



THE TORONTO AND REGION CONSERVATION AUTHORITY

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WATERSHED MANAGEMENT ADVISORY BOARD MEETING
#3/07

Friday, September 14, 2007

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THE TORONTO AND REGION CONSERVATION AUTHORITY

**MEETING OF THE WATERSHED MANAGEMENT ADVISORY BOARD #3/07
September 14, 2007**

The Watershed Management Advisory Board Meeting #3/07, was held in the South Theatre, Black Creek Pioneer Village, on Friday, September 14, 2007. The Vice Chair Anthony Perruzza, called the meeting to order at 10:09 a.m..

PRESENT

Maria Augimeri	Member
Bryan Bertie	Member
Gay Cowbourne	Member
Grant Gibson	Member
Bonnie Littley	Member
Gerri Lynn O'Connor	Chair, Authority
John Parker	Member
Anthony Perruzza	Vice Chair

ABSENT

Lois Griffin	Member
Alissa Sugar	Member
Richard Whitehead	Chair

RES.#D23/07 - MINUTES

Moved by: Bonnie Littley
Seconded by: Bryan Bertie

THAT the Minutes of Meeting #2/07, held on June 8, 2007, be approved.

CARRIED

PRESENTATIONS

- (a) A presentation by John Stille, Environmental Technician, TRCA, in regard to item 7.1 - Habitat Implementation Plan.
- (b) A presentation by Deborah Martin-Downs, Director, Ecology, TRCA, in regard to the American Fisheries Society Conference, attended on September 2-7, 2007, in San Francisco, California, approved by Resolution #B58/07.

- (c) A presentation by Andrew Taylor, Hydrogeologist, TRCA, in regard to the National Ground Water Association Environmental Forensics Short Course, attended on June 26-27, 2007, in Fairlawn New Jersey, approved by Resolution #A130/07.
- (d) A presentation by Bill Snodgrass, Senior Engineer, Water & Wastewater Services, Works & Emergency Services, City of Toronto, in regard to item 7.2 - Highland Creek Wet Weather Flow Management Master Plan Implementation..

RES.#D24/07 - PRESENTATIONS

Moved by: Grant Gibson
 Seconded by: John Parker

THAT above-noted presentation (a) be heard and received.

CARRIED

RES.#D25/07 - PRESENTATIONS

Moved by: Bonnie Littley
 Seconded by: Grant Gibson

THAT above-noted presentation (b) be heard and received.

CARRIED

RES.#D26/07 - PRESENTATIONS

Moved by: Maria Augimeri
 Seconded by: John Parker

THAT above-noted presentation (c) be heard and received.

CARRIED

RES.#D27/07 - PRESENTATIONS

Moved by: Bonnie Littley
 Seconded by: John Parker

THAT above-noted presentation (d) be heard and received.

CARRIED

SECTION I - ITEMS FOR AUTHORITY ACTION

RES.#D28/07 - HABITAT IMPLEMENTATION PLAN

2007 Summary Report. 2007 summary report of the Habitat Implementation Plans (HIP) for the individual watersheds within the Toronto and Region Conservation Authority (TRCA) jurisdiction.

Moved by: Bonnie Littley
Seconded by: Grant Gibson

THE BOARD RECOMMENDS TO THE AUTHORITY THAT staff continue to work with the City of Toronto, Region of Peel, York Region, Durham Region, municipal partners and community organizations to implement the Habitat Implementation Plans (HIP) for the individual watersheds within the Toronto and Region Conservation Authority (TRCA) jurisdiction;

THAT staff be directed to use the individual watershed HIP's as the foundations for targeting habitat restoration opportunities, and the mechanism for achieving watershed targets in TRCA's jurisdiction;

AND FURTHER THAT staff report annually to the Authority on the progress of the implementation of the HIP's.

CARRIED

BACKGROUND

In 2003, the Restoration and Environmental Monitoring Projects group of Restoration Services initiated Habitat Implementation Plans as a means to strategically implement restoration projects throughout TRCA's jurisdiction. The HIP is a targeted site-level implementation strategy, based on watershed targets. Generated from desktop and field assessments, the HIP contains a catalogue/database of potential restoration sites which are linked to geographic information system (GIS) information layers. The information stored within the database includes general site descriptions, existing habitat components, the potential habitat opportunities identified and an implementation priority score. The HIP database of projects functions through a dynamic process based on querying data to determine the highest priority site for restoration. HIPs act as a mechanism by which the concepts of the terrestrial natural heritage program, fisheries management plans and watershed management strategies can be implemented. For a complete methodology, refer to the HIP reports for Etobicoke-Mimico, Humber, Duffins and Don watersheds; as well as the waterfront terrestrial HIP. To date, HIP assessments have been completed (primarily on TRCA-owned property) for the following watersheds and the waterfront:

- Etobicoke and Mimico creeks watersheds (2003);
- Humber River watershed (2004);
- Duffins and Carruthers creeks watersheds (2004);
- waterfront terrestrial (2005);
- Don River watershed (2006).

The current HIP process involves assessing opportunities on TRCA-owned lands and, where possible, other public lands (municipal, hydro, etc.) which varies from watershed to watershed. The application of the HIP findings can help staff do the following:

- present a list of high priority restoration sites that represent the general principles of the various strategies and management plans;
- create a workable database that contains a prioritized list of sites that may be recommended for implementation by interested stakeholder groups/partners as funding opportunities arise; and

- utilize the database to identify overall contributions to watershed targets, track completed projects and to quantify specific deliverables.

A number of external partnerships have been expanded to ensure that a more complete and targeted implementation strategy can be fulfilled. The nature of these partnership relate to funding, planning and implementation. External partners include: Peel Region, Durham Region, York Region, City of Toronto, City of Brampton, City of Ajax, the Greater Toronto Airport Authority, Ministry of Natural Resources, Oak Ridges Moraine Foundation and private land owners. Through these partnerships, to date, we have successfully implemented 41 habitat projects. Collectively they represent 23.3 ha of wetland, 22.7 ha of forest and 9,250 m of riparian cover.

RATIONALE

The individual watershed HIPs have enabled TRCA to develop a database of habitat restoration opportunities on publicly-owned lands. These opportunities can be cataloged and assessed to develop priority locations for restoration. This has enabled TRCA to become more efficient and strategic in its project implementation. The database of opportunities can be used to achieve watershed targets, plan for compensation measures, or direct external partners to priority areas. It also enables TRCA and partners to more effectively forecast and target opportunities to develop multi-year implementation program and strategies. The HIP can be utilized by all departments within TRCA to achieve watershed-wide goals (natural heritage, fisheries management), and enables for efficient reporting and tracking.

DETAILS OF THE WORK TO BE DONE

The next step is to assess opportunities on private lands and to continue assessing new public lands, to generate a complete watershed-wide HIP, and to engage private landowners on high priority sites to implement projects. HIPs involve detailed field visits where staff walk areas of interest on public lands (primarily TRCA-owned properties) to determine restoration opportunities. However, this is not possible on private lands, unless permission is granted by the landowner. Also, It would become too time consuming to walk the entire watershed in search of restoration opportunities so new tools for more remote assessments became needed. A methodology was developed which included a more detailed desktop analysis and driving tours with a laptop, camera and GPS to identify restoration opportunities on areas that can not be walked. These findings will be combined with public land assessments, and will be done for each watershed in TRCA's jurisdiction.

A variety of new desktop assessment techniques are being used to allow assessors to determine specific land details based on elevation and drainage. By using tools in Arc Hydro, a GIS application, a drainage line can be derived from the Digital Elevation Model (DEM). Using the DEM, sub-watershed catchments are delineated and Arc Hydro drainage lines are calculated within them. These drainage lines are influenced by area, flow direction and flow accumulation. In many cases, these drainage lines go beyond the original TRCA GIS mapping river layer, which may lack segments of a watercourse, such as intermittent streams or swales (i.e. first order or headwater streams). In addition, these lines represent areas of accumulated flow which indicate possible historical wetland cover. Identifying these lines aids the assessors by enabling them to speculate where, historical or present day, wetlands or first order riparian corridors are. Thus, making it an easier and more efficient way to delineate cover opportunities (wetland, riparian or forest) from each other in areas where TRCA staff is not permitted to walk. This method, coupled with the knowledge of a Restoration Services trained field assessor, will give a relatively accurate preliminary picture of the implementation opportunities for a given site.

It is important to remember that these identified opportunities are preliminary only. They are used to target and prioritize implementation opportunities. Once a high priority site is targeted, the planning and design phase begins, where full assessments of the site garner detailed site prescriptions.

To date, the new HIP assessment methodology are being used, and will be used, to identify restoration opportunities for the following:

- *Transport Canada (Durham Federal Airport Lands)*- Utilized Phase 2 assessment techniques to identify and implement priority riparian cover projects. 6 km of stream bank cover completed in spring 2007.
- *Rouge Park* - In partnership with Rouge Park, HIP assessments are being completed for the Little Rouge sub-watershed, with the goal of completing a HIP for the entire Rouge River watershed.
- *Duffins River Watershed* - Phase 2 assessments are being conducted within the Duffins River watershed, which will allow TRCA to strategically engage private landowners in high priority areas.
- *ORM CPA4* - Phase 2 techniques will be utilized to identify and implement cover opportunities within the Oak Ridges Moraine CPA4 designated area.

