Atlantic Stormwater Conference 2015

November 9, 2015
Dalhousie University Club
Nova Scotia

Clean Foundation

Atlantic Stormwater Initiative

What is the Atlantic Stormwater Initiative?

The Atlantic Stormwater Initiative (ASI) is a project being launched by the Clean Foundation which aims to support climate change adaptation in the Atlantic Provinces by reducing the negative impacts of stormwater runoff. Conventional stormwater management systems are designed to prevent flooding by draining runoff as quickly as possible, which has resulted in the increase in velocity and volume of surface runoff, alteration of surface and groundwater hydrology, accelerated rates of erosion, and degradation of water quality, habitat and biodiversity. Rethinking our conventional stormwater control systems will provide benefits to Atlantic Canadian economies, ecosystems, and communities.

ASI will increase knowledge and access to information and resources amongst stormwater experts and stakeholders. It will work with the capacity and expertise found within Atlantic Canada to highlight effective stormwater management practices for our climate, geography and infrastructure. It will communicate the benefits of LID implementation and reduce barriers to their successful implementation. This will include developing common language, symbols and signage to ensure clear communication on BMPs and LIDs. Information on current LIDs will be compiled and mapped, and will be combined with information on areas at a high risk of stormwater damage, flooding, or climate change-related impacts. Finally, several demonstration sites showcasing stormwater management innovation will be developed across Atlantic Canada to highlight the impact of LIDs and BMPs.

What are the goals of ASI?

The ultimate goal of ASI is to bring effective stormwater management into the mainstream. Stormwater management is increasingly a focus point for government at many levels, for NGOs, and for homeowners, decision-makers and developers. Current stormwater practices result in poor water quality, groundwater recharge issues, unhealthy ecosystems, increased erosion and added stresses on our water infrastructure. By bringing these problems to the forefront, and pairing them with solutions, resources and successful examples, ASI will work to improve our water quality and health.

Achieving this goal will require establishing a strong network of stormwater experts, policy makers, landowners, and stakeholders. This network will need to communicate freely and openly, toward a common goal of improving stormwater management across Atlantic Canada. ASI seeks to form the foundations of this network, address the needs of those involved, and effectively and painlessly facilitate communication, information sharing, and collaboration.

ASI will seek to build on the existing capacity for stormwater management within Atlantic Canada, and identify those solutions which will work best for our demanding climate.

What was the Atlantic Stormwater Conference 2015

The Atlantic Stormwater Conference was the inaugural event for ASI. This workshop builds upon the NS SWIMS conference, held in 2013, and the Applied Stormwater Management workshop, held in 2012 by the Ecology Action Centre. NS SWIMS participants identified the need for increased collaboration and information sharing, as well as the need for demonstration sites. The Atlantic Stormwater Conference will lay the groundwork for this collaboration by identifying potential partnerships, describing the successes and failures in local LIDs, and identifying common needs and goals to achieve effective stormwater management across all of Atlantic Canada.

What were the goals of the conference?

- Establish the status of stormwater management in Atlantic Canada
- Establish methods to communicate and share information
- Identify the strengths of different sectors in achieving ASI goals
- Establish common scientific and social measures that enable assessment of the success of stormwater BMPs
- Establish a business case for stormwater management in Atlantic Canada
- Identify the barriers to stormwater management advancement in Atlantic Canada
- Establish an understanding of winter stormwater management practices and effects
- Identify innovative stormwater management techniques that work in Atlantic Canada's geography and climate

Agenda Items

Sector Stormwater Management Scenario

Participants were grouped by sector, and asked to describe how their sector would address the stormwater management issues at a fictitious site.

A wide variety of Low Impact Developments (LIDs) that could be installed were suggested, including permeable paving, vegetation changes, reducing impermeable surfaces like parking lots, and residential rainwater collection. Additionally, education programs for homeowners about how to manage stormwater on their properties, and how to maintain water quality in the nearby river, were suggested. The need to implement municipal regulations to guide developers to prevent this type of development was highlighted.

