

on the Environmental Registry for a 60-day public review and comment period starting October 23, 2008 and ending December 22, 2008. MOE posted a policy decision with a revised Guideline C-4: The Management of Biomedical Waste in Ontario, 2009 ("2009 Guideline") on January 12, 2010. For a review of this decision, please refer to Section 4.4 of this Supplement.

The regulatory framework that governs the management of biomedical waste in the province includes:

- Part V of the *Environmental Protection Act* (EPA);
- Regulation 347 – General-Waste Management; and
- the revised Guideline C-4: The Management of Biomedical Waste in Ontario, 2009

MOE revised the 1994 Guideline, rather than converting it into an *EPA* regulation, as the applicants had requested. The introduction to the 2009 Guideline noted that waste generators should follow the 2009 Guideline as "best management practices", but that waste carriers and receivers will be bound by Certificates of Approval (Cs of A) under the *EPA*. The new Guideline "will in part inform" the case by case conditions that the ministry will impose when it approves Cs of A for carriers and receivers of biomedical waste. It must be noted, however, that under section 18 of Reg. 347 the generators of biomedical waste are obliged to be registered with the MOE Hazardous Waste Information Network and report on the quantities and types of waste they generate.

ECO Comment

While the provisions of the revised 2009 Guideline will be incorporated into the Certificate of Approval process for biomedical waste management companies, it is not clear how the 2009 Guideline will ensure biomedical waste generators comply. In other words, MOE's decision to simply revise the guideline instead of converting it into a regulation does not address the applicants' main concern, which is generators' non-compliance with the Guideline's provisions and the risks to public health and the environment this poses.

The ECO has some procedural concerns. MOE did not meet the 60-day deadline established under section 70 of the *EBR* for informing applicants of a decision to review. In addition, MOE's initial review took 14 months longer than it promised without informing the applicants of the delay.

Review of Applications R2006006, R2006010, and R2007010:

5.2.3 Review of the Need to Create Legislation to Protect the Waterloo and Paris/Galt Moraines (Review Undertaken by MOE)

Background/Summary of Issues

In 2006 and 2007, the ECO received several applications for review that draw attention to tensions between development pressures in communities in the Grand River and adjacent watersheds and protection of the ecosystems that several urban centres depend on for water.

Growth Plan

In 2006, the Ontario government prepared the Growth Plan for the Greater Golden Horseshoe ("Growth Plan") under the *Places to Grow Act, 2005*, which is a decision-guidance framework that establishes specific density targets and planning priorities for managing growth in the region. According to the Growth Plan, Ontario's population is supposed to increase by four million people by 2031. The Growth Plan establishes five urban growth centres within the Grand River watershed: downtown Guelph, uptown Waterloo, downtown Kitchener, downtown Cambridge and downtown Brantford. These communities

largely depend on groundwater and/or limited surface water supplies for drinking water. Nutrients and other pollutants from treated and untreated wastewater are also discharged into the Grand River.

There is a tension between the Growth Plan population targets and protecting the water resources of the watershed. Population growth may be appropriate where there is adequate access to water supplies. However, the long-term supply of potable water will be adversely affected by increased development and demand for water. If demand for water outstrips supply, municipalities will need to invest in bringing water into the area to deal with water shortages, as well as ensure its water infrastructure can handle the discharged water.

The situation is further compounded by the effects of climate change, where Ministry of Natural Resources (MNR) 2010 models predict that by mid-century Southern Ontario will experience at least an average 2.6 degrees Celsius warming in the summer with consequent increased evapotranspiration.

The Moraines

Moraines are a geological feature formed at the edge of glaciers traversing across the landscape. Moraines vary in composition, size, height and thickness depending on the underlying geological material the glacier travelled across.

