COUNTY of Frontenac

COUNTY OF FRONTENAC

NATURAL HERITAGE STUDY FINAL REPORT

December 2012

DILLON CONSULTING

Submitted by:

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December 11, 2012

County of Frontenac
2069 Battersea Road
Glenburnie, Ontario
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Attention: Mr. Peter Young, Community Planner

Re: Final Natural Heritage Study Report

Dear Mr. Young:

We are pleased to provide you with a copy of the final Natural Heritage Study Report. This report provides relevant information collected during each of the three phases of the County's Natural Heritage Study. The information summarizes the County's natural heritage system, protection requirements and associated policies to protect important natural features.

Once you have reviewed the material and approve of its' release, we can provide the necessary printed copies as well as electronic file. Should you have any questions, please do not hesitate to contact me at menright@dillon.ca or 905-901-2912.

Yours sincerely,

DILLON CONSULTING LIMITED

Mike Enright, IRMT, B.Sc.
Associate, Project Manager

Encl.

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Introduction

The need for and priority placed on the development of solid information and policies addressing natural features in the County of Frontenac (County) have been recognized by the County Council though its' adoption of the Integrated Community Sustainability Plan (ICSP). The ICSP identifies the need for a Natural Heritage Study (NHS) as a key priority project in achieving a sustainable future. In early 2012, the County of Frontenac retained Dillon Consulting Limited (Dillon) to undertake this NHS.

The goals of the NHS, as identified by the County of Frontenac include:

- To increase the understanding of natural heritage features and systems across the Frontenacs;
- To develop land use planning information and policies that identify, protect, and enhance the County's natural heritage features and systems in manner that meets or exceeds provincial direction;
- To encourage and facilitate private stewardship, partnerships between organizations, and public education;
- To protect the relationships between plant and animal communities; and
- To recognize the links between natural heritage features and systems.

The NHS was undertaken in three phases including:

- Phase 1 – Background Review, Public Consultation and Scoping
- Phase II – Natural Heritage System Mapping and Analysis

- Phase III – Policy Development and Public Consultation

This report summarizes the results of each phase of the study. Specifically, this report will provide the following for each phase of the project:

Phase I

- Information on the agencies and stakeholders contacted;
- Documentation/Geographic Information System (GIS) files reviewed;
- Methodology for carrying out the NHS;
- Information defining significance of natural heritage features;
- Comparative assessment of existing Frontenac Township Official Plans; and
- Feedback received during the first public consultation event.

Phase II

- Natural Heritage System Map
  - Areas of Biodiversity
  - Natural Linkages
- Field Work
- Quantity and Quality of Natural Heritage System
- Targets and Performance Measures
- Information Gaps and Recommendations for Improving Conservation Measures

Phase III

- Natural Heritage Strategy
- Official Plan Policy
  - Wetlands
  - Areas of Natural and Scientific Interest
  - Wildlife Habitat
  - Fish Habitat
  - Endangered and Threatened Species
  - Woodlands
  - Valleylands
  - Linkages and Biodiversity Areas
  - Mineral Aggregate Operations
  - Environmental Impact Study
- Collaboration and Partnership
- Performance Measures

Phase I – Background Review, Public Consultation and Scoping

Agencies and Stakeholders Contacted

There are four different Conservation Authorities operating in the County including Quinte Conservation, Cataraqui Region Conservation Authority, Rideau Valley Conservation Authority and Mississippi Valley Conservation. In addition, two Ontario Ministry of Natural Resources (MNR) Districts (Peterborough and Bancroft), overlap the County of Frontenac. Within the County there are four Townships including North Frontenac, Central Frontenac, South Frontenac and Frontenac Islands. Several non-governmental organizations such as Ducks Unlimited, Queen's University (Biology Station), Friends of Salmon River, Kingston Field Naturalists and Nature Conservancy also operate within the County.

Documentation/GIS Files Reviewed

The above agencies, Townships and non-governmental stakeholders were contacted to obtain relevant GIS natural feature mapping within their jurisdiction. The data provided was catalogued and organized within a GIS database.

Our focus during this exercise was to collect information that could be mapped and was known to be of a quality that could be relied upon to define the natural heritage system within the County. The quality of specific data was discussed with the responsible agency or stakeholder and a determination made on its appropriateness for use within this process. The results of this information gathering exercise is provided in the table of **Appendix I**. This appendix also provides three maps outlining information deemed most relevant to the NHS. These maps were used during the first public consultation event to communicate the major components of the natural heritage system in the County.

Other documentation collected includes Official Plans for North Frontenac, Central Frontenac, South Frontenac and Frontenac Islands.

Methodology for Carrying Out the NHS

The approach to carrying out the NHS involves establishing areas of protection based on a holistic assessment of natural features supported by functional natural linkages. These areas protect key features and functions, biodiversity, and maintain a natural linkage for the long-term.

