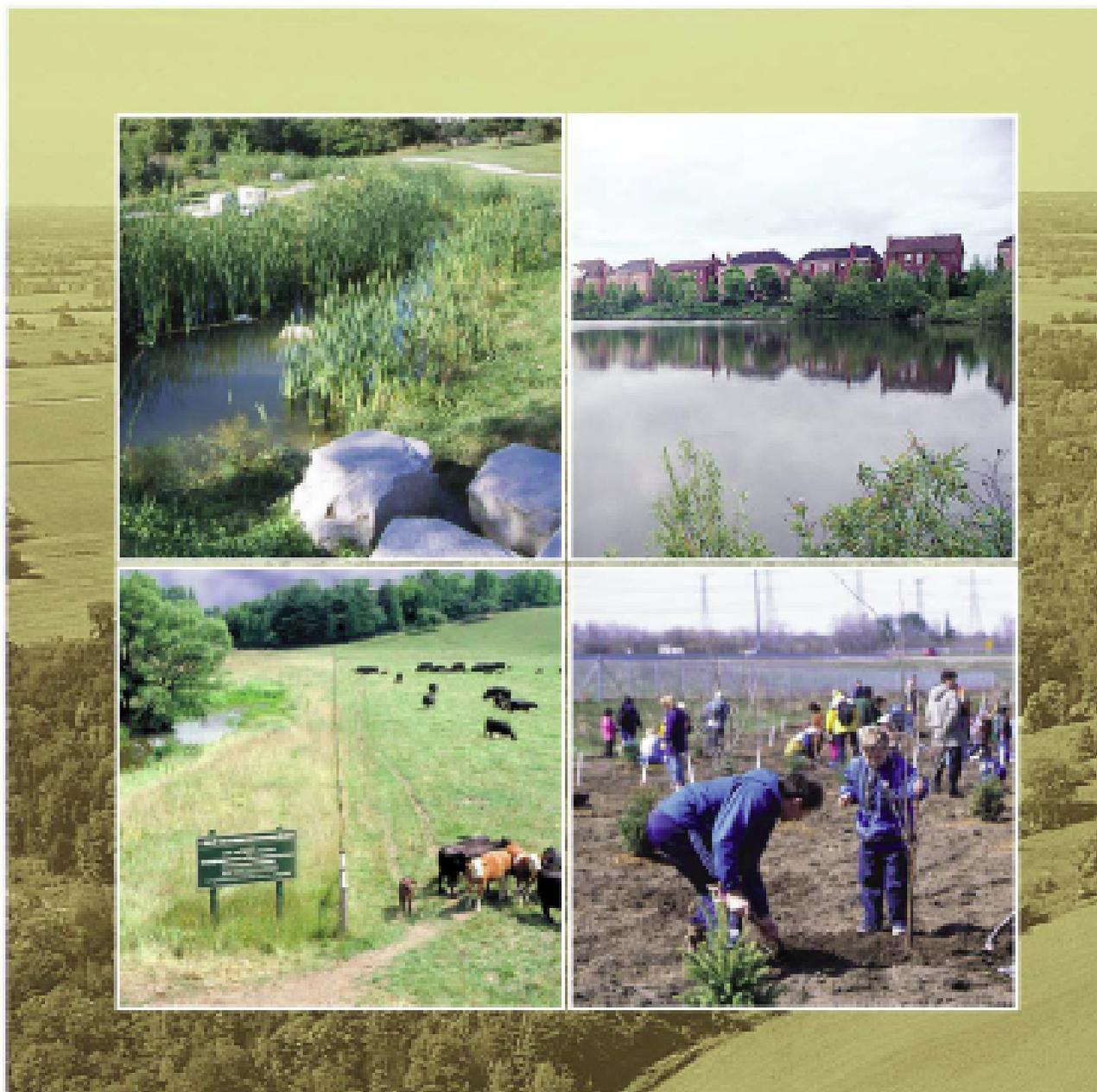


# WATERSHED PLANNING

from **Recommendations** to **Municipal Policies:**



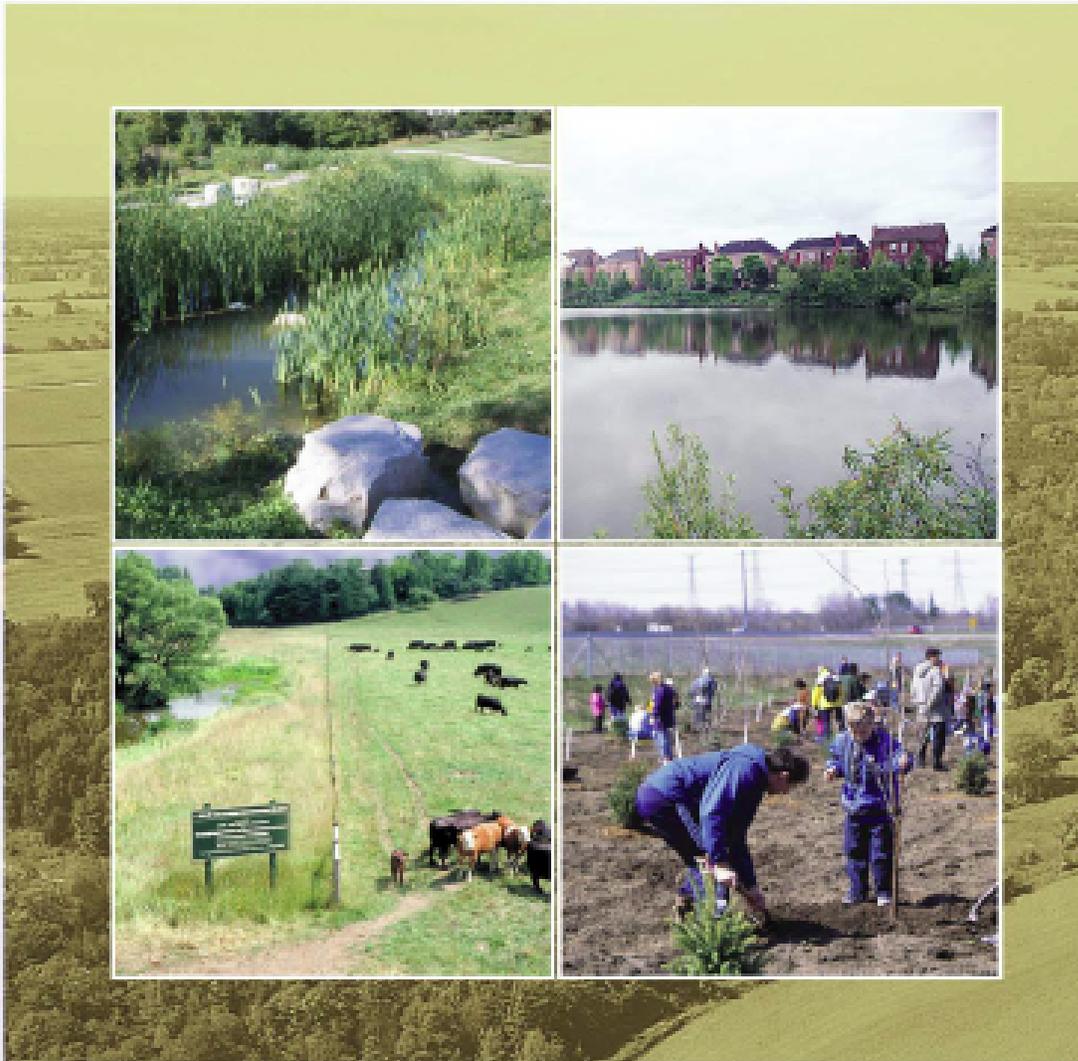
## A Guidance Document

By Ogilvie, Ogilvie & Company and Anthony Usher Planning Consultant  
Interim Report - April 2005



# WATERSHED PLANNING

from **Recommendations** to **Municipal Policies:**



## A Guidance Document

*Prepared for*

The York, Peel, Durham, Toronto Groundwater Study  
Conservation Authorities Moraine Coalition

*by*

*Ogilvie, Ogilvie & Company and Anthony Usher Planning Consultant*

*Interim Version - April 2005*



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## OVERVIEW

This Guidance Document describes model municipal planning policies that should be considered when preparing watershed plans. Each watershed plan would recommend appropriate policies to partner municipalities for adaptation into their planning documents. These policies deal with ground and surface water, terrestrial and aquatic natural heritage, landforms, and infrastructure, and were designed with the Greater Toronto Area (GTA) in mind.

Section 24 of the *Oak Ridges Moraine Conservation Plan* requires upper-tier and single-tier municipalities to prepare watershed plans and to incorporate the objectives and requirements of the watershed plans into their official plans. This requirement spurred the development of this Guidance Document. The project objective was to formulate model policies that will accomplish this requirement in a consistent way for the municipalities and conservation authorities across and downstream from the Oak Ridges Moraine within the Greater Toronto Area.

Accordingly, the Conservation Authorities Moraine Coalition (CAMC), representing the nine conservation authorities covering the Moraine, and the Regional Municipalities of York, Peel, and Durham and the City of Toronto (YPDT), commissioned this project. It builds on technical work undertaken over the past few years through the YPDT/CAMC Groundwater Study, by formulating policies for the management and protection of groundwater resources, as well as for other topic areas commonly addressed in watershed plans, such as surface water, terrestrial and aquatic natural heritage, landforms, and infrastructure.

Sections 1 and 2 of the Guidance Document provide the background, rationale, assumptions, and purpose for the project: to translate recommendations, objectives, and targets which are commonly found in watershed planning documents, into policies that can be incorporated into regional and local official plans, secondary or block plans, and zoning bylaws.

Section 3 identifies, for each policy topic, mandates, as set out by provincial policy; candidate planning goals; and key planning issues. Also discussed are complementary actions (education, incentives, regulation other than planning) that could help address the issues identified, and reinforce the model planning policies.

Section 4 describes, for each policy topic, model planning policies that should be considered when preparing watershed plans. The policies all seek to achieve environmental improvement, within the present-day planning process and policy framework. The Guidance Document indicates the planning levels at which each policy could be applied (often more than one), while leaving to individual municipalities the selection of the planning instruments most appropriate to their planning traditions and approach.

The model planning policies were developed by a team of 27 experienced planners and environmental and resource scientists from GTA conservation authorities and upper- and lower-tier municipalities, through a facilitated process with consultant assistance. ***The team recommends this interim version of the Guidance Document be distributed to GTA municipalities and Oak Ridges Moraine conservation authorities and used for one year, following which it will be reviewed and improved based on user feedback.***

# 1 INTRODUCTION

## 1.1 WHY THIS DOCUMENT

Planning for watershed management has a long history in Ontario and has taken several different forms over the years (see Conservation Ontario, *Watershed Management in Ontario: Lessons Learned and Best Practices*, 2003). Watershed (including subwatershed) planning as we know it today has been shaped mainly by provincial guidelines released in 1993, with some recent rethinking as a result of the O'Connor *Report of the Walkerton Inquiry* of 2002, and in the Greater Toronto Area, the 2002 *Oak Ridges Moraine Conservation Plan*.

Over \$10 million, possibly over \$20 million, has been spent on watershed planning in Ontario over the last decade (estimated from information in *Watershed Management in Ontario: Lessons Learned and Best Practices*). Watershed plans have provided resource managers, landowners, developers, and community groups with guidance on direct actions they can take to improve environmental conditions through education, restoration, land acquisition, and regulatory approvals. (In this document, acquisition refers to the full range of options for conveying title or interest in land, not just fee simple purchase.)

It is well recognized, however, that watershed plans can only be effectively implemented if these direct actions are complemented by supportive municipal planning policies.

"Municipal land use planning mechanisms such as official plans, secondary plans and community plans should use watershed and subwatershed plans as guiding documents. Correspondingly, land use planning mechanisms are a primary tool for implementing the watershed management strategy components that relate to allowable land uses. Planning departments responsible for these land use planning mechanisms need to have a full understanding of the watershed and subwatershed planning process. Appropriate land use designations and related policies will be developed by local municipalities and other agencies as appropriate (i.e., hazard lands, environmental protection areas, etc.). The [watershed] implementation plan should therefore identify what land use planning mechanisms will be affected and what changes are needed to them for implementation of watershed or subwatershed plans." (*Watershed Management in Ontario: Lessons Learned and Best Practices*, p. 55.)

The intended relationship between watershed plans and subwatershed plans on the one hand, and official plans and zoning bylaws on the other, was clearly elaborated in some detail by the Province in 1993, in three documents intended to guide watershed planning in Ontario. Although the documents were "interim", they remain in place unrevised, and continue to

provide needed guidance to planners and resource managers. These documents leave no doubt as to the importance of implementation through municipal policy:

**"The ultimate goal of [these] documents . . . is to see that the appropriate components developed through the watershed planning and management process are incorporated and/or linked into the municipal planning process . . . ."** (Ontario Ministries of Environment and Energy and Natural Resources, *Integrating Water Management Objectives into Municipal Planning Documents*, 1993, pp. 2-3. Emphasis in original.)

At least in the GTA, however, conservation authority and municipal planners have concluded that:

"A weakness with current watershed planning documents is that the final recommendations typically put forward in the summary section do not easily translate into policies that can be readily implemented and adopted into official plans. Many recommendations or targets found within watershed planning documents are discussed in technical appendices that accompany a watershed planning document. These detailed recommendations are not brought forward in a comprehensive fashion to the overall summary part of the watershed document, due to the nature of its intended, broad audience. Implementation of initiatives or recommendations from watershed reports typically evolves from the summary sections: these sections being the ones that are targeted by planners looking to take meaningful direction from the watershed plan. Recent thinking related to watershed planning has noted the need for the development of a policy framework that will appropriately address the recommendations of the watershed plan and form a key component of the plan's implementation." (Terms of Reference for this project, February 2004.)

In portions of the GTA, the need to address these deficiencies has become more pressing, because watershed plans, and their translation into municipal plans, are now mandatory on the Oak Ridges Moraine:

"Every upper-tier municipality and single-tier municipality shall [prepare] a watershed plan . . . for every watershed whose streams originate within the municipality's area of jurisdiction. The objectives and requirements of each watershed plan shall be incorporated into the municipality's official plan." (*Oak Ridges Moraine Conservation Plan*, secs. 24(1) and (2)).

Accordingly, this project was commissioned by the Conservation Authorities Moraine Coalition, representing the nine conservation authorities covering the Oak Ridges Moraine, and by the Regional Municipalities of Durham, Peel, and York and the City of Toronto, through the YPDT/CAMC Groundwater Study. As stated in the Terms of Reference,

"The purpose of this study is to translate directives (recommendations, objectives, targets, etc.) commonly found in watershed planning documents into policies and standards that can be incorporated into Regional and Local Official Plans and Zoning By-laws. . . . The deliverable . . . will be a series of 'Guidance Documents' that will discuss the environmental management issues brought out at a series of workshop meetings [with conservation authority and municipal staff]. The documents will establish the context for policy formulation, with a particular expectation of the documents being the development and recommendation of key generic model policies, at several municipal scales, addressing each of the key topics."

The commissioning agencies decided the guidance documents should deal with the following policy topics: ground and surface water, terrestrial and aquatic natural heritage, landforms, and infrastructure.

Hazardous lands policies are probably the longest standing, most thoroughly elaborated planning policies of provincial interest in Ontario, and are in place throughout the GTA. While watershed plans often reassess hazards and recommend improvements to hazardous lands policies, the problems described in the project Terms of Reference were not considered to extend to this policy topic. Therefore, the guidance document does not address hazardous lands policies, which nevertheless complement and reinforce water and natural heritage policies in watershed and municipal plans.

## ***1.2 HOW THIS DOCUMENT WAS PREPARED***

The three Regions and Toronto, and the Conservation Authorities Moraine Coalition, established a nine-person steering committee to direct the project. In turn, the steering committee assembled a team of experienced professionals (27 including the steering committee) to participate in the workshops and review this guidance document. The workshop team consisted of staff from conservation authorities (13), the City of Toronto (3), the three Regions (9), and lower-tier municipalities within the Regions (2). The lower-tier municipal representatives were planners, and the representatives of the other sectors were a healthy mix of planners and environmental and resource scientists and engineers. A list of the workshop team members and their affiliations is provided in Appendix 1.

Seven workshops were held from April through June 2004. Some team members attended regularly, while others attended one or more sessions particularly relevant to them. However, all were involved in electronic circulation and review.

Each workshop dealt with one or more policy topics, with the effort broken down approximately as follows:

- groundwater - 3 workshops
- surface water - 2 workshops
- terrestrial natural heritage - 1 workshop
- aquatic natural heritage - 1 workshop.

The workshops took as their starting points background information and policy options developed by the consultants, as well as by specialist task groups established to explore water issues in greater detail. Information and options on infrastructure and landform conservation were reviewed primarily by e-mail. In developing the policy options, the consultants relied primarily on published planning documents relevant to the GTA, including the *Oak Ridges Moraine Conservation Plan* and *Niagara Escarpment Plan*, the Toronto, Durham, York, and Peel official plans, and what the steering committee considered to be "benchmark" watershed plans (see Section 2.1).

Because of the number and diversity of professionals involved, and the importance of providing target audiences with a consensus-based document that would have the greatest possible legitimacy, this project was designed as a facilitated process. The consulting team consisted of a professional facilitator, Robb Ogilvie, who designed the team process and facilitated, recorded, and summarized the workshops, and a professional planner, Tony Usher, who prepared the background information and policy options and led the preparation of this guidance document based on the workshop results.

A synopsis of the seven workshops is provided in Appendix 7.

### **1.3 KEY ASSUMPTIONS**

At the beginning of the project, the steering committee and the consultants agreed on a number of key assumptions to govern the project process. Further assumptions were formalized as the work progressed. The following assumptions are especially relevant to the development of this guidance document. Some of the assumptions repeat material found elsewhere in this document, but because the process that led to this guidance document was as important as the document itself, it is important to present these key assumptions in one place.

#### **What Are Policies?**

- ❖ Policies are standing decisions on recurring matters.
- ❖ Policies are also statements about whatever governments choose to do or not do, that is, statements related to goal determination and/or the preferred methods of achieving the stated goal.

- ❖ Planning policies are statements such as, "the proponent will do the following when the proponent needs a planning approval", or "a proponent will not be given a planning approval to do the following".

## From Watershed Plans to Planning Policies

- ❖ The guidance document will maintain the distinction between watershed plans and municipal plans. Watershed plans seek to protect, enhance, and restore ecological health and ecosystem functions. They may evaluate alternative land use planning scenarios, but they are not, and should not become, mini-land use plans.
- ❖ At the same time, the document will show the links between typical watershed plan recommendations and the formulation of planning policy proposals, leading to clearer and more effective municipal planning policies.

## What Planning Can Do

- ❖ The guidance document will focus on the present planning process and what can be done within it. This project is not about changing the planning process.
- ❖ The document will focus on those watershed management issues that are most effectively addressed through planning policies. Many watershed management issues are better dealt with, or can only be dealt with, through education, financial incentives, or non-planning regulation, as well as direct management actions by public authorities, all of which fall outside the scope of this document.
- ❖ Within those limits, the document will address sustainability and cumulative impacts as much as possible, and apply principles of adaptive management and continuous improvement to do so.
- ❖ The document will regard water policies as the foundation for all other policies, recognizing that protecting ground and surface waters will help protect natural heritage and other key watershed values, without assigning greater importance to water policies than to other policy areas.

## Geographical Scope

- ❖ The guidance document's planning issues are identified and model policies designed with the GTA in mind, not all of Ontario.

- ❖ Taken together, the issues and policies in the document are designed to address the full range of development situations in the GTA, from countryside through greenfield development to development in already urbanized areas. Some policies apply only to some specific situations, but many policies are potentially applicable throughout the GTA, the urbanized lakeshore municipalities included.
- ❖ The model policies may be usable outside the GTA, but only with full consideration of their appropriateness and applicability to other regions and situations, and adaptation as required.

## Purpose of the Guidance Document

- ❖ The guidance document will focus on municipal planning policies that relate to watershed planning and achieve environmental improvement through *Planning Act* powers.
- ❖ The document will complement and reinforce other watershed-related municipal planning policies, such as hazardous lands policies.
- ❖ The document will indicate the planning levels at which each policy could be applied (often more than one), and leave it to individual municipalities to select the planning instruments most appropriate to their planning traditions and approach.
- ❖ The document will discuss complementary actions (education, incentives, regulation other than planning) that are needed to help address the issues identified, and reinforce the model planning policies.

## Prime Audiences for the Guidance Document

- ❖ Conservation authority planners - to help them formulate better watershed plan recommendations.
- ❖ Municipal planners - to help them formulate better municipal planning policies.
- ❖ Policies have to be readily adaptable for both audiences to use.

## 2 WATERSHED PLANNING AND MUNICIPAL PLANNING

### 2.1 ABOUT WATERSHED PLANNING

Watershed planning takes place at many scales. *Watershed Planning in Ontario: Lessons Learned and Best Practices* identifies, in order of increasing detail:

- watershed plans, for the basins of major rivers, typically covering over 1,000 km<sup>2</sup>
- subwatershed plans, typically 50 to 200 km<sup>2</sup>
- tributary plans, such as Toronto and Region Conservation Authority (TRCA) Master Environmental Servicing Plans, typically 2 to 10 km<sup>2</sup>
- environmental site plans.

Tributary plans and environmental site plans are most often prepared by proponents in support of individual development applications. By the time they are prepared, the municipal policy basics have already been set. Therefore, this guidance document is mainly directed to watershed and subwatershed plans.

Even watershed and subwatershed plans can vary greatly in scope from the guidelines indicated above, depending on the practices of individual conservation authorities. For example, TRCA considers the Carruthers Creek basin, 38 km<sup>2</sup> in area, to be a watershed, and has prepared a highly detailed watershed plan for it. It is accepted that if a defined basin is considered a watershed, and can be divided into sub-basins based on tributaries of the main stream, then those sub-basins are subwatersheds. Beyond that, there is no accepted method for determining whether any defined basin is a watershed or a subwatershed.

Therefore, in this guidance document, a "watershed" means a watershed or subwatershed, and "watershed planning" means watershed or subwatershed planning.

As indicated in Section 1.1, the Province's 1993 guidelines on watershed planning remain "the book" on how to do it. But while these guidelines clearly show *how* watershed planning and municipal planning documents relate to each other, they do not provide a lot of guidance on *what* watershed plans should contribute to municipal plans. Section 3 of *Integrating Water Management Objectives into Municipal Planning Documents* provides guidance on *what kind* of policies are desirable, but those specific policies that are proposed are very general. As well, there has been considerable evolution and innovation in environmental policy since these guidelines were written. The recent *Watershed Management in Ontario: Lessons Learned and Best Practices*

provides a very useful complement to the 1993 guidelines, but is again very general on the subject of what watershed plans should contribute to municipal plans.

There has, however, been considerable advance in identifying what a watershed plan should be based on and consist of, from the general 1993 Provincial guideline, *Subwatershed Planning*. In 2003, TRCA, Lake Simcoe Region CA, and the Region of York prepared *A Workplan to Fulfill the Watershed Planning Requirements of the Oak Ridges Moraine Conservation Plan Regulation*, to "recommend a generic watershed planning process and outline of key deliverables". The *Workplan* is considered to represent best practice with the GTA.

According to the 2003 *Workplan*, a watershed plan should be undertaken in three stages:

- ❖ characterization of the watershed
- ❖ analysis and evaluation of alternative land and water use and management scenarios
- ❖ development of the watershed plan and implementation plan.

The following component studies are required as input to watershed characterization and the basis for subsequent analysis:

- ❖ groundwater quantity study
- ❖ groundwater quality study
- ❖ surface flow modelling study
- ❖ surface water quality study
- ❖ water budget
- ❖ water use assessment
- ❖ terrestrial natural heritage study
- ❖ aquatic resource study
- ❖ land use mapping.

## **2.2 ABOUT MUNICIPAL PLANNING**

Municipal planning also takes place at many scales. The *Planning Act* defines each type of municipal planning document and sets certain limits on what each type can address. Within those limits, and beyond the general guidance that the *Provincial Policy Statement* (and more recently, the *Oak Ridges Moraine Conservation Plan* and *Greenbelt Plan*) provide on certain aspects of official plans, there is very little provincial prescription on what should be in municipal planning documents. The contents of those documents are determined mainly by local needs, local municipal structure (particularly whether single-tier or two-tier), and local planning traditions and precedent which may go back 50 years or more.

For reasons explained in Section 4.1, this guidance document focuses on official plans (including secondary plans) and zoning bylaws. All other municipal planning documents and instruments are subordinate to official plans and zoning.

## 2.3 RECENT WATERSHED PLANS

The Terms of Reference for this project listed three watershed plans recently prepared by GTA conservation authority staff, which undoubtedly represent best practice benchmarks for the proponent authorities. As mentioned in Section 1.2, these watershed plans contributed to the development of policy options for the workshop team.

Naturally, each watershed plan culminates in extensive recommendations. Following is a brief review of the "translatability" of each watershed plan's recommendations into municipal planning policies. This review illustrates tremendous variation in how watershed plans contribute to municipal planning, even among the most recent cohort of GTA watershed plans.

### Credit Valley Conservation Authority, Caledon Creek and Credit River Subwatershed Study, 2003:

- covers Credit River subwatersheds 16 (51 km<sup>2</sup>) and 18 (40 km<sup>2</sup>)
- Town of Caledon and Region of Peel
- 435 pages
- municipal planning direction is addressed in the Phase III, Implementation Report portion of the *Study*
- the Recommended Plan section of Phase III (pp. 17-89) deals mainly with specific natural heritage areas that should be protected, water quality and quantity objectives, best design and construction practices, resource management and restoration, environmental monitoring, landowner/public education, etc.
- there is very little discussion in the Recommended Plan of municipal planning direction, and nothing that would constitute specific recommended municipal planning policies
- a concluding summary of 10 recommendations is provided (pp. 90-92), but the recommendations are very general and do not include anything that would constitute specific recommended planning policies.

### Toronto and Region Conservation Authority, A Watershed Plan for Duffins Creek and Carruthers Creek, 2003:

- covers Duffins Creek watershed (283 km<sup>2</sup>) and Carruthers Creek watershed (38 km<sup>2</sup>)
- Town of Ajax, City of Pickering, Township of Uxbridge, and Region of Durham; Town of Markham, Township of Whitchurch-Stouffville, and Region of York
- 720 pages (234 page plan, plus two state of the watershed reports released in 2002; does not include nine additional technical reports)
- municipal planning direction is addressed in the *Watershed Plan*

- the Management Strategies section (pp. 75-165) is organized into 25 objectives, with a concise list of management actions under each objective; these management actions include a wide range of regulatory (including planning) initiatives, as well as specific natural heritage areas that should be protected, best design and construction practices, resource management and restoration, environmental monitoring, landowner/public education, etc.
- the proposed municipal planning directions are scattered through the lists of management actions, and there is very little that would constitute specific recommended municipal planning policies
- an introductory summary of 10 integral management actions is provided (p. 10), but the actions are very general and do not include anything that would constitute specific recommended planning policies.

### Central Lake Ontario Conservation Authority, Oshawa Creek Watershed Management Plan, 2002

- covers Oshawa Creek watershed (120 km<sup>2</sup>)
- City of Oshawa, Town of Whitby, Township of Scugog, Municipality of Clarington, and Region of Durham
- 214 pages
- municipal planning direction is addressed in the Watershed Management Plan portion of the *Plan*
- the What Needs to be Done section (pp. 143-181) includes a Land Use Planning subsection (pp. 149-156), along with discussion of other regulatory initiatives, specific natural heritage areas that should be protected, best design and construction practices, resource management and restoration, environmental monitoring, landowner/public education, etc.
- the Land Use Planning section discusses each municipality's planning documents and how they should be improved to better reflect the watershed plan; however, the discussion is limited to land use designations and groundwater policies, and with regard to groundwater, there is very little that would constitute specific recommended municipal planning policies
- a summary of 20 key recommendations is provided (three unnumbered pages at beginning); the planning recommendations are mixed in with the others but can be easily identified; the planning recommendations are targeted to individual municipalities, are relatively detailed, and provide at least a starting point for specific planning policies.

## **2.4 HOW TO BRIDGE THE TRANSITION**

An explanation of how the relationship between watershed planning and municipal planning *should* work was provided by TRCA in a letter to the City of Pickering, responding to the

City's inquiry, "Who will approve the [Duffins Creek Watershed Plan, then being developed]? How does it relate to the municipal planning process?"

"The watershed study and resulting management strategy should be viewed as a background study to the formulation of official plan or secondary plan policies. In that respect it is similar to other OP background studies (i.e. population projections, employment land demand forecasts, etc.) which provide the rationale and basis for formulating official plan policies to achieve the goals and objectives of the municipality.