The glacial sand and gravel deposits of moraines act like a sponge, absorbing rain and snowmelt. The water stored in the moraine's aquifers is filtered and slowly released into lakes, rivers and streams. As such, moraines are often an important source of drinking water and act a recharge/discharge area for watersheds and their communities. Furthermore, the forested areas of the moraine typically support diverse ecological habitats.

Numerous advancing and retreating glaciers in the glacial era resulted in the formation of a series of moraines in Ontario. In total, there are 14 moraine complexes in the Grand River Watershed, including the Waterloo Moraine, the Paris Moraine and the Galt Moraine. These three moraines are the subject of the three separate *EBR* applications for review received by the ECO that express concern that development pressures in the region are impeding the moraine's hydrologic cycle and threatening water resources of the watershed.

The Waterloo Moraine:

The Waterloo Moraine spans approximately 400 square kilometres of the Grand River watershed in the Region of Waterloo. The municipalities of Waterloo and Kitchener developed on the central portion of the moraine, and as urban growth centres in the Growth Plan, are required to meet specified resident and job density targets by 2031.

Much of the moraine's major recharge area is located to the west of the urban area in a rural agricultural area. The multi-aquifer provides water to the majority of Kitchener/Waterloo inhabitants and those in rural areas west of the municipalities. The Region of Waterloo Water Supply Master Plan indicates that there is sufficient groundwater supply to meet the 2031 Growth Plan targets, but only if water conservation and efficiency programs are implemented, and a pipe to Lake Erie would be required after 2031. Furthermore, wastewater is already an issue in Waterloo (pop. 478,000), where 13 treatment plants discharge wastewater into the Grand River or its watershed. The region expects to spend \$826 million in the next 10 years in treatment upgrades and expansions to water and wastewater treatment.

The Paris and Galt Moraines:

The Paris and Galt Moraines extend 560 square kilometres from Caledon to Norfolk County. These moraines are significantly lower in relief than the Waterloo Moraine and have a relatively permeable surface geology. These features contribute to high levels of recharge into the moraines, which support numerous coldwater streams and wetlands. Studies indicate the potential presence of locally important aquifers along and beneath the moraines. Moreover, there are significant natural heritage features that warrant recognition unto themselves.

While the moraines are not subject to imminent development pressures, Guelph (pop. 115,000) and Cambridge (pop. 131,000), as Growth Plan urban centres, are on course to reach resident and job gross density targets by 2031. This growth will be primarily outside the moraines. Furthermore, significant aggregate operations are occurring in Puslinch Township, between the Paris and Galt Moraines. The City of Guelph Water Supply Master Plan indicates the need for additional ground and/or surface water supplies by 2017-2025. Cambridge is examining the option of bedrock wells to meet its water demands.

The Applications for Review

Waterloo Applications:

In June and July 2006, two applications for review (the “Waterloo applications”) were submitted to the ECO outlining the need for a new policy or act to protect the Waterloo Moraine. They asserted that increased population growth would have a detrimental affect on the quality and quantity of groundwater and result in pollutants contaminating regional wells. They also expressed concern over an increase in the risk of floods and water shortages if the recharge areas are not allowed to function naturally.

The applicants further contended that current policies and laws are insufficient to protect the moraine. They asserted that the region’s new Environmentally Sensitive Landscapes policy, which aims to identify and protect areas of high quality environmental features, does not contain adequate source water protection measures and only protects a portion of the groundwater recharge lands of the moraine. Furthermore, they argued that current laws and policies, i.e., the *Ontario Water Resources Act (OWRA)*, *Safe Drinking Water Act*, and Provincial Policy Statement, 2005 (PPS), do not safeguard the ecological integrity of the moraine. Instead, the applicants proposed that a new act or policy be created to protect the groundwater and recharge areas of the moraines.

