



Central Cataraqui Region

# Natural Heritage Study

## FINAL REPORT

August 2006

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Cataraqui Region Conservation Authority

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#### 4.3.6 Previously Identified Potential Areas for Restoration

A number of previous studies completed for specific areas of the Central Cataraqui Region have identified areas that would benefit from restoration efforts. Some of these areas are outlined in this section.

Environmentally Sensitive Areas (ESAs) are areas that have been inventoried and evaluated based on natural areas research. An environmentally sensitive area incorporates the full range of natural heritage features present and provides wildlife habitat. The Pittsburgh Township Environmentally Sensitive Areas Study (Environmental Advisory Services Limited, 1996) identified “two contiguous, large, intimately linked, and very diverse natural systems” that were considered to have high movement potential: (1) Abbey Dawn Forest/Abbey Dawn Creek/Eastview Forest/Madoma Marsh/Butternut Creep Swamp Forest and (2) Cataraqui River/Cataraqui Cliffs (and Rideau Marsh)/Kingston Mills Gorge Complex. The Leo Lake Forest forms part of another system. The study recommended that applications for new development within these two systems should be accompanied by a landscape site plan that outlines green areas that would be designed to contribute to the maintenance and/or replacement of corridors and linkages. The study also recommended a management strategy for the environmentally sensitive areas, which was incorporated into the municipality’s Official Plan. These areas are identified on Figure 9b.

Phase 1 of the Collins Watershed Study (M.M. Dillon Limited, 1993) indicated that existing watershed conditions could be improved through a number of methods including stream rehabilitation (regular removal of debris, dumped material and blockage), the establishment of a stream and lake shore buffer zone, undertaking an active stream bank revegetation program, and planting natural corridor connections. Phase 2 of the Study (M.M. Dillon Limited, 1994) prioritized remedial action, monitoring and planning recommendations, and identified the agencies and groups that should be responsible for their implementation.

The Little Cataraqui Creek watershed is very fragmented. A study completed by the Queen’s University School of Urban and Regional Planning (2002) suggested that four implementation tools are required for the successful creation of a corridor: stewardship agreements, conservation easements, natural buffers, and land acquisition. It recommended that a pilot project for corridor creation be implemented along the south end of Little Cataraqui Creek (between Lake Ontario and Bath Road) where fewer obstacles exist.

Lower Trent Conservation performed an evaluation of upland habitat in the Wilton Creek watershed in 1997, using Environment Canada rehabilitation targets. At that time, the watershed had satisfactory levels of achievement for percentage of forest cover, forest size, interior forest, and imperviousness. The study recommended that the percentage of riparian habitat that is vegetated, and has a minimum 30 metre wide buffer, needed to be increased in order to reduce nutrient runoff and algal problems, and to facilitate wildlife movement along the stream corridor. It was suggested that the riparian habitat could be expanded and rehabilitated through stewardship signed agreements and vegetation plantings.

## 5.0 PUBLIC CONSULTATION

The Central Cataraqui Region Natural Heritage Study was managed by a Technical Steering Committee. This committee was responsible for administering the preparation and completion of the study. The committee consisted of staff representatives from the Ministry of Municipal Affairs and Housing and the Ministry of Natural Resources, the City of Kingston, Loyalist Township and the Cataraqui Region Conservation Authority (CRCA).

The results of this study have a potential influence on the broader general public across the municipalities, therefore public consultation was considered to be a critical component in the study. Consultation took the form of a Public Advisory Committee and a series of public information sessions.

A Public Advisory Committee was created to provide input from local interest groups and residents. The Committee was comprised of individuals associated with City of Kingston Council, Loyalist Township Council, the Ontario Soil and Crop Improvement Association, Kingston Home Builders Association, Kingston Field Naturalists, Queen's University, Frontenac Stewardship Council, Lennox and Addington Stewardship Council, and the Limestone Chapter of the Ontario Woodlot Association. There were also two members of the general public.

These representatives provided valuable local knowledge and advice on other available information and resources necessary to satisfactorily complete the study. They also reviewed and provided comments on the draft report, provided feedback on behalf of a stakeholder cluster, and helped to disseminate information to each group.

Two public information sessions were held over the course of the study. The initial round of public open houses was coordinated to receive input on draft findings and options. The second round was coordinated to gather feedback on a set of draft recommendations.

The public consultation process was documented as background for use by the municipalities in the Implementation Phase, which may include amendments to planning documents, or further program development that may result from the study findings. The documentation for this process has been included in Appendix 'H' of this report.

The following methods of providing notice were pursued:

- *Advertisements* were placed in local newspapers (Kingston This Week, Kingston Heritage, Kingston Whig-Standard, Napanee Beaver);
- A *Public Service Announcement* was sent to local newspapers, television and radio stations;
- The notice and related information were posted on Loyalist Township, City of Kingston and CRCA *websites*; and
- *Direct mail* was sent to area interest groups (e.g. agricultural organizations, environmental groups, tourism groups, economic development groups), and Amherst Island residents.

The key messages of the public consultation were:

- The Central Cataraqui Region Natural Heritage Study is a good news story. Unlike many areas of southern Ontario, there are relatively healthy natural communities still intact in the Loyalist and Kingston area. This is a boon for the local community as it not only provides a healthy environment in which to live and helps protect precious water resources, but also is an attraction for tourism and economic development.
- Our natural heritage is important to local lifestyles and the quality of life. An array of natural heritage features allows for passive recreational activities such as hiking and walking. This type of activity is growing in popularity in the two municipalities.
- Significance criteria were developed based upon a review of the literature, and follow the guidelines set out in the Natural Heritage Reference Manual for Policy 2.3 of the Provincial Policy Statement (MNR, 1999).
- The mapping in the Natural Heritage Report is based on the best information available. As more detailed mapping becomes available it can be incorporated into the report.
- Not all of the proposed land use restrictions are new. Many areas identified in the natural heritage system (provincially significant wetlands, lowlands, riparian lands) are already protected in municipal official plans and zoning by-laws. Others have been recognized in the PPS since 1997 but never identified.
- Completion of this study is a requirement for the Municipalities. Without a natural heritage strategy, Loyalist Township and the City of Kingston cannot make informed decisions on the natural heritage components of the 2005 Provincial Policy Statement.
- The project is not just about land use planning. Stewardship, education, and restoration of impaired habitats are also important components.

### **Details on Public Information Session #1**

The first set of information sessions was held in April 2005 to introduce the community to the study and to inform residents of the work that had been completed to date. The sessions were held at the following locations:

April 19	Amherst Island Public School, Stella
April 21	Memorial Hall (Kingston City Hall), 216 Ontario Street, Kingston
April 26	Glenburnie Fire Hall, 1485 Unity Road, Glenburnie
April 28	Council Chambers, 263 Main Street, Odessa

Approximately 50 residents attended the public meetings. The format of the session was 1.5 hours for attendees to view maps and displays, followed by a brief presentation and a question and answer period. CRCA staff presented background information on the study, draft maps (woodlands, wetlands and ANSIs, significant species) for the City of Kingston and Loyalist

Township, the significance criteria table, and the next steps in the process. The feedback received from the participants was used to revise the maps and direct field checks.

### **Details on Public Information Session #2**

A second information session was held in June 2006 to gather feedback on the findings of the study, including the mapping and set of draft recommendations. The sessions were held at the following locations:

June 20	Amherst Island Public School, Stella
June 22	Cataraqui Community Centre, 1030 Sunnyside Drive, Kingston
June 27	Loyalist Township Municipal Office, 263 Main Street, Odessa

Approximately 40 residents attended the public meetings. The format of the session was 1 hour for attendees to view maps and displays, followed by a brief presentation and a question and answer period. CRCA staff presented background information on the study, final draft maps (woodlands, wetlands and ANSIs, significant species) for the City of Kingston and Loyalist Township, a comparison to federal and provincial standards, and general study recommendations. The feedback received from the participants confirmed the importance of the study.

Additional information on the public meetings and a summary of comments received are included in Appendix 'H'.

## 6.0 STRATEGY DEVELOPMENT AND IMPLEMENTATION

This report represents the first phase of the natural heritage project. Upon completion of the report, it is recommended that the municipalities proceed with the Implementation Phase, which would include creating a detailed natural heritage database, amending planning documents, and developing a strategy for stewardship programs, public education programs, restoration projects, and targets for land acquisition.

The community will be involved in the implementation process; however, the municipalities will be the final decision makers. Implementation will require the ongoing commitment of many partners – municipalities, conservation authorities, provincial ministries, interest groups, and landowners.

An important step will be implementation through the planning process. As outlined above, the municipalities will need to draft policies for their Official Plans and provisions for their Zoning By-laws to implement the document. Public consultation will again be required at the plan development stage, as required by the *Planning Act*.

Resource managers will also need to work on developing programs for stewardship and education and on focusing restoration efforts in key areas.

The urban forest is one natural feature that was mentioned numerous times over the course of the study that could be the subject of further study. Although these woodlands may not have been considered significant based on the criteria of the study, they provide many tangible and intangible social, spiritual, cultural, environmental and economic benefits. It can define communities, increase residential property values, attract industry and tourists, provide wildlife habitat, provide jobs, and reduce the energy needed to heat and cool buildings (National Forest Strategy Coalition, 2003).

The development of an urban forest management plan/system could help the municipalities to maintain and enhance the overall health of the urban forest; increase tree canopy and diversity to ensure that there are a wide variety of trees of all ages; manage the urban forest to ensure that the trees are healthy and can be maintained in a safe condition for as long as possible, and to protect the existing urban forest through policies, programs, guidelines, by-laws and long-term planning.

Key to the implementation of a natural heritage strategy is the development of an understanding within the community of how protection of the natural heritage system is linked with the community's vision of "a great place to live." Scenic vistas, clear water, abundant forests and wetlands are all part of the natural landscape and are vital to the area's diversity. These natural amenities also provide for a high quality lifestyle. There is a direct link between protecting the region's green infrastructure and water resources with development and economic growth in the Central Cataraqui Region. This link needs to be recognized and promoted.

## **6.1 ON-GOING DATA COLLECTION**

The implemented natural heritage strategy should be seen as a living document. Ongoing adjustments to the report and mapping will be required in order to incorporate new information and data, to reflect increased understanding of ecological processes, and to integrate improved planning and resource management models.

It should also be recognized that natural features and the natural heritage system are not static features, but that their area extent varies over time based on weather patterns, natural processes and human impacts. For example, beaver dams cause fluctuations to wetland boundaries and woodlands tend to expand outward through natural regeneration. Adjacent land policies and setbacks give some degree of protection to fluctuating natural area boundaries, but the mapping needs to be updated regularly to reflect the changing natural heritage system.

## **6.2 DATA MANAGEMENT**

Upon completion of this study, the data will be up-to-date as of June 2006. Mapping updates will be necessary as new data become available to ensure that the municipalities have the most accurate information. As part of the Implementation Phase of this project, a database will be attached to the digital mapping that is designed to identify characteristics of specific features, and to record new information as it is collected. It is critical that this database is maintained and enhanced. New information/data should be shared between the implementation partners as it becomes available.

Sources of input data might include:

- Environmental Impact Statements;
- Environmental Assessments or Class EAs;
- Resource and biological inventories;
- Subwatershed Plans;
- Assessment records and development proposals; and
- Contributions from area field naturalists.

Regular maintenance of the database and mapping should be the responsibility of the municipalities, although assistance could be provided by the Conservation Authority. New or updated information could be tracked through the development review process.

It is recommended that the mapping be updated at least every five years, and the database at least on an annual basis.

## **6.3 MONITORING FOR SUCCESS**

Keeping the maps current will allow for monitoring of changes to the natural heritage system. Restoration projects can be tracked and new mapping of natural areas can be entered into the map layers. On-going monitoring of the impacts of development on the natural heritage system can be undertaken by Conservation Authority and municipal staff through tracking of planning application decisions.

The long-term implementation of a natural heritage strategy should be seen as an evolving process; monitoring of the progress followed by adaptations to the recommendations to ensure that the natural heritage system is being protected.

As new information becomes available, the municipalities are encouraged to incorporate it into their Official Plans, through amendments to the schedules and/or policies. For example, based on the results of Environmental Impact Assessments or other inventories, specific woodlands may be identified as highly significant. Rather than leaving these in the “Environmentally Sensitive” or “Natural Heritage B” designation or overlay (which may permit development), it may be more appropriate to move them to the “Environmental Protection” or “Natural Heritage A” designation, and zone them accordingly.

## 7.0 SUMMARY OF RECOMMENDATIONS

This section includes a summary of the recommendations made throughout the report.

1. It is recommended that the municipalities adopt planning policies and provisions related to natural heritage features and areas, and that are consistent with the 2005 Provincial Policy Statement.
2. In addition to official plan policies and zoning by-law provisions, it is recommended that the municipalities adopt additional municipal planning and implementation tools such as a woodland conservation by-law, municipal fill by-law (where such regulation is not provided by the Conservation Authority), site alteration by-law, and landscaping guidelines.
3. The municipalities are encouraged to participate in, or support, ecological land acquisition initiatives in the region.
4. It is recommended that the municipalities develop a plan to appropriately manage ecologically sensitive lands that they own, and to encourage the rehabilitation of these areas. One important area for further study is the urban forest.
5. As part of their leadership role in the preservation of the regional natural heritage system, municipal departments should coordinate their review of maintenance programs to determine how these interface with ecological features, and what changes can be made to make the programs more 'environment friendly'.
6. In addition to municipalities, private individuals and businesses should be encouraged to participate in stewardship and restoration program.
7. Since the natural heritage system is not static, and new data will be made available over time, it will be necessary to perform regular maintenance of the database and mapping to ensure that the municipalities have the most accurate information for decision-making.

## 8.0 CONCLUSION

The intent of this study was to map out the natural heritage system for the study area and to develop initial options to protect it. Options presented included municipal planning and implementation tools, stewardship, restoration, and land acquisition. The information presented in this report can be used to develop a Natural Heritage Strategy for Loyalist Township and the City of Kingston.

Suggestions for Official Plan and Zoning By-law Amendments were provided in this report for consideration by the municipalities as part of the implementation process. This report suggested additional municipal planning and implementation tools, including a woodland conservation by-law, a municipal fill/site alteration by-law and landscaping guidelines, which should be further researched as part of the Implementation phase.

The municipalities are encouraged to work with other government and non-profit agencies, and the community to identify and undertake stewardship and restoration projects. Ongoing data collection and monitoring will be important to ensure the success of the Natural Heritage Strategy.

The quality of our lives is dependent on the quality of our environment. The human species has the ability to seriously alter and negatively impact the natural landscape. When making land use decisions, whether through municipal planning or private land management, consideration must be given to the broader perspective of ensuring long-term ecological health.

Development and implementation of a natural heritage strategy can help to protect water resources and the remaining richness and diversity of habitats and landscapes – the ecological integrity of the municipalities and broader region. It can heighten civic environmentalism, create a shared vision, and encourage the community to take collaborative action to value and restore the natural integrity of the landscape.

The Central Cataraqui Region and its residents are encouraged to take this report and support the intent of the recommendations within, and to work together to create a strategy that will protect our natural inheritance for future generations.

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## Appendix A. Detailed Methodology

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This document outlines the methods and metadata used to prepare the mapping and GIS work for the Central Cataraqui Region Natural Heritage Study. This is intended as a guide to other resource managers and GIS professionals so that the study can be duplicated regardless of geographical location. Most of the details below relate to procedures for digital mapping; guidance is also provided for information gathering and interpretation of aerial photographs.

