

Urban Runoff Report

Recommendation Categorization Summary	Total	Reference #
Already in Practice or Being Updated	6	B4, C2, C5, C8, E3, E8
Feasible with Current Resources	3	B6, C3, C6
Feasible with Additional Resources	6	C4, C7, D2, E1, E4, E7
Responsibility of Outside Partners	14	B1, B2, B3, B5, B 7, B8, B9, B10, C1, D1, E2, E5, E6, E9

Already in Practice

The following recommendations are already in practice within the City and will be continuing and looking to perform and improve the programs associated.

Recommendation Reference & Description	Steps for Implementation
<p>B4: It is recommended that the City of Hamilton, in consultation with the Hamilton Conservation Authority and Conservation Halton, develop or update a stormwater management manual and Master Plans for development in Hamilton based on the Province of Ontario's LID Guidance Manual, the 2003 MOECC Stormwater Planning and Design Manual, and other relevant references.</p>	<p>The City is updating both the Citywide Water, Wastewater and Stormwater Master Plans and the Flooding and Drainage Master Servicing Study. In addition the City maintains Comprehensive Development Guidelines. Below are brief descriptions:</p> <p>Citywide Water, Wastewater, and Stormwater Master Plans:</p> <p>The project will develop City Wide Water / Wastewater And Stormwater Master Plans to assist with the operation of existing systems and allow for optimization of existing infrastructure, long range planning of improvements and enhancements to the systems. The scope of the project includes establishment of the capacities of existing systems, review of the City's current policies / design criteria, evaluation of the systems' operation and reliability, identification of study problems / opportunities, generation, assessment and evaluation of alternative servicing solutions, public consultation and preparation of water / wastewater and stormwater master plans.</p> <p>Flooding and Drainage Master Servicing Study:</p> <p>The Flooding and Drainage Master Servicing Study has been initiated to review the level of service for the City's urban drainage systems (underground and surface drainage) which are located within the combined sewer system area.</p>

	<p>A key part of this study will include an assessment of the impact of planned growth, land use intensification and climate change on Hamilton’s flood risk, conveyance, wet weather management, treatment strategies and impact on Hamilton Harbour and its associated Remedial Action Plan (HHRAP). Flooding and drainage system improvements will be identified, conceptual designs will be developed, and opportunities to reduce storm flows into the combined system will be verified.</p> <p>Comprehensive Development Guidelines:</p> <p>The Comprehensive Development Guidelines detail the development engineering requirements related to subdivision and site plan process requirements, sanitary sewers and wastewater treatment, storm sewers and storm water management, watermains and water supply and more.</p>
<p>C2: It is recommended that the City of Hamilton inventory the area to confirm and update location and ownership of all stormwater management infrastructure and OGS on municipal and where possible private lands.</p>	<p>The City feels they have a comprehensive list with owner identified and City divisions are maintaining as required.</p> <p>There is limited visibility on private lands however the environmental monitoring and enforcement (EME) group does track those on private land when they come across it in the field and record findings in the sewer-use by-law assessment report. In addition EME will notify owners of their responsibility to maintain the stormwater management infrastructure and make recommendations for maintenance. Subdivisions are not under the purview of EME.</p>
<p>C5: It is recommended that the City of Hamilton continue the practice of updating its catch basin inventory and cleanout maintenance program.</p>	<p>The City maintains a Drainage Program in which the catch basin inventory is updated regularly with information from new developments and road improvements. The current maintenance frequency, as agreed with City Council, is every two years. This will be reviewed and if necessary a revised frequency could be recommended to Council.</p>
<p>C8: It is recommended that the City of Hamilton continue with the program for optimization and improvements in their combined sewer system.</p>	<p>The City has an ongoing infrastructure project to optimize the combined sewage management and capture/treatment through enhancements to the City’s Real Time Control (RTC). The City’s combined sewer network captures both sewage and rainwater for treatment at the Woodward Avenue Wastewater Treatment Plant (Woodward WWTP). During dry weather 100% of the sewage collected is conveyed to Woodward for treatment. However, this legacy system was originally design to also allow excess sewer volume to overflow to Hamilton Harbour as Combined Sewer Overflow-CSO. RTC allows operator controlled gates to optimally direct flow to the Woodward WWTP and away from the harbor</p>