Our approach to the development of a natural heritage system will use the following key principles:

- Build from existing protected areas;
- Identify natural features which are relatively undisturbed (e.g. contiguous forests);
- Identify functional linkages between natural features that follow the most appropriate path and existing habitat (e.g. avoids roads or other impediment to wildlife, prioritize natural habitat over agriculture, settlement areas, etc.);
- Identify areas of biodiversity;

- Identify enhancement areas, where possible (improving size, shape, proximity of features). This may also be achieved by linkage between features;
- Seek connections to natural features beyond jurisdictional boundaries (beyond the County of Frontenac);
- Consult with the Steering Committee and public; and,
- Recommend policy and stewardship that delivers protection, promotion and enhancement of natural features.

Based on the above principles, the methodology for the NHS was developed and is presented in a flow chart provided in **Appendix II**. This flow chart defines the process for achieving all phases of the NHS.

Information Defining Significance of Natural Heritage Features

A review of the MNR Natural Heritage Reference Manual (NHRM) (MNR 2010) was used to identify current criteria, consistent with the Provincial Policy Statement (PPS), for identifying the significance of natural features. Although other material was reviewed, the NHRM is considered to be the authority on defining significance of natural features in the province and was developed by the MNR to be consistent with the intent of the PPS. Relevant material from the NHRM that is required to be addressed during policy development is provided in **Appendix III**.

Comparative Assessment of Existing Frontenac Township Official Plans

A review of the latest versions of the Township Official Plans for relevant natural environment policies was conducted to determine their level of consistency and noting where they meet, exceed or need further refinement to correspond with provincial policy. A summary of this review is provided in the table of **Appendix IV**. Overall, findings from the review suggest that the most recent Official Plans are fairly consistent and meet the minimum requirements of the PPS, 2005. During the course of this study a draft of the 2012 PPS was released. Phase II and III take into account recent revisions to PPS policies relevant to the natural environment.

Feedback Received During the First Public Consultation Event

During the later stages of Phase I, two public consultation events took place, including one in the north (Sharbot Lake) and one in the south (Glenburnie). The purpose of these events was to summarize the NHS, the methods to be followed and to elicit feedback from the public regarding what they deemed important within the County. In order to engage the public, a small activity was conducted, which focused on the public providing input into natural heritage features they felt contributed to the economic development, heritage/culture/historic, natural beauty, recreation and sustainability/ecological function of the County. A summary of the input received from the public is provided below and mapped in **Appendix V**.

Economic Development: Common themes were focused around lakes (and lake activities such as fishing, ferries, and beaches), canals, and a variety of other features, including certain places (e.g., Wolfe Island, Verona, and Kingston). Some unique features included lawn service and MacDonald

Tree Nursery near Sharbot Lake. The majority of features identified surrounded the Sharbot Lake area.

Heritage/Culture/Historic: Common themes were focused around lake/river systems (including fish hatcheries, mills, dams, and canals) and old mines. Unique features mentioned were the Holleford Crater and a company called Ecological Services (address was given in the description). A small amount of features were identified near Verona, otherwise there was no specific concentration of features, although they tend to be easily accessible by road.

Natural Beauty: Common themes were landscape features (e.g., forests, lakes/rivers, hills, valleys). Trail systems, lookouts, and parks (e.g., Bon Echo) were also prevalent. Unique features included Bedford Road and Simcoe Island (as well as Simcoe Lighthouse). No specific concentration of features occurred except many are easily accessible by road.

Recreation: Common themes were trails (for ATVs, bikes, walking), and activities around lakes/rivers (boating, canoeing, fishing, birding). Unique features were Camp Oconto and golfing. No specific concentration of features occurred, although feedback from the public did tend to focus on features that are easily accessible by road.

Sustainability/Ecological Function: A variety of themes were apparent. Areas with different animals were considered important (e.g., flying squirrels, migration routes, five lined skinks), lake/river systems (including shoreline and wetlands), as well as parks (e.g., Frontenac Provincial Park). Unique features included a dump, Clay windmills, and zebra mussels. Some concentration of feedback provided from the public occurred around Sharbot Lake and Frontenac Provincial Park.

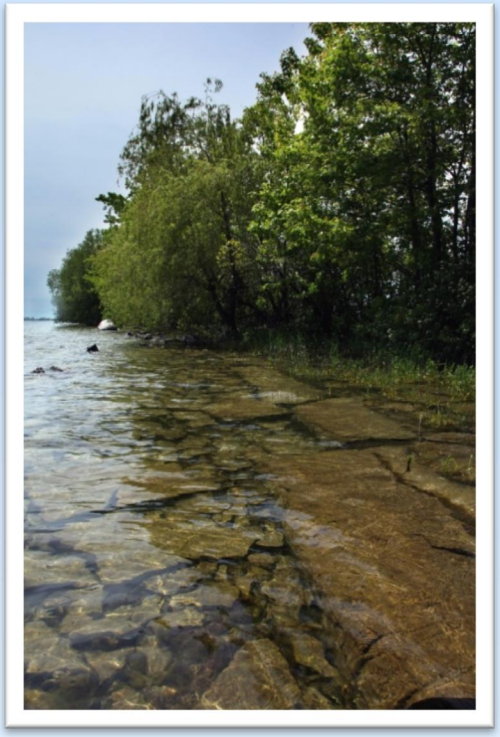
Overall, the majority of points that the public noted were easily accessible by road. Common areas were Kennebec Lake area, Bon Echo Provincial Park, Sharbot Lake, Verona, and Frontenac Provincial Park. Major common themes throughout all the natural heritage categories included lakes/river systems (with associated activities – fishing, boating; and features – ferries, canals and mills), parks and trail systems. Less common themes included different landscape features (natural and man-made mines), specific roads and areas (e.g., Devil Lake Road and Harrowsmith) and animals.