## 1. Required Equipment

The following computer software and hardware are the minimum requirements needed to complete this study:

Computer: Pentium IV, 3.0 GHz processor, 40 gigabyte free hard drive space, 128 MHz video card, and a high speed internet connection.

Plotter: able to print 11x17 and Ansi E size paper.

GIS Software: ESRI ArcView 9.0 License with Spatial Analyst extension, Autodesk Map 5 and, GeoExpress View by ILS.

Other Software: Microsoft Excel, Microsoft Access, Microsoft Word, Corel Photo Paint, Adobe Acrobat.

## 2. Required Data

The data for this study were collected from a variety of sources. Following is a list of organizations and data sets collected.

### 2.1 Ontario Geospatial Data Exchange

All data that was provided to the Cataraqui Region Conservation Authority through the Ontario Geospatial Data Exchange (OGDE) is used under license with the Ontario Ministry of Natural Resources and is copyrighted to the Queen's Printer for Ontario, 2004.

<b>Data Set</b>	<b>Description</b>	<b>Scale / Accuracy</b>
ANSI	ANSI's (Areas of Natural and Scientific Interest) are polygon features that represent lands and waters containing important natural landscapes or features that are important for natural heritage, protection, appreciation, scientific study or education.	<b>Horizontal:</b> Approximate: +/- 500 m
Geographic Township	A Geographic Township is a polygon feature that indicates the fundamental land subdivision fabric of the Province. Each Geographic Township area may or may not be the same as the jurisdictional area of the township.	<b>Horizontal:</b> Unknown

Airport	An Airport is a polygon feature that identifies a tract of land maintained for the landing and takeoff of aircraft and for receiving and discharging passengers and cargo. These locations generally include facilities for the shelter and repair of aircraft.	<b>Horizontal:</b> Precise: +/- 10 m for Runway locations from the OBM
Lot	A Lot is a polygon feature that identifies a surveyed area that is a portion of a Concession within a Geographic Township. This information was captured digitally through the Ontario Base Mapping Program.	<b>Horizontal:</b> Unknown
Railway	Railway Segments are a polyline feature class from the NRVIS database.	<b>Horizontal:</b> Scale: 1:10,000
Road Segment	A group of linear transport features which originated from the OBM mapping program and were often updated in localized areas within the FRI Mapping program. A Road Segment is a line feature that identifies a length of road having similar features and rankings. These include: primary, secondary and tertiary roads. The FRI program required the update of road segments for forest management planning purposes.	<b>Horizontal:</b> Precise: +/- 10 m  <b>Vertical:</b> Reliable: +/- 5 m
Utility Line	A group of Linear utility features which originated from the OBM Base Mapping Program or localized updates. These include pipeline above ground, transmission line, pipeline update and powerline update.	<b>Horizontal:</b> Precise: +/- 10 m
Waterbody Segment	A Waterbody Segment is a polygon or line feature that identifies a segment of a body of water such as a lake, pond, river, stream, or reservoir. A Waterbody Segment may be the Waterbody in its entirety or a component of the Waterbody.	<b>Horizontal:</b> Precise: +/- 10 m
Water Virtual Flow	These include: river/stream – intermittent / approximate, river/stream - single line, virtual segment – stream.	<b>Horizontal:</b> Precise: +/- 10 m
Forest	A forest is a polygon NRVIS data class which originated from the OBM Base Mapping Program. The woodlands dataset represents outer boundaries of forest communities.	<b>Horizontal:</b> Precise: +/- 10 m
Evaluated Wetlands	An Evaluated Wetland Complex is a group of wetlands that have similar or complementary biological, social and/or hydrological functions located in such close proximity that delineation of the wetland units into individually recognized wetlands would not be an ecologically or functionally sound process. Evaluated Wetland Complexes are those wetland complexes that have been designated and evaluated through the Wetland Evaluation. An Evaluated Wetland Complex comprises more than one wetland unit.	<b>Horizontal:</b> Approximate: +/- 500 m

DEM	The provincial Digital Elevation Model (DEM) is a high resolution raster data set covering the province of Ontario to the 51st parallel. It has been interpolated using ANUDEM 4.6.3 software with NRVIS contour and water Cell resolutions are 20 metres in northern Ontario and 10 metres in southern Ontario.	<b>Horizontal:</b> Precise: +/- 10 m  <b>Vertical: Reliable:</b> +/- 5 m
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## 2.2 Ministry of Natural Resources – Kingston District Office

Data Set	Description	Scale / Accuracy
1998 Infrared Air Photos	Colour Infrared (CIRs) Air Photos are taken using “near infrared” film and cover most areas in southern Ontario.	1:10,000
1978 FRI Air Photos	Black and White (B&Ws) Air Photos are taken using black and white film and cover most of Ontario. Available in Hard Copy. A Significant Woodland is a woodland of interest to the Ministry that is ecologically significant, and warrants special consideration, excluding ANSI's, wetlands, parks, reserves, or ESA's.	1:10,000

## 2.3 Ministry of Natural Resources - Natural Heritage Information Centre

Data Set	Description	Scale / Accuracy
Sensitive Species	The Natural Heritage Information Centre (NHIC) compiles, maintains and provides information on rare, threatened and endangered species and spaces in Ontario.	Masked
Avian Species	Includes locations of Breeding, Migratory Waterfowl, Colonial and Monitoring Sites.	Environment Canada – Canadian Wildlife Services Branch

## 2.4 City of Kingston

Data Set	Description	Scale / Accuracy
2004 Aerial Photo	City of Kingston aerial photo flown spring of 2004.	1:2000 <b>Horizontal:</b> 24cm <b>Vertical:</b> 14cm
Roads Centerline	City of Kingston roads centerline, digitized off of 1:2000 aerial photo.	1:2000
DTM	City of Kingston Digital Terrain Model, generated off of the 2004 aerial photograph.	<b>Vertical:</b> 14cm

## 2.5 Cataraqui Region Conservation Authority

<b>Data Set</b>	<b>Description</b>	<b>Scale / Accuracy</b>
Spawning Areas	A Spawning Area is a polygon feature that identifies an area where a species of fish habitually spawns. Digitized off of existing hard cover maps.	<b>Horizontal:</b> Approximate: +/- 500 m
Woodlands	Woodlands are a polygon dataset updated using new imagery from the OGDE woodlands layer.	<b>Loyalist</b> 1:10,000 <b>Kingston</b> 1:2000
FRI Woodlands	Forest Resource Inventory woodlands, were collected off of the 1978 black and white aerial photos. FRI data was applied to the woodlands that still make up the same geographical area.	<b>Loyalist</b> 1:10,000 <b>Kingston</b> 1:2000
NHS Areas	Contains Point features of ANSI, Life Science Sites and International Biological Program sites. Collected from Natural Heritage Information Centre (NHIC).	
Riparian Areas /Corridors	Riparian areas and wooded riparian corridors as created during the study.	1:10000
Core Habitat	Core Habitat are compiled as part of the work in the study	1:10000
Linkages	Linkages are compiled during the study	1:10000
Valleylands	Valleylands were created by the CRCA for their new regulation limit.	1:10000

## 3. Digital Mapping of Natural Features

### 3.1 Woodlands

The initial woodlands layer for this study was obtained through the OGDE and was created for use by the Ontario Base Mapping Program. This layer was updated for this natural heritage study using aerial photos.

Before the imagery could be used to update the woodland layers some pre-processing was needed. For Loyalist Township digital 1998 Infrared Air Photos were provided by the Ministry of Natural Resources (MNR). These files were originally in a Kodak picture format. The files were opened in Corel Photo Paint; the black borders were clipped off and then saved as jpeg 2000 files. The files were then opened within ArcMap and georeferenced using the georeferencing toolbar.

The City of Kingston aerial photo was provided in a Mr. Sid format as one file, this presented problems due to the file size. The file was pre-processed within GeoExpress View, this was done to cut down on processing time, as the smaller files created from this process are easier to

handle than one big file. Using the export function within GeoExpress the aerial photo for the City of Kingston was split into thirty smaller sections and saved as jpeg image. Because the Mr. Sid image was properly referenced, the created jpegs were also properly georeferenced during the export operation.

Once all the needed aerial photos were processed and georeferenced, they were opened within ArcMap and the updating of the woodlands commenced. Woodlands were updated according to the specifications in the Ecological Land Classification field guide, which suggests that any woodland have a minimum sixty percent canopy coverage.

To update the woodlands, the following layers need to be loaded into Arcview: Road Segments, Woodlands, Waterbodies, Utility Lines and Watercourses. There are a few rules that are adhered to when update the woodlands. The editing rules are forest cannot cross primary or secondary roadways, nor can a forest cross a hydro line corridor, and forest can exist in a wetland but not in a waterbody. Forest blocks were created then modified using the editing toolbar and the “create new feature” and “modify feature” commands.

The following criteria were used to determine the significance of each woodland block.

### **3.1.1 Size**

It should be noted that in determining the size of woodlands, it must be taken into account that the woodlands do not stop at municipal boundaries but rather continue into the next municipality. For that reason all significance criteria are run on the whole woodland block before it is clipped down to the municipality for display purposes.

Using the Calculate Values command, the area of each woodland was calculated using the following script.

```
Dim dblArea as double
Dim pArea as IArea
Set pArea = [shape]
dblArea = pArea.area

SiteID = dblArea
```

The above script returns the area calculation of all woodlands in metres squared. After the calculation has been run, select all forest that are over forty hectares (400 000 sq. m.) in size. The selected forests are given a value of one in the *Patch Size* field. These forest blocks are considered significant by size.

On Amherst Island, woodlands that are 2 hectares or greater were considered significant. The reasoning behind this is that the total area of the woodlands on the island is only 13.6% the land area. Environment Canada recommends that if an area has a woodland percentage under 15% then woodlands of 4 hectares or greater are considered significant.

### 3.1.2 Interior Habitat

Interior habitat refers to woodlands that are 200 metres from the edge of the forest and still have at least 4 hectares of woodland left within the buffer. To calculate Interior Habitat, run a buffer inside the woodland layer of 200 metres. Take this new layer *200m\_Inside\_Buffer* and using the clip command in ArcToolbox, clip the woodland layer by the *200m\_Inside\_Buffer* layer, creating *Clipped\_200m\_Buffer*. This new layer is then run through the single part to multi part command, found in ArcToolbox. This command will take any woodland that had two or more sections of interior habitat and separate them, creating a new layer *woods\_single\_multi*.

Once that command is run, take the layer *woods\_single\_multi*, calculate the area of each woodland interior, and then select those that have an area over 4 ha. Create a new layer from this selection, *interior\_4ha*. Once the new layer is created, run a 200m buffer on this layer and clip the woodlands layer. This will retain all woodlands that have a 4 hectare interior habitat core with a 200 metre buffer.

### 3.1.3 Connectivity

The next criterion for selecting significant woodlands is connectivity. To calculate significance by connectivity two layers are needed, *ANSI's*, *Evaluated Wetlands*. Take these two layers and run a 120 metre buffer on each. Merge the two new layers created together, and then clip all woodlands that are inside of the buffered layers. Name this new layer *woodlands\_connectivity*. These woodlands that have been clipped are considered significant by connectivity.

### 3.1.4 Age (FRI Woodlands)

Forest Resource Inventory mapping was prepared by the MNR using 1978 aerial photos. This mapping, although out of date, is the most consistent qualitative description of woodlots available. The original mapping gathered attributes on the working group and tree species, on the age, height and stocking number. Other attributes collected were site class information, the area of the woodlands in hectares, and if the woodland was field checked.

The 1978 aerial photos containing the FRI information were georeferenced in ArcView after the pre-processing was completed. The newly created woodlands layer that was created from the 1998 Infrareds and 2004 City of Kingston aerial photos was used as the base layer. The woodlands layer was saved with a new name, and then edited to reflect the woodlands shown on the FRI mapping. Only inside boundaries of the polygons were edited to show different stand types, if no information was available for a woodland or part of the woodland, no information was collected. The age attribute was adjusted in a new field to after the editing to reflect that the forest stands are now 28 years older than when the information was originally collected. For more information see the Forest Inventory Procedure for Ontario book (1978); this will describe how the woodlands were originally ranked.

To select woodlands that are significant by age, run a selection on the FRI woodlands layer where the adjusted age is greater than 100. These woodlands are significant by age.

For more details about the species of the woodland collected during the digitizing of the FRI woodlands refer to Forest Inventory Manual Appendix III, which will describes the species codes collected.

### **3.1.5 Wooded Riparian Areas**

Wooded Riparian Areas are created by the watercourses, waterbodies and evaluated wetland layers. The first step is to run a 30 metre buffer on each layer; these three new layers are then merged and dissolved. This dissolved layer, which is also the riparian habitat layer, is then clipped by the woodlands layer, creating the Wooded Riparian Areas layer.

### **3.1.6 Significance**

Once all the significance criteria have been run, select all the woodlands that are significant and then using the merge command merge these layers together, call the new layer *significant\_woodlands*. All other woodlands are to be considered contributory.

### **3.2 Evaluated Wetlands**

This layer is created and maintained by the Ministry of Natural Resources. The data layer provided from MNR was compared to the most recent air photo to verify its accuracy. There have been no changes made to this layer and is used as is. It is used to calculate connectivity and as a display layer on the Landscape Features maps.

### **3.3 Areas of Natural and Scientific Interest**

Digital Mapping of ANSIs was obtained from the Ministry of Natural Resources through the OGDE. The ANSI Layer includes polygons, and smaller polygons that are essentially points. The smaller polygons were queried out of the larger set by selecting all polygons with an area less than one. These polygons were then converted to points for display purposes. The ANSI Layer includes both provincially significant ANSIs and regionally significant ANSIs.

This layer is used as is, with no changes made to location information. A separate layer of International Biological Program site and Life Science Sites were collected by the Cataraqui Region Conservation Authority and is for use on the Landscape Features maps.

### **3.4 Riparian Habitat**

Riparian Corridors are Wooded Riparian Areas that are polygon layers created during the study. To create Riparian Corridors, the watercourses, waterbodies and evaluated wetland layers are needed. Unevaluated wetlands are included within the waterbodies layer. The first step is to run a 30 metre buffer on each layer; these three new layers are then merged and dissolved. This creates the riparian corridors layer. To create the Wooded Riparian layer, load the woodlands

layer. The riparian layer is then clipped by the woodlands layer, creating the Wooded Riparian Areas layer.

### ***3.5 Sensitive Species***

Sensitive species data was collected from the Natural Heritage Information Centre website. This data is provided individually for each species and comes in a database format. Because the data is sensitive it is masked to the lower right hand corner of a one kilometre square. To properly display this data, add 500 metres to the northing coordinates and subtract 500 metres from the easting coordinate, this will place the location of the species in the middle of the masked one kilometre rectangle. The sensitive species are then converted to a layer using the *Display XY Data* command. Once this layer is ready, the masked layer is created by running a 600 metre buffer on the species layer. This will create a polygon layer that effectively masks the location of the sensitive species.

### ***3.6 Spawning Areas***

The spawning areas layer is a polygon feature class that was digitized off of older paper copy maps (obtained from the Ministry of Natural Resources). These areas represent locations of fish spawning by either bass or pike species.

### ***3.7 Avian Species***

The avian species layer was collected by the Cataraqui Region Conservation Authority from Environment Canada – Canadian Wildlife Service data records. This layer is a point feature class that displays the location of breeding sites, waterbird sites, monitoring areas and migratory waterfowl sites.

### ***3.8 Valleylands***

The valleylands layer that is used in the study was created by the CRCA as the new regulation line limit for Ontario Regulation 148/06. This polygon layer was created using the following criteria.

