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**TO: MAYOR J. LEHMAN AND MEMBERS OF COUNCIL**

**FROM: S. DIEMERT, P. ENG., MANAGER OF INFRASTRUCTURE PLANNING**

**NOTED: R. J. FORWARD, MBA, M.SC., P. ENG.,  
GENERAL MANAGER OF INFRASTRUCTURE AND GROWTH MANAGEMENT  
  
C. LADD, CHIEF ADMINISTRATIVE OFFICER**

**RE: COMPREHENSIVE STORMWATER MANAGEMENT MASTER PLAN  
(FILE: D03-CO2)**

**DATE: JANUARY 30, 2017**

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The Engineering Department has completed a Comprehensive Stormwater Management Master Plan (CSWM-MP) as required by Policy 4.5 of the Lake Simcoe Protection Plan (LSPP). The CSWM-MP is required to be completed by all municipalities with settlement areas that drain to Lake Simcoe. In an effort to develop a consistent City-wide stormwater policy, the study area was expanded to include areas of the City that are within the Nottawasaga Valley Conservation Authority (NVCA) boundary.

Traditional stormwater master plans focus primarily on hydraulic and hydrologic analysis of stormwater infrastructure. The CSWM-MP differs by focusing on mitigating water quality impacts associated with development. The CSWM-MP provides strategic direction to the City on how LSPP objectives will be achieved through the effective management of stormwater within existing and expanding settlement areas. The contribution of the CSWM-MP will be particularly relevant to the objectives and policies of the LSPP focused on reducing loadings of phosphorous and discharge of pollutants to Lake Simcoe and its tributaries.

The study team developed three alternative strategies:

**Alternative 1 – Traditional Stormwater Management (Do Nothing / Baseline):** This alternative allows for the consideration of maintaining traditional SWM systems consisting of storm sewers and wet ponds providing water quality treatment as well as quantity (flood protection) and erosion control.

**Alternative 2 – Stormwater Management using Low Impact Development Practices:** This alternative consists of implementing Low Impact Development (LID) practices to utilize natural processes to provide water quality treatment. LID does not provide quantity control (flood protection) for major storm events. As part of this alternative, the implementation of private property LID source controls is encouraged for existing development and required for new development. Additional LID end-of-pipe Stormwater Management (SWM) opportunities have been identified in City parks / playing fields and at outfalls servicing direct draining catchments. A summary of the identified sites (see Attachment #1) and a location plan (see Figure #1) have been included.

Type	Technology	Objective
City Parks / Playing Fields (Park Retrofits)	Underground Infiltration Galleries	Water Quality Treatment, Erosion Control and Water Balance
Outfalls to Lake Simcoe	Mechanical Treatment Devices (Oil Grit Separators)	Water Quality Treatment

**Alternative 3 – Combination of Traditional SWM with LID Practices:** This alternative is a combination of Alternative 1 (Traditional SWM) and Alternative 2 (LID Practices). This alternative provides maximum flexibility and allows full utilization of best practices for water quality treatment, erosion control, quantity control (flood protection) and water balance. This alternative includes the additional end-of-pipe SWM opportunities as identified in Alternative 2.

These alternatives were presented to the public and agencies at two Public Information Centres (PIC). Public comments submitted as part of the PICs have been considered in the development of the preferred alternative. Please see the CSWM-MP Report for a complete summary of comments and responses. Areas of major concerns include:

- Minimizing impact to trees to implement SWM retrofits;
- Concerns with respect to funding the identified works and impacts to property taxes; and
- Maintaining usability of parks identified for retrofits.

The public responses from the consultation process indicated the following as their preferred alternative:

	Alternative 1 Traditional SWM	Alternative 2 SWM using LID Practices	Alternative 3 Traditional SWM with LID Practices
Instances Ranked No. 1	6	5	31

The study team selected Alternative 3 as the preferred strategy.

The primary components of the preferred stormwater strategy are as follows:

**Pollution Prevention** – Continue and enhance efforts to reduce and/or eliminate sources of stormwater pollution through efforts such as salt management programs, catchbasin cleaning, street sweeping, free household hazardous waste disposal and source water protection public outreach.

**Source Control LID Measures** – Encourage existing property owners to implement onsite LID practices. All new development will be encouraged wherever possible to direct downspouts and sump pump discharges to pervious surfaces in addition to onsite LID practices.

**Conveyance Control LID Measures** – All road construction that includes SWM improvements will be required to be assessed for implementation of linear or centralized LID practices.

**End-of-Pipe Control Measures** – A number of additional end-of-pipe SWM opportunities were identified consisting primarily of underground infiltration galleries located in parks in addition to SWM pond retrofits identified in the annexation growth studies. New development will be encouraged to seek alternative end-of-pipe control measures and transition away from traditional wet ponds where feasible.

**Stream Restoration** – As part of the City's upcoming master drainage plan updates for all watercourses; assess, identify and establish a plan to address erosion prone areas.