Future restoration initiatives will target both public and private lands through an integrated watershed approach. There are many benefits to this:

- watershed-wide implementation opportunities can be integrated with watershed planning targets for forecasting and reporting on deliverables;
- providing funders with complete targeted and measurable implementation projects within multi-year time frames;
- engaging private landowners in a manner that targets those within priority areas to get a more substantial multi-benefit result in regard to ecosystem health.

This watershed integrated approach will allow TRCA to identify priorities from the perspective of increasing natural cover through reforestation projects, improving hydrologic function and water quality through wetland projects, and improving stream quality and habitat through riparian restoration.

FINANCIAL DETAILS

The total budgets for the individual 2007 watershed HIPs are represented in the following chart. Funding is provided through the City of Toronto, regions of Peel, York and Durham, and Great Lakes Sustainability Fund.

Watershed HIP	Account Code	Budget
Duffins	109 15	\$42,000
Don	114 40	\$60,000
Humber	114 43	\$106,500
Etobicoke/Mimico	114 39	\$40,000
Waterfront	113 51	\$73,500

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Date: August 31, 2007

RES.#D29/07 - HIGHLAND CREEK WET WEATHER FLOW MANAGEMENT MASTER PLAN IMPLEMENTATION
 City of Toronto. Progress update on the Highland Creek studies and design process to implement channel restoration works following the recommendations of the City of Toronto Wet Weather Flow Management Master Plan.

Moved by: Gay Cowbourne
 Seconded by: John Parker

THE BOARD RECOMMENDS TO THE AUTHORITY THAT the City of Toronto's commitment to implement long-term objectives for stream restoration in Highland Creek be acknowledged;

THAT in consideration of the above commitment, the general direction of the Highland Creek Geomorphic Systems Master Plan and the Valley Segment 8 and 4A Environmental Assessments be supported;

THAT the City of Toronto be requested to explore opportunities to enhance the Highland Creek valley system by restoring natural habitat, reconnecting the channel to the floodplain and improving the trails and other recreational amenities through the development of a comprehensive Greening Strategy for the Highland Creek watershed;

AND FURTHER THAT the City of Toronto invite a panel of academic experts to perform a formal review of the Highland Creek studies, including the Highland Creek Geomorphic Master Systems Plan and the Valley Segment 8 and 4A Environmental Assessments.

CARRIED

BACKGROUND

Due to the highly dynamic nature of Highland Creek, the City of Toronto has initiated a study process to mitigate the effects of uncontrolled stormwater discharge to protect infrastructure and property from erosion. This process began with the development of the Wet Weather Flow Management Master Plan (WWFMMP), and has evolved, in part, into the ongoing development and implementation of a Geomorphic Systems Master Plan, valley segment specific environmental assessments and channel restoration works. In consultation with Toronto and Region Conservation Authority (TRCA), the city has committed to long-term planning objectives for Highland Creek to create a stable, sustainable and enhanced valley system.

These works represent the application of innovative design concepts in an urban stream system, the scope and complexity of which are unparalleled in TRCA's jurisdiction. This progress update has been prepared to inform the Authority of the history, status and future direction of restoration works in Highland Creek, and to recommend action to ensure the long-term viability of the proposals.

Current Conditions

Highland Creek is a fully developed watershed, heavily channelized in the northern sections with virtually no stormwater management facilities such as detention ponds. As a result, it is a volatile watershed, subject to flash floods and rapid, severe erosion. In addition, much of the infrastructure in the area was historically constructed within the Highland Creek valley corridor and now parallels and traverses the watercourse. Creek reconstruction has taken several forms, most particularly during urbanization between 1970 and 1990. Interventions have included channel shortening to provide more land for urban development, channel straightening, creating concrete lined channels, and constructing bank protection structures to keep the creek away from landfills and to protect property and infrastructure such as pedestrian pathways, bridge footings and sub-surface pipelines. The combination of a harsh hydrologic regime, inadequate setbacks and unsuitable in-stream engineering have resulted in a consistent trend of increasing problems over time as the creek bed and banks have eroded. This has further resulted in exposed and damaged infrastructure, property loss and impacts to aquatic habitat.

Of particular concern have been the effects of recent storms on May 12, 2000 and August 19, 2005. High flows and excessive erosion during these events led to significant channel migration, which resulted in the exposure of infrastructure within the channel and the breaching of a trunk sewer in 2005. Since 2005 the city has initiated emergency works to stabilize and restore sections of the creek. The city has begun an expedited study process to better understand the Highland Creek system and to develop and implement a comprehensive solution to the problems.

Wet Weather Flow

Wet weather flow consists of untreated or uncontrolled stormwater. The city undertook the Highland Creek WWFMMP study between 1999 and 2003 to develop a long-term plan to reduce, and ultimately eliminate, the adverse impacts of wet weather flow on the built and natural environment. The WWFMMP provided watershed specific recommendations to address this issue based on 13 technical objectives which includes the implementation of source, conveyance and end-of-pipe controls.

The plan identified Highland Creek as a highly impacted channel system and noted that retrofit stormwater management controls would not be sufficient on their own to stabilize the channel. The WWFMMP developed a generalized approach for stream restoration activities in the Highland Creek watershed, indicating that the removal of the existing infrastructure (including sewers, watermains and other utilities) from the valley corridor would be cost prohibitive and generally not feasible. Within the broad framework of the WWFMMP, the city has recognized the need to integrate a more rigorous and holistic understanding of the mechanisms of channel instability and erosion in the Highland Creek system and to then develop a mitigation strategy.

Geomorphic Systems Master Plan

As a result of the WWFMMP, the city commissioned the Highland Creek Geomorphic Systems Master Plan (GSMP) in 2005 to provide recommendations on how the watercourse should be managed to protect the infrastructure. The GSMP will develop a strategy for restoration of all creeks and streams within the Highland Creek watershed. The immediate priority is the watershed sections located south of Highway 401. These sections were identified in the WWFMMP as priority areas for stream restoration in the first 15 years of the implementation. The second priority is to develop a strategy for stream reconstruction and rehabilitation for the channelized sections north of Highway 401. The time frame for these sections is the next 50 to 100 years. The latter analyses will also inform future studies related to the feasibility of rehabilitating controlled channels in other watersheds which are reaching the end of their design life (e.g. the lower sections of Black Creek and the East Don River).

The GSMP will provide recommendations on a valley segment basis, to be developed within an adaptive management framework. It will evaluate the type of intervention needed, from a focus on local sites of limited extent of intervention through to complete channel reconstruction either using the natural channel systems method or a significantly constrained engineered natural channel system method. The development of the GSMP is underway and ongoing. However, the immediate need for stabilization in certain sections of the Highland Creek has prompted the initiation and implementation of certain specific valley segment studies in parallel with the GSMP. Although these studies are being conducted separately from the GSMP, they will be linked to the general objectives and preliminary design of the plan.

Valley Segment Environmental Assessments

It was determined that the repair of several sites after the May 12, 2000 and August 19, 2005 storms was too narrowly scoped. This led the city to initiate broader-scale systems studies. The GSMP was scoped to examine the watershed as a whole at a systems level, with subsequent detailed designs to follow. Additional specific studies were initiated and scoped to analyse particular valley segments in detail to develop design solutions. Two valley segments on the east branch of Highland Creek were identified as highest priority based on unstable conditions and high risk to infrastructure. These include Valley Segment 8, from the confluence of the Malvern and Markham branches south to Morningside Park, and Valley Segment 4A, from Markham Road on the Markham branch east to Segment 8.

The environmental assessment (EA) for Segment 8 was completed in 2006, and the subsequent construction of portions of Phase 1 and Phase 3 were completed in 2007. Segment 8 was declared an emergency by the city following the sanitary sewer break associated with the August 19, 2005 storm. As a result the works were authorized by Fisheries and Oceans Canada based on the City of Toronto Emergency Works Protocol. In addition, the EA and detailed design submissions were reviewed by technical staff and the design proposals were approved by the Executive Committee under Permits C-06358 (Phase 1 Stage 1), C-07380 (Phase 1 Stage 2) and C-07405 (Phase 3 Stage 2). The restoration works for Phase 1 Stage 1 are complete. Design submissions on the remaining stages are expected shortly, while design proposals for Phase 2 are anticipated within 2 years.

A status update in December, 2006 and partial draft characterization report for Segment 4A was reviewed by technical staff. The final report is anticipated in the fall of 2007. The area for the Valley Segment 4A study has been extended upstream into Valley Segment 4 to include an additional area of concern west of Markham Road. Emergency works for three sections of exposed sewer were completed in 2006. Another emergency works application is under review to address bridge and sewer impacts. It is expected that detailed design will commence in late fall, 2007 or early 2008. Repairs within the Scarborough Golf and Country Club have been completed at 9 sites within the club, as of March, 2007.