1. 100 year floodplain + 15 m buffer
2. Meander belt: (Bankfull width of stream) \*10, applied to each stream (Note: a valley containing a meandering stream is not considered an apparent valley, so criteria 5-7 do not apply)
3. Provincially Significant Wetlands: 120 m buffer

4. Other Areas (Wetlands): 30 m buffer
5. Apparent Valleys/Slopes: 3:1 slope for unconsolidated material. Stable top of bank + 15 m
6. Apparent Valleys / Slopes: 2:1 slope for thin till over bedrock. Stable top of bank +15 m
7. Apparent Valleys / Slopes: 1:1 slope for bedrock (consolidated). Stable top of bank + 15 m

The furthest extent of criteria 1-7 upslope from the stream is defined as the regulation limit, or for the purposes of this study, valleylands.

### ***3.9 Core Habitat***

The core habitat layer is a compilation of many layers used throughout the study. To create this layer all woodland criteria layers were turned into grid layers using ArcMaps Spatial Analyst extension; these layers include interior habitat, age, woodlands over 40 hectares, woodlands over 200 hectares, woodlands over 4 hectares on Amherst Island, and wooded riparian corridors. Once these layers were turned into grid layers, all the woodlands used were given a score of one. Once the grid layers were classified they were then added together, and then converted back into a polygon layer called wooded core habitat.

The wooded core habitat layer is then classified into three categories. These categories are high, intermediate and contributory. Contributory woodlands are the smaller woodlands that are not considered significant. Intermediate core habitats are those polygons that score a one or two when the grids were added together. High core habitats are those polygons with a combined score of three or more.

To complete the core habitat layer, the evaluated wetlands layer and the ANSI layer are classified as either high or intermediate habitat. Those areas in the layers that are provincially significant are classified as high core habitat, and those areas that are regionally significant are classified as intermediate core habitat. The last step in completing the core habitat layer is to classify any unevaluated wetlands as being contributory.

### ***3.10 Linkages***

The linkages layer is created once the core habitat layer is done. This is created using a visual exercise where linkages are created following a least resistance path of analysis using the core habitat layer.

## **4. Other Considerations**

### ***4.1 Study Area Limits***

Since natural areas do not follow municipal boundaries, the natural heritage system boundary is

expected to be somewhat irregular. For example, the total size of a natural area that extends outside the municipal boundary is mapped. It is important to take natural features that extend beyond municipal boundaries into consideration when doing analyses such as woodland size and interior habitat.

#### ***4.2 Area Calculations***

It may be necessary to clip the natural heritage features (e.g. woodlands, wetlands, etc.) at the municipal boundaries in order to calculate areas or percentages of the municipality that are forested, have wetlands, or are covered with other natural heritage features. These files should only be used for this purpose. For any analysis to determine significance, the natural heritage features should extend beyond the municipal boundary.

### **5. References**

Dent, R.D. 1999. *Cartography Thematic Map Design*. Fifth Edition.

Lee, H., W. Bakowsky, J. Riley, J. Bowles, M. Puddister, P. Uhlig and S. McMurray. 1998. Ecological Land Classification for Southern Ontario (First Approximation and its Application) SCSS Field Guide FG-02. September 1998.

Lillesand, T.M. and R.W. Kiefer. 2000. *Remote Sensing and Image Interpretation*. Fourth Edition.

Ministry of Natural Resources. 1978. *Forest Inventory Procedure for Ontario*. Third Edition.

## Appendix B. Description of Natural Features and Areas

Total number of natural features and areas by type and municipality:

Type of Natural feature or area	Number of features in Loyalist Township	Number of features in the City of Kingston	Total number of features in Central Cataraqui Region
ANSI (Earth Science)	1	2	3
ANSI (Life Science)	4	4	8
International Biological Program Site	5	6	11
Life Science Area	9	8	17
Evaluated Wetland	7	20	27

Earth Science ANSIs have been identified by MNR as areas having provincially or regionally significant representative geological features. Similarly, Life Science ANSI areas have provincially or regionally significant representation of ecological features. The International Biological Program developed site inventories in the late 1960s and early 1970s to monitor the effect on biological communities of changes in the natural environment, and on the conservation and growth of natural resources for human benefit. Life Science Areas are recognized as having ecological features and include Environmentally Sensitive Areas identified by municipalities as being ecologically important. The wetlands have been evaluated by MNR using the Ontario Wetland Evaluation System.

The following descriptions of natural features and areas in the Central Cataraqui Region were produced by the Natural Heritage Information Centre (NHIC). Some features may be classified under more than one type, and contain more than one description. For the complete description of a feature and references, please contact the NHIC.

## Loyalist Township

### **AMHERST BAY - LONG POINT BAY WETLAND**

**Alias:** Amherst to Long Point Bays Coastal Wetland

**Type:** Area of Natural and Scientific Interest - Life Science

**Significance:** Provincial

**Size:** 360 ha

This is a large, well developed coastal wetland and shoreline complex which is representative of the Napanee Plain Physiographic Region. Notable here are the extensive marsh, swamp forest and aquatic vegetation, as well as upland forest developed upon a drumlin and coastal barrier sand bar features. The adjacent uplands are actively cultivated and support croplands or old field communities.

The significance of this site lies in its representation of a Lake Ontario coastal wetland community. As well, and perhaps most importantly, it represents the last, largely unaltered coastal wetland system enclosed behind a barrier sand bar in Site District 6-15. A similar site, Big Sandy Bay on Wolfe Island, has been manipulated to a degree and is exposed to much higher recreational use and possible development pressures in the near future. Significant representation of upland features also occurs in the study area, although not extensively, such as deciduous forested drumlin, maple swamps, sand dunes, sand beach and shrub thickets.

### **AMHERST ISLAND COMPLEX**

**Type:** wetland (unofficial complex)

**Size:** 157 ha

The feature is considered to be an unofficial, potential Provincially Significant coastal wetland complex that is made up of five individual significant wetlands (Wemps Bay, Nut Island Duck Club, and Long Point -Amherst Island Marsh), and composed of three wetland types (1% bog, 42% swamp and 57% marsh).

### **AMHERSTVIEW SWAMP AND BOG**

**Aliases:** Bayview Bog, Lost Lake Swamp

**Type:** Area of Natural and Scientific Interest - Life Science

**Significance:** Provincial

**Size:** 380 ha

This is a large, stream-fed, interior wetland basin feature which supports an inundation-disturbed deciduous swamp forest and marsh, and a floating bog coniferous forest, heath and pond vegetation. The bog features are representative of a limited habitat within the Napanee Plain Physiographic Region.

Prior to the past decade, this site was significant in its portrayal of northerly peatland, temperate and alvar vegetation and biota. However, the recent flooding, cutting and grazing has reduced this representation to presenting a small bog community encircling the interior pond. The designation of this site in the Napanee District Land Use Strategy as an ANSI was based on past reports of its former quality, and a redesignation might have been more appropriate. Nevertheless, if the flooding and other disturbances were to cease, the site could be rehabilitated to become a Regionally Significant ANSI.

### **ASSELSTINE ALVAR**

**Type:** Area of Natural and Scientific Interest - Life Science

**Significance:** Provincial

**Size:** 105.3 ha

This is an area of flat limestone plain with alvar associations (regionally significant alvar vegetation). A series of low ridges and troughs in the south part of the site display open alvar habitat mixed with conifer forest and parkland. Some of the drier sites are burnt over. The north part of the site is disturbed scrubby grassland. There is dieback of the trees along the streams.

**Type:** Life Science Area

The area consists of an open flat alvar grassland that is thinly soiled. The driest areas contain small patches of open pavement. The western section is fenced, with heavy grazing west of the fence. Some adjacent areas support early successional deciduous and mixed forest. 1978 air photos show a widespread treed alvar condition (a.k.a. alvar savannah).

**Alias:** Asselstein Alvar

**Type:** International Biological Program Site

**Size:** 105.2 ha

The site consists of a large flat dry limestone plain with alvar/gryke landforms; a representative well developed deciduous, mixed and coniferous forest, open thicket and dry alvar meadow and barrens (7 communities); temperate biota, with a diverse regionally significant western alvar flora; and light to moderate disturbance.

The alvar contains front shattered limestone and gryke-patterning, which are considered to be a special physical features. It is also a good example of limestone plain alvar associations.

### **BATH POINT WETLAND**

**Type:** Wetland

**Significance:** Provincial

**Size:** 13.8 ha

A Provincially Significant, Coastal wetland complex, made up of two individual wetlands, composed of two wetland types (43% swamp and 57% marsh). The dominant vegetation forms are: 30% dead coniferous, 13% tall shrub, 49% narrow-leaved emergents and 4% robust emergents.

### **BAYVIEW BOG**

**Aliases:** Amherstview Bog, Lost Lake Swamp

**Type:** Wetland

**Significance:** Provincial

**Size:** 215 ha

A Provincially significant wetland, composed of three wetland types (3% fen, 79% swamp and 18% marsh).

**Type:** International Biological Program Site

**Size:** 210 ha

The site consists of peat development in a broad basin on a limestone plain, with pond, bog and plain landforms; lowland mixed and coniferous swamp and bog forests, semiopen fen groves, thickets, meadows and aquatics, and upland plain meadows (15 communities); temperate and northern biota, with regionally significant plants; and severe to moderate flooding disturbance.

The area contains peatland development on limestone plan and a dystrophic lake, which are considered to be special physical features. The area also contains special biological features including an extremely rich and diverse wetland bog and fen complex of somewhat singular significance for the district, and a broad range of habitats and gradients.

**Type:** Life Science Area

**Size:** 40.5 ha

The Bayview Bog is in itself, a medium-sized bog, geographically separated from the more abundant bog habitats found to the north of this area. The site is notable for an interesting association of *Picea mariana* (Black Spruce), *Thuja occidentalis* (White Cedar) and other boreal plant species. A considerable diversity of habitat types can be identified, each possessed a rich species diversity.

### **CAMDEN EAST ALVAR**

**Type:** Area of Natural and Scientific Interest - Life Science

**Significance:** Provincial

**Size:** 1110 ha

The Camden East Alvar is set on a limestone plateau that lies 2 km southeast of Camden East and just south of the Napanee River and slopes very gradually to the southeast and Wilton Creek. A range of alvar vegetation, adapted to seasonal flooding, extreme summer drought and calcareous conditions, has developed at this natural area. Open gravel and bedrock barrens with very shallow soil support characteristic associations of mosses, algae, liverworts, lichens, grasses and herbaceous plants. These associations grade into open parkland areas with common juniper, scattered red cedar, native grasses and alvar species. Interspersed between these open alvar barrens and parklands are mixed, deciduous and coniferous woodlands where soils are deeper, and a few wetlands in depressions where water collects.

The Camden East Alvar and Carden Alvar are the largest and least disturbed alvars in MNR Site District 6-9. In Ontario, alvars are restricted to Manitoulin Island, the Bruce Peninsula, Pelee Island and sites near the contact between Precambrian and Paleozoic bedrock.

**Type:** International Biological Program Site

**Size:** 13.3 ha

The site consists of a small flat limestone plain with very shallow soil, local wet depression and well developed "alvar/gryke" landform; a representative deciduous grove meadow and marsh, and excellent alvar meadow (5 communities); temperate and western biota, and the flora is rich in characteristic alvar species; undisturbed to local severe development encroachment.

The site contains special biological features in that it is an excellent alvar. This is actually an extension of the Thorpe Alvar and is separated from the latter by a road. It has a very rich alvar flora concentrated in a small area. Ideally it should be bought up together with the Thorpe Alvar, but if it came to a choice between the two areas, this one might be the best because of its floristic richness.

**Type:** Life Science Area

**Size:** 13.5 ha

A diverse population of prairie species situated on a flat, dry limestone plain, the Camden East Alvar supports a rich flora.

### **CAMDEN SOUTH ALVAR**

**Type:** Life Science Area

No description available.

**LONG POINT MARSH**

**Type:** Wetland (part of Amherst Island Wetland Complex)  
**Significance:** Provincial  
**Size:** 315 ha

A Provincially significant, Coastal wetland complex, made up of three individual wetlands and composed of three wetland types.

**MCINTYRE SWAMP**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 84.0 ha

A Provincially significant wetland, composed of two wetland types (94% swamp and 6% marsh).

**MILLHAVEN STROMATOLOIDS**

**Type:** Area of Natural and Scientific Interest - Earth Science  
**Significance:** Provincial  
**Size:** 0.41 ha

This area contains Middle Ordovician, Simcoe Group, Gull River Formation limestone stromatoloids 12-18 inches in diameter. There are 2 visible outcrops: one in a road cut and the other is located in an abandoned quarry.

**NUT ISLAND DUCK CLUB MARSH**

**Type:** Wetland (part of Amherst Island Wetland Complex)  
**Significance:** Provincial  
**Size:** 114 ha

A Provincially significant, Coastal wetland, composed of two wetland types (60% swamp and 40% marsh).

**ODESSA EAST ALVAR**

**Type:** Life Science Area

No description available.

**ODESSA LAKE SWAMP**

**Type:** International Biological Program Site  
**Size:** 232.7 ha

The site consists of an extensive wetland in a broad limestone plain basin at the head of a small lake well developed transition from open lake aquatics and marshes to swamps, thickets and deciduous and mixed forests (10 communities); temperate biota; light to moderate flooding and cutting disturbances.

The site contains seepage areas, which are considered to be special physical features. The area contains special biological features, in that it is a good example of representative swamp forest, swamp scrub and marshland associations.

**Type:** Life Science Area  
**Size:** 243 ha

Plant communities include a wet, closed deciduous swamp forest, a wet mesic, closed coniferous slope forest, mesic, semi-open scrubby meadow, saturated open aquatic meadow, and mesic, semi-open deciduous slope forest.

The site is developed on a level shallow basin of a lakeshore - stream area on a limestone plain the Odessa Lake Swamp is a representative example of a swamp forest, scrubland and marshland association occurring in a poorly drained area. The site is quite species rich and diversified.

**ODESSA NORTH ALVAR**

**Type:** Life Science Area  
No description available.

**ODESSA SOUTH ALVAR**

**Type:** Life Science Area  
No description available.

**PARROTT BAY**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 30 ha

A Provincially significant, Coastal wetland, composed of only one wetland type (100% marsh).

## **THORPE ALVAR**

**Type:** International Biological Program Site

**Size:** 377 ha

The site consists of an extensive flat poorly drained limestone plain, with shallow soil and local wet depressions; diverse complement of “alvar” barrens (15 communities); diverse temperate biota, with a regionally significant “alvar” associate flora; low to moderate grazing, fire and cutting disturbances, but threatened from development.

The area is a flat limestone plain covered with very thin soil. It probably was never entirely forested at any one time. It holds a large area of the “alvar” type of vegetation. These include numerous prairie relicts and are unique for eastern Ontario. This is a good example of alvar which is now in great danger of destruction by overgrazing. This association may depend upon a continued state of disturbance to maintain its status and so the cattle’s grazing may be essential for the existence of this community. It is probably the largest alvar community in the Kingston region and would perhaps be the easiest one to protect.

The area contains a shallow-soiled limestone plain showing landform patterns such as “grykes”, which is considered to be a special physical feature. The area contains special biological features in that it is one of the largest remaining alvar areas in a relatively undisturbed condition in the region.

**Type:** Life Science Area

**Size:** 380 ha

A flat to moderately undulating limestone plain, bordered by a low-rising scarp along the southern edge, the Thorpe Alvar is one of the least disturbed and largest alvar complexes found in the Eastern Region. The site supports an assemblage of rare and uncommon relict prairie species. This alvar contains these and other vicarious prairie species which have managed to survive in these xeric micro-environments from the post-glacial hyperthermic period (approximately 2500 years B.P.) and is thus significant as a source of important information about post-glacial plant biogeography. Along with other already protected prairie reserves (i.e. Windsor Prairie Nature Reserve, Pinery Provincial Park), the Thorpe (and closely related Camden East Alvars) deserves protection, especially since it has a different substrate from that recorded in the other prairie reserves in Ontario.

