

April 21, 2011

Toronto and Region Conservation Authority
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Downsview, ON M3N 1S4

Credit Valley Conservation Authority
1255 Old Derry Road
Mississauga, ON L5N 6B4

Ms. Carol Reid,
Regional Clerk
Region of Peel
10 Peel Centre Drive
Brampton, ON L6T 4B9

| LEGISLATIVE SERVICES | |
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| Health Services | File |
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| Peel Living | |

Re: City of Brampton Stormwater Management Retrofit and Enhancement Study (File N10)

The following recommendation of the Committee of Council Meeting of April 6, 2011 was approved by Council on April 13, 2011:

- CW117-2011
1. That the report from M. Won, Director of Engineering and Development Services, Planning, Design and Development, and K. Stolch, Director of Engineering and Construction, Works and Transportation, dated February 24, 2011, to the Committee of Council Meeting of April 6, 2011, re: **City of Brampton Stormwater Management Retrofit and Enhancement Study (File N10)** be received; and,
 2. That staff be authorized to initiate a City-wide Stormwater Management Retrofit and Enhancement Study in order to update the City's current drainage systems and determine associated costs and funding sources; and,
 3. That a copy of the subject report be forwarded to the Toronto and Region Conservation Authority, the Credit Valley Conservation Authority and the Region of Peel.

A copy of the subject report is attached for your information.

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Yours truly,



Sonya Pacheco

Legislative Coordinator

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ef/sp (CW-I4)

cc: J. Corbett, Commissioner, Planning, Design and Development
T. Mulligan, Commissioner, Works and Transportation
M. Won, Director, Engineering and Development Services, Planning, Design
and Development
K. Stolch, Director, Engineering and Construction, Works and Transportation



BRAMPTON
Flower City

PW-CI-3

Report

Committee of Council
Committee of the Council of
The Corporation of the City of Brampton

Date: February 24, 2011

COMMITTEE OF COUNCIL

DATE: April 6, 2011

File: N10(SMRS)

Subject: **RECOMMENDATION REPORT**
City of Brampton Stormwater Management Retrofit and
Enhancement Study

Contact: Michael Won, Planning, Design and Development Department
Klaus Stolch, Works and Transportation Department

Overview:

- **City of Brampton Council's support of the City's Stormwater Management Master Plan is the driver behind a number of City-driven initiatives that have been completed, while others are underway.**
- **This report deals with:**
 - **The need for a Stormwater Management Retrofit Study to define a stormwater quality management strategy and enhance mitigation opportunities within developed areas of the city**
- **Highlights of the recommended Stormwater Management Retrofit and Enhancement Study include:**
 - **meeting provincial water quality targets;**
 - **exploring opportunities to aim for a "zero increase" objective in mass loadings of contaminants of concern;**
 - **assisting development approvals within new secondary plan areas;**
 - **updating a prioritized list of potential stormwater retrofit sites; and**
 - **creating a protocol for a city-wide retrofit and enhancement strategy**
- **This proposed study will also look at funding models for the implementation of the city-wide retrofit program.**
- **Once the city-wide retrofit program gets underway, stormwater management deliverables for areas such as Mt. Pleasant can be refined.**
- **The City, in consultation with Mt. Pleasant landowners, is developing a funding protocol to be used for stormwater quality management retrofit and enhancements to sites within the Mt. Pleasant Secondary Plan community's drainage system.**

Recommendations:

1. THAT the report from Michael Won, P. Eng., Director of Development Engineering, Planning, Design and Development, and Klaus Stolch, Director, Engineering and Construction, Works and Transportation Department, dated February 24, 2011 to the Committee of Council Meeting of April 6, 2011 re: **Stormwater Management Retrofit and Enhancement Study, File No. N10(SMRS)**, be received;
2. THAT staff be authorized to initiate a City-wide Stormwater Management Retrofit and Enhancement Study in order to update the City's current drainage systems and determine associated costs and funding sources; and
3. THAT a copy of this report be forwarded to the Toronto and Region Conservation Authority, the Credit Valley Conservation and the Region of Peel.

Background:

The City of Brampton has undergone significant increased urbanization since the early 1980's. In conjunction with this development, various levels of stormwater management controls have been implemented. The Toronto and Region Conservation Authority (TRCA) and the Credit Valley Conservation (CVC), through its completion of various master plan studies for the Humber River and the Credit River watersheds, respectively, have identified that stormwater management is an important indicator in assessing and maintaining the health of these rivers and their tributaries. As a result, the implementation and compliance to current Ministry of the Environment Guidelines related to stormwater management quantity and quality controls are key action items for all municipalities to assist in reducing the quantity and improving the quality of stormwater reaching the rivers. The overall goal is to improve the health of the watersheds. The proposed Citywide Stormwater Management Retrofit and Enhancement Study Project is one of the City's initiatives to achieve this goal.