In consideration of the immediate need to protect damaged and exposed infrastructure, TRCA staff has expedited the review and approval of these emergency works projects through the existing City of Toronto Emergency Works Protocol. The need for refinements to this protocol to better reflect the application, review process and approval responsibilities to appropriately address emergency works has been identified. This has prompted a separate review of the current protocol to assess and implement the necessary changes.

State of Good Repair Projects and Emergency Works

The stream restoration projects flowing from the WWFMMP were designed to holistically address channel instability and threatened infrastructure over the long-term, while providing ecological benefits to the extent possible. However, the damage from the August 19, 2005 storm re-prioritized the implementation strategy of the 25-year WWFMMP Implementation Plan to provide a focus on emergency works and state-of-good repair projects for the foreseeable future. The response to the storm of May 12, 2000 required 4 years to address approximately 75% of the problem sites, including additional design changes at a few sites to address fish passage issues. It is anticipated that a similar time frame will be required to address the damage from the August 19, 2005 storm.

Although these state of good repair projects will be the primary focus of restoration work in the Highland Creek, the city has developed a priority list for damaged sites to provide the framework for repair projects, accommodate new sites and to prioritize stream restoration projects in the context of the GSMP. The GSMP and the Valley Segment EAs will guide the implementation of priority works to ensure that the design solutions are framed into a tributary systems scale perspective that will provide a holistic approach to the implementation of the restoration works.

Objectives

Through the development of the WWFMMP and the review of the GSMP, the Valley Segment EAs and the detailed design submissions, the city, in consultation with TRCA has committed that the implementation of the works to date, and all future proposals, will meet the following long-term objectives:

- protection of municipal infrastructure from exposure due to stream migration and erosion processes;
- development of a proactive long-term rehabilitation strategy that will allow for the gradual, planned stabilization of the creek rather than continuing to address problems using a reactive, piecemeal approach;
- adoption of an adaptive management approach for long-term channel management, founded on a forecast of channel response based on the implementation of a series of channel interventions, monitoring and learning from the channel response, and determining the next necessary actions over a 25 to 100 year time-frame;
- provision of a solution that is consistent with the WWFMMP objectives and the treatment train approach;
- implementation of an aquatic rehabilitation plan to improve the connectivity, quality and diversity of fish habitat in the Highland Creek;
- development of a riparian zone management plan for Highland Creek to address habitat restoration and enhancement;
- establish a long-term, life-cycle based asset management strategy which includes operational inspection, science-based monitoring, rehabilitation and reconstruction of newly built stream structures, older erosion control structures and concrete-lined channels; and
- assurance that a financial framework is developed for the city to actively monitor and maintain the channel works.

Implementation

It is recognized that stream erosion control projects have traditionally been conducted using a reactive approach and limited to a local site length perspective. In particular, the repair of several sites after the May 12, 2000 storm were too narrowly scoped and prompted the city, with the support of Fisheries and Oceans Canada, the Ministry of Natural Resources and TRCA, to initiate the broader scale systems studies. An overall concept plan was developed, which has guided the implementation of emergency works to date. This concept plan will be finalized through the completion of the GSMP.

The recent emergency works caused TRCA staff to raise concerns during the review process regarding the piecemeal approach of the design and implementation of Valley Segments 4A and 8, in consideration for the fact that the GSMP has not yet been completed. Staff recognize that due to the erosive nature of the creek and the vulnerability of the existing infrastructure, these segments are high priority and the protection and stabilization works must be completed in advance of the finalization of the GSMP. However, should the GSMP require modification to the design of these segments so that the final design for Highland Creek can be properly implemented, the city has committed to modify them accordingly. It is the general consensus that the overall direction of the proposals to date are acceptable, but that the city must be encouraged to complete the GSMP as soon as possible to provide a coherent governing document for the design and construction of in-stream works on Highland Creek.

The long-term implications of the maintenance and performance of the proposed channel works are significant. The proposed designs incorporate extensive stabilization through the use of non-native stones and material to prevent erosion. Due to this, there is no natural upstream supply of bed material to regenerate the constructed channels as they are weathered over time by the extreme flow regime. As such, the channels will require maintenance in perpetuity as they cannot be sustained through natural processes as would natural streams. Further, experience has shown that when constructed channels of this nature fail, they can cause massive erosion and damage to aquatic systems. Staff has suggested that an integral part of the reconstruction of Highland Creek will be the development of a program to monitor and maintain the proposed channel works at a frequency sufficient to ensure that their integrity is maintained and that aquatic habitat objectives are met. This program should include the development of financial instruments to ensure that sufficient funds for monitoring and maintenance activities are available for the life of the channel.

The immediate priority within Highland Creek is to mitigate the effects of erosion. In consideration of this, the design submissions to date have limited the scope of restoration to the channel and surrounding banks. The design submissions for Valley Segments 4A and 8 will provide only localized restoration to stabilize the channel works. The city has committed to developing a riparian zone management plan for Highland Creek to address habitat restoration at a site-specific scale. However, staff identify that the development of the GSMP provides an opportunity to develop a comprehensive strategy for the Highland Creek watershed to guide the implementation of habitat restoration and valley improvements to maximize the ecological and recreational benefits of the proposed works. Staff suggest that the city develop a greening strategy for Highland Creek that will outline an overall plan to enhance the surrounding natural features, to reconnect the channel to its floodplain and valley system and to improve the habitat value of the watershed. As part of this strategy, the city should also investigate opportunities to improve the existing trail system and recreational amenities within the valley.

The proposed concepts emerging from this study process represent a large-scale reconstruction of Highland Creek that blends engineering and geomorphic design principles. There are few examples of this type of widespread channel restructuring in watercourse systems as urbanized and as unstable as Highland Creek. As a result, it is difficult to predict the durability and longevity of the constructed channels, as well as the impacts that widespread channel restructuring will have on the physical processes of the creek and associated valley system. As these principles have not been applied in a system with the scale or complexity of Highland Creek, staff has suggested that a panel of academic experts be retained to provide a peer review of the Highland Creek studies, including the Highland Creek GSMP and the Valley Segment 8 and 4A EAs to direct the refinement of the overall design. It is acknowledged that the city has engaged in a degree of peer review through consultation with partner agencies and the interaction of the two consulting teams that have been retained. However, no formal review has taken place to assess the overall direction of the studies and the potential effects of the proposed works on the Highland Creek system as a whole. Such a review would serve to confirm the suitability of the overall design concepts, which can then be used to direct the detailed design. It is suggested that the city contact the group of professors Kostaschuk (University of Guelph), Ashmore (University of Western Ontario) and Desloges (University of Toronto), or other experts who have conducted extensive academic research on Highland Creek and in applied and urban fluvial geomorphology and invite them to perform this review.

DETAILS OF WORK TO BE DONE

The City of Toronto will move forward with the completion of the GSMP in 2008. In parallel, the development of the EA for Valley Segment 4A will continue with regard for the general objectives and preliminary design of the GSMP. The development of detailed design plans for the remaining phases of Valley Segment 8 will commence as necessary. All of these studies will proceed in consideration of the long-term objectives noted above.

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Date: August 22, 2007

RES.#D30/07 -

FULFILMENT OF OAK RIDGES MORAINÉ CONSERVATION PLAN WATERSHED PLANNING REQUIREMENTS – HUMBER RIVER WATERSHED

Approval of the Oak Ridges Moraine Conservation Plan conformity assessment for the Humber River watershed and approval to use the draft watershed planning documents referenced in the conformity assessment in the review of major development proposals on the Oak Ridges Moraine.

Moved by: Grant Gibson
Seconded by: Gay Cowbourne

THE BOARD RECOMMENDS TO THE AUTHORITY THAT the conformity assessment for the Humber River Watershed Plan and the watershed planning documents referenced in the conformity assessment be deemed to fulfil the watershed planning requirements of the Oak Ridges Moraine Conservation Plan (ORMCP; 2002);

THAT the conformity assessment for the Humber River Watershed Plan and the watershed planning documents referenced in the conformity assessment be approved for use by the appropriate implementation authority on an interim basis in the review of major development proposals on the Oak Ridges Moraine until such time as municipal consultation is completed and a final watershed plan is brought back to the Authority for approval;

AND FURTHER THAT the regional and local watershed municipalities and the Conservation Authorities Moraine Coalition be so advised.

CARRIED

BACKGROUND

At Authority Meeting #3/07, held on April 27, 2007, the Authority approved conformity assessments for the Duffins Creek watershed plan, Rouge River watershed plan and the Don River watershed plan and use of watershed planning documents referenced in the conformity assessments in the review of major development proposals on the Oak Ridges Moraine, pursuant to requirements of the *Oak Ridges Moraine Act* and *Oak Ridges Moraine Conservation Plan* (ORMCP, 2002). The watershed planning requirements of sections 24 and 25 of the ORMCP require the municipalities to ensure all major development commenced on or after April 23, 2007 on the Oak Ridges Moraine conforms with the completed watershed plan, otherwise major development (i.e. 4 lots or greater; 500 m² (5000 ft²) or greater or major recreational use) cannot be approved.