## **WEMPS BAY MARSH**

**Type:** Wetland (part of Amherst Island Wetland Complex)

**Significance:** Provincial

**Size:** 43 ha

A Provincially significant, Coastal wetland, composed of two wetland types (19% swamp and 81% marsh).

## **City of Kingston**

### **BELL'S SWAMP**

**Type:** Wetland

**Significance:** Provincial

**Size:** 59 ha

A Provincially significant wetland, composed of two wetland types (90% swamp and 10% marsh).

**Type:** International Biological Program Site

**Size:** 76.5 ha

It is a broad stream valley on limestone at gneissic rockland interface, with ice-carved clay ridges; variety of lowland forests, thickets and marshes and upland forests (12 communities); temperate and southern biota, with regionally significant flora; medium cutting and construction disturbances.

The area contains long, parallel clay ridges that are thought to result from compaction by claving glacial ice, which is considered to be a special physical feature.

**Type:** Life Science Area

**Size:** 76.9 ha

Plant communities vary - a very wet, closed deciduous swamp scrub and wet, deciduous swamp forest predominate. However mesic, closed mixed forest and mesic, closed old field are also common. Low, parallel ridges oriented along the length of the valley system are now thought to be the result of compaction caused by claving, glacial ice.

### **CATARAQUI CREEK CLAY RIDGES**

**Type:** Area of Natural and Scientific Interest – Earth Science

**Significance:** Provincial

No description available.

### **CATARAQUI RIVER MARSH**

**Type:** Area of Natural and Scientific Interest – Life Science

**Significance:** Provincial

**Size:** 400.0 ha

This is a large wetland and upland complex near the mouth of the Cataraqui River which encompasses excellent examples of the representative and significant river valley and coastal wetland landforms of the Napanee Plain Physiographic Region. It is located on the eastern fringe of Kingston, bounded on the west by the Canadian National railway tracks, on the north by the Macdonald - Cartier Freeway, and on the east by the rim of the valley.

The site's vegetation features reflect the temperate and southern affinities of the area's location. The wetlands include large marshlands which are dominated by stands of broad leaved cattail (*Typha latifolia*), and are accompanied by several other wet meadows and marsh types. Scattered throughout the wetland and along its margins are discontinuous swamp thickets and groves. Many openings in the marshes and thickets and along the course of the river, and its tributaries also create frequent aquatic communities. These also provide excellent habitat for waterfowl and other wildlife. The mesic slopes of the limestone valley support deciduous and mixed forests of submature to young age classes. The surrounding uplands of the limestone plain are disturbed by pasture, cultivation, successional forbs and thickets, and housing development; hence they support rather weedy community patterns.

The landform features of this site are dominated by the broad valley which encompasses an extensive wetland complex at the mouth of the Cataraqui River. The water level of the marsh is controlled by that of Lake Ontario, but is well protected from the lake's environment. The open water body of the river mouth occupies about half of the surface area, with the rest, particularly in the northwestern portion, presenting fibrous mucklands. The saturated to wet moisture regime conditions of the wetland have allowed these fibrous mucks to develop. The valley slopes present several limestone terrace levels with more deeply soiled substrates which are circummesic and sandy to loamy in texture. A gneissic outcrop of the Frontenac Axis lies just to the north of the area, marking the edge of the Leeds Knobs and Flats Physiographic Region.

### **CATARAQUI RIVER MARSHES**

**Type:** Life Science Area

Cataraqui River Marshes are a large wetland and upland complex with excellent examples of representative and significant river valley and coastal wetland landforms. Marsh and aquatic habitats, which represent 80% of area, have a higher diversity of aquatic plants than most other marshes in the Great Lakes system. This wetland, encompassed by broad valley of Cataraqui River, is one of most important wildlife areas along Rideau Canal system. Half of surface area is open water, while remaining, especially in NW, is fibrous mucklands. Vegetation reflects southern, western and Appalachian affinities. Upper portion has high granite ridge while further south limestone slopes rim broader river basin. Communities present include various deciduous, mixed and coniferous forest types on dry to moist soils and talus slopes, swamp thickets, and numerous aquatic community types, although cattail marsh predominates.

**COLLINS CREEK**

**Type:** Life Science Area  
**Size:** 4.9 ha

A small area characterized by a stream bed situated in a flat, alluvial floodplain (overlying a limestone plain) and possessing an intermittent, disappearing stream which percolates through the cobbles and pavement grykes of the limestone stream bed.

**COLLINS CREEK SAURURUS STAND**

**Type:** International Biological Program Site  
**Size:** 4.9 ha

It consists of a shallow valley of a small stream on limestone plain; meadow, marsh and stream aquatics (4 communities); temperate and southern biota, with regionally significant flora; moderate to severe grazing disturbances.

The area contains an intermittent disappearing stream caused by percolation through the cobbles and pavement grykes of the limestone stream bed, which is considered to be a special physical feature.

**COLLINS LAKE - INVERARY LAKE COMPLEX**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 469.8 ha

A Provincially significant wetland complex, made up of five individual wetlands, composed of two wetland types (33% swamp and 67% marsh).

**COLLINS LAKE UPLAND FOREST**

**Type:** Area of Natural and Scientific Interest – Life Science  
**Significance:** Provincial  
**Size:** 60.0 ha

A mature example of maple -beech -hemlock upland forest on a mesic, sandy loam site. Other vegetation includes small areas of deciduous swamp (red oak - white cedar - white elm - yellow birch) and successional hawthorn. Scrub marsh lines the shoreline of Collins lake.

**COLLINS LAKE WEST SLOPE FOREST**

**Type:** International Biological Program Site  
**Size:** 70.8 ha

It consists of a moderately rolling sandy loam plain, with westward slope to interior lake; well developed upland deciduous forests with swamp forests, and lake shore marshes and thickets (12 communities); southern and temperate biota, with provincially significant flora; light cutting disturbances, with threat from adjacent quarry and development.

The area contains special biological features in that although the forest has been selectively logged in the distant past, it is one of the most mature and richest areas in the district.

**DOWNEY WETLAND**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 45 ha

A Provincially significant wetland, composed of two wetland types (33% swamp and 67% marsh).

**EASTVIEW FOREST AND MADOMA MARSH**

**Type:** International Biological Program Site  
**Size:** 32.0 ha

A moderately rolling gneissic rockland, with a marshland basin; upland forests, thickets and rockland barrens, and wetland marshes, thickets and aquatics (19 communities); temperate and southern biota, regionally significant flora; severe to light cutting, flooding, grazing and development disturbances.

The area is a contact zone of Precambrian and Paleozoic bedrock, which is considered to be a special physical feature. The area contains special biological features. Area contains a complex of forest and marshland patterns which occur on a transition between the Paleozoic limestone and the Precambrian gneiss; these are representative of the district.

**EASTVIEW FOREST/ABBEY DAWN MARSH**

**Type:** Life Science Area  
**Size:** 32.4 ha

A complex of marshes and forested land patterns occurring on the local transition between Palaeozoic limestones and Precambrian gneiss - quite representative of this area. The marshlands extend to the bay of the adjacent St. Lawrence River. Dry mesic, closed and mixed forest, deciduous slope forest, wet semi-open pond fringe scrubland, saturated closed, tall grass cattail marsh, open floating aquatic meadow and old field forb meadow predominate as vegetation communities.

**FIRMAN'S CREEK WETLAND**

**Type:** Wetland  
**Significance:** Other  
**Size:** 9.75 ha

A Non-Provincially significant, Coastal wetland, composed of only one wetland type (100% marsh).

**GLENBURNIE MARSH**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 69.4 ha

A Provincially significant wetland, composed of two wetland types (28% swamp and 72% marsh).

**GREATER CATARAQUI MARSH**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 504 ha

A Provincially significant, Coastal wetland, composed of only one wetland type (100% marsh).

**HOWE'S ROAD ALVAR**

**Type:** Life Science Area

Cirsium discolor occurs in some forest openings, just south of the alvar grassland, near the road into the site.

**JOYCEVILLE MARSH**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 117 ha

A Provincially significant wetland, composed of two wetland types (68% swamp and 32% marsh).

**KINGSTON MILLS WETLAND**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 35.1 ha

A Provincially significant wetland complex, made up of four individual wetlands, composed of two wetland types (16% swamp and 84% marsh).

**KINGSTON SITE #1**

**Type:** Area of Natural and Scientific Interest – Earth Science  
**Significance:** Provincial  
**Size:** 0.41 ha

No description available.

**LAWLESS WETLAND**

**Type:** Wetland  
**Significance:** Other  
**Size:** 8.7 ha

A Non-Provincially significant wetland complex, made up of seven individual wetlands, composed of two wetland types (12% swamp and 88% marsh).

**LITTLE CATARAQUI CREEK COMPLEX**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 359.9 ha

A Provincially significant, Coastal wetland complex, made up of three individual wetlands, composed of two wetland types (28% swamp and 72% marsh).

**LITTLE CATARAQUI MARSH**

**Type:** International Biological Program Site  
**Size:** 70.8 ha

An extensive river mouth wetland along north coast of Lake Ontario on limestone plains; well developed aquatic marshland and thicket complex with associate mixed and deciduous forests (5 communities); temperate and southern biota, with regionally significant flora and waterfowl nesting area; light to moderate drainage disturbances with potential development threat.

Special physical features include poor development of distortion of glacial clay loam lake bed caused by calving and ice rafting and settling. The area contains special biological features; this marsh and forest complex is representative of the district.

**LOUGHBOROUGH LAKE SOUTH WETLAND**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 90.0 ha

A Provincially significant wetland, composed of two wetland types (60% swamp and 40% marsh).

**LOUGHBOROUGH LAKE SWAMP**

**Type:** Area of Natural and Scientific Interest - Life Science  
**Significance:** Provincial  
**Size:** 320 ha

The ANSI contains the most extensive lacustrine swamp seen in the site district. The swamp consists of young deciduous swamp dominated by Red Maple, and thicket swamp dominated by Alder (*Alnus rugosa*) (White, 1993).

**LOWER COLLINS CREEK COMPLEX - WETLAND**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 202.9 ha

A Provincially significant wetland complex, made up of two individual wetlands, composed of two wetland types (62% swamp and 38% marsh).

**McGARVEY FOREST**

**Type:** Life Science Area  
**Size:** 8.1 ha

A small stand of largely undisturbed forest; maple, oak, basswood, hemlock and beech are represented.

**RIVER STYX WETLAND**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 369 ha

A Provincially significant wetland, composed of two wetland types (44% swamp and 56% marsh).

**STEVENTOWN CREEK MARSH**

**Type:** Wetland  
**Significance Level:** Other  
**Size:** 52.7 ha

A Non-Provincially significant wetland complex, made up of eight individual wetlands, composed of two wetland types (41% swamp and 59% marsh).

**WASHBURN - WETLAND**

**Type:** Wetland  
**Significance:** Provincial  
**Size:** 63 ha

A Provincially significant wetland, composed of two wetland types (25% swamp and 75% marsh).

## **Appendix C. Recommendations for the new City of Kingston Official Plan and Zoning By-law**

The suggestions outlined in this appendix are one approach that the City of Kingston might consider when it proceeds to implement the findings of this study through the development of an Official Plan and Zoning By-law. These policies would ensure implementation of the 2005 Provincial Policy Statement.

Historically an Environmental Protection designation has been used by municipalities to address both natural heritage and natural hazard interests, owing to the fact that they often occur in the same location, and since they are often connected by function. According to the 2005 Provincial Policy Statement (PPS), the purpose of natural hazards policies is to reduce the potential for public cost or risk to Ontario's residents from natural or human-made hazards. The PPS defines natural heritage policies as those that will allow for the protection of natural features and areas, by protecting ecological functions, diversity and connectivity for the long term. Since the purpose of these policies differs, it is recommended that natural hazard lands/areas and natural heritage features be addressed in separate policy sections in the Official Plan, even though these interests may occur at the same location.

### **Definitions**

To provide clarification of terminology used, a definition for each of the natural heritage features identified within the Environmental Policies should be included in the 'Definitions' section of the Official Plan (and Zoning By-law). It is recommended that definitions consistent with the 2005 PPS should be incorporated, including the following terms: wetlands, coastal wetland, areas of natural and scientific interest, natural heritage system, natural heritage features and areas, endangered or threatened species, forestry, wildlife habitat, woodlands, fish habitat, significant, surface water feature, valleylands, watershed, waterbody and biodiversity. Sample definitions that were taken from the PPS or are consistent with the PPS are provided in Appendix 'E'. A glossary or definition section should reference definitions as set out in the Provincial Policy Statement (2005).

### **Natural Environment Goal / Objectives**

The new environmental policies that Council will adopt should support the 'Natural Environment' goal and objectives of the Official Plan that would be identified by Council and the community as part of the Plan's development.

### **The Natural Heritage System - General Policies**

It is suggested that introductory text, similar to the following, be included in order to relate the Official Plan policies to the Natural Heritage System.

Natural Heritage Systems are made up of natural features and areas (the most important of which are usually called 'cores'), linked by natural corridors and restored linkages necessary to maintain biological and geological diversity, natural functions, viable

populations of indigenous species, and ecosystems. These ecological systems also function to help protect water resources, and to provide for flood damage reduction and the conservation of soil.

The City of Kingston is characterized by a rich diversity of environmental attributes including wetlands, Areas of Natural and Scientific Interest (ANSIs), woodlands, lake and river systems, Lake Ontario shoreline, and fish and wildlife habitats. Some of these features and their associated functions have been identified as being of provincial significance, while others are of regional or local importance.

The purpose of this section is to identify a linked, sustainable, Natural Heritage System for the City. The Natural Heritage System identified on Schedule ‘\_\_’ was developed as part of the Central Cataraqui Region Natural Heritage Study (2006). This study assessed the value of the City’s natural heritage at a regional level using various criteria.

In addition to the policies for the underlying designation and overlay, general policies should be developed for the Natural Heritage System as a whole. The following list contains policies that the City may wish to consider.

It should be the policy of Council:

1. To protect and encourage the restoration of the Natural Heritage System shown on Schedule ‘\_\_’, and to coordinate planning and management initiatives with municipalities adjacent to the City of Kingston, particularly for those natural heritage features and areas that cross over administrative boundaries, and that are important to the ecology of the region.
2. That development applications within or adjacent to the natural features and areas that comprise the Natural Heritage System shall be accompanied by an environmental impact assessment (EIA) that assesses the impact the development will have or is expected to have on the environmental functions, attributes or linkages of the Natural Heritage System.
3. That where an environmental impact assessment has indicated that the development would have an overall negative effect on the environmental functions, attributes or linkages for which the lands were identified and said negative effects cannot be appropriately mitigated, the application will not be supported or approved.
4. To direct new settlement areas or major land use changes away from the Natural Heritage System identified on Schedule ‘\_\_’. Where this is not possible it should be the intention of Council to protect the Natural Heritage System by utilizing such techniques as justifiable increases in density, reconfiguration of public uses, and comprehensive public-private agreements. (Note: These sample techniques are used by other municipalities; appropriate techniques should be researched by the City.)