In 2004, the City of Brampton completed a Stormwater Retrofit Study. At the time, the key objective of this study was to provide a comprehensive analysis of potential retrofit opportunities, as well as to rank the stormwater management facilities based on environmental benefits, estimated costs, social criteria, site access, and land status. This study identified 36 potential sites along with associated costs of the retrofit works.

Since the completion of this study, the City finalized a Stormwater Management Master Plan in February 2010. The overall objective of this master plan was to undertake an assessment of the allocation and distribution of stormwater management facilities that can effectively meet the long-term protection objectives through appropriate planning, engineering, and environmental protection. As identified in the Stormwater Management Master Plan, a significant portion of the City of Brampton was developed prior to the implementation of modern stormwater management which includes both runoff quantity and quality controls. As such, there are areas within the City where uncontrolled and untreated stormwater runoff is discharged to receiving streams including the Fletcher's Creek, Credit River, Etobicoke Creek, Mimico Creek and the

West Humber River. Furthermore, the Stormwater Management Master Plan identified alternative stormwater controls along with their associated costs. Potential funding mechanisms were reviewed, including the City's existing Fee-in-lieu policy and the potential to finance these initiatives including the program for retrofitting existing SWM sites through fees collected from infill developments.

Current Situation:

As identified in the City's Stormwater Management Master Plan, developments in older areas where no stormwater management facilities exist, typically have their stormwater runoff controlled on site by utilizing oil and grit separators and orifice plates (devices which control the amount of flow that is released into the storm sewer or watercourse). Maintenance of oil and grit separators is usually the responsibility of the landowner, as they are commonly located on private property. Developers of infill sites within older areas not serviced by stormwater management facilities may also utilize a Fee-in-lieu option instead of implementing oil and grit separators on site. The principle behind this is to allow developments that produce very little pollution to be built without oil and grit separators provided that they pay a fee (in lieu of the cost of an oil and grit separator) that would be put towards the construction or rehabilitation of a future or existing stormwater management outfall and/or pond within the same tributary catchment area. This fee would be used towards the treatment of the stormwater from a larger urban area where the stormwater quality is degraded. The City of Brampton's Stormwater Retrofit Study (completed in 2004) identified and prioritized 36 such retrofit and enhancement opportunities.

The recommendations from the 2003/2004 Retrofit Study were provided in terms of implementation and shown in the table in Attachment 1 as a "roadmap" to carry out the retrofits as funding became available. It was evident that there were considerable shortfalls in the City's allocated funds from the fees collected to be able to implement the retrofit works identified. To date, the City has collected approximately \$3,400,000 through the Fee-in-lieu policy for the retrofit works. The total estimated cost to fund the retrofit works, not including land costs, is in the order of approximately \$38,000,000.

Furthermore, changes to the Provincial Standards and Guidelines for water quality controls and a desire to explore going beyond these standards have resulted in a need to further review, update and assess all infill areas within the City to explore potential stormwater management treatment options, including both structural and non-structural best management practices. To keep abreast of current technical standards, the City will consider enabling selected implementation of Low Impact Development (LIDs), beginning with pilot projects to determine their effectiveness and associated operational implications to the sole satisfaction of the City of Brampton.

The results of the City's earlier Retrofit Study identified 7 existing "quantity only" control ponds within Brampton with retrofit potential and 29 uncontrolled storm sewer outfall locations where new ponds could potentially be constructed. However, a more detailed investigation (including an updated review and analysis of the previously identified sites) should be carried out to apply alternative best management practices in conjunction

with construction of the proposed retrofit facility including pollution control and prevention practices. In addition, the study will explore the opportunities and constraints of going beyond the existing Provincial Standards, including consideration of a "zero increase" objective. Funding sources and partnerships need to be further investigated and established to ensure implementation of all feasible stormwater quality management projects.