At the time of the April Authority meeting, staff indicated that a conformity assessment for the Humber watershed would be reported back at the Authority's June meeting, to allow municipal staff the opportunity to review the first full draft Humber River Watershed Plan. Peel Region and York Region municipal staff had expressed preference for this timing. Consultation with municipalities and the public is underway and comments on the draft watershed plan are anticipated to be received in September. Review of the conformity assessment report (Table 1) by municipal staff has been completed.

Based on the content of the draft Humber River Watershed Plan, TRCA staff has prepared a conformity assessment summarizing how this watershed plan has addressed the ORMCP requirements and identifying the appropriate document references of where the information can be found (Table 1).

The ORMCP's watershed planning requirements mainly involve the characterization of the watershed's water budget, surface and groundwater flow systems, natural heritage, determination of appropriate land and water use management strategies, and criteria to protect these resources.

Staff feel confident that the information and management direction contained in the draft watershed planning documents has an adequate scientific basis to allow municipal and TRCA staff to begin to use this information in the review of major development applications, if any such applications are submitted after April 23, 2007 and before final watershed planning documents can be brought back for approval by the Authority early in 2008.

The watershed plans provide updated technical information about existing conditions and systems in the watershed that is unlikely to change substantively as the plans are finalized. Many of the management recommendations are not new, but rather endorse the continuation of accepted practice using the updated technical information. New approaches are being recommended in the following areas:

- The particular need to protect groundwater recharge and flow directions in the upper Credit River watershed, as this area is an important source of water to the upper Main Humber River watershed.
- The need to protect and expand natural cover in the watershed, as an integral component of the water management strategy and also to achieve objectives for biodiversity consistent with the Toronto and Region Terrestrial Natural Heritage System Strategy.
- The need to manage water balance, particularly as part of community planning and stormwater management designs. Community designs that minimize impervious surfaces and incorporate innovative stormwater management techniques will be needed to mitigate impacts on pre-development rates of infiltration, evapotranspiration and surface runoff.
- The need to design and build more sustainably in greenfield developments, redevelopments and retrofits, by addressing a range of objectives including those noted above.

The watershed plan does not contain land use policies for the review of major development applications under the *Planning Act* but rather, contains guidance and recommendations that are intended to inform the decisions of municipalities and other approval authorities regarding their land use policies. It should also be recognized that the watershed plans provide guidance at both watershed and subwatershed scales of detail. This information represents a valuable contribution and context, which will assist development proponents. However there will still be further study requirements and planning refinements to be carried out by development proponents at a greater level of detail in order to meet the requirements of the ORMCP at a minimum.

Interim approval to use the draft watershed planning documents will allow TRCA and municipal staff to work cooperatively with development proponents on the early stages of implementation, should any applications be submitted. Lessons learned from these experiences can be considered and incorporated into the final watershed planning and implementation documents.

DETAILS OF WORK TO BE DONE

- The first full draft of the Humber River Watershed Plan was released for broad municipal and stakeholder consultation in June 2007.
- While a preliminary consultation session was convened with watershed municipalities on March 30, 2007, individual meetings will be scheduled with each municipality to discuss the recommendations and implementation approaches in more detail during the fall of 2007.

- Public meetings will also be held during the fall of 2007.
- Background technical reports and the draft implementation guide are expected to be available for review concurrent with and following the release of the watershed plan.
- Aim to report back to the Authority with the final Humber River Watershed Plan in February 2008, pending comments received.

FINANCIAL DETAILS

Funding for the watershed planning studies was provided by the Regional Municipality of Peel, Regional Municipality of York and City of Toronto as part of the municipal capital budgets.

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Attachments: 1

Attachment 1

Table 1: Oak Ridges Moraine Conservation Plan Watershed Planning Requirements Conformity Assessment Report – HUMBER RIVER WATERSHED

This report documents how requirements of sections 24 and 25 of the *Oak Ridges Moraine Conservation Plan* (Ministry of Municipal Affairs and Housing, 2002) have been satisfied for the portions of the **Humber River watershed** located in the Oak Ridges Moraine Area, based on direction provided by the province's draft technical guidance documents (Ministry of the Environment, 2007)¹

Subsection	Requirement	Conformity Assessment	Document Reference
24.(1)	Every upper-tier municipality and single-tier municipality shall, on or before April 22, 2003, begin preparing a watershed plan, in accordance with subsection 24.(3), for every watershed whose streams originate within the municipality's area of jurisdiction.	<p>Watershed planning and on-going watershed management have been activities the Toronto and Region Conservation Authority (TRCA) has carried out in partnership with its municipalities for a number of years. Therefore a watershed plan was deemed to have been initiated prior to April 22, 2003, acknowledging that some study components required updating to varying degrees.</p> <p>A watershed planning study was initiated by the TRCA, in partnership with the Region of York, Region of Peel, and City of Toronto and area municipalities for the Humber River watershed on June 25, 2004.</p> <p>A first draft of the <i>Humber River Watershed Plan</i> was completed on June 11, 2007.</p>	<p>A workplan to fulfill the watershed planning requirements of the ORMCP and direction to initiate the Humber River Watershed Planning Study according to the initial work program was approved by the Authority on Sept. 26, 2003 (Authority Res. #A196/03).</p> <p>A detailed workplan for the Humber River Watershed Planning Study was approved by the Authority on June 25, 2004 (Authority Res. #A191/04).</p>
24.(3)	A watershed plan shall include, as a minimum, (a) a water budget and conservation plan as set out in section 25;	See conformity assessments for sections 25.(1) and 25.(2).	See document references for sections 25.(1) and 25.(2).

Subsection	Requirement	Conformity Assessment	Document Reference
24.(3) cont'd	(b) land and water use and management strategies;	The draft <i>Humber River Watershed Plan</i> describes recommended management strategies regarding existing and future land and water use that will help to protect the ecological and hydrological features and functions of the watershed, including the portions in the Oak Ridges Moraine Area. Key strategies include the need to expand natural cover and build sustainable communities, particularly with an aim to maintain or restore pre-development water balance.	See section 5.0 of the <i>Humber River Watershed Plan</i> .
24.(3) cont'd	(c) a framework for implementation, which may include more detailed implementation plans for smaller geographic areas, such as subwatershed plans, or for specific subject matter, such as environmental management plans;	Implementation direction and initial considerations for priority actions and areas, at watershed and subwatershed scales, accompany the management strategies in the draft <i>Humber River Watershed Plan</i> . Specific policies within the framework for implementation may be subject to revision based on detailed consultation with municipal partners and stakeholders and Conservation Authority Board review. Any such revisions will not affect satisfaction of this <i>Oak Ridges Moraine Conservation Plan</i> requirement.	See section 5.0 of the <i>Humber River Watershed Plan</i> .

Subsection	Requirement	Conformity Assessment	Document Reference
24.(3) cont'd	(d) an environmental monitoring plan;	The draft <i>Humber River Watershed Plan</i> includes recommendations regarding changes or enhancements to existing environmental monitoring programs and other area, site-or issue-specific monitoring requirements.	See section 5.6 of the <i>Humber River Watershed Plan</i> for recommended enhancements to existing monitoring programs.
24.(3) cont'd	(e) provisions requiring the use of environmental management practices and programs, such as programs to prevent pollution, reduce the use of pesticides and manage the use of road salt; and,	The draft <i>Humber River Watershed Plan</i> includes recommendations regarding environmental practices and programs. Many Humber watershed municipalities already require the use of environmental management practices (e.g., by-laws to control idling, dumping, filling, pesticide use, sewer use, and tree cutting, and salt management plans)	See section 5.0 of the <i>Humber River Watershed Plan</i> . Also see endnotes for list of relevant municipal by-laws and salt management plans. ²
24.(3) cont'd	(f) criteria for evaluating the protection of water quality and quantity, hydrological features and hydrological functions.	The draft <i>Humber River Watershed Plan</i> includes a framework of watershed objectives, indicators and targets to be used to track or evaluate long term watershed health. This framework provides criteria for evaluating development proposals regarding protection of groundwater and surface water quality and quantity, hydrological features and functions, as well as terrestrial features and functions, aquatic communities and habitat and sustainable community design.	See Appendix D of the <i>Humber River Watershed Plan</i> for a summary of watershed objectives, indicators and targets.