5. That where the Natural Heritage System is held in private ownership, nothing in this Plan requires that these lands be free and available for public use. Similarly, Council is not obligated to purchase lands identified as part of the Natural Heritage System, although consideration of acquisition or partnerships to do so is encouraged if opportunities arise.
6. That the boundaries and extent of the Natural Heritage System on Schedule ‘\_\_\_’ are approximate. Specific delineation or clarification of the boundaries of the Natural Heritage System shall be undertaken when applications for development are received. Refinements to system boundaries may occur through environmental evaluation by qualified agents or through periodic refinements by the City and the Cataraqui Region Conservation Authority. The Ministry of Natural Resources would be involved in approving changes to wetland boundaries. Neither will require an amendment to this Plan.
7. To coordinate efforts between public and private agencies, landowners and communities in managing and improving the ecological sustainability of the Natural Heritage System as a whole.
8. To pursue and encourage a wide variety of land stewardship options including easements, trusts, tax incentives and right of way approaches to preserving, enhancing and accessing greenlands.

### **General Subdivision and Development Policies**

Land severances that have the effect of fragmenting the ownership of natural heritage lands should be discouraged.

Consents to sever land or approval of plans of subdivision will not be permitted for any parcel of land that is entirely within or part of the natural heritage system unless: the land is being conveyed to the Conservation Authority or other public agencies for conservation purposes, or an assessment of the impacts to the natural heritage system has been satisfactorily completed.

No land division shall result in a negative effect on the natural features or the ecological functions for which the area is identified such as wetlands, areas of natural and scientific interest (ANSIs), woodlands, fish habitat, wildlife habitat and endangered and threatened species habitat. The policies of the appropriate Natural Heritage section will be adhered to in this regard.

No land division shall create a lot which cannot comply with the minimum water setback and minimum water frontage requirements contained in the Waterfront Development Policies section of this Plan.

It is recommended that traditional open space uses (such as stormwater retention and recreation facilities), which may have negative impacts on natural heritage features, be directed to locations outside of Natural Heritage areas. In an effort to preserve specific natural features such as

significant woodlands, some municipalities, such as the City of London, accept natural heritage features as a proportion of the 5% parkland dedication.

Depending on the nature of park and open space uses, they may not be compatible with lands designated Natural Heritage A, Natural Heritage B, or Natural Hazard. It is recommended that where these facilities are proposed within the Natural Heritage A, Natural Heritage B or Natural Hazard designation, they shall only be permitted in accordance with the relevant policies.

### **Natural Heritage Designations**

It is recommended that natural heritage features and areas should be placed into either a Natural Heritage 'A' or Natural Heritage 'B' designation. The natural features and areas would be placed in either area based on the significance of the features and the level of protection/conservation that is warranted. The list of permitted uses within the designations should explicitly identify what activities will be permitted.

The Natural Heritage 'A' designation would be the more stringent of the two areas. No development or site alteration would be permitted on lands within this designation. The Natural Heritage 'A' designation should include:

- all wetlands that have been evaluated by the Ministry of Natural Resources;
- significant Areas of Natural Scientific Interest; and
- significant habitat of endangered and threatened species.

It would be important to identify in the text that the designation would also include lands that may not be shown on land use schedules as Natural Heritage 'A'. This would apply to habitat of endangered and threatened species, which cannot be mapped in order to protect the species.

The Natural Heritage 'B' designation or overlay would identify lands on which development and site alteration would not be permitted unless it has been demonstrated that there would be no negative impacts on the natural features or their ecological functions, and that meet other requirements identified in the Official Plan.

The Natural Heritage 'B' designation or overlay should include:

- significant woodlands;
- significant valleylands;
- significant wildlife habitat;
- environmentally sensitive areas;
- unevaluated wetlands;
- lands within 120 metres of a provincially significant wetland;
- lands within 30 metres of an evaluated locally significant wetland;
- lands within 30 metres of fish habitat; and
- lands within 50 metres of: ANSIs and significant habitat of endangered and threatened species; and groundwater recharge/discharge areas.

A sample of key text and policy recommendations for the Natural Heritage designations are described below. The City will need to expand on these recommendations when developing its Environmental policies.

### *Natural Heritage 'A'*

- Council should make every effort to retain lands in the Natural Heritage 'A' designation in a natural state.
- Standard policies relating to the interpretation of boundaries should be included in the Plan. The Environmental Policies should also be referenced throughout the Plan, where appropriate.
- There is no public obligation either to redesignate or to purchase land if it includes a natural heritage feature that this Plan intends be conserved, or if there is an existing or potential natural hazard that affects the area.
- Development and site alterations shall be prohibited in significant wetlands, significant coastal wetlands and significant endangered or threatened species habitat.
- Development and site alteration shall not be considered on lands adjacent to the Natural Heritage 'A' designation unless it has satisfactorily met the requirements of the Environmental Impact Assessment section of the Plan.
- For the purposes of determining adjacent lands, they shall be those lands lying within 120 metres of any provincially significant wetland and within 50 metres of any significant endangered or threatened species habitat, any locally significant wetland or provincially significant area of natural and scientific interest (ANSI).
- Any approval shall be conditional upon enhancement and remediation measures which result in a net environmental gain to the City through such measures as remediation of degraded ecosystems, renaturalization of stream corridors, and creation of wildlife linkages and ecological buffer strips comprised of native plant and tree species.
- Building setbacks should be imposed in consultation with Cataraqui Region Conservation Authority or Ministry of Natural Resource staff from the margins of Natural Heritage lands based on the extent or sensitivity of the feature.
- An Environmental Impact Assessment (EIA) would be required prior to considering an application to redesignate lands adjacent to a Natural Heritage 'A' designation area. The designation of lands within a Natural Heritage 'A' area may only be changed with permission from the Ministry of Natural Resources. Recommended guidelines for the preparation of an EIA should be included in the Official Plan as an appendix. Suggested EIA guidelines are described in Appendix 'F' of this Report.

- Applications for development on existing lots of record will be considered in light of the goals, objectives and policies of this Plan, the comments of the appropriate approvals agencies, and the policies of the Implementation and Interpretation section.

### ***Natural Heritage ‘B’***

- Standard policies relating to the interpretation of boundaries should be included in the Plan. The Environmental Policies should also be referenced throughout the Plan, where appropriate.
- There is no public obligation either to redesignate or to purchase land if it includes a natural heritage feature that this Plan intends be conserved, or if there is an existing or potential natural hazard that affects the area.
- Development and site alterations are generally not permitted within the Natural Heritage ‘B’ designation. Development may be permitted subject to the Environmental Impact Assessment section of the Plan and an amendment to the Zoning By-law.
- Development and site alteration may be permitted on lands adjacent to the Natural Heritage ‘B’ designation subject to the Environmental Impact Assessment section of the Plan.
- For the purposes of determining adjacent lands, they shall be those lands lying within 50 metres of any significant woodland, significant valleyland or significant wildlife habitat.
- An Environmental Impact Assessment (EIA) would be required prior to considering an application to develop lands within or adjacent to a Natural Heritage ‘B’ designation. Those Natural Heritage ‘B’ features that are of interest to the Ministry of Natural Resources may only be redesignated with the Ministry’s permission. Recommended guidelines for the preparation of an EIA should be included in the Official Plan as an appendix to the Official Plan. Suggested EIA guidelines are described in Appendix ‘F’ of this Report.
- Council should encourage the preservation of good quality woodlots and tree stands as reflected in the policies of Section ‘\_\_\_’ of the Official Plan. In addition, areas of continuous woodlands particularly in association with wetlands represent an important wildlife habitat. The introduction of recreational trails or other uses that would disturb such areas will be discouraged unless it can be demonstrated to be in harmony with the natural environment.

### **Land Use Schedules**

It is recommended that Schedule(s) be included in the Official Plan that:

1. identify the boundaries of Natural Heritage ‘A’ and ‘B’ designations; and
2. are prepared at a reasonable scale to effectively depict natural heritage features.

The Ministry of Natural Resources should be contacted to obtain this information (#2) at the time that the plan is being updated to ensure that the schedules contain the most up-to-date

information. A map that identifies the nature of the Environmental/Natural Heritage feature would be made available at the municipal office.

The use of distinct designations for natural heritage and natural hazard lands has implications for the preparation of land use schedules. A method will need to be devised that will distinguish between the designations and identify lands that fall under both designations.

### **Environmental Impact Assessment**

Since an Environmental Impact Assessment may be required to satisfy policies in both the Natural Heritage 'A' and Natural Heritage 'B' designations, it is recommended that an appendix to the Official Plan be created that will outline the specific requirements for an Environmental Impact Assessment. The new text should be referenced in appropriate locations throughout the Plan. Recommended guidelines for the preparation of an EIA are described in Appendix 'F'.

### **Endangered and Threatened Species**

The exact location of the habitat of endangered and threatened species and other significant wildlife habitat is sensitive information, and therefore should not be included on the Schedules. Instead, a point representation (centroid of the one kilometre square region provided by the Natural Heritage Information Centre of the Ministry of Natural Resources (NHIC)) with a buffer around the point that would encompass its location can be illustrated on the Schedule to indicate a potential interest. If a proposal is found to be located in or adjacent to a habitat area of interest, NHIC should be contacted to determine the species that may be impacted. Since this information is subject to change, it will need to be verified each time development and/or site alteration is proposed.

### **Zoning By-law**

The implementing Zoning By-law should reflect the intent and policies of the new Official Plan. It is suggested that there should be a differentiation between Natural Heritage 'A' and Natural Heritage 'B' areas in the Zoning By-law.

### ***Water Setbacks***

It is recommended that the City of Kingston incorporate water setbacks into the implementing Zoning By-law to accomplish the following:

- (1) conserve natural habitat;
- (2) protect surface water quality;
- (3) avoid erosion hazards; and.
- (4) avoid flooding hazards.

(1)/(2)/(3) Natural Habitat / Surface Water Quality / Erosion Hazards

A 30 metre water setback is the generally accepted standard in eastern Ontario, as it supports the

intent of Sections 2.1 (Natural Heritage) and 2.2 (Water) of the 2005 Provincial Policy Statement. Thirty metres is recommended by the Ontario Ministry of Natural Resources because “it encompasses an area which, if developed without adequate controls, is reasonably likely to result in negative impacts on adjacent fish habitat” (Natural Heritage Reference Manual, 1999). The setback is measured from the high water mark.

The intent of the 30 metre setback is to provide a buffer of undisturbed soil and vegetation along the shoreline, which will help to filter overland runoff and near-surface groundwater flows, prevent soil erosion, and provide fish and wildlife habitat.

Setbacks for development adjacent to waterbodies must also take into consideration the potential for erosion over a period of 100 years. It is anticipated that a majority of erosion hazards in the City of Kingston would be adequately addressed by a 30 metre water setback from the high water mark; in those locations with greater potential for erosion (e.g. a steep till bluff along the Great Cataraqui River), Cataraqui Region Conservation Authority staff will provide site-specific recommendations.

A 30 metre water setback is also the generally accepted standard used in the absence of floodplain mapping to direct development away from areas that may be subject to inundation.

Based on all of the above factors, the inclusion of a provision similar to the following is recommended:

*Restrictions adjacent to high water mark:*

Where a floodplain has not been defined, no building shall be erected or altered within 30 metres of the high water mark. On lots of record existing at the date of adoption of this By-law, where the lot depth is insufficient to provide the 30 metre setback from the high water mark, such setback may be reduced to not less than 15 metres from the high water mark.

(4) Flooding Hazards

Information about the floodplain is available for selected areas across the City of Kingston. In our opinion, it is appropriate to utilize a setback from the floodplain as a factor of safety, since:

- the engineering models that are used to define the floodplain may change;
- variation along a watercourse or a shoreline, or events such as the accumulation of ice in the spring, or beaver activity, may result in greater flooding than anticipated by the models;
- the maximum recorded water elevation along the Rideau Canal may be exceeded; and/or
- the regulatory event (1:100 year) for this part of Ontario may change.

It is recommended that the current provision of the Zoning By-law 76-26 for the former Township of Kingston be enforced throughout the municipality, as follows:

*Restrictions adjacent to Floodplain:*

No building shall be erected or altered within 7.5 metres of a floodplain.

**Relationship Between the Provisions**

Within the City of Kingston there are a number of locations where a 30 metre setback from the high water mark does not encompass the regulatory (1:100 year) floodplain. A greater setback would be required for development in those locations. Alternatively, in those situations where a setback from the floodplain would be less than that from the high water mark, site characteristics may suggest that a 30 metre setback from the high water mark is warranted.

In order to address both of these circumstances, it is recommended that the greater of the two provisions should apply to a given development.

## **Appendix D. Recommendations for the existing Official Plan and Zoning By-law for Loyalist Township.**

The suggestions and mapping found in this appendix are one approach that Loyalist Township might consider when it proceeds to implement the findings of this Report through Official Plan and Zoning By-law Amendments.

### **Recommendation OP-1**

To provide clarification of terminology used, a definition for each of the natural heritage features identified within the Environmental Policies should be included in the 'Definitions' section (8.19) of the Official Plan (and Zoning By-law). The Plan currently contains a satisfactory definition for the term *wetlands*, which is consistent with the 2005 Provincial Policy Statement.

It is suggested that the definition of Areas of Natural and Scientific Interest (ANSI) be amended, and that definitions for the following terms be incorporated into the Official Plan: coastal wetland, natural heritage system, natural heritage features and areas, endangered or threatened species, forestry, wildlife habitat, woodlands, fish habitat, significant, surface water feature, valleylands, and watershed. Sample definitions are provided in Appendix 'E'.

For consistency, it is suggested that the Township consider using the same definition for *waterbody* in the Official Plan as is found in the Zoning By-law.

### **Recommendation OP-2**

A review of the Plan found inconsistencies regarding the description and designation of individual natural features between Sections 4.2.1, 4.2.2 and 4.2.3. The intent of these sections has been reviewed, and the following modifications are recommended:

The more stringent Section 4.2.2 (Environmental Protection) should include:

- significant Areas of Natural and Scientific Interest;
- regionally significant Areas of Natural and Scientific Interest;
- all wetlands that have been evaluated by the Ministry of Natural Resources;
- significant habitat of endangered and threatened species;
- lands having inherent environmental hazards such as poor drainage, organic soils, steep slopes, or that are subject to flooding, and/or erosion; and
- lands within 30 metres of the high water mark of a waterbody for which there is no floodplain mapping or fill line mapping.

The less stringent Section 4.2.3 (Environmentally Sensitive Areas) should include:

- significant woodlands;
- significant valleylands;
- unevaluated wetlands;
- lands within 120 metres of a provincially significant wetland;

- lands within 30 metres of an evaluated locally significant wetland;
- groundwater recharge/discharge areas;
- lands within 30 metres of fish habitat; and
- lands within 50 metres of: ANSIs, significant valleylands, significant wildlife habitat and significant habitat of endangered or threatened species.

### **Recommendation OP-3**

It is recommended that Schedule(s) be included in the Official Plan that:

1. identify the boundaries of Environmental Protection Areas and Environmentally Sensitive Areas; and
2. are prepared at a reasonable scale to effectively depict natural heritage features.

The Ministry of Natural Resources should be contacted to obtain this information (#2) at the time that the plan is being updated to ensure that the schedules contain the most up-to-date information. A map that identifies the nature of the Environmental/ Natural Heritage feature would be made available at the municipal office.

### **Recommendation OP-4**

The following text for Section 4.2.1 (replacing the first paragraph) is suggested to clarify/distinguish between the Environmental Protection Area designation and the Environmentally Sensitive Area overlay, and to relate the policies to the natural heritage system:

A natural heritage strategy encompasses an integrated landscape approach to identification, protection and rehabilitation of natural areas in a planning region.

Natural Heritage Systems are made up of natural features and areas (the most important of which are usually called ‘cores’), linked by natural corridors and restored linkages necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems. These ecological systems also function to help protect water resources, and to provide for flood damage reduction and the conservation of soil.