Watershed Management Project

The City of Brampton in partnership with the landowners of the Mount Pleasant Community (Block 51-1) is currently undergoing a subwatershed study in support of the planning process for this community. The subwatershed study, which encompasses the reaches of Huttonville and Fletcher's Creeks, will soon be finalized and an objective has been identified to work towards a "zero increase" in mass loadings of a suite of contaminants of concern under future land use conditions. This objective can be achieved by implementing structural and non-structural best management practices within the existing urban area in the Credit River watershed outside of the Mount Pleasant Community. Through consultation with the Mount Pleasant landowners' group, a funding protocol for the Mount Pleasant Community is being developed which will be applied as a pilot project to this community and these funds will be used for implementation of potential stormwater quality management retrofit and enhancement works within the Credit River watershed. In order for this area specific project to be established, an updated and contemporary stormwater management retrofit and enhancement study for the whole of the City is necessary to be undertaken as soon as possible. The Terms of Reference for this study shall set out the tasks to be undertaken and the expected deliverables of the study. As well, the results of this city-wide study will contribute to the development of comprehensive and consistent protocol and provide direction on stormwater quality management retrofit sites and practices to be conducted city-wide including seeking further opportunities in the Mount Pleasant Community.

The Credit Valley Conservation is preparing an update to the Fletcher's Creek Subwatershed Study and will identify opportunities to manage water quality of development areas through both structural and broader-based environmental best management practices, including pollution control and prevention practices for the public and private sectors such as reduced use of hazardous materials, improved practices for parking lot maintenance, and turf management, etc. The City's Stormwater Management Retrofit and Enhancement Study will utilize information from the Fletcher's Creek Subwatershed Study Update and integrate recommendations, as appropriate.

Environmental Benefits

As noted, there are areas within the City where uncontrolled and untreated stormwater runoff is discharged to receiving streams including the Fletcher's Creek, Credit River, Etobicoke Creek, and the West Humber River. All of these watercourses, as well as three tributaries of the Credit River (Huttonville Creek, Springbrook Creek and Tributary 8B) provide habitat for Redside Dace. The Redside Dace Recovery Strategy published

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February, 2010 has identified the Province's intent to 'support actions focusing on protection, restoration, monitoring, research and awareness'. The City's proposed Stormwater Management Retrofit and Enhancement Study is intended to be a holistic approach to improving the water quality of stormwater runoff in both new development existing built areas of the City. This study may provide the framework and direction for the City to seek provincial funding support for implementing some of the study's water quality improvement recommendations.

Terms of Reference

The Terms of Reference will be finalized upon approval of Council to proceed with the City-wide Stormwater Management Retrofit and Enhancement Study. Outlined below is a brief overview of the study's purpose, approach and scope of work.

Study Purpose

The primary objective of the Stormwater Management and Retrofit and Enhancement Study is to identify the appropriate steps are taken to meet Provincial water quality targets as set out by Provincial policies, and explore opportunities and constraints to go beyond the Provincial Standards, including a "zero increase" objective in mass loadings of contaminants of concern. A stormwater quality management retrofit program will assist development approvals within new secondary plan areas and will identify how the City can improve stormwater quality in the built areas through redevelopment and intensification. Furthermore, the study will prepare and update a prioritized list of the potential stormwater retrofit sites and practices (based on current Provincial Guidelines) that can be used for the implementation of the citywide retrofit and enhancement strategy. Other objectives of the study include creating a protocol for the assessment of structural and non-structural best management practices, including stormwater management facilities (ponds and outfalls) in the City of Brampton. The protocol is also expected to identify and integrate the constraints associated with water quality, erosion control, watercourses/stream quality (health) and flood control. The final deliverable of the study will be a report defining the water quality parameters, estimating concentrations for the defined water quality parameters, developing retrofit scenarios, estimating associated costs for each scenario and presenting the most beneficial scenario. Furthermore, a sustainable citywide funding scheme needs to be established in order to implement the recommendation coming out of the study.

Study Approach

The Study will be co-managed by Planning, Design & Development and Works & Transportation. The City will retain the services of a municipal engineering consultant to complete this Stormwater Management Retrofit and Enhancement Study. This will be undertaken with involvement from City staff, in particular the Project Team and the Steering Committee. A Technical Advisory Committee (external stakeholders from the various Ministries and Conservation Authorities) will be involved at major milestones.