Paris/Galt Application:

In May 2007, applicants filed an application for review (the “Paris/Galt application”) requesting a review of the need for a new policy or law to protect the Paris and Galt Moraines and their groundwater recharge area in the Grand River watershed. The applicants stated that municipalities within the watershed, such as Guelph, Cambridge, Kitchener and Waterloo, are all designated as growth areas in the province’s Growth Plan and largely dependent on groundwater resources to supply their municipal drinking water. The applicants contended it is critical to protect the moraines before the surrounding growth areas encroach into the moraines. The applicants also urged the province to analyze the cumulative effects of aggregate extraction on groundwater recharge in the moraine areas.

The applicants argued the “inter-jurisdictional complexity of protecting the Paris and Galt Moraines warrant provincial leadership in protection policy.” Due to the geographic size of this system of moraines, the applicants stated that the area requiring protection is more extensive than the municipal source water protection areas outlined in the *Clean Water Act, 2006*.

The ECO sent the three applications to the Ministry of the Environment (MOE), the Ministry of Natural Resources (MNR) and the Ministry of Municipal Affairs and Housing (MMAH).

Ministry Response

MNR and MMAH denied all three applications. The ECO’s review of their responses can be found in the Supplement to our 2007/2008 Annual Report (pages 259-262).

After an extended delay, in April and July 2007 respectively, MOE responded to the applicants of the Waterloo and Paris/Galt applications and agreed to conduct a review into the necessity of a law or policy to protect the moraines. However, the ministry stated that items not under MOE’s mandate, such as the PPS 2005, the Greenbelt Plan and the Growth Plan, would not be part of the review. Likewise, MOE stated that, in keeping with provisions in the *EBR*, the ministry’s review would not examine decisions made within the last five years (e.g., *Clean Water Act, 2006 (CWA)*; the *OWRA*; *Nutrient Management Act, 2002*; *Environmental Assessment Act*). Finally, the ministry outlined that its review would not affect current planning decisions.

In May 2009, MOE informed the applicants that it had completed its review on the Waterloo and Paris/Galt applications. It produced a single report responding to the three sets of *EBR* applications on May 4, 2009. The ministry's report concluded that no new provincial policy or legislation was required to protect the moraines.

MOE's report surveyed the current policy and legislative framework to determine if it was sufficient to protect groundwater recharge in the Grand River watershed (and other watersheds along the moraines) from the effects of urban development and aggregate extraction on the moraines. The review also examined the framework for potential gaps in knowledge of the hydrogeology of the moraines and the ability of laws and policies to protect the hydrologic function of the moraines.

The review was completed with the assistance of a consultant, a ministry review team, and an inter-ministry committee made up of staff from MNR, MMAH, the Ministry of Agriculture, Food and Rural Affairs, the Ministry of Northern Development, Mines and Forestry, the Ministry of Energy and Infrastructure and the Ministry of Transportation. The MOE review team examined provincial, regional and municipal policies and consulted with municipalities, conservation authorities and provincial staff.

MOE asserted that its review broadens the understanding of the functions of the moraines, which benefits other government agencies, municipalities, conservation authorities and stakeholders. MOE's report describes the hydrology of the moraines including the: boundaries, geology, hydrogeology, recharge and storage, water supply, ecological features, water quantity and budget and water quality. The report also outlines key scientific considerations such as the scope of hydrogeology evaluations and ecological reserves. The report supported the use of monitoring data to guide future planning and land use policy decisions and the development of technical guidance documents.

MOE's report found that the Waterloo Moraine has been extensively studied for decades. Although the Waterloo Moraine is experiencing local contamination issues at several well fields, particularly from road salts and fertilizers, the report noted that the area is not facing issues related to decreased water quantity. The report found that the Region of Waterloo has been pro-active in water resource protection and has developed an extensive monitoring program and sub-watershed development plans. Nevertheless, no specific land-use controls have been proposed. The report confirmed that much of the major recharge area is located to the west of the urban area in an agricultural area of the moraine.