The Environmental Protection Area designation applies to lands that play an important role in the conservation of the natural heritage system of the Township and surrounding region. These lands include significant and regionally significant Areas of Natural Scientific Interest (ANSIs), all wetlands that have been evaluated by the Ministry of Natural Resources including significant coastal wetlands, significant habitat of endangered and threatened species, and lands within 30 metres of the high water mark of a waterbody for which there is no floodplain mapping or fill line mapping. This designation also includes natural hazard lands which may pose a threat to life and

property because they are prone to flooding, and/or erosion hazards, or have steep slopes, poor drainage, organic soils, or other similar physical limitations.

An Environmentally Sensitive Areas overlay identifies lands where development and site alteration shall not be permitted unless it has been demonstrated that there will be no negative impacts on the natural features or on their ecological function. These areas should be conserved in the long term. These lands include significant woodlands, significant valleylands, unevaluated wetlands, lands within 120 metres of a provincially significant wetland, lands within 30 metres of an evaluated locally significant wetland, groundwater recharge/discharge areas, lands within 30 metres of fish habitat, and lands within 50 metres of: ANSIs, significant valleylands, significant wildlife habitat and significant habitat of endangered or threatened species.

Since lands may be subject to more than one aspect of the environmental policies, this section, and all other relevant policies, should be read in its entirety.

### **Recommendation OP-5**

The following recommendations are presented for the EP designation in Section 4.2.2:

- Forestry is a permitted use in the EP designation. We have recommended a definition of “forestry” (see above), in part to ensure that site alteration in sensitive areas does not compromise their ecological integrity.

- It is recommended that the text of Section 4.2.2.2 (a) be amended to read:

Natural features such as significant woodlands have been identified by the Conservation Authority in a Natural Heritage Study of the Township. As new information becomes available about these features, the Official Plan should be amended accordingly.

- It is recommended that the text in the second paragraph of Section 4.2.2.2 (e) be revised to read:

There is no public obligation either to redesignate or to purchase land if it includes a natural heritage feature that this Plan intends be conserved, or if there is an existing or potential natural hazard that affects the area.

- It is recommended that the text of Section 4.2.2.2 (g) be revised to read:

Development and site alterations are not permitted in significant wetlands and significant endangered/threatened species habitat. In all other cases the construction of any building or structure, or the placing or removal of fill of any kind, whether originating on the site or elsewhere, shall not be permitted without the approval of the Township and the Conservation Authority.

- It is also recommended that the text in the first sentence of Section 4.2.2.2 (j) be amended to read: The use of Environmental Protection lands for stormwater management is prohibited.
- It is recommended that the following text/subsection be added to Section 4.2.2.2:
  1. Agricultural activities excluding new buildings and structures are permitted upon adjacent lands without the need for an EIA.
  2. Applications for development on existing lots of record will be considered in light of the goals, objectives and policies of this Plan, the comments of the appropriate approvals agencies, and the policies of Part 8.
  3. Land severances that have the effect of fragmenting the ownership of Environmental Protection Areas will be discouraged.

### **Recommendation OP-6**

Since an Environmental Impact Assessment (EIA) may be required to satisfy policies in both the EP and ES areas, it is recommended that an appendix to the Official Plan be created to outline the specific requirements for an Environmental Impact Assessment (i.e. Section 4.2.4). The new text should be referenced in appropriate locations throughout the Plan. Suggested EIA guidelines are described in Appendix 'F' of this Report.

### **Recommendation OP-7**

The Environmental Protection designation addresses both natural heritage and natural hazards interests, owing to the fact that they often occur in the same location, and since they are often connected by function. In order to address the dual purpose of the designation, municipalities often insert natural hazards policies under the EP section, and also ensure that:

1. the EP designation applies to areas not shown on the Schedules; and
2. there is a reference to the EP content in the General Development Policies.

Using this approach, it is recommended that the EP designation (Section 4.2.2) include text similar to Sections 5.4.4 (Flood Plain Mapping), and 5.4.5 (Flood and Erosion Prone Lands - Additions or Reconstruction).

### **Recommendation OP-8**

It is recommended that Section 4.2.2 include a general paragraph regarding natural hazards, such as the following:

Natural hazard lands may be unsafe for development because of their physical characteristics, and may pose a potential risk for loss of life, property damage, and social disruption if developed. Council, in consultation with the Conservation Authority, will

examine, from time to time, the need to upgrade and/or prepare mapping of natural hazards.

### **Recommendation OP-9**

It is recommended that additional text be added to Section 4.2.2 to discuss flood-prone areas, as follows:

In order to direct new development to areas outside of flood-prone lands, the EP designation includes:

- all lands within regulatory (1:100) year floodlines, as mapped by the Conservation Authority;
- along the shoreline of Lake Ontario, the regulatory (1:100 year) water elevation, plus a factor to account for wave uprush and other water-related hazards;
- areas within 30 metres horizontal of a waterbody, where engineered floodplain mapping has not yet been prepared; and
- other lands that are deemed to be subject to the regulatory (1:100 year) flood event.

Residents are encouraged to contact the Conservation Authority to confirm the location of the floodplain.

### **Recommendation OP-10**

It is recommended that additional text be added to Section 4.2.2 to discuss areas that are prone to erosion, such as the following:

Lands characterized by steep slopes can pose risks to persons and property as a result of potential slope instability or erosion. Development on steep slopes can have significant impacts on features such as fish and wildlife habitat, soils and vegetation, surface water quantity and quality, and wetlands.

The Township will direct development or site alterations away from lands identified as potentially being subject to erosion hazards. The Township should consult with the Conservation Authority with respect to lands that may constitute an erosion hazard.

Lot creation or development on a portion of a site having a steep slope and/or a potential erosion hazard shall require the submission of a geotechnical report, prepared by a qualified professional engineer, to ensure that the property is suitable for development. Such report shall be to the satisfaction of the Township and the Conservation Authority.

### **Recommendation OP-11**

The exact location of the habitat of endangered and threatened species and other significant wildlife habitat is sensitive information, and therefore should not be included on the Schedules.

Instead, a point representation (centroid of the one kilometre square region provided by the Natural Heritage Information Centre of the Ministry of Natural Resources (NHIC)) with a buffer around the point that would encompass its location can be illustrated on the Schedule ‘\_\_\_’ to indicate a potential interest. If a proposal is found to be located in or adjacent to a habitat area of interest, NHIC should be contacted to determine the species that may be impacted. Since this information is subject to change, it will need to be verified each time development and/or site alteration is proposed.

### **Recommendation OP-12**

Section 4.2.3.1 Permitted uses and Section 4.2.3.2 - *change references to schedules if needed.*

### **Recommendation OP-13**

The following recommendations are presented for Section 4.2.3.2 of the Plan:

- It is recommended that part (b) of the Plan be deleted. This Section states that “no change to this Plan is required to permit development in accordance with the abutting designation so long as the intent of Section 5.4 on Environmental Management is met.”
- In part (c), it is recommended that the phrase “where lands designated Environmentally Sensitive” be revised to “where lands are identified as being in the Environmentally Sensitive Area overlay”.
- Since the Environmentally Sensitive Areas form part of an overlay, it is not possible to redesignate them. It is recommended that section 4.2.3.1 (d) be deleted.
- Part (e) should be revised to read: Prior to considering any development or site alteration, within an area designated as Environmentally Sensitive, Council may require an Environmental Impact Assessment, in consultation with the Conservation Authority and other agencies, and in accordance with the requirements of Appendix ‘\_\_\_’ of this Plan (refer to Recommendation OP-6).

Loyalist Township has passed Zoning By-law 2001-38 (to implement the intent of its Official Plan). The following recommendations are made for Amendments to the By-law.

### **Recommendation ZBL-1**

- The By-law should provide the same definitions as in the Official Plan.

### **Recommendation ZBL-2**

- When comparing the Schedules of the Official Plan and Zoning By-law, we note that there is no differentiation between the Environmental Protection Areas and Environmentally

Sensitive Areas in the Zoning By-law (i.e. they are all placed in the restrictive Environmental Protection zone).

## Appendix E. Natural Heritage Definitions

The definitions listed in this appendix are derived from those found in the 2005 Provincial Policy Statement. The definition for *biodiversity* is derived from the Ontario Biodiversity Strategy.

*Adjacent lands* means those lands contiguous to a specific natural heritage feature or area where it is likely that development or site alteration would have a negative impact on the feature or area. The extent of the adjacent lands may be recommended by the Province or based on municipal approaches which achieve the same objectives.

*Adverse effects* as defined in the Environmental Protection Act, means one or more of:

- a. impairment of the quality of the natural environment for any use that can be made of it;
- b. injury or damage to property or plant or animal life;
- c. harm or material discomfort to any person;
- d. an adverse effect on the health of any person;
- e. impairment of the safety of any person;
- f. rendering any property or plant or animal life unfit for human use;
- g. loss of enjoyment of normal use of property; and
- h. interference with normal conduct of business.

*Agricultural uses* means the growing of crops, including nursery and horticultural crops; raising of livestock; raising of other animals for food, fur or fiber, including poultry and fish; aquaculture; apiaries; agro-forestry; maple syrup production; and associated on-farm buildings and structures, including accommodation for full-time farm labour when the size and nature of the operation requires additional employment.

*Areas of Natural and Scientific Interest (ANSI)* means areas of land and water containing natural landscapes or features that have been identified as having life science or earth science values related to protection, scientific study or education.

*Biodiversity* means the variability among living organisms from all sources including *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

*Coastal wetland* means any wetland that is located on Lake Ontario or the St. Lawrence River; or any other wetland that is on a tributary to Lake Ontario or the St. Lawrence River and lies, either wholly or in part, downstream of a line located 2 kilometres upstream of the 1:100 year floodline (plus wave run-up) of the Lake or River.

*Conserved* means the identification, protection, use and/or management of cultural heritage and archaeological resources in such a way that their heritage values, attributes and integrity are retained. This may be addressed through a conservation plan or heritage impact assessment.

*Development* means the creation of a new lot, a change in land use, or the construction of buildings and structures, requiring approval under the Planning Act, but does not include:

- a. activities that create or maintain infrastructure authorized under an environmental assessment process; or
- b. works subject to the Drainage Act.

*Ecological function* means the natural processes, products or services that living and non-living environments provide or perform within or between species, ecosystems and landscapes. These may include biological, physical and socio-economic interactions.

*Endangered or threatened species* means a species of fauna or flora that is listed or categorized as an “Endangered Species” or a “Threatened Species” on the Ministry of Natural Resources’ official species at risk list, as updated and amended from time to time.

*Fish habitat* means the spawning grounds and nursery, rearing, food supply, and migration areas on which fish depend directly or indirectly in order to carry out their life processes. The term *fish* includes fish, shellfish, crustaceans, and marine animals, at all stages of their life cycles.

*Forestry* means the proper implementation of harvest, renewal, and maintenance activities that are known to be appropriate for the sustained health of the forest, and for the ecological features and functions that it supports.

*Great Lakes - St. Lawrence River System* means the major water system consisting of Lakes Superior, Huron, St. Clair, Erie and Ontario and their connecting channels, and the St. Lawrence River within the boundaries of the Province of Ontario.

*Hydrologic function* means the functions of the hydrological cycle that include the occurrence, circulation, distribution and chemical and physical properties of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere, and water’s interaction with the environment including its relation to living things.

*Large inland lakes* means those waterbodies having a surface area of equal to or greater than 100 square kilometres where there is not a measurable or predictable response to a single runoff event.

*Natural heritage features and areas* means features and areas, including significant wetlands, significant coastal wetlands, fish habitat, significant woodlands south and east of the Canadian Shield, significant valleylands south and east of the Canadian Shield, significant habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest, which are important for their environmental and social values as a legacy of the natural landscapes of an area.

*Natural heritage system* means a system made up of natural features and areas, linked by natural corridors necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species, and ecosystems.

*Negative impacts* means

- a. in regard to water protection policies, degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive development or site alteration activities;
- b. in regard to fish habitat, the harmful alteration, disruption or destruction of fish habitat, except where, in conjunction with the appropriate authorities, it has been authorized under the *Fisheries Act*, using the guiding principle of no net loss of productive capacity; and
- c. in regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities.

*Net Environmental Gain*: means a relative increase in environmental features and natural system functions resulting from new development or new land uses or natural resource extraction rehabilitation over the long term.

*Recreation* means leisure time activity undertaken in built or natural settings for purposes of physical activity, health benefits, sport participation and skill development, personal enjoyment, positive social interaction and the achievement of human potential.

*River, stream and small inland lake systems* mean all watercourses, rivers, streams, and small inland lakes or waterbodies that have a measurable or predictable response to a single runoff event.

*Rural areas* means lands in the rural area which are located outside settlement areas and which are outside prime agricultural areas.

*Sensitive* in regard to surface water features and ground water features, means areas that are particularly susceptible to impacts from activities or events including, but not limited to, water withdrawals, and additions of pollutants.

*Significant* means

- a. in regard to wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time;
- b. in regard to the habitat of endangered species and threatened species, means the habitat, as approved by the Ministry of Natural Resources, that is necessary for the maintenance, survival, and/or the recovery of naturally occurring or reintroduced populations of endangered species or threatened species, and where those areas of occurrence are occupied or habitually occupied by the species during all or any part(s) of its life cycle;
- c. in regard to woodlands, an area which is ecologically important in terms of features such as species composition, age of trees and stand history; functionally important due to its contribution to the broader landscape because of its location, size or due to the amount of forest cover in the planning area; or economically important due to site quality, species composition, or past management history; and

- d. in regard to other natural features and areas, ecologically important in terms of features, functions, representation or amount, and contributing to the quality and diversity of an identifiable geographic area or natural heritage system.
- b. Criteria for determining significance may be recommended by the Province, but municipal approaches that achieve or exceed the same objective may also be used.

While some significant resources may already be identified and inventoried by official sources, the significance of others can only be determined after evaluation.

*Site alteration* means activities, such as grading, excavation and the placement of fill that would change the landform and natural vegetative characteristics of a site.

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

*Valleylands* means a natural area that occurs in a valley or other landform depression that has water flowing through or standing for some period of the year.

*Vulnerable* means surface and groundwater that can be easily changed or impacted by activities or events, either by virtue of their vicinity to such activities or events or by permissive pathways between such activities and the surface and/or groundwater.

*Waterbody* means any bay, lake, wetland, surface stream, or river where there is an identifiable depression in the ground in which a flow or ponding of water is regular or continuous and includes a channel for an intermittent stream and a municipal drain as defined by *The Drainage Act*, as amended.

*Watershed* means an area that is drained by a river and its tributaries.

*Wetlands* means lands that are seasonally or permanently covered by shallow water, as well as lands where the water table is close to or at the surface. In either case, the presence of abundant water has caused the formation of hydric soils and has favoured the dominance of either hydrophytic or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs, and fens. Lands being used for agricultural purposes, that are periodically "soaked" or "wet", are not considered to be wetlands in this definition.

*Wildlife habitat* means areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Specific wildlife habitats of concern may include areas where species concentrate at a vulnerable point in their annual or life cycle; and areas that are important to migratory or non-migratory species.

*Woodlands* means treed areas that provide environmental and economic benefits to both the private landowner and the general public, such as erosion prevention, hydrological and nutrient cycling, provision of clean air and the long-term storage of carbon, provision of wildlife habitat,

outdoor recreational opportunities, and the sustainable harvest of a wide range of woodland products. Woodlands include treed areas, woodlots or forested areas, and vary in their level of significance at the local, regional and provincial levels.