"The development of the watershed strategy for Duffins Creek is a collaborative process of local citizens and politicians, municipal and conservation authority staffs. It has the further benefits of ongoing public consultation and is supported by detailed scientific technical field studies. In that regard we believe that the final strategy will be a consensus document that will identify key environmental resources which should be protected, identify other lands which could accommodate certain kinds or levels of development subject to detailed studies and use of best management practices, and identify the remaining lands that have few environmental constraints to development.

"Our expectation for the process of approval of the strategy document is firstly, adoption of the strategy by the Duffins Task Force, with a recommendation that it be similarly endorsed and adopted by the Toronto and Region Conservation Authority. Subsequent to adoption by resolution of the full TRCA board we would then anticipate forwarding the strategy to affected upper and lower tier municipalities for their review and adoption by resolution of Council and/or incorporation into their official plans, secondary plans or zoning by-laws. . . . Thus, the strategy will ultimately be 'enforced' by municipal councils who, hopefully, will make their decisions based on staff and commenting agency recommendations that are consistent with the watershed strategy directions." (TRCA to City of Pickering, January 2002.)

This is an excellent description of *how* the process should work. However, even with complete goodwill and understanding on both conservation authority and municipal sides, it still does not quite get at *what* it is that watershed plans should give to the process, and municipal plans should take from it.

What are some of the factors that keep the transition from watershed planning to municipal planning from being as effective as it should be?

- ❖ Conservation authorities and municipalities have different mandates and it's well known that they tend to have different ways of doing business, although it's an

oversimplification to say that CAs are exclusively focused on resource management and protection, and municipalities on planning and development.

- ❖ The professions within each organization are also diverse. On the conservation authority side of the process are biologists, water resource engineers, and planners. On the municipal side of the process are planners and works engineers.
- ❖ Each of these professional disciplines is most often associated with a separate department within each organization. Silos emerge from the landscape despite the best of intentions.
- ❖ Provincial legislative and policy direction further encourage "siloism". Separate ministries, legislation, and *Provincial Policy Statement* policies deal with water and natural heritage, and the relationship between these two policy topics has been historically minimized. Subordinate agencies have little choice but to orient themselves accordingly, like iron filings in magnetic fields.
- ❖ Even though the same provincial ministry, legislation, and *Provincial Policy Statement* policies apply to both, ground and surface water have tended to be treated separately in planning policies, and their interrelationship somewhat minimized. This may be due in part to the professional specialization that now completely differentiates among hydrology, hydrogeology, and aquatic biology and their practitioners.
- ❖ A watershed plan often involves more than one local municipality, and always one and sometimes more than one upper-tier municipality. (Although the City of Toronto is single-tier, all TRCA watersheds extend beyond it.) As noted in Section 2.3, the Oshawa Creek watershed involves five municipalities, and the Duffins and Carruthers Creeks watersheds, seven.
- ❖ Until quite recently, the vast majority of effort in watershed planning was spent on the science of how the watershed functions, in the characterization-of-the-watershed phase. Very little effort was spent on analyzing and evaluating alternatives and developing planning policies and implementation strategies (see Section 2.1).
- ❖ A watershed plan and a municipal official plan or zoning bylaw remain fundamentally different in many respects. A watershed plan results in policy, but is ultimately based in science. An official plan or zoning bylaw is 100% policy, and while it should not fly in the face of science (and parts of it, such as resource mapping, are science-based), it is ultimately based in public preference, within the considerable constraints of statute and case law and provincial policy.

- ❖ An official plan or zoning bylaw is a regulatory document backed by statutory authority. Aside from flood and fill regulation under the *Conservation Authorities Act*, a watershed plan is not. For this reason alone, they need to be, and are, written quite differently.
- ❖ And finally, watershed plans are rooted in principles like sustainable resource management, protection and restoration of ecological functions, and the use of "adaptive environmental management approaches that aim for continuous improvement" (see *Watershed Management in Ontario: Lessons Learned and Best Practices*, "Watershed management" box on p. 10). There is only limited support for these principles in current provincial planning legislation and policy. Leading-edge official plans in the GTA clearly support these principles, but in the absence of provincial backing, even the most "green" official plans have faced severe challenges in translating these principles into specific, implementable policies.

For these reasons, the project steering committee concluded that having each watershed plan process trying to devise policy from scratch in the face of all these cultural and structural differences would not bridge the gap. Instead, this project would bring together knowledgeable and representative professionals from across the conservation authority and municipal spectrum. Those professionals would make their best effort at developing off-the-shelf policies, from which each watershed plan process could pick and choose, recognizing that the policies recommended by each watershed plan would still have to be tailored by each partner municipality to fit its own traditions and process. This guidance document is the result of that best effort.

For the same reasons, the gap can never be completely bridged. The success of this guidance document should be measured relative to past performance, not unattainable perfection.

## 3 PLANNING ISSUES

### 3.1 INTRODUCTION

The purpose of Section 3 is to identify, for each policy topic,

- ❖ mandates, as set out by provincial policy,
- ❖ candidate planning goals, not provincially mandated, but provided here to suggest an overall direction and context for the planning issues and policies for that topic,
- ❖ key planning issues, as identified by the workshop team.

Discussion of provincial policy mandates was a moving target during the course of this project, given the many initiatives released by the Ontario Government during 2004 and still under consideration as the project concluded. This guidance document relies primarily on policies in force as of December 2004, but also briefly notes new initiatives such as the March 2005 *Provincial Policy Statement* and their potential impacts. The *Greenbelt Plan* existed only in draft form until the guidance document was essentially complete, and is not reflected in this document. As approved in February 2005, the *Greenbelt Plan* will require rethinking of some aspects of the policies proposed here. Similarly, the report of the Technical Experts Committee on drinking water source protection legislation, *Watershed-Based Source Protection Planning, Science-Based Decision-Making for Protecting Ontario's Drinking Water Resources: A Threats Assessment Framework* (November 2004), and the *Growth Plan for the Greater Golden Horseshoe* (still in draft April 2005), are not reflected in this guidance document.

The key planning issues are summarized in a table for each topic. The second column of the table gives a brief explanation of why each issue is important. The third column is a summary listing of management actions other than planning policies that could address the issue, under three headings: education, incentives (financial or other), and regulation.

The management actions in the third column are intended to be examples only, and are far from a complete list. They are taken from *Watershed Management in Ontario: Lessons Learned and Best Practices*, the three "benchmark" watershed plans, and the consultants' experience. No doubt there are many management actions currently in use somewhere in Ontario that have been omitted. As well, there are many types of management actions not shown in the table that could be introduced into Ontario practice, but that is, of course, beyond the scope of this project. The three categories of management actions are somewhat arbitrary; the point is for planners and resource managers to remember that every issue can be addressed by a wide variety of actions, covering the spectrum from encouragement through enforcement. In some cases, no specific examples are provided under education or incentives, but those headings have been left in the table to remind readers that those options are always available.

The proponent conservation authority and municipality can also undertake direct management actions on their own properties which will also help deal with the issues to some degree. Because the "education, incentives, regulation" list is focused on getting others to change their behaviour, it includes these direct actions only as a form of persuasion of others through demonstration projects.

Each planning issue should first be viewed through the filter of this table (is it important? are there other, possibly more effective, ways of addressing some or all of its aspects?). Section 4 then provides model planning policies to address the issue.

## **3.2 WATER**

### **Provincial Policy Mandate**

- ❖ "Planning authorities shall protect, improve or restore the quality and quantity of water by:
  - a) using the watershed as the ecologically meaningful scale for planning;
  - b) minimizing potential negative impacts, including cross-jurisdictional and cross-watershed impacts;
  - c) identifying surface water features, ground water features, hydrologic functions and natural heritage features and areas which are necessary for the ecological and hydrological integrity of the watershed;
  - d) implementing necessary restrictions on development and site alteration to:
    1. protect all municipal drinking water supplies and designated vulnerable areas; and
    2. protect, improve or restore vulnerable surface and ground water, sensitive surface water features and sensitive ground water features, and their hydrologic functions;
  - e) maintaining linkages and related functions among surface water features, ground water features, hydrologic functions and natural heritage features and areas;
  - f) promoting efficient and sustainable use of water resources, including practices for water conservation and sustaining water quality; and
  - g) ensuring stormwater management practices minimize stormwater volumes and contaminant loads, and maintain or increase the extent of vegetative and pervious surfaces.

"Development and site alteration shall be restricted in or near sensitive surface water features and sensitive ground water features such that these features and their related hydrologic functions will be protected, improved or restored.

"Mitigative measures and/or alternative development approaches may be required in order to protect, improve or restore sensitive surface water features, sensitive ground water features, and their hydrologic functions." (*Provincial Policy Statement*, 2005, policies 2.2.1 and 2.2.2.)

- ❖ "To protect the quality of ground water for the greatest number of beneficial uses."  
 "To ensure that the surface waters of the province are of a quality which is satisfactory for aquatic life and recreation."  
 "To ensure the fair sharing, conservation and sustainable use of the surface and ground waters of the province."  
 (*Water Management: Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy*, 1994.)
- ❖ "Where the potential exists for a significant direct threat to drinking water sources, municipal official plans and decisions must be consistent with the applicable source protection plan. Otherwise, municipal official plans and decisions should have regard to the source protection plan. The plans should designate areas where consistency is required." (*Report of the Walkerton Inquiry, Part Two*, 2002, recommendation 5.) (While the report as such is not provincial policy, the Province has said that it is generally committed to implementing the report's recommendations. The draft *Drinking Water Source Protection Act*, and the White Paper on Watershed-based Source Protection Planning that preceded it, set out a proposed process for preparing source protection plans, but do not progress beyond the Walkerton Inquiry Report in indicating how source protection planning would relate to municipal planning. The Implementation Committee advisory to the Ministry of the Environment addressed that issue in its November 2004 report, and it is expected that its recommendations will be reflected in the Act when it is introduced in 2005.)

## Candidate Planning Goals

- ❖ Protect/enhance/restore the quality and quantity of ground and surface water, for both consumption and ecological purposes.
- ❖ Protect/enhance/restore important ground and surface water features.
- ❖ Protect/enhance/restore hydrological functions.

## Planning Issues

<b>Table 1 Water Planning Issues</b>		
<i>Planning issue</i>	<i>Why the issue is important</i>	<i>Example management actions</i>
W1: Defining and identifying important ground and surface water areas	Ground and surface water areas whose protection is critical to the above goals need to be defined and identified in planning documents, as a precondition to and basis for any policies intended to protect them specifically.	Education: Incentives: Regulation: -planning - see Section 4.2
W2: Protecting important ground and surface water areas	Ground and surface water areas whose protection is critical to the above goals may need specific protection. While many management actions necessarily protect water features and functions generally, directing a large share of management actions towards priority areas will result in more effective and efficient progress towards goal achievement.	Education: -best practices information -stewardship programs Incentives: -land acquisition* Regulation: -planning - see Section 4.2 -tree bylaws -site alteration bylaws
W3: Minimizing groundwater flow alteration	Subsurface construction can change groundwater flow patterns in or near important groundwater areas, substantially altering hydrological functions from natural conditions.	Education: -best practices information Incentives: Regulation: -planning - see Section 4.2 -environmental assessment -floodplain/fill approvals -drainage approvals -alternative development standards -site alteration bylaws -statutory penalties
W4: Managing abandoned wells and boreholes	Without proper management and decommissioning, abandoned wells and boreholes can become dangerously effective vectors for	Education: -best practices information Incentives: Regulation:

<b>Table 1 Water Planning Issues</b>		
<b><i>Planning issue</i></b>	<b><i>Why the issue is important</i></b>	<b><i>Example management actions</i></b>
	groundwater contamination.	<ul style="list-style-type: none"> <li>-planning - see Section 4.2</li> <li>-<i>EPA/OWRA</i> approvals</li> <li>-statutory penalties</li> </ul>
W5: Minimizing hard-surfacing	<p>As impervious surfaces increase in a watershed, surface runoff increases at the expense of groundwater recharge.</p> <p>Opportunities for contaminants, sediments, etc. to be intercepted before reaching surface waters are reduced, and hydrological functions, especially stream flows and channels, are substantially altered from natural conditions.</p>	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> </ul> <p>Incentives:</p> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.2</li> <li>-environmental assessment</li> <li>-floodplain/fill approvals</li> <li>-alternative development standards</li> <li>-site alteration bylaws</li> <li>-statutory penalties</li> </ul>
W6: Restricting development and restoring vegetation on and near shorelines	<p>All forms of shoreland development can result in increased discharge of toxic contaminants, excessive pathogens, nutrients, sediment, excessively warm water, etc. into lakes and streams. Altering shorelines and filling nearshore waters without proper planning and management can cause erosion or siltation, destroy shoreland and aquatic vegetation, and eliminate fish and wildlife habitats. No-development buffer strips along shorelines reduce these effects. Maintaining or restoring natural vegetation within these buffer strips reduces these effects further.</p>	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> <li>-demonstration projects on own property</li> <li>-stewardship programs</li> </ul> <p>Incentives:</p> <ul style="list-style-type: none"> <li>-land acquisition*</li> </ul> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.2</li> <li>-environmental assessment</li> <li>-nutrient management approvals</li> <li>-<i>LRIA</i> approvals</li> <li>-<i>Public Lands Act</i> approvals</li> <li>-<i>Fisheries Act</i> approvals</li> <li>-floodplain/fill approvals</li> <li>-exotics control powers</li> <li>-pesticides regulation</li> <li>-site alteration bylaws</li> <li>-statutory penalties</li> </ul>
W7: Requiring a planned sustainable	Each water withdrawal leaves less for the next user. Water budgeting and conservation can ensure that	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> <li>-water reuse programs</li> </ul>

<b>Table 1 Water Planning Issues</b>		
<b><i>Planning issue</i></b>	<b><i>Why the issue is important</i></b>	<b><i>Example management actions</i></b>
water supply	the quantity of water required for human, industrial, and agricultural consumption and for irrigation is limited so as to maintain a healthy hydrological cycle, and that within those limits, water is fairly allocated and efficiently used.	Incentives: -water taking charges Regulation: -planning - see Section 4.2 - <i>EPA/OWRA</i> approvals -statutory penalties
W8: Restricting water-taking land uses	Although the <i>Ontario Water Resources Act</i> regulates water taking, water taking has been legally recognized as a land use. Issues of water quantity and hydrological function may in some cases be so critical that they should be subject to the more open and inclusive review and approval requirements of the <i>Planning Act</i> .	Education: Incentives: Regulation: -planning - see Section 4.2 - <i>EPA/OWRA</i> approvals -statutory penalties
W9: Requiring appropriate water and sewage services	Inappropriate or no water and sewage services can cause toxic contaminants and excessive pathogens and nutrients to be discharged into aquifers, lakes, and streams, either directly or through surface runoff.	Education: Incentives: -provision of services -subsidization of services Regulation: -planning - see Section 4.2 -environmental assessment - <i>EPA/OWRA</i> approvals - <i>Ontario Building Code</i> -statutory penalties
W10: Requiring urban stormwater management best practices	Inappropriate or no stormwater services can cause toxic contaminants, excessive pathogens, nutrients, and sediment, excessively warm water etc., to be discharged into aquifers, lakes, and streams, either directly or through surface runoff. Inappropriate or no services can also result in too much runoff, which can impair the	Education: -best practices information -demonstration projects on own property Incentives: Regulation: -planning - see Section 4.2 -environmental assessment - <i>EPA/OWRA</i> approvals -alternative development

<b>Table 1 Water Planning Issues</b>		
<i>Planning issue</i>	<i>Why the issue is important</i>	<i>Example management actions</i>
	natural functioning of the hydrological cycle and adversely alter stream flows and channels.	standards -erosion and sediment control bylaws -sewer use bylaws -statutory penalties
W11: Requiring cumulative effects assessment	Watershed plans evaluate the current state of watersheds, how natural conditions will change in response to future development scenarios, and what mitigation is required to keep change within acceptable bounds. Watershed plans will only be effective with a mechanism to periodically assess whether the watershed is in fact responding to development as predicted, and if it is not, to change course as needed.	Education: Incentives: Regulation: -planning - see Section 4.2
*Refers to the full range of options for conveying title or interest in land.		

### **3.3 NATURAL HERITAGE**

#### **Provincial Policy Mandate**

❖ "Natural features and areas shall be protected for the long term.

"The diversity and connectivity of natural features in an area, and the long-term ecological function and biodiversity of natural heritage systems, should be maintained, restored or, where possible, improved, recognizing linkages between and among natural heritage features and areas, surface water features and ground water features.

"Development and site alteration shall not be permitted in:

- a) significant habitat of endangered species and threatened species;
- b) significant wetlands . . . ; and
- c) significant coastal wetlands.

"Development and site alteration shall not be permitted in:

. . . .

- b) significant woodlands . . . ;
- c) significant valleylands . . . ;
- d) significant wildlife habitat; and
- e) significant areas of natural and scientific interest

unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions.

"Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.

"Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in [the above policies] unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions." (*Provincial Policy Statement*, 2005, policies 2.1.1 to 2.1.6.)

## What are Natural Heritage Systems?

Although until 2005, the *PPS* referred only to natural heritage features, planners have increasingly identified the protection and restoration of natural heritage *systems* as their goal. This newer, broader approach is now acknowledged in the *PPS*, which identifies and defines natural heritage systems.

When dealing with natural heritage as a single topic integrating terrestrial and aquatic resources, however, it is important to remember that in terms of both science and policy, we are much closer to answering the question, "what is a natural heritage system?" for terrestrial than for aquatic systems. In fact, most current examples of natural heritage systems on closer examination turn out to be terrestrial natural heritage systems (including wetlands) only, or are clearly stated to be terrestrial systems only (as in the case of TRCA's 2004 *Draft Toronto and Region Terrestrial Natural Heritage System Strategy*).

Because aquatic species are migratory, aquatic environments are more permeable to external influences, aquatic property rights are less easily privatized, and aquatic conservation planning is less developed, we are much farther from agreement on what would constitute aquatic natural heritage systems. The best we can hope for at present is to identify those types of waters, features, and functions that should constitute aquatic natural heritage and might be represented in a system. The goals and issues below, and the model policies in Section 4.3, should be considered in that context.

## Candidate Planning Goals

- ❖ Protect/enhance/restore natural heritage systems and features.
- ❖ Enhance native biodiversity.
- ❖ Protect/enhance/restore ecological functions.
- ❖ In conjunction with other planning considerations, shape urban community structure.
- ❖ Provide opportunities for natural heritage enjoyment and appreciation and appropriate outdoor recreation.

## Planning Issues

<i>Planning issue</i>	<i>Why the issue is important</i>	<i>Potential management actions</i>
N1: Defining and identifying a present and future natural heritage system	Existing natural heritage features and communities, and lands and waters with future restoration potential, whose protection is critical to the above goals, need to be defined and identified in planning documents as a precondition to and basis for any policies intended to protect them specifically.	Education: Incentives: Regulation: -planning - see Section 4
N2: Protecting system lands, waters, features, and functions	Natural heritage lands, waters, features, and functions critical to the above goals will need to be protected from incompatible land use and development.	Education: -best practices information -stewardship programs Incentives: -land acquisition* Regulation: -planning - see Section 4.3 -floodplain/fill approvals - <i>Fisheries Act</i> approvals -tree bylaws

Table 2 Natural Heritage Planning Issues		
		<ul style="list-style-type: none"> <li>-site alteration bylaws</li> <li>-property standards bylaws</li> <li>-statutory penalties</li> </ul>
N3: Achieving net gains to the system	It may be possible to protect or enhance the natural heritage system while permitting new land uses and development, by applying a net-gain or no-net-loss principle whereby less critical components of the natural heritage system may be altered but the altered system is as good as or better than it was before (for example, the no-net-loss principle of the federal <i>Policy for the Management of Fish Habitat</i> .)	<p>Education:</p> <p>Incentives:</p> <ul style="list-style-type: none"> <li>-land acquisition*</li> </ul> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.3</li> <li>-floodplain/fill approvals</li> <li>-<i>Fisheries Act</i> approvals</li> </ul>
N4: Defining and restricting development on lands/waters adjacent to the system	New development and land uses near the natural heritage system need to be adequately set back from the system, and demonstrate that they will not cause any negative impacts on the system.	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> <li>-stewardship programs</li> </ul> <p>Incentives:</p> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.3</li> <li>-floodplain/fill approvals</li> <li>-tree bylaws</li> <li>-site alteration bylaws</li> <li>-property standards bylaws</li> <li>-statutory penalties</li> </ul>
N5: Securing lands for the system	Where urban land uses and development will potentially affect natural heritage system lands or waters, it is most often in the best interest of the landowner, the planning authority, and the community at large for the affected lands or waters to be conveyed to or otherwise secured in favour of a public or not-for-profit authority.	<p>Education:</p> <p>Incentives:</p> <ul style="list-style-type: none"> <li>-land acquisition*</li> <li>-donor recognition</li> <li>-income tax advantages</li> </ul> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.3</li> <li>-floodplain/fill approvals</li> <li>-parkland dedication</li> </ul>
N6: Enhancing/rest	Existing natural heritage lands, waters, and features are often	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> </ul>

oring degraded portions of the existing system	degraded and unable to effectively function as part of the system, or provide ecological functions. Restoration to a healthy natural condition is essential.	<ul style="list-style-type: none"> <li>-stewardship programs</li> <li>-demonstration projects on own property</li> </ul> Incentives: <ul style="list-style-type: none"> <li>-Managed Forest/Conservation Land Tax Incentive Programs</li> </ul> Regulation: <ul style="list-style-type: none"> <li>-planning - see Section 4.3</li> <li>-<i>Fisheries Act</i> approvals</li> <li>-exotics control powers</li> </ul>
N7: Restoring natural cover and connections in the proposed future system	Levels of natural cover (primarily forest and wetland) in the GTA are too low to support viable fish and wildlife populations and maintain healthy ecological functions. Natural cover needs to be increased, with long-term restoration plans developed for those lands with the best potential for restoration to a healthy natural condition.	Education: <ul style="list-style-type: none"> <li>-best practices information</li> <li>-stewardship programs</li> <li>-demonstration projects on own property</li> </ul> Incentives: <ul style="list-style-type: none"> <li>-planning - see Section 4.3</li> <li>-exotics control powers</li> </ul>
*Refers to the full range of options for conveying title or interest in land.		

### **3.4 LANDFORM CONSERVATION**

#### **Provincial Policy Mandate**

Some significant earth science areas of natural and scientific interest have been identified for their landform attributes. Other recognized natural heritage feature types, such as valleylands, may also be considered landforms. The provincial policy mandate for their protection is described in Section 3.3. With that exception, there is no direct mandate for landform conservation in the *Provincial Policy Statement*.

However, there is an implicit mandate for landform conservation in the *PPS*'s definition of surface water features (the *PPS* requires that such features be identified and sensitive features and their functions be protected):

- ❖ "Surface water feature: refers to water-related features on the earth's surface, including headwaters, rivers, stream channels, inland lakes, seepage areas, recharge/discharge areas, springs, wetlands, and associated riparian lands that can be defined by their soil moisture, soil type, vegetation or topographic characteristics."

### Candidate Planning Goals

- ❖ Conserve important landforms.
- ❖ Protect/enhance/restore ecological functions.

### Planning Issues

<i>Planning issue</i>	<i>Why the issue is important</i>	<i>Potential management actions</i>
L1: Defining and identifying landforms meriting conservation	Existing regionally significant earth science ANSIs need to be identified in planning documents as a precondition to and basis for any policies intended to protect them (the <i>PPS</i> already requires identification and protection of provincially significant ANSIs). So do other landforms meriting specific conservation policies; these may include landforms of intrinsic scientific value, landforms that contribute to landscape character and sense of place, and landforms of particular importance to ecological functions.	Education: Incentives: Regulation: -planning - see Section 4.4
L2: Protecting landforms meriting	Landforms critical to the above goals will need to be protected from incompatible land use and	Education: -best practices information -stewardship programs

Table 3 Landform Conservation Planning Issues		
conservation	development.	Incentives: -land acquisition* Regulation: -planning - see Section 4.4 -site alteration bylaws -property standards bylaws -statutory penalties
*Refers to the full range of options for conveying title or interest in land.		

### 3.5 INFRASTRUCTURE

#### What is Infrastructure?

The topic of infrastructure, though considered separately from water, natural heritage, and landform conservation, is accessory to those other topics. Watershed plans need to address this issue not to provide, plan, or design infrastructure, but to ensure that infrastructure provided by others has minimal adverse effects on the water, natural heritage, and landform features and functions that watershed plans seek to protect.

The definition of infrastructure in Section 4.6 was adapted from the *Oak Ridges Moraine Conservation Plan* and TRCA's *Draft Toronto and Region Terrestrial Natural Heritage System Strategy* (in both documents, it is called "transportation, infrastructure, and utilities"), and is reasonably consistent with the *Provincial Policy Statement* definition of infrastructure. As defined in Section 4.6, infrastructure includes:

- provincial highways and municipal roads,
- transit lines, railways, and related facilities,
- gas and oil pipelines, power transmission lines, and telecommunications lines and facilities including broadcasting towers,
- sewage and water service systems and lines,
- bridges, interchanges, stations, and other structures, above and below ground, as well as rights of way associated with these facilities.

#### Provincial Policy Mandate

The only portion of the *Provincial Policy Statement* that addresses the relationship between infrastructure and environmental features and functions is the definition of development:

- ❖ "Development: means the creation of a new lot, a change in land use, or the construction of buildings and structures, requiring approval under the *Planning Act*, but does not include . . . activities that create or maintain infrastructure authorized under an environmental assessment process [or] works subject to the *Drainage Act* . . ."

Since all infrastructure, except for local roads and local sewage and water lines built as part of a subdivision, is "authorized under an environmental assessment process", the effect is that the *PPS* prohibitions and restrictions on development in and near natural heritage features and areas and sensitive ground and surface water features do not apply. (Interestingly, this exemption does not appear to apply to site alteration.)

The *PPS* puts much emphasis on infrastructure being efficient, and unnecessary infrastructure not being developed. However, it does not address the infrastructure-environment relationship, with one exception. When planning for transportation and infrastructure corridors and rights-of-way, "consideration will be given" to all significant resources including significant natural features and natural heritage systems and sensitive ground and surface water features.

### Candidate Planning Goals

- ❖ Protect/enhance/restore water and natural heritage features and systems and ecological functions.
- ❖ Where infrastructure development and operation would unavoidably affect important water, natural heritage, and landform features and systems and native biodiversity and ecological functions, minimize adverse effects and compensate for them wherever possible.

### Planning Issues

<i>Planning issue</i>	<i>Why the issue is important</i>	<i>Potential management actions</i>
I1. Avoiding infrastructure development in or near important features and systems	Important ground and surface water areas and natural heritage systems need to be protected from incompatible infrastructure development. Adverse effects may include not only the physical impact of development itself, but also the interruption of ecological functions by infrastructure	Education: Incentives: Regulation: -planning - see Section 4.5 -environmental assessment

Table 4 Infrastructure Planning Issues		
	crossings.	
I2. Minimizing and compensating for adverse effects of infrastructure development in or near important features and systems	Infrastructure will still be developed in or near important features and systems where there is no reasonable alternative. It then needs to be located and designed so as to minimize adverse effects, and a net-gain or no-net-loss principle needs to be applied to compensate for those adverse effects.	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> <li>-stewardship programs</li> <li>-demonstration projects/best practices on own property</li> </ul> <p>Incentives:</p> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.5</li> <li>-environmental assessment</li> <li>-floodplain/fill approvals</li> <li>-<i>LRIA</i> approvals</li> <li>-<i>Fisheries Act</i> approvals</li> <li>-alternative development standards</li> </ul>
I3. Minimizing the adverse effects of infrastructure operation in or near important features and systems	The management and use of existing and new infrastructure can also have adverse effects on important features and systems. These effects can be minimized through best management and operating practices.	<p>Education:</p> <ul style="list-style-type: none"> <li>-best practices information</li> <li>-stewardship programs</li> <li>-demonstration projects/best practices on own property</li> </ul> <p>Incentives:</p> <p>Regulation:</p> <ul style="list-style-type: none"> <li>-planning - see Section 4.5</li> <li>-environmental assessment</li> <li>-alternative development standards</li> <li>-ISO standards</li> </ul>

## 4 MODEL PLANNING POLICIES

### 4.1 INTRODUCTION

The purpose of Section 4 is to describe, for each policy topic, model planning policies that should be considered when preparing watershed plans. Where appropriate, watershed plans would recommend these policies to municipalities for inclusion in their planning documents.

Section 4 does not, of course, represent all possible policies or the best possible policies. Some other policy options were considered in preparing this guidance document (for discussion of these options, see the synopsis of the seven workshops provided in Appendix 7). Watershed and municipal planners should not feel in any way constrained by what is and is not in Section 4 in searching for what is most appropriate for their particular situation.