With respect to the Paris and Galt Moraines, MOE's report found that there was detailed hydrogeology data for the developed areas of the moraines but insufficient detailed data for the majority of the moraines. The report found that water level trends are stable and there are high levels of recharge into the moraines, which supports coldwater streams and wetlands. The presence of large scale aquifers, however, has not yet been confirmed within the moraines. While MOE's report noted that groundwater quality is affected by agriculture, septic systems and de-icing material, gravel extraction in the area does not appear to have significant impacts on the groundwater flow systems or surface water and wetlands.

Upon reviewing existing laws and policies (except those excluded from the review), the report concluded that a new provincial law or policy for the moraines was unwarranted at this time. Although not officially part of the review, the report found that the CWA, the PPS, the Greenbelt Plan and the OWRA provide adequate protection for groundwater recharge in the Upper Grand River watershed and other neighbouring watersheds. MOE expected that the CWA would address most of the applicants' concerns over drinking water once source protection plans are prepared and implemented. The report also affirmed that regions, municipalities and conservation authorities play a key role in implementing Ontario's planning system at a local level.

MOE revealed that additional studies examining water supplies were being conducted and were expected to be completed in 2010. The report also stressed the continued need to analyze data and monitor and assess future growth implications. Further, in collaboration or consultation with partner ministries, First Nations and stakeholders, MOE committed to developing guidance materials to assist with the implementation of policies protecting hydrologic functions of the moraines.

ECO Comment

MOE's research outlining the hydrogeology of the moraines – and the laws and policies applicable to them – is important and is to be commended. The ECO believes, however, that it is by no means the conclusive step in determining how best to manage and control development pressures on the moraines to ensure that water resources are protected for future generations. If the principles of watershed-based planning are applied, and the environmental and socio-economic context of the moraines are examined to assess the cumulative effects of development, the ECO believes that current provincial policies do not adequately protect the ecological and hydrogeological integrity of the moraines.

On the tenth anniversary of the Walkerton water tragedy, we are reminded of the critical role water plays in the environmental, social and economic well-being of our communities. These hard lessons must never be forgotten. The ECO outlined our concerns over the provincial planning system's ability to protect water resources and natural features such as moraines in previous Annual Reports. In our 2006/2007 Annual Report, which examined the challenges to creating sustainable communities in southern Ontario, the ECO found that "serious conflicts are inherent in the province's plans for balancing growth and ecosystem sustainability." These conflicts can be avoided if they are anticipated and proactively addressed in a more thoughtful way. The mandated use of a systems-based approach – in contrast to the voluntary nature of the PPS – should ideally require the explicit prioritization of ecological and hydrological integrity in land use planning. For example, watersheds should be a key unit within land use planning in which to frame decision-making. Sustainability, a central premise in watershed planning, ensures regular assessments of where it is feasible to develop and how much growth the natural environment can support. Ecologically sustainable water management requires the protection of the integrity and resilience of the affected ecosystems while meeting the human needs for water.

Although MOE's report provided excellent benchmarking information on the moraines, it did not assess whether the ecological capacity of the moraines can realistically accommodate the projected growth in the region. This would include considering natural flows variability, source water protection, pollution risks, groundwater supplies and climate change. Interestingly, several models cited by the report indicate that the water capacity of the moraine's recharge areas decreased as the population increased. Our 2006/2007 Annual Report reiterated these concerns, noting that the Growth Plan imposes growth on watersheds where communities are already struggling with water supply and wastewater treatment issues. Unfortunately, the population projections for Growth Plan communities were established before the future water and wastewater infrastructure needs were identified, and their associated costs and environment impacts, were assessed. This clearly indicates that provincial policies, such as the Growth Plan, favour economic development over sustainable planning processes.

Not only does the Growth Plan fail to require that population allocations be adjusted for communities with watersheds close to or already at carrying capacity, it favours large-scale infrastructure projects to overcome natural limits to growth. Waterloo is proposing to address any future water shortages by constructing a pipe to Lake Erie to pump water in and out of the city. Not only do infrastructure projects like these override natural ecological carrying capacity, they are also extremely costly and energy intensive, and as sewage and water systems ("infrastructure") they are exempt from natural heritage protections in the PPS and Greenbelt Plan despite their potential for significant environmental effects.

