County Official Plans within the Land Between:

An Analysis of the Connectivity of Soils and Water Quality in Relation to Development Policy.

A Trent Centre for Community Based Education Project for The Land Between

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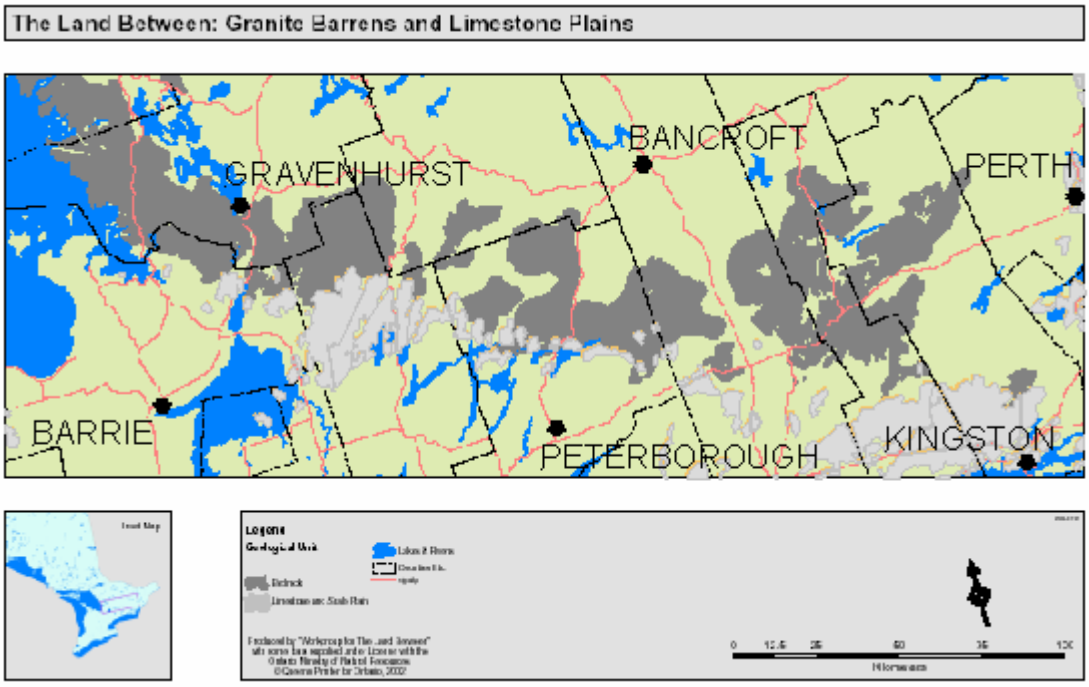
There is a distinct region that lies between the northern forests and farms of southern Ontario and which is found along the contact zone of the Canadian Shield and St. Lawrence Lowlands. This area has been labeled by some “The Land Between”. The Land Between was previously overlooked by conservation agencies and provincial ministries and so the unique geological features are often overlooked by planning authorities to the detriment of the area.

Consisting of granite barrens and limestone plains, The Land Between is characterized by exposed bedrock sometimes covered with thin soil. This geomorphology leads to low or very low absorptive capacity, in turn making water quality vulnerable to pollution.



The Land Between is spread across eight counties and many small settlement areas are undergoing rapid development. The Land Between currently lacks recognition however given the susceptibility to contamination; planning and development in this region should consider the geological attributes.

To address these issues, policy outlined in official plans should recognize the importance and connectivity between the geology, soil and water quality of their areas and how development decisions can incorporate those factors. The focus of this particular study will examine 7 county official plans whose area lies within The Land Between. The county is an appropriate level to address these issues given their wide geological scope and potential ecosystem approach.

The report is divided into two main sections, 1) the application of soils in respect to septic systems, agriculture and their relation to water quality and, 2) an examination of how water quality is addressed in terms of development setbacks, buffers and overall protection. To supplement The Land Between official plans and to provide a point of comparison, both Bruce County and The Greater City of Sudbury will be studied.

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Soil Management within Official Plans

The important role that soils have in maintaining water quality is not generally acknowledged in official plans. Given the geology of The Land Between and its soil depth variances, development within these areas is particularly susceptible to influencing water quality. Contamination of shallow soil for instance, will have a much higher rate of leakage into water systems because of its low absorbency. Similarly, agricultural practices may contribute to nutrient migration into water systems conducted on low or medium absorbency soils. Farm severances sizes also relate to nutrient management but are rarely addressed in this context within an official plan. Soils encompass a fundamental function in water quality management and it is for this reason that it is paramount that soil type and depth is taken into consideration and strong policies put in place to ensure the integrity of the environment.

The County of Simcoe

Scope of Protection/Management

The County of Simcoe does not have an overall policy for the protection or consideration of soils. The plan does however acknowledge the different geological features found in the area, including those characteristics of The Land Between.

2.2 Physical Geography

The following description is composed of excerpts from the report "Development of a Natural Heritage System for the County of Simcoe", one of the background reports for the Official Plan preparation:

"Simcoe County is one of the most geologically diverse areas in Ontario, containing a wide array of prominent physiographic features. Two areas of high topographic relief, the Niagara Escarpment and the Oak Ridges Moraine, form much of the County's western and southern boundaries, respectively. The Oro or Bass Lake Moraine is the dominant landform northwest of Lake Simcoe, while on the east side of the lake is an extensive limestone plain. Granitic bedrock at surface occupies the northeast quadrant of the County. The interior is characterized by a mix of till plains south of the City of Barrie, and sand plains, till plains, and clay plains to the north of Barrie. Several of the larger river systems that drain north into Georgian Bay, notably the Nottawasaga and Wye, occupy wide, flat valleys underlain by extensive beds of silt and organic deposits which in turn give rise to several large wetlands such as Minesing Swamp and Wye Marsh."

Septic Systems and Other Development

The Simcoe County Official Plan does not have policies specific to, or which recognize shallow soils.

Agriculture

Soil is addressed in terms of its importance to agriculture. In the Rural and Agriculture Designation, Prime Agricultural land is based on the Canada Land Inventory soil classifications 1 to 3 and specialty crop lands (***Sec. 3.6.4***). How these different types of soil may influence development in agricultural areas is not noted.

Agriculture lot sizes are addressed in the plan, though the only mention of soils is in reference to specialty crop areas.

Sec. 3.6.6 *New lots for agricultural uses should generally not be less than 35 hectares or the original survey lot size, whichever is lesser, or 4 hectares on organic soils used for specialty crops.*

Additional Considerations

Expanding settlement areas beyond existing settlement areas is discouraged. If this settlement expansion does occur however, limits to development have been set as well as including the requirement of a settlement capability study. This study addresses the importance of soils in effluent assimilation (***Sec. 4.7.3.2***).

District of Muskoka

Scope of Protection/Management

The District of Muskoka Official Plan does not address soil protection or its importance in the overall policy except for in a rural context.
Within "Section D" (Settlement- Pattern and Policy), some soil considerations are given under the Rural heading. Specifically, geology characteristic of The Land Between are listed as constraints for development.

RURAL
A key consideration for development in the rural area will be the ability of the site to sustain private services. Muskoka comprises a unique setting for the provision of servicing due to the major constraints posed by the topography of the Canadian Shield. Much of Muskoka is comprised of either shallow till over bedrock or exposed bedrock. The relief is extremely undulating with numerous local bedrock depressions, knobs and ridges.
The high variability in bedrock relief and in the distribution in the thickness and type of the overlying soils makes it very difficult to estimate the geologic conditions over areas of more than several hectares

Septic Systems and Other Development

For the construction of septic systems near High Sensitivity and Over Threshold waterbodies, soils must be required to eliminate phosphorus.

F.30 & F.32 *iii. The use of a septic system with soils that have a demonstrated ability to effectively eliminate phosphorus will be required*

Sewage system construction in Building Hazards Areas soils must be able to support the proposed sewage system.

F.77 *b) adequate area, depth and suitability of soils for supporting an appropriate on-site sewage system*

Policy for development in rural and water front areas include soil constraints as part of development design.

D.32 *Rural lots should be of sufficient size to accommodate the use proposed, related structural requirements and private individual services. In addition, rural lots should be sized and designed where appropriate to facilitate resource management practices or environmental, manmade or other influences, including soil, terrain and water quality constraints, among others.*

D.19 *The Area Municipalities will establish a variety of lot sizes and frontages reflective of environmental constraints. In particular, waterfront lots should be of sufficient size to accommodate the use proposed, related structural requirements and private individual services. In addition, waterfront lots should be sized and designed to recognize environmental, man-made or other influences including soil, terrain, water quality, fish habitat and waterbody constraints among others.*

For urban centers and communities a similar policy is listed.

D.6 *&* ***D.13*** *The development of the community in a compact manner unless soil, servicing and other physical features prevent it.*

Agriculture

There are no farm severance size minimums outlined within the official plan. The provincial standard is referred to however for minimum distance separation.

E.34 *All farm and non-farm uses will comply with the Provincial Minimum Distance Separation Formula One or Two as amended from time to time.*

Additional Considerations

Although agriculture severances sizes are not specified in the plan, rural residential lots do have minimum acreage requirements. In certain cases, a hydrogeology study is needed before development can occur. Since soils are an essential part of such a study this consideration was deemed appropriate to include.

D.33 *The Area Municipalities will establish a variety of lot sizes and frontages reflective of the rural environment. Rural residential lots will be encouraged to be one hectare (2.5 acres) in area. Larger lot sizes should be developed for hinterland or resource areas and where five (5) or more lots are proposed that are smaller than one hectare (2.5 acres) a study that has demonstrated that the hydrogeology of the area is suitable to sustain the proposed private systems will be required. The minimum lot size will be no less than .4 hectares (1 acre).*

The City of Kawarthas Lakes (Draft)

Scope of Protection/Management

The overview section of the City of Kawartha Lakes official plan gives a brief geographical setting of the area. Geological features characteristic of The Land Between are listed.
The Townships north of the Trent Canal lake system generally have shallow soils over bedrock and are primarily used for ranching or forestry. A significant limestone feature known as the Carden Plain is centred on Carden Township and has significant aggregate potential. The Precambrian shield covers the northern part of the city in Dalton, Digby and Longford Townships.

No further detail is given for connection between soil and development or water quality.

Septic Systems and Other Development

Under the wetlands section of the Natural Heritage Areas heading, special considerations are given to areas that have specific soil constraints.

Sec. 4.15.1. *(17). For development in areas where physical constraints and/or physical heritage dominate, sites will have to meet defined conditions and regulations. In areas of steep slope, narrow waterbodies, small islands and/or specific soil constraints, development proposals may require a site evaluation report.*

Agriculture

The City of Kawartha Lakes has designated prime agricultural land using the Canada Land Inventory soil classifications 1-3 (***Sec. 4.5***). Both agriculture lot sizes and minimum distance separation are addressed. In agricultural lot creation, the Nutrient Management Act is referred to.

Sec. 4.5. Prime Agricultural Areas
1. Prime agricultural areas are primarily south of the Trent-Severn Waterway. Based on the Canada Land Inventory, this area is predominately Classes 1 to 3 soils.
4. The Minimum Distance Separation Formulae will be used to ensure appropriate buffering to protect agricultural operations.

