province.