Attendees of the public consultation event were encouraged to submit additional comments using the comment sheet provided as they arrived. In total, five comment sheets were submitted for consideration. These comments sheets are provided in **Appendix V**.

Phase I Summary

Key information was gathered and a preliminary analysis conducted for the purpose of building a strong knowledge-base for undertaking the NHS. The work completed helped identify information gaps, stakeholder perspectives on the NHS, important places in the County, and provides an initial base for defining the natural heritage system and related policies.

Phase II – Natural Heritage System Mapping and Analysis



Natural Heritage System Mapping

Using the information collected during Phase I and identified in the maps of **Appendix I** a consolidated natural heritage systems map was finalized in consultation with the County, Steering Committee and using public feedback received during the public consultation events carried out during Phase I. In addition, areas of biodiversity and natural linkage were developed using habitat suitability and Marxan Model function in GIS. The final natural heritage system map is provided in **Appendix VI**. Below a description of the GIS modelling environment used to develop natural linkage and biodiversity areas is provided.

Natural Linkage

Overview

Natural linkage areas were identified using a GIS habitat suitability model which highlighted areas of higher habitat quality and/or naturalness which have the potential to reconnect or maintain connections between natural features for the long-term. These natural linkages include internal connections to natural features within the County as well as connections to areas outside the County.

Spatial features available for use in the GIS model were ranked to reflect features that are likely optimal for organism movement or that curtail a functional linkage between features. These ranked features were then combined to connect protected areas within the natural heritage system. Natural linkage areas represent the path of optimal movement between two protected areas (e.g. least amount of road crossings, suitable habitat, etc.). They are not necessarily synonymous with actual organism movement that is occurring between natural features, nor are they intended to suggest that animal movement is limited to natural linkage areas. Rather, the natural linkage feature is intended to represent areas that are required to reconnect or maintain connection to natural features for the long-term. Should all other connections disappear, the identified natural linkages would protect connections to existing natural features making up the natural heritage system. It is recognized that the natural heritage system in the central and northern portion of the County are already interconnected by woodland. The modeled natural linkage areas should not detract from the importance of these existing connections rather, be seen as a method for supporting the connection of the system for the long-term.

Model Inputs

- Study area encompassed all quaternary watersheds (an area of 1,108,980 ha) that intersected the County of Frontenac (data provided through Land Information Ontario).

- To determine areas of optimal natural linkage, three different types of information were used, which include:

    - Land Cover: The land cover classifications were grouped into common habitat categories similar to those used by the provinces Ecological Land Classification System. Rankings were associated with each land cover classification based on navigability and general habitat suitability for a generic organism. A summary of these rankings are listed below. The higher the ranking, the more suitable the habitat is for maintaining functional connections between natural features. The landcover data was derived from the EOSD Land Cover Classification obtained from the GeoBase Website (www.geobase.ca).

Land Cover Types	Rank (0 - 100)
Open Water	20
Rock Barren	50
Developed	5
Shrubland	75
Wetland	70
Meadow	80
Agriculture	35
Coniferous Forest	100
Deciduous Forest	100
Mixed Forest	100

    - Presence of Protected Areas: The presence of protected areas was included as they represent natural areas which have a level of protection and typically have less human interference. This approach was also intended to guide the selection of linkages towards protected areas, where suitable. Protected areas included: provincial and national parks, conservation authority areas, forest reserves, agreement forests, provincial conservation reserves, enhanced management areas, areas of natural and scientific interest and provincially significant wetlands. Protected areas were ranked as 100.

    - Proximity to Roads: Roads were included as they are inhospitable to wildlife (e.g., road mortalities) and are typically avoid by many organisms. The road, as well as areas of negative impact adjacent to the road was given a rank of 20. The extent of a roads negative impact on an animal's movement in adjacent areas depends on the type of road. The greater the size of the road, or volume of traffic, the greater the extent of the negative impact on adjacent areas (e.g., Highway 401 versus a local road). To capture the extent roads negative effect extends into adjacent environments, roads were classified into discrete types and a distance from the road, where the negative effect extends into was determined, as listed below. Areas away from a roads negative effect were ranked 100.

Road Types	Distance from Road (m)
Freeway	500
Highway	100
Arterial	50
Local	10

- The 3 types of spatial information (i.e. land cover, presence of protected areas and proximity to roads), with their assigned rankings, were combined using specified weightings to create an overall habitat suitability ranking within the study area. Weighting for each type of spatial information was as follows: 50% land cover; 35% presence of protected areas and 15% for proximity of roads.