Sec. 6.1.4. Agricultural Lot Creation
New agricultural lots may be permitted only where the severed and retained lots are intended for agricultural use. The lots shall:
(a) be sufficiently large to maintain flexibility for future changes in the type of agricultural operation;
(b) have a minimum lot size of 38 hectares; and
(c) should not be reduced in size below what would be required to accommodate manure being spread on the land based on the Nutrient Management Act requirements that could be generated by livestock in the agricultural buildings or facilities.

Additional Considerations

Soil is taken into consideration when evaluating development density in settlement areas.

Sec. 4.1. Settlement Areas
5. Density of development in settlement areas shall be based on servicing, soil and groundwater capability and the compatibility of the proposed development with the established character of the community.

County of Haliburton

Scope of Protection/Management

Within the County of Halliburton official plan there is no reference to soil conditions in the area, nor is there any note of the geological characteristics of The Land Between.

Septic Systems and Other Development

No mention of septic system requirements is made in reference to soil. The County has however listed “quality assurance program for sceptic tank” as part of future plans. No mention of how that study may incorporate soils into the program.

Sec. 2.3.3.5 *The County and local municipalities will develop and implement a “quality assurance program” to progressively upgrade existing septic tank systems and other private services to current permanent occupancy levels and the requirements of the District Health Unit.*

Agriculture

There are no provisions for farm or agriculture severances nor is there reference to minimum separation requirements.

Additional Considerations

The county lists “Agriculture Soils Assessment Study” as an avenue to obtain more information for development applications, though more specificity is not given.

County of Peterborough

Scope of Protection/Management

Appreciation for the geological variance found in the County of Peterborough is not addressed within the official plan. Issues of soil depth or variance are given specific consideration for septic tanks and some consideration in terms of impacts in agriculture and lot creation.

Septic Systems and Other Development

Under general policies in the Rural and Cultural Landscape section there is recognition that soil depth relates directly to septic take effluent and water quality.

Sec. 4.3.3.1 *Research in the fields of soil science and hydrogeology has concluded that fractured bedrock aquifers can be contaminated by micro-organisms originating from untreated septic tank effluent and urban runoff. To minimize the risk of contamination to water resources, it is policy of the County that development permitted by local municipalities be directed to areas where the depth of soil is sufficient to retain and treat micro-organisms, as well as provide a stable anchoring platform for raised (imported material) tile bed systems.*

Assessment guidelines are also given for private sewage systems.

Sec. 4.2.3 *Applications for plans of subdivision/condominiums within the Settlement Areas that are not serviced by public systems shall include a hydrogeological analysis as per MOE Guidelines that addresses the suitability of the land to provide adequate potable water and for the proper siting of private sewage systems. Where municipalities are approving individual septic systems they may also wish to consult with the water Quality Impact Risk assessment which is the MOE technical guideline for individual on-site sewage systems.*

Shoreline and waterfront areas require biophysical information for development.

Sec. 4.4.3 *The development of lots where possible shall be undertaken using a "best management" approach. Biophysical information for the siting of the building, septic system and any buffer area should take into account the soil type, depth and slope of the land when determining the best location for any such buildings.*

Agriculture

The County of Peterborough promotes the protection of prime agricultural land from major development. Poor soil quality is related to less land conflict but greater risk of environment impacts. Severance guidelines and minimum distance separation regulation are listed below.

Sec. 2.6.3.4 - Agricultural Areas

The following policies apply to severance applications for land holdings located in prime agricultural lands indicated on Schedules to this plan.
Non-agriculturally related residential, commercial and industrial uses can potentially impair the effectiveness of agricultural operations. Land use conflicts may be created when they are introduced into prime agricultural and other agricultural areas. While the same type of land use conflicts are

generally not found in areas with poorer quality soils, there is often a greater possibility of negative environmental impact from scattered residential, commercial and industrial development.

E) Lot creation in prime agricultural areas is discouraged and may only be permitted for:
i) agriculture uses as defined in the Provincial Policy Statement, provided that the lots are of a size appropriate for the type of agricultural use(s) common in the area and are sufficiently large to maintain flexibility for future changes in the type or size of agricultural operations.
ii) a residence surplus to a farming operation as a result of farm consolidation, provided that the planning authority ensures that new residential dwellings are prohibited on any vacant remnant parcel of farmland created by the severance.
iii) infrastructure, where the facility or corridor cannot be accommodated through the use of easements or rights-of-way;
iv) lot adjustments for legal or technical reasons.

F) Notwithstanding subsection (E) above, applications for severance may be granted for residential use where the proposed lot is located between two existing nonfarm residences on separate lots of similar size, such that the existing and proposed lots front on the same side of the road and the two existing lots are not more than 100 metres apart.

G) Notwithstanding subsection (E) above, new farm parcels, for agricultural uses as defined in the Provincial Policy Statement, may be considered when each of the severed and retained parcels is generally equivalent to a natural township lot of about 40 hectares or less due to municipal boundaries or water bodies.

H) Consent applications shall comply with Minimum Distance Separation formula as established by the Province in order to minimize odour conflicts between livestock facilities and development, as amended from time to time.

Additional Considerations

No significant considerations were given to the importance of soil and water quality.

Township of Frontenac Islands

Scope of Protection/Management

Within the Township of South Frontenac official plan, soil depth and variance is not addressed except for the recognition given to the quality of agricultural soils.

Sec. 2.1. *1. A number of important events shaped the communities in the Township. Key events include:*
- the good agricultural soils which dominate the Municipality

Septic Systems and Other Development

For private sewage construction, proof of soil suitability is required. Connection to water quality is made. The plan does not give direction on how proof is to be obtained for soil suitability.

Sec. 3.2.5.3 *Individual Sewage Disposal System*
In the review of a development proposal based upon individual private sewage disposal, the applicant should be required to prove the adequacy of the soil conditions to ensure that available water supplies are protected and there will be no impact on other water sources for adjacent uses.

Agriculture

The following matters in reviewing applications for the development of such uses on agricultural land.

Sec. 5.1.1 *i. the compatibility of the proposed use with surrounding land uses;*
iii. such development shall comply with the provisions of the Minimum Distance Separation Formulae;
iv. the requirement for the use to be in close proximity to farming operations.
v. compliance with Policy 2.1.3 of the Provincial Policy Statement. It shall further be the policy of this Plan that such uses will only be permitted conditional upon approval of an amendment to a separate zoning classification in the implementing Zoning By-law where appropriate provisions and regulations are established to govern the use of such lands.

Sec. 5.2.1
It is the policy of this Plan to maintain a permanent and viable agricultural industry throughout the Township. Agriculture is recognized as an important component of the economic base, a source of employment and the basis of a rural way of life. Therefore, it is the intent of this Plan to protect land suitable for agricultural production from scattered development and land uses which are unrelated to agriculture. The Township will direct limited non-farm growth to the Rural areas provided it will not interfere with or limit existing farm activity in the Rural designation. The development of land in the Rural areas will be primarily by consent to a land severance.
The Rural areas represent soils primarily within Classes 5, 6 and 7 Soils of the Canada Land Inventory of Soil Capability for Agriculture, and organic soils; Class 4 soils which are adjacent to the Classes listed above and form part of a large and contiguous block of poorer agricultural land; and, areas where previous non-farm development has effectively limited the future of intensive farm activity. Development in the Rural designation, but within the Shoreland Area will be subject to the policies outlined in Section 5.2.4 of this Plan.

Additional Considerations

There is some consideration in the plan for with soil erosion and infrastructure.

Sec. 3.4.2.4 *Roadside Tree Plantings*

Roadside tree plantings and vegetative cover shall be preserved, established, or replaced, especially after construction or reconstruction, for erosion control and windbreaks, as well as aesthetic reasons.

Township of South Frontenac

Scope of Protection/Management

The township of Frontenac Island does not address generally the differences in geology across the area or the differentiation in soil types.

Septic Systems and Other Development

Septic system requirement are framed in terms of erosion hazards.

Sec. 5.2.4 *Erosion Hazards*

The Township will direct development or site alterations away from lands identified by the municipality which may be subject to shoreline erosion hazards. The Township should consult with the appropriate Conservation Authority with respect to lands that may constitute an erosion hazard.
a) the drainage of the proposed lot flows to a separate, non-sensitive, watershed as a result of existing topographical or physical features;
b) it can be demonstrated, through hydrogeological studies, that the drainage of the sewage effluent will effectively result in a circuitous setback of at least 300 metres (984.3 feet);
c) that new technologies in sewage disposal systems, acceptable to the Ministry of Environment, will be utilized resulting in no adverse effects on lake water quality;
d) a conventional septic system (tile bed) will be located outside 300 metres (984.3 feet) from the highwater mark, provided that the total nutrient loading resulting from proposed buildings, construction and land clearing does not adversely affect the water quality of the lake.
(e) the proposal is supported by detailed site-specific hydrogeological and soil studies which assess phosphorus distribution, migration velocity and long-term soil retention capabilities.

If development is proposed near an environmentally sensitive areas, an environmental impact assessment is required that will depict the natural landscape.

Sec. 5.2.11 *Environmental Impact Assessment*

a) description of the proposed development, its purpose including site planning details, a general locational map, proposed buildings, existing land uses and details showing the existing vegetation, site topography, drainage, soils and fish and wildlife habitat areas.

Agriculture

The Rural and Agricultural Goal of this official plan is to preserve the Township's established rural character and agricultural industry.

Sec. 4.3 ***AGRICULTURAL AND RURAL GOAL***

(i)to protect agriculturally productive land from the encroachment of incompatible land uses by restricting the location of residential, commercial and industrial development on such land and by encouraging such uses not to locate on productive agricultural lands.
(ii)to maintain agriculturally productive lands in economically viable units by preventing the fragmentation of such land.
(iii)to protect the viability of confinement livestock enterprises by limiting the encroachment of non-agricultural uses.
(iv)to protect the established rural character of the Township from uncontrolled strip development.

Additional Considerations

No additional considerations were found in the official plan that addressed linkages between soil and water quality

County of Bruce

Scope of Protection/Management

Bruce County does address soil and soil quality with regards to water quality as there is a detailed section on the Niagara Escarpment.

Septic Systems and Other Development

The Bruce county OP does not address the personal septic unit.

Sec. 4.7.5 Water and Sewer Services - Hierarchy

It is the intent of County Council that a hierarchy of water and sewer servicing systems be established in the County. The hierarchy preference is for eventual full municipal services in all Primary and Secondary Urban Communities. The Hamlet, Shoreline Development and Inland Lake Areas, identified in this Plan will be serviced by a combination of communal and private systems. Development in the remainder of the County will generally occur on the basis of individual water supply and septic systems

Agriculture

The Bruce County Official Plan addresses farm severances and refers to soil classifications in terms of agricultural use. There is no mention of minimum separation distances.

Sec. 5.5.1 Area of Application Soils

Agricultural Areas include those areas of the Class 1, 2 and 3 soils as defined by the Canada Land Inventory Soil Capability Classification for Agricultural Capability that are greater than 80 hectares in size, and pockets of Class 4, 5, 6, or 7 soils that are smaller than 80 hectares in size. As a result, this designation will include a combination of higher capability and lower capability soils. The designation has been determined based upon the 80 hectare majority of the predominant soil type. These areas have been identified as generally prime agricultural soils in the County, based upon the Canada Land Inventory mapping. It is intended that a local municipality may develop a local strategy to identify agricultural areas through an Amendment to this Plan, or by preparation of a Local Official Plan.