Scope of Work

The scope of the study shall include the following components:

1. Gather all background information including relevant studies, reports, maps and aerial photographs conducted by both the Conservation Authorities as well as the City along with all of the relevant policies, acts, regulations and guidelines related to stormwater management quality and quantity.
2. Define water quality parameters which will include selecting indicators (i.e. Contaminants of Concern) to measure water quality/health of the streams and tributaries for all the pertinent subwatersheds within the City of Brampton.
3. Estimate the opportunities and constraints of going beyond existing Provincial water quality standards, including examining the potential of a "zero increase" objective.
4. Estimate concentrations for selected water quality parameters (as typical inflow concentrations) including estimating the potential water quality control that is available at each potential facility.
5. Develop a screening protocol for assessment of retrofit scenarios and structural and non-structural best management practices with regard to environmental, social, economic and operation and maintenance factors. Potential implementation of low impact development measures should also be part of this assessment.
6. Review existing information and undertake field assessments to confirm the potential for the implementation of structural and non-structural Best Management Practices (BMPs).
7. Assess the potential to retrofit the SWM ponds and/or outfalls based on technical and environmental considerations.
8. Develop feasibility level cost estimates for implementing structural and non-structural BMPs, including retrofitting each potential facility.
9. Rank the priority of the structural and non-structural BMPs, including retrofitting SWM facilities based on technical feasibility, environmental, social and financial factors.
10. Identify and evaluate alternative and/or innovative stormwater management measures which could be implemented as part of an overall strategy.
11. Identify and examine alternative funding mechanisms and recommend preferred approaches.
12. Develop a practical policy on financial contribution towards stormwater management for infill development or redevelopment, as well as a funding policy for retrofitting stormwater management facilities.
13. Develop an implementation plan.

Budget Implications

Urbanization without the implementation of appropriate stormwater management mitigation measures has a negative impact on the watersheds, specifically on hydrology, erosion, sediment transport and water quality degradation. Each of these

impacts can create a risk to public health and safety and affects the quality of terrestrial and aquatic habitat. A key component coming out of the Citywide Stormwater Management Master Plan is a comprehensive citywide stormwater management retrofit program and a framework for a long term strategy utilizing stormwater quality/quantity and erosion controls within the existing urbanized areas of the City. To complete the Citywide Stormwater Management Retrofit and Enhancement Study will cost approximately \$180,000.00. Sufficient funds are available within the existing approved budget to cover the cost of the study and will be initiated this year by the Planning, Design and Development Department and the Works and Transportation Department upon Council approval of same.

The budget impact in future years will depend upon the outcome of the above noted study. Through consultation with the landowners' group within the Mount Pleasant Secondary Plan area, a funding protocol for this community and its subwatersheds is being developed which will be applied as an area specific pilot project for implementation of any potential stormwater quality management retrofit and enhancement works after the completion of this citywide study. As well, the success of this program will help inform and expedite the Heritage Heights subwatershed and secondary plan process. However, as identified in the City-wide Stormwater Management Master Plan, various funding sources need to be considered and evaluated in order to sustain all of these programs throughout the city.

Corporate Implications:

The budget impact in future years will depend on the outcome of the above retrofit and enhancement study. The \$3,400,000 estimated funds collected to date would allow for the start up of the Citywide Stormwater Management Retrofit Program including the associated Environmental Assessments that may need to be undertaken on a site by site basis. The timing and annual funding requirement for the nearly \$38,000,000 of the estimated retrofit works as identified through the Citywide Stormwater Management Master Plan has not yet been determined. Council decisions on prioritization against other corporate priorities for available financial resources will need to be reviewed through future budget deliberations.

Conclusion:

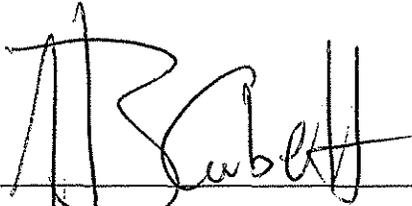
The evolution of stormwater management requirements over the past three decades, together with the rapid rate of growth, has led to the need for comprehensive stormwater management projects throughout all municipalities within southern Ontario. Staff are seeking Council approval to undertake a comprehensive Citywide Stormwater Management Retrofit and Enhancement Study as a component of the City's Stormwater Management Master Plan work.

The City continues to collect Fee-in-lieu from infill and redevelopment applications in order to implement a retrofit program. To date the City has collected approximately \$3,400,000. It was identified through the City's Stormwater Management Master Plan that the total preliminary cost estimate to complete the previously identified retrofit works is approximately \$38,000,000 (excluding land costs where applicable).

Implementation of these and other stormwater management projects is a long term process and must be coordinated with other ongoing initiatives including the City's Stormwater Management Master Plan and the City's overall growth management strategy. Accordingly, it is recommended that the conclusions and recommendations from the Citywide Stormwater Management Retrofit and Enhancement Study be considered in future public works and make up part of the City's environmental strategy.