Subsection	Requirement	Conformity Assessment	Document Reference
24.(4)	Major development is prohibited unless, (a) the watershed plan for the relevant watershed, prepared in accordance with subsection 24.(3), has been completed;	A draft <i>Humber River Watershed Plan</i> was completed on June 11, 2007. While the draft watershed plan may be subject to revisions based on detailed consultation with municipal partners and stakeholders and Conservation Authority Board review, any such revisions will not affect satisfaction of <i>Oak Ridges Moraine Conservation Plan</i> requirements.	See draft <i>Humber River Watershed Plan</i> (June 11, 2007).
24.(4) cont'd	(b) the major development conforms with the watershed plan; and	See conformity assessment for section 24.(3)	See document references for section 24.(3)
24.(4) cont'd	(c) a water budget and conservation plan, prepared in accordance with section 25 and demonstrating that the water supply required for the major development is sustainable, has been completed.	See conformity assessments for sections 25.(1) and 25.(2).	See document references for sections 25.(1) and 25.(2)
24.(8)	An application for major development to which this subsection applies shall not be approved unless, (a) the relevant municipality has complied with clause (c) of subsection 24.(4); or	See conformity assessment for section 24.(4)	See document references for section 24.(4)

Subsection	Requirement	Conformity Assessment	Document Reference
24.(8) cont'd	(b) the applicant, (i) identifies any hydrologically sensitive features and related hydrological functions on the site and how they will be protected, (ii) demonstrates that an adequate water supply is available for the development without compromising the ecological integrity of the Plan Area, and (iii) provides, with respect to the site and such other land as the approval authority considers necessary, a water budget and water conservation plan that, (A) characterizes groundwater and surface water flow systems by means of modelling, (B) identifies the availability, quantity and quality of water sources, and (C) identifies water conservation measures.	For any applications received prior to completion of watershed plans, in accordance with the <i>Oak Ridges Moraine Conservation Plan</i> , conformity will have been reviewed and confirmed through applicant submitted studies.	

Subsection	Requirement	Conformity Assessment	Document Reference
25.(1)	Every upper-tier municipality and single-tier municipality shall, on or before April 22, 2003, begin preparing a water budget and conservation plan, in accordance with subsection 25.(2), for every watershed whose streams originate within the municipality's area of jurisdiction.	<p>A water budget study was initiated in January 2003 by the TRCA, in partnership with the Region of York, Region of Peel, and City of Toronto and area municipalities for the Humber River watershed in advance of the overall Humber River Watershed Planning Study.</p> <p>The Region of York's Water for Tomorrow program outlines specific goals for both education and water conservation measures as outlined in the initial scope of work. The Water Efficiency Master Plan Update recommends new and/or updated programs for public education and water conservation measures. New goals for education and water conservation measures will be set once the program implementation plan is completed and approved by council.</p> <p>The Region of Peel's Water Conservation Plan was initiated in 2002 and completed in May 2004. The objectives of the plan are to reduce average annual day demand by 10 per cent, peak day demand by 10 per cent, and wastewater flows by 7 per cent, by the year 2015. Key components of the Region's water efficiency efforts include public education through 'Water Smart Peel', rebate programs and other incentives. The program is targeted to residents throughout the Region.</p> <p>The City of Toronto completed a water efficiency plan in 2002. The plan targets a reduction of peak day water demands by 275 ML/day or approximately 14% of 2001 levels, and a reduction of wastewater flow by 86 ML/day, by 2011.</p>	<p>See TRCA 2003 Capital Budget Workplan and Authority approval to hire consultants to undertake a study terms of reference.</p> <p>Approval to initiate the Humber River Watershed Planning Study according to a general workplan, including a water budget study component, was granted at the Sept. 26, 2003 meeting of the TRCA (Authority Res. #A196/03) and further approval of a detailed workplan was granted on June 25, 2004 (Authority Res. #A191/04).</p> <p><i>York Region Water Efficiency Master Plan Update, 2007.</i></p> <p><i>Regional Municipality of Peel Water Efficiency Plan – Final Report, Region of Peel, 2004.</i></p> <p><i>Water Efficiency Plan, City of Toronto Works and Emergency Services, 2002.</i></p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2)	<p>A water budget and conservation plan shall, as a minimum,</p> <p>(a) quantify the components of the water balance equation, including precipitation, evapotranspiration, groundwater inflow and outflow, surface water outflow, change in storage, water withdrawals and water returns;</p>	<p>The <i>Humber River Watershed Plan</i> includes a quantitative description of the major components of the water balance equation on an average annual basis over the watershed surface area. The water budget was developed based on available information regarding land use, land cover, surficial soil characteristics, surficial geology, stream flow at permanent stream gauges, permitted water withdrawals and spatial variations in long term average precipitation, temperature and evaporation across the watershed. It was developed using Precipitation Run-off Modelling System (PRMS) software. The PRMS model generated recharge estimates for input to the groundwater flow model (MODFLOW software), developed through the York-Peel-Durham-Toronto partnership (YPDT), which was used to estimate the groundwater components of the water budget.</p>	<p>Section 3.2 of the <i>Humber River Watershed Plan</i> describes the overall water budget for the watershed.</p> <p>The <i>Humber River Watershed Scenario Modelling and Analysis Report</i> provides a more detailed description of the existing water budget, including maps and tabular summaries, and the predicted effects of future land and water use and management scenarios on water budget components.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(b) characterize groundwater and surface water flow systems by means of modelling;	<p>The groundwater flow system of the Humber River watershed has been characterized by the groundwater flow model (MODFLOW software), developed through the York-Peel-Durham-Toronto partnership (YPDT).</p> <p>The surface water flow system of the Humber River watershed has been characterized by developing and calibrating a hydrologic model based on Hydrologic Simulation Program – Fortran (HSPF) software. This model was originally developed by the City of Toronto in support of work on the Toronto Wet Weather Flow Management Plan, and was refined for TRCA to support work on the Humber River Watershed Plan.</p>	<p>See section 4.0 of the <i>Humber River State of the Watershed Technical Report – Geology and Groundwater Resources</i> for a characterization of the groundwater flow system.</p> <p>See section 5 of the <i>Humber River State of the Watershed Technical Report – Surface Water Quantity</i> for a summary of the surface water flow system.</p> <p>The <i>Humber River Watershed Scenario Modelling and Analysis Report</i> provides more detailed descriptions of the existing surface and groundwater flow systems, including maps and tabular summaries, and the effects of future land and water use and management scenarios on these systems.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(c) identify, (i) targets to meet the water needs of the affected ecosystems, (ii) the availability, quantity and quality of water sources, and (iii) goals for public education and for water conservation;	<p>The draft <i>Humber River Watershed Plan</i> includes criteria in the form of maps and targets (both quantitative and qualitative) for the protection of groundwater and surface water quality and quantity, hydrological features and functions, as well as terrestrial features and functions and aquatic communities and habitat.</p> <p>Water efficiency plans or programs of the Region of York, Region of Peel and City of Toronto have set goals for water conservation and public education.</p>	<p>See 24(3)(f) above for watershed targets.</p> <p>See the <i>Humber River State of the Watershed Technical Report – Geology and Groundwater Resources</i> and <i>Humber River State of the Watershed Technical Report – Surface Water Quantity</i> for summaries of information on the availability and quality of water sources.</p> <p>Section 5.6.3 of the <i>Humber River Watershed Plan</i> addresses water conservation and supports continuation of municipal water efficiency and public awareness programs.</p> <p>See York Region Water Efficiency Master Plan Update (2007)</p> <p>See section 2.0 of Peel Region's Water Efficiency Plan (2004)</p> <p>See section 1.0 of City of Toronto's Water Efficiency Plan (2002)</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(d) develop a water-use profile and forecast;	<p>The Region of York, Region of Peel and City of Toronto have developed water-use profiles and forecasts as part of studies to update their water master plans. The forecasts consider the effect of planned water conservation measures on future demand.</p> <p>A watershed-based water use profile and forecast was developed as part of preparing the <i>Humber River Watershed Plan</i>.</p>	<p>See section 4.0 of York Region's <i>Long Term Water Project Master Plan Update, April 2004 for water use forecast</i>.</p> <p>See Peel Region's Water Efficiency Plan (2004) for water use forecast.</p> <p>See City of Toronto's Water Efficiency Plan (2002) for water use forecast.</p> <p>See section 5.3 of the <i>Humber River State of the Watershed Technical Report – Surface Water Quantity</i> for the watershed-based water use profile.</p> <p>Also see section 5.3 of the <i>Humber River State of the Watershed Technical Report – Geology and Groundwater Resources</i> for a summary of groundwater takings in the Humber River watershed.</p>
25.(2) cont'd	(e) evaluate plans for water facilities such as pumping stations and reservoirs;	<p>A watershed-scale evaluation of the predicted effects of forecasted water and land use on groundwater levels was completed in support of the <i>Humber River Watershed Plan</i>. Based on this evaluation, appropriate land and water use management strategies have been provided in the draft watershed plan.</p> <p>Further plans for any such facilities are evaluated by municipalities as part of environmental assessment studies and/or updates to water supply master plans and will be reviewed in the context of watershed-based information from the Humber River Watershed Plan, supporting technical reports and available databases.</p>	<p>See section 5.0 of the <i>Humber River Watershed Plan</i> for management strategies.</p> <p>The <i>Humber River Watershed Scenario Modelling and Analysis Report</i> provides a summary of predicted effects of forecasted water and land use on groundwater levels.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	<p>(f) identify and evaluate,</p> <p>(i) water conservation measures such as public education, improved management practices, the use of flow restricting devices and other hardware, water reuse and recycling, and practices and technologies associated with water reuse and recycling,</p> <p>(ii) water conservation incentives such as full cost pricing, and</p> <p>(iii) ways of promoting water conservation measures and water conservation incentives;</p>	<p>All upper-tier and single-tier municipalities in the Humber River watershed have developed water efficiency plans and programs that identify and evaluate water conservation measures, incentives and ways of promoting water conservation measures and incentives. The draft Humber River Watershed Plan supports the recommendations of the municipal water efficiency plans and programs and describes management strategies that would further contribute to achieving the objectives and targets of these plans/programs (e.g., adopting policies and providing incentives to support the practice of rainwater harvesting for stormwater management and water conservation benefits).</p>	<p>See section 5.6.3 of the <i>Humber River Watershed Plan</i>.</p> <p>See sections 5.0 and 6.0 of York Region's <i>Water Efficiency Master Plan Update (2007)</i> for the identification, evaluation and recommendation of water conservation measures and education.</p> <p>See sections 6.0 and 9.0 of Peel Region's <i>Water Efficiency Plan (2004)</i>.</p> <p>See sections 4.0 and 6.0 of City of Toronto's <i>Water Efficiency Plan (2002)</i>.</p>
25.(2) cont'd	<p>(g) analyse the costs and benefits of the matters described in clause (f);</p>	<p>All upper-tier and single-tier municipalities in the Humber River watershed have developed water efficiency plans and programs that analyse the costs and benefits of their recommended water conservation measures, incentives and promotion strategies.</p>	<p>See Section 5.2.3 of York Region's <i>Water Efficiency Master Plan Update(2007)</i> for the cost analysis of water conservation measures</p> <p>See section 8.0 of Peel Region's <i>Water Efficiency Plan (2004)</i></p> <p>See section 5.0 of City of Toronto's <i>Water Efficiency Plan (2002)</i></p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(h) require the use of specified water conservation measures and incentives;	<p>York Region's Water for Tomorrow program used specific water conservation measures and incentives as part of the original capital plan. The Water Efficiency Master Plan Update also recommends the use of specific water conservation measures and incentives.</p> <p>The Region of Peel and City of Toronto water efficiency plans also use specific water conservation measures and incentives such as system leak detection, computer controlled irrigation, watering restrictions, toilet replacement, clothes washer replacement, and indoor and outdoor water audits.</p>	<p>See section 6.0 of York Region's <i>Water Efficiency Master Plan Update (2007)</i> for the recommended program strategy.</p> <p>See section 6.0 of Peel Region's <i>Water Efficiency Plan (2004.)</i></p> <p>See section 4.0 of City of Toronto's <i>Water Efficiency Plan (2002)</i>.</p>
25.(2) cont'd	(i) contain an implementation plan for those specified measures and incentives that reconciles the demand for water with the water supply;	<p>York Region developed an implementation plan for the program as part of the scope of work in 1998. The Water Efficiency Master Plan Update has recommended an updated program strategy, the development of an implementation plan for the updated program will begin once the Master Plan Update has been finalized.</p> <p>The Peel Region and City of Toronto water efficiency plans include implementation schedules.</p>	<p>See Section 6.0 of York Region's <i>Water Efficiency Master Plan Update (2007)</i> for the recommended program strategy</p> <p>See section 9.0 of Peel Region's <i>Water Efficiency Plan (2004)</i>.</p> <p>See section 6.0 of City of Toronto's <i>Water Efficiency Plan (2002)</i>.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
25.(2) cont'd	(j) provide for monitoring of the water budget and water conservation plan for effectiveness.	<p>York Region's <i>Water Use Efficiency Master Plan Update</i> , Peel Region's <i>Water Efficiency Plan</i> and City of Toronto's <i>Water Efficiency Plan</i> recommend monitoring and evaluation programs be implemented.</p> <p>The draft <i>Humber River Watershed Plan</i> includes recommendations regarding changes or enhancements to existing environmental monitoring programs and other area, site-or issue-specific monitoring requirements that provide for, or improve capacity for monitoring of the water budget (e.g., additional climate stations, stream gauges, groundwater monitoring wells etc.).</p>	<p>See Section 9.0 of York Region's <i>Water Efficiency Master Plan Update</i>(2007)</p> <p>See section 9.0 of Peel Region's <i>Water Efficiency Plan</i> (2004).</p> <p>See section 6.0 of City of Toronto's <i>Water Efficiency Plan</i> (2002).</p> <p>See section 5.6 of the <i>Humber River Watershed Plan</i> for recommended enhancements to existing monitoring programs.</p>