Stormwater management solutions fell into five categories:

- **Watershed management**: community planning including zoning and regulations for commercial and recreational spaces, and master plans; the focus was on the source of the problems and floodplain mapping
- **Frameworks**: regulations, bylaws and policies that reflect guidelines, implementation of Best Management Practices, and mapping setbacks
- **Research and experience**: desire to collect and share data in order to increase understanding of the situation
- **Implementing LIDs**: reducing the load on the current infrastructure using both technical and community-based solutions, increasing the green space and storage/infiltration potential; a multitude of LIDs were suggested
- **Behaviour changes**: working with lot owners to implement education-based BMPs

Panel discussion- Regulations and Barriers to Stormwater Management

Moderated by Jocelyne Rankin, Ecology Action Centre

Peter Duncan	City of Halifax
Graham Fisher	Province of Nova Scotia
Peter McLaughlin	Province of New Brunswick
Margot Young	EDM Environmental Design and Management, Ltd.

- We need to **set targets**, objectives and develop a master plan for stormwater management, rather than trying to solve barriers

- We need to **think bigger** than individual problem areas and remember that each solution will be as complex and diverse as the problem landscape.
- Lack of stormwater quality standards is a barrier to stormwater management; we need to **set a goal** through communication amongst regulatory bodies
- We **need leadership and more communication**, and to use our resources more effectively
- Municipal planners **want a blue print** on how to address stormwater, but don't have the time or guidance to develop these frameworks alone
- **Insurance industry needs to support** and promote practices that mitigate stormwater and promote public to be educated and engaged
- We need to **look beyond current problems** and include plans, BMPs/LIDs in locations that could be affected or be key locations in the future

Keynote Address

Speaker: Dr. Jiri Marsalek, Scientist Emeritus with the National Water Research Institute in Burlington Ontario

"Evolution of stormwater management: the current emphasis on LID measures"

Highlights:

- The focus of stormwater management has changed to include a multitude of parameters; we are making progress
- Once we identify the objectives of what we seek to address with stormwater management we can identify the issues to resolve
- We can manage stormwater through the use of Best Management Practices and Low-Impact Development (LID)
- Stormwater can be a resource, not a problem
- Implementation of LID measures requires an understanding of the full environment, and involvement of the public
- There are concerns that are also present when considering stormwater harvesting:
    - Winter operation
    - Compliance with plumbing codes
    - Standing water and risk of mosquitoes
    - Child safety
    - Maintenance
    - High cost in areas with high rainfall

Atlantic Stormwater Initiative Network

Highlights:

The need for guidance and leadership was identified by multiple people as essential to stormwater management success in Atlantic Canada. The idea of forming a formal stormwater network was introduced, with the following subgroups:

- Organizing group
- Demonstration site group
- Communications group
- Barriers and Regulations group
- Stormwater Innovation group
- General network group

Participants were given the opportunity to sign up to learn more about these groups, and the network in general. The demonstration site group currently has the most interest, but several people commented that they will be more willing to participate once the groups are more formalized. Communication with these groups will be via email and phone calls to begin with, and all interested people have been encouraged to participate, and judge their availability or desire to continue as the project continues.

Panel discussion-Business Case for Stormwater Management

Moderated by Rochelle Owen, Dalhousie University

Dr. Jiri Marsalek	Canadian Centre for Inland Waters
Kenda MacKenzie	Halifax Water
Steve Olmstead	Insurance Bureau of Canada
Brad Harnett	Seven Lakes Development, Ltd

- We want to keep high amounts of green space in our developments to maintain groundwater, slowdown stormwater runoff and keep houses from flooding
- LID is cost effective, pleasing to the eye, and healthy for the environment
- We are unnecessarily treating our stormwater in our combined sewer systems
- Some LID savings are immediate, others have long-term benefits, but being creative will bring the business case to the forefront
- Pilot projects help identify financial benefits and challenges
- Easier and cheaper to integrate stormwater management from the beginning, rather than to retrofit
- Many LIDs require regular maintenance to work effectively, so you must plan resources for this
- Developers in Canada are using LIDs as attractive features and are advertising them as such

Pop-up Presentations: Stormwater Management in Atlantic Canada

Objective: inter-sectorial collaboration and knowledge exchange

Participants were divided into groups composed of a variety of sectors and regions. All members were invited to discuss the stormwater work they were completing, and each group then chose one project to present to the conference. The following projects were showcased:

- Town of Bridgewater Flood Management and Downtown Revitalization
- Oxford/Coburg stormwater nexus, Dalhousie University
- Day-lighting the Sawmill River, Ecology Action Centre
- Halifax Water's incentive for reducing impermeable surfaces
- Small urban retrofitting for stormwater, Town of Yarmouth
- Sustainable subdivisions, Town of Stratford

Feedback

A complete assessment of the feedback given on the conference will be compiled, and posted on the website.