The end result of this ranking process produced a habitat suitability map which was used to identify natural linkages within the County of Frontenac. Using the habitat suitability information, combined with a search radius of 90 m, natural linkages were created showing the top 0.1% of all possible solutions. This was repeated for all conceptual linkages within the natural heritage system. Since the modeled results did not exclude the option for the corridor to bisect or cross a lake (including large lakes), a 120m buffer was established to facilitate the passage of terrestrial organisms around waterbodies that intersected the modeled natural linkages. Natural linkages are oriented in a north south as well as east west direction. Connections to features outside of the County of Frontenac boundaries, including the City of Kingston corridors and linkages identified in their Official Plan were also identified.

Biodiversity Areas

Overview

The Marxan model is a computer program that aids in determining areas appropriate for conservation reserves. It considers features (e.g., species presence/absence; land cover types; soil types) that are of interest to conserve areas which are representative of the ecological diversity in the surrounding landscape. This includes an evaluation of ecological or economic costs (e.g., presence of roads; cost to fisheries). Taking all these aspects into consideration, Marxan produces a score for planning units within the study area that correlate with areas that best conserve the most features of interest for the least cost. Essentially, Marxan provides an algorithmic method to determining the best solution for conservation reserves.

For this study there was interest in determining whether current protected areas are in ideal locations, whether there are areas which should be protected that currently are not, and which currently protected area would benefit most by adding more land to it.

Model Inputs

- Study area encompassed all watersheds (an area of 1,108,980 ha) that intersect Frontenac County.
- The study area was divided into hexagon planning units with an area of 250 hectare.
- To find areas of high biodiversity, three different types of information were used.

- Land Cover: The land cover classifications were grouped into common habitat categories similar to those used by the provinces Ecological Land Classification System (same variables as natural linkage).

- Soil Types: Soil types were classified by soil names as listed below. This data was obtained from the Soil Landscapes of Canada, Version 3.2 (03/08/2011).

Soil Types	
Acid Rock	Napanee
Anstruther	Organic
Bondhead	OtonaBee
Brandon	Rideau
Dummer	Seeley's Bay
Eganville	Sidney
Farmington	Snedden
Landsdowne	Tennyson
Monteagle	Tweed

- Surficial Geology: Geological layers classified from the quaternary period attribute from the Quaternary Geology GIS data was obtained from the Ontario Gas and Salt Resource website. Surficial geology types identified and used are listed below.

Surficial Geological Types
Bedrock
Fluvial Deposits
Glaciofluvial ice-contact deposits
Glaciofluvial outwash deposits
Glaciolacustrine deposits
Glaciomarine and marine deposits
Lake
Organic deposits
Till

- To determine areas with higher biodiversity the Marxan model was set to preserve 10% of all features from land cover, soil, geology data (except for agriculture and rock barrens which were set to preserve 5%).
- Species penalty factor was set at 10 for soil, geology, rock barrens, and agriculture. The rest of the land cover features were set at 100. Thus a greater penalty occurred if land cover feature targets (of 10%) were not met, as land cover has a strong influence on biodiversity.

Model Costs

- Planning units with greater than 125 hectares of developed land were restricted from becoming a reserve.
- If planning units were included, then the proportion of developed land in each planning unit had a proportional increased cost in the model.
- The proportion of roads in each planning unit also had proportional increased costs in the model.
- If no roads or development occurred in a planning unit, costs were 1.

Clumping

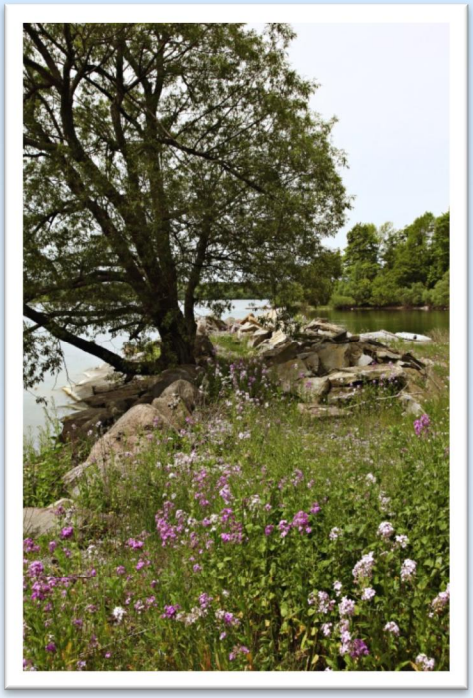
- Boundary Length Modifier was set at 0.001 to produce results that had more compact, larger reserves.

Existing Protected Areas

- Current protected areas were not included in the model results

Field Work

The propose of the field survey was to verify the general validity of the modeled natural linkages and biodiversity areas relative to 'real world' conditions and to identify if areas were appropriate for their intended purpose. The survey also provided an opportunity to evaluate the natural heritage system mapping against that observed in the field and identify inconsistencies that were not previously known through consultation with the County of Frontenac, Steering Committee or public.