Subsection	Requirement	Conformity Assessment	Document Reference
27.(1)	Except with respect to land in Settlement Areas, all development and site alteration with respect to land in a subwatershed are prohibited if they would cause the total percentage of the area of the subwatershed that has impervious surfaces to exceed, (a) 10 per cent; or	The Humber River Watershed Planning Study assessed the current and projected future percent impervious cover for each Oak Ridges Moraine subwatershed (based on methods suggested in draft Technical Paper #13 which exclude Settlement Areas, utilizing subwatershed boundaries defined in draft Technical Paper #9). These estimates indicate that no Oak Ridges Moraine subwatersheds in the Humber River Watershed exceed the 10% impervious cover criteria for current conditions (based on 2002 land use), nor will they exceed 10% upon build-out of municipal official plans approved as of January 2005.	See <i>Humber River Watershed Scenario Modelling and Analysis Report Appendix B – Oak Ridges Moraine Subwatersheds Assessment Report</i> .
27.(1) cont'd	(b) any lower percentage specified in the applicable watershed plan.	No lower percentage has been specified.	N/A

Endnotes:

1.
 - Ministry of the Environment (2007) Oak Ridges Moraine Conservation Plan – Watershed Plans, Technical Paper #9.
 - Ministry of the Environment (2007) Oak Ridges Moraine Conservation Plan – Water Budgets, Technical Paper #10.
 - Ministry of the Environment (2007) Oak Ridges Moraine Conservation Plan – Water Conservation Plans, Technical Paper #11.
 - Ministry of the Environment (2007) Oak Ridges Moraine Conservation Plan – Subwatersheds (Impervious Surfaces), Technical Paper #13.

2.
 - City of Brampton Fill By-law, By-law 143-95.
 - City of Brampton Refuse By-law, By-law 381-2005.
 - City of Brampton Sewage By-law, By-law 90-75.
 - City of Brampton Salt Management Plan, 2005.
 - City of Brampton Tree Preservation By-law, Bylaw 38-2006.
 - City of Brampton Woodlot Conservation By-law, By-law 70-2001 as amended by By-law 402-2005.
 - City of Toronto Municipal Code, Chapters 455 (Filling and Grading), 517 (Idling of Vehicles and Boats), 548 (Littering and Dumping of Refuse), 612 (Pesticides, Use of), 658 (Ravine Protection), 681 (Sewers), and 813 (Trees),
 - City of Toronto Salt Management Plan, 2004.
 - City of Vaughan Fill By-law, By-law 189-96 as amended by By-law 265-2006.
 - City of Vaughan Idling of Vehicles By-law, By-law 170-2004.

- City of Vaughan Littering and Dumping By-law, By-law 3-2004.
 - City of Vaughan Private Property Tree Protection By-law, By-law 185-2007 as amended by By-law 205-2007.
 - City of Vaughan Sewer Use By-law, By-law 12-74.
 - City of Vaughan Tree Protection By-law (Public Property), By-law 95-2005.
 - Dufferin County Forest Conservation By-law, By-law 2006-15.
 - Dufferin County Salt Management Plan, 2005.
 - Region of Peel Salt Management Plan, 2007.
 - Region of Peel Sewer Use By-law, By-law 90-90.
 - Simcoe County Tree-cutting By-law, By-law 5289.
 - Simcoe County Anti-dumping By-law, By-law 4805.
 - Town of Caledon Dumping on Private or Municipal Property By-law, 87-100.
 - Town of Caledon Fill By-law, By-law 2007-59.
 - Town of Caledon Healthy Horticultural Landscapes By-law, By-law 2003-81 as amended by By-law 2005-82.
 - Town of Caledon Salt Management Plan, 2005.
 - Town of Caledon Woodlands Conservation By-law, By-law 2000-100.
 - Town of Richmond Hill Salt Management Plan, 2005.
 - Town of Richmond Hill Tree Preservation By-law (Private Property), By-law 41-07.
 - Town of Richmond Hill Water Use Restrictions By-law, By-law 157-05.
 - Township of King Water Restriction By-law, By-law 75-43.
 - York Region Salt Management Plan, 2004.
 - York Region Sewage By-law, By-law S-0064-2005-009.
 - York Region Trees By-law, By-law TR-0004-2005-036.
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RES.#D31/07 -

HEADWATER DRAINAGE FEATURES

Approval of the Evaluation, Classification and Management of Headwater Drainage Features: Interim Guideline (March, 2007) prepared for Toronto and Region Conservation Authority (TRCA), Credit Valley Conservation (CVC) and other conservation authorities.