5.5.4 Farm Size

It is the intention of County Council to encourage the retention of large farming areas within the County. These areas will be largely unencumbered from non-agricultural uses by restricting the establishment of non-agricultural uses. A minimum farm size of generally 40 hectares (100 acres) has therefore been established for new or remnant farm parcels, subject to the consent policies of Section 6.5.3, and except as provided elsewhere in this Plan.
Smaller, specialized, farm parcel sizes will only be permitted if the owner can demonstrate that:

Sec. 5.5.4.1

Notwithstanding the permitted 40 hectare farm parcel size, on lands described as Lot 1, North Part of Lots 2, 3 and 4, Concession 2 (Inverhuron), former Township of Bruce, Municipality of Kincardine, the minimum farm parcel size shall be 20 acres.

Sec. 5.6.2.1 Farm Size

In the Rural designation newly created farm lots should generally be 20 hectares (50 acres). It is not intended to prevent the creation of smaller farm parcels where they are of a size appropriate for the type of agricultural use(s) common in the area and are sufficiently large to maintain for future changes in the type or size of the agricultural operation. Local municipalities will be encouraged to establish farm sizes appropriate to the area in the Local Municipal Official Plan and Zoning By-Law.

Sec. 5.5 AGRICULTURAL AREAS

The purpose of the Agricultural Areas policies is to protect and strengthen the agricultural Community, which is recognized as a major economic component of the County. The policies protect Agricultural Areas from the intrusion of land uses that are not compatible with agricultural operations.

The Plan contemplates commercial and industrial uses in the Agricultural Areas that are supportive of the agricultural community and represent supplemental sources of income for farmers. Home industries and home occupations are also permitted.

Additional Considerations

There are no additional considerations given to soil and water quality.

The City of Greater Sudbury

Scope of Protection/Management

Sudbuy Official Plan is comprehensive, detailed and addresses many issues in depth.

The City of Greater Sudbury Official Plan refers to its mining as one of the most important industries in the area. There is no particular focus on the importance of soils, but the plan does provide comprehensive policy for protecting natural areas. Mentions soil as part of natural environment;

Sec. 9.0 Natural Environment

*A healthy natural environment is critical to Greater Sudbury's quality of life. Our forests, wetlands, lakes, streams and wildlife are all part of a living system, contributing to clean air, soil, water, and to our overall well-being. Healthy and plentiful natural features *and areas* also attract people to live, work, visit and invest in our City. As such, significant natural features *and areas* and functions and their relationships must not be compromised in the growth of our City and will be protected for long-term use. The built environment is to be integrated with natural features *and areas* and functions in a manner respectful of the natural system's limits.*

Sec. 9.3 FOREST RESOURCES

Wise forestry practices ensure not only the production of wood and wood products, but also maintain and enhance forest ecosystem conditions and productivity, protect and conserve forest soil and water resources, conserve the biological diversity of the
City's forests, and provide sustainable economic and social benefits.

Policies

2. New development, redevelopment, and municipal infrastructure works on previously restored land will be required to mitigate any impacts to existing soil and vegetation. Where mitigation through avoidance is not possible, onsite soil erosion shall be prevented and all vegetation removed shall be replaced through appropriate and adequate site landscaping and/or land reclamation measures.
3. New development, redevelopment, and municipal infrastructure works on land in need of reclamation, will be required to reclaim the soil and vegetation onsite to a level equal to or greater than would be achieved through the City's Land Reclamation Program.

Septic Systems and Other Development

For individual septic systems, a hydrogeological study is needed that addresses the suitability of soils conditions;

12.2.3 Individual Systems

Individual systems are privately owned water and wastewater systems, usually taking the form of a well and septic system. Many households also draw water from area lakes. While new development is primarily directed by this Plan to fully serviced areas of the City, developments in the Agricultural Reserve, Rural Areas and certain parts of Living Areas that are either partially serviced or unserviced are permitted to use individual systems subject to the policies of this Plan.

Policies

1. Where development is proposed outside fully serviced areas, the proponent must prove that the soil conditions of the proposed site are suitable for a waste sewage disposal system and that there is a proven source of potable water available. A hydrogeological assessment is required where the minimum lot size is less than 0.8 hectare (2 acres).

The general rural policy does not address soil constraints but does outline a general vision for septic systems and development;

Sec. 5.0 Rural Areas
Given Greater Sudbury's vast geographic area, a significant proportion of the municipality is comprised of Rural Areas. Although some areas are partially serviced by municipal water, most rural households, businesses and farms rely on private water and sewage disposal systems. There is no intention to expand services to these areas.
…The intent of this designation is to accommodate a variety of land uses that are appropriate for a rural location, especially those that provide rural economic benefits that are balanced with protection of the natural environment and the agricultural resource base. Intensive development of these lands is not desired, as more suitable locations within Communities have been identified for urban growth.

Agriculture
Within the Rural Area Designation, land uses include residential, agricultural, conservation, mineral exploration, rural industrial/commercial, resort and shoreline commercial, and public works such as energy generation **(5.2)**. For all of these uses, minimum distance separation regulations apply;

5.2 *3. All new farm and non-farm development in the* Rural Areas *designation will comply with the Minimum Distance Separation (MDS) formulae established by the Province in order to minimize conflicts between livestock facilities and surrounding development.*

Regulations for severances of agricultural lots are specified but without consideration of soil function;

Sec. 6.2.2 Lot Creation
Policies
1. Agricultural Reserve areas are to be preserved in large parcels. Lot creation in the Agricultural Reserve designation will only be permitted for:
a. agricultural uses;
b. agriculture-related uses;
c. a residence surplus to a farming operation as a result of a farm consolidation; and,
d. infrastructure purposes.
2. Severances in Agricultural Reserve areas are subject to the following criteria:
a. New and retained lots from severances are to be of an appropriate size for the type of agricultural uses common in the area and sufficiently large to maintain flexibility for future changes in the type or size of the agricultural operation;
b. The severed parcel and the parcel remaining after severance will be a minimum of 30 hectares (74 acres) in size; and,

c. Existing Agricultural Reserve operations will not be subdivided into smaller parcels of land where the severance would reduce the long term flexibility and viability of the existing farm unit. However, Council may consider the creation of smaller lot parcels if the parcel retained is at least 30 hectares and the part severed is less than 30 hectares but is being conveyed to a neighboring farmer for consolidation.
3. New lots for agriculture-related commercial or industrial uses will be kept to the minimum size needed to accommodate the use and shall be compatible with and shall not hinder surrounding agricultural operations.
4. In the case of a farm consolidation, a new lot may be created for a residence surplus to a farming operation. The proposed severance must meet the following criteria:
a. the lot size is kept to the minimum required to site a dwelling, well, sewage disposal system and accessory uses;
b. the new lot is separated from agricultural uses in accordance with the Minimum Distance Separation formulae; and,
c. new residential dwellings are prohibited on any vacant remnant parcel of farmland created by the severance

Additional Considerations

Sudbury has addressed soil issues within the official plan primarily on the restoration of the contaminated soil. Though Sudbury is not within The Land Between this section of the plan can serve as an example of integrating soil issues within a broader scope;

Sec. 9.4 ECOSYSTEM RECOVERY: LAND RECLAMATION AND THE URBAN TREE CANOPY

In the early 1970s, small experimental trials established the best regreening method to overcome elevated metal levels in Sudbury's industrially impacted soils. These trials quickly evolved into a large-scale undertaking that employed hundreds of workers to apply lime to the soil, spread fertilizer and seed, and plant trees to begin the process of ecosystem recovery. Through its municipal Land Reclamation Program, Sudbury successfully 'regreened' thousands of hectares of formerly barren land, receiving international acclaim for achieving this transformation. This achievement is a vital asset for the City, both now and for the future, that has required large investments in time and money. As such, every effort must be made during development to protect soils and vegetation on land that has been reclaimed.
Thousands more hectares of land still need to be limed and planted to initiate ecosystem recovery. The intent of the Land Reclamation Program is to improve the quality of Greater Sudbury's terrestrial ecosystems and, by so doing, improve the health of the City's watersheds and urban and rural environments. Such initiatives are essential to maintain and improve our quality of place.

Sec. 10.3 UNSTABLE SOILS

In some instances, the nature of the soil can be hazardous, particularly if it is susceptible to erosion and collapse. This Plan recognizes that there are areas of land in Greater Sudbury that have soils unsuitable for normal building practices, thus posing a risk to public safety and property. Development will not be permitted where there is an unacceptable risk to public health or safety or of property damage.

Sec. Policies

1. Development is discouraged in areas with known or suspected unstable soils.
2. In order for development to be permitted in these areas, the City will require a geotechnical study to be conducted at the time of application for plans of subdivision and consents. The geotechnical study must provide information to indicate that: a. although the site is identified as having unstable soils, it is in fact suitable or can be made suitable for development by accepted engineering techniques; and, b. alterations to the site will not cause adverse environmental effects.

10.5 CONTAMINATED LANDS
Policies
2. The City will require all applications for development in areas known or suspected of former land use activities that may lead to soil contamination be supported by a Phase I Environmental Site Assessment (ESA).

Analysis of Soil Management within Official Plans

As soil is not readily recognized as an important part of environmental and development management it is not surprising that most of the official plans did not address that functions and importance of soil. Some of the policies that are related to soil and water quality such as those for septic systems or farm lots are written into the plans, but the connection to water quality or the importance of soils in relation to that is often overlooked.

Simcoe County, City of Kawartha Lakes, Haliburton and Bruce County do not address septic systems within the Official Plans, however they must follow the building code act with regards to septic development and therefore as decided to rely solely on that legislation. The Township of Frontenac Islands, South Frontenac and Sudbury specified the need for hydrological and soil studies to be conducted to prove the suitability of soils for any septic development. The District of Muskoka in particular, referred to soil depth as an important issue. Peterborough County incorporated a unique section within the plan that explains link between septic systems, soil depth and water quality and included that hydrology studies needed to follow MOE guidelines.

Provincial standards are set for minimum distance separation and the areas of Muskoka, City of Kawartha Lakes, Peterborough, Frontenac Islands and Sudbury all mention this formula within their plans. None of the counties however made any connection between separation and soil or water quality.

Sudbury, Frontenac Islands, South Frontenac, Halliburton, and Muskoka did not address farm severances. Simcoe, Peterborough and Bruce counties do address farm severances; however no relation to soils is made. City of Kawartha Lakes is the only County to address nutrient management in association with farm severances.

Water Quality Management within Official Plans

Water quality is often viewed as one of the most important areas of management for a community. Although usually focused on drinking water, addressing water quality in the context of source water protection and other ecological functions is important for the vibrancy of the community and natural environment. Water quality is an issue often addressed within official plans; however the effect of geology and soils on this issue is not typically recognized.

Policies that can be put in place include regulations on setbacks and buffers between waterbodies and development. Although these two issues can be found within official plans, the purpose behind these regulations is not always associated with water quality and may in fact be motivated by aesthetic purposes. Additionally, any development made near waterbodies should include regulations that are meant to protect the water quality of that body. Part of those regulations should also include restrictions or alternatives for development if soil type or depth may potentially compromise water quality. Given that The Land Between is characteristic of such conditions, any county that encompasses these areas should take these considerations seriously.