## Appendix F. Environmental Impact Assessments

The following text is suggested for the Environmental Impact Assessment section of the Official Plan:

In considering any development or site alteration adjacent to a Natural Heritage 'A' or Environmental Protection designated area, or within and adjacent to a Natural Heritage 'B' or Environmentally Sensitive designated area, Council, in consultation with the appropriate agencies, may require the proponent to undertake an Environmental Impact Assessment (EIA). The scale and subject matter of the EIA required will vary with the scale and type of development proposed. This shall be determined in pre-consultation with the Conservation Authority and the municipality prior to the EIA proceeding. Such a study shall:

- be prepared by a qualified professional who has been educated in, and has current knowledge of, biology, ecology, landscape ecology and any other relevant fields of study, as required, and who understands the natural heritage system of the region. The qualifications of the individual(s) who prepare the plan should be included as an appendix in the EIA;
- be consistent with the intent of the 2005 Provincial Policy Statement;
- for areas on and adjacent to the site, include descriptions and clearly legible, appropriately scaled maps of the existing land uses (i.e. land use designations and zoning), and the proposed development and site alteration, including all proposed buildings, structures, driveways and parking areas, and sources of human intrusion, light, noise, dust, etc.;
- on clearly legible, scaled maps, illustrate the precise location of **all** of the natural features and areas (regardless of whether evaluated, and not just those identified as provincially significant) on, or adjacent to the site;
- provide a thorough inventory of flora and fauna and related habitat communities (which is to be completed during the growing season, and preferably in more than one of spring, summer, and fall - additional field work may be required during the winter for specific attributes, for example, Deer wintering yards), as well as relevant information on soils and geology, slope, hydrology, and hydrogeology;
- include the best information available from others (including other agencies) regarding the items listed above, including regional natural heritage reports where they have been prepared;
- review the ecological functions of the natural features identified above, including the habitat needs of species that utilize adjacent lands, and an assessment of how the site contributes to the natural heritage system of the adjacent area and the municipality;
- discuss the significance of the natural features and areas identified above;
- predict the impacts of the proposed development and site alteration on the various attributes of the environment on and adjacent to the site, such as habitat, vegetation, soil, surface and

ground water, air, and any other relevant attributes, taking into consideration the sensitivity of the attributes, impacts both during and after construction, and where appropriate, the role of flooding and erosion hazards;

- predict the cumulative impacts of the proposal (and any other existing or known future proposals in the vicinity);
- evaluate the significance of all predicted positive and negative impacts on the environment;
- recommend extents of land where: (1) disturbance must be avoided, and (2) disturbance must be limited, in order to maintain the natural features and ecological functions of the area, supported by a detailed rationale;
- explore opportunities for enhancement of the natural heritage system;
- review alternative development options, and recommend measures that could be implemented to avoid or mitigate the predicted negative impacts (e.g. timing of work, fencing, erosion and sediment control, pathway routing, etc.) of the development proposed (i.e. Why is the development form proposed the most appropriate and what are the best measures available to protect the features of the site?);
- identify any measures needed to monitor the mitigation measures and to assess the long-term impacts associated with the proposal; and
- conclude with an independent professional opinion as to whether or not impacts of the development and site alteration are negative, and whether the development proposal is consistent with the intent of the 2005 Provincial Policy Statement.

Sensitive information regarding the habitat of endangered or threatened species, or the habitat of other species at risk, shall be utilized and considered by the author, but shall not be shared in a manner that could further endanger the species or its habitat.

Changes to the boundary of an evaluated Area of Natural and Scientific Interest or wetland shall be subject to the approval of the Ministry of Natural Resources.

The completion and acceptance of an EIA shall not guarantee that a development or site alteration proposal will automatically be permitted. Input from other agencies may be required, and Council or their designate have approval authority for applications under the Planning Act. Any approved development or site alteration shall occur in accordance with the recommendations of the approved EIA. The recommendations would normally need to be implemented through a subdivision, site plan or development agreement between the proponent and the municipality. The municipality may require that the proponent/applicant provide funds to be held in reserve for the purpose of long-term monitoring, which may occur following the completion of the development or site alteration.

## **Appendix G. Existing Stewardship and Restoration Programs**

This appendix identifies a variety of the current and previous stewardship and restoration programs that are offered in the Central Cataraqui Region.

### Cataraqui Region Conservation Authority Forestry Program

The Cataraqui Region Conservation Authority (CRCA) manages a forestry program with a variety of funding sources.

The CRCA Reforestation Assistance Program operates on a 100% cost recovery basis. The program includes a site assessment, assistance with field preparation, and follow-up evaluations.

Landowners may purchase trees through the Over the Counter Tree Program. This program is also operated on a 100 % cost recovery basis, and requires a minimum 500 tree (50/bundle) order. There is also a plantation/deciduous tree replacement program.

Throughout the entire CRCA jurisdiction, private wetland stewardship initiatives may be funded through the Wetland Habitat Fund at a 50% grant rate. Within the Wilton Creek/Hay Bay Watershed, a 60% grant rate is available through the Habitat Enhancement Program.

Reforestation opportunities also exist through Forest 20/20, which is funded by the Government of Canada. The project would result in fast growing tree species being planted on a minimum of 2 hectares. The landowner must contribute \$550 per hectare, and sign a 15 year maintenance contract. The landowner will own the trees, while the federal government will retain the carbon credits.

The Lennox & Addington and Frontenac Stewardship Councils, local school boards and the CRCA participate in the Trees for Peace program.

### Lennox & Addington Stewardship Council

The Lennox & Addington Stewardship Council has been involved in a number of projects including:

The local Recovery Action Group of the Eastern Ontario Loggerhead Shrike Recovery Program is involved in the restoration of damaged shrike habitat, and raising awareness on the importance of the species (e.g. Shrike Road Signs in Township of Stone Mills).

The Stewardship Council and Ontario Hydro created a partnership to complete the Lennox Generation Station Wetland Enhancement Project. The purpose of the project was to enhance and protect this unique wetland, and to enlarge its vegetated buffer.

Best management practices were developed and restoration plans prepared as part of the Wilton Creek Restoration Plan.

### Frontenac Stewardship Council

The Frontenac Stewardship Council has also been involved in a number of projects, including the Forest Recovery Assistance Program and the Little Creek Naturalization Project (1997).

## Appendix H. Public Consultation

This appendix includes a copy of the public meeting notice, public service announcement, and handout materials for each round of consultation sessions.

# PUBLIC INFORMATION SESSION

# REGIONAL NATURAL HERITAGE STUDY

The municipalities of Loyalist Township and the City of Kingston are initiating the **Central Cataraqui Region Natural Heritage Study**. This study will identify:

- a system of natural features and areas, such as woodlands, wetlands and significant wildlife areas
- potential areas of concern
- ways to protect these natural resources

**Attend any one of four similar sessions:**

<b>April 19</b>	Kingston City Hall (Memorial Hall)	216 Ontario St., Kingston
<b>April 21</b>	Amherst Island Public School	5955 Front Rd, Stella
<b>April 25</b>	Glenburnie Fire Hall	1485 Unity Rd., Glenburnie
<b>April 28</b>	Loyalist Township Council Chambers	263 Main St. (Hwy. 2), Odessa

**All sessions are held from 5:30 to 8:30 p.m.**

- A brief presentation will be held at 7:00 p.m.
- Question periods will be held after the presentation
- Information displays and knowledgeable staff will be available

Come share ideas and learn about our natural heritage.

**For more information, call or e-mail:**  
**Christine Woods**, Ecological Planner  
Cataraqui Region Conservation Authority  
(613) 546-4228 ext. 235 Mailbox@cataraquiregion.on.ca



CATARAQUI REGION  
CONSERVATION AUTHORITY  
in partnership with







A **Public Service Announcement**  
from the  
**Cataraqui Region**  
**Conservation Authority**

6 April 2005

## Public meetings scheduled for Kingston, Loyalist

Four public meetings are scheduled to present background information and the initial findings of the Central Cataraqui Region Natural Heritage Study to City of Kingston and Loyalist Township residents.

The municipalities are partnering with the Cataraqui Region Conservation Authority which provides the necessary professional expertise. The study identifies natural features such as woodlands, wetlands and significant wildlife areas, areas of concern and ways to protect them.

Residents of the municipalities are invited to attend any of the meetings. Attendance is welcome any time between 5:30 and 8:30 p.m. The meetings are scheduled for:

April 19, Kingston City Hall (Memorial Hall), 216 Ontario Street, Kingston;

April 21, Amherst Island Public School, Stella;

April 25, Glenburnie Fire Hall, 1485 Unity Road, Glenburnie; and

April 28, Loyalist Township Council Chambers, 263 Main Street, (Hwy. 2) Odessa.

Each meeting features informational displays and a brief presentation at 7 p.m. followed by a question period. Knowledgeable staff will be there to answer questions.

Study findings eventually will be reflected in appropriate municipal official plans and zoning bylaws. Provincial legislation requires planning authorities to protect significant natural heritage features and areas.

**For more information call:**

Christine Woods, Ecological Planner

(613) 546-4228, Ext. 235

# CENTRAL CATARAQUI REGION NATURAL HERITAGE STUDY

## BACKGROUND INFORMATION AND INITIAL FINDINGS SPRING 2005

### INTRODUCTION

The CRCA has started a Regional Natural Heritage Study to identify a system of natural features and areas, including wetlands, woodlands and significant wildlife areas. The findings will assist in updating official plan policies for the City of Kingston and Loyalist Township. The study area includes all urban and rural lands located within the municipal boundaries of the two municipalities.

The **purposes** of this initial Natural Heritage Study are:

1. to identify a 'broad-brush' system of features and areas that supports biodiversity within the City of Kingston and Loyalist Township, with attention to the surrounding area, and
2. to suggest ways in which each of the municipalities, in consultation and partnership with the community, might develop a strategy to protect and enhance the habitats and biological diversity of that system.

The Natural Heritage Study is a good news story. Unlike many areas of southern Ontario, there are relatively healthy natural communities still intact in the Loyalist and Kingston area. This is good for the local community; it not only provides a healthy environment in which to live and helps protect precious water resources, but also is an attraction for tourism and related economic benefits. An array of natural heritage features allows for recreational activities such as hiking and walking.

Natural stream corridors and hedgerows link the larger landscape features (wetlands, ravines, forests, and grasslands) to form a connected web of landforms and habitats that are home to a diverse wildlife community.

### BACKGROUND

The Provincial Policy Statement (PPS) outlines the Province's interests in land use and development. These policies must be reflected in local planning documents, such as the Official Plan and Zoning By-law. The PPS requires planning authorities to protect significant natural heritage features and areas by restricting development and site alteration, and by demonstrating that the features and ecological function of the areas will not be harmed. This is done normally through the preparation of an environmental impact assessment by a qualified individual.

Examples of natural features and areas include: wetlands, fish habitat, woodlands, habitat of endangered species and threatened species, and areas of natural and scientific interest.

Loyalist Township has a recently approved Official Plan. It includes mapping and policies for selected natural heritage areas previously studied at the time of Official Plan preparation. However, it must now consider other features. The council is looking to review and update the Plan.

The study will form an important component of the new Official Plan for the City of Kingston. The City currently uses three different Official Plans.

### **WHICH NATURAL AREAS ARE MOST IMPORTANT?**

The first step was to gather and map existing information about natural heritage features and areas. A set of criteria was developed, and applied to the data collected, to assess the significance of the features and areas.

### **NEXT STEPS**

#### **1. Field Checks**

The next step is to verify the information that we have by conducting field checks. In most situations these checks will not require entering onto private lands. Permission must be obtained from landowners prior to accessing private property. The field checks may include:

- confirmation of the habitat of species of conservation concern and significant wildlife habitat,
- examination of potential old growth forest locations, and
- other questions that cannot be readily addressed using mapping or other tools.

#### **2. Recommendations**

Once all of the field data has been analyzed, recommendations for land use planning and stewardship activities that will maintain and enhance the Central Cataraqui Region natural heritage system will be presented to the community and each of the municipalities.

Completion of this project will help both municipalities to make informed decisions on the natural heritage components of the Provincial Policy Statement.

The project is not just about land use planning. Stewardship, education, and restoration of impaired habitats are also important components.

**FEEDBACK WANTED** - Your input is important to the success of this study. Please take a moment to complete the attached Feedback Form on the initial findings and options of the Central Cataraqui Region Natural Heritage Study.

A second information session will be held in the **fall of 2005** to gather feedback on a set of draft recommendations for the Study.

Additional information on the Natural Heritage Study can be obtained from:

Christine Woods, Ecological Planner  
Cataraqui Region Conservation Authority  
1641 Perth Road, P.O. Box 160  
Glenburnie, ON K0H 1S0  
Fax: (613) 547-6474  
E-mail: [mailbox@cataraquiregion.on.ca](mailto:mailbox@cataraquiregion.on.ca)



**CENTRAL CATARAQUI REGION NATURAL HERITAGE STUDY**

**COMMENT FORM**

**Open House - Background Information and Initial Findings**

April 2005

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**The CRCA has started a Regional Natural Heritage Study to identify a system of natural features and areas, including wetlands, woodlands and significant wildlife areas. The findings will assist in updating official plan policies for the municipalities.**

1. Official Plans in the past showed **wetland areas** where development was discouraged. The new Provincial Policy Statement implements stronger policies to protect these areas. Is your property affected by these wetlands?

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If so, do you have information about the wetlands that you would like included in the study.

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2. The Provincial Policy Statement now requires that municipalities analyze their wooded areas, and decide on criteria to assess the **wooded areas**, to determine what areas are significant. The map shows areas which are considered to be significant, based primarily on criteria about size of wooded area, slope, habitat, and connections to other natural features and areas. Is your property affected by woodlands?

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If so, do you have information on the species of trees on your property and the age of the trees that can be added to the data base?

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3. Provincial policies also require municipalities to examine **endangered and threatened species**. The mapping shown reflects the general areas where a threatened or endangered species has been reported. Are you aware of any such reportings on your property?

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If so, do you have information on the endangered and threatened species or other wildlife sited on your property that can be added to the data base?

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*Continued on back of page*

4. Are there other aspects of the presentation or plans that you wish to comment on?

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Please provide your contact information if you wish to be kept informed of the recommendations and implementation of this study.

Name

Organization (if applicable)

Address

E-mail (if applicable)

Please place this completed form in the box provided at the meeting, or return by **May 13, 2005** to:

Christine Woods, Ecological Planner  
Cataraqui Region Conservation Authority  
1641 Perth Road, P.O. Box 160  
Glenburnie, ON K0H 1S0  
Fax: (613) 547-6474  
E-mail: mailbox@cataraquiregion.on.ca

***THANK YOU FOR COMING TO THE MEETING AND PROVIDING COMMENTS!***

Personal information collected as a result of this public information meeting is collected under the authority of the ***Municipal Act*** and will be used to assist in making a decision on this matter. All names, addresses, opinions and comments collected may be made available for public disclosure. Questions regarding this collection should be forwarded to Christine Woods, Ecological Planner, CRCA (613) 546-4228 extension 235 or at: mailbox@cataraquiregion.on.ca

**Participants were asked to fill out a comment form. The following is a summary of the responses received on the form. Each letter corresponds to an individual's response.**

1. Official Plans in the past showed wetland areas where development was discouraged. The new Provincial Policy Statement implements stronger policies to protect these areas. Is your property affected by these wetlands? If so do you have information about the wetlands which you would like included in the study?