For each issue shown in tables 1 through 4 in Section 3, the following information is provided in Section 4:

- ❖ Why the issue is important (repeated from the table).
- ❖ Model official plan policy or policies.
- ❖ Linkages to other policies, where required.
- ❖ How the policies could be varied to reflect the needs and wants of individual watersheds and municipalities, which is only to suggest some possible variations, not provide a complete list of them.
- ❖ Whether the policies could also be implemented by comprehensive zoning bylaw or site-specific bylaw amendment (holding provisions excepted). Generally, all policies should be implemented through an official plan. Zoning may be a valuable, often essential, complement. However, a statement that a policy may be implementable by zoning is not meant to suggest either that it should be implemented by zoning only, or that all aspects can be expressed within the restrictive framework of a zoning bylaw.

The policies include terms requiring definition, which are in *italics*. All definitions are provided in Section 4.6. Wherever possible, the guidance document relies on existing recognized definitions in the *Provincial Policy Statement*, *Oak Ridges Moraine Conservation Plan*, *Niagara Escarpment Plan*, or legislation.

Section 4 does not include policies that simply express the minimum requirements of the 1996 *Provincial Policy Statement*. Nor does it include "blue sky" policies such as official plan goals and objectives, or very general policies such as "seek to improve water quality".

The model policies are not intended to modify the *Provincial Policy Statement*, *Oak Ridges Moraine Conservation Plan*, *Niagara Escarpment Plan*, or *Greenbelt Plan*. Where the provincial plans are more restrictive, their policies would of course prevail.

There are several options for incorporating policies into official plans outside the City of Toronto:

- The same policy can be in both regional and local plans (this is sometimes required by the *Oak Ridges Moraine Conservation Plan*, but in general, there should be a compelling reason for the same provisions to exist in two plans covering the same jurisdiction).
- The policy can be in the regional plan only, or the local plan only.
- The policy can be in the regional plan in general terms, including in generalized form on a small-scale schedule if relevant, and in the local plan in more detailed terms, including in more detailed form on a large-scale schedule if relevant.
- The regional plan can in general terms require the local plan to have the policy.

It should be left to the upper-tier municipality and its constituent lower-tier municipalities to decide which approach is most appropriate, depending on the nature of the policy itself, regional and local circumstances, and the region's established planning approach.

In the single-tier City of Toronto, the choices are, of course, much simpler.

As suggested above, in some cases only some of the policies described for a particular issue will be compatible with each other in the context of a lower-tier official plan. However, options that are mutually exclusive within a local plan could be mixed and matched within a regional plan, should the upper-tier municipality wish to follow a "let a hundred flowers bloom" approach of prescribing different approaches for different parts of the region, or allowing its lower-tier municipalities to choose among different approaches.

All municipalities will also need to allow themselves the latitude and flexibility to adopt different policies in different parts of their jurisdiction. Most lower-tier municipalities, and all regions and the City of Toronto, consist of two or more watersheds. Each watershed plan will select from among the model policies in this guidance document, and will tailor the selected policies to best fit individual watershed needs, before making its recommendation to the municipalities. Some policies recommended by a watershed plan will only be appropriate or justifiable for that watershed, and the municipality will want to limit its application to that watershed. However, the municipality may feel that other recommended policies are appropriate to apply to the entire municipality.

However, at the most basic level of defining and identifying important features, as expressed in model policies W1-1, N1-1, and N1-2, the workshop team believes that consistency within an individual watershed is essential. At this level, the policies recommended by a watershed plan should be translated as uniformly as possible into the official plans of the watershed's constituent municipalities.

Secondary plans (sometimes called block plans) are parts of lower-tier official plans that provide more detailed policy direction for individual areas. Depending on its established planning approach, a lower-tier municipality may decide to include in its official plan:

- no secondary plans and no policies at that level of detail,
- no secondary plans, but municipal-wide policies at that level of detail,
- secondary plans for a few critical areas,
- secondary plans for a complete subset of areas (all downtowns/mixed use centres, all new neighbourhoods, etc.)

Because they are part of official plans, the guidance document does not indicate secondary plans as a separate level for applying the model policies, but all references to official plans in this document should be considered as including secondary plans. In those municipalities which use them, especially for greenfield development, secondary plans tend to be where policy meets on-the-ground reality to determine what environmental features are or are not protected through the planning process. In these situations, secondary plans will be the main vehicle for applying the model policies.

Site plans and agreements are contracts between a lower-tier municipality and an applicant that implement development details. From a policy viewpoint, their prescriptions flow entirely from official plan and zoning bylaw provisions, and the municipality's powers under Section 41 of the *Planning Act*. Where and how a municipality chooses to use site plan powers is again a matter of local circumstances and established planning approach, although the municipality must set forth its intended use of those powers in an official plan policy. Certainly, if the local municipality's official plan includes a commitment to site plan control in all appropriate situations as well as detailed policies for its application, it will be much easier to effectively implement the model policies in this report.

Other planning instruments that can be used to implement the model policies are:

- holding provisions of a site-specific zoning bylaw,
- subdivision or consent agreements, if there is a division of land,
- condominium declaration, where applicable,
- development permits, if and when these are prescribed for more general use (currently in the GTA, they are limited to one location in each of Toronto and Oakville).

As a general rule, the smaller the scale at which the policies will be applied, the more detailed and prescriptive the policies will have to be.

## 4.2 WATER

### **Issue W1: Defining and identifying important ground and surface water areas**

#### Why the issue is important

Ground and surface water areas whose protection is critical to the candidate planning goals in Section 3 need to be defined and identified in planning documents, as a precondition to and basis for any policies intended to protect them specifically.

#### Model policies

##### **Model Policy W1-1: Identify and map feature types that important areas include**

Important ground and surface water areas include the following feature types, all of which will be mapped, and the aquatic ecosystems within those features.

1. *Municipal wellhead protection areas*, divided into the following:
  - 1a. within 100 m of the well or well field
  - 1b. 100 m from the well or well field, to two years *groundwater travel time*
  - 1c. two to five years *groundwater travel time*
  - 1d. five to 25 years *groundwater travel time*
  - 1e. 25 years *groundwater travel time* to limit of *groundwater capture zone*.

(Additional direction or guidance on the division of wellhead protection areas may be provided as the proposed *Drinking Water Source Protection Act* progresses. 1a through 1e may need to be revised accordingly in future versions of the guidance document.)

2. *Areas of high aquifer vulnerability*.
3. *Significant recharge areas*, divided into the following:
  - 3a. areas identified through site-specific study
  - 3b. areas identified through *watershed*-wide studies.
4. *Significant discharge areas*, divided into the following:
  - 4a. areas identified through site-specific study

- 4b. areas identified through *watershed*-wide studies.
- 5. *Headwater areas* that are not within developed portions of *areas of settlement* served by *municipal sewage and water services*, divided into the following:
  - 5a. *headwater areas of cold water streams*
  - 5b. *headwater areas of warm water streams*.
- 6. *Stream corridors*.
- 7. *Wetlands*.
- 8. The *flooding hazard* limit of Lake Ontario.
- 9. *Lakes* other than Lake Ontario, divided into the following:
  - 9a. *kettle lakes*
  - 9b. *other lakes*.

**Model Policy W1-2: Identify important areas not yet known**

It is the policy of the municipality to appropriately identify as important ground and surface water areas any lands and waters that have not been so mapped or identified, but that meet the requirements of policy W1-1 and come to the attention of the municipality due to new information or correction of previous inaccurate or incomplete information.

## Discussion

Policy W1-1 could be varied by:

- Adding feature types.
- Varying the definitions of feature types.
- Giving the map the status of a schedule (legally part of the official plan) or a figure (information and guideline).
- Separating wellhead protection areas from other feature types, so that there is one set of maps and policies for wellhead protection areas and another for other feature types.

Policy W1-2 could be varied by:

- Requiring the map or maps to be fully updated at each regular review of the official plan.

Policies W1-1 and W1-2 could also be implemented by zoning bylaw.

## **Issue W2: Protecting important ground and surface water areas**

### Why the issue is important

Ground and surface water areas whose protection is critical to the candidate planning goals in Section 3 may need specific protection. While many management actions necessarily protect water features and functions generally, directing a large share of management actions towards priority areas will result in more effective and efficient progress towards goal achievement.

### Model policies

#### **Model Policy W2-1: Restrict development in important areas**

*Development* in important ground and surface water areas is prohibited or restricted as shown in Table 5, which is part of this policy.

All other relevant provincial and municipal policies continue to apply in all cases.

### Explanatory note to Table 5

Important ground and surface water area feature types are shown by name and number. The name is a short form of the name in Policy W1-1. The number is as shown in Policy W1-1.

If a feature type is shown in the column, "not permitted in:", the *development* type in that row is not permitted in any circumstances in that feature type. If a feature type is shown in the column, "not permitted in, except:", the *development* type in that row may be permitted in that feature type only in accordance with the restrictions shown.

Where subject lands fall within two or more feature types in the same row, the most restrictive policies apply. If a feature type is not shown in either column, Policy W2-1 does not apply to the *development* type in that row.

Appendixes 2 and 3 provide further information on the threat classification of land uses and contaminants.

For reader convenience, workshop team members have prepared a chart showing the Table 5 development restrictions in graphic form. This is provided in Appendix 4.

Table 5 Model Policy W2-1 Development Restrictions		
<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
Any type of <i>development</i> not listed below	1a - wellhead <100 m 4a, 4b - discharge 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	3a, 3b - recharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>hydrological evaluation</i> , to the satisfaction of the municipality
<i>New lot creation</i>	1a - wellhead <100 m 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	
Very high threat land uses (see Appendix 2)	1a, 1b, 1c - wellhead <5 yr 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1d, 1e - wellhead 5 yr to limit 2 - vulnerable aquifer 3a, 3b - recharge 4a, 4b - discharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> for contaminants normally associated with the subject use, to the satisfaction of the municipality
High threat land uses (see Appendix 2)	1a, 1b - wellhead <2 yr 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1c, 1d - wellhead 2 to 25 yr 2 - vulnerable aquifer 3a, 3b - recharge 4a, 4b - discharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> for contaminants normally associated with the subject use, to the satisfaction of the municipality
Moderate threat land uses	1a - wellhead <100	1b, 1c, 1d - wellhead 100 m to 25 yr

<b>Table 5 Model Policy W2-1 Development Restrictions</b>		
<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
(see Appendix 2)	m 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	2 - vulnerable aquifer 3a, 3b - recharge 4a, 4b - discharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> for contaminants normally associated with the subject use, to the satisfaction of the municipality
Pathogenic land uses (see Appendix 2)	1a - wellhead <100 m 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1b - wellhead 100 m to 2 yr: permitted only if the applicant submits a <i>contaminant management plan</i> for contaminants normally associated with the subject use, to the satisfaction of the municipality
Storage of very high threat contaminants in excess of specified quantities (see Appendix 2)	1a, 1b, 1c - wellhead <5 yr 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1d, 1e - wellhead 5 yr to limit 2 - vulnerable aquifer 3a, 3b - recharge 4a, 4b - discharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> , to the satisfaction of the municipality
Storage of high threat contaminants in excess of specified quantities (see Appendix 2)	1a, 1b - wellhead <2 yr 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1c, 1d - wellhead 2 to 25 yr 2 - vulnerable aquifer 3a, 3b - recharge 4a, 4b - discharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> , to the satisfaction of the municipality
Storage of moderate threat contaminants in excess of specified quantities (see Appendix 2)	1a - wellhead <100 m 6 - stream corridors	1b, 1c, 1d - wellhead 100 m to 25 yr 2 - vulnerable aquifer 3a, 3b - recharge 4a, 4b - discharge

<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
2)	7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> , to the satisfaction of the municipality
Storage of pathogenic contaminants in excess of specified quantities (see Appendix 2)	1a - wellhead <100 m 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1b - wellhead 100 m to 2 yr: permitted only if the applicant submits a <i>contaminant management plan</i> , to the satisfaction of the municipality
<i>Site alteration</i> that is neither an integral and essential part of any other type of <i>development</i> listed in Table 5, nor minor alteration of grade for landscaping or driveway construction purposes	1a - wellhead <100 m 3a - recharge, site-specific 4a - discharge, site-specific 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	4b - discharge, watershed-wide 5a, 5b - headwaters: permitted only in accordance with an established process (municipal site alteration bylaw, site plan control, or <i>Conservation Authorities Act</i> or <i>Niagara Escarpment Planning and Development Act</i> approval) satisfactory to the municipality
Conservation and flood or erosion control projects		1a - wellhead <100 m 4a, 4b - discharge 5a, 5b - headwaters 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes: permitted only if demonstrated to be necessary in the public interest after all alternatives have been considered
Private farm, recreational, or scenic ponds	1a - wellhead <100 m 3a - recharge, site-specific	4b - discharge, watershed-wide 5a, 5b - headwaters: permitted only in accordance with an established process (municipal site

<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
	4a - discharge, site-specific 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	alteration bylaw, site plan control, or <i>Conservation Authorities Act</i> or <i>Niagara Escarpment Planning and Development Act</i> approval) satisfactory to the municipality
<i>Forest, fish, and wildlife management</i>		
Reconstruction, repair, or maintenance of an existing drain approved under the <i>Drainage Act</i>		4a, 4b - discharge: permitted only if the applicant submits a <i>hydrological evaluation</i> , to the satisfaction of the municipality
New or expanded <i>agricultural uses</i> that would generate five or more additional <i>nutrient units</i> of manure per year	1a - wellhead <100 m 4a, 4b - discharge 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	1b, 1c - wellhead 100 m to 5 yr 2 - vulnerable aquifer 3a, 3b - recharge 5a, 5b - headwaters: permitted only if the applicant submits a <i>contaminant management plan</i> for contaminants normally associated with the subject use, to the satisfaction of the municipality
New or expanded <i>agricultural uses</i> that would generate less than five additional <i>nutrient units</i> of manure per year	1a - wellhead <100 m 4a, 4b - discharge 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes	
Any other <i>agricultural uses</i> on lands whose existing use is <i>agricultural uses</i>		
<i>Low-intensity recreational uses</i>		

<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
Existing uses, buildings, and structures, as permitted by the official plan		
Expansion of existing uses, buildings, and structures, as permitted by the official plan		1a, 1b, 1c, 1d - wellhead <25 yr 4a, 4b - discharge 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes: permitted only if the applicant submits a <i>hydrological evaluation</i> , to the satisfaction of the municipality
A change of use to a similar or more compatible use, as permitted by the official plan		1a, 1b, 1c, 1d - wellhead <25 yr 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes: permitted only if the applicant submits a <i>hydrological evaluation</i> , to the satisfaction of the municipality
Construction and use of a single dwelling, a single accessory apartment or dwelling, or nonresidential buildings accessory to a dwelling, on an existing lot, as permitted by the official plan		
Change of use to a similar use, where the change is permitted by the official plan		
New public or private		1a - wellhead <100 m

<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
roads that are not <i>infrastructure</i>		4a, 4b - discharge 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes: permitted only as part of approved <i>development</i>
<i>Infrastructure</i>		1a - wellhead <100 m 3a - recharge, site-specific 4a - discharge, site-specific 6 - stream corridors 7 - wetlands 8 - L. Ont. hazard 9a, 9b - other lakes: permitted subject to justification through an approved environmental assessment process under the <i>Environmental Assessment Act</i> or <i>Canadian Environmental Assessment Act</i> or a submission by the applicant, that demonstrates to the satisfaction of the municipality that the works are necessary in the public interest and that all reasonable alternatives to the undertaking (including a do-nothing option) have been considered, and that there has been due regard to Policy I2-1

### **Model Policy W2-2: Use nutrient bylaw to control spreading**

It is the policy of the municipality to:

- Pass a nutrient management bylaw, or maintain one if it exists already, to regulate those aspects of nutrient management that are beyond the jurisdiction of the *Nutrient Management Act, 2002* and regulations.
- Through the operation of this bylaw, prohibit the spreading of manure, biosolids, and other nutrients in *municipal wellhead protection areas* within 100 m of the well or well field, and require a satisfactory *contaminant management plan* to regulate spreading within two years *groundwater travel time*.

### **Model Policy W2-3: Identify adjacent lands**

Lands adjacent to important surface water areas include lands which are one or more of the following:

- Within [specified by the *watershed plan*] m of:
  - stream corridors*
  - wetlands* [alternatively the *watershed plan* could specify the groundwater catchment area]
  - the *flooding hazard* limit of Lake Ontario
  - lakes* other than Lake Ontario that are not *kettle lakes*.
- Within the surface catchment areas of *kettle lakes*.
- Within [specified by the *watershed plan*] m of the *flooding hazard* limit of a *warm water stream* or the high water mark of a *warm water lake*.
- Within [specified by the *watershed plan*] m of the *flooding hazard* limit of a *cold water stream* or the high water mark of a *cold water lake*.

### **Model Policy W2-4: Restrict development in adjacent lands**

*Development* on lands adjacent to important surface water areas may be permitted, provided that any studies of those lands recommended by the *watershed plan* have been completed to the satisfaction of the municipality, and that the requirements recommended by those studies (for example, restoration to a natural state) have been met.

*Development* on lands adjacent to important surface water areas is subject to the following restrictions, unless a study of those lands as described above recommends otherwise:

- very high or high threat land uses (see Appendix 2) not permitted
- storage of very high or high threat contaminants in excess of specified quantities (see Appendix 2) not permitted.

Where lands adjacent to important surface water areas are themselves also important ground or surface water areas subject to Policy W2-1, the more restrictive of Policies W2-1 and W2-4 apply.

### **Model Policy W2-5: Set land acquisition priorities**

It is the policy of the municipality that *municipal wellhead protection areas* within 100 m of the well or well field are priority lands for *acquisition* by a public authority, where they are currently not owned by a public authority or land trust. If any such lands are contaminated, before conveyance the transferor will:

- restore them to a condition free from adverse effects and suitable for enhancement,
- submit a Record of Site Condition to the municipality, and
- satisfy any other requirements of the municipality regarding contaminated sites.

## Discussion

If Policy W2-1 is adopted, Policy I2-1 is required.

If adopted, Policies W2-3 and W2-4 require each other.

Policy W2-1 could be varied by:

- Adding or deleting development types as specified in Table 5 and otherwise varying the development types.
- Increasing or decreasing the number of development types not permitted, or permitted with restrictions, in each feature type.
- Making the policies on prohibited and permitted uses more uniform or more different across the range of feature types or the range of development types.
- Making any of the conditions for permitting uses more or less restrictive.
- Incorporating detailed threat classifications in the official plan, along the lines of Appendix 3.
- Increasing or decreasing the number of threat classifications.
- Varying the land uses and contaminants within the threat classifications.
- Restricting higher-threat land uses but not contaminant storage.
- Restricting higher-threat contaminant storage but not land uses.

Policy W2-2 could be varied by:

- Increasing the range of feature types to which the specified application of the nutrient management bylaw would apply.
- Changing the management actions to which the specified application of the bylaw would apply.

Policy W2-3 could be varied by:

- Adding or deleting feature types that would have adjacent lands.

Policy W2-4 could be varied by:

- Removing the reference to specific studies and relying on the listed land use restrictions only.
- Increasing or decreasing the number of development types not permitted, or permitted with restrictions.
- Making any of the restrictions on permitted uses more or less restrictive.
- Restricting higher-threat land uses but not contaminant storage.
- Restricting higher-threat contaminant storage but not land uses.

Policy W2-5 could be varied by:

- Adding feature types subject to the policy.
- Setting priorities by feature type.

Policies W2-1, W2-3, and W2-4 could also be implemented by zoning bylaw.

### **Issue W3: Minimizing groundwater flow alteration**

#### Why the issue is important

Subsurface construction can change groundwater flow patterns in or near important groundwater areas, substantially altering hydrological functions from natural conditions.

#### Model policies

##### **Model Policy W3-1: Minimize groundwater flow alteration**

*Development in:*

- municipal wellhead protection areas within 100 m of the well or well field,
- significant discharge areas,
- headwater areas of cold water streams,
- stream corridors,
- wetlands,
- lakes other than Lake Ontario, and
- lands adjacent to *kettle lakes* as defined in Policy W2-3,

may be permitted only if the applicant demonstrates that direct alteration of groundwater flows will be minimized, by:

- undertaking no construction at a depth greater than 1 m above the high water table, or
- undertaking a hydrogeological and/or geotechnical study to the satisfaction of the municipality, or
- fulfilling applicable approval requirements under the *Aggregate Resources Act*, *Environmental Assessment Act*, and/or *Ontario Water Resources Act*.

*Development in significant recharge areas* may be permitted only if the applicant undertakes a hydrogeological study that demonstrates to the satisfaction of the municipality that direct alteration of groundwater flows will be minimized and that the feature will be protected and its related hydrological functions maintained.

#### Discussion

This policy could be varied by:

- Adding or deleting feature types subject to the policy.
- Varying the study requirements.

- Varying or removing the conditions that can be fulfilled as an alternative to a study.

This policy could also be implemented by zoning bylaw.

### **Issue W4: Managing abandoned wells and boreholes**

#### Why the issue is important

Without proper management and decommissioning, abandoned wells and boreholes can become dangerously effective vectors for groundwater contamination.

#### Model policies

##### **Model Policy W4-1: Ensure wells or boreholes properly abandoned**

On a lot on which there is an abandoned well or borehole, *development* may be permitted only if the applicant demonstrates to the satisfaction of the municipality that in the case of a well all abandonment actions required under the *Ontario Water Resources Act* have been taken, or that in the case of a borehole comparable abandonment actions have been taken. If the well or borehole was not previously known and is encountered by the applicant, this policy takes effect immediately, and the applicant must immediately report this finding to the municipality.

#### Discussion

This policy could also be implemented by zoning bylaw.

### **Issue W5: Minimizing hard-surfacing**

#### Why the issue is important

As impervious surfaces increase in a watershed, surface runoff increases at the expense of groundwater recharge. Opportunities for contaminants, sediments, etc. to be intercepted before reaching surface waters are reduced, and hydrological functions, especially stream flows and channels, are substantially altered from natural conditions.

## Model policies

### **Model Policy W5-1: Cap cumulative hard surfaces**

*Development* may be permitted only if the applicant demonstrates to the satisfaction of the municipality that the *development* will not cause the total cumulative *impervious surface* area of the [name] *watershed* to exceed [specified by the *watershed plan*] % of the *watershed* area.

### **Model Policy W5-2: Limit growth of hard surfaces in urban areas**

It is the policy of the municipality that in developed portions of *areas of settlement*, municipal development standards and review of individual applications will seek to minimize increases in, and if possible reduce, the total cumulative area that has *impervious surfaces*.

### **Model Policy W5-3: Compensate offsite for hard surface effects**

It is the policy of the municipality that in those developed portions of *areas of settlement*, and those areas of new *development* where planning policies encourage or mandate medium and high densities to promote efficient urban form and servicing, where it is not possible to achieve Policies W5-1 or W5-2 [such areas may be specified in the *watershed plan*], methods satisfactory to the municipality will be used to ensure that the applicant compensates offsite for the inevitable adverse effects of excessive hard-surfacing on the *watershed's* important ground and surface water areas, water quality, and hydrological functions.

Appendix 6 contains more detailed candidate urban stormwater management policies that may be more suitable for inclusion in the watershed plan than in the official plan. Some of these policies also address the issue of hard-surfacing.

## Discussion

Policy W5-2 is not intended to be adopted without Policy W5-1.

If adopted, Policy W5-3 requires Policy W5-1.

Policy W5-1 could be varied by:

- Changing the definition of impervious surfaces from that in Section 4.6, to make it more performance-based and/or restrictive.
- Allowing applicants greater flexibility on impervious surfaces if they can demonstrate that their overall site plan will maintain or enhance the existing water balance.
- Establishing different cumulative limits for different portions of the watershed.

- Limiting the policy to nonurban areas.

Policy W5-2 could be varied by:

- Changing the definition of impervious surfaces from that in Section 4.6, to make it more performance-based and/or restrictive.
- Allowing applicants greater flexibility on impervious surfaces if they can demonstrate that their overall site plan will maintain or enhance the existing water balance.
- Setting a cumulative limit for impervious surfaces.
- Making the policy more prescriptive, for example, setting performance standards for individual lots or applications.

### **Issue W6: Restricting development and restoring vegetation on and near shorelines**

#### Why the issue is important

All forms of shoreland development can result in increased discharge of toxic contaminants, excessive pathogens, nutrients, sediment, excessively warm water, etc. into lakes and streams. Altering shorelines and filling nearshore waters without proper planning and management can cause erosion or siltation, destroy shoreland and aquatic vegetation, and eliminate fish and wildlife habitats. No-development buffer strips along shorelines reduce these effects. Maintaining or restoring natural vegetation within these buffer strips reduces these effects further.

#### Model policies

##### **Model Policy W6-1: Set development back from lakes and streams**

All *development* will be set back from *lakes* to at least the greater of the following:

- The high water mark.
- [-Distance recommended by the *watershed plan*].

All *development* will be set back from *streams* to at least the greater of the following:

- The limit of the *stream corridor*.
- [-Distance recommended by the *watershed plan*].

The municipality may consider an exception to the required setback where one or more of the following applies:

- A *watershed plan* or an *environmental impact study* demonstrates to the satisfaction of the municipality that the setback can be reduced, without adversely affecting slope stability, *flooding hazards*, natural vegetation in the setback, and *fish habitat* in the *lake* or *stream*.
- Site alteration* is necessary for environmental restoration or enhancement, and has been approved by the municipality or conservation authority.
- An existing lot where due to its size, shape, topography, or existing or previously approved use, it is not feasible to achieve the required setback.

Also excepted from the required setback are any shoreline-related accessory structures (see Policy W6-2), to the extent that the zoning bylaw defines them and permits them within some or all of the setbacks.

### **Model Policy W6-2: Control nearshore accessory structures**

*Development* of shoreline-related accessory structures, such as docks, boathouses, marine facilities, stairs, gazebos, etc., and *site alteration* of shorelines, may be permitted only if the applicant:

- demonstrates minimum impact on the *shoreline* and *lake* or *stream* through an *environmental impact study*, or
- complies with minimum impact guidelines recommended in the *watershed plan*.

### **Model Policy W6-3: Protect and restore setbacks**

Within the shoreline setbacks established by Policy W6-1, applicants will be required to leave the lands substantially undisturbed except for the minimum required for approved *development*, or if the setbacks have been disturbed by past activities, restore them to a natural state. Restoration should include renaturalizing the shoreline and planting native vegetation. Clearing will be restricted to the minimum required for approved *development*, pedestrian access, safety of residents, and limited views to water.

### **Model Policy W6-4: Protect and restore natural cover lengths along streams**

In *stream corridors*, the municipality will use Policy W6-3 to promote and encourage the protection or restoration of continuous lengths of natural cover 5 km or greater.

### **Model Policy W6-5: Restrict Lake Ontario lakefilling**

In Lake Ontario and its *flooding hazard* limit:

- major lakefilling, as defined in the official plan, may be permitted only for purposes of public recreation or *infrastructure*, subject to justification through an approved environmental assessment process under the *Environmental Assessment Act* or *Canadian*

*Environmental Assessment Act* that ensures to the satisfaction of the municipality that water quality and hydrological functions will be protected or enhanced;  
 -minor lakefilling, as defined in the official plan, may be permitted only for purposes of public recreation, public access to water, *infrastructure*, slope or shoreline stabilization, shoreline naturalization, or water quality or aquatic habitat protection or enhancement.

## Discussion

Policy W6-1 could be varied by:

- Varying the setback distances.
- Adding to, reducing, or eliminating the site-specific exceptions.
- Adding to, reducing, or eliminating the types of shoreline-related accessory structures permitted within the setback.

Policy W6-2 could be varied by:

- Applying the policy to shoreline structures only (docks, boathouses, marine facilities).
- Limiting structure development and site alteration to a fixed amount or percentage of the lot shoreline.
- Limiting structure development to a fixed amount or percentage of lot coverage based on that part of the lot within a specified distance from the shore.
- Requiring an environmental impact study only.
- Requiring compliance with recommended guidelines only.
- Allowing structure development up to a fixed amount or percentage of lot coverage without an environmental impact study and/or compliance with recommended guidelines.

Policy W6-3 could be varied by:

- Changing it to an "encourage" policy.
- Adding to, reducing, or eliminating permitted disturbance and clearing.

Policy W6-4 could be varied by:

- Changing the desired lengths of natural cover.

Policy W6-5 could be varied by:

- Defining major and minor lakefilling through watershed plan recommendations.
- Adding or deleting purposes for which major or minor lakefilling may be permitted.
- Adding to the environmental assessment justification requirements.

Policies W6-1, W6-2, W6-3, and W6-5 could also be implemented by zoning bylaw.

## **Issue W7: Requiring a planned sustainable water supply**

### Why the issue is important

Each water withdrawal leaves less for the next user. Water budgeting and conservation can ensure that the quantity of water required for human, industrial, and agricultural consumption and for irrigation is limited so as to maintain a healthy hydrological cycle, and that within those limits, water is fairly allocated and efficiently used.