**Stormwater Management Funding** – At a high level, the CSWM-MP identified that a funding gap for SWM infrastructure exists and that alternative funding sources should be considered by the City to fully fund the operation, maintenance and renewal of SWM infrastructure. Options include a dedicated stormwater utility fee, perpetual maintenance fees from developers or increased property taxes (dedicated tax levy).

The additional end-of-pipe SWM opportunities (underground infiltration galleries located within parks) require completion of a Schedule B Class EA study and will be further evaluated as part of the upcoming City-wide Drainage and SWM Master Plan (commencing in 2017). This study will build upon the work completed in the CSWM-MP and include further public consultation and a detailed evaluation of all potential stormwater management improvements on a subwatershed basis with the objective of developing the most effective and financially viable approach to improve stormwater management.

Adapting this new strategy for SWM further reinforces the City's commitment to enhancing the health of Lake Simcoe and compliance with the LSPP. Tom Hogenbirk, Manager of Engineering at Lake Simcoe Region Conservation Authority has received and approved the City's CSWM-MP (see Attachment #2). Tom Reeve, Senior Manager at NVCA has received and noted NVCA's support for the document (see Attachment #3).

The CSWM-MP is available online at [www.barrie.ca/eastudies](http://www.barrie.ca/eastudies) and located under the Comprehensive Stormwater Management Master Plan heading.

If there are any questions, please contact Brett Gratrix at extension 5117, or e-mail [Brett.Gratrix@barrie.ca](mailto:Brett.Gratrix@barrie.ca).

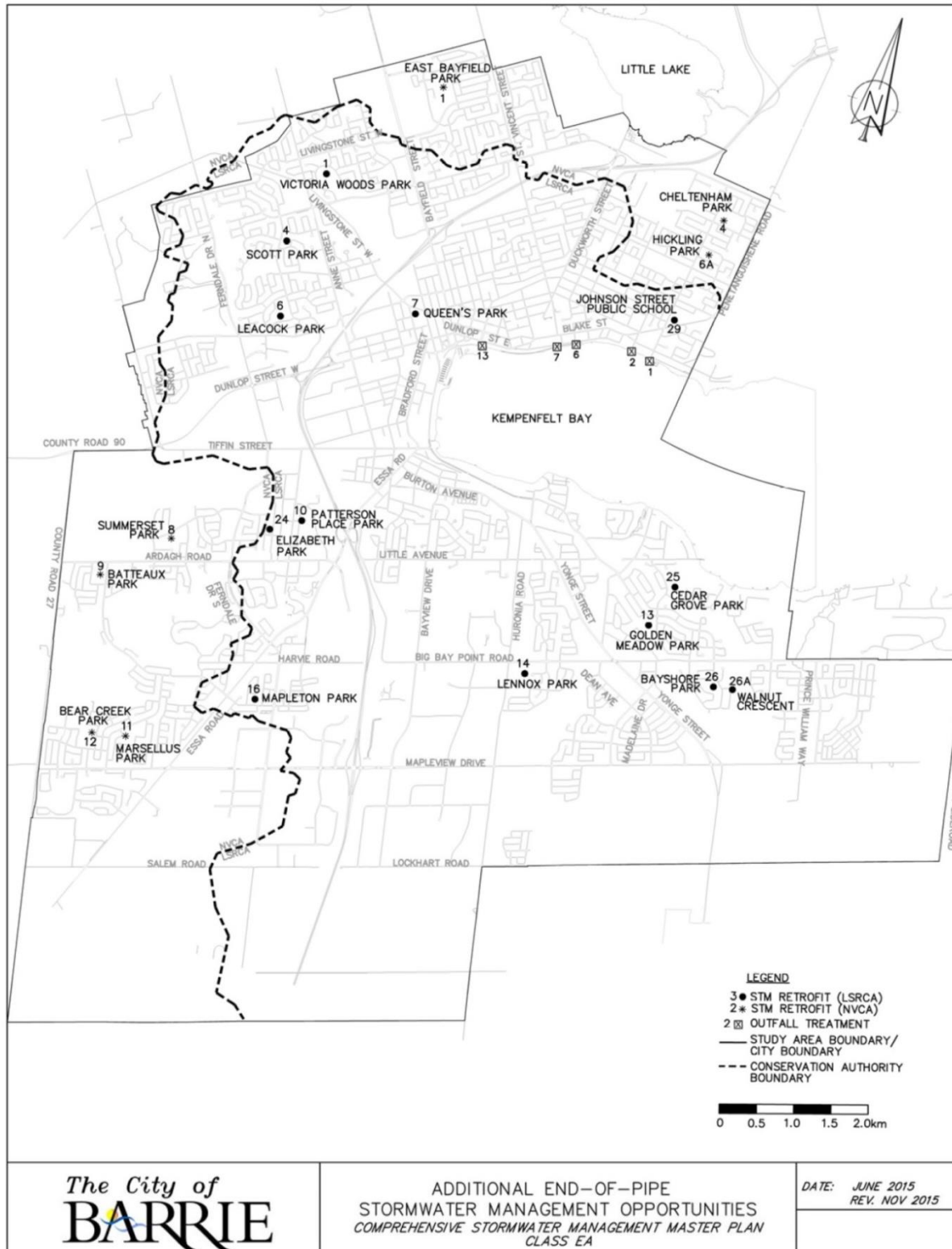
Attachment #1 – Summary of Additional End-of-Pipe SWM Measures