The County of Simcoe

Scope of Protection/Management

The County of Simcoe has chosen to address waterbody management on a watershed basis. Water is labeled as a crucial resources and conservation or wise management is stated as essential. Below are some key sections from the Wastersheds section under Natural Heritage Conservation Guidelines (***Sec. 4.5.1***):

Sec. 4.5.1.1 *Land use Planning and* development *decisions within the County shall contribute to the protection, maintenance, and enhancement of water and related resources and aquatic ecosystems on an integrated* watershed management *basis.*

Sec. 4.5.1.2 *Surface and ground water resources in sufficient quality and quantity shall be maintained, and enhanced where possible, to meet existing and future needs on an environmentally sustainable basis.*

Sec. 4.5.1.3 *Proposals for* major growth *and* development *shall be reviewed on a* watershed management *basis to ensure the watershed is maintained in an environmentally sustainable fashion.*

Relationships between water quality and geology are made as well as the potential effects of water use and sewage disposal;

Sec. 4.12.7 Water quality and quantity: *the importance of water, both surface and underground, is noted in Section 3.1 of this Plan. Since most* development *in Simcoe County is dependent on ground water, sustaining good quality and sufficient quantity of ground water is essential. However, little is known about the effects of current water use and sewage disposal on the long term quality and quantity of groundwater. Some geographical features, such as the Oro Moraine and Oak Ridges Moraine, are known to be critical elements in sustaining quality and quantity, but the specific impacts of* development *on and near the Moraine are unknown. Similarly, there is a need to further understand the relationship between land use change/watershed planning and surface water quality associated with Lakes Simcoe, Couchiching, Huron (Georgian Bay). Assembly and analysis of more information including the possibility of identifying well-head protection areas and watershed based quality targets in this regard is considered a priority throughout the County.*

Development (Setbacks and Buffers)

Instead of specific setback distances, the plan outlines the development setback procedure and guidelines;

Sec. 4.5.4.1 *New development should be sufficiently set back from rivers, streams, and lakes within the County in order to develop vegetative corridors along shorelines and watercourses. The development setback distance shall be determined on-site in consultation with a qualified professional and the* local municipality, *at the applicant's expense. The following factors shall be considered when establishing the setback distance, with the intent of protecting natural features or functions, providing riparian habitat, and minimizing risk to public safety and property:*
i. soil type;
ii. vegetation type and cover;

iii. slope of the land including existing drainage patterns;
iv. natural heritage functions and features including fisheries habitat;
v. the nature of the development;
vi. defined portions of dynamic beaches; *and*
vii. flooding and erosion hazards.

The plan addresses the significance of shoreline development and its importance to ecological functions;

Sec. 4.12.8 Shoreline Development: *The extensive shorelines within the County have historically attracted significant seasonal residential and related tourism development. More recently, shoreline areas have attracted a greater amount of permanent residential* development *and/or the conversion of seasonal residences into year round housing. Historically, shoreline areas have been developed on private individual services on small lots. Ecologically, shorelines perform and contain a variety of natural functions and features and are important components of the* natural heritage *system. The ecological sensitivity and importance of shorelines together with the implications of extensive permanent residential* development *on the ecological functions of shorelines and the growth management strategies of municipalities needs to be further assessed. Assembly and analysis of more information in this regard should be undertaken and management approaches identified in consultation with local municipalities and other affected stakeholders.*

Under General Development Policies and Guidelines, development plans are encouraged although suggestions or guidelines for such plans are not addressed;

Sec. 4.5.4.5 *Development proposed near lakes and water bodies with an established management Plan shall be developed in accordance with the management plan. The County encourages the development of such plans, and will participate in their development.*

Additional Considerations
Consideration is given to water conservation;

Sec. 4.5.1.7 *Watershed plans shall be completed and implemented in consultation with local municipalities and the conservation authorities, including water budgets and water conservation plans to meet the requirements of the Oak Ridges Moraine Conservation Plan, in particular Sections 24 and 25. Development approvals shall be considered within the context of these Plans.*

District of Muskoka

Scope of Protection/Management

Within the General Development Policy, all developments are subject to some degree of addressing water issues:

C.12 *Where development is proposed, including a new or expanded golf course, the following issues will be addressed to the satisfaction of the District and as appropriate for the site:*
a) Water quality;
b) Protection of shorelines;
c) Impact on Heritage Areas and Provincially significant wetlands; and
d) Access as it relates to District facilities.

The plan also addresses in detail the importance and scope of lake system health:

Lake System Health
Water significantly contributes to Muskoka's geography, biology and cultural heritage. The water that connects Muskoka plays a key role in its economy and lifestyle and represents part of its important natural assets. Therefore, the District of Muskoka has an interest in the protection of all of the water resources within its jurisdiction and it is important that the District continues to be a leader in the protection of this key asset.
Key Program Components
The following sections describe key components of the Lake System Health program.
F.12 *The District of Muskoka will, in collaboration with the Area Municipalities and other stakeholders, undertake limits to growth assessments for waterbodies in Muskoka, with those lakes considered to have surpassed an acceptable threshold for phosphorus taking priority. Limits to growth assessments are intended to identify the development limits of a waterbody by using existing base data and applying the various applicable official plan policies to determine potential development capacity. These limits to growth assessments will provide background information for local municipal planning decisions and initiatives and lake plans.*
F.13 *The District of Muskoka will, in collaboration with any affected Area Municipalities, the lake community and other stakeholders, facilitate and participate in remedial action programs for lakes considered to have surpassed an acceptable threshold for phosphorus. The purpose of remedial action programs is to identify areas of degradation or sources of contamination in and around these lakes and to develop a plan with actions to remediate and improve the situation.*
F.17 *The District of Muskoka will continue, through its development review and approvals function, to ensure that water quality is protected and will require Municipalities to adopt provisions in Area Municipal official plans and zoning by-laws in order to achieve this objective.*

Development (Setbacks and Buffers)

Buffer specificities are set within the plan and their connection to water quality is made;

F.21 *The role of natural vegetated shorelines in buffering waterbodies from erosion, siltation and nutrient migration adjacent to the sensitive littoral zone is critical to the protection of water quality. Preservation and restoration, where appropriate, of shoreline buffers is therefore required. At a minimum, a target of 75% of the linear shoreline frontage of a lot will be*

maintained in a natural state to a target depth of 15 metres from the shoreline where new lots are being created and where vacant lots are being developed. Where lots are already developed and further development or redevelopment is proposed, or where the lot is located within an urban centre or community, these targets should be achieved to the extent feasible. Where these targets cannot be met, a net improvement over the existing situation is required.

D.20 *The maintenance of the shoreline of lakes and rivers is key to preserving the quality of the natural and cultural heritage of Muskoka within the Waterfront designation. Tree cover, vegetation and other natural features are encouraged to be retained to uphold the visual and environmental integrity of the Waterfront. Where development is proposed, a natural, substantially undisturbed buffer is recommended at the water's edge to generally meet a target of 8 metres (26 feet) in width for three-quarters of the water frontage.*

E.31 *Where an existing agricultural operation is located adjacent to a waterbody the impact of the operation on water quality will be minimized. In particular, a buffer consisting of natural vegetation should be provided where possible between areas of high nutrient export and the waterbody.*

Specific setback distances are also included;

F.22 *A minimum 30 metre setback from any shoreline will be required for leaching beds. Where this is not feasible, on-site phosphorus management, as outlined in section F.26, will be required.*

F.23 *A minimum 20 metre setback from any shoreline will be required for all development, excluding shoreline structures. Where this setback cannot be achieved, a lesser setback may be considered where on-site phosphorus management is implemented and in the following circumstances:*
a) Sufficient lot depth is not available;
b) Terrain or soil conditions exist which make other locations on the lot more suitable;
c) The proposal is for an addition to an existing building or replacement of a leaching bed where the setback is not further reduced;
d) Redevelopment is proposed on an existing lot and a net improvement is achieved; or
e) The lot is located within an urban centre or community and a net improvement over the existing situation is achieve

Muskoka has decided that a cautious approach to development is the most beneficial for the overall health of lakes and rivers (***F.20***).
Waterfront designations are subject to specific development requirements;

D.17 *The Waterfront is a sensitive area and as such permitted uses are limited to:*
a) Single unit residential dwellings;
b) Tourist Commercial and other commercial uses that relate to the waterfront area (ie. resorts, camps, restaurants and attractions);
c*) Industrial development that services the waterfront community (ie. contractors yards, boat repair and accessories);*
d) Open space uses; and

e) Waterfront landings.

Other restrictions on waterfront development include lot sizes;

D.19 *The Area Municipalities will establish a variety of lot sizes and frontages reflective of environmental constraints. In particular, waterfront lots should be of sufficient size to accommodate the use proposed, related structural requirements and private individual services. In addition, waterfront lots should be sized and designed to recognize environmental, man-made or other influences including soil, terrain, water quality, fish habitat and waterbody constraints among others.*

Water quality is framed in terms of its importance to recreational usage. The classification system used for waterbodies in this section relate directly to the type and scope of development permitted around those areas;

Recreational Water Quality
The single most significant impact on water quality on most recreational lakes and rivers in Ontario is the increased levels of phosphorus, that are entering surface waterbodies.
Sources of phosphorus are both natural and man made. Natural sources of phosphorus include such things as precipitation and natural drainage form the watershed.
Man made sources of phosphorus include increases in overland flow as a result of disruption in the natural vegetation (leading to erosion) in and beyond the riparian zone, use of fertilizers, increased stormwater run-off from impervious surfaces and effluent from septic systems and sewage treatment plants.
Based on the recreational water quality model as detailed in the report prepared by Gartner Lee Limited in 2005 entitled Recreational Water Quality Management in Muskoka, the lakes and rivers in Muskoka have been classified as having high, moderate or low sensitivity to phosphorus. This classification is based on the responsiveness of a waterbody to phosphorus and its mobility within the watershed and will not change. Where the phosphorus loading to a waterbody exceeds 50% of the undeveloped phosphorus load, the lake or river is considered as being "Over Threshold" for phosphorus loading. "Over Threshold" lakes require a higher level of development control as a precautionary action to protect the long-term health of the lake.

Low Sensitivity Waterbodies
F.24 *Area Municipalities are encouraged to require site plan approval or a development permit for substantial development on lots abutting low sensitivity waterbodies. In addition, Area Municipalities are encouraged to require site plan approval or a development permit for all shoreline and non-shoreline commercial, institutional and industrial development in order to ensure that stormwater management and construction mitigation techniques are implemented.*

Moderate and High Sensitivity and Over Threshold Waterbodies
F.25 *In order to ensure no negative impact on recreational water quality, all substantial development on a lot within the waterfront designation (including backlots), and on shoreline lots in the urban centre and community designations, of moderate and high sensitivity and Over Threshold waterbodies will be subject to site plan control or development permitting.*
F.29 *In general, no lot creation will be permitted on waterbodies identified as being of high sensitivity unless the lot is connected to municipal water and sewer services.*

High Sensitivity Waterbodies – Specific Policy

Lot Creation

F.29 *In general, no lot creation will be permitted on waterbodies identified as being of high sensitivity unless the lot is connected to municipal water and sewer services.*

F.30 *Notwithstanding Section F.29, lot creation on private services may be permitted where the Area Municipality has the resources and tools in place and is prepared to implement the following requirements:*

a) *The lot creation may only proceed where a water quality impact assessment, undertaken and implemented to the satisfaction of*
Muskoka and the Area Municipality demonstrates that the development can proceed without negatively impacting water quality and which outlines the circumstances under which development should occur.

b) *The water quality impact assessment shall consist of the following main elements at a minimum.*

Phase 1

Site condition analysis to determine if the required conditions exist on site so that development can occur in a manner that will ensure the protection of water quality and shall include analysis of the site and surrounding area, soil characteristics, and vegetation cover. The Phase 1 report must be completed to the satisfaction of the District of Muskoka and the Area Municipality before proceeding to Phase 2.