### Model policies

#### **Model Policy W7-1: Require water budget for some types of development**

The following types of *development*,

-*major development* not within developed portions of *areas of settlement* served by *municipal sewage and water services*,

-*major development* in areas served by *municipal water services* drawing from groundwater, and

-any other *development* that would require a Permit to Take Water under the *Ontario Water Resources Act*,

are permitted only if a water budget and conservation plan prepared in accordance with Section 25(2) of the *Oak Ridges Moraine Conservation Plan*, or an assessment report prepared in accordance with the *Drinking Water Source Protection Act* [draft legislation only as of April 2005], is or already has been completed. The plan/report must demonstrate or have demonstrated to the satisfaction of the municipality that a sustainable water supply can be provided, having regard for the capacity of the water source, the needs of other users, and impacts on the environment. The applicant must demonstrate to the satisfaction of the municipality that any water conservation requirements recommended by the plan/report can and will be met.

### Discussion

This policy could be varied by:

- Adding or deleting development types subject to the policy.
- Increasing or removing the area limitations applicable to development types.
- Limiting the overall policy to nonurban areas.
- Limiting the policy to nonurban areas, and urban areas served by groundwater.

This policy could also be implemented by zoning bylaw.

## **Issue W8: Restricting water-taking land uses**

### Why the issue is important

Although the *Ontario Water Resources Act* regulates water taking, water taking has been legally recognized as a land use. Issues of water quantity and hydrological function may in some cases be so critical that they should be subject to the more open and inclusive review and approval requirements of the *Planning Act*.

### Model policies

#### **Model Policy W8-1: Restrict development needing PTTW in wellhead protection areas**

*Development* that would require a Permit to Take Water under the *Ontario Water Resources Act* may be permitted in a *municipal wellhead protection area* only if the applicant demonstrates to the satisfaction of the municipality that this water withdrawal in conjunction with previously approved withdrawals will not cumulatively alter the *groundwater capture zone* or reduce future takings from the well or well field.

#### **Model Policy W8-2: Prohibit development needing PTTW in most vulnerable headwaters**

*Development* that would require a Permit to Take Water under the *Ontario Water Resources Act* and that would draw from an *unconfined aquifer* is not permitted in a *headwater area* of a *cold water stream*.

### Discussion

Policy W8-2 could be varied by:

- Adding feature types subject to this policy.

Policies W8-1 and W8-2 could also be implemented by zoning bylaw.

## **Issue W9: Requiring appropriate water and sewage services**

### Why the issue is important

Inappropriate or no water and sewage services can cause toxic contaminants and excessive pathogens and nutrients to be discharged into aquifers, lakes, and streams, either directly or through surface runoff.

### Model policies

#### **Model Policy W9-1: Restrict lot creation on private services in some feature types**

Creation of four or more lots (including the retained lot in case of a consent) to be serviced by *individual on-site sewage and/or water services* may be permitted in *significant recharge areas* and *significant discharge areas* identified through site-specific study, and the surface catchment areas of *kettle lakes*, only if the applicant demonstrates that the proposed systems will not cumulatively adversely affect the important feature or its water quality or hydrological functions. (*New lot creation* would be prohibited within some feature types - see Policy W2-1.)

#### **Model Policy W9-2: Prohibit development on private services near wellheads**

*Development* that would require construction of a new *individual on-site sewage and/or water service* is not permitted in a *municipal wellhead protection area* within 100 m of the well or well field, unless the system is constructed on a portion of the lot that is beyond the 100 m limit.

#### **Model Policy W9-3: Prohibit development on municipal services in some feature types**

*Major development* is not permitted in *municipal wellhead protection areas* up to 25 years *groundwater travel time*, or in *areas of high aquifer vulnerability*, unless serviced by *municipal sewage and water services* or *private communal sewage and water services*.

#### **Model Policy W9-4: Require private sewage system upgrading for redevelopment**

On a lot on which there is an *individual on-site sewage service* that includes a leaching bed (tile field), *development* that includes or alters plumbing or the leaching bed may be permitted only if the applicant demonstrates to the satisfaction of the municipality that the *sewage system* has

been inspected by the responsible authority and has been or will be upgraded to meet current *Ontario Building Code* requirements taking discharge from the *development* into account.

**Model Policy W9-5: Use reinspection bylaw to upgrade private sewage systems**

It is the policy of the municipality to pass bylaws:

- providing for reinspection of all *individual on-site sewage services* from time to time, and issuance of remedial orders for deficient systems, and/or
- requiring all owners of septic tanks to pump them out at set intervals.

## Discussion

Policy W9-1 could be varied by:

- Increasing or decreasing the minimum number of lots subject to the policy.
- Adding or deleting feature types subject to the policy.

Policy W9-2 could be varied by:

- Adding feature types subject to the policy.

Policy W9-3 could be varied by:

- Adding or deleting feature types subject to the policy.

Policy W9-5 could be varied by:

- Requiring both private system reinspection and septic tank pumpout.

Policies W9-2, W9-3, and W9-4 could also be implemented by zoning bylaw.

## **Issue W10: Requiring urban stormwater management best practices**

### Why the issue is important

Inappropriate or no stormwater services can cause toxic contaminants, excessive pathogens, nutrients, and sediment, excessively warm water etc., to be discharged into aquifers, lakes, and streams, either directly or through surface runoff. Inappropriate or no stormwater services can also result in too much runoff, which can impair the natural functioning of the hydrological cycle and adversely alter stream flows and channels.

## Model policies

### **Model Policy W10-1: Require urban stormwater management best practices**

It is the policy of the municipality that in *areas of settlement*, all *development* will meet development standards, water balance targets, and peak flow and quality targets at point of discharge, recommended by the *watershed plan* or by a tributary plan mandated by the *watershed plan*, for the better management of stormwater in accordance with natural hydrological principles. For the purposes of this policy, point of discharge may refer to runoff at the lot line, discharge to receiving surface water, and/or infiltration to receiving groundwater, as appropriate. Where it is not possible to achieve the recommended standards and targets, methods satisfactory to the municipality will be used to ensure that the applicant compensates offsite for the inevitable adverse effects of inadequately managed stormwater on the *watershed's* important ground and surface water areas, water quality, and hydrological functions.

Appendix 6 provides more detailed candidate policies on the hierarchy principle of stormwater management, water balance criteria, water quality criteria, peak flow targets, development standards, offsite compensation, and related issues, that may be more suitable for inclusion in the watershed plan than in the official plan.

## Discussion

None.

### **Issue W11: Requiring cumulative effects assessment**

#### Why the issue is important

Watershed plans evaluate the current state of watersheds, how natural conditions will change in response to future development scenarios, and what mitigation is required to keep change within acceptable bounds. Watershed plans will only be effective with a mechanism to periodically assess whether the watershed is in fact responding to development as predicted, and if it is not, to change course as needed.

## Model policies

### **Model Policy W11-1: Monitor and phase urban development across watershed**

It is the policy of the municipality that in the [name] *watershed*, the impacts of *development* of *areas of settlement* will be monitored and the environmental performance of that *development* continuously improved, as follows:

- [Here a series of development phases would be indicated. For example, if the *watershed plan* finds that the developed portions of *areas of settlement* currently occupy 10% of the *watershed*, and evaluates and recommends a scenario that would increase urbanization to 25%, three phases might be indicated: up to 15%, up to 20%, and up to 25%.]
- Before the end of each phase of *development* of *areas of settlement*, the conservation authority and the municipality will undertake a watershed monitoring program as recommended by the *watershed plan*. Landowners actually and potentially benefiting from *development* will pay in advance the cost of the monitoring program, and will be involved in its implementation if they so wish. This program will update the measures of current conditions in the *watershed plan*, compare actual versus predicted changes in conditions and attempt to determine reasons for variance, and evaluate actual performance against targets established in the *watershed plan*.
- Development* of the next phase will not be approved until the monitoring program is concluded, or if approved, will be subject to appropriate holding provisions.
- Once the monitoring program is concluded, and if the monitoring finds that actual performance has in one or more significant respects fallen short of the targets established in the *watershed plan*, the conservation authority and the municipality will determine what improvements to future phases, including if necessary reduction of the area to be urbanized, as well as what remediation of completed phases, will be needed to restore performance to target levels in the next phase.
- Development* approvals for the next phase will incorporate these improvements.

### **Model Policy W11-2: Monitor performance of individual developments**

In the [name] *watershed*, it will be a condition of approval of [types of *development* specified by the *watershed plan*] that individual applicants undertake or provide for, to the satisfaction of the municipality, such pre- and post-development monitoring as the [name] *watershed plan* has determined is required to compare actual environmental performance to *watershed plan* objectives and targets, and identify opportunities for continuous improvement.

## Discussion

Policy W11-1 addresses urban development only. Rural developments such as golf courses, aggregate operations, etc. can also have significant impacts on watersheds. Additional policies should be considered in future versions of the guidance document.

## 4.3 NATURAL HERITAGE

### **Issue N1: Defining and identifying a present and future natural heritage system**

#### Why the issue is important

Existing natural heritage features and communities, and lands and waters with future restoration potential, whose protection is critical to the candidate planning goals in Section 3, need to be defined and identified in planning documents as a precondition to and basis for any policies intended to protect them specifically.

#### Model policies

##### **Model Policy N1-1: Identify feature types that natural heritage systems include**

Natural heritage systems include the following existing feature types, as well as lands and waters identified by the *watershed plan* (subject to Policy N3-1) as having the potential to be restored to the following feature types:

- habitat of *endangered* and *threatened species*
- habitat of *species of special concern*
- important fish habitat*
- important wildlife habitat*
- wetlands*
- woodlands*
- savannahs, tallgrass prairies, and sand barrens*
- kettle lakes*
- valley and stream corridors*
- natural beaches, dunes, and bluffs along present and former lake shorelines
- areas of natural and scientific interest.*

##### **Model Policy N1-2: Map natural heritage system by feature type category**

Natural heritage system lands and waters are classified and will be mapped into three land use categories, ranked from Category 1 (highest protection) to Category 3 (lowest protection). Where features of different categories overlap, the lands are classified and mapped in the highest protection (lowest number) category.

Category 1:

-existing features of types in which *development* would generally not be permitted [specific features or feature types to be specified in the *watershed plan*]

Category 2:

-existing features of types in which *development* would generally not be permitted except where no negative impacts on the feature and its ecological functions can be demonstrated, excepting any lands or waters that have been removed from the natural heritage system by agreement in accordance with Policy N3-1 [specific features or feature types to be specified in the *watershed plan*].

Category 3:

-existing features of types in which *development* would generally be permitted where compatible with protection of the feature and its ecological functions [specific features or feature types to be specified in the *watershed plan*].  
 -all lands and waters identified by the *watershed plan* as having the potential to be restored to an important feature of any type, excepting any lands/waters that have been removed from the natural heritage system by agreement in accordance with Policy N3-1  
 -all lands and waters with the potential to be restored to an important feature of any type and that have been added to the natural heritage system by agreement in accordance with Policy N3-1.

## Explanatory note to Policy N1-2

Where the terms "would generally not be permitted" or "would generally be permitted" are used in Policy N1-2, this is solely to characterize (but not limit or prescribe) the types of features that the *watershed plan* would assign to each category. Once the features are assigned, Policy N2-1 sets out what *development* would or would not be permitted in each category.

However, as further guidance to *watershed plans*, it would be expected that certain feature types would be restricted to certain categories, unless the *watershed plan* justifies otherwise, as follows:

- ❖ habitat of *endangered* and *threatened species* - Category 1 only
- ❖ habitat of *species of special concern* - Categories 1 and 2 only
- ❖ *wetlands* - Categories 1 and 2 only
- ❖ *savannahs, tallgrass prairies, and sand barrens* - Category 1 only
- ❖ *kettle lakes* - Category 1 only
- ❖ *valley and stream corridors* - Category 1 only
- ❖ *areas of natural and scientific interest* - Category 1 only.

Note that any feature not considered significant by the *Provincial Policy Statement* or important by the *watershed plan*, nor described as a key natural heritage feature or minimum vegetation protection zone by the *Oak Ridges Moraine Conservation Plan*, would not fall into any category and would not merit any protection.

### **Model Policy N1-3: Identify natural heritage system features not yet known**

It is the policy of the municipality to appropriately identify and classify as part of the natural heritage system any lands and waters that have not been so mapped or identified, but that meet the requirements of policy N1-1 and come to the attention of the municipality due to new information or correction of previous inaccurate or incomplete information.

## Discussion

Policy N1-1 could be varied by:

- Adding feature types.
- Varying the definitions of feature types.

Policy N1-2 could be varied by:

- Increasing the number of categories and further differentiating among the categories by general development policy.
- Separating all feature types, so that each feature type is mapped separately and has its own set of policies, as is the most common current practice in official plans.
- Giving the map the status of a schedule (legally part of the official plan) or a figure (information and guideline).

Policy N1-3 could be varied by:

- Requiring the map or maps to be fully updated at each regular review of the official plan.

Policies N1-1, N1-2, and N1-3 could also be implemented by zoning bylaw.

## **Issue N2: Protecting system lands, waters, features, and functions**

### Why the issue is important

Natural heritage lands, waters, features, and functions critical to the candidate planning goals in Section 3 will need to be protected from incompatible land use and development.

## Model policies

### **Model Policy N2-1: Restrict development in natural heritage system**

*Development* in the natural heritage system is prohibited or restricted as shown in Table 6, which is part of this policy.

All other relevant provincial and municipal policies continue to apply in all cases.

### Explanatory note to Table 6

Categories are shown by number as per Policy N1-2.

If a category is shown in the column, "not permitted in:", the *development* type in that row is not permitted in any circumstances in that category. If a category is shown in the column, "not permitted in, except:", the *development* type in that row may be permitted in that category only in accordance with the restrictions shown. If a category is not shown in either column, Policy N2-1 does not apply to the *development* type in that row.

For reader convenience, workshop team members have prepared a chart showing the Table 6 development restrictions in graphic form. This is provided in Appendix 5.

<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
Any type of <i>development</i> not listed below	1	2: permitted only where an <i>environmental impact study</i> demonstrates to the satisfaction of the municipality that the <i>development</i> will meet the normally prescribed requirements of that study, as well as performance standards [recommended by the <i>watershed plan</i> ]: [the policy may either list the performance standards here, or provide a specific reference to the <i>watershed plan</i> ] 3: permitted only where an <i>environmental impact study</i> demonstrates to the satisfaction of the municipality that the <i>development</i> will be compatible with the

Table 6 Model Policy N2-1 Development Restrictions		
<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
		protection of the feature and/or its ecological functions
<i>New lot creation</i>	1	
<i>Site alteration</i> that is neither an integral and essential part of any other type of <i>development</i> listed in this table, nor minor alteration of grade for landscaping or driveway construction purposes	1	2: permitted only in accordance with an established process (municipal site alteration bylaw, site plan control, or <i>Conservation Authorities Act</i> or <i>Niagara Escarpment Planning and Development Act</i> approval) satisfactory to the municipality, or 3: permitted same as category 2, or in accordance with a <i>site restoration plan</i> satisfactory to the municipality
Conservation and flood or erosion control projects		1, 2: permitted only if demonstrated to be necessary in the public interest after all reasonable alternatives have been considered, or 3: permitted same as categories 1 and 2, or in accordance with a <i>site restoration plan</i> satisfactory to the municipality
Private farm, recreational, or scenic ponds	1	
<i>Forest management</i>		1, 2: permitted only in accordance with a trees bylaw under the <i>Municipal Act</i> or <i>Forestry Act</i> , a previously approved managed forest plan under the <i>Assessment Act</i> , or a <i>site restoration plan</i> satisfactory to the municipality
Fish and wildlife management		

<b>Table 6 Model Policy N2-1 Development Restrictions</b>		
<b><i>Type of development</i></b>	<b><i>Not permitted in:</i></b>	<b><i>Not permitted in, except:</i></b>
Reconstruction, repair, or maintenance of an existing drain approved under the <i>Drainage Act</i>		
<i>Agricultural uses</i> on lands whose existing use is <i>agricultural uses</i>		
<i>Agricultural uses</i> on lands whose existing use is not <i>agricultural uses</i>	1	
<i>Low-intensity recreational uses</i>		
Existing uses, buildings, and structures, as permitted by the official plan		1, 2: permitted subject to Policy N6-1
Expansion of existing uses, buildings, and structures, as permitted by the official plan		1, 2: permitted subject to Policy N6-1
A change of use to a similar or more compatible use, as permitted by the official plan		1, 2: permitted subject to Policy N6-1
Construction and use of a single dwelling, a single accessory apartment or dwelling, or nonresidential buildings accessory to a dwelling, on an existing lot, as permitted by the official plan		1, 2: permitted subject to Policy N6-1

<i>Type of development</i>	<i>Not permitted in:</i>	<i>Not permitted in, except:</i>
New public or private roads that are not <i>infrastructure</i>		1: permitted only as part of approved <i>development</i>
<i>Infrastructure corridors</i>	1, 2, 3	
<i>Infrastructure that is not infrastructure corridors</i>		1, 2: permitted subject to justification through an approved environmental assessment process under the <i>Environmental Assessment Act</i> or <i>Canadian Environmental Assessment Act</i> or a submission by the applicant, that demonstrates to the satisfaction of the municipality that the works are necessary in the public interest and that all reasonable alternatives to the undertaking (including a do-nothing option) have been considered, and that there has been due regard to Policy I2-1, and also permitted only in accordance with a <i>site restoration plan</i> satisfactory to the municipality 3: permitted only in accordance with a <i>site restoration plan</i> satisfactory to the municipality

## Discussion

If Policy N2-1 is adopted, Policy I2-1 is required.

Policy N2-1 could be varied by:

- Adding or deleting development types as specified in Table 6 and otherwise varying the development types.
- Increasing or decreasing the number of development types not permitted, or permitted with restrictions, in each category.
- Making the policies on prohibited and permitted uses more uniform or more different across the range of categories or the range of development types.
- Making any of the conditions for permitting uses more or less restrictive.

This policy could also be implemented by zoning bylaw.

### **Issue N3: Achieving net gains to the system**

#### Why the issue is important

It may be possible to protect or enhance the natural heritage system while permitting new land uses and development, by applying a net-gain or no-net-loss principle whereby less critical components of the natural heritage system may be altered but the altered system is as good as or better than it was before (for example, the no-net-loss principle of the federal *Policy for the Management of Fish Habitat*.)

#### Model policies

##### **Model Policy N3-1: Negotiate net gains to natural heritage system**

Lands may only be added to or removed from the natural heritage system in accordance with the following conditions.

Lands will only be removed to enable *development* that would not otherwise be permitted under Policy N2-1.

Removal of lands to enable *infrastructure* is also subject to Policies I1-2 and I2-2.

Only the following lands may be removed to enable *development* that is not *infrastructure*:

- Category 3 lands,
- Category 1 and 2 lands that do not meet any of the following criteria:
  - would be protected from incompatible *development* by the *Provincial Policy Statement*,
  - are key natural heritage features or minimum vegetation protection zones as described in the *Oak Ridges Moraine Conservation Plan*, or
  - are specifically prescribed by the official plan as lands that should not be removed from the natural heritage system.

No lands will be removed, or their category changed, as a result of damage to or destruction of existing features.

Any removal of lands will be compensated for by an addition of lands, as follows.

- The removal and addition will be justified by an *environmental impact study*. This study will demonstrate to the satisfaction of the municipality that there will be no net loss, and if possible a net gain, in natural heritage system values and ecological functions.
- The added lands will at least equal the removed lands in area.
- The added lands should abut other portions of the natural heritage system, and they should also be within the subject lands or the remainder of a lot partly within the subject lands. If this is not possible, the more this requirement is deviated from, the greater the added lands should be in area relative to the removed lands. [This requirement may be made more specific as the result of recommendations in the *watershed plan*.]
- At the time of agreement, the added lands will be owned by or under the control of the landowner/applicant or a public authority
- If the added lands are contaminated, the landowner/applicant will:
  - restore them to a condition free from adverse effects and suitable for enhancement,
  - submit a Record of Site Condition to the municipality, and
  - satisfy any other requirements of the municipality regarding contaminated sites.

## Discussion

Policy N3-1 could be varied by:

- Adding to or deleting categories or feature types that may not be removed from the natural heritage system.
- Altering the locational requirements for added lands relative to the existing natural heritage system.
- Altering or removing the requirement that the added lands be under control of a public authority.

### **Issue N4: Defining and restricting development on lands/waters adjacent to the system**

#### Why the issue is important

New development and land uses near the natural heritage system need to be adequately set back from the system, and demonstrate that they will not cause any negative impacts on the system.

## Model policies

### **Model Policy N4-1: Identify adjacent lands**

Lands adjacent to the natural heritage system include lands which are one or more of:

- Within 120 m of *wetlands*.
- Within [specified by the *watershed plan*, should be at least 50] m of the *flooding hazard* limit of a *stream* or the high water mark of a *lake* that is upstream of a habitat of *endangered* or *threatened species* or *species of special concern* or of *important fish habitat*, provided:
  - the habitat is aquatic,
  - if the habitat is on a Great Lake, it is in the estuary of the *stream*,
  - if the habitat is on a *lake*, the adjacent lands extend up the *stream* to, but not including, the next *lake* upstream,
  - if the habitat is on a *stream*, the adjacent lands extend up the *stream* to, and including, the next *lake* upstream, but not beyond.
- Within [specified by the official plan or *watershed plan*, should be at least 50] m of other Category 1 lands. [Alternatively for *kettle lakes*, the official plan or *watershed plan* could specify the surface catchment area.]
- Within [specified by the official plan or *watershed plan*, should be at least 50] m of Category 2 lands.

### **Model Policy N4-2: Restrict development in adjacent lands**

*Development* is not permitted within the following portions, whichever are the greater in extent, of lands adjacent to Category 1 lands, except to the extent *development* is permitted under Policies N2-1 and N3-1:

- within [specified by the *watershed plan*, from nil to a distance less than Policy N4-1] m of the Category 1 lands,
- lands described by the *Oak Ridges Moraine Conservation Plan* as a minimum vegetation protection zone for a Category 1 feature.

*Development* in lands adjacent to the natural heritage system may otherwise be permitted, provided an *environmental impact study* and any other studies of those lands recommended by the *watershed plan* have been completed to the satisfaction of the municipality, and the requirements recommended by those studies have been met. These requirements may include restrictions on *development* in lands beyond the adjacent lands, where the study or studies demonstrate that there is a potential for *development* beyond the adjacent lands to have negative impacts on the valued features or functions.

## Discussion

If adopted, Policies N4-1 and N4-2 require each other.

Policy N4-1 could be varied by:

- Prescribing adjacent lands for Category 3 lands.
- Increasing the adjacent lands distance for wetlands.
- Defining adjacent lands to include all of any lot, or all of any subject lands, any part of which is within the specified distances.

Policy N4-2 could be varied by:

- Adding categories or feature types in which no development is permitted within a portion of the adjacent lands.

Policies N4-1 and N4-2 could also be implemented by zoning bylaw.

### **Issue N5: Securing lands for the system**

#### Why the issue is important

Where urban land uses and development will potentially affect natural heritage system lands or waters, it is most often in the best interest of the landowner, the planning authority, and the community at large for the affected lands or waters to be conveyed to or otherwise secured in favour of a public or not-for-profit authority.

#### Model policies

##### **Model Policy N5-1: Convey lands added to natural heritage system**

Where any agreement is made to add lands to or remove lands from the natural heritage system in accordance with Policy N3-1, and that agreement is in conjunction with a *development* approval, it will be a condition of that approval that:

- the applicant will convey the lands added, and all other system lands on the subject lands, to a public authority or land trust acceptable to the municipality, and that if any of these lands are contaminated, before conveyance the transferor will:
  - restore them to a condition free from adverse effects and suitable for enhancement,
  - submit a Record of Site Condition to the municipality, and
  - satisfy any other requirements of the municipality regarding contaminated sites, or
- the landowner will enter into a stewardship agreement to the satisfaction of the municipality.

### **Model Policy N5-2: Convey threatened natural heritage system lands**

It is the policy of the municipality that the following natural heritage system lands are priority lands for *acquisition* by a public authority, where they are currently not owned by a public authority or land trust:

- lands whose features and ecological functions are under threat from proposed *development*,
- lands that are not or cannot be adequately protected from the impacts of *development* by planning policy or stewardship agreements,
- [-lands that meet any other criteria that the *watershed plan* may specify].

If any such lands are contaminated, before conveyance the transferor will:

- restore them to a condition free from adverse effects and suitable for enhancement,
- submit a Record of Site Condition to the municipality, and
- satisfy any other requirements of the municipality regarding contaminated sites.

## Discussion

If adopted, Policy N5-1 requires Policy N3-1.

Policy N5-1 could be varied by:

- Altering or removing the conveyance requirement.

Policy N5-2 could be varied by:

- Altering the acquisition criteria.

## **Issue N6: Enhancing/restoring degraded portions of the existing system**

### Why the issue is important

Existing natural heritage lands, waters, and features are often degraded and unable to effectively function as part of the system, or provide ecological functions. Restoration to a healthy natural condition is essential.

## Model policies

### **Model Policy N6-1: Require site restoration for development within features**

Where Policy N2-1 permits any type of *development* within an existing feature subject to Policy N6-1, and that *development* requires any expansion of building footprints, driveways, parking, or other *impervious surfaces*, any removal of natural self-sustaining vegetation, or any *site alteration* in previously unaltered areas, *development* is only permitted in accordance with a *site restoration plan* satisfactory to the municipality. The plan should demonstrate that alternatives were considered that would have required the least possible *impervious surface* expansion, vegetation removal, or *site alteration*, and if those were not the alternatives proposed in the plan, justify those that were.

### **Model Policy N6-2: Require restoration of damaged or destroyed features**

On lands subject to a *development* application where any Category 1 or 2 existing features have been damaged or destroyed, it will be a condition of the *development* approval that the applicant prepare a *site restoration plan* for the damaged or destroyed feature and undertake the restoration prescribed in the plan, to the satisfaction of the municipality.

## Discussion

If adopted, Policy N6-2 requires Policy N3-1.

Policy N6-1 could be varied by:

- Removing site alteration from the policy.
- Specifying or varying site restoration plan requirements.

Policy N6-2 could be varied by:

- Adding or deleting categories or feature types.

Policy N6-1 could also be implemented by zoning bylaw.

## **Issue N7: Restoring natural cover and connections in the proposed future system**

### Why the issue is important

Levels of natural cover (primarily forest and wetland) in the GTA are too low to support viable fish and wildlife populations and maintain healthy ecological functions. Natural cover

needs to be increased, with long-term restoration plans developed for those lands with the best potential for restoration to a healthy natural condition.

## Model policies

### **Model Policy N7-1: Set natural cover target across watershed**

It is the policy of the municipality that the area of *woodland* and *wetland* in the [name] *watershed* should be increased to a target of at least [specified by the *watershed plan*] % of the area of the *watershed* by [a year specified by the *watershed plan*].

### **Model Policy N7-2: Require restoration of lands added to natural heritage system**

Where any agreement is made to add lands to or remove lands from the natural heritage system in accordance with Policy N3-1, and that agreement is in conjunction with a *development* approval, it will be a condition of the *development* approval that the applicant prepare a *site restoration plan* for the added lands and undertake the restoration prescribed in the plan, to the satisfaction of the municipality.

## Discussion

If adopted, Policy N7-2 requires Policy N3-1.

## 4.4 LANDFORM CONSERVATION

### Issue L1: Defining and identifying landforms meriting conservation

#### Why the issue is important

Existing regionally significant earth science areas of natural and scientific interest (ANSIs) need to be identified in planning documents as a precondition to and basis for any policies intended to protect them in addition to provincially significant ANSIs. So do other landforms meriting specific conservation policies; these may include landforms of intrinsic scientific value, landforms that contribute to landscape character and sense of place, and landforms of particular importance to ecological functions.

#### Model policies

##### **Model Policy L1-1: Identify and map important feature types**

It is the policy of the municipality to conserve, identify, and map important landform feature types, consisting of:

- the brow, slope, and toe of the Niagara Escarpment
- earth science *areas of natural and scientific interest*
- natural beaches, dunes, and bluffs along present lake shorelines
- remnants of former postglacial lake shorelines
- steep slopes*
- kettles*
- kames*
- [-if the *watershed plan* so specifies, other moraines, drumlins, escarpments, and ravines].

##### **Model Policy L1-2: Identify landform conservation areas**

It is the policy of the municipality to identify landform conservation areas, consisting of:

- important landform features of the types described in Policy L1-1
- other recognized landform features that are in part defined by, and include, *steep slopes*
- lands 20% or more of whose area consists of natural slopes of 10% or greater
- lands [as defined by the official plan or *watershed plan*] having a diversity of slope classes
- [-if the *watershed plan* so specifies, other *valley corridors*].

## Discussion

If adopted, Policy L1-2 requires Policy L1-1.