Site ID	Location	Description
Park Retrofits – Underground Infiltration Galleries <sup>1</sup>		
LSRCA Watershed		Construct underground infiltration galleries during future park/school renewal projects. As the infrastructure is located underground; park/school use would not be impacted (after construction is completed).
1	Victoria Woods Park	
4	Scott Park	
6	Leacock Park	
7	Queen’s Park	
10	Patterson Place Park	
13	Golden Meadow Park	
14	Lennox Park	
16	Mapleton Park	
24	Elizabeth Place Park	
25	Cedar Grove Park	
26	Bayshore Park	
26a	Walnut Crescent Open Space	
29	Johnson Street Public School	
NVCA Watershed		The infiltration galleries will provide water quality treatment, erosion control and improve water balance.
1	East Bayfield Park	
4	Cheltenham Park	
6a	Hickling Park	
8	Summerset Park	
9	Batteaux Park	
11	Marsellus Park	
12	Bear Creek Park	
Outfall Retrofits (LSRCA Watershed) <sup>1,2</sup>		
1	Johnson Street (Johnson Drainage Area)	Install oil-grit separator (OGS) to provide water quality treatment for stormwater outfalls that are presently direct draining without treatment.
2	Puget Street (Nelson Drainage Area)	
6	Rodney Street (Rodney Drainage Area)	
7	West of St. Vincent Square Park (St. Vincent Street Drainage Area)	
13	West of St. Vincent Square Park (Mulcaster Drainage Area)	

1 – To be further assessed as part of the City-wide Drainage and SWM Master Plan commencing in 2017.

2 – To be coordinated with renewal works/subject to available funding.

Figure #1 – Summary of Additional End-of-Pipe SWM Measures



Attachment #2 – LSRCA Acceptance Letter



**Lake Simcoe Region**  
conservation authority

[www.LSRCA.on.ca](http://www.LSRCA.on.ca)

Sent by Email Only: [Brett.Gratix@barrie.ca](mailto:Brett.Gratix@barrie.ca)

November 10, 2016

IMS No: PEAA420C4

Mr. Brett Gratix, P.Eng.  
Infrastructure Planning Engineer  
Engineering Department  
70 Collier Street  
Barrie, ON L4M 4T5

Dear Mr. Gratix:

**Re: Comprehensive Stormwater Management Master Plan  
Municipal Class EA  
Report Dated November 8, 2016  
City of Barrie**

We have completed our review of the above noted submission which we received on November 8, 2016.

Please be advised that the above noted CSWM Master Plan generally meets the technical requirements of the Comprehensive Stormwater Management Master Plan Guidelines (April 26, 2012) and as such is acceptable.

Please contact the undersigned if you have any questions regarding this letter. Please refer to the above noted IMS number in any future correspondence.

Yours truly,

A handwritten signature in blue ink, appearing to read 'TH', is placed over the printed name of Tom Hogenbirk.

Tom Hogenbirk, P.Eng.  
Manager, Engineering

TH/ph

c. Greg Frew, [frew.g@aquaforbeech.com](mailto:frew.g@aquaforbeech.com)

\\BLACKWATER\\Shared\\Planning And Development Services\\Engineering And Technical Services\\Comprehensive SWM Master Plans\\Barrie\\November 2016 Submission\\11-09-2016-HOGENBIRK-CSWMMP-PEAA420 BAR MASTER SWM PLAN FINAL LETTER.DOCX



Attachment #3 – NVCA Letter of Support



**Nottawasaga Valley**  
Conservation Authority

December 23, 2016

Delivery via E-mail

Brett Gratrix, P.Eng.  
Infrastructure Planning Engineer  
The City of Barrie  
70 Collier Street  
Barrie ON, L4M 4T5

Dear Mr. Gratrix:

**Re: Comprehensive Stormwater Management Master Plan  
City of Barrie**

The Nottawasaga Valley Conservation Authority (NVCA) staff have reviewed the *City of Barrie Comprehensive Stormwater Management Master Plan, Final Report* by Aquafor Beach Ltd. dated November 8, 2016. The plan seeks to reduce the stormwater impacts of urban development through the implementation of effective stormwater management using a combination of end-of-pipe facilities and low impact development measures. This includes applying these practices in new development, infill developments and in retrofits of existing systems.

The NVCA is supportive of the high level direction and recommendations outlined in the report. We look forward to being involved in the future as the City undertakes further studies and moves towards implementation. In particular, we would be able to offer valuable watershed data and expertise to aid in prioritizing potential projects.

Overall the approaches outlined in the report fit well as part of the NVCA's mandate of integrated watershed management which takes into account, social, economic and environmental issues, as well as community interest in order to manage water resources sustainably.

Please feel free to contact the undersigned should you have any questions or wish to discuss next steps.

Yours Truly,

A handwritten signature in blue ink, appearing to read "Tom Reeve".

Tom Reeve, P.Eng.  
Senior Manager, Engineering Services