While there are municipal, regional, provincial and federal laws and policies that can be used to protect the moraines, the moraines traverse several cities, counties, and regions each with their own official plans and zoning individually applied to these complex ecosystems. It is unlikely that every jurisdiction or level of government will have the same priorities. The resulting piecemeal approach to planning and protection can leave ecologically and hydrogeologically significant areas vulnerable or under protected, thereby compromising the entire landscape and the communities that rely on it.

A comprehensive systems-based plan for natural heritage protection, as well as land use planning, is clearly required to address such problems. Although the province's land use planning laws and policies are commendable in some respects, our past reviews reveal that they were ineffective in preventing,

curtailing or modifying environmentally destructive developments. Natural features such as large moraines should be the very basis, at the outset, on which local land use planning decisions are weighed. Yet the province does not specifically identify moraines as a landform or natural heritage feature to be considered for protection. On numerous occasions MOE has asserted that its planning system is adequate to protect significant environmental features. The ECO finds this assertion unconvincing given that the government has had to create several individual laws and policies to protect specific vulnerable ecosystems, including the Oak Ridges Moraine, the Protected Countryside and Lake Simcoe. The province should acknowledge, as it did for the Oak Ridges Moraine, that these laws and policies on their own are inadequate to protect complex ecological features spanning several jurisdictions. The ECO commented on this issue in our 2008/2009 Annual Report. The province has the opportunity to make a strong commitment to ecosystems-based planning in Ontario. The PPS is currently under review. MMAH should revise the PPS to *require* that diversity and connectivity of natural features, as well as their long-term ecological function and biodiversity, be maintained and restored. This would improve planning in Ontario and help to ensure significant natural features are protected.

Review of Applications R2007007, R2007008, and R2007009:

5.2.4 The Need for Municipal Climate Change Adaptation Strategies (Review Undertaken by MOE, Denied by MNR, MMAH)

Background/Summary of Issues

In Ontario, the *Environmental Protection Act (EPA)* and *Ontario Water Resources Act (OWRA)* provide broad authority for the Ministry of the Environment (MOE) for environmental protection. However, the province does not have a regulation specific to stormwater management and current ministry guidance related to stormwater does not consider climate change.

The applicants submitted this application to the ECO on April 12, 2007. They contended that there is a need for legislation that requires municipalities to put in place climate change adaptation strategies, particularly with regard to stormwater infrastructure. They felt that this is particularly urgent given that Ontario's stormwater infrastructure is aging.

In addition to providing background on climate change and adaptation research, the applicants provided four principal reasons why the ministries identified MOE, MNR, and MMAH should undertake the review:

- 1) Global climate change is influencing weather patterns in North America. This climatic variability is causing more frequent extreme weather events to occur. As a result there is increased pressure on municipal stormwater infrastructure and an increased risk of economic losses from flooding to the province as well as the private sector.
- 2) Management of stormwater infrastructure in Ontario currently is based on "best management practices," which only large municipalities have the economic means to undertake. The applicants noted that MOE's Stormwater Management Planning and Design Manual 2003 ("SWMP Manual" or "Manual") is a guidance document for municipalities and urban developers to consult and that there is no legal requirement to follow the guidelines. They felt that those municipalities with larger budgets will follow the manual's guidance, but those with smaller budgets will not. This means some municipalities will have inadequate stormwater infrastructure to deal with the heavier precipitation events expected as a result of climate change. The applicants pointed to the role of the *Planning Act* in municipal stormwater management and drainage planning. They also note the *Conservation Authorities Act* "does not directly affect urban storm water management as it exists right now, [but] the potential for it to exist in a refined stormwater management plan is there."