Policy L1-1 could be varied by:

- Adding or deleting feature types.
- Varying the definitions of feature types.
- Giving the map the status of a schedule (legally part of the official plan) or a figure (information and guideline).

Policy L1-2 could be varied by:

- Adding or deleting categories of landform conservation areas.
- Varying the categories of landform conservation areas.
- Varying the definition of steep slopes.

Policy L1-1 could also be implemented by zoning bylaw.

## **Issue L2: Protecting landforms meriting conservation**

### Why the issue is important

Landforms critical to the candidate planning goals in Section 3 will need to be protected from incompatible land use and development.

### Model policies

#### **Model Policy L2-1: Restrict development in important feature types**

*Development* in important landform feature types is subject to the following restrictions:

- site alteration* may be permitted only in accordance with an established process (municipal site alteration bylaw, site plan control, or *Conservation Authorities Act* or *Niagara Escarpment Planning and Development Act* approval) satisfactory to the municipality,
- any other *development* may be permitted that is not *major development* [if a *mineral aggregate operation* is defined as part of *major development*, it should not be so defined for the purposes of Policy L2-1] and that an *environmental impact study* demonstrates to the satisfaction of the municipality will meet the normally prescribed requirements of that study,
- where the same lands are subject to Policies W2-1 or N2-1 and those policies are more restrictive, the more restrictive policies apply.

### **Model Policy L2-2: Restrict development in landform conservation areas**

*Development* in landform conservation areas may be permitted only if the applicant demonstrates that disturbance of landform character will be minimized, by:

- undertaking more detailed mapping that demonstrates to the satisfaction of the municipality that *development* will be restricted to portions of the subject lands that are not landform conservation areas, or
- demonstrating to the satisfaction of the municipality that *development* will be planned, designed, and constructed so as to:
  - leave in their natural undisturbed form any important landform features,
  - limit *site alteration* and other disturbance to not more than [specified by official plan or *watershed plan*] % of that part of the landform conservation area within the subject lands that does not consist of important landform features,
  - limit *impervious surfaces* to not more than [specified by official plan or *watershed plan*] % of that part of the landform conservation area within the subject lands that does not consist of important landform features, or
- if the *development* is a *mineral aggregate operation* or *wayside pit* or *quarry*, demonstrating to the satisfaction of the municipality that the pit or quarry will be rehabilitated to a landform character compatible with the landform character of the surrounding area.

## Discussion

If adopted, Policy L2-1 requires Policy L1-1.

If adopted, Policy L2-2 requires Policy L1-2.

Policy L2-1 could be varied by:

- Removing site alteration from the policy.
- Making site alteration subject to the same requirements as other development.
- Reducing the scope of development that is not site alteration that is subject to the policy.
- Permitting major development subject to a study.
- Varying the study requirements.

Policy L2-2 could be varied by:

- Varying the study requirements.
- Removing site alteration from the policy.
- Removing the pit and quarry rehabilitation requirements from the policy.

Policy L2-1 could also be implemented by zoning bylaw.

## 4.5 INFRASTRUCTURE

### **Issue I1: Avoiding infrastructure development in or near important features and systems**

#### Why the issue is important

Important ground and surface water areas and natural heritage systems need to be protected from incompatible infrastructure development. Adverse effects may include not only the physical impact of development itself, but also the interruption of ecological functions by infrastructure crossings.

#### Model policies

##### **Model Policy I1-1: Apply all relevant policies to infrastructure development**

*Infrastructure development* is generally subject to all applicable Water, Natural Heritage, and Landform Conservation policies, except where the Infrastructure policies address the same subject matter, in which case the Infrastructure policies prevail.

*Development of infrastructure* is prohibited or restricted as shown in Policy W2-1, Table 5 and Policy N2-1, Table 6.

##### **Model Policy I1-2: Require EA before removing natural heritage system lands for corridors**

Any removal of lands from the natural heritage system to enable *infrastructure corridor development* is, in addition to Policy N3-1, subject to justification through an approved environmental assessment process under the *Environmental Assessment Act* or *Canadian Environmental Assessment Act* that demonstrates to the satisfaction of the municipality that the works are necessary in the public interest and that all reasonable alternatives to the undertaking (including a do-nothing option) have been considered, and that there has been due regard to Policy I2-1. Despite Policies N1-2 and N3-1, any lands may be removed from the system for *infrastructure corridor development* if justified by the environmental assessment process.

## Discussion

If Policies I1-2 is adopted, Policy I2-1 is required.

### **Issue I2: Minimizing and compensating for adverse effects of infrastructure development in or near important features and systems**

#### Why the issue is important

Infrastructure will still be developed in or near important features and systems where there is no reasonable alternative. It then needs to be located and designed so as to minimize adverse effects, and a net-gain or no-net-loss principle needs to be applied to compensate for those adverse effects.

#### Model policies

##### **Model Policy I2-1: Require planning, design, and construction best practices**

Any environmental assessment process or applicant submission required by Policies W2-1, N2-1, or I1-2 will demonstrate due regard to the following planning, design, and construction principles

- if the *development* is an *infrastructure corridor*, minimizing the total number of crossings of the affected important ground and surface water area and/or natural heritage system lands, and minimizing the width of crossings,
- minimizing the total area of important ground and surface water area and natural heritage system lands that would be disturbed
- if the *development* is an *infrastructure corridor* crossing the following important ground and surface water feature types,

- wetlands*,
- the *flooding hazard limit* of Lake Ontario,
- lakes* other than Lake Ontario,
- stream corridors*,

or crossing natural heritage system Category 1 lands to be removed from the system, using to the greatest extent possible a high level design that carries the crossing over the affected lands with minimum footprint on them,

- minimizing the total area of any lands to be removed from the natural heritage system, and minimizing the impact of the removal of those lands on the ecological integrity of the system,
- minimizing cumulative disturbance to ecological functions,
- minimizing any remaining impacts of project construction, after mitigating measures have been taken, on adjacent important ground and surface water area and natural heritage system lands,
- if the *development* is a road or railway, designing it to minimize the potential impacts of contaminant spills resulting from vehicle accidents, and of contaminant (e.g., salt) runoff resulting from maintenance,
- if the *development* is an *infrastructure corridor* crossing or adjacent to natural heritage system lands, using appropriate landscape design and native plant species as much as possible,
- minimizing visual impacts,
- maintaining natural connections between any adjacent natural heritage system lands, including viable opportunities for fish and wildlife movement.

### **Model Policy I2-2: Negotiate net gains to natural heritage system**

Any addition of lands to the natural heritage system to compensate for a removal to enable *infrastructure corridor development* will be subject to the following requirements in addition to Policy N3-1.

- The added lands should abut both the *infrastructure corridor* and the remaining natural heritage system where it abuts the *corridor*, if at all possible.
- To achieve no net loss, and if possible a net gain, in natural heritage system values and ecological functions, the proponent may also be required to:
  - in anticipation of adverse effects on the remaining natural heritage system where it abuts the *infrastructure corridor*, prepare a *site restoration plan* for the existing system lands abutting the *corridor* and the added lands, and undertake the restoration prescribed in the plan, to the satisfaction of the municipality,
  - ensure that the owner of the existing system lands abutting the *corridor* enters into a stewardship agreement to the satisfaction of the municipality, and/or
  - compensate offsite for the inevitable adverse effects on the remaining natural heritage system, where it is otherwise not possible to achieve no net loss.

## Discussion

Policy I2-1 could be varied by:

- Varying any of the planning, design, and construction principles.

Policy I2-2 could be varied by:

- Varying any of the additional requirements for additions of land.

### **Issue I3: Minimizing the adverse effects of infrastructure operation in or near important features and systems**

#### Why the issue is important

The management and use of existing and new infrastructure can also have adverse effects on important features and systems. These effects can be minimized through best management and operating practices.

#### Model policies

##### **Model Policy I3-1: Require operations best practices**

Any environmental assessment process or applicant submission required by Policies W2-1, N2-1, or I1-2 will demonstrate due regard to minimizing any remaining impacts of *infrastructure* operation, after mitigating measures have been taken, on adjacent important ground and surface water areas and natural heritage system lands.

##### **Model Policy I3-2: Minimize contaminant transportation in important water areas**

It is the policy of the municipality that in planning its road network, it will seek to minimize the transportation of moderate and higher threat contaminants on roads crossing important ground and surface water areas.

#### Discussion

Policy I3-2 could be varied by:

- Limiting the policy to higher threat contaminants.
- Deleting some ground and surface water feature types.

## 4.6 DEFINITIONS

**Acquisition:** Any form of conveyance of title or interest in land.

**Agricultural uses:** As defined in the *Provincial Policy Statement*.

**Area of high aquifer vulnerability:** On the Oak Ridges Moraine, an area of high aquifer vulnerability as prescribed in the *Oak Ridges Moraine Conservation Plan*. Elsewhere, lands whose uppermost aquifer is most vulnerable to contamination as a result of surface activities or sources, due to the thickness and permeability of the rock and soil above the aquifer. Vulnerability is expressed as an intrinsic susceptibility index calculated using methods established by the Ministry of the Environment. Lands with an index value of less than 30 are considered to be of high vulnerability. (Additional guidance on an appropriate definition may be provided as the proposed *Drinking Water Source Protection Act* progresses.)

**Area of natural and scientific interest:** As defined in the *Provincial Policy Statement*.

**Area of settlement:** As defined in the *Planning Act*.

**Cold water lake, cold water stream:** A lake or stream recognized as cold water by the Ministry of Natural Resources.

**Contaminant management plan:** A nutrient management strategy or plan if and as required by the *Nutrient Management Act, 2002* or a municipal nutrient management bylaw, or a comparable management and contingency plan for the management of contaminants stored on or discharged from the subject lands and that are not nutrients as defined by the *Nutrient Management Act, 2002*. A *contaminant management plan* is binding on successive owners of the subject lands.

**Development:** The creation of a new lot, a change in land use, or the construction of buildings or structures, any of which require approval under the *Planning Act*, the *Environmental Assessment Act*, or the *Drainage Act*, plus *site alteration*.

**Endangered species:** As defined in the *Provincial Policy Statement*.

**Environmental impact study:** A study that demonstrates that there will be no negative impacts on a valued natural feature or related ecological functions, and whose name and requirements are prescribed in an applicable official plan.

**Fish:** As defined in the *Provincial Policy Statement*.

**Fish habitat:** As defined in the *Provincial Policy Statement*.

**Flooding hazard:** As defined in the *Provincial Policy Statement*. Where a regulatory floodplain is in place, this will be considered to be the definitive identification of the flooding hazard.

**Forest management:** As defined in the *Oak Ridges Moraine Conservation Plan*.

**Groundwater capture zone:** The total area in which groundwater will eventually travel to a water well or well field, based on groundwater flow patterns including the effects of pumping to supply the well, estimated using methods acceptable to the municipality.

**Groundwater travel time:** The time for groundwater to travel to a water well or well field, calculated using methods acceptable to the municipality.

**Hazardous lands:** As defined in the *Provincial Policy Statement*.

**Headwater area:** The uppermost portion of the drainage basin of a *stream*, delineated using methods established in the *watershed plan*. If the *stream* is a *cold water stream*, the basin may be the greater of the surface and the subsurface drainage basin. If the *stream* is a *warm water stream*, the basin is the surface drainage basin.

**Hydrological evaluation:** A study that demonstrates that there will be no adverse effects on an important ground or surface water feature or related hydrological functions, and identifies planning, design, and construction practices that will protect, and where possible enhance or restore, the health, diversity, and size of the feature. Specific methods and requirements may be established in the *watershed plan*.

**Impervious surface:** A human-made surface that does not permit the infiltration of water, such as a rooftop, or a paved, non-permeable sidewalk, roadway, driveway, or parking lot.

**Important fish habitat:** *Fish habitat* that has been identified by the Department of Fisheries and Oceans, the Ministry of Natural Resources, the regional or local municipality, or the conservation authority as important to *fish*.

**Important wildlife habitat:** *Wildlife habitat* that has been identified by the Ministry of Natural Resources, the regional or local municipality, or the conservation authority as important to wildlife.

**Individual on-site sewage services, individual on-site water services:** As defined in the *Provincial Policy Statement*.

**Infrastructure:** Physical facilities that form the foundation for development, consisting of the specific uses listed in Section 41(1) of the *Oak Ridges Moraine Conservation Plan*, but excluding

local roads or local sewage and water lines not subject to Municipal Class Environmental Assessment requirements.

**Infrastructure corridor:** An *infrastructure* facility, or components of that facility, that are by necessity linear, and the right-of-way required for the facility. An infrastructure corridor includes facility components, such as interchanges and transit stations, that may not themselves be linear but are required for the use and operation of the linear facility.

**Kame:** As defined in the *Oak Ridges Moraine Conservation Plan*.

**Kettle:** A depression formed by glacial action.

**Lake:** A lake, pond, or similar body of water, except for a human-made pond less than 2 ha that is not on a *stream*, does not intercept stream flow, is fed by runoff or groundwater, and if fed by groundwater, does not require a permanent outflow.

**Low-intensity recreational uses:** Recreational uses that have minimal impact on the natural environment and require very little terrain or vegetation modification, including but not limited to non-motorized trail uses, natural heritage appreciation, and unserviced camping on public and institutional land; accessory uses; and accessory small-scale structures such as trails, boardwalks, footbridges, fences, docks, and picnic facilities.

**Major development:** *Development* consisting of [thresholds should be determined by the local or regional municipality; the definition in the *Oak Ridges Moraine Conservation Plan* is a possible model but is not necessarily recommended by the guidance document].

**Meander belt:** The land across which a *stream* shifts its channel from time to time.

**Mineral aggregate operation:** As defined in the *Provincial Policy Statement*.

**Municipal sewage services, municipal water services:** As defined in the *Provincial Policy Statement*.

**Municipal wellhead protection area:** Lands surrounding an existing water well or well field, or a future well or well field site identified by the municipality, that supplies or will supply a *municipal water service*, and the outer limit of which is the limit of the *groundwater capture zone*. These lands are divided into zones based on distance from the well or well field, and *groundwater travel time*.

**New lot creation:** Creation of a lot, but does not include:

- severance of an original township lot or half lot along the original lot lines,
- lot adjustment that does not create an additional lot,

- creation of an additional lot to enable conveyance to a public authority or land trust for conservation purposes,
- creation of an additional lot to enable conveyance to a public authority for *infrastructure* purposes.

**Nutrient unit:** As defined by regulation under the *Nutrient Management Act, 2002*.

**Private communal sewage services, private communal water services:** As defined in the *Provincial Policy Statement*.

**Sand barrens:** As defined in the *Oak Ridges Moraine Conservation Plan*.

**Savannah:** As defined in the *Oak Ridges Moraine Conservation Plan*.

**Significant discharge area:** Lands of particular importance for the natural replenishment of surface water by groundwater. These may be identified either through *watershed*-wide studies or site-specific study, using methods established by the conservation authority.

**Significant recharge area:** Lands of particular importance for the natural replenishment of groundwater. These may be identified either through *watershed*-wide studies or site-specific study, using methods established by the conservation authority.

**Site alteration:** As defined in the *Provincial Policy Statement*.

**Site restoration plan:** A plan that provides for restoration and enhancement of valued features and functions at an altered or disturbed site as nearly as possible to natural conditions, while recognizing what is achievable and appropriate in the context of existing and approved *development* on the site. Specific methods and requirements may be established in the *watershed plan*.

**Species of special concern:** A species so designated by the Ministry of Natural Resources.

**Steep slope:** A natural slope of 15% or greater with a height of 5 m or more and a length of 50 m or more.

**Stream:** A permanent or intermittent stream, river, or other watercourse that has a measurable or predictable response to a single runoff event.

**Stream corridor:** A *stream*, plus all lands adjacent to it as far inland as the greatest of the following:

- 10 m from the predicted limit of the *meander belt*,
- 10 m from the *flooding hazard* limit,
- 15 m from the centre line of the *stream* if *warm water*,

-30 m from the centre line of the *stream* if *cold water*.

**Tallgrass prairie:** As defined in the *Oak Ridges Moraine Conservation Plan*.

**Threatened species:** As defined in the *Provincial Policy Statement*.

**Unconfined aquifer:** An aquifer whose upper level is the water table. The pressure on the groundwater in an unconfined aquifer is equal to atmospheric pressure.

**Valley and stream corridor:** A *valley corridor* plus a *stream corridor*, such that the limit of the valley and stream corridor is at any point the greater of the limits of its two components.

**Valley corridor:** A stream, plus all lands adjacent to it as far as the stable top of bank, delineated using methods established by the conservation authority.

**Warm water lake, warm water stream:** A *lake* or *stream* that is not a *cold water lake* or *cold water stream*.

**Watershed:** Any watershed or subwatershed identified and delineated by the responsible conservation authority.

**Watershed plan:** A management plan for a *watershed* prepared and approved by the responsible conservation authority.

**Wayside pit or quarry:** As defined in the *Provincial Policy Statement*.

**Wetland:** As defined in the *Provincial Policy Statement*.

**Wildlife habitat:** As defined in the *Provincial Policy Statement*.

**Woodland:** As defined in the *Provincial Policy Statement*.

## 5 LESSONS LEARNED - PLANNING POLICIES FOR BETTER WATERSHED MANAGEMENT

This guidance document concludes with a few thoughts on lessons learned by the workshop team. The team hopes these thoughts will assist those who use this report, those who are considering what additional work might help remedy the deficiencies of this interim version, and those who will sooner or later make it better. As throughout this report, "planners" refers to both watershed planners and municipal planners.

1. Planners can't overemphasize the importance of integration. Just because there are disciplinary, bureaucratic, and policy silos is no reason to perpetuate them.
2. Planners need to ensure that those who will implement watershed plans - citizens as well as public authority staff - are more involved in developing plan policies.
3. Local official plans (including secondary plans) are where the watershed planning rubber meets the municipal planning road. The policies in this guidance document will stand or fall on their acceptance among lower-tier municipal planners, and those planners' ability to sell them to their councils and citizens.
4. Planning approaches which require uniform application across a lower-tier municipality, an upper-tier municipality, or the whole GTA will more often fail than succeed. Every watershed and every lower-tier municipality has its own traditions, approaches, and needs. The more that diversity is permitted and encouraged, the more enthusiastic support there will be for a variety of policies that achieve environmental improvement. Requiring uniformity beyond the identification and protection of provincially significant vital resources is more likely to lead to grudging acceptance or sullen resistance.
5. The policies in the guidance document will for the most part have their broadest impact in greenfield development areas. Their application elsewhere, while important, will be more sporadic, based on the pattern of development and redevelopment. However, greenfield development cannot carry the primary burden for remedying the critical state of water, natural heritage, and landform resources in the GTA. This will be even more so if the intensification directions proposed in the 2005 draft *Greater Golden Horseshoe Growth Plan* are implemented. Planners and public authorities must continue to explore and implement nonplanning actions to improve environmental health throughout the region, and find ways to increase the application of watershed-friendly planning policies within already built-up areas.

6. The highest priority areas for catching up on resource identification and mapping are areas of high aquifer vulnerability and significant recharge and discharge areas. Source protection and watershed plans should accomplish this.
7. Provincial research and policy leadership on identification and classification of contaminant-related threats is vital - but if it isn't forthcoming, GTA public authorities should get together to forge a common direction.
8. Plans and planners need to keep moving. Waiting for the last word on the Province's many new planning and environmental initiatives, let alone federal initiatives such as climate change response, may result in more perfect policies, but in the meantime, opportunities for planning-initiated environmental improvement will slip away.
9. This guidance document is already outdated and will continue to become more so more rapidly than we can anticipate. Current technologies should allow it to evolve into a regularly updated, participatory "best planning practices" manual.

## APPENDIX 1                      WORKSHOP TEAM

Laura Atkins-Paul	Senior Planner	RM of York
Kim Baker	Natural Heritage Biologist	Lake Simcoe Region CA
Simone Banz	Manager, Planning Policy and Research	RM of Peel
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Carolyn Woodland	Director, Development Services	Toronto and Region CA
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Robb Ogilvie	project facilitator	Ogilvie, Ogilvie & Company
Tony Usher	project planner	Anthony Usher Planning Consultant

**\*No longer in this position.**

**\*\*Don Wright passed away on November 30, 2004. The workshop team is grateful for his contributions and hopes that this report will honour his memory.**

## APPENDIX 2                    THREAT CLASSIFICATION OF LAND USES AND CONTAMINANTS

Policy W2-1 (Table 5) classifies land uses and contaminants that potentially threaten water quality into four threat classifications: very high, high, moderate, and pathogenic. (Pathogenic threats are listed last because from a land use point of view, they affect a very small land area due to the short life of pathogens. However, their effects can be very serious as demonstrated at Walkerton.)

This report does not make specific recommendations as to exactly what should make up these four threat classifications, for each of land uses and contaminants, for the purposes of Policy W2-1. Preferably, these classifications should be standard province-wide, without each municipality having to create its own. Official plans could then reference the appropriate provincial document as amended from time to time, without having to include the classification details, or requiring amendment whenever science or technology dictate the classification details be updated. If and when the draft *Drinking Water Source Protection Act* becomes law, the regulations made under it may identify a hierarchy of threats to drinking water that may help meet this need.

In the meantime:

- The official plans of Halton and Waterloo Regions (among others) have classified land uses by risk (threat). Halton's classification is provided for information in Appendix 3.
- The workshop team's preliminary thinking on classifications for land uses and contaminants is as follows. Needless to say, these have no status and are provided as food for thought only.

### ***Land uses***

Very high threat:

- waste management facilities
- airports
- industries and services that manufacture or intensively use very high or high threat contaminants
- generally, the higher-threat end of Group 1, High Risk Land Uses, in the Halton Region Official Plan (see Appendix 3)

High threat:

- industries and services that manufacture or substantially use very high or high threat contaminants
- generally, the lower-threat end of Group 1, High Risk Land Uses, in the Halton Plan

## Moderate threat:

- cemeteries
- golf courses
- industries and services that manufacture or substantially use moderate threat contaminants
- generally, Group 2, Moderate Risk Land Uses, in the Halton Plan

## Pathogenic:

- leaching beds (tile fields)
- livestock farms

***Contaminants***

## Very high threat:

- dense nonaqueous phase liquids (DNAPLs)

## High threat:

- light nonaqueous phase liquids (LNAPLs)
- all petroleum fuels that are neither DNAPLs nor LNAPLs

## Moderate threat:

- pesticides, herbicides, fungicides, and inorganic fertilizers that are neither DNAPLs nor LNAPLs
- road salt

## Pathogenic:

- animal manure, biosolids, and other nutrients as defined by the *Nutrient Management Act, 2002*
- sanitary and storm sewage.

The specified quantities of contaminant storage above which a *contaminant management plan* would be required in accordance with Policy W2-1 could be tailored to each feature and contaminant type. For example, although the same high threat contaminant storage policy is shown in Table 5 for both types of *significant recharge area*, the quantity of, for example, gasoline that would trigger a *contaminant management plan* could be higher in areas identified through *watershed-wide* studies than those identified through site-specific study. Also, the specified quantities can be zero, as would be appropriate for very high threat contaminants in portions of *municipal wellhead protection areas*, for example. As well, the specified quantities could exempt certain types of storage, such as storage of manure by an individual for personal or family use.

## APPENDIX 3

LAND USE GROUPS BY RISK TO  
GROUNDWATER QUALITY

[Table 6, Part VII Appendix, Halton Region Official Plan]

Group 1—High Risk Land Uses			
<ul style="list-style-type: none"> <li>➤ Landfills, waste transfer stations, &amp; putrescible waste disposal</li> <li>➤ Lagoons for sewage treatment</li> <li>➤ Auto wrecking &amp; salvage yards</li> <li>➤ Commercial or industrial dry cleaning of textiles &amp; textile products</li> <li>➤ Foundries, non-ferrous metal smelting &amp; refining, &amp; casting operations</li> <li>➤ Metal finishing operations (electroplating, electrocoating, galvanizing, painting, application of baked enamel)</li> <li>➤ Vehicle stampings</li> </ul>	<ul style="list-style-type: none"> <li>➤ Wood &amp; wood product preservation &amp; treatment</li> <li>➤ Airports</li> <li>➤ Bulk liquid trucking</li> <li>➤ Local inter-municipal passenger service terminals</li> <li>➤ Warehousing, bulk storage or retail sale of:               <ul style="list-style-type: none"> <li>-Oil, natural gas &amp; petroleum products</li> <li>-Household or industrial cleaning products</li> <li>-Agricultural pesticides, herbicides, fungicides &amp; chemicals</li> </ul> </li> <li>➤ Manufacturing of:               <ul style="list-style-type: none"> <li>-Petroleum products or asphalt batching (including processing)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>-Motor vehicles, trucks, &amp; bus bodies</li> <li>-Aircraft &amp; aircraft parts</li> <li>-Trailers</li> <li>-Rail cars</li> <li>-Mobile homes</li> <li>-Ships &amp; boats</li> <li>-Industrial chemicals</li> <li>-Printing inks</li> <li>-Adhesives</li> <li>-Small electrical appliances</li> <li>-Electric lamps</li> <li>-Wet batteries</li> <li>-Dry electrical industrial equipment</li> <li>-Vehicle engines</li> <li>-Cable &amp; wire</li> <li>-Pharmaceuticals &amp; medicines</li> <li>-Paints &amp; varnishes</li> <li>-Major electric appliances</li> </ul>	<ul style="list-style-type: none"> <li>-Plastics &amp; synthetic resins</li> <li>-Lighting fixtures</li> <li>-Wet electrical equipment</li> <li>-Steering &amp; suspension parts</li> <li>-Engine parts</li> <li>-Motor vehicle wiring</li> <li>-Jewellery &amp; precious metals</li> <li>-Reinforced fibreglass plastic</li> <li>-Electronic components (semi-conductors, printed circuit boards, cathode ray tubes)</li> <li>-Unfinished fabricated metal products</li> <li>-Wheels &amp; brakes</li> <li>-Leather products</li> <li>-Soaps &amp; toilet preparations</li> </ul>
Group 2—Moderate Risk Land Uses			
<ul style="list-style-type: none"> <li>➤ Golf courses</li> <li>➤ Photo developing facilities</li> <li>➤ Printing of newspapers, packaging &amp; books</li> <li>➤ Repair of industrial machinery</li> </ul>	<ul style="list-style-type: none"> <li>➤ Repair of motor vehicles, aircraft, watercraft, rail vehicles &amp; trucks</li> <li>➤ Manufacturing of:               <ul style="list-style-type: none"> <li>-Plastic parts for vehicles</li> <li>-Telephones</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>-Business machines</li> <li>-Plastic products</li> <li>-Paper &amp; newsprint</li> <li>-Stereo equipment</li> <li>-Fax machines</li> <li>-Dry batteries</li> <li>-Glass &amp; glass products</li> </ul>	<ul style="list-style-type: none"> <li>-Furniture, caskets, cabinets &amp; other wood products</li> <li>-Radios &amp; televisions</li> <li>-Computing equipment</li> <li>-Rubber products</li> <li>-Photographic equipment</li> </ul>
Group 3—Low Risk Land Uses			
<ul style="list-style-type: none"> <li>➤ Funeral homes &amp; cemeteries</li> <li>➤ Medical, health &amp; other laboratories</li> <li>➤ Storage, repair yards &amp; facilities for contractors</li> <li>➤ Asphalt paving &amp; roofing contractor yards</li> <li>➤ Lawn care contractors</li> </ul>	<ul style="list-style-type: none"> <li>➤ Machinery equipment rental yards</li> <li>➤ Retail sale of agricultural pesticides &amp; herbicides</li> <li>➤ Repair (including welding) of:               <ul style="list-style-type: none"> <li>-Photographic equipment</li> <li>-Watches</li> <li>-Electronic equipment</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>-Appliances</li> <li>-Furniture</li> <li>-Jewellery</li> <li>-Electronic motors</li> <li>-Small motors</li> <li>-Vending machines</li> <li>-Computer equipment</li> <li>➤ Manufacturing of:               <ul style="list-style-type: none"> <li>-Textiles (including dyeing)</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>-Vehicle fabric accessories</li> <li>-Dairy</li> <li>-Processed foods &amp; meats</li> <li>-Soft drinks &amp; alcohol</li> <li>-Baked goods</li> <li>-Canned goods</li> <li>-Frozen foods</li> </ul>

**APPENDIX 4 Development Restrictions in Important Ground and Surface Water Areas**

<b>Development Types</b> <b>Significant Ground and Surface Water Area</b> <b>Feature Types ↓</b>	<b>Any Development type not shown to the right</b>	<b>New Lot Creation</b>	<b>Very High Threat Land Uses</b>	<b>High Threat Land Uses</b>	<b>ModerateThreat Land Uses</b>	<b>Pathogenic Land Uses</b>	<b>Very High Threat Contaminant Storage</b>	<b>High Threat Contaminant Storage</b>	<b>ModerateThreat Contaminant Storage</b>	<b>Pathogenic Contaminant Storage</b>	<b>Site Alteration (not integral to other development type shown in chart) (includes private farm, recreational or scenic ponds)</b>
Wellhead Protection: 100 m from well	N	N	N	N	N	N	N	N	N	N	N
Wellhead Protection: 100 m from well to 2 yr travel time			N	N	CMP	CMP	N	N	CMP	CMP	
Wellhead Protection: 2 yr to 5 yr travel time			N	CMP	CMP		N	CMP	CMP		
Wellhead Protection: 5 yr to 25 yr travel time			CMP	CMP	CMP		CMP	CMP	CMP		
Wellhead Protection: 25 yr to limit of capture zone			CMP				CMP				
Areas of High Aquifer Vulnerability			CMP	CMP	CMP		CMP	CMP	CMP		
Significant Recharge Areas identified through site-specific study	H		CMP	CMP	CMP		CMP	CMP	CMP		N
Significant Recharge Areas identified through watershed-wide study	H		CMP	CMP	CMP		CMP	CMP	CMP		
Significant Discharge Areas identified through site-specific study	N		CMP	CMP	CMP		CMP	CMP	CMP		N
Significant Discharge Areas identified through watershed-wide study	N		CMP	CMP	CMP		CMP	CMP	CMP		EP
Headwater Areas outside serviced urban areas (Cold Water)	R		CMP	CMP	CMP		CMP	CMP	CMP		EP
Headwater Areas outside serviced urban areas (Warm Water)	R		CMP	CMP	CMP		CMP	CMP	CMP		EP
Stream Corridors	N	N	N	N	N	N	N	N	N	N	N
Wetlands	N	N	N	N	N	N	N	N	N	N	N
Flooding Hazard Limit of Lake Ontario	N	N	N	N	N	N	N	N	N	N	N
Kettle Lakes	N	N	N	N	N	N	N	N	N	N	N
Other Lakes	N	N	N	N	N	N	N	N	N	N	N

**NOTE:** N = Not Permitted

CMP = Contaminant Management Plan Required;

H = Hydrological evaluation required

AD = Permitted only as part of approved development;

EA = Permitted only under approved Environmental Assessment Process, or equivalent, and if demonstrated to be necessary in the public interest;

EP = Permitted only under established site/development planning process

PI = Permitted only if demonstrated to be necessary in the public interest

Blank Cell = Not Restricted by Table 5

This chart has been prepared as a convenience to show the development restrictions in Table 5. In case of any conflict or uncertainty, Table 5 takes precedence over this chart.