	The Flooding and Drainage Master Servicing Study will also investigate and recommend ways of increasing the performance of the City’s Combined Sewer System possibly through both traditional grey infrastructure solutions, and also through green infrastructure solutions such as Low Impact Development-LID systems. The Ministry of the Environment and Climate Control is expected to release regulations for stormwater infrastructure system that will require Municipalities to manage a portion of the initial rainfall in the geographic area where it lands (infiltration, storage, evaporation, etc.).
E3: It is recommended that the City of Hamilton review their Sewer Use By-Law regarding including a limit for total phosphorus discharged into storm sewers.	There is currently a review of the Sewer Use By-Law underway which will look into the total phosphorus discharge. A consultant has been engaged to review the bylaw and it is expected that total phosphorus levels would be brought up. The urban runoff HHRAP report has been identified as a report to add to the consultants review.
E8: It is recommended that the City of Hamilton continue to provide additional staffing and funding to accelerate the identification and remediation of cross connections from the sanitary to the separated storm sewer system.	A cross connection program is currently operating under the Water Distribution and Wastewater Collection section of Hamilton Water. The program is approved temporarily until 2020 as per Council directive however a report will be presented to Council in November 2017 to report on progress and support the continuation of the program.

Feasible with Current Resources

These recommendations are supported by City staff and may be implemented within the current resources available.

Recommendation Reference & Description	Steps for Implementation
B6: It is recommended that the City of Hamilton, the Hamilton Conservation Authority, and Conservation Halton review their watershed basin reports and develop a list to identify updates and priorities.	The City’s Public Works Department, Planning & Economic Development Department and Conservation Authorities have all completed sub-watershed studies. In order to meet this recommendation a specific collaboration with the Conservation Authorities and the various City Divisions are to meet to present their inventory of existing and active watershed reports. PW/P&ED/HCA annual meeting agenda item to review, update & prioritize list as per the recommendation.

<p>C3: It is recommended that the City of Hamilton establish a new monitoring procedure for the accumulation of sediment within City owned stormwater management ponds. This would provide information beyond a visual inspection to assist with forecasting dredging work.</p>	<p>The Roads & Maintenance Section of the Public Works Department currently inspects City owned stormwater management ponds under the SWM Pond/Creek Maintenance Program. This program includes the structural rehab/ replacement of components, vegetation restoration, siltation/ debris removal and bank stabilization within the pond or watercourse.</p> <p>Currently investigating the feasibility of taking cross section measurements, using in house resources, across each of the SWM ponds to not only forecast dredging work but to check the functionality of the SWP. It is anticipated that a trial run with the SWM crew would be undertaken in 2018.</p>
<p>C6: It is recommended that the City of Hamilton, within the Hamilton Harbour watershed, explore opportunities to improve the efficiency of their catch basin cleaning program with the use of new sediment capturing technologies.</p>	<p>The Roads & Maintenance Section of the Public Works Department currently clean catch basins under the Drainage Program. Roads & Maintenance are working on programming to help optimize resources & increase efficiencies including the use of Goss traps in our catch basins.</p> <p>A further review will be completed to determine if there is an opportunity to monitor areas to predict sediment loading. This information would help in developing appropriate cleaning frequency. Discussions should take place with Development Engineering to see if there are opportunities to advance sediment capturing technology in new developments.</p>

Feasible with Additional Resources

These recommendations are supported by City staff however in order to implement the recommendations additional resources would need to be approved. If approved by Council further investigation by staff would be required to understand and articulate the additional resources and next steps for implementation.