Phase 2

i. *Identification of recommended building and septic system (including the leaching bed) envelope and mitigation measures, including but not limited to, detailed construction mitigation plans, shoreline setbacks and buffers, measures for protecting natural vegetation, and stormwater management;*

ii. *Monitoring will be required to confirm that the vegetative buffer and stormwater mitigation measures are in place until such time as construction is complete and an occupancy permit is issued and at a time approximately two years following the issuance of an occupancy permit;*

iii. *The use of a septic system with soils that have a demonstrated ability to effectively eliminate phosphorus will be required; and*

iv. *The recommendations of such a report and the monitoring and septic system requirements are required to be implemented through an official plan or zoning amendment and in Section 51(26) (subdivision, condominium or consent) and site plan agreements or development permits.*

Development of shoreline structures and works are also addressed with specific policy in the plan. These guidelines are for structures which are below the normal or controlled high water mark:

K.58 *Buildings, structures, or works extending beyond the normal or controlled high water mark or located at the shoreline shall be designed and located in a manner which:*
a) does not have a significant detrimental effect on critical fish and wildlife habitat;
b) does not have a significant detrimental effect on property by facilitating erosion;
c) minimizes the obstruction to the natural flow of water;
d) minimizes potential damage from flood and ice heaving; and
e) implements shoreline and resource development and environmental policies of the affected agency.

Part of the general development policy for recreational water quality includes setback distances. If those setback distances are to be adjusted, one of the conditions may be related to soils;

F.23 *b) Terrain or soil conditions exist which make other locations on the lot more suitable*

Under that same section, lot creation for sensitive waterbodies (high and over threshold) must undergo a water quality assessment;

F.30 Site condition analysis to determine if the required conditions exist on site so that development can occur in a manner that will ensure the protection of water quality and shall include analysis of the site and surrounding area, soil characteristics, and vegetation cover.

Additional Considerations

Other considerations for boat use (***D.21***), floating dwellings (***D.22***) and stormwater management (***F.14***) are given.

Provisions are also given for stewardship and monitoring of lake system health:

F.15 *Stewardship programs engage the local community and empower individuals to care for or remediate specific portions of the watershed. Local stewardship is especially important on waterbodies that have been identified as being Over Threshold or of high sensitivity, as defined elsewhere in this Plan. The District, will, in collaboration with the Area Municipalities, the Muskoka Watershed Council, lake communities and other stakeholders, participate in stewardship initiatives as appropriate.*

F.16 *Recreational water quality monitoring and modeling is an important component of Lake System Health. Recreational water quality will continue to be monitored and modeled by The District of Muskoka as one measure of a waterbody's capacity to sustain development.*

The plan recognizes that a waterbody such as Georgian Bay requires different considerations in planning and development;

Georgian Bay

The Georgian Bay waterway is part of an open water system and an international waterbody. It is a water based community separated from other parts of Muskoka by significant tracts of Crown Land where there are no roads. Planning along the Bay tends to look away from the land base of Muskoka to the water. Transient boating is a key issue and encourages strong economic ties to Midland, Penetanguishene and Parry Sound. The amount of boating in the Bay also creates a need for more specific policy that addresses congestion and compatibility issues. Although the environmental issues along Georgian Bay are substantially the same as other parts of Muskoka, water quality must be addressed differently. Through the Severn Sound Remedial Action Plan (RAP) and the Great Lakes Water Quality Agreements, different parameters and issues have been identified and policies to address this unique situation are required.

The City of Kawarthas Lakes (Draft)

Scope of Protection/Management

The Official Plan recognizes the natural water features within the areas and their importance. Waterfront areas are given special attention in terms of development, and wetlands are given particular importance in the Environment section of Goals and Objectives;

Sec. 3.1.1. 8. *Recognize that wetlands are extremely important habitats and perform a myriad of essential ecological, hydrological, and social functions. These include the provision of habitat for a wide range of plants and animals; groundwater discharge; flood attenuation through the storage and control of water; stabilization of shorelines and reduction in damage caused by erosion; water quality improvement; and recreational and tourism opportunities such as hunting, fishing, boating and bird watching.*

Development (Setbacks and Buffers)

Buffer zones around waterfront are recommended and specific policy is outlined for the Trent-Severn Waterway;

Sec. 4.4. *2. A Waterfront designation will be assigned to all lands fronting and functionally relating to lakes and significant rivers such as the Scugog, Gull, and Burnt Rivers. Naturalized and/or vegetative shorelines shall be retained and restored. Lot sizes and development design will respond directly to the natural shoreline character.*

Sec. 6.2.6. Trent-Severn Waterway Buffer Area
Notwithstanding the permitted uses within this designation, a 350-metre buffer abutting the lakes and rivers that form part of the Trent-Severn Waterway shall be maintained where commercial, industrial and tourist accommodation uses will not be permitted. The designations abutting these lakes and rivers will provide policies for commercial, industrial and tourist accommodation uses that would be permitted.

Sec. 6.7.4. Water Setback and Accessory Uses
1. A natural buffer of 30 metres from the high water mark of a waterbody will be maintained with non-disturbance of the vegetation and soils. The buffer should consist of vegetation native to this area of Ontario.
4. Notwithstanding the above, the natural buffer may be reduced to a depth of 8 metres for 25% of a lot's water frontage or a maximum of 9 metres to permit a boathouse or boatport. Within this reduced buffer, a boat ramp and walkway to the shoreline will be permitted.
12. Septic tanks, holding tanks and leaching beds should be set back a minimum of 30 metres from waters edge of a lake or river. For existing lots of record where there is not sufficient area to accommodate this setback, all effort should be made to have as wide a setback from the water as possible, but in no case shall it be less than 15 metres to the high water mark.

The protection of surface water is addressed through the Waterfront Areas section and includes provisions for setback, buffers and other development requirements:

Sec. 4.4*. 3. The protection of surface water quality will encouraged through setback requirements, minimum lot sizes, septic inspections, preservation of aquifers, shoreline naturalization efforts, development restrictions in sensitive areas and the creation of lake quality monitoring programs.*

Sec. 4.4*. 11. Where a wetland abuts the waterfront, development will not be permitted on the upland. This will help to protect and preserve the sensitive lake ecosystems.*

For land adjust to wetlands, an Environmental Impact Study is required for any development:

Sec. 4.15.1. *4. All wetlands should be protected and treated equally. Any development proposed on adjacent lands will have to be supported by an Environmental Impact Study demonstrating no negative impact on the features or functions of the wetland.*

Some provisions are made in the plan for development to occur near a wetland (within a 120 meters) if there are no negative impacts on the natural features or on the ecological functions (***Sec. 4.15.1.,*** *7*).

Sec. 4.15.1. *13. General policies should support the protection of significant woodlands and valleylands such that development may be permitted if it is demonstrated that there will be no negative impacts on the natural features or on the ecological functions for which the area is identified. Vegetative shoreline buffers and natural corridors will also be encouraged and supported.*

Additional Considerations

Sec. 4.25.3. Protection of Groundwater

1. The water quality and quantity of the groundwater will be protected. Prior to the development of land on individual services for multiple residential development and significant water users, a hydrogeological study will be required to ensure that there is sufficient quality and quantity of potable water to service the development and the land is suitable for the disposal of sewage without impacting on the groundwater supply and causing cross contamination with the water source.

County of Haliburton

Scope of Protection/Management

The plan states general policy for wetlands and some protection of ground and surface water;

Sec. 2.1.3.1 *The integrity and function of the ecosystem will be protected, restored and enhanced. Development and site alterations are not permitted within the habitat of provincially identified endangered and threatened species, Areas of Natural and Scientific Importance (ANSI's) and wetlands. Local official plans will identify areas of locally significant natural heritage lands including wetlands, woodlands, valley lands, wildlife habitat, fish habitat, the habitat of endangered and threatened species and areas of natural and scientific interest.*

Sec. 2.1.3.5 *The quality and quantity of all ground and surface water will be protected and improved in areas of degradation, where identified.*

Sec. 2.1.3.6 *There are a number of lakes in Haliburton County that are managed by the Ministry of Natural Resources as lake trout lakes. Lower tier official plans provide a list of lakes which are classified "highly sensitive" or "moderately sensitive" to additional nutrient loadings and include specific policies for both classifications of lakes.*

Development (Setbacks and Buffers)

The plan does include parameters for shoreline development which includes setbacks;

Sec. 2.1.3.6.1 *Council will not consider any application that involves the creation of a new lot, residential units, or any non-residential development on the shorelines of lakes which have been identified in the Plans of the lower tiers as being "at capacity or highly sensitive" except in consultation with the Ministry of Environment and the Ministry of Natural Resources and under one of the following special circumstances:*
i) the tile fields on each new lot are set back at least 300 metres from the highwater mark of the lake, or such that drainage from the tile fields would flow at least 300 metres to the lake.
ii) the tile fields on each new lot are located such that they would drain into the drainage basin of another waterbody, which is not at capacity.
iii) to separate existing, habitable dwellings, each having a separate septic system, provided that the land use would not change.
iv) the proposed new use, which is permitted in the lower tier Official Plan, has a scale and density that is less than currently exists on site, and shall demonstrate a net reduction of the phosphorus loading on the lake. Prior to any redevelopment being approved, the Environmental Impact Study (EIS) shall be completed to the satisfaction of the County, local municipality, the Ministry of Natural Resources and the Ministry of the Environment. The Environmental Impact Study (EIS) shall among other things, provide recommendations on implementation tools related to hydro-geology, soils and vegetation matters on site.
v) the proposed development is to be serviced with full municipal sewage services and appropriate storm water management design is incorporated on site.
vi) the proposed new development is non-residential, conforms to the lower tier Official Plan, and it does not involve or require any new individual on-site or communal sewage system disposal systems, nor any expansion of existing systems.

The plan emphasizes that the protection of ground and surface water regulations with be addressed in local official plans.