The survey was conducted by means of a windshield survey, and stopping adjacent to the features of interest. The intent of the survey was to capture a subset of features, not necessarily all features. Most of the major arterial roads were traveled within North Frontenac, Central Frontenac, and South Frontenac. This captured the areas where the natural linkages and biodiversity areas intersected a roadway. Photographs were taken of representative linkages, natural heritage features, and possible constraints.

Natural Linkages

Generally, the modeled natural linkages viewed from the road were observed to be viable on the ground. The linkages tended to be highly naturalized, often following rivers wetlands or other linear natural features. Photograph 1 and Photograph 2 illustrate representative modeled natural linkage areas prior to crossing a road.

Photograph 1: Salmon River corridor north of Puzzle Lake Provincial Park.

Photograph 2: Representative linkage north of Highway 509, near Ompah

Biodiversity Areas

The windshield survey suggests that the biodiversity areas adequately captured the inherent biodiversity present within the County's major watersheds. It also highlighted that in some cases the model did not make the distinction between natural biodiversity and general landcover diversity. Therefore, in some areas settlement land uses were captured by the model. Based on this observation, minor modifications to the modeled result were made to better represent the field conditions observed.

Photograph 3: Edge of Biodiversity Area along Highway 38, near Sharbot Lake.

Natural Heritage System Mapping

The effort put forth during the initial stages of the project to identify appropriate digital layers representative of the County's natural heritage system proved worthwhile during the field survey. The mapped natural heritage system closely resembled features observed in the field. A number of minor constraints were identified during the windshield survey, which were not known to occur from the mapping (e.g. small aggregate quarry, Industrial facilities, etc.). These constraints do not significantly alter or constrain the natural heritage system as mapped. Habitat features adjacent to and under the large hydro corridor that bisects North Frontenac was also observed. Photograph 4 shows an example of the hydro corridor as it crosses Highway 506.

Photograph 4: Hydro Corridor that crosses Highway 506

Quantity and Quality of Natural Heritage System

An analysis of the quantity of natural features making up the natural heritage system was undertaken to determine the state of the County's natural system relative to provincial (PPS 2012), federal (Environment Canada 2004) or other (MNR 2010) protection targets. Understanding how the natural heritage system measures against these targets provides one basis for identifying general strengths and weaknesses of the

system. Similarly for quality of the natural heritage system, available information was collected to provide some assessment of the state of natural features. In many cases very little specific information on natural feature quality was available. The table presented in **Appendix VII** is organized by natural feature forming part of the natural heritage system. Across the row of each natural feature, the quantity and quality information of each feature is presented along with their protection targets.

Targets and Performance Measures

Using information derived from the quantity and quality assessment, performance measures were developed to help guide future protection and acquisition of information for natural features comprising the natural heritage system. The performance measures identified for each natural feature in **Appendix VII** reflects input during the second phase of this project. Performance measures were further refined during Phase III are presented below.

Information Gaps and Recommendations for Improving Conservation Measures

Through the development of the natural heritage system mapping, consultation with the County, Steering Committee and public, as well as working through the quantity and quality assessment of the natural system, information gaps were noted. Information gaps are provided in the last column of the table located in **Appendix VII**. Acquiring additional information on these gaps would aid in the prioritization and ultimately the protection of specific natural features within the natural heritage system.

Phase III – Policy Development

The inherent value of this project is the opportunity to move from a study which details the existing conditions of the natural heritage system to a strategy for their protection (guidance for the future). The strategic element considers and discusses aspects such as policy-making and collaboration/partnership. There are minimum levels of environmental protection which are established through the PPS and the strategic aspect for Frontenac to define how much further than the regulatory minimums are needed to achieve the County's sustainability vision. This Strategy section incorporates three components:

- Proposed Official Plan Policy
- Collaboration/Partnership
- Performance Measures

Policy in this section reflects changes proposed for the PPS in 2012.

Proposed Official Plan Policy

The italicized text which follows is proposed as the environmental policy framework for the new County of Frontenac Official Plan, with exception to the preamble. The preamble below and in other sections of this proposed official plan policy is explanatory information and not technically official plan policy.

Three land use options are provided below for consideration by the County. Each option effects how the natural heritage mapping is implemented, the level of control Townships have over its implementation and the types of land uses allowed in the natural heritage system.

Natural Heritage System

Preamble *– The County of Frontenac covers a large geographic area which is comprised of a rich natural environment that makes the region a unique place to live, work and play. This natural environment includes natural assets, natural sites, and natural attractions. The value of the natural environment for the County is more than just ecological health; it contributes to our economy and our society as well.*

The County of Frontenac natural heritage system is defined as an ecologically based delineation of nature and natural function – a system of connected or to be connected green and natural area that provide ecological functions over a longer period of time and enable movement of species. Natural heritage systems encompass or incorporate natural features, functions and linkages as component parts within them and across the landscape. A natural heritage system also supports natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems. The delineation of the natural heritage system presented in ***Appendix VI*** *uses current standards and procedures such as the Natural Heritage Reference Manual (MNR 2010), Provincial Policy Statement (MMAH 2012) to identify natural features of interest, which include significant wetlands, significant coastal wetlands, fish habitat, significant*

woodlands, significant valleylands, habitat of endangered species and threatened species, significant wildlife habitat, and significant areas of natural and scientific interest.