<p>Recommendation Reference & Description</p>	<p>Steps for Implementation</p>
<p>C4: It is recommended that the City of Hamilton, in collaboration with the Hamilton Conservation Authority and Conservation Halton, develop a monitoring program to examine the functioning of stormwater management facilities to determine if they are addressing water quality requirements, functioning as designed, and if their performance can be optimized.</p>	<p>Stormwater management facilities are currently monitored under the SWM Pond/Creek Maintenance Program. This program includes the structural rehab/ replacement of components, vegetation restoration, siltation/ debris removal and bank stabilization within the pond or watercourse.</p> <p>The City has 60+ wet ponds where water quality can be monitored. Roads & Maintenance are investigating methods for measuring the TSS loading for the ponds. Resources and equipment have not been identified for this yet. Investigation will proceed in 2018 with potential budget inclusion in 2019 for equipment or contract service.</p>

<p>C7: It is recommended that the City of Hamilton, Hamilton CA, and Conservation Halton update and maintain an inventory of erosion sites within the City and CA owned creek blocks and prioritize appropriate remedial actions.</p>	<p>Both the conservation authorities and the City have completed work to get an inventory of creeks and measure erosion. The Hamilton Conservation Authority is measuring creek banks to get a baseline at which point they will return to measure any changes. Roads & Maintenance have completed an inventory of all City owned watercourses however are not completing any measurements to monitor erosion. In order to meet this recommendation technical infrastructure would have to be created to house the inventory and additional staff would be required to maintain the inventory and be in the field inspecting and updating measurements to monitor for erosion.</p>
<p>D2: It is recommended that the City of Hamilton create a municipal financial model for stormwater management based on an equitable rate structure for a stable funding source.</p>	<p>Since 2005 City staff have recommended the implementation of a stormwater rate to Council with the latest attempt in 2015 when Finance & Corporate Services presented a Stormwater Funding Review FCS15061/PW15067 to GIC on October 7, 2015 with the following recommendations:</p> <ul style="list-style-type: none"> (a) <i>That staff be directed to evaluate the benefits of an alternative Stormwater Fee structure and report back to the General Issues Committee on the following:</i> <ul style="list-style-type: none"> (i) <i>residential Stormwater Fee;</i> (ii) <i>multi-residential (MR)/Industrial/Commercial/Institutional (ICI) Stormwater Fee;</i> (iii) <i>Stormwater Fee Credit Program;</i> (iv) <i>identify budget restatement amounts for both the property tax and rate supported budgets;</i> (v) <i>cost to implement and maintain an alternative stormwater fee based program;</i> (vi) <i>billing mechanism and related policy/business process considerations;</i> (b) <i>That staff be authorized and directed to issue a Request for Proposals (“RFP”) for Consulting Services for a Stormwater Funding Review; and,</i> (c) <i>That the total cost of the Stormwater Funding Review with an upset limit of \$600,000 be funded from the Stormwater reserve (108010).</i>

	<p>At that time the motion was defeated. Staff can update the reports and present again to council to pass a stormwater rate in Hamilton which will provide a stable funding source for stormwater management as recommended by HHRAP.</p>
<p>E1: It is recommended that the City of Hamilton investigate and explore measures to ensure maintenance is carried out by private industrial, commercial, and institutional landowners to ensure that efficiency of all private stormwater management facilities and private OGS systems are maintained.</p>	<p>In 2014 the sewer use bylaw was updated to include enforcement opportunities for private OGS. The EME group does not inspect subdivisions however industrial, commercial and institutional landowners are all under the bylaw mandate. Currently there are not enough staff to proactively enforce private stormwater management systems. However a program can be developed and enforced through EME if enough resources are provided for implementation.</p>
<p>E4: It is recommended that the City of Hamilton, the Hamilton Conservation Authority, Conservation Halton, and local community groups provide and/or expand programs for social incentives to recognize community participation in sustainable stormwater management and the adoption of LIDs (e.g. awards, recognition programs).</p>	<p>Hamilton Water does extensive outreach and education to the community with the Customer Service and Community Outreach Section. In order to develop and maintain a LID program with social incentives a project manager would be required to deliver a similar campaign to the lead and flushables.</p>
<p>E7: It is recommended that the City of Hamilton, in collaboration with Hamilton Conservation Authority and Conservation Halton, investigate the opportunity to develop an incentive program to encourage the use of LIDs on private lands.</p>	<p>Along similar terms to recommendation E4 the project manager for LID would also be responsible for the development and implementation of an incentive program.</p>

Responsibility of Outside Partners

These recommendations are lead by outside partners to which the City follows or works with closely. The City would be supportive in assisting those organizations in the investigation or implementation of recommendations.