2.1.3.2 *Strategies for the protection of ground and surface water resources and public access to them will be included in local official plans or as County and local partnership actions. These shall include, among others: lake capacity estimates, lake flow control, waterfront setbacks, shoreline protection, forest buffers, water level management and the cumulative impact of development.*

For any development on sensitive waterbodies an Environmental Impact Study is required which will include soils in its evaluation;

Sec. 2.1.3.6.1 *iv) the proposed new use, which is permitted in the lower tier Official Plan, has a scale and density that is less than currently exists on site, and shall demonstrate a net reduction of the phosphorus loading on the lake. Prior to any redevelopment being approved, the Environmental Impact Study (EIS) shall be completed to the satisfaction of the County, local municipality, the Ministry of Natural Resources and the Ministry of the Environment. The Environmental Impact Study (EIS) shall among other things, provide recommendations on implementation tools related to hydro-geology, soils and vegetation matters on site.*

Additional Considerations

Additional consideration is made for lakefront communities, although the development in relation to water is not clear;

Sec. 3. *Lakefront Communities Around the County's many lakes, lakefront communities and tourist operations have developed. While originally summer areas, more and more these are taking on a year round and permanent perspective. This development relies on private water and sewage systems and is serviced by a combination of private and public roads. Development along publicly maintained roads is the preferred form of development, and new proposals shall be encouraged accordingly.*

Also, the plan includes some areas of future research:

Future plans*:*
-common policies for rural and lakefront development
- watershed flow management strategy
- approach to lake capacity studies

County of Peterborough

Scope of Protection/Management

The Peterborough Official Plan does address development of waterbody protection fairly comprehensively. The development around Natural Heritage Features is detailed and addresses the Canadian Shield. The connection is not made between soil depth and water quality specifically but mainly on the relationship between development and the interaction with the natural environment.

Sec. 3.1.2 - Land Use Planning and Water Management Linkages

Significant relationships and inter-connections between the natural and manmade environment can be understood through the concept of "ecosystem" planning. An ecosystem relates to the interactions between the air, the land, the water and living organisms, including humans. Ecosystem planning recognizes that the decisions made in one area affect all other areas and therefore, there should be early guidance and input into decisions affecting existing and potential land uses. With an emphasis on the protection of the form and function of the natural resources by the County, it is no longer acceptable to impair water quality, degrade aquatic/terrestrial habitats, reduce baseflows, lower groundwater tables, or drain and sewer large areas. An ecosystem approach to land use planning requires that boundaries for land use planning be based on biophysical boundaries as the context for examining the relationships between the natural environment and human activities. The primary boundaries for an ecosystem approach to land use planning are the watershed boundaries.

Development (Setbacks and Buffers)

This section of the Official Plan makes special reference to the Canadian Shield in regards to development on Natural Heritage Features.

An environmental impact assessment for proposed development in or adjacent to a significant natural heritage feature will include as its study area the natural heritage feature as well as the area surrounding that type of feature, as follows:

- *significant wetlands - all lands within 120 metres;*
- *fish habitat - all lands within 30 metres of the high water mark of all watercourses;*
- *significant woodlands south of the southern limit of the Canadian Shield - all lands within 50 metres;*
- *significant valleylands south of the southern limit of the Canadian Shield - all lands within 50 metres;*
- *significant areas of natural and scientific interest - all lands within 50 metres;*

• Where a feature is of more than one type, or the adjacent lands of nearby features overlap, the most restrictive provisions apply;

• A local plan may require that an environmental impact assessment include additional components, with respect to natural resources listed in Section 4.1, or other features identified in the local plan;

Additional Considerations

There were no addition considerations given to soil and water quality.

Township of Frontenac Islands

Scope of Protection/Management

The Township of Frontenac Islands addresses overall water management on a watershed basis;

Sec. 3.3.1

The Township of Frontenac Islands acknowledges the need to plan on a watershed and subwatershed basis. Watersheds serve as natural and logical boundaries for environmental and land use planning. Watershed studies apply an ecosystem based approach to resource management using watershed boundaries. These studies establish constraints, opportunities and approaches for input into land use planning decisions. For the purposes of this plan a watershed is defined as the area of land drained by a stream and its tributaries. A subwatershed is the area drained by the tributary to the main watercourse.

Development (Setbacks and Buffers)

Setbacks for shoreline development are addressed in terms of potential to flooding; however water quality is not mentioned;

Sec 5.3.4 *Shoreline Areas*

In addition to theHazard Land policies, the following policies shall apply to all lands along the shore of The St. Lawrence River and/or Lake Ontario. Those areas requiring particular attention are delineated on Schedule "A" as "Sensitive Shoreline".

a) The stability of the shoreline, the potential for flooding and wave uprush are natural hazards which must be addressed prior to the approval of development. Development along the shoreline must consider the environmentally sensitive nature of this feature.

c) Where the above setback cannot be accommodated (such as where the placement of an existing road will not allow such a setback) the distance may be reduced to 15 metres provided buildings are not in the floodplain or other Hazard area and subject to approval of a variance to the implementing Zoning By-law and to Site Plan approval. Residential infill (between two existing residential dwelling units not greater than 30 metres apart measured along the shoreline) structures may be setback from the high water mark such that they are in keeping with the established building line for the area and provided the setback is not less than 15 metres and that such uses will not be located within the flood plain or other hazard area.

d) Where there is concern as to the appropriate setback, Council may request a professional opinion as to the shoreline stability or extent of hazard lands, and the appropriate setback. Detailed engineering, geotechnical and scientific priniples, practices and procedures are published from time to time by the Ministry of Natural Resources and shall be referenced for clarification or in matters of dispute.

e) For those lands located in Lot 27, South Range, former Township of Howe Island, specifically described in registered plan of subdivision, Plan 13M-29, a 15 metre setback from the highwater mark will be required as per the subdivision agreement for Plan 13- M-29.(Modification #16)

5.4.1 *Provincially Significant Wetlands (PSW)*

The policies for the areas designated "Provincially Significant Wetland" on Schedule "A" shall be as follows:

5.4.1.4 *Policies*
No development as defined in this designation shall be permitted within a Provincially Significant Wetland as shown on Schedule "A" subject to the following policies.
1. The boundaries of the Provincially Significant Wetland designation as shown on Schedule "A" are approximate only and will be used as general guidelines in the review of development proposals and in the preparation of the Zoning By-law. Council will require the determination of the exact boundaries at the time of a development application.
2. Minor alterations of the boundaries of the Wetland areas resulting from more detailed mapping, which are implemented in the Zoning Bylaw, will not require an amendment to this Plan provided that the original intent of the Plan is maintained.
3. Any changes to the boundaries or status of Provincially Significant Wetlands will require the approval of the Ministry of Natural Resources.
3.3.2 Watershed and Subwatershed Plans
The municipality shall encourage the preparation of watershed/subwatershed plans as a basis for integrating water management into the planning process.

Watershed plan guidelines are listed in the plan;

Sec 3.3.2.1 *Approach*
Watershed/subwatershed plans will be coordinated by the municipality in cooperation with the Ministry of Natural Resources and/or the Ministry of the Environment and will at a minimum include:
a) The location, area extent, present status, significance and sensitivity of the existing natural environment within the subwatershed.
b) Establish goals and objectives in management of the watershed.
c) Identify lands not suitable for development and recommend, with reasons, appropriate environmental management practices which will protect, conserve, rehabilitate and/or enhance natural features.
d) Provide directions for the screening and selection of Best Management Practices for the watershed and subwatershed.
e) Determine how existing and future land uses can compatibly exist with the natural environment.
f) Promote public participation in and support for watershed and subwatershed planning.
g) Provide technical information that will assist in the development of community plans and the design of subdivisions.
h) Integrate disciplines, policies, mandates and requirements of all agencies and interests including neighbouring municipalities.
i) The watershed and subwatershed plans will be implemented by appropriate changes to the Official Plan and Zoning By-law.

Sec. 3.3.2.2 *Development Review*
A watershed/subwatershed plan will be required as part of a Secondary Plan process for any area experiencing development pressure. Proponents w ill be required to assess the impacts of development on stormwater quality and quantity, receiving watercourses/waterbodies, the natural environment, and the potential to create hazards. The stormwater management plan should identify a mix of on and off site controls, based on best management practices, in order to address stormwater quality and quantity concerns. Once a watershed/subwatershed plan has been approved by the

municipality, proposals for plans of subdivision, and commercial and industrial development will be required to include a stormwater management plan showing layout of ditches, drainage channels and retention ponds in conformity to the requirements of the subwatershed plan. The stormwater management plan will be implemented through draft plans of subdivision and site plan approval. For areas which do not have a watershed/subwatershed plan a stormwater management plan will be required prior to final approval of a draft plan of subdivision. In the absence of a watershed/subwatershed plan the storm water management plan may be required to address the implications of development both upstream and downstream from the proposed development.

Additional Considerations

This section of the Official Plan is positive; it demonstrates that there is an open communication line between the adjacent municipalities in regards to policy formulation and protection.

Sec.3.2.11 *Joint Planning with Adjacent Municipalities*
The coordination of efforts between municipalities should be encouraged. In particular, joint planning should be established on an ongoing basis to assist in the review of general development strategies for the Township of Frontenac Islands.

South Frontenac Township

Scope of Protection/Management

There are sections provided that has a wide scope for protection of waterbodies, and protection specific to fish habitat.

Sec. 5.2 ENVIRONMENTAL PROTECTION

The Environmental Protection designation applies to lands which play an important role in the preservation of the Township's natural heritage systems including wetlands, watercourses and lakes and significant portions of the habitat of threatened or endangered species. This designation includes natural hazard lands which may pose a threat to life and property because of inherent physiographic characteristics such as floodplains, erosion hazards, poor drainage, organic soil, steep slopes or other similar physical limitations.

Sec. 5.2.1

The uses permitted on lands designated Environmental Protection are limited to agriculture, conservation, wildlife management, research, education, appropriate passive recreational uses and public or private open space. Buildings, structures or works associated with agriculture, excluding residences, flood or erosion control, water course protection or bank stabilization may be permitted. However, no development or site alterations shall be permitted within significant portions of threatened or endangered species or within a Provincially Significant Wetland although existing agricultural uses will be permitted and allowed to continue.

Development (Setbacks and Buffers)

Setback designations for wetlands are addressed;

5.2.5 *No new development or site alteration within 120 metres (394 feet) of a provincially significant wetland, nor the expansion or redevelopment of existing development within or adjacent to a provincially significant wetland is permitted unless it has been determined through an Environmental Impact Assessment, completed in accordance with Section 5.2.11 of this plan, that there will be no negative impacts on the natural features or ecological functions of the wetland.*

Setback designations for lakes and rivers are fairly comprehensive and include linkages to water quality;

Sec. 5.2.5

b)Policies for Development and Site Alterations Adjacent to Lakes and Rivers

The policies of this section apply to all lakes and rivers, except where they conflict with the policies detailed in Sections 5.2.8 of this Plan.

i) All lands within 90 metres (295 feet) of the highwater mark of all lakes and rivers which are not designated Environmental Protection are included as Environmentally Sensitive Areas. Where development and site alterations occur in these locations, it is the intent of this Official Plan that all buildings, campsites and structures not related to the use of the water and all sewage disposal

system leaching beds be well set back from the highwater mark. Vegetation within the setback area should be disturbed as little as possible consistent with pedestrian passage, safety, provision of views and ventilation. When considering views and ventilation, it is intended that only selective, minor tree cutting and trimming occur. The soil mantle within the setback area should not be altered. These measures are intended to minimize lake impacts by reducing phosphorus inputs, preventing erosion and by maintaining a natural appearance. No commercial or clear-cut logging shall be permitted within 90 metres of the highwater mark of all lakes and rivers or on lands sloping towards lakes within the Township.

In implementing subsection (i), it is intended that:

1. On lots created subsequent to the approval of this plan and having steep slopes, minimal woody vegetation cover, thin soils and soils with poor phosphorus retention capability, setbacks of 90 metres (295 feet) may be required.