Here are a few comments from the day:

"The session this morning with the fictitious site was a great way to collaborate and come up with new ideas for stormwater management"

"Really great presentation by Water Research Institute (lots of info)."

Highlight of the conference- "Group interactions, specifically the 2nd one where we interacted with people from different sectors and locations"

"I think we are asking the wrong question, there is no solution to the problem of barriers; we should set objectives/targets, and the solutions come after the problem has been identified"

"The most useful part of the conference was learning about the cost effectiveness of BMPs and LIDs"

Next Steps

The Atlantic Stormwater Conference highlighted the need for defined, quantifiable targets to guide stormwater management, and for leadership to help develop these targets. The next steps to achieve these goals include:

- Continue communication with interested network members
- Work with network subgroups to identify potential targets and goals
- Continue to request feedback from the network about how best to meet the collective needs of the group
- Start planning the demonstration sites to implement these management goals on the ground, and also to test and monitor stormwater management techniques

Partners

This project is dependent on many partners for its success.

Environment Canada Environnement Canada

This initiative was undertaken with the financial support of Environment Canada.

Additional project partners are:

Halifax Water

CBCL LIMITED
Consulting Engineers

CHARLOTTETOWN
Great things happen here.

TD Friends of the Environment Foundation

NOVA SCOTIA
Environment

Passage Studio

Nova Scotia Youth Conservation Corps

Agenda	
8:00-8:20	**Registration**
8:20-8:30	**General Welcome**
8:30-9:00	**Introductions**
9:00-9:15	**Opening remarks** Why the Atlantic Stormwater Initiative, and the goals of the day
9:15-10:00	**Sector SW Scenario** Case study on stormwater management
10:00-10:15	**Break**
10:15-11:00	**Regulations and Barriers** Panel discussion: Moderator: Jocelyne Rankin, Ecology Action Centre Peter Duncan, City of Halifax Graham Fisher, Province of Nova Scotia Peter McLaughlin, Province of New Brunswick Margot Young- EDM Environmental Design and Management, Ldt.
11:00-12:00	**Keynote- Dr. Jiri Marsalek** “Evolution of stormwater management: The current emphasis on LID measures”
12:00- 12:15	**ASI Network** Description of the ASI Network
12:15-1:15	**Lunch**
1:15- 2:00	**Business case for stormwater management** Panel discussion: Moderator: Rochelle Owen, Dalhousie University Jiri Marsalek, Canada Centre for Inland Waters Kenda MacKenzie- Halifax Water Steve Olmstead- Insurance Bureau of Canada Brad Harnett- Seven Lakes Developments Ltd.
2:00- 2:45	**Stormwater Management in Atlantic Canada** Preparation of pop-up presentations on stormwater management by sector/region
2:45-3:00	**Break**
3:00- 3:45	**Stormwater Management in Atlantic Canada con’t.** Pop-up presentations
3:45-4:00	**Feedback and Evaluation**
4:00- 4:15	**Conclusion**

Speaker Biographies

Dr. Jiri Marsalek is Professor of Urban Water at the Technical University of Lulea, Sweden, and emeritus scientist in the Water Science and Technology Directorate, Environment Canada, in Burlington, Ontario, Canada. His research interests, including sustainable stormwater management, drainage adaptation in a changing climate, and control and treatment of combined sewer overflows, are documented in more than 400 publications, including 145 journal papers.

On the international scene, he has served as secretary of the International Association for Hydro-Environment Engineering and Research (IAHR) & International Water Association (IWA) Joint Committee on Urban Drainage (a specialist group with > 1,000 members worldwide) and has worked extensively with UNESCO and NATO on urban water management.

His professional awards include:

- Environment Canada's Citation for Excellence (2005),
- Two honorary doctorates from Sweden (2006) and Denmark (2008),
- Sharing the 2009 Canadian Society for Civil Engineering Award for the best paper in environmental engineering (2010), and
- The International Water Association (> 10,000 members) Honorary Membership Award (2010) for outstanding contribution to the Association and to the water sector.