Funding alternatives and associated models to support the increasing budgetary demands resulting from the operation, maintenance and retrofit of stormwater management facilities, continues to be an increasing challenge to many municipalities. The proposed study will examine funding models for the implementation of the Citywide Stormwater Management Retrofit Program. A funding protocol for the Mount Pleasant community is being developed which will be applied as a pilot project to this community and is one step towards this end.

Respectfully submitted:



John Corbett, MCIP, RPP
Commissioner of Planning, Design and
Development



Thomas Mulligan, P.Eng.
Commissioner of Works &
Transportation

Attachments: Previously Identified Locations of Stormwater Management Facilities and Outfalls For Potential Retrofit (2004 Study)

Report authored by: Michael Won and Klaus Stolch

Previously Identified Locations of Stormwater Management Facilities and Outfalls For Potential Retrofit (2004 Study)

| SWM Pond/Outfall Name & Reference | Type | | Tributary | General Location |
|--|----------------------|-----------------|---------------------|-----------------------------------|
| TRCA | | | | |
| <u>Etobicoke Creek</u> | | | | |
| Upper Nine Pond (TRCA No.105.0) | Off-line dry pond | Etobicoke Creek | Upper Main Branch | Hwy. 10 & Hwy. 407 |
| Grey Stoke Pond (TRCA No.158.0) | Off-line dry pond | Etobicoke Creek | Upper Main Branch | Mayfield Rd. & Kennedy Rd. |
| Chinguacousy Ponds | On-line pond | Etobicoke Creek | Spring Creek | Queen St. & Bramalea Rd. |
| TRCA outfall No. 1 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Centre St. & Queen St. |
| TRCA outfall No. 2 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Vodden St. & Main St. |
| TRCA outfall No. 3 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Vodden St. & Main St. |
| TRCA outfall No. 5 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Williams Pkwy. & Main St. |
| TRCA outfall No. 6 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Bovaird Dr. & Kennedy Rd. |
| TRCA outfall No. 7 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Bovaird Dr. & Kennedy Rd. |
| TRCA outfall No. 7.5 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Conservation Dr. & Hurontario St. |
| TRCA outfall No. 8 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Bovaird Dr. & Hurontario St. |
| TRCA outfall No. 11 | Uncontrolled outfall | Etobicoke Creek | Spring Creek | Bovaird Dr. & Dixie Rd. |
| TRCA outfall No. 13 | Uncontrolled outfall | Etobicoke Creek | Spring Creek | Bramalea Dr. & Queen St. |
| TRCA outfall No. 18 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Queen St. & Main St. |
| TRCA outfall No. 22 | Uncontrolled outfall | Etobicoke Creek | Spring Creek | Dixie Rd. & Steeles Ave. |
| TRCA outfall No. 22.5 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Steeles Ave. & Kennedy Rd. |
| TRCA outfall No. 23 | Uncontrolled outfall | Etobicoke Creek | Spring Creek | Steeles Ave. & Bramalea Rd. |
| TRCA outfall No. 31 | Uncontrolled outfall | Etobicoke Creek | Upper Main Branch | Conservation Dr. & Kennedy Rd. |
| <u>Mimico Creek</u> | | | | |
| Kenfask Pond | On-line dry pond | Mimico Creek | Main Branch | Steeles Ave. & Goreway Dr. |
| Industrial Nine Pond (TRCA No.20.0) | On-line dry pond | Mimico Creek | Main Branch | Queen St. & Airport Rd. |
| TRCA outfall No. 21 | Uncontrolled outfall | Mimico Creek | Upper Mimico Branch | Bovaird Dr. & Bramalea Rd. |
| TRCA outfall No. 24 | Uncontrolled outfall | Mimico Creek | West Mimico Branch | Steeles Ave. & Torbram Rd. |
| TRCA outfall No. 25 | Uncontrolled outfall | Mimico Creek | West Mimico Branch | Queen St. & Bramalea Rd. |
| <u>West Humber River</u> | | | | |
| TRCA outfall No. 26 | Uncontrolled outfall | Humber River | West Humber River | Queen St. & Goreway Dr. |
| TRCA outfall No. 28 | Uncontrolled outfall | Humber River | West Humber River | Gore Road & Countryside Dr. |
| TRCA outfall No. 29 | Uncontrolled outfall | Humber River | West Humber River | McVean Dr. & Countryside Dr. |
| TRCA outfall No. 30 | Uncontrolled outfall | Humber River | West Humber River | McVean Dr. & Countryside Dr. |

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