The natural heritage system, and the ecological functions it provides, contributes to maintaining the environmental health of the County of Frontenac. This Plan contains policies to maintain, enhance or, wherever feasible, restore the natural heritage system. Such action is necessary to counteract the negative effects of fragmentation which can result in a loss of ecological integrity and the degradation of natural biodiversity. Such action is also necessary to maintain biological and geological diversity, viable populations of native species and ecosystems, and make possible adaptation in response to actual or expected effects of climate change.

This Plan recognizes the importance of wetlands, watercourses, lakes and groundwater to the strength of the natural heritage system. There is a significant amount of shoreline along Lake Ontario and the St. Lawrence River, waterbodies such as the Salmon and Mississippi Rivers and the Great Cataraqui River, as well as the numerous inland lakes for which the County is known. These hydrological features and their associated functions provide a variety of environmental benefits and are fundamental components of the overall ecosystem.

Responsibility for the environment is shared among Federal and Provincial governments, the County, Townships, the Conservation Authorities (Quinte Conservation, Cataraqui Region Conservation Authority, Rideau Valley Conservation Authority, and Mississippi Valley Conservation) and private landowners. All have an important role in enhancing the natural environment within the county, and all have the responsibility to be good stewards. As a result, establishing a natural heritage system requires co-operation among agencies, private landholders and the wider community. Communication with agencies during the planning process is important.

This Section of the Official Plan establishes a policy framework for a co-operative approach to the identification of the environmental features that comprise the natural heritage system. It also outlines how provincially and regionally significant features will be maintained, enhanced or, wherever feasible, restored and encourages the establishment of linkages among elements of the natural heritage system.

The natural heritage system is a layered approach to environmental protection comprised of features delineated on ***Appendix VI*** *and described in this section of the Official Plan. Each layer contains policies that provide appropriate protection to areas of environmental significance. Notably, the County of Frontenac's natural heritage system includes natural linkages and biodiversity areas. Through linkages and biodiversity areas, we acknowledge that our system is not an isolated one. We are interconnected to the natural heritage beyond our boundaries and we value our local biosphere – the Frontenac Arch – as well as our global biosphere, Earth.*

In this context it is important for Frontenac County use a regional approach to ensure that significant natural heritage characteristics are protected for future generations.

Goal

The goal of the natural heritage system is to work with the Province, Townships, the Conservation Authorities and private landowners to maintain, enhance and restore a comprehensive natural heritage system within the County.

Objectives

To achieve the goal of a comprehensive natural heritage system, this Official Plan will:

- *Identify and describe the component environmental features of the natural heritage system;*
- *Incorporate policies addressing land use and environmental preservation, conservation, and management that conform to the Provincial Policy Statement;*
- *Designate the natural heritage system on Official Plan mapping at the regional scale;*
- *Provide a mechanism for the refinement of the natural heritage system at the site-specific level;*
- *Identify, describe, and incorporate polices addressing County of Frontenac-specific natural linkages and biodiversity areas; and,*
- *Encourage local Townships to refine the natural heritage system to include important local features and linkages, where appropriate.*

Land Uses and Zoning

The County of Frontenac encourages the Townships to identify appropriate land uses and other performance standards in their zoning by-laws that provide for protection of the features identified in the natural heritage system and which are compliant with the PPS.

1. Wetlands

- ***Preamble*** *– Wetlands, as defined by the PPS, are 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 plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens. Periodically soaked or wet lands being used for agricultural purposes which no longer exhibit wetland characteristics are not considered wetlands. Wetlands are an important part of Ontario's biodiversity. They provide a wide variety of ecological, economic and social benefits for both humans and wildlife. Wetlands help reduce erosion, decrease flood damage, improve and maintain good water quality, provide important fish and wildlife habitat, ensure a stable, long-term supply of groundwater (by contributing to the recharge and discharge), provide recreation and tourism opportunities, limit greenhouse gas emissions (by acting as carbon sinks), and provide valuable economic products, such as timber, commercial baitfish, wild rice and natural medicines.*
- *The County of Frontenac recognizes the importance and value of wetlands in the County and supports their protection.*
- ***Appendix VI*** *identifies provincially significant wetlands, coastal wetlands and other wetlands, which form part of the County's natural heritage system.*
- *Development and site alteration shall not be permitted in provincially significant wetlands or provincially significant coastal wetlands.*