Jocelyn Rankin has been the freshwater coordinator with the Ecology Action Centre, in Halifax, Nova Scotia, for over 6 years. During this time, she has organized and led many stormwater demonstration projects, such as rain garden builds and a stormwater retrofit demonstration site. She has contributed to the EAC's stormwater blog on such topics as rain gardens, stormwater policy and regulations, and best management practices. She has organized and participated in two previous stormwater conferences in Halifax, and has been asked to speak about stormwater matters to municipalities, non-profits and at a meeting of the Gulf of Maine Council on the Marine Environment.

Peter Duncan is a civil engineer, who is currently the Manager of Growth Analysis and Development Charges with the City of Halifax, and is the municipal lead for the Stormwater Policy matters in conjunction with Halifax Water. A graduate of the Technical University of Nova Scotia, he has practiced municipal engineering for 29 years. He has been working with Halifax for 17 years, and his past management portfolios include Development Engineering, Infrastructure Planning, and the Environmental Management Office.

Graham Fisher is a senior planner with the Department of Municipal Affairs, with the Nova Scotia provincial government. In this position he works with municipal planners and staff on issues relating to climate change, including stormwater and flooding. In 2013, he was given an Award of Excellence for his efforts on the design, development and implementation of the Municipal Climate Change Action Plan Guidebook. This important resource is now helping municipalities reduce greenhouse gas emissions and identify priorities for climate change adaptation.

Peter McLaughlin is the Director of the Surface Water Protection program, with the Department of Environment and Local Government in New Brunswick. He has been with the department for 26 years in various positions. In his current role he is responsible for issuing all permits for work near watercourses or wetlands in the province. Previous to this position, he acted as the Regional Director in Southeastern New Brunswick, where he witnessed the results of poor planning and construction. His background is in biology, so he is keenly interested in seeing the incorporation of more natural features and designs in stormwater management planning.

Margot Young is a planner with EDM Environmental Design and Management Limited. Margot has her Masters degree in Landscape Architecture (Landscape Ecology) from Harvard University, where she also undertook

coursework at MIT in environmental engineering. She has taught "Water in Environmental Planning" to planning students, is the lead author of many articles, including a chapter in the "Handbook of Water Sensitive Planning and Design", edited by Robert France. She is the lead planner, and responsible for all permitting, for Dartmouth Crossing, which includes several day-lighted and restored brooks, including Grassy Brook, now one of the most productive trout streams in the Province.

Rochelle Owen has worked in the environment and sustainability field for over 25 years at non-profit, government, and academic institutions. She currently works as the Director of the Office of Sustainability at Dalhousie University. Rochelle uses facilitation, community development, program management, and analytical skills to design programs and involve people in sustainability issues. Rochelle holds a BSc in community health, a Masters in Environmental Studies, and is a LEED Green Associate. She writes sustainability columns for newspapers and magazines.

Kenda MacKenzie is the Director of Environmental Services with Halifax Water. This group is responsible for ensuring provincial and federal regulatory compliance is met for wastewater and water systems, including making sure that no discharges have a negative impact on the collection network, treatment facilities or receiving waters. Her group also works to identify areas where excess stormwater is entering into the wastewater system, and is also involved in the development and management of the stormwater billing program. Prior to this position, Kenda was the Manager of Engineering Approvals, where she was responsible for reviewing and approving infrastructure extensions for development projects, including stormwater management systems.

Brad Harnett is a certified civil engineering technologist with thirty years' experience in Nova Scotia's construction and land development industries. Since arriving from his native Newfoundland in 1985 he has helped create communities and neighbourhoods encompassing thousands of acres. Working with engineers, surveyors and land developers, Brad has been involved in all aspects of land development from initial property acquisition through surveying, conceptual design, engineering, construction inspection, contract administration and condominium registration. Brad oversees Seven Lakes Builders Program and works directly with all stakeholders to help grow the Porters Lake community.

Steve Olmstead is Insurance Bureau of Canada's Manager of Government Relations in Atlantic Canada. One of Steve's areas of focus is in working with consumers and governments to adapt to severe weather; one of IBC's national priorities. Steve's policy development and advocacy experience spans more than 20 years across North America. He was involved in development of the BC Water Plan, the Green Building Code, and in renewable energy policy development in this region.