Moved by: Grant Gibson
Seconded by: Gay Cowbourne

THE BOARD RECOMMENDS TO THE AUTHORITY THAT Toronto and Region Conservation Authority (TRCA) staff commence implementation of the Evaluation, Classification and Management of Headwater Drainage Features: Interim Guideline (March, 2007);

THAT staff continue to collaborate with project partners in conducting primary research examining the natural functions of small drainage features in order to facilitate refinements to the guideline;

THAT direction be given to staff to engage municipalities and the development industry in policy development and research initiatives;

AND FURTHER THAT the interim guideline be updated as necessary based on the results of the research and that the results be reported back to the Watershed Management Advisory Board.

CARRIED

BACKGROUND

Past land uses have altered headwater drainage features through a combination of standard engineering practices (ditching, burying and diverting) and agricultural activities (tile drains and infilling). There remains significant gaps in understanding of the ecological importance of these features, particularly ill-defined, non-permanently flowing features and their functions. These features are referred to as Headwater Drainage Features (HDFs). Because HDFs are small and do not convey flow year round, they may not appear to have significant function. However, the loss of these features may be contributing to watershed-scale impacts on a cumulative basis. This makes evaluation of impacts when alteration is contemplated through the development process very difficult. The lack of understanding can potentially lead to mismanagement of these features and loss of function in the face of new urban development. In order to address these problems, staff has completed a literature review and interim guideline to provide support and direction for headwater management.

RATIONALE

Staff completed an extensive literature review which examined the current scientific understanding of HDFs. Staff then took the results of the review and incorporated the findings into an interim guideline document. The guideline provides conservation authority (CA) staff with direction on how to evaluate, classify and manage HDFs in the landscape through the development process in order to ensure critical functions are not lost. All neighbouring CAs (including Central Lake Ontario Conservation Authority, Lake Simcoe Region Conservation Authority, Credit Valley Conservation and Conservation Halton) have been engaged in the development of both the literature review and interim guideline, and will continue to be involved in the next phases of this project. The Town of Markham completed a similar study in 2004, entitled Markham Small Streams Study. While Markham's approach was both progressive and precautionary, staff recognize that there is need for a broader application of the concepts introduced in Markham's study at a watershed scale. TRCA's study will provide consistency amongst CAs in the Greater Toronto Area (GTA), and it recognizes that there remains outstanding gaps in the understanding of these systems in Southern Ontario.

In order to improve the science and support for the guideline, staff is undertaking a two-year research study examining the hydrological, biological and sediment transport functions of HDFs by collaborating with academic, agency and private sector practitioners. Once the research and reporting are completed, staff intend to use the findings to refine the guideline document, as necessary, and provide support for a finalized guideline by the end of the 2008 fiscal year.

DETAILS OF WORK TO BE DONE

Fieldwork will be conducted on a variety of headwater drainage features throughout the GTA in order to capture differences in soils and land use. Thus far, staff has identified sites in Brampton, Oakville, Uxbridge and possibly Waterloo. Staff will be adding sites in a number of other areas within the Greater Golden Horseshoe. Staff is collaborating with academic experts at the University of Waterloo and the University of Toronto to examine how HDFs contribute food (invertebrates and leaf litter) to downstream aquatic systems, and their role in stormflow attenuation, baseflow contribution and sediment transport processes within streams. The research will be conducted during the field seasons of 2007 and 2008, with data analysis occurring by December of 2008, and refinements to the guideline being completed by March, 2009.

FINANCIAL DETAILS

Financial support for the initial phase (literature review and guideline development) of this project was provided by the Great Lakes Sustainability Fund, Fisheries and Oceans Canada and The Conservation Foundation of Greater Toronto. The cost of this phase was approximately \$10,000. The research component is being supported by the Oak Ridges Moraine Foundation, the Regional Municipality of Peel, the Ministry of Natural Resources, Lake Simcoe Region Conservation Authority and Conservation Halton. Thus far, staff has secured \$180,000 for the two-year project. Additional funding is being sought from the regional municipalities of Durham and York, the Great Lakes Sustainability Fund and Fisheries and Oceans Canada to fill the outstanding funding gap of \$60,000. Stakeholder consultation may require an additional minimal cost of \$5,000.

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Date: August 30, 2007

RES.#D32/07 - MALTON ENVIRONMENTAL STEWARDSHIP PROJECT
Year 3 Progress Report. Progress report on the accomplishments and next steps for the Malton Environmental Stewardship Project.

Moved by: Grant Gibson
Seconded by: Gay Cowbourne

THE BOARD RECOMMENDS TO THE AUTHORITY THAT Toronto and Region Conservation Authority (TRCA) continue to work with the City of Mississauga, Malton residents, Mississauga-Airport Rotary Club, Ontario Trillium Foundation and the Regional Municipality of Peel to implement the Malton Environmental Stewardship Project (MESP) work plan deliverables;

AND FURTHER THAT staff report back to the Watershed Management Advisory Board upon the completion of this project in the fall of 2008 to acknowledge the project's four year accomplishments, project partners and how to sustain the project into the future.

CARRIED

BACKGROUND

At Authority Meeting #6/06, held on July 28, 2006, Resolution #A169/06 was approved directing staff to continue to report back annually regarding the milestones and accomplishments of the Malton Environmental Stewardship Project (MESP).

The MESP began in July, 2004 as a four-year community initiative through an Ontario Trillium Foundation grant of \$253,700. Since July 28th, 2006, the Malton Environmental Stewardship Project has continued to provide hands on environmental stewardship opportunities engaging local schools, faith groups, agencies, businesses and the many culturally diverse communities living within the Malton community, City of Mississauga. This project is currently in its fourth and final year of Ontario Trillium Foundation funding, which ends in June, 2008. With the project in its final year, planning has been initiated with the project partners to continue to build capacity within Malton and define the future direction of stewardship within the community.

MESP's main stewardship activities are:

- creek clean-up and habitat naturalization plantings;
- outreach education programs to foster a connection to nature, provide a better understanding of the importance of natural habitats, and promote lifestyle practices to reduce negative environmental impacts;
- engage the many segments of Malton's culturally diverse community; and
- build community capacity through strong, local partnerships with organizations and residents to continue supporting stewardship in Malton.

To date, this project has reached over 15,500 people and engaged over 2,400 volunteers who contributed over 9,250 hours of their time. The program has been very successful in meeting or exceeding targets. A summary of the expected results and accomplishments for year three are summarized as follows:

Expected Results (July 1, 2006 – June 30, 2007)	Accomplishments (July 1, 2006 - June 30, 2007)
6 naturalization/clean-up/restoration events each year in 7 community action sites during the life of the project.	8 clean-up/habitat naturalization planting events - additional activities include invasive species removal.
Approximately 2,000 native trees, shrubs and meadow plants to be planted during the life of the project.	320 native trees and shrubs planted this year (1,352 total to date).
Approximately 5,600 square metres of forest, wetland, riparian and meadow areas enhanced during the life of the project.	Over 7,800 square metres of riparian, meadow and forest areas enhanced to date.
2 wildlife structures (two hibernacula and two habitat piles) and 18 nest boxes installed for the duration of the project.	20 bird nest boxes constructed for installation in backyards in Malton.
3 community/business education workshops/seminars to be held each year.	3 community workshops/seminars. 6 youth environmental education programs. 2 presentations to community groups. 1 interpretive nature hike.
An annual environmental festival hosted each year.	1 annual Malton Stewardship Day festival.
Malton Environmental Stewardship Group (Malton Community Action Area Advisory Committee) established with representation from key community stakeholder groups.	Malton Environmental Stewardship Group (MESG) formed in fall of 2004 and remains engaged in meetings and assisting with events.
An environmental youth corp to be formed for participation in stewardship activities.	MESP Youth Action Group formed in late 2004 and has membership of 70+ youth aged 14-25.
2 schools to participate in stewardship activities each year.	2 schools participated in activities.
Sustainable Schools Challenge program introduced to local schools.	15 local schools were provided with information packages which included local environmental activities for their participation.
5 activities and events to be held by each participating school annually.	Participating schools engaged in 2-6 environmental activities each.

DETAILS OF WORK TO BE DONE

Staff will continue to work with the City of Mississauga, Malton residents, Mississauga-Airport Rotary Club, Ontario Trillium Foundation, Regional Municipality of Peel and community partners to implement the work plan deliverables for the final year of the project which ends in June, 2008. Staff will continue to build capacity within the community, along with creating new partnerships and ideas, as part of the future of stewardship in Malton.

FINANCIAL DETAILS

This project has been granted core funding for four years by the Ontario Trillium Foundation in the amount of \$253,700 and subsequently has received annual funding from the Regional Municipality of Peel's Sustainable Communities Program. The amount received for year three stewardship activities was \$30,000. MESP has an average annual budget of \$100,000. The following funds have also been raised over the last year:

- \$500 corporate donation from United Parcel Service (UPS);
- \$5,000 from Cargill Inc. and Cargill Foods Toronto.