- *Development and site alteration shall not be permitted within 120 metres of provincially significant wetland boundaries unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the wetland features or their ecological function through an Environmental Impact Study.*
- *If at any time during the duration of this Plan any additional provincially significant wetlands are identified in the County of Frontenac by the Ministry of Natural Resources, the policies in this Plan related to significant wetlands shall apply and the appropriate schedules shall be updated to reflect the new provincially significant wetlands without amendment to the OP.*
- *The County of Frontenac encourages local municipalities to adopt mechanisms (such as site plan control, consent or subdivider's agreements) that would minimize and control the removal of vegetation, and ensure the protection of naturally vegetated buffers adjacent to any provincially significant wetlands.*
- *Other wetlands have also been identified in* ***Appendix VI.*** *Impacts on these wetlands should be considered in the evaluation of development applications in or adjacent to them, and an Environmental Impact Study may be required if significant characteristics are observed and/or to demonstrate that appropriate alternatives have been assessed and negative impacts to the feature and its' function have been prevented or minimized to the degree reasonably possible.*

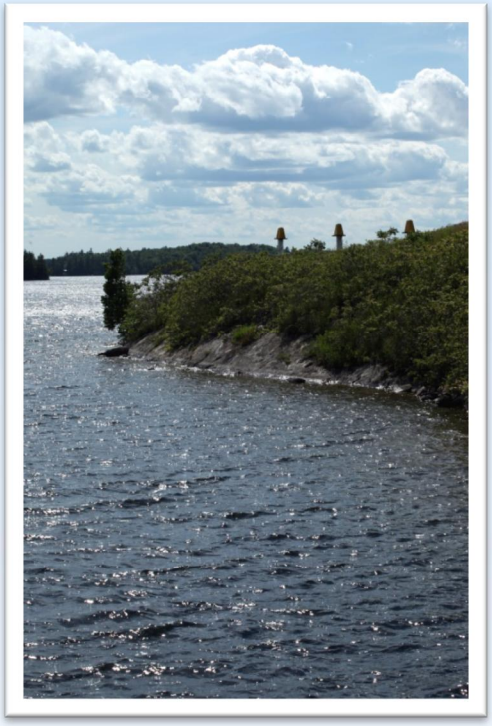
2. Significant Areas of Natural and Scientific Interest (ANSI)

- ***Preamble*** *– An ANSI, as defined by the PPS, 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. ANSIs are a critical complement to provincial parks and conservation reserves as they represent important natural features that are not found in protected areas.*
- *The County recognizes the importance and value of regionally or provincially significant ANSIs and supports their protection.*
- ***Appendix VI*** *identifies ANSIs within the County's natural heritage system.*
- *Development and/or site alteration in or adjacent to a regionally or provincially significant ANSI shall not be permitted unless it can be demonstrated that there will be no negative impacts on the ANSI and its ecological function. However, existing agricultural activities such as ploughing, harvesting, grazing, animal farming, and minor expansions to existing buildlings or other structures associated with farming operations are permitted on adjacent lands without the need for an Environmental Impact Statement.*

3. Significant Wildlife Habitat

- ***Preamble*** *– Wildlife habitat, as defined by the PPS, means areas where plants, animals and other organisms live, and find adequate amounts of food, water, shelter and space needed to sustain their populations. Wildlife habitats are important since they are areas where species concentrate at a vulnerable point in their annual or life cycle, and are areas which are important to both migratory or non-migratory species.*
- *The County of Frontenac recognizes the importance and value of wildlife and supports the protection of significant wildlife habitat*

- ***Appendix VI*** *identifies the location of known wildlife habitat. Development and/or site alteration in or adjacent to significant wildlife habitat shall not be permitted unless it can be demonstrated that there will be no negative impacts on the significant wildlife habitat and its ecological function through an Environmental Impact Study.*
- *Wildlife habitats occur throughout the County but may not be shown on Appendix VI because the exact habitat location needs to be refined at the local scale by site specific field work. If development or site alteration is planned in or adjacent to the natural heritage system, the proponent of the development shall document for consideration by the local Township, whether there is potential for significant wildlife habitat to occur in the area and whether an Environmental Impact Study is required to identify significant wildlife habitat for consideration during Planning Act decisions.*
- *Prior to the approval of land use planning applications, assessment of potential significant wildlife habitat shall be conducted through an Environmental Impact Study.*
- *The local Townships shall adopt appropriate development controls to protect significant wildlife habitat. If development or site alteration is planned near these sites, the local Townships may contact the Ministry of Natural Resources for technical advice regarding the proposed development*
- *Natural linkages shall be protected in order to maintain, restore and/or improve the diversity and connectivity of natural features and the long-term ecological function and biodiversity of natural heritage systems.*
- *Removal of vegetation shall be minimized in significant wildlife habitat areas.*
- *The County and local municipalities shall investigate ways to minimize and control the removal of vegetation for buildings, site alteration or accessory activities such as landscaping.*



4. Fish Habitat

- ***Preamble*** *– Fish habitat, as defined by the Fisheries Act, means 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 aquatic ecosystem is most often described as fish habitat since fish communities are important resources, and as such, have a long history of being used as indicators of aquatic ecosystem health. Aquatic habitat is an integral part of the watershed's ecosystem as it provides feeding, breeding and rearing areas for resident and migratory fish and invertebrate species.*
- *The County of Frontenac recognizes the importance and value of the fisheries in the municipality and supports protection of their habitat.*