- A. I'm interested in protecting "Mile Square Land Block" – CNR, Coronation Blvd, Taylor Kidd, Collins Creek, as much as possible (875 acre forest, old growth, interior, wildlife corridor b/n bath road (lake Ontario) and north to princess St./401 along Collins creek, alvar along creek bed, nesting grounds for great blue heron, and henslow sparrow (along meadow CNR track). There are Great Blue Heron nesting grounds on my property.
- B. When was MNR mapping for wetlands created? Updated? Landscape features map should clarify difference between PSWs, evaluated and unevaluated wetlands and their significance on local and regional scales if applicable. How are PSW boundaries defined? – especially when adjoining other wetland, landscape features map should also show coastal wetland and clearly differentiate these from other classifications.
- C. No, but as part of the overall area then yes.
- D. Yes, indirectly affected by Little Cataraqui Creek, City of Kingston has done nothing to protect this wetland (new Hyundai dealership is an example...). KFN "Report on LCC Wetland..." data should be acknowledged and included in study.
- E. No response.
- F. Our property is not in this study area.
- G. No.
- H. No.
- I. Yes.
- J. Not directly, beauty and wildlife we enjoy. D.U. area west end and south end.
- K. Yes.

2. The Provincial Policy Statement now requires that municipalities analyze their wooded areas, and decide on criteria to assess the wooded areas, to determine what areas are significant. The map shows areas which are considered to be significant, based primarily on criteria about size of wooded area, slope, habitat, and connections to other natural features and areas. Is your property affected by woodlands? If so, do you have information on the species of trees on your property and the age of the trees that can be added to the data base?

- A. Mile Square Land Block – definitely. Private ownership though of 10 plus individuals in it strictly for development phase 3 - \$\$ Can you please check for old growth forest, the forest is very old – I think it's possible for the trees to be considered old growth.
- B. Quality characteristics such as species composition should be included in significance criteria/evaluation, how is old growth defined? Does this actually exist in Kingston? Maps should maintain the term 'significant' to be consistent with PPS. Wary of a 4-tiered significance system, what have other municipalities used as the significance threshold 10 or

12 points? Do not wish to downplay actual quantity of significant woodlands w a 4-tiered system.

- C. No response.
- D. Yes, indirectly through wooded areas west of Portsmouth Avenue, between Princess and Bath. (near property), closest woods to Portsmouth Avenue are over-run by buckthorns and garlic mustard (this woodland was shown on map to have “significant species” present).
- E. No response.
- F. No response.
- G. Yes.
- H. Yes, probably.
- I. No.
- J. Not directly, center ridge running east/west – great habitat, deer.
- K. Yes.

3. Provincial policies also require municipalities to examine endangered and threatened species. The mapping shown reflects the general areas where a threatened or endangered species has been reported. Are you aware of any such reportings on your property? If so, do you have information on the endangered and threatened species or other wildlife sited on your property that can be added to the data base?

- A. Yes; Henslow sparrow. Also, with its dense interior, other wildlife (endangered) could exist.
- B. Hatching of woodlands map should not occur unless the significant species relies on a woodland habitat. Hatching on woodlands map should not appear in final version because when overlaid with other maps will result in confusion and double counting. Should deer wintering yards still require protection?
- C. No.
- D. No response.
- E. No response.
- F. No response.
- G. No.
- H. No.
- I. No.
- J. No. Migratory bird layover on Bay, both sides.
- K. Yes. Virginia White Butterfly (annual in spring), Loggerhead shrike (not in last 5 years), Black rat snake (rare).

4. Are there other aspects of the presentation or plans that you wish to comment on?

- A. Please check for alvar along Collins creek, floral and faunal features observed: Significant species/species of concern – Henslow sparrow, Bird nesting sites (colonies, waterfowl, landbird, shorebird), Bird migratory stopover and staging areas (colonies, waterfowl, landbird, shorebird), Bat hibernacula, Winter deer yards, Turkey vulture summer roosting areas, Reptile hibernacula, Bullfrog concentration areas, Migratory butterfly stopover areas.

- B.** Presenting % of tree cover may lead people to believe that there are no issues with natural heritage protection in Kingston and therefore no strategy, policies, or actions are required (now presented as 34% coverage in rural area that has increased over time).
- C.** Have planted nearly 380 trees and bushes, primarily native to eastern Ontario, old growth trees are found in Pentland Cemetery – cedars from 1860-1870 planted by Daniel Fowler (died 1898).
- D.** Considering how much more info CRCA “intends to add” to the study, I’m surprised that there isn’t going to be another public meeting about it; especially since all the info “to be added” is stuff that isn’t as widely available (ex. Through MNR, BSC, Environment Canada, CRCA, etc.), why can’t the public comment on results of info gathered through this type of survey. Also, NHS is a “good news story” only if City of Kingston takes it seriously, will it form an “important component” of the new Official Plan?
- E.** Following the field checks and before the final recommendations are presented there should be another open house to review the mapping based on complete data set.
- F.** I would like to see more emphasis on connecting woodland areas to promote gene change (genetic diversity)
- G.** Excellent work. Keep it up.
- H.** No response.
- I.** No response.
- J.** Thank you for input, Nut Island has a great diversity of flora and fauna – should be reviewed.
- K.** No response.

# SECOND PUBLIC CONSULTATION SESSION REGIONAL NATURAL HERITAGE STUDY

The municipalities of Loyalist Township and the City of Kingston have completed the Central Cataraqui Region Natural Heritage Study. This study identifies:

- a system of natural features and areas, such as woodlands, wetlands and significant wildlife areas; and
- recommendations to maintain these natural features.

## Attend any one of the public consultation sessions:

<b>June 20</b>	Amherst Island Public School	5955 Front Rd., Stella
<b>June 22</b>	Cataraqui Community Centre	1030 Sunnyside Rd., Kingston
<b>June 27</b>	Loyalist Township Municipal Offices	263 Main St. (Hwy. 2), Odessa

**All sessions run from 6 to 8 p.m. Brief presentation at 7 p.m.**

- Questions will be answered after the presentation
- Information displays and knowledgeable staff will be available

Come share ideas and learn about our natural heritage.

For more information, call or e-mail:  
Christine Woods, Ecological Planner  
Cataraqui Region Conservation Authority  
(613) 546-4228 ext. 235 woods@cataraquiregion.on.ca





A **News Release**  
from the  
**Cataraqui Region**  
**Conservation Authority**

12 June 2006

## Natural Heritage study nears completion public consultation meetings called

**Kingston** - The Cataraqui Region Conservation Authority (CRCA) is inviting public feedback concerning a natural heritage study conducted for Kingston and Loyalist Township.

“The study’s basic purpose is to ensure that official plans for Kingston and Loyalist Township are consistent with the provincial planning policy concerning land use planning,” explains CRCA Ecological Planner Christine Woods.

The study has been completed by the CRCA on behalf of the municipalities. The conservation authority’s role is that of consultant because of its environmental expertise.

The provincial planning policy Ms. Woods mentions outlines Ontario’s interests in land use and development. Those interests must be reflected in local planning documents such as official plans and zoning bylaws. The policy requires that significant natural heritage features be protected by restricting nearby development or site alteration.

A natural heritage study identifies natural features and areas. These include: wetlands, fish habitat, woodlands, endangered species habitat and areas of natural and scientific interest (ANSI). The study covers all rural and urban lands within Kingston and Loyalist Township.

The public may learn more and offer comments at any of three public consultation sessions:

**June 20:** Amherst Island Public School, 5955 Front Road, Stella;

**June 22:** Cataraqui Community Centre, 1030 Sunnyside Road, Kingston; and

**June 27:** Loyalist Township municipal offices, 263 Main Street, Odessa.

All meetings run from 6 to 8 p.m. with a brief presentation at 7 p.m.

Work on the project began in the fall of 2004. In the spring of 2005, it was introduced to residents of the two municipalities at public consultation meetings.

“Since then, we’ve been refining the criteria used (for evaluating natural heritage features) and the maps as well as finishing our report that contains recommendations for policies and stewardship,” says Ms. Woods.

So why does this study matter?

“The municipalities can use the information to guide development,” says Ms. Woods. “The information can also be used to direct stewardship and rehabilitation efforts.”

Ms. Woods says such studies are becoming more common.

“There have been a few natural heritage studies done in south-western Ontario in reaction to development, and natural heritage features are stressed by development,” she says. “However, Kingston and Loyalist are proactive and are not waiting until natural features are gone before acting.”

This project was overseen by two committees. A technical steering committee included staff from both municipalities as well as the Ministry of Natural Resources and Ministry of Municipal Affairs and Housing. A public advisory committee included representation from developers, agriculture, the academic community, environmental groups, the general public and municipal councillors.

For more information, check the CRCA website at: [www.cataraqueiregion.on.ca](http://www.cataraqueiregion.on.ca).

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**For more information contact:**

**Christine Woods, Ecological Planner**

**(613) 546-4228 Ext. 235**

## **The Central Cataraqui Regional Natural Heritage Study A Plain Language Summary**

The Central Cataraqui Regional Natural Heritage Study provides data for municipal planners in Kingston and Loyalist Township to update policies guiding new development to minimize its impact. It identifies systems of natural features and areas including wetlands, fish habitat, woodlands, endangered and threatened species habitat and areas of natural and scientific interest (ANSI). This facilitates revising official plans and zoning bylaws.

Study findings will enable the municipalities' planning documents to reflect new provincial planning policies. These outline the provincial interest in, and limits on, land use and development. Ontario's planning policy statement obliges planning authorities to protect significant natural heritage features and areas by restricting some development or site alteration.

Unlike some areas of the province, relatively healthy, intact, natural communities thrive within the two municipalities. Further, natural corridors form a web of landforms and habitats contributing to regional biodiversity.

Anticipated benefits and subsequent actions by the study partners include: maintenance of a healthy and aesthetically pleasing environment, protection of water resources and preservation of natural attractions. Protecting natural features preserves traditional activities such as fishing, hunting, kayaking, canoeing, hiking and camping.

Public consultation was key throughout the process. The study was managed by a technical steering committee. A separate advisory committee represented the interests of environmental groups, woodlot owners, agriculture and developers and the general public. Two rounds of public consultation meetings provided eight opportunities for public comment. The Cataraqui Region Conservation Authority served as study consultant.

This study provides recommendations for stewardship initiatives to maintain and enhance the natural heritage system. In fact, the study helps identify priority locations for stewardship and rehabilitation efforts.

Other recommendations call for:

- Municipal bylaws to address woodland conservation, fill regulation and landscaping guidelines;
- Public acquisition of ecologically sensitive lands;
- Plans to manage ecologically sensitive areas and to encourage rehabilitation;
- Private sector involvement in stewardship and restoration programs; and
- Regular maintenance of the database and mapping to provide current data to decision makers.

Benefits for residents of the municipalities include:

- Study findings will help residents understand and appreciate natural features on their properties;
- These findings also may point property owners toward stewardship initiatives;
- Study findings will provide certainty for anyone interested in land acquisition; and
- Stewardship service providers may discover and fulfill new needs.

The study concludes with this observation: “The quality of our lives is dependent on the quality of our environment . . . when making land use decisions, whether through municipal planning or private land management, consideration must be given to the broader perspective of ensuring long-term ecological health.”

**For more information contact:**

**Christine Woods, Ecological Planner**

**546-4228, Ext. 235**

[woods@cataraquiregion.on.ca](mailto:woods@cataraquiregion.on.ca)



**CATARAQUI REGION  
CONSERVATION AUTHORITY**



Central Cataraqui Region  
**Natural Heritage Study**

**COMMENT FORM**

June 2006

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**The CRCA has completed a Regional Natural Heritage Study that identifies a system of natural features and areas, including wetlands, woodlands and significant wildlife areas. The findings will assist in updating official plan policies for the participating municipalities. They may also be used to promote stewardship programs in the region.**

Are there aspects of the report or presentation on which you wish to comment?

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The 2005 Provincial Policy Statement requires that natural features and areas, such as wetlands, woodlands, and habitat, be protected for the long term. It also promotes improving linkages between these features and areas.

Some landowners in Loyalist and Kingston work with organizations such as the Cataraqui Region Conservation Authority to implement stewardship actions on their properties.

Would you, as a landowner, be interested in participating in a stewardship program to enhance natural features such as wetlands and woodlands on your property?

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*Continued on other side*

The mapping and recommendations that come out of this study will be incorporated into the municipalities' planning policies. You will have an opportunity to comment on the changes to the Official Plan and Zoning By-law in the future.

Please provide your contact information if you wish to be contacted about potential stewardship program opportunities or future meetings relating to proposed official plan amendments.

Name

Organization (if applicable)

Address

E-mail (if applicable)

Please place this completed form in the box provided at the meeting, or return by **July 14, 2006** to:

Christine Woods, Ecological Planner  
Cataraqui Region Conservation Authority  
1641 Perth Road, P.O. Box 160  
Glenburnie, ON K0H 1S0  
Fax: (613) 547-6474  
e-mail: woods@cataraquiregion.on.ca

***THANK YOU FOR COMING TO THE MEETING AND PROVIDING COMMENTS!***

Personal information collected as a result of this public information meeting is collected under the authority of the Ontario ***Municipal Act*** and will be used to assist in making decisions on this matter. All names, addresses, opinions and comments collected may be made available for public disclosure. Questions regarding this collection should be forwarded to Christine Woods, Ecological Planner, CRCA (613) 546-4228 extension 235 or at: woods@cataraquiregion.on.ca

**Participants were asked to fill out a comment form. The following is a summary of the responses received on the form. The responses have been broken down into five categories: general comments, implementation, data, communications, and follow-up.**

### 1. General Comments

- Excellent work, provides decision makers with reliable recent information on which to base decisions.
- On the whole you have all done great work on this study, Thank you.
- This is a good solid study. Incorporation of the recommendations by the municipalities will be crucial. A huge task well done, Thank you.
- Excellent work – the City had better use these guidelines.
- Absolute necessity to preserve “old growth” on Amherst Island in woodlands along roads.
- The Study is thorough, has identified most of the region’s areas and features of environmental importance and is proposing positive and meaningful policy options to preserve what we have and expand where opportunities exist.

### 2. Implementation

- Hope that the new official plan incorporates these ideas.
- Hope that the CRCA has some grit in defending the principles.
- Mechanisms for protecting the corridors will be extremely important.
- Please make it as difficult as possible for significant woodlands to disappear to development.
- Stewardship appears to be for big landowners, yet more and more large parcels of land are being sold. Therefore small (acre and under) land owners should be encouraged to 1) plant trees and bushes native to the area not hybrid plants. 2) Preserve a portion of all waterfront properties as natural reserves, encourages wild life to stay, return and propagate – even in an area that is built up.
- The study should become one of the major inputs for the two participating municipalities as they develop updated official plans and bylaws that reflect the environmental concerns of the regional population and the intent of the 2005 Provincial Policy Statement.
- New Environmental bylaws in our region must be clear, and must be backed up by competent enforcement.

### 3. Data

- Recent sighting report to NHIC of Least Bittern and Milksnake provided.
- Figure 4B significant woodlands, this mapping is dated 2006 however, I understand that the data is 2004. Since 2004 there has been clear cutting on a number of properties. If the maps are dated 2006 then perhaps the mapping should be updated to reflect clear cutting on properties (example properties listed).
- On Map 3b (landscape features). I noticed that an ANSI is represented by a dot – west of highway 15 and just north of Highway #401. Also there is a blocking identifying an ANSI between Highway 15 and Highway #401. Are there two distinct and separate ANSI’s? Also given that an enormous amount of fill being dumped off Highway #15 escarpment into what appears to be an ANSI area – is this defined ANSI still correct?

#### 4. Communications

- Recommendation regarding public notice – use Beacon and local radio.
- Great Maps, please have them on your website with your presentation tonight.

#### 5. Information Follow Up

- What municipalities currently have significant woodland conservation bylaws? Halton does – do others?

## Figures