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Date: August 24, 2007

SECTION IV - ITEMS FOR THE INFORMATION OF THE BOARD

RES.#D33/07 - UPPER MIMICO CREEK AQUATIC HABITAT RESTORATION PROJECT

Update on the commencement of Phase I construction of the Upper Mimico Creek Aquatic Habitat Restoration Project.

Moved by: Maria Augimeri

Seconded by: John Parker

IT IS RECOMMENDED THAT the staff report on commencement in September, 2007 of Phase 1 of the Upper Mimico Creek Aquatic Habitat Restoration Project be received.

CARRIED

BACKGROUND

The Upper Mimico Creek Aquatic Habitat Restoration Project site is located in the City of Brampton, bordered by Intermodal Drive to the south, Queen Street to the north, the Canadian National (CN) Brampton Intermodal rail terminal to the west, the A.J. Billes Canadian Tire Distribution Centre to the east and a retired farm field to the northeast.

The purpose of this project is to restore the aquatic and terrestrial ecosystems of Mimico Creek within the study area, provide integrated and naturalized solutions to stormwater management and generally address issues of water quality, increased flows, natural cover and the impacts of adjacent land uses. Detailed designs and cost estimates have been developed by the consultant for in-stream elements such as natural channel design and associated stormwater attenuation features, as well as barrier mitigation and removal. Detailed designs for terrestrial habitat such as floodplain restoration and habitat enhancement are being developed and simultaneously integrated into the phased components by Toronto and Region Conservation Authority (TRCA) staff.

A natural corridor design is proposed within the project area to restore natural channel form and function. A holistic approach was used to guide the design process, which considers geomorphology, hydrology and downstream reaches with respect to benefits and constraints, and future land use changes.

All required approvals have been obtained and the construction of Phase I is ready to commence in September, 2007.

RATIONALE

This project offers an opportunity to substantially improve channel conditions and aquatic habitat within and beyond the project area. The in-stream barriers that fragment the aquatic system and prevent fish from accessing available habitat will be removed, thereby enhancing the health and productivity of the local aquatic community. Greater variability with respect to topography and vegetation in the floodplain will also improve the terrestrial and aquatic habitat. Wetland and oxbow features will be used to mimic and enhance the retention and detention functions of natural channel systems. Riparian plantings along the watercourse will provide shade to the creek, improve channel stability and increase the diversity of habitat available for local wildlife. The remainder of the floodplain will benefit from greater canopy cover, with strategic nodal plantings used to increase terrestrial habitat value while addressing identified flood risks.

Overall, the restoration objective is to employ natural channel design principals to:

- re-establish a more naturalized channel form within the valley;
- improve terrestrial and aquatic habitat; and
- enhance water and sediment retention and detention functions.

Project Deliverables

- 1.2 km of naturalization and enhancement of upper Mimico Creek;
- 1.5 ha of meadow wetland features;
- 4 oxbow features;
- 220 trees and 4000 shrubs for wetland, riparian and upland plantings;
- 1 km of aquatic habitat enhancement with riffle pool sequences;
- 3 in-stream barriers removed;
- 700 m of concrete lining removed and naturalized bank treatment applied.

DETAILS OF WORK TO BE DONE

- Begin construction of Phase I in September, 2007.
- Implement pre- and post-construction aquatic monitoring as part of continual efforts to assess the ecological benefits of project implementation.
- Phased implementation of the remaining 4 components of the Upper Mimico Aquatic Habitat Restoration Project will continue throughout 2008-2010.
- Continue to strengthen and pursue relationships with municipal partners and the industrial/commercial community surrounding the upper Mimico site.
- Investigate and secure matching funding for future implementation through a variety of private and public partnerships.

FINANCIAL DETAILS

Phase I construction will cost \$361,000. Funding for Phase I implementation is available in the amount of \$70,000 through Region of Peel Regeneration and \$150,000 through the Regional Municipality of Peel Climate Change Enhancement funding. An additional \$141,000 has been made available through TRCA and other private funding sources.

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Date: August 30, 2007

RES.#D34/07 -

CLAIREVILLE COMMUNITY STEWARDSHIP PROJECT

Status Report. Status report on the Claireville Community Stewardship Project.

Moved by: Maria Augimeri

Seconded by: John Parker

IT IS RECOMMENDED THAT the staff report on the status of the Claireville Community Stewardship Project be received.

CARRIED

BACKGROUND

At Authority Meeting #3/06, held on April 28, 2006, Resolution #A88/06 was approved as follows:

THAT staff be authorized to take such action as is necessary to implement the Claireville Community Stewardship project;

AND FURTHER THAT staff report back to the Authority on the progress of the Claireville Community Stewardship project.

Claireville Conservation Area is an 848 hectare (2,100 acre) property owned by Toronto and Region Conservation Authority (TRCA). The area is located in the West Humber subwatershed in the Humber River watershed. It is one of the most publicly accessible natural environment properties in the Regional Municipality of Peel. It has vast tracts of natural areas, open field, a designated heritage barn and existing recreation and educational facilities. There are many residential communities, businesses and special interest groups who, along with local and regional municipal governments, have expressed an interest in seeing a wider variety of outdoor recreation, education, and commercial recreation activities and programs at Claireville.

The Friends of Claireville (FOC) are a volunteer group who, since their inception in 1999, has sought to educate the public on environmental issues and to engage the community in environmental stewardship activities at Claireville Conservation Area. Joint initiatives with TRCA include community plantings (over 21,000 trees planted to date), clean-ups, guided hikes and other community events that reach out to families, seniors, youth and new Canadians. The FOC are also an active group on the Humber Watershed Alliance.

TRCA has worked closely with the FOC for over 7 years. During this time, both groups have identified opportunities for restoration projects and the further development of community stewardship. Although Claireville is not an operating conservation area, many residents from the surrounding areas enjoy passive recreation, such as hiking and nature viewing on site.

The Claireville Community Stewardship Project (CCSP) was initiated in December of 2005 in partnership with the Friends of Claireville as a three-year community initiative through an Ontario Trillium Foundation (OTF) grant. The goal of the CCSP is to strengthen the organizational structure and capacity of the FOC and to foster awareness, build community and restore the ecological health of Claireville Conservation Area through a hands-on environmental stewardship program that provides youth, adults, community and business leaders with the knowledge and tools required to help revitalize and care for the watershed's natural resources.

The CCSP's main stewardship activities and highlights are as follows:

1. Shoreline clean-up and habitat naturalization plantings:
 - Planted over 2100 native trees and shrubs and over 100 bags of garbage and recyclables collected.
2. Volunteer Environmental Monitoring - Claireville stewards in the field:
 - 60 registered stewards.
 - Monitored water quality in the West Humber River at 3 different sites using benthic macroinvertebrates.
 - Ongoing monitoring of tree growth and success of 5 previous planting sites. Sites include community plantings as well as TRCA staff and mechanical plantings.
 - Mulched over 1,000 native trees and shrubs to reduce competition by grass.
3. Annual Claireville fishing festival:
 - Over 100 members of the community attended.

4. Community engagement in stewardship activities for the protection, restoration and enhancement of the Claireville Conservation Area.
5. Management plan:
 - Provide input into the updates of the Claireville Management Plan.

To date, this project has reached over 113,000 people, engaged over 610 volunteers, and 2 Ontario Ministry of Natural Resources Stewardship Ranger Crews. The program has been very successful in meeting or exceeding its targets.

Other activities associated with this project include the development of agricultural uses on a portion of the Claireville land and heritage interpretation with the potential assistance of the Architectural Conservancy of Ontario. All parties work together to accomplish common and complementary objectives.

FINANCIAL DETAILS

A total of \$100,500 from OTF has been approved over a three-year period. Other funding sources for this project will include: TD Friends of the Environment (proposed), Ministry of Natural Resources: Community Fisheries and Wildlife Involvement Program (CFWIP) (proposed), corporate sponsorship (proposed) and the Region of Peel capital budget (\$24,450). The total cost of this three-year project is estimated at \$280,718.

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Date: September 5, 2007

RES.#D35/07 - WATERSHED COMMITTEE MINUTES

Moved by: Maria Augimeri

Seconded by: John Parker

THAT Section IV items 8.3.1 - 8.3.2, inclusive, in regards to watershed committee minutes, be received.

CARRIED

Section IV Items - 8.3.1 - 8.3.2, Inclusive

DUFFINS CARRUTHERS WATERSHED RESOURCE GROUP

Minutes of Meeting #1/07, held on February 21, 2007

ROUGE PARK ALLIANCE

Minutes of Meeting #3/07, held on March 23, 2007.

TERMINATION

ON MOTION, the meeting terminated at 11:43 a.m., on Friday, September 14, 2007.

Anthony Perruzza
Vice Chair

Brian Denney
Secretary-Treasurer

/ks