Recommendation Reference & Description	Steps for Implementation
B1: It is recommended that the Province of Ontario complete development of the Low Impact Development (LID) Guidance Manual to complement the current MOECC Stormwater Planning and Design Manual	Lead by the Provincial Government
B2: It is recommended that the Province of Ontario provide guidance with respect to the stormwater volume reduction that may be possible through crediting LID techniques as part of a treatment train approach to stormwater management, particularly implications for designing stormwater management wet ponds.	Lead by the Provincial Government
B3: It is recommended that the Province of Ontario review the existing building code to include recommendations that support and/or promote implementing LID techniques for buildings and structures subject to the building code.	Lead by the Provincial Government
B5: It is recommended that the City of Hamilton develop LID guidance for reconstruction of urban roads based on LID stormwater management techniques developed by the Province, other municipalities, and Conservation Authorities.	New guidance document that needs to be created by the provincial government. City of Hamilton will adapt provincial guideline or modify. May even just take the Provincial guidance document and include Hamilton Logo. It is feasible but we would need to adopt it as a standard and get buy in. Would have to do a study to understand cost implications.
B7: It is recommended that the Hamilton	To be lead by the Hamilton Conservation Authority

<p>Conservation Authority water quality monitoring program and the associated aquatic monitoring and terrestrial monitoring program continue and be expanded to ensure a thorough understanding of water quality issues from headwaters to Cootes Paradise/Hamilton Harbour.</p>	
<p>B8: It is recommended that the City of Hamilton, the Hamilton Conservation Authority, Conservation Halton, and the Province of Ontario develop a local workshop/conference for the development industry and practitioners to share new LID guidelines, LID construction and design tools, LID maintenance, and resources.</p>	<p>Conservation Halton should lead as already sponsoring workshops on the lifecycle of LID assets. Could follow similar programs to TRCA and CVC</p>
<p>B9: It is recommended that the City of Hamilton, with support from the Province of Ontario, create and implement a training program in LID, SWM, and maintenance for municipal engineers, planners, building department staff, and maintenance operations staff (Parks and Rec, Roads and Parks Maintenance, etc.) involved in all stages of development to ensure full integration of changes/updates to LID and SWM guidelines and manuals.</p>	<p>Conservation Authorities would be best to lead this as they have done with Aquafor beech/Amec Foster Wheeler</p>
<p>B10: It is recommended that the Hamilton Conservation Authority and Conservation Halton, with support from the Province of Ontario, create and implement a training program in LID, SWM, and maintenance for its engineers, planners, enforcement, and ecology staff involved in all stages of</p>	<p>To be lead by the conservation authorities</p>

<p>development to ensure full integration of changes/updates to LID and SWM guidelines and manuals.</p>	
<p>C1: It is recommended that the Province of Ontario include guidance regarding the frequency of quantity and/or quality monitoring of stormwater management infrastructure.</p>	<p>To be lead by the Provincial Government</p>
<p>D1: It is recommended that the Province of Ontario provide guidance and direction for new financial models that allow stormwater infrastructure to be separately and predictably funded.</p>	<p>To be lead by the Provincial Government</p>
<p>E2: It is recommended that the Province of Ontario provide updated guidance for storm sewers and include requirements related to nutrients for incorporation into municipal sewer use bylaws.</p>	<p>To be lead by the Provincial Government</p>
<p>E5: It is recommended that a neighbourhood based stormwater stewardship program be delivered in the communities of Ancaster, Upper and Lower Hamilton, and Flamborough and ensure that collaboration in these initiatives occurs between local organizations and governments.</p>	<p>HCA to investigate and implement throughout the community</p>
<p>E6: It is recommended that the numerous existing outreach and education programs being delivered currently by Hamilton Conservation Authority, Conservation Halton, the City of Hamilton, and local non-profit agencies be enhanced and ensure that collaboration in these initiatives occurs.</p>	<p>HCA to be Hamilton lead.</p>

<p>E9: It is recommended that local government and community groups in the Hamilton Harbour Watershed collaborate on stormwater stewardship outreach and education initiatives to maximize effectiveness of messaging to urban residents to promote acceptance and implementation at the lot level to address urban stormwater runoff.</p>	<p>Suggest to be lead by Bay Area Restoration Council & other non-municipal bodies.</p>
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