2. On lots created subsequent to the approval of this plan which have fewer constraints, reduced setbacks are permitted with an absolute minimum of 30 metres (98 feet) for ideal sites.

3) On lots existing on the day of adoption of this plan, a minimum 30metre (98 feet) set back from the high watermark shall apply. Consideration will be given to slight reductions to the minimum requirement of 30 metres (98 feet), only if it is not physically possible or environmentally desirable to meet this requirement provided that there will be no negative impacts to fish habitat or water quality.

4) Development and/or site alterations proposed within 30 metres (98 feet) of the highwater mark will require an Environmental Impact Assessment, prepared in accordance with Section 5.2.11 which evaluates the potential negative impacts on fish habitat.

For the purpose of this section, the setback requirement shall mean the horizontal distance between the highwater mark and the proposed development or site alterations.

Other development guidelines address water quality as well;

Sec. 5.2.5 *Significant Wetlands 'W'*

Several wetland areas in the Township have been evaluated through the provincial Wetland Evaluation System as being Provincially Significant. Evaluated wetlands that have been classified as provincially significant are designated Environmental Protection and identified by the symbol 'W' on the Land Use Schedule. The Township will promote the continued protection of all significant wetlands to maintain and improve water quality, assist in flood control, provide important fish and wildlife habitat and contribute to substantial social and economic benefits which include selected outdoor recreational and tourism related activities.

Notwithstanding Section 5.2.1, no development or site alterations shall be permitted within any of the significant wetlands.

The Township will zone all provincially significant wetlands as areas for environmental protection and conservation and will encourage protection and conservation of all other wetlands in order to maintain their hydrologic, social, wildlife habitat features and recreational benefits.

…Development on existing lots of record which are located within or adjacent to a provincially significant wetland will be permitted, subject to the requirements of Section 5.2.11.

Notwithstanding the above, established agricultural activities are permitted within and adjacent to a provincially significant wetland without an Environmental Impact Assessment.

(iii) Appendix 'A' provides information which will help interpret the intent of this section. It is taken from the study entitled "Rideau Lakes Carrying Capacities and Proposed Shoreland

Development Policies" and provides additional information which will be used by Council, municipal staff, applicants, reviewing agencies, Committee of Adjustment and the public in assessing the proposed development or site alterations of any land near water. The objective is to attempt to ensure that development or site alterations are sustainable and in particular to maximize the protection of water quality.

(c) Prior to constructing, funding or supporting public projects, such as municipal road or drainage works on land within or adjacent to Environmentally Sensitive Areas including lake trout lakes, Council shall consult with the Ministry of Natural Resources, the Ministry of the Environment and the Department of Fisheries and Oceans or agents to determine what design requirements, if any, are necessary to eliminate or mitigate adverse effects on the environmental feature or lake trout habitat including water quality requirements.

Sec. 5.2.10 *Lake Impact Assessments*

Development adjacent to any waterbody has the potential to negatively impact on that waterbody by causing impairments to water quality and indirectly impact on fish habitat. It is the municipality's intention to protect and maintain water quality in its many lakes and, where possible, to improve water quality over the long term. A Lake Impact Assessment must be prepared by a qualified individual in consultation with, and to the satisfaction of, the municipality and the Ministry of Environment.

Additional Considerations

There were no additional considerations found in the plan that addressed water quality specifically.

County of Bruce

Scope of Protection/Management

The Bruce County Official Plans waterbody management addresses issues that are not examined within many of the other Official Plans such as upper tier Official Plans set the high standards of water protection especially with Niagra escarpment, inland lake subdivision policies and cold and warm water streams and comprehensive shoreline development policies. This differentiation is not apparent in the analysis of Land between Official Plans and sets Bruce County apart.

Development (Setbacks and Buffers)

Sec. 5.3 SHORELINE DEVELOPMENT AREA

Much of the shoreline along Lake Huron and Georgian Bay has already been developed by way of seasonal and permanent residential uses, and, to a limited extent resort related commercial uses. Much of the remaining shoreline that is currently undeveloped is subject to environmental constraints.

Sec. 5.3.7 Shoreline Residential: Development of Existing Lots

A number of vacant residential lots exist within the designation that were created prior to any formalized planning. Some of these are suitable or could be made suitable for residential uses, while others exhibiting physical restraints to development due to poor road access, lack of suitable soils, steep topography and identified ground water and septic problems in the area.

a) Development of existing undersized vacant lots may proceed provided that:

i) It has been demonstrated that the lot size and physical conditions can support proper sewage disposal and a clean potable water supply can be obtained. In some circumstances, engineered drawings may be required from a qualified engineer indicating that the lands can be made suitable for individual septic systems. The engineering plans for the sewage system may be required to be registered on title as a condition site plan approval.

Sec. 5.3.10 Shoreline Development Areas and Local Official Plans

It is the intention of this Plan to permit the development of more detailed planning policies for shoreline settlements as an Official Plan to reflect a higher intensity and range of land uses. An example is the Point Clarke area of Huron Township.

Local Official Plans within the Shoreline designation shall include detailed polices addressing development issues unique to the lakeshore areas, and shall include:

a) polices directing both seasonal and year round residential uses, and the circumstances in which year round uses are permitted, including references to scale and intensity of development and public waterfront access availability

b) Servicing policies addressing private, communal and municipal sewage and water servicing

c) more detailed commercial use polices dealing with redevelopment of existing uses, and may include polices permitting a broader range of commercial services

d) more detailed and refined land use designations, such as open space, resort commercial, natural environment or hazard areas, and neighbourhood commercial providing for specific uses within the designations.

Bruce County Water Quality

Sec. 5.4.4 Inland Lakes Subdivision Policies

Due to the identified capacity problems associated with development on some Inland Lakes, residential development by way of Plan of Subdivision or Condominium shall proceed by way of Amendment to this Plan.

(i) When reviewing proposed Amendments, special attention shall be paid to the impact of the proposed development on the carrying capacity of the lake;

(ii) The policies in Section 5.3.5 Shoreline Residential Subdivision shall be used in determining the appropriateness of Plan Amendments for Plans of Subdivision or Condominiums in the Inland Lakes areas.

The lower tier official plans must follow the upper tier OP when regarding lakeshore development. This is an issue raised within the analysis of the Official Plans's, whether or not the lower tier Official Plan's must attain the same standards of the upper tier. Regarding Water issues this would provide the best protection option as water courses are connected and municipalities that had the same standards across the board would have the best protection plan.

Sec. 5.4.9.1 Local Official Plans

The adoption of new Local Official Plans and the updating of existing Secondary Plans or Local Official Plans within the Lakeshore Development Designation shall be in accordance with the intent and policies of the Inland Lakes Designation.

Local Official Plans for the Inland Lakes area shall be prepared in accordance with Section 5.3.10, excepting, however, that:

(a) Local Official Plans may include additional policies permitting tourism related and resort type uses, in addition to the small-scale, convenience uses permitted by the Inland Lakes designation.

(b) Local Official Plans shall specifically address the issue of new development in regard to the carrying capacity of the Inland Lake

Water Development

Sec. 4.3.2.1 Cold and Warm Water Streams

No development shall be permitted within 30 metres of the banks of a cold water stream or 15 metres of a warm water stream. Landowners are encouraged to forest the area within 30 metres of any stream to maintain and improve fish habitat, ecological function of the stream and to increase natural connections.

Sec. 4.3.3 Headwater/Recharge Areas (The Environment)

It is the intent of County Council to protect headwater areas, groundwater recharge areas and aquifers as one means of protecting groundwater and surface water from degradation. In doing so, the County acknowledges that comprehensive mapping indicating the location of these areas for the entire County is not available from the appropriate Provincial authority. Where mapping or site specific studies or observations for headwater areas, groundwater recharge areas is made available by the proponent and/or review agencies, new development will be required to demonstrate protection of these sensitive water resources and that the associated environment and any water resource uses are not detrimentally impacted.

County Council will encourage consultation and communication between the County, local municipalities, the appropriate Provincial authority, interested agencies, and development interests to identify and protect headwater areas, groundwater recharge areas and aquifers.

Sec. 4.3.5 Regionally and Locally Significant Wetlands

County Council shall encourage the protection of regionally and locally significant wetlands (Class 4 to 7).

Development, which may have a significant impact on lands, located within regionally or locally significant wetlands, may require the preparation of an Environmental Impact Study, by the proponent, to ensure that lands are not negatively impacted by the proposed development. An EIS shall be prepared in accordance with the policies of Section 4.3.9.

Sec. 4.3.6 Provincially Significant Wetlands

Schedule C to this Plan identifies Provincially Significant Wetlands (Class 1, 2 and 3). The following policies apply to those wetlands.

It is the policy of County Council that development except for infrastructure permitted by the Provincial Policy Statement shall not be permitted within Provincially Significant Wetlands.

It is the policy of County Council that development may be permitted on adjacent lands only if it does not result in any of the following:

a) a loss of wetland function;

b) subsequent demand for future development, which will negatively impact on existing wetland functions;

c) conflict with existing site specific wetland management practices; and

d) loss of contiguous wetland areas.

Wetland Area is a single continuous wetland, which may be composed of one or more wetland types.

Adjacent lands are those lands within 120 metres of an individual wetland area.

It is the policy of County Council that the policies of Section 4.3.6 a), b), c) and d) shall be addressed by an Environmental Impact Study (EIS), prepared in accordance with established procedures and carried out by the proponent. The EIS shall be subject to review and comment by the appropriate Provincial authority, the Conservation Authority, where one exists, and other public authorities having jurisdiction.

Development proposals may be considered on adjacent lands without an Amendment to this Plan, in accordance with the abutting land use designation if supported by a site specific EIS indicating how the above policy has been met.

It is the policy of County Council that wetlands shall be designated in local Official Plans where they exist, and that policies be included to preclude new development within Provincially Significant Wetlands.

It is the policy of County Council that Provincially Significant Wetlands shall be zoned in the local Municipal Zoning By-Law to preclude new development within Provincially Significant Wetlands.

Local Official Plans should implement specific surface water management policies.

Surface water management plans shall be required for any new development consisting of more than five lots or for commercial or industrial developments with large amounts of impervious area.

Such plans may be required for other developments, as determined by the local municipality in consultation with the appropriate Government agencies, if the area has existing drainage problems or if runoff could significantly affect adjacent lands or water quality.

Additional Considerations

Sec. 4.15 NIAGARA ESCARPMENT PLAN

The purpose of the Niagara Escarpment Plan is to provide for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development occurs as is compatible with that natural environment.
The objectives are:
♦*to protect unique ecologic and historic areas;*
♦*to maintain and enhance the quality and character of natural streams and water supplies;*
♦*to provide adequate opportunities for outdoor recreation;*
♦*to maintain and enhance the open landscape character of the Niagara Escarpment insofar as possible, by such means as compatible farming or forestry and by preserving the natural scenery;*
♦*to ensure that all new development is compatible with the purpose of the Plan;*
♦*to provide for adequate public access to the Niagara Escarpment; and*
♦*to support municipalities within the Niagara Escarpment Plan Area in their exercise of the planning functions conferred upon them by the Planning Act.*

The City of Greater Sudbury

Scope of Protection/Management

The Sudbury Official Plan analysis case study is a comprehensive look at an official plan that does address environmental issues that many Official Plans neglect. This section of the OP states to protect the natural environment for the future and appears to be fairly detailed

Water plays a vital role in defining Greater Sudbury. Healthy surface water and groundwater ensure access to clean and plentiful drinking water. Hundreds of lakes, rivers, and streams also provide important opportunities for recreation, shoreline living, and fish and wildlife habitat. Addressing water-related issues from a watershed-based planning approach is a critical first step in protecting the City's water resources.