- *Development and/or site alteration in or adjacent to fish habitat shall not be permitted except in accordance with federal and provincial legislation and can be demonstrated through an Environmental Impact Study that there will be no negative impact on fish habitat and its ecological function.*
- *Development and site alteration in or adjacent to fish habitat shall require an Environmental Impact Study, to demonstrate that there will be no negative impacts on the fish habitat or on their ecological functions.*
- *New development along watercourses and waterbodies which have demonstrated no negative impact on the fish habitat or on their ecological functions shall require a minimum setback of 30 metres. These setbacks shall remain undisturbed and naturally vegetated, where possible. The County encourages the use of best management practices, stewardship and habitat management that promotes healthy fish habitat and natural riparian areas.*

4.1 Lake Trout Lakes

- ***Preamble** – Only one percent of Ontario's lakes contain lake trout but this represents 20-25% of all lake trout lakes in the world. The County, therefore, has a great responsibility to manage them wisely. The lake trout is particularly vulnerable to the impacts of human activities and is an indicator of the health of aquatic ecosystems. Special protection is required for these lakes and their lake trout populations.*
- *New planning approvals shall not be allowed within 300 metres of these at-capacity lakes: Shabomeka (Buck) Lake, Kishkebus (Dyers) Lake, Little Green Lake, Buckshot (Indian) Lake, Lucky Lake, Mosque (Mosquito) Lake, Big Ohlmann (Rock) Lake, Mackie Lake, Reid (Boundary) Lake, Round Schooner Lake, and Camp (Little Mackie) Lake, Big Salmon Lake, Bobs (Green Bay) Lake, Buck Lake, Crow Lake, Devil Lake, Eagle Lake, Garter Lake, Hungry Lake, Knowlton Lake, Loughborough (West Basin) Lake, Potspoon Lake, and Sharbot (West Basin) Lake*
- *Exceptions to the prohibition of development near at-capacity lakes shall be made under the following conditions:*
    - *any new residential, commercial or industrial development requiring approval under the Planning Act that is connected to a municipal sewage treatment facility;*
    - *all new tile fields are set back at least 300 metres from the shoreline of the lake, or such that drainage from the tile fields would flow at least 300 metres to the lake;*
    - *all new tile fields are located such that they would drain into the drainage basin of another waterbody, which is not at capacity; or*
    - *to separate existing habitable dwellings, each having a separate septic system, provided that the land use would not change.*
- *Under such exceptional circumstances, new development requiring approval under the Planning Act shall only proceed on the following conditions:*
    - *restrict the removal of vegetation within 30 metres of the lake, except to accommodate a limited number of paths, water lines, docking facilities and removal of trees posing a hazard;*
    - *require a minimum 30 metre setback for all buildings and structures (except docking facilities); and;*

    - *prohibit the use of fertilizers on lawns and gardens within 300 metres of the lake.*
- *Local municipalities are encouraged to identify the moderately sensitive at-capacity lake trout lakes in their Official Plans with policies addressing development around these lakes to ensure their long-term sustainability.*

5. Endangered and Threatened Species

- ***Preamble** – Endangered and Threatened species, as defined by the PPS, means a species that is listed or categorized as an "Endangered or Threatened Species" on the Ontario Ministry of Natural Resources' official species at risk list, as updated and amended from time to time; Saving Endangered and Threatened species is important for their sake, and for ours since humans are dependent on the earth's diversity of species for our own survival.*
- *The County of Frontenac recognizes the importance and value of the endangered and threatened species in the County and supports their protection.*
- *Significant habitat of endangered or threatened species is approved by the Province or the Federal government. This habitat is necessary for the maintenance, survival and/or recovery of naturally occurring or reintroduced populations of endangered 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. Mapping of the habitat of these species may not be shown on **Appendix VI** in order to protect such species and their habitat, or because the exact location and habitat needs to be refined by site specific field work.*
- *No new development or site alteration shall be permitted within the significant portions of the habitat of endangered or threatened species. Development and site alteration shall not be permitted on the adjacent lands of endangered or threatened species, unless it has been demonstrated through the preparation of an Environmental Impact Study that there will be no negative impacts on the natural features or on the ecological functions for which the area is identified.*
- *New development proposals shall require an appropriate level of site assessment to identify potential presence or absence of endangered or threatened species and their potential habitats as determined by the Ministry of Natural Resources.*
- *Where potential habitat is identified, a more detailed site assessment shall be required by an Environmental Impact Study to provide information on current habitat conditions, to address any applicable permit requirements under the Endangered Species Act (as appropriate), and to delineate significant habitat for approval by Ministry of Natural Resources.*
- *No new development and/or site alteration shall be permitted within 120 metres of significant habitats of endangered and threatened species unless it has been demonstrated that there would be no negative impacts on the natural features or its ecological function.*
- *If development or site alteration is planned near these sites, the local Township shall contact Ministry of Natural Resources for technical advice regarding the proposed development.*

6. Significant Woodlands

- ***Preamble** – Woodlands, as defined by the PPS, 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. Woodlands are important for their aesthetic value, economic value, as species