**APPENDIX 4 Development Restrictions in Important Ground and Surface Water Areas**

<b>Development Types</b> <b>Significant Ground and Surface Water Area</b> <b>Feature Types ↓</b>	<b>Conservation &amp; Flood Erosion Control Projects</b>	<b>Forest, fish &amp; wildlife management; low intensity recreational uses; agricultural uses not shown to right, on lands whose existing use is agriculture</b>	<b>Reconstruction, repair, or maintenance of existing approved (Drainage Act) drain</b>	<b>New or expanded Agricultural Uses (= or &gt; 5 Nutrient Units)</b>	<b>New or expanded Agricultural Uses (&lt; 5 Nutrient Units)</b>	<b>Expansion of existing uses, buildings and structures as permitted by OP</b>	<b>Change of use to similar or more compatible use as permitted by OP</b>	<b>Existing uses, buildings and structures as permitted by OP; single residence construction on an existing lot as permitted by OP</b>	<b>New Private or public roads that are not infrastructure (local roads)</b>	<b>Infrastructure</b>
Wellhead Protection: 100 m from well	PI			N	N	H	H		AD	EA
Wellhead Protection: 100 m from well to 2 yr travel time				CMP		H	H			
Wellhead Protection: 2 yr to 5 yr travel time				CMP		H	H			
Wellhead Protection: 5 yr to 25 yr travel time						H	H			
Wellhead Protection: 25 yr to limit of capture zone										
Areas of High Aquifer Vulnerability				CMP						
Significant Recharge Areas identified through site-specific study	PI			CMP						EA
Significant Recharge Areas identified through watershed-wide study	PI			CMP						
Significant Discharge Areas identified through site-specific study	PI		H	N	N	H			AD	EA
Significant Discharge Areas identified through watershed-wide study	PI		H	N	N	H			AD	
Headwater Areas outside serviced urban areas (Cold Water)	PI			CMP						
Headwater Areas outside serviced urban areas (Warm Water)	PI			CMP						
Stream Corridors	PI			N	N	H	H		AD	EA
Wetlands	PI			N	N	H	H		AD	EA
Flooding Hazard Limit of Lake Ontario	PI			N	N	H	H		AD	EA
Kettle Lakes	PI			N	N	H	H		AD	EA
Other Lakes	PI			N	N	H	H		AD	EA

**NOTE:** N = Not Permitted

CMP = Contaminant Management Plan Required;

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This chart has been prepared as a convenience to show the development restrictions in Table 5. In case of any conflict or uncertainty, Table 5 takes precedence over this chart.

**APPENDIX 5 Development Restrictions in Natural Heritage Systems**

<b>Development Types Natural Heritage System Categories</b>	<b>Any Development type not shown to the right</b>	<b>New Lot Creation</b>	<b>Site Alteration (not integral to other development types shown in chart)</b>	<b>Conservation and flood or erosion control projects</b>	<b>Private farm, recreational, or scenic ponds</b>	<b>Forest management</b>	<b>Fish and wildlife management</b>	<b>Reconstruction, repair, or maintenance of an existing drain approved under the Drainage Act</b>	<b>Agricultural uses on lands whose existing use is agriculture</b>	<b>Agricultural uses on lands whose existing use is not agriculture</b>
<b>Category 1 (Existing features of types in which development would generally not be permitted)</b>	<b>N</b>	<b>N</b>	<b>N</b>	<b>PI</b>	<b>N</b>	<b>F or SRP</b>				<b>N</b>
<b>Category 2 (Existing features of types in which development would generally not be permitted except where no negative impacts on the feature and its ecological functions can be demonstrated)</b>	<b>EIS/STD</b>		<b>EP</b>	<b>PI</b>		<b>F or SRP</b>				
<b>Category 3 (Existing features of types in which development would generally be permitted where compatible with protection of the feature and its ecological functions; lands and waters identified as having the potential to be restored)</b>	<b>EIS</b>		<b>R or SRP</b>	<b>PI or SRP</b>						

**NOTE:** N = Not Permitted

EIS = Permitted only where EIS demonstrates development will be compatible with protection of the feature and its functions

EIS/STD = Permitted only where EIS also demonstrates development will meet performance standards

SRP = Site restoration plan required

SRP\* = SRP plus additional requirements as per Model Policy N6-1

AD = Permitted only as part of approved development

EA = Permitted only under approved Environmental Assessment Process or equivalent and if demonstrated to be necessary in the public interest

PI = Permitted if demonstrated to be in the public interest

EP = Permitted only under established site/development planning process

F = Permitted only in accordance with trees by-law or approved forest plan

Blank Cell = Not Restricted by Table 6

This chart has been prepared as a convenience to show the development restrictions in Table 6. In case of any conflict or uncertainty, Table 6 takes precedence over this chart.

**APPENDIX 5 Development Restrictions in Natural Heritage Systems**

<b>Development Types Natural Heritage System Categories</b>	<b>Low-intensity recreational uses</b>	<b>Existing uses, buildings and structures as permitted by OP</b>	<b>Expansion of existing uses, buildings and structures as permitted by OP</b>	<b>Change of use to similar or more compatible use, as permitted by OP.</b>	<b>Single residence construction on an existing lot, as permitted by OP</b>	<b>New public or private roads that are not infrastructure (local roads).</b>	<b>Infrastructure corridors</b>	<b>Infrastructure that is not infrastructure corridors</b>
<b>Category 1 (Existing features of types in which development would generally not be permitted)</b>		<b>SRP*</b>	<b>SRP*</b>	<b>SRP*</b>	<b>SRP*</b>	<b>AD</b>	<b>N</b>	<b>EA + SRP</b>
<b>Category 2 (Existing features of types in which development would generally not be permitted except where no negative impacts on the feature and its ecological functions can be demonstrated)</b>		<b>SRP*</b>	<b>SRP*</b>	<b>SRP*</b>	<b>SRP*</b>		<b>N</b>	<b>EA + SRP</b>
<b>Category 3 (Existing features of types in which development would generally be permitted where compatible with protection of the feature and its ecological functions; lands and waters identified as having the potential to be restored)</b>							<b>N</b>	<b>SRP</b>

**NOTE:** N = Not Permitted

EIS = Permitted only where EIS demonstrates development will be compatible with protection of the feature and its functions

EIS/STD = Permitted only where EIS also demonstrates development will meet performance standards

SRP = Site restoration plan required

SRP\* = SRP plus additional requirements as per Model Policy N6-1

AD = Permitted only as part of approved development

EA = Permitted only under approved Environmental Assessment Process or equivalent and if demonstrated to be necessary in the public interest

PI = Permitted if demonstrated to be in the public interest

EP = Permitted only under established site/development planning process

F = Permitted only in accordance with trees by-law or approved forest plan

Blank Cell = Not Restricted by Table 6

This chart has been prepared as a convenience to show the development restrictions in Table 6. In case of any conflict or uncertainty, Table 6 takes precedence over this chart.

## APPENDIX 6 CANDIDATE URBAN STORMWATER MANAGEMENT POLICIES

Policy W10-1, and indirectly Policies W5-1, W5-2, and W5-3, address stormwater management in urban areas. While most of the policies in this document are designed to be applicable to urbanizing or already urbanized areas, these four policies in particular deal with the problems of trying to promote intensification on the one hand, while managing stormwater generated by intensive development to acceptable quantity and quality standards on the other.

This Appendix provides more detailed candidate policies on the hierarchy principle of stormwater management, water balance criteria, water quality criteria, peak flow targets, development standards, offsite compensation, and related issues, that may be more suitable for inclusion in the watershed plan than in the official plan. These policy ideas come from municipal representatives on the workshop team who are wrestling with these issues on a day-to-day basis. As with the model policies in Section 4, these candidate policies are a starting point, not the last word.

### ***Hierarchy Principle***

The watershed plan should advocate a hierarchy principle for managing stormwater. An example is found in the City of Toronto's *Wet Weather Flow Management Policy*, 2003. The first three principles stated in that policy are:

- "(1) Recognize rainwater and snowmelt as a valuable resource. Manage rainwater where it falls, on the lots and streets of our City, before it enters a sewer.
- "(2) Manage wet weather flow on a watershed basis using an Ecosystem Approach.
- "(3) Implement a hierarchy of Wet Weather Flow practices starting with 'at source', then 'conveyance', and finally 'end-of-pipe' solutions."

The watershed plan should advocate requiring applicants to demonstrate that they have addressed the hierarchy principle and maximized opportunities for achieving onsite water management criteria, before any offsite compensation is considered.

For more detail on underlying philosophy and specific stormwater management measures, see the Ministry of the Environment's *Stormwater Management Planning and Design Manual*, 2003.

### ***Water Balance Criteria***

The following water balance scenarios could be put forward in a watershed plan for evaluation:

- No net increases in annual volume of overland runoff from a pre- to post-development basis.
- Achieve pre-urban development amount of infiltration.
- Prevent runoff collected from downspout disconnection from leaving the site through a combination of infiltration and evapotranspiration techniques.

The watershed plan might recommend that the scenario that yields the largest stormwater volume on a given site should become the target for that site. The volumes associated with each scenario should be determined on an annual average basis (in millimetres), thus corresponding to the units used in a watershed water balance.

### ***Water Quality Criteria for Surface Discharges***

The watershed plan should provide some direction on water quality criteria for the following significant parameters, as well as any other parameters specifically significant to the watershed.

Total Suspended Solids:

For all stormwater discharges, the watershed plan should recommend removal of 80% of total suspended solids on a concentration basis from all runoff leaving a development site including the local streets within it. For stormwater discharges into a headwater cold water stream, the removal target should be 90%.

Total Phosphorus:

The following examples are based on specific receiving lake or river requirements. The watershed plan should provide criteria appropriate to the watershed's specific receiving water bodies.

For some watersheds, such as the Credit River, there should be no net increase in total phosphorus loadings on a pre- to post-development basis. This would be required given, in this example, the current total phosphorus loadings from the Credit to Lake Ontario. On top of this watershed-wide directive, the watershed plan might call for specific reductions in total phosphorus loadings into specific sub-basins.

For watersheds in developed urban areas without stormwater quality control facilities, the watershed plan should recommend a target, such as x% reduction in total phosphorus loadings over the next y years.

For watersheds draining to Lake Simcoe, the watershed plan should call for a target of no net increase in total phosphorus loadings on a pre- to post development basis. This would include stormwater runoff, plus treated sewage effluent if the effluent is discharged into the Lake Simcoe basin.

For more rural watersheds draining to Lake Ontario, the recommended target could involve a continuous reduction in loadings from rural areas to accommodate urban growth, to achieve an x% reduction in total phosphorus loadings.

#### Temperature:

For certain sensitive upper reaches of cold water brook trout streams, the watershed plan could call for a temperature target, such as "Achieve maximum temperature of x°C for a four hour discharge from end-of-pipe on the 95th percentile hottest day between June 1 and August 31".

Where temperature targets cannot be reached due to the intensity of urban development, an offsite compensation method could require planting along cold water streams to achieve a continuous natural cover canopy of 5 km (see also Model Policy W6-4). This would assist in returning cool water streams to cold water conditions.

#### *E. coli*:

The watershed plan could provide targets for *E. coli* such as:

- For stormwater discharges near beaches, no more than 200 to 1000 *E. coli* per 100 mL of discharge.
- Provide ultraviolet treatment at end-of-pipe.
- As a substitute for an *E. coli* effluent standard, apply a receiving water model between the proposed point of discharge and the nearest significant environment that would be affected (such as a beach or recreational use), and determine an effluent design criterion, considering all nearby discharges which also influence water quality in the affected environment.

#### Nitrates and Ammonia:

For surface water discharges, the watershed plan should seek complete nitrification of discharges, to minimize impacts on the oxygen resources of a stream. This requirement is particularly applicable to discharges from sewage treatment plants.

### ***Water Quality Criteria for Infiltration or Recharge***

In order to ensure minimal degradation to groundwater quality, the watershed plan must seek ways to ensure that infiltrating stormwater is of adequate quality prior to infiltration into the ground.

Where there is no drinking water use of groundwater, chlorides should be assessed. Where there is drinking water use of groundwater, nitrates as well as chlorides should be assessed. Assessment should take into account infiltration from septic systems and similar infiltration technologies.

For both chlorides and nitrates, the requirement could be to evaluate reasonable use requirements, in accordance with the Reasonable Use approach as described in Ministry of the Environment guidelines and procedures, and use quantitative criteria associated with this approach for evaluating the proposed development and its mitigating technologies. Also, snowmelt from streets could potentially be treated for chlorides by reverse osmosis, although this would be costly.

The various model policies that address municipal wellhead protection areas will also help protect drinking water from infiltration by pathogens.

### ***Peak Flow Targets and Design Criteria***

Flood Control:

Through the watershed plan, the conservation authority establishes numerical criteria for flood control. A typical criterion is to maintain no net increase in the peak flow rate of overland runoff on a pre- to post- development basis for runoff from the 2 year through 100 year design storms. This objective is sometimes abbreviated as "2 year to 100 year post to pre".

Where this cannot be achieved, the watershed plan should require development of offsite compensation measures to the satisfaction of the conservation authority and municipality. (Currently, for many sites an offsite compensation process for flood control is not allowed.)

Stream Erosion Control and Stream Geomorphic Criteria:

Criteria and analysis for stream erosion and stream geomorphology is an evolving area. The following represent potential criteria that may be provided by a subwatershed plan or otherwise required by a resource management agency.

For stream erosion control, runoff from a 25 mm storm from both pervious and impervious areas should be capable of being stored for at least 48 hours before discharge to a first order or second order stream. If deemed necessary by the conservation authority, the watershed plan could recommend more strict criteria, as dictated by an erosion analysis study, for sensitive headwater areas or for other design storms. The release rate from a stormwater pond facility would be used to establish the size of the facility. Where erosion targets are exceeded, offsite compensation could be implemented.

For stream geomorphic criteria, a hydrological analysis should be applied using 10 or more years of continuous simulation. It should be determined that the development meets geomorphic criteria such as "no net increase in cumulative excess shear stress". If the criteria cannot be met, channel reconstruction may be needed to manage the impacts of development.

#### Discharge to Infrastructure Target:

Where discharge is to infrastructure, the municipality and conservation authority may require that criteria be met such as the following:

- The allowable release rate from a developed site during a 2 year design storm should not exceed the peak runoff rate from the site under pre-development flow conditions during the same storm.
- Runoff from storms up to and including the 5 year design storm should be capable of being contained on site and released at the allowable release rate. All flows up to the 100 year storm must be capable of being managed on site.
- An overland flow route should be provided within the developed site to direct runoff in excess of that from the 5 year storm to an approved overland flow outlet, where one exists.

#### ***Lot Level Standards and Other Development Issues***

There are a variety of opportunities for lot level control of water during or after development. They should all be assessed to establish a system that helps meet water balance criteria, and is consistent with applicable lot level standards.

#### Lot Level Standards:

These are prescribed in various building codes, municipal standards, and storm and sanitary sewer use bylaws.

#### Foundation Drainage and Water/Groundwater Pumping from below Parking Garages and Underpasses:

The watershed or tributary plan could recommend measures to address this issue, such as installing a dedicated pipe to direct "clean" groundwater to a receiving water body so that the groundwater does not add to the capacity requirements of a stormwater treatment facility. This might only be required if the site is within a specified distance of a receiving water body.

Other uses of pumped groundwater may also be recommended in the absence of a dedicated pipe, provided:

- the "clean" groundwater is not discharged to a treatment facility, or
- the amount of "clean" groundwater discharged to a treatment facility is reduced to a degree satisfactory to the municipality, or
- other water management benefits, such as lawn irrigation or water efficiency or water substitution, are provided to the municipality.

For foundation drain water that is not significant to the regional groundwater system, storing as much as possible of the pumped water in cisterns may be a suitable substitute.

Source Separation of Runoff:

Source separation involves managing roof runoff separately from street runoff. The watershed plan should encourage this in specific areas where the plan determines there are concerns.

Erosion and Sediment Control:

Two good examples for consideration are TRCA's model bylaw, and the City of Barrie's enforcement approach.

### ***Offsite Compensation***

Where targets cannot be achieved at the lot level, the watershed plan could provide an indication of the types of compensation scenarios that are acceptable. Offsite compensation should be designed so that its beneficial effects are as close as possible to the adverse impacts that are being compensated for (model policies N3-1 and I2-2 already provide for this with respect to natural heritage). An example priority list for offsite compensation measures could be as follows, in descending order of priority:

- target achievement through abutting lots
- downstream or downgradient conveyance systems, such as a ditch or exfiltration pipe
- downstream or downgradient end-of-pipe systems, such as extended detention ponds or sand filters
- construction of conveyance control or end-of-pipe systems in adjoining catchments
- physical reconstruction of streams or stream-based habitats and their aquatic or riparian zone habitats
- financial compensation through a cash-in-lieu system.

When establishing an offsite compensation system, watershed planners should remember that the elements involved are a function of scale. For example:

- For very large land blocks that include streams or floodplains, such as urbanizing secondary plan areas, most of the compensating elements could likely be accommodated within the block itself as directed through the watershed or tributary plan, perhaps coupled with the secondary plan. The applicant should put the required actions in place before any plans of subdivision are approved.
- For smaller developments, on the scale of 2 to 10 ha for example, compensation is more likely to involve offsite measures such as conveyance system options.
- For small lots or lots subject to significant constraints, the only practical offsite compensation may be a cash-in-lieu provision.

Other comments on the compensation process:

- The principles for compensation for unavoidable Harmful Alteration, Disruption or Destruction (HADD) of aquatic habitat must be developed in concurrence with the Department of Fisheries and Oceans which is the approval agency for any such compensation.
- Cost analyses to estimate appropriate financial compensation (cash-in-lieu) for water quality control are under development by TRCA and various municipalities.
- The cost of stream restoration due to urbanization impacts that cannot be mitigated is a function of the value and the health of the stream. Much work is still needed to cost stream rehabilitation. However, as an example, for a headwater cold water stream affected by new development, one estimate is that cash-in-lieu of \$5 to \$7 million per kilometre would be required to fund a 30 year restoration program. This would cover such things as:
  - initial capital works
  - riparian canopy establishment
  - habitat compensation
  - rehabilitation and maintenance
  - ecological/biological monitoring over the 30 year period.
- How much compensation is needed may also be a function of development design. For example, the compensation process and costs would differ between a development where stormwater flows from hard surfaces are conveyed through ditches and swales, versus a development where these flows are discharged directly into stormwater pipes. Direct

connections into stormwater pipes are a significant cause of damage to aquatic life in receiving waters.

### ***Constraints in Attaining Water Management Criteria***

The watershed plan could provide some direction on what constraints might be considered acceptable when a proponent wants to use offsite compensation to address development impacts. These could include such things as lot/development size, soil conditions, etc. The acceptability of constraints should be determined on a site by site basis.

Most soils are not contaminated and will remove pollutants from infiltrating stormwater. However, where it exists, soil contamination may constrain infiltration techniques. Infiltration of stormwater or roof runoff must not lead to significant leaching of soil contaminants. This can lead to groundwater contamination, and in particular to formation of a significant plume of contamination that will migrate to other sites. Assessment of leaching and migration potential should follow a prescribed methodology as outlined in the watershed plan, or a guideline referred to by the plan.

### ***Administering Offsite Compensation***

Where stormwater cannot be managed on site, administrative procedures are required to guide the offsite compensation process; these must consist of:

- a set of rules, or
- parameters for negotiation, or
- a set of expectations of the applicant and of agency staff.

Factors that need to be considered in developing these procedures include scale of development, and how close does compensation have to come to target achievement to be acceptable (for example, is a result within 5%" of a water balance target good enough?).

### ***Imperviousness***

The watershed plan, following on recent examples (for example, the 10% impervious surface limit per non-urban subwatershed established in the *Oak Ridges Moraine Conservation Plan*), can provide hard-surfacing targets for entire watershed plan or tributary plan areas (see Model Policy W5-1). This ties into the offsite compensation process outlined above. Where higher density development that cannot meet hard-surfacing targets is proposed, and will drain to streams specified in the watershed plan, the plan should require offsite compensation measures to address the inevitable adverse effect of stormwater from the development's impervious surfaces on receiving water aquatic ecosystems (see Model Policy W5-3).

# Synopsis of Seven Workshops

## *Incorporating Watershed Recommendations into Municipal Planning Documents*

### Steering Committee

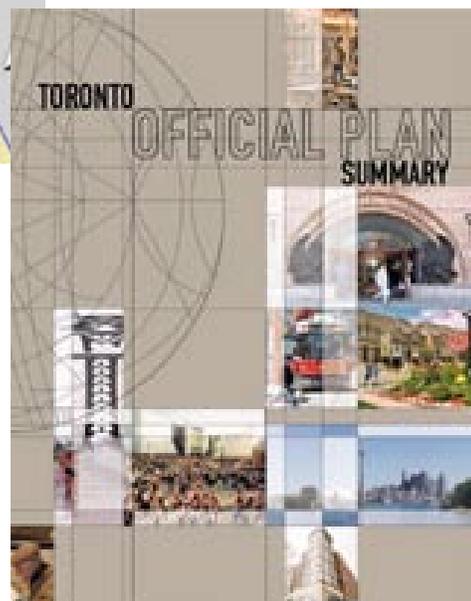
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### A WATERSHED PLAN FOR DUFFINS CREEK AND CARRUTHERS CREEK



# Terms of Reference for the Assignment

## The ToR

The Terms of Reference described the project in the following manner:

"... The purpose of this study is to translate directives (recommendations, objectives, targets, etc.) commonly found in watershed planning documents into policies and standards that can be incorporated into Regional and Local Official Plans and Zoning By-laws. The work will be developed through a series of working meetings with conservation Authority and Municipal staff. A defined set of key watershed related environmental topics and 3 watershed plans will be used as case studies. The deliverable from the study will be a series of "Guidance Documents" that will discuss the environmental management issues brought out at a series of workshop meetings. The documents will establish the context for policy formulation, with a particular expectation of the documents being the development and recommendations of key generic model policies, at several municipal scales, addressing each of the key topics.

" The successful consultant will facilitate discussions among working group members and formulate the draft documents, based on input and direction provided by the working group. The successful consultant will have expertise in the areas of facilitation, municipal planning and policy writing, and an understanding of watershed systems. A solid understanding of groundwater - surface water interaction is also expected. The consultant will be expected to have a working knowledge of the Toronto, York, Peel and Durham Regional official plans and the 3 case study watershed plans. In summary, the primary responsibilities of the consultant will be to:

- Facilitate the discussions of the working group;
- Record, summarize and distribute the notes of the discussions; and
- Synthesize the discussions into guidance documents and recommend model policies;
- Generate specific policies for the Duffins and Carruthers watershed using the model policies developed."

## Schedule of Workshops

This synopsis is derived from the summaries of the following schedule of Workshops

- Start-up Meeting.... March 16 .....
- 1st wksp ..... April 8 ..... Groundwater #1
- 2ndwksp ..... April 19 ..... Groundwater #2
- 3rd wksp..... May 3 ..... Surface water
- 4th wksp ..... May 17 ..... Terrestrial natural heritage
- 5thwksp ..... May 31 ..... Aquatic natural heritage
- 6th wksp ..... June 14 ..... Groundwater & Surface Water - special effort by the 4 Amigos and the 4 Muskateers
- 7thwksp ..... June 28 ..... Groundwater & Surface water charts and tables

- Public Use/Municipal Infrastructure .... is being handled by e-mail
- Landform ..... e-mail as well

- 2 Meetings with Stakeholders ..... TBD
- 1 Meeting with municipal politicians etc.. TBD

## Starting Concepts, Assumptions and Caveats

At the start of the workshops and during the ensuing workshops , the following assumptions and caveats guided our discussions and deliberations...

### Definitions

The expression "translate directives (recommendations, objectives, targets, etc.) commonly found in watershed planning documents into policies and standards that can be incorporated into Regional and Local Official Plans and Zoning By-laws" was defined as follows:

- (a) Policies are "standing decisions on recurring matters" and/or
- (b) Policies can also be policy statements of intent, desirable approaches, and general expectations

(c) for purposes of this assignment, policies means statements regarding the following:  
 “ the proponent shalt do the following when the proponent needs a planning approval”

Tony Usher continued to remind us of this latter point whenever the discussion appeared to step outside the box of “a proponent seeking a planning approval”.

### Planning Policies, Not a Watershed Plan

Agreed to distinguish between things that go in a “municipal planning policy statement / document” versus things that are more appropriately placed or reside in a watershed plan, a water management plan, a water budget, etc.

### Focus is on municipal policies that will have the “force of law” once enacted in the Official Plans or By-Laws

Robb Ogilvie presented the following schematic diagram of the “governing instrument” typically employed by the different levels of government to influence the decisions and actions of its citizens. The point of the diagram is to remind participants that this assignment is ONLY dealing with the REGULATORY instruments.