In general, policies contained in this section apply to all forms of development in all designations. Supplementary policies on land uses that have a direct impact on water resources are integrated throughout this Plan. Due to the added concerns posed by unserviced development and the impact of septic systems, additional policies on shoreline residential development and lot creation in Rural Areas are established in Sections 5.2.1 and 5.2.2. Chapter 9.0 Natural Environment, examines features such as wetlands and fish and wildlife habitat. Policies specific to flooding hazards are found in Section 10.2.

The source water protection is comprehensive and covers areas and issues not addressed in most County Official Plans. Specifically addressed are issues of the link between land and water. The watershed approach is broken down into three different plans. The main sections that are analyzed are ground and source water protection.

Sec. 8.2 WATERSHED APPROACH – THE LINK BETWEEN LAND AND WATER

This Plan takes a broad perspective on the watershed approach, recognizing that at least three types of watershed-based plans may be developed in various areas of the City, each with a different focus. First, source water protection plans will use relatively large watersheds that include groundwater aquifers as well as all of the lakes and rivers connected in a system. Second, subwatershed plans typically address flooding and water quality due to stormwater using watersheds of moderate size. Third, lake-based recreational and habitat issues can, in some cases, involve only the watershed of the lake in question, which can be relatively small. While watershed-based plans may differ in scope and issues, these plans will provide the necessary level of detail to identify and assess sensitive environmental features and functions critical to the health of our natural water systems. All agencies and stakeholders involved with *water regulation and stewardship may be cooperatively involved in the development of watershed-based plans.*

Development (Setbacks and Buffers)

Setback requirements for seasonal and new waterfront development are included for buildings and septic systems;

Sec. 21.6.2 Waterfront Developments

Policies

1. Seasonal dwellings shall be permitted on existing registered waterfront lots or parcels legally created and held under separate ownership at the time of adoption of this Plan by Council, provided that:

b. approval is obtained from the appropriate regulatory authorities for the location and operation of a private sewage disposal system pursuant to regulations of the Environmental Protection Act prior to the issuance of a building permit, and all new or replacement field beds shall have a minimum setback of 30 metres from the high-water mark;
c. all new main or accessory buildings, with the exception of boathouses and docks, shall have a minimum setback of 25 metres from the highwater mark; and,

Sec. 8.5.2 Vegetative Buffers
Vegetative buffers along shorelines and stream banks are essential to maintaining and improving water quality. Shoreline vegetation acts as a filter, protecting lakes, streams and rivers from urban runoff from lawns and roads. Vegetation also stabilizes the shoreline and helps prevent erosion from storm runoff, wave action and ice. Wildlife and fish also benefit from shoreline vegetation on land and in the water. New shoreline and stream bank development, such as boathouses, docks or other accessory structures, will be integrated, where possible, into the landscape and maintain and enhance existing shoreline and stream bank vegetation to:
a. protect the riparian and littoral zones and associated habitat;
b. protect the quality of the water by preventing erosion, siltation and nutrient migration;
c. maintain shoreline character and appearance; and,
d. minimize the visual impact of development.
Policies
1. It is the intent of this Plan to maximize the amount of natural vegetation along shorelines and stream banks. As such, Council may implement controls on the removal of vegetation by establishing limits on clearing, changes to the grade, and the placement of impervious surfaces along shorelines and stream banks.
These regulations will be based on achieving the following targets:
a. For residential uses, a maximum cleared area of 25% of the shoreline or stream bank frontage or up to 23 metres, whichever is the lesser;
b. For Resort and Shoreline Commercial uses, 33% of the shoreline or stream bank; and,
c. Maintain shoreline buffer zones at a minimum of 12 metres from the high-water mark for all new and existing waterfront development. For existing properties, an educational outreach program shall be developed to encourage revegetation of shoreline buffer zones and upland areas in order to increase the amount of vegetation around shorelines.

Surface water policies are meant to addresses measures needed to protect, enhance or restore natural features. Water quality is recognized as important within and outside of drinking water purposes;

Sec. 8.5 SURFACE WATER RESOURCES - LAKES, RIVERS AND STREAMS
Sec. 8.5.1 Environmental Constraints on Development
Even when not used for drinking water, our lakes, streams and rivers are strongly identifiable with the City's quality of life. As such, it is important to maintain and enhance the water quality of these features by controlling not only water-based and shoreline activities, but also activities and land uses occurring within the watershed.

Specific regulations are given for resort and shoreline commercial development on waterfront areas with a focus on water quality;
Sec. 5.2.6 Resort and Shoreline Commercial

Resort and shoreline commercial uses in rural and waterfront areas are permitted as a means of expanding the tourism sector and providing increased recreational opportunities. Additional policies are established to mitigate the impacts of development on lake water quality.

Additional Considerations

Sudbury also has enacted a section within the OP that addresses ecosystem recovery. This is impressive, and includes land reclamation and the Urban Tree Canopy.

Part III: Protecting the Natural Environment

Water resources are recovering from the effects of metal contamination and deforestation, but are increasingly subject to the negative impacts of urbanization in the form of agricultural, industrial and urban runoff, pesticide use, faulty septic systems, site alteration and other activities
The policies contained in the following chapters encompass our Water Resources and Natural Environment. All land uses are subject to these policies that are aimed at promoting the sustainability of our natural environment. This Plan also recognizes that various naturally occurring and human-made conditions can result in risks to human health and safety. Protecting Public Health and Safety addresses these concerns with specific land use policies for each type of hazard.
There is also a large portion dedicated to the protection of natural heritage features that include detailed objectives. The objective of the natural heritage feature policies from the Official Plan:

Sec. 5.2 RURAL AREA DESIGNATION

2. Waterfront development in Rural *Areas must also comply with the policies of Section 8.5, Surface Water Resources.*

Sec. 8.4 GROUNDWATER RESOURCES

Groundwater use accounts for 21% of total water usage in the City. In some areas, it is an important source of water for domestic supply. Groundwater is also used extensively for commercial and industrial purposes, including mining, irrigation of golf courses, and aggregate washing. Finally, groundwater discharge contributes to maintaining stream flows and therefore plays a vital role in protecting the integrity of certain aquatic ecosystems. Particular attention is needed to ensure that municipal wellhead protection areas and sensitive areas for groundwater protection are not compromised during land development. Inappropriate land use in and around these features could lead to permanent damage of the drinking water resources for large numbers of citizens.
Special consideration is given to the area of Whitewater Lake. The Lake is shallow and extra attention is being given to its water quality. The Whitewater Lake water quality management includes programs that will address fertilizers, ditch cleaning, Best Management Practices, septic systems, lake sampling, hazardous spills, and urban runoff (Sec 21.1.2). A general water quality model is to be followed;

Sec. 21.1 WHITEWATER LAKE POLICY AREA
Sec. 21.1.3 Water Quality Model

A qualified consultant will be retained to develop and/or apply a lake-wide water quality model calibrated to Whitewater Lake and its unique characteristics. An appropriate model will provide the ability to assess the probable water quality and biological impacts of future development within the community of Azilda and on existing unserviced waterfront lots around the lake.

Analysis of Water Quality Management within Official Plans

In general, counties within this analysis did address water quality is some capacity. Specifically, several choose to approach protection by using watersheds as the basis for management. This is quite appropriate given the counties usually consists of fairly large areas.

The District of Muskoka utilized a classification systems and specific policy for waterbodies that had different levels of nutrient loading. This type of management was quite comprehensive and gave specific development regulations so as to protect those sensitive waterbodies.

Most counties dealt with shoreline development within the official plan, however for some it was a matter of maintaining the natural integrity (aesthetics) as opposed to maintaining good water quality. Most counties did not deal specifically with buffers in relation to waterbodies, and only Muskoka and Sudbury dealt with it in terms of water quality. Muskoka County official plan was primarily concerned with the preservation and restoration of natural buffers on all waterbodies. Sudbury approached buffers with the intent that they protect the quality of the water by preventing erosion, siltation and nutrient migration.

All counties that were analyzed included setback requirements for waterbodies and Simcoe, Haliburton and Peterborough counties addressed water quality indirectly. Peterborough County for example, considered the difference between areas located on the Canadian Shield when addressing setbacks for development near waterbodies. The South Frontenac Official Plan has detailed regulations outlining the requirements for setbacks and related regulations back to water quality. It should be noted that if the purpose of shoreline retention (setbacks, buffers) is not intended for water quality, it may not be able to serve that purpose since various conditions for the protection of water quality are not being met.

Final Analysis and General Suggestions

The Land Between is an area diverse in its natural features. It is a venerable area however because of its unique geological characteristics which makes it particularly susceptible to development. In general, those counties that lie within this area do not address this distinctiveness within the official plans directly. Although some plans recognize the variances in geology, there is little connection made to the importance of taking this into consideration when managing various developments. Policy outlined in official plans should recognize the importance and connectivity between the geology, soil and water quality of their areas and how development decisions can incorporate those factors.

Special note will be made on the comparative study using Sudbury's official plan, as it offers a different perspective on soil management and water quality. Sudbury has very specific soil reclamation policies due to the heavy contamination Sudbury endured over past decades from industry. Sudbury has revamped the official plan due to the severe degradation that it had incurred, and is now in the process of reclamation of the natural environment. Sudbury also has included under specific area management a detailed plan for Whitewater Lake. The policy for this lake is entirely based on water quality and a number of programs and regulations are in place to aid in its protection.

The counties within The Land Between have of course a different context in which to place soil and water protection. Although many of these areas base policy around the importance that tourism and recreation have in these regions, it is no less important there should be a direct connection made between soil depth, quality and variance in relation to water quality. It should be stated within the official plan that the county is within the boarders of The Land Between and thus is subject to soil variances with quality and depth. Planning should then take into consideration these variances when land use planning and formulating of policy.

The importance of county plans in this regard is addressed with the Bruce County official plan. Bruce County sees itself as a steward of water quality and has set standards for lower tier municipalities to follow.

In general, more attention should be paid to the connectivity between how we manage development within our communities and the direct and indirect effects that may have on the natural environment. Ecological systems are by their nature very complicated and can be unpredictable in unknown situations. Soil and water are two of the most basic components on the earth and should be acknowledged and cared for with respect.

Appendix:

Official Plans Accessed From:

Peterborough County Official Plan
Bruce County Official Plan
Sudbury County Official Plan
Simcoe County Official Plan
Haliburton County Official Plan
South Frontenac Official Plan
Frontenac Islands Official Plan
Muskoka County Official Plan
City of Kawartha Lakes Official Plan

Map courtesy of:
The Land Between Map Retrieved April 2 2008 from the World Wide Web:
http://www.couchconservancy.ca/thelandbetween.htm

Front pages photos courtesy of:
The Land Between. Retrieved April 2 2008 from the World Wide Web:
http://www.thelandbetween.ca/scienceanddiscoveries.asp