## Examples of the Continuum of Governing Instruments

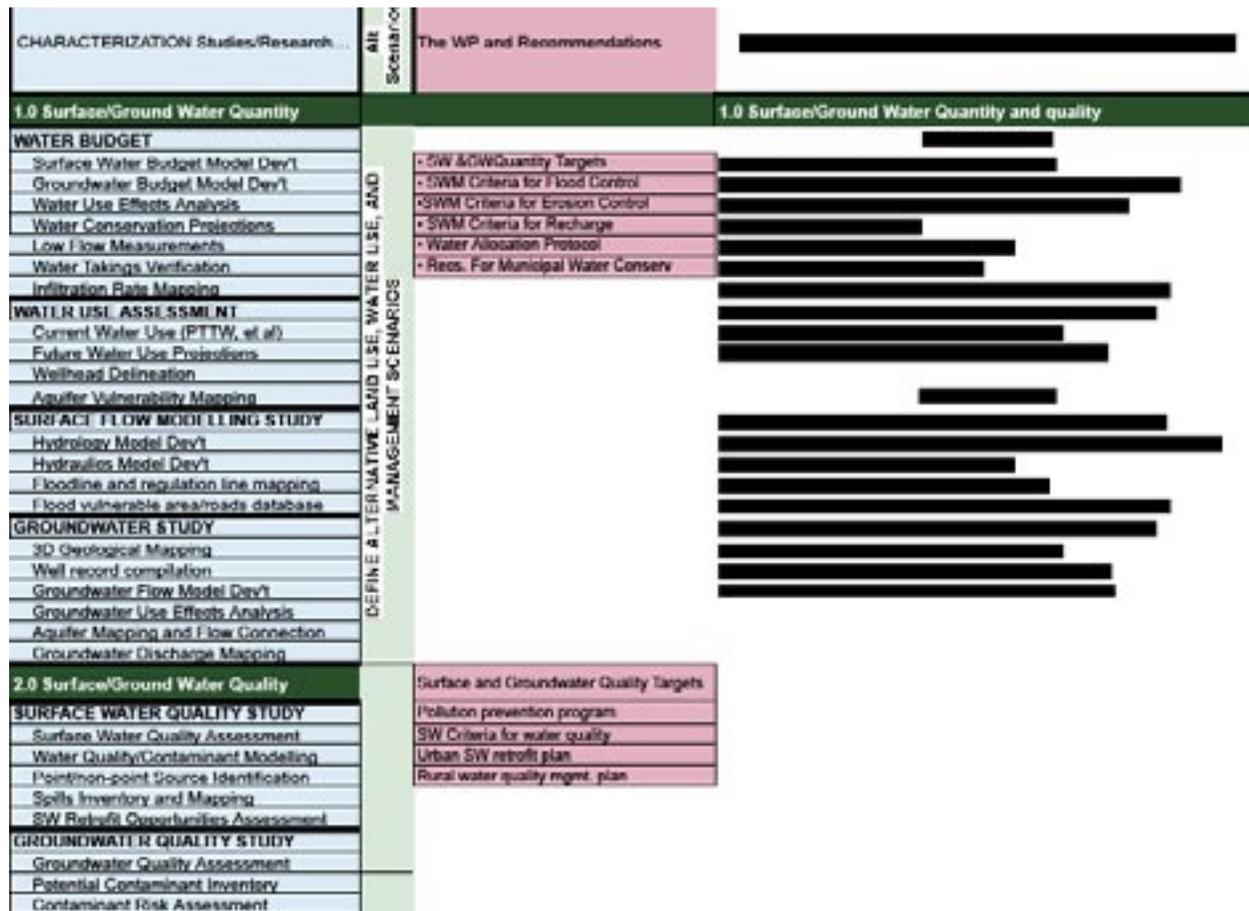


**Which Instrument (or mix of instruments) is most cost-effective in “changing behaviour or getting the desired change in condition” in society?**

### From Watershed Plans to Municipal Planning documents - the concept of recipies

Watershed plans typically consist of a variety of characterization studies followed by recommendations to protect important natural features and functions. One of the challenges tackled by the workshop participants was how to translate a Watershed Plan and its recommendations into Municipal planning documents like Official Plans. The participants adopted the concept of “recipies” to metaphorically describe what was needed to successfully translate the WPs into the OPs. In effect, Tony and Robb are creating a cookbook of various recipies that the WP planners can suggest/recommend and conversely, the municipalities can select from and use in translating the WPs into their OPs “recipies”

The following is an abridged version of a sample Sonya Meek provided to help the Facilitator sketch out a conceptual diagram of what's in a typical WP and how does one move from these contents to the possible recipes needed to translate the WP into the municipal planning documents. The full diagram is included in the Appendix of this Synopsis.



**Creative Tension Between the need to significantly increase the protection of natural features and functions and the socio-economic, legal and political realities of the municipalities**

This introduction would be incomplete if it did not refer to the repeated discussions that occurred in the workshops about the central tension between the need to significantly increase the protection of natural features and functions in the GTA (given the degraded state of the environment and the increasing development pressures) and the socio-economic, legal and political realities of the municipalities that limit the extent to which the municipal planning policies can accommodate or incorporate all of the recommendations of the WPs. The discussions and conclusions constantly strived to find a balance between these pressures.

**Purpose of the study products**

While the study products will focus on planning policies, the study process may provide some useful discussion of nonplanning issues, and the final report could indicate nonplanning actions needed to reinforce recommended planning policies

**Audiences for the final report**

- Conservation authority planners - to help them formulate better watershed plan recommendations
- Municipal planners - to help them formulate better municipal planning policies
- Policies have to be readily adaptable for both audiences to use

## Degree of Prescriptiveness

The report should indicate the levels at which each policy could be applied (often more than one), and leave it to individual municipalities to select the planning instruments most appropriate to their planning approach and culture.

# Session 1 – Groundwater

## Issue: Defining areas of groundwater vulnerability

### Options Considered:

- 1a. *Hydrologically sensitive features (permanent and intermittent streams, wetlands, kettle lakes, seepage areas and springs, and immediately adjacent minimum vegetation protection zones, plus "areas of high aquifer vulnerability" as shown on a prescribed map)*
- 1b. *Recharge areas (high water table areas, highly permeable soils/bedrock, meltwater channels, wetlands, kettle lakes) (Note: discharge areas assumed to be primarily a surface water concern)*
- 1c. *Recharge areas as in option 1b, divided into critical and other areas of groundwater vulnerability (what are criteria for division?)*

### Excerpts from Discussion:

- Prior to the policy being written, the legal authority to deal with aquifers needs to be determined.
- Some thought needs to be put into whether quality and/or quantity protection of aquifers is the goal.
- Identify the standard method for recharge and vulnerable areas identification.
- Definition of terms needs to be agreed upon. (Vulnerable Areas, High Vulnerability, Low Vulnerability, Recharge Areas, Discharge Areas, Aquatic Habitat, Potable Water Supply, Kettle Lakes, Meltwater Channels, Permeable Soils/Bedrock).
- The aquifer in question needs to be identified as well as the use.
- Is meltwater channels appropriate in Policy Option 1b?
- Modify to highly permeable geologic formations, fractured bedrock.
- Clarify the intent of the policy.

### Conclusion(s)

The policies will be created with the legal authority to deal with aquifers in mind, agreed upon definitions and consideration for aquifer definition as well as use.

## Issue: Identifying and protecting areas of groundwater vulnerability

### Options Considered:

2. *Identify areas of groundwater vulnerability on schedule*
- 3a. *Prohibit development in critical areas of groundwater vulnerability, restrict/permit development in other areas of groundwater vulnerability as per options 3b and 3c*
- 3b. *Restrict development in areas of groundwater vulnerability to low-intensity and essential uses*  
*(Note: Options 3b, 5, 6 do not include "areas of high aquifer vulnerability" if they are not otherwise hydrologically sensitive features)*
- 3c. *Permit development in areas of groundwater vulnerability subject to a hydrogeological study or appropriate alternative that demonstrates no adverse effects*
4. *Prohibit contaminant storage, waste generation and disposal, and storage tanks within "areas of high aquifer vulnerability"*
5. *Permit transportation/infrastructure/utilities in areas of groundwater vulnerability subject to demonstration of minimal adverse effects*
6. *Permit development in lands adjacent to areas of groundwater vulnerability subject to a hydrogeological study that demonstrates no adverse effects*
7. *Require applicants potentially affecting groundwater quantity or quality to submit hydrogeological study that demonstrates no adverse effects*

8. *Require subsurface construction to minimize impacts on groundwater flows*
9. *Encourage restrictions on contaminant transportation in areas of groundwater vulnerability*

**Excerpts from Discussion:**

- Define “low intensity” and “essential uses” (carefully).
- The types of use is the issue, not necessarily intensity.
- A standard of minimum threshold needs to be established.
- A standard study approach is needed.
- “Development” should include site alteration.
- Differentiate between people who have their approval and those that don’t.
- Is there municipal liability issues with the studies, in a case where the studies were in correct?
- Storage tanks needs to be identified based on specific compounds for storage.
- Unsure of how to implement given existing and/or approved development.
- A mitigation policy should be in here.
- Define “Adjacent” and “No Adverse Effect”.
- Terms of Reference for the hydrogeological studies will be required and identification of the approval body.
- Perhaps the policy should recommend and EIS with hydrogeological as a component.
- Policy Option #6 is deferred until the mapping is complete.
- Standards and minimum thresholds are required.
- Where will this apply to?
- What are the enforcement options?
- This should be applicable when studies are required, then implemented through the stormwater management report.
- Heat pumps etc. should be included in a policy so municipalities have the choice.
- “If you are in area X and you want to do Y, then you will have to complete Z study”.
- Distinguish between using the Planning Act or the OWR Act as a starting point.
- The wording will need to be tailored to the mechanism.
- Make sure to note the origin/attribution of the policies.
- How will this be implemented?
- Set the municipal transportation routes for dangerous goods with groundwater as a consideration.
- There is no way to operationalize this. Maybe a spill contingency plan, but this not something easily done.
- Use other legislation to protect the environment, but designate sensitive areas of land use and areas of concern on a map.
- Put in design measures to mitigate for possible spills. (Tony does not think this is necessary)
- The group was split on Policy Options 8 and 9, and decided to have a recipe card on it rather than leave it out.

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**Conclusion(s)**

Policies will be created with agreed upon definitions and will identify the required hydrogeological studies by land use.

**Issue: Defining wellhead protection areas**

**Options Considered:**

*10a. Municipal wells, with 2, 10, and 25 yr travel time zones*

*10b. Municipal wells, with 150 day, 2 yr, and 10 yr travel time, and end-of-capture, zones*

**Excerpts from Discussion:**

- Leave this to the four amigos.
- Shouldn’t restrict the number of zones.
- Travel time zones are not good enough.
- Agree with addition of the 25 year zone.
- Maybe we want a very limited restriction list for the outer the end-of-capture zone.

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### **Conclusion(s)**

Policies will be created based on the recommendations of the Four Amigos and the group when the recommendations are complete.

### **Issue: Identifying and protecting wellhead protection areas**

#### **Options Considered:**

11. *Identify wellhead protection areas on schedule*
- 12a. *Prohibit or restrict contaminant storage, waste generation and disposal, animal agriculture, etc. within wellhead protection areas*
- 12b. *Prohibit a set of land uses diminishing in each wellhead protection zone; permit a set of land uses increasing in each zone but subject to best management practices*
13. *Require applicants for uses restricted in wellhead protection areas to submit and maintain site management and contingency plans*
14. *Require applicants for major development permitted in wellhead protection areas to monitor groundwater quality through construction to 5 yr after completion.*
15. *Require best management practices along transportation/infrastructure/utility corridors in wellhead protection areas*
16. *Encourage restrictions on contaminant transportation in wellhead protection areas\**
17. *Ensure new municipal wells are adequately separated from contaminant sources*

#### **Excerpts from Discussion:**

- Agreed, well head protection zones must be on the schedule.
- Need to specify land uses.
- Have to consider existing versus future land use.
- Contingency plans should be required for any potentially adverse landuse and included in all hydrogeological studies.
- If the use is restricted, do we even entertain an application?
- Monitoring must be part of the management plan.
- This must go along with a guidance document, but take a holistic approach.
- Added to the Four Amigos mandate.
- Do not be super restrictive.
- A different subgroup will be created to review the Four Amigos recommendations.
- Monitoring should start at the planning phase and continue.
- Premonitoring should occur for two years prior to the development.
- Monitoring should include quantity and quality.
- If an adverse impact is possible, monitoring should continue indefinitely.
- Must define "major development".
- An option for municipalities is to develop to a certain point, then evaluate the effect and decide at that point whether or not to release more land.
- Tie monitoring to a criteria instead of a timeline? You have to know if things are getting better or worse.
- Use a watershed Planning based system to create the recipe.
- Set up routes that avoid areas for Policy Options 15 and 16, they are weak on specifics.
- In the case of farms and wells, if the farm exists, we have to locate a well somewhere else. Why can we not include this as an option?

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### **Conclusion(s)**

Well head protection has been added to the Four Amigos mandate. Policies will be created from those recommendations after the group has discussed them.

### **Issue: Managing abandoned wells**

#### **Options Considered:**

- 18a. *Require all applicants to decommission abandoned wells*

18b. *Require all applicants to decommission abandoned wells and boreholes*

**Excerpts from Discussion:**

- A deposit system that allows the municipality to abandon a well with the proponents money if the proponent does not comply.

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**Conclusion(s)**

Recipe Cards will be created for both policies.

**Issue: Regulating hard-surfacing**

**Options Considered:**

- 19a. *Outside urban areas, limit hard surfaces to a cumulative maximum (10% or less) per sub-watershed*
- 19b. *Limit hard surfaces to a cumulative maximum of 15% per watershed*
20. *In urban areas and other major development, seek to reduce hard surfaces through municipal standards and development review*
21. *Require applicants proposing 2500 m<sup>2</sup> or more of hard surface to provide for stormwater quality treatment*

**Excerpts from Discussion:**

- Tough to measure and enforce.
- What about leaky pavement designs?
- How would you track this and decide who can pave what?
- The percentage should be established by the individual subwatershed study.
- Too general.
- Hard to convince planners that this is appropriate in the face of urban areas. Is it worth the effort of pursuit?
- Need consistency in the standards between municipalities.

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**Conclusion(s)**

**Issue: Requiring water budgets/cumulative effects assessment**

**Options Considered:**

22. *Require municipality to prepare a water budget and conservation plan\* (defined in ORM Plan)*
23. *Prohibit major development until water budget and conservation plan demonstrating sustainable water supply is completed*
24. *Identify groundwater infiltration rate and groundwater recharge deficit zones on schedule*

**Excerpts from Discussion:**

- Have to determine the criteria for completing the water budget.
- The model has to be maintained.
- Define water budget.
- Situations have to be considered after the water budget is complete.
- This would only work if there is a reasonable definition of "major development" – not the ORM Plan's definition.
- How will this be used?

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**Conclusion(s)**

**Issue: Regulating water-taking land uses**

**Options Considered:**

- 25a. *Require OPA for any application requiring a PTTW or otherwise adversely affecting groundwater quantity.*
- 25b. *Require OPA for any application more narrowly defined as extracting and not returning wa-*

ter for industrial purposes (e.g., water bottling)

**Excerpts from Discussion:**

- What comes first, municipal approval or PTTW?
- What is the legal authority for this policy?

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**Conclusion(s)**

The group agrees with the policy options in general - Recipe Cards will be developed accordingly.

**Issue: Requiring water conservation best management practices**

**Options Considered:**

26. *Require applicants for major development to demonstrate and implement water conservation practices*

**Excerpts from Discussion:**

- More details are required. Tie servicing to water conservation targets?
- Should be able to say when development applications are submitted. What about if it is just a building permit?

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**Conclusion(s)**

The group agrees, a Recipe Card will be created.

**Issue: Requiring appropriate water, sewage, stormwater services**

**Options Considered:**

27. *Increase minimum lot size for residences on private services in areas of groundwater vulnerability and/or wellhead protection areas*
28. *Require higher standards for private services in areas of groundwater vulnerability and/or wellhead protection areas*
29. *Require municipal/communal services in areas of groundwater vulnerability and/or wellhead protection areas*
30. *Require applicants on private services to reinspect/upgrade septic tank/tile fields*
31. *Require local municipalities to pass private services inspection bylaws*
32. *Prohibit rapid infiltration basins and columns*

**Excerpts from Discussion:**

- Policy Option 27 seems like a good second choice to no development.
- Policy Option 29 is not an option in Durham as communal services are prohibited. This would also cut down on the number of applicants and very high standards and financial will be required.
- Agree with Policy Option 30.
- Agree with Policy Option 31.
- Disagree with Policy Option 32, there are ways to develop these that are appropriate for water budgets.
- What about a third pipe system?

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**Conclusion(s)**

**Issue: Requiring stormwater best management practices**

**Options Considered:**

- 33a. *Require applicants for major development to submit stormwater management plan providing for best control practices\* (defined in ORM Plan)*
- 33b. *Require all applicants to demonstrate and implement best control practices (Note: Options 33b to 35b would be demonstrated through a stormwater management plan or appropriate alternative, as preferred by the municipality)*

34. *Require all applicants to demonstrate and implement best construction practices*
- 35a. *Require all applicants to demonstrate achievement of stormwater quality/quantity performance targets specified in plan*
- 35b. *Require all applicants to demonstrate achievement of stormwater quality/quantity performance targets specified in a referenced document*

**Excerpts from Discussion:**

- Need to ensure compliance.
- Do we need municipal by-laws under the Municipal Act for Policy Option 33a?
- Who would approve this?
- Agree with Policy Option 33b.
- Policy Option 34 is agreed with in general, but considered weak.
- Policy Option 35a is not a good policy, it will clutter up the OP.
- Agree with Policy Option 35b, taking it out of the OP removes the need for an amendment to change standards. We need to make sure that water quality and quantity protection is being maintained during construction and that it actually works after construction.

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**Conclusion(s)**

## Session 2 – Surface Water

### Defining and identifying significant surface water areas

Surface water areas whose protection is critical to the goals listed above need to be defined and identified in planning documents, as a precondition to and basis for any policies intended to protect them specifically.

**Options Considered:**

- 1a. *Permanent and intermittent streams and kettle lakes and immediately adjacent minimum vegetation protection zones [ORM Plan]*
- 1b. *Major lakes and watercourses as shown on a schedule [York OP]*
- 1c. *All watercourses and riparian lands as shown on a schedule [Oshawa Creek WP]*

**Excerpts from Discussion:**

- Define “significant surface water areas” and “headwater areas”.
- Protect wetlands as wetlands. Identify internal drainage characters as factors to protect.
- Capture recharge areas in groundwater.
- Protect the function, not just the feature. Recognize systems as systems and not features for the policies.
- Surface water group created to deal with the issue of protecting all of the features that affect a function.
- Differentiate between urban and rural areas?
- In non-urbanized areas, the level of protection should be greater to protect the system that has a better chance of being protected.
- A Policy Option is that in highly valued systems, you just don’t urbanize.
- You can either protect all of the significant areas, or say that there are certain policies for undeveloped areas and for developed areas, or say we will only protect one area or another.

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**Conclusion(s)**

### Protecting significant surface water areas

Surface water areas whose protection is critical to the goals listed above may need specific protection, beyond whatever management actions are taken to protect surface water resources generally.

**Options Considered:**

- 3a. *Maintain natural quality and hydrological characteristics of significant surface water areas*

[York OP]

- 3b. *Prohibit development that has the potential to create an overall negative effect on significant surface water areas [York OP]*
- 3c. *Restrict development in significant surface water areas to low-intensity and essential uses [ORM Plan]*
- 3d. *Permit development in lands adjacent to significant surface water areas subject to a hydrogeological study that demonstrates no adverse effects [ORM Plan]*

**Excerpts from Discussion:**

- “The potential to create” leaves room for argument – it is too loose.
- Fundamental difference between 3a and 3b is that 3a is trying to assess the impact and in 3b you are saying that you have already assessed the significant features and are prohibiting development based on this. 3b is the way to go.
- We need to think broader in terms of corridors which include flood plains.
- Replace the hydrogeological part in Policy Option 3d with a more general recommendation to do the study from the watershed plan.
- Note the Provincial Policy on hazards and floods.

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**Conclusion(s)**

These options will be cloned with a variation added.

**Regulating potentially contaminating land uses near water**

Surface water areas whose protection is critical to the goals listed above may need specific protection, beyond whatever management actions are taken to protect surface water resources generally.

**Options Considered:**

- 5a. *Prohibit or restrict contaminant storage, waste generation and disposal, animal agriculture, etc. within a specified distance of lakes and streams*
- 5b. *Prohibit a set of land uses diminishing with specified distances from lakes and streams; permit a set of land uses increasing with specified distances but subject to best management practice.*

**Excerpts from Discussion:**

- 5a is more parallel to the approach that the Four Amigos are taking.

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**Conclusion(s)**

Consensus that 5a and 5b should stay in.

**Issue: Restricting development and restoring vegetation near shorelines**

All forms of development can result in increased discharge of toxic contaminants, bacteria, nutrients, excessively warm water, etc. into lakes and streams, if right on the shoreline. No-development buffer strips along shorelines reduce these effects. Maintaining or restoring natural vegetation within these buffer strips reduces these effects further.

**Options Considered:**

- 6. *Require development to be set back 30 m from stream flooding hazard limits*
- 7. *Require applicants for development to retain in or rehabilitate to a natural state lands adjacent to lakes and streams [Durham OP, Caledon-Credit WP]*

**Excerpts from Discussion:**

- The 30m is ambiguous.
- Suggest that the set-back be set-back from the meander belt, not from flood lines.
- In the City of Ottawa, they put forward four lines, and the set-backs should be the greatest of these four: 1. Flood Line 2. Stable Slope Line 3. Meander Belt and 4. 30m from the high water mark or 15m from top of bank (which ever is greater). Ottawa is saying you go to the farthest of those. They do provide site specific exceptions though.
- The 30m is arbitrary and would cause great municipal outcry.

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**Conclusion(s)**

Bottom line on number 6 – a policy that is somewhat like the Ottawa policy.

Take the limits from somewhere else and say that whatever the greatest of those are – there will be no development. There will be no set back as such.

### **Issue: Regulating surface drainage alteration**

Changing surface runoff patterns without proper site planning or management can weaken the natural functioning of the hydrological cycle. This could cause, for example, a wetland to dry up because it no longer gets enough water, or a stream channel to erode because it now gets too much water.

#### **Options Considered:**

8. *Require development to minimize alterations to natural drainage [Durham OP]*

#### **Excerpts from Discussion:**

- People preferred the wording “sustain the function of natural drainage patterns”.
- Identify on three levels – 1. Primary (don’t touch), Secondary and Headwaters.

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#### **Conclusion(s)**

The recipe card will be created to reflect the preference of “sustain the function of natural drainage patterns”, but otherwise will clone Policy Option 8.

### **Issue: Regulating stream and shoreline alteration**

Altering streams and shorelines without proper planning and management can cause them to erode or silt up, destroy their shoreland and aquatic vegetation, and eliminate their value as fish and wildlife habitats.

#### **Options Considered:**

9a. *Limit amount or percentage of the shoreline of a lot that can be altered*

9b. *Require all shoreline alteration and structures to be subject to prescribed guidelines to ensure minimum impact*

#### **Excerpts from Discussion:**

- Discussion of shoreline alteration for lakes and streams to be discussed separately.
- CA’s take care of this.
- Municipalities have a stake in it.
- There is no science to support 9a.

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#### **Conclusion(s)**

This will be developed to support what the CA s already do with consideration for MNR and DFO approvals that may be required.

### **Issue: Requiring water budgets/cumulative effects assessment**

**NOTE: This is also a groundwater issue; the options are reproduced from that backgrounder but have not been discussed yet**

Each water withdrawal leaves less for the next user. Water budgeting can ensure that the quantity of surface water required for human, industrial, and agricultural consumption and for irrigation is limited so as to maintain a healthy hydrological cycle, and that within those limits, water is fairly allocated and efficiently used.

#### **Options Considered:**

10. *Require municipality to prepare a water budget and conservation plan [ORM Plan] (defined in ORM Plan)*

11. *Prohibit major development until water budget and conservation plan demonstrating sustainable water supply is completed [ORM Plan]*

12. *Identify groundwater infiltration rate and groundwater recharge deficit zones on schedule*

#### **Excerpts from Discussion:**

- No discussion for this Policy Option currently.

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#### **Conclusion(s)**

## Issue: Regulating water-taking land uses

**NOTE: This is also a groundwater issue; the options are reproduced from that backgrounder but have not been discussed yet**

Although the Ontario Water Resources Act regulates water taking, water taking has been legally recognized as a land use, and water quantity issues may in some cases be so critical that they should also be subject to the more open and inclusive review and approval requirements of the Planning Act.

### Options Considered:

- 13a. *Require OPA for any application requiring a PTTW or otherwise adversely affecting groundwater quantity*
- 13b. *Require OPA for any application more narrowly defined as extracting and not returning water for industrial purposes (e.g., water bottling)*

### Excerpts from Discussion:

- No discussion for this Policy Option currently.

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### Conclusion(s)

## Issue: Requiring water conservation best management practices

**NOTE: This is also a groundwater issue; the options are reproduced from that backgrounder but have not been discussed yet**

Each water withdrawal leaves less for the next user. Best conservation practices ensure that more surface water is left for maintaining a healthy hydrological cycle.

### Options Considered:

14. *Require applicants for major development to demonstrate and implement water conservation practices*

### Excerpts from Discussion:

- No discussion for this Policy Option currently.

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### Conclusion(s)

## Issue: Requiring appropriate water, sewage, stormwater services

**NOTE: This is also a groundwater issue; the options are reproduced from that backgrounder but have not been discussed yet**

Inappropriate or no services can cause toxic contaminants, excessive bacteria, excessive nutrients, excessively warm water, etc. to be discharged into lakes and streams, either directly or through surface runoff. Inappropriate or no stormwater services can also result in too much runoff, which can impair the natural functioning of the hydrological cycle and cause stream and shoreline erosion or sedimentation.

### Options Considered:

15. *Increase minimum lot size for residences on private services in areas of groundwater vulnerability and/or wellhead protection areas*
16. *Require higher standards for private services in areas of groundwater vulnerability and/or wellhead protection areas*
17. *Require municipal/communal services in areas of groundwater vulnerability and/or wellhead protection areas*
18. *Require applicants on private services to reinspect/upgrade septic tank/tile fields*
19. *Require local municipalities to pass private services inspection bylaws*
20. *Prohibit rapid infiltration basins and columns [ORM Plan]*

### Excerpts from Discussion:

- No discussion for this Policy Option currently.

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### Conclusion(s)

## Issue: Requiring stormwater best management practices

**NOTE: This is also a groundwater issue; the options are reproduced from that backgrounder but have not been discussed yet**

Best management practices can ensure that toxic contaminants, excessive bacteria, excessive nutrients, excessively warm water, etc. are not discharged into lakes and streams from inadequately treated runoff. They can also ensure that discharge quantities are not excessive, so as not to impair the natural functioning of the hydrological cycle or cause stream and shoreline erosion or sedimentation.

### Options Considered:

- 21a. *Require applicants for major development to submit stormwater management plan providing for best control practices [ORM Plan] (defined in ORM Plan)*
- 21b. *Require all applicants to demonstrate and implement best control practices (Note: Options 33b to 35b would be demonstrated through a stormwater management plan or appropriate alternative, as preferred by the municipality)*
22. *Require all applicants to demonstrate and implement best construction practices [ORM Plan]*
- 23a. *Require all applicants to demonstrate achievement of stormwater quality/quantity performance targets specified in plan*
- 23b. *Require all applicants to demonstrate achievement of stormwater quality/quantity performance targets specified in a referenced document*

### Excerpts from Discussion:

- No discussion for this Policy Option currently.

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### Conclusion(s)

## Issue: Lake Ontario vs. inland waters: same or different?

Policies which tend to be designed for inland surface waters must also be adaptable for Lake Ontario. On the one hand, individual watersheds or sites have virtually no capacity to affect water quantity, and very little capacity to affect water quality, in Lake Ontario. On the other hand, Lake Ontario is the sink that absorbs the cumulative effects of water quantity and quality decisions in all the Ontario watersheds that drain into it, not to mention all the New York watersheds draining into it and all the Great Lakes above it. This sink is also the source for most of the GTA's drinking water.

### Options Considered:

24. *Limit major lakefilling to public recreation and essential transportation/infrastructure/utilities, approved under an Environmental Assessment Act process that ensures water quantity and quality protection or enhancement [Toronto OP]*
25. *Permit minor lakefilling for slope/shoreline stabilization, aquatic habitat, shoreline naturalization, water quality, or public access purposes only [Toronto OP]*
26. *Require additional relevant matters for any EIS where on Lake Ontario [Durham OP]*

### Excerpts from Discussion:

- Concern that you are creating more land in water by lake filling.

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### Conclusion(s)

Policy options number 24 and 25 are put in the parking lot for later determination if lake filling is actually a land use and can our policies have any legitimacy in this situation.

## Session 3 – Terrestrial and Natural Heritage

### Issue: Defining and identifying a terrestrial natural heritage system.

**NOTE: All options are in addition to a PPS minimum system**

Existing terrestrial natural heritage features and communities, and lands with future restoration potential, whose protection is critical to the goals listed above need to be defined and identified in planning documents, as a precondition to and basis for any policies intended to protect them specifically.

### Options Considered:

1. *All wetlands, all species-at-risk habitat, all life science ANSIs, all sand barrens, savannahs, and tallgrass prairies, and immediately adjacent minimum vegetation protection zones, not shown on a schedule [ORM Plan]*
- 2a. *All forests and all wetlands as shown on a schedule [Toronto OP, Peel OP]*
- 2b. *Regionally significant forests as shown on a schedule [York OP]*
3. *All ESAs and all species at risk habitat as shown on a schedule [York OP, Peel OP]*
4. *All life science ANSIs as shown on a schedule [York OP]*
5. *Lake Ontario waterfront as shown on a schedule [Toronto OP, Durham OP]*
- 6a. *Riparian lands and lands with future restoration potential as shown on a schedule [Toronto OP]*
- 6b. *Major cores and corridors, including lands with future restoration potential, as shown on a schedule [Durham OP, York OP]*
- 6c. *All valley and stream corridors, including lands with future restoration potential, as shown on a schedule [Peel OP]*
- 6d. *The 30% of lands with the best potential to contribute to a system as determined by a model, including lands with future restoration potential, as shown on a schedule [TRCA TNHS]*

### Excerpts from Discussion:

- Not all municipalities have identified significant woodlots – take into consideration if the assumption is that everyone is at the minimum point of the PPS.
- I look at it as a layering down. Province would identify things that are inter-regional, then the region would identify, and then municipalities.
- 6a) b) and c) are all based on the systems corridor approach.
- We could use the features approach and then apply a systems approach.
- Look at the “Suggested Guidelines for the Identification of Significant Woodlots”.
- I would suggest that the “X”s under one to sixteen in the background document. You don’t identify what is to be protected by the zoning by-law, it just is.
- A Greenland system is not the same as protecting a provincially significant woodlot.
- Concern that if you go beyond the PPS, the policies will not be defensible.
- Should a watershed plan stick to science and make really good recommendations, then let the planning process pick up on that?
- Rather than identifying parts of a system as important, we need to identify a system and make the entire system important. The PPS does leave the door open to do that. Look at the “Natural Heritage Technical Manual/Reference Manual”, there is a lot of direction in that document. We need to take the bull by the horns and say that the system is significant and fight for it.
- In terms of terrestrial systems, there is this overlap of crude benefits to water management. The function piece becomes very difficult. We need to protect for future improvement.
- The drivers are not all natural – political, recreation, land owners etc. all need to be included in the planning process. The features approach is not adequate. The PPS features approach is not enough.
- The identification of the natural heritage system can and will be modified through a comprehensive watershed plan.
- Why doesn’t one direction of the recipes steer towards features and another that talks to the systems based functional side?
- The provincial policy is focused on maintaining the significant features alone so the challenge is identifying based on existing and future functions.
- A watershed plan identifies features and functions as well as areas of degradation. These things can be included in municipal planning documents. The watershed plan establishes a context for the larger sensitivity of an area.
- You are probably going to have two levels. One that is sacrosanct, and another that you just need to maintain the land base which can be modified/shifted.
- Recognize what we have to protect and what we have to give a little on.

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### Conclusion(s)

The group wants to move beyond the minimum PPS. The Recipe Cards will reflect this.

## **Issue: Defining and regulating lands adjacent to the system**

**NOTE: Does not include policies that simply apply the PPS adjacent-lands approach to a more expansive system**

New development and land uses near the terrestrial natural heritage system need to be adequately set back from the system, and demonstrate that they will not cause any negative impacts on the system.

### **Options Considered:**

- 7a. *Restrict development in system to low-intensity and essential uses [ORM Plan, TRCA TNHS]*
- 7b. *Prohibit major development in most significant portions (ESAs, all forests >30 ha, valley and stream corridors draining >125 ha) of system [Peel OP]*
- 8a. *Prohibit urban expansion into system [Durham OP]*
- 8b. *Direct urban expansion away from system, and where not possible, require intensification of development [York OP]*
9. *Prohibit aggregate resource and waste disposal uses in system [York OP]*
10. *Establish target of 30% natural cover in each subwatershed outside urban areas for plan review purposes [ORM Plan]*
11. *Require applicants to demonstrate development will not impede plant and animal movement through corridors [ORM Plan]*

### **Excerpts from Discussion:**

- We are again taking for granted a minimum of PPS protection.
- Watershed planning forces us to take a systems approach and starts from the premise that we are starting with a stressed landscape. When we look at the relationships between terrestrial, aquatic etc., we end up with a triple-tier. At the top is what is protected rigorously, the second level is that which can be “modified” and the third is the level that is already damaged or stressed and would benefit from reconstruction. We go back to the science and look at the adjustments/manipulations then we can identify the linkages that we need to strengthen. The functional relationships are the drivers and provide the guidance for what extent we can work with these.
- I think another disparity is that there are differences in things like cover. For example, there is less cover in south Durham than in the north. The plans have to be flexible.
- Zoning by-laws are based on lines. I am wondering if we define an area that needs restoration, can we put in the by-law, that something has to be done with the area?
- The level of appropriate significance between rural and urban areas is an issue.
- You could have an overlay approach with a suffix that will direct the growth.
- Where we do have watershed plans complete, they are not necessarily compatible.
- Really we are looking at a three-tiered system, not a two. Develop similar to the well-head protection system. “Rings” to describe the tiers. The third line would essentially be what the third line “flexible” system would be. This is where you would look at your net-gains and compromises.
- There needs to be some forethought on compensating different areas.
- Have to take into consideration the differences in urban settings, (TRCA has already addressed this in their plan).
- Our best line of defense is to protect what we have. I support the tiered approach but we have to be careful about what we know and what we don’t know.
- The key thing here is that the relative sensitivity is the first whole step, then you identify what to do with that (municipalities).

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### **Conclusion(s)**

The discussion about what recipes to use should be an integrated one. We have created the generic recipes and we should integrate the watershed planning process with the municipal process. Policy Option 7a is flagged for the Parking Lot. Policy Options from 7b to 9 will not be used, we are simply going to rely on performance based measures like the PPS.

## Issue: Achieving net gains to the system

It may be possible to maintain or improve the terrestrial natural heritage system while permitting new land uses and development, by applying a net-gain or no-net-loss principle whereby the terrestrial natural heritage system may be altered but the altered system is as good as or better than it was before.

### Options Considered:

12. *Lands may be removed from the system to enable development, provided the applicant adds compensating lands to the system; the lands added must be at least equal in area and abutting the system if on the same site; ratio of lands added to lands removed increases up to 3:1 as lands added become more remote from site and system; significant features (wetlands, life science ANSIs, ESAs, etc.) may not be removed [TRCA TNHS]*

### Excerpts from Discussion:

- This seems to be opening a door to remove lands from the OP. Secondly, saying must in an OP is usually a problem.
- The example Under number 12, should make this one generic.

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### Conclusion(s)

The Recipe Card for this policy will compensate loss at an equal value to the system.

## Issue: Defining and regulating lands adjacent to the system

**NOTE: Does not include policies that simply apply the PPS adjacent-lands approach to a more expansive system**

New development and land uses near the terrestrial natural heritage system need to be adequately set back from the system, and demonstrate that they will not cause any negative impacts on the system.

### Options Considered:

13. *Require EIS that demonstrates no adverse effects for all development within 120 m of system [ORM Plan]*
- 14a. *Require applicants to set back all development at least 10 m and up to 120 m from system, depending on feature or as otherwise justified by an EIS [TRCA TNHS]*
- 14b. *Require applicants to set back all development 30 m from system and maintain/restore natural cover in setback*

### Excerpts from Discussion:

- Take the 120 m out of Policy Option 13 and 14a, it is in there as the EIS trigger.
- It is really important that either the OP or the watershed document set out what the EIS should include so there is some uniformity. It could be a recommendation that could be made.
- For Policy Option 13, if we required an EIS for some distance and 14 a) would require a setback, recommended at 10m more than the EIS. Just a suggestion to work those two together. Have the set back determined by the EIS. (Tony thinks this may be indefensible.)
- Mention that one of the things that has come up for us was the need to have a ToR for a terrestrial natural heritage system. I agree that it should be the study itself that determines the setback. If it is a potentially significant feature, it will be a very difficult task for someone to study a feature that doesn't exist.

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### Conclusion(s)

The Recipe Card will go beyond the PPS minimum standard, but will be defensible.

## Issue: Conveying lands into the system

Often, and especially where the system is being affected by new land uses and development, it is in the best interest of the landowner, the planning authority, and the community at large for the affected lands to be conveyed to a public or nonprofit authority.

### Options Considered:

15. *Where lands removed from system and compensating lands added, require applicant to convey compensating and all other system lands to public or nonprofit authority [TRCA TNHS]*

**Excerpts from Discussion:**

- Policy Option 15 needs a little bit of reality check, as this is unlikely to happen. I think we will need more options.
- I would suggest that because we are not here to discuss the TRCA strategy is that we put in another option.

---

**Conclusion(s)**

More Recipe Cards will be created for review that the current Policy Option listed.

**Issue: Enhancing/restoring degraded portions of the existing system**

Existing natural heritage lands and features are often degraded and unable to effectively function as part of the terrestrial natural heritage system, or provide ecological functions. Restoration to a healthy natural condition is essential

**Options Considered:**

16. *Encourage restoration and enhancement of system through planning approvals [Peel OP]*
17. *Require restoration of any scheduled portion of system should it be damaged or destroyed [Peel OP]*
18. *Within the system, permit hard-surface expansion, vegetation removal, or site alteration, associated with existing use or the development of a single dwelling on an existing lot, only subject to a satisfactory natural heritage compensation plan [TRCA TNHS]*

**Excerpts from Discussion:**

- On Policy Option 18, this seems like an awfully site-specific recommendation to come out of a watershed plan. Maybe use it as an example.

---

**Conclusion(s)**

The group agrees that they want to keep these options in. Recipe Cards will be created for all of the above Policy Options.

**Issue: Restoring natural cover and connections in the future system**

Lands with potential to contribute to the future terrestrial natural heritage system lack natural cover, and require long-term restoration to reach a healthy natural condition.

**Options Considered:**

19. *Establish xx% forest coverage target for restoration purposes [Durham OPR Issues and Directions, 30%; York OP, 25%]*
20. *Require applicants to restore compensating lands added to the system [TRCA THNS]*

**Excerpts from Discussion:**

- Keep the municipal target and also where the % comes from (i.e. within watershed, municipality etc.)

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**Conclusion(s)**

This Policy Option will be moved to the Parking Lot for further discussion.

## Session 4 – Aquatic Natural Heritage

**Issue: Defining and identifying aquatic natural heritage.**

**Note: All options are in addition to a PPS minimum**

Theoretically, existing aquatic natural heritage features and communities, and waters with future restoration potential, whose protection is critical to the goals listed above, need to be defined and identified in planning

documents on a system basis as with terrestrial natural heritage. However, because aquatic species are more migratory, aquatic environments are more permeable to external influences, aquatic property rights are less easily privatized, and aquatic conservation science is less developed, we are nowhere near agreement on what would constitute aquatic natural heritage systems and whether such systems even exist. The best we can hope for is to identify those types of waters and features that would constitute aquatic natural heritage.

#### **Options Considered:**

1. *All wetlands, all species-at-risk habitat, and immediately adjacent minimum vegetation protection zones, not shown on a schedule [ORM Plan]*
2. *All wetlands as shown on a schedule [Toronto OP, Peel OP]*
3. *All species at risk habitat as shown on a schedule [York OP, Peel OP]*
4. *All natural lakes  $\geq 2$  ha and their shorelines as shown on a schedule [Peel OP]*
5. *Lake Ontario waterfront as shown on a schedule [Toronto OP, Durham OP, Peel OP]*
- 6a. *Riparian lands and lands with future restoration potential as shown on a schedule [Toronto OP]*
- 6b. *Major valley and stream corridors, including lands with future restoration potential, as shown on a schedule [Durham OP, York OP]*
- 6c. *All valley and stream corridors, including lands with future restoration potential, as shown on a schedule [Peel OP]*
- 6d. *The 30% of lands with the best potential to contribute to a terrestrial natural heritage system (including some aquatic components) as determined by a model, including lands with future restoration potential, as shown on a schedule [TRCA TNHS]*

#### **Excerpts from Discussion:**

- Only swamps and marshes provide aquatic habitat.
- The 30% - shouldn't mean that if you have more than 30% you can get rid of it.
- Policy Option 6c) has to be qualified to say that the schedule is not the be all and end all of the policy option.

---

### **Conclusion(s)**

#### **Issue: Protecting aquatic heritage waters, features, and functions**

Aquatic natural heritage waters, features, and functions critical to the goals listed above will need to be protected from incompatible land use and development.

#### **Options Considered:**

- 7a. *Restrict development in identified areas to low-intensity and essential uses [ORM Plan, TRCA TNHS]*
8. *Prohibit major development in valley and stream corridors draining  $\geq 125$  ha [Peel OP]*
9. *Prohibit development in core fishery resource areas*
- 10a. *Prohibit urban expansion into identified areas [Durham OP]*
- 10b. *Direct urban expansion away from identified areas, and where not possible, require intensification of development [York OP]*

#### **Excerpts from Discussion:**

- There is nothing that forces a building permit to be prevented under "bad" conditions.
- What is the legal operative way of requiring in an OP that planning approvals be obtained first? Sometimes a permit is issued and because of that - it is hard to say to the applicant that you have a problem with say taking water when they have a permit from MOE.
- If you put the suggestion about permits in the OP, it will serve as a reminder, but will not be prescriptive – actually might get you into more trouble.
- If the zoning by-law hasn't caught up to the OP - that is the problem. Really shaky ground trying to say that the OP should apply instead of the zoning by-law.
- The report has to recognize that with aquatic, there are several levels of approval to go through. The other question of the broadness of the impacts compared to terrestrial.

---

### **Conclusion(s)**

#### **Issue: Achieving net gains to features and functions**

It is possible to maintain or improve aquatic natural heritage while permitting new land uses and develop-

ment, by applying the no-net-loss principle of the federal Policy for the Management of Fish Habitat.

### **Options Considered:**

11. *Require development in fish habitat to achieve no net loss and, where possible, net gain of productive capacity*
12. *Lands may be removed from the terrestrial natural heritage system (including some aquatic components) to enable development, provided the applicant adds compensating lands to the system; the lands added must be at least equal in area and abutting the system if on the same site; ratio of lands added to lands removed increases up to 3:1 as lands added become more remote from site and system; significant features (wetlands, fish habitat, etc.) may not be removed [TRCA TNHS]*

### **Excerpts from Discussion:**

- Do we want to change the wording of Policy Option 11 to say “directly affecting” and “adjacent to” fish habitat?
- Policy Option 11 is certainly not in any of the upper tier plans. It is taking the federal fish habitat policy and putting it in an official plan. The question is does that need to be done, given it is a federally legislated thing?
- What is not really shown in Policy Option 12 is that there is a list of features that area “hands off”, this is only for smaller, less significant features. And there is an attempt that value is taken into consideration as well.
- I don’t think that area for area thing works as well for aquatic as it does for terrestrial.
- The biggest reason we are here is to maintain the same quality and quantity of surface water. To me, fish habitat is just a function of the surface water features. Everything you do is simply a way to protect you ground and surface water.
- Policy Option 12 needs more detail. Policy Option 11 needs to be made clear that the first thing you do is protect the water.
- Establish the context for why you have to do the studies. It can be the “hammer” for requiring the studies.

---

### **Conclusion(s)**

## **Issue: Defining and regulating lands/waters adjacent to aquatic natural heritage**

**NOTE: Does not include policies that simply apply the PPS adjacent-lands approach to additional feature types**

New development and land uses near aquatic natural heritage need to be adequately set back from the heritage waters/features, and demonstrate that they will not cause any negative impacts on critical features and functions

### **Options Considered:**

13. *Require EIS that demonstrates no adverse effects for all development within 120 m of features [ORM Plan]*
- 14a. *Require applicants to set back all development at least 10 m and up to 120 m from terrestrial natural heritage system (including some aquatic components), depending on feature or as otherwise justified by an EIS [TRCA TNHS]*
- 14b. *Require applicants to set back all development 30 m from features and maintain/restore natural cover in setback*

### **Excerpts from Discussion:**

- The guideline is 30m, which may make sense if you are talking about development on land, but it makes not sense if you are talking about development in the water. If the upstream development is affecting the watercourse - it has the potential to adversely affect aquatic habitat. You can argue that any development in the Humber Watershed could affect anything in the Humber Watershed. Where do we draw the line on requiring and EIS?

---

### **Conclusion(s)**

This issue is put in the Parking Lot for further discussion.

## **Issue: Conveying lands**

Where aquatic natural heritage is privately owned, and especially where it is being affected by new land uses and development, it is in the best interest of the landowner, the planning authority, and the community at

large for the affected lands to be conveyed to a public or nonprofit authority.

**Options Considered:**

15. *Where lands removed from terrestrial natural heritage system (including some aquatic components) and compensating lands added, require applicant to convey compensating and all other system lands to public or nonprofit authority [TRCA TNHS]*

**Excerpts from Discussion:**

- Is there an opportunity for a responsible corporate citizen to look after a woodlot etc?
- Have to make sure that the policies are defensible given the sometimes seemingly arbitrary decisions of the OMB.
- Take into account that many municipalities cannot afford to buy or even maintain land deeded to them.
- Conveyance undermines the notion that in society, there is a collective responsibility to be good stewards.

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**Conclusion(s)**

More recipe cards are needed to talk about something other than public ownership.

**Issue: Enhancing/restoring degraded waters and features**

Existing aquatic natural heritage waters and features are often degraded and unable to effectively provide ecological functions. Restoration to a healthy natural condition is essential.

**Options Considered:**

16. *Encourage restoration and enhancement of features through planning approvals [Peel OP]*
17. *Require restoration of any scheduled features should they be damaged or destroyed [Peel OP]*

**Excerpts from Discussion:**

- It is often hard for planners to buy into restoration.
- How do you make sure that restoration is making the system “better”?

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**Conclusion(s)**

Put policy option 16 and 17 forward, and leave suggestions for more open to the group.

**Issue: Restoring wetland natural cover and connections**

Waters with biological potential to function as wetlands and thereby contribute to aquatic natural heritage require long-term restoration to reach a healthy natural condition.

**Options Considered:**

18. *Require applicants to restore compensating lands added to the terrestrial natural heritage system (including some aquatic components) [TRCA THNS]*

**Excerpts from Discussion:**

- Any suggestions, let Tony know.

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**Conclusion(s)**

Policy Option 18 will be turned into a Recipe Card.

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## Session 6 – Back to Water...

This session was dedicated to an update by Steve and Lloyd on where the Four Amigos and Musketeers are in their work, and will be fully documented upon completion of the group’s mandate.

## Session 7 – Finishing Up...

This session focussed on reviewing the ground and surface water tables completed by the Four Amigos and Musketeers. The agenda also included any items that Tony had leftover on his list to discuss with the group before he started creating the draft policy document.

### Groundwater Table/Boxes:

#### Options Considered:

- Groundwater Box 1: Wellhead Protection 150 (200) day - unconfined aquifer system.
- Groundwater Box 2: Wellhead Protection 150 (200) day to 2 year (5 year?) - unconfined aquifer system.
- Groundwater Box 3: Wellhead Protection 2 (5) year to 10 (25) year - unconfined aquifer system.
- Groundwater Box 4: Wellhead Protection 10 (25) year to capture zone boundary - unconfined aquifer system.
- Groundwater Box 5: Wellhead Protection 150 (200) day - confined aquifer system.
- Groundwater Box 6: Wellhead Protection 150 (200) day to 2 year (5 year?) - confined aquifer system.
- Groundwater Box 7: Wellhead Protection 2 (5) year to 10 (25) year - confined aquifer system.
- Groundwater Box 8: Wellhead Protection 10 (25) year to capture zone boundary - confined aquifer system.

#### Excerpts from Discussion:

- We can leave the table as is, with a note that says that there are things in here that go beyond today's planning.
- The watershed plan should dictate to us what we do in terms of any % imperviousness or any other numerical goals.
- I think we have guidance that we need a recipe card for cumulative limits for at least upper watersheds over and above what we decide for specific areas. We also need some kind of recipe card that tries to ensure that land/lots are designed with 100% infiltration included.
- The recipe will reflect that the further away you get from a municipal well, the less restrictive you get.
- Our intention was no roads, period, under new land uses within the 100 meters to the well.
- The thinking is that within the 5/2 year zone, you don't have enough time to replace a well. Outside of that zone, you have monitoring and you can replace the well so you can be less restrictive.
- Regulating the 5 year zone would be pretty prohibitive.
- Tony: If we feel that it doesn't adequately address concerns, we should add in things like
- The bullet about no new agriculture is suggesting that if you have a farming facility, you can't intensify it in the existing area. It is all based on potential.
- I disagree with the Nutrient Management Act caveat. I am concerned that because of economies, farmers have to constantly expand and so this doesn't seem equitable.
- Maybe we specifically could cross-reference. I think Boxes 9 and 10 deal with quality and quantity, but I think perhaps Boxes 11 and 12 should reflect that. These are going to be the only boxes that deal with private wells. All other protection helps, but this will be the only thing written down for it.

---

#### Conclusion:

The Four Amigos/Musketeers have to decide/give us, the thresholds for a decision regarding specific targets. Tony will craft and do some magic on the policy options dealing with agriculture, while looking at the nutrient management Act. For the unconfined aquifer systems, Tony will use the capture zone and for the confined systems, he will use the 25 year target. Tony will pull out the planning aspects of Boxes 9 and 10.

### Surface Water Tables:

#### Options Considered:

- Surface Water Box 1: Level 1 Headwater Areas.
- Surface Water Box 2: Level 2 Headwater Areas.
- Surface Water Box 3: Level 3 Headwater Areas.
- Surface Water Box 4: Corridor Areas.
- Surface Water Box 5: Remaining Contributing Areas.

**Discussion:**

**Note: Due to the time restraint, it was suggested that Tony take a first shot at the policies using the tables instead of hashing them out. Todd's issues with the table were recorded for Tony to follow on if he had any questions. Other issues mentioned during that discussion are also included in the following list:**

- Restricted Minor residential use.
- Quantity - Box 1, first bullet, definition of deep and jurisdiction.
- Left column, forth bullet, no change to drainage in intermitten swails.
- Under existing - no new farm ponds (needs discussion, think about why that is applicable or appropriate). See Niagara Escarpment Study on ponds - the study produced guidelines that Tony should take a look at.
- Box 4 - Corridor Areas definition.
- Existing Land uses, second point - no tillage within corridors. This also appears in other areas, and implies that you can't touch the land. That is unreasonable.
- Box 5, do we really need this level of complexity?
- I want to see the stormwater management stuff tied to a land use policy.
- In Box 4, in corridor areas in new land uses, "For minor recreation and other development" - looking at natural cover, it seems like the two first points contradict one and other. No new development will appear as minor recreational development or something along that line.

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**Conclusion:**

Tony will take all of the above concerns into consideration when drafting the policies.

**Tony's Leftovers:**

**The basic issues were:**

- managing abandoned wells,
- hard surfaces, and
- water budgets.

**Discussion:**

- Both managing abandoned wells and hard surfaces have been covered, which leaves us with water budgets to discuss.
- We are trying to maintain water balance in our water budgets and if you can't, then cash in lieu is used. We use the funds for offsite work etc.
- You can have cash in lui in the city because realistically you can't really get back to natural conditions. Shouldn't people in rural areas be striving for natural conditions? We just don't want to give the proponent an excuse.

---

**Conclusion:**

Regulating water taking land uses was discussed previously and the group wants a recipe card for it.

**Issues that were not discussed during the session, but were on Tony's list:**

- Requiring water conservation best management practices
- Requiring appropriate services
- Requiring stormwater best management proactices
- The Lake Ontario issue...

**Discussion:**

- For Policy Option 31, "require local municipalities to pass..." Can we actually do that? (the response is that it was thought that upper tier government can do that.
- Site the legislative section that gives the recipe power.

### **Conclusion:**

In the absence of comments, Tony will do his best to draft the policy or leave it in the Parking Lot for discussion at the next meeting. Tony will also site the legislative power behind each applicable policy.

## **Session 8 – Public Use/Municipal Infrastructure**

This session was handled by e-mail. No substantive comments were received from the group regarding this session, so the text below is from Table 2 that was sent out to the group for review by Tony.

### **Issue: Minimizing the development of infrastructure in or near significant features and systems**

1. Permit infrastructure in significant groundwater areas (wellhead protection zones excepted) subject to demonstration of minimal adverse effects [ORM Plan].
- 2a. Permit infrastructure in significant natural heritage features and surface water areas only as crossings and only if need demonstrated and no reasonable alternative [ORM Plan].
- 2b. Permit infrastructure in terrestrial natural heritage system only if need demonstrated and no reasonable alternative [ORM Plan].
- 2c. Require utilities/communications infrastructure to avoid terrestrial natural heritage system [York OP].
- 2d. Require that removal of any lands from terrestrial natural heritage system to permit infrastructure subject to Environmental Assessment Act be justified through an EA process that considers all available alternatives to the undertaking where there is a potential for significant impacts [TRCA TNH System Strategy].
3. Require that removal of any lands from terrestrial natural heritage system to permit infrastructure be subject to best efforts to minimize the aggregate number of crossings [TRCA TNH System Strategy].
4. Require infrastructure in core areas of terrestrial natural heritage system to locate as close to edge as possible and prohibit interchanges and stations in core areas [ORM Plan].
5. Permit above-ground infrastructure in floodplains only as crossings [Toronto OP].
6. Encourage interregional utilities/communications infrastructure to share rights-of-way to reduce adverse effects [York OP].

### **Issue: Minimizing the adverse effects of infrastructure development in or near significant features and systems**

- 7a. Require infrastructure crossing significant natural heritage features and surface water areas to minimize adverse effects on ecological integrity, maintain or restore ecological linkages, use natural landscaping, and maintain or improve feature/area health, diversity, size, and connectivity [ORM Plan].
- 7b. Require transportation crossings of terrestrial natural heritage system to maintain various ecological functions and use natural landscaping [Oshawa Creek WP].
- 8a. Require infrastructure in terrestrial natural heritage system to minimize construction disturbance, minimize right-of-way width, allow for wildlife movement, minimize lighting impacts, and minimize adverse effects on ecological integrity [ORM Plan].
- 8b. Require that removal of any lands from terrestrial natural heritage system to permit infrastructure be subject to best efforts to minimize the width of crossings and total area of lands removed, minimize removal impacts on ecological integrity and construction impacts on remaining system lands, and maintain natural connections [TRCA TNH System Strategy].

### **Issue: Minimizing the adverse effects of infrastructure operation in or near significant features and systems.**

9. Encourage restrictions on contaminant transportation in significant groundwater areas [ORM Plan].
10. Require best management practices along infrastructure corridors in wellhead protection areas.
11. Require that removal of any lands from terrestrial natural heritage system to permit infrastructure be subject to best efforts to minimize operational impacts on remaining system lands [TRCA TNH System Strategy].

## **Session 9 – Landforms**

This session was handled by e-mail. No substantive comments were received from the group regarding this session, so the text below is from Table 2 that was sent out to the group for review by Tony.

**Issue: Defining and identifying landforms meriting conservation. NOTE: All options are in addition to a PPS minimum.**

1. Landform conservation areas (2 categories) as shown on a prescribed map [ORM Plan].
2. All earth science ANSIs, not shown on a schedule [ORM Plan].
3. Drumlins as shown on a schedule [Toronto OP].
4. Portions of, or entire, postglacial lake shorelines as shown on a schedule [Toronto OP, York OP, Peel OP].

**Issue: Protecting landforms meriting conservation.**

5. Prohibit division of land entirely within landforms unless conveyance is to public authority, land is within special policy area, or satisfactory EIS completed [Toronto OP].
- 6a. Restrict development in landforms to low-intensity and essential uses.
- 6b. Permit development in landforms subject to a site plan (major development, subject to a landform conservation plan), and to demonstration of planning, design, and construction practices that would not disturb significant landform features and would limit site disturbance to xx% and hard-surfacing to yy% of site [ORM Plan].
- 6c. Require EIS for development in landforms, recognize landform values and ecosystem impacts to reasonable extent, minimize adverse effects, and restore and enhance landforms where possible [Toronto OP].
7. Permit development in regionally significant earth science ANSIs subject to earth science heritage evaluation that demonstrates planning, design, and construction practices that would not disturb significant earth science values [ORM Plan].
8. Prohibit mass grading and extensive site alteration of landforms [York OP].
9. Permit aggregate extraction in landforms, subject to rehabilitation that restores compatible landform character [ORM Plan].

**Issue: Defining and regulating lands/waters adjacent to landforms meriting conservation. NOTE: Does not include policies that simply apply the PPS adjacent-lands approach to landform features - however, only such policies are currently on the table.**



<b>3.0 Aquatic Habitat and Species</b>		<b>Aquatic natural Heritage</b>	
<b>AQUATIC RESOURCE STUDY</b>		<b>Aquatic Community Targets</b>	
Fish Habitat Survey		Fisheries mgmt. plan	
Fish Community Survey		Priority regeneration activities	
Benthic Invertebrate Survey			
Riparian Zone Survey			
Regional Reference Community Assess.			
Water Temperature Survey			
Fluvial Geomorphic Assessment			
<b>4.0 Terrestrial Habitat and Species</b>		<b>Terrestrial</b>	
<b>TERR. NATURAL HERITAGE STUDY</b>		<b>Terr. Nat. Heritage system targets</b>	
Natural Cover and Land Use Mapping		Terr. Nat. Heritage strategy	
Field Data Collection/Mapping			
Terrestrial Natural Heritage Modelling			
<b>5.0 Other Components</b>		<b>5.0 Other Components</b>	
<b>Public Use - Outdoor Recreation</b>			
Human Heritage			
Air Quality			
Human Health			
Economy			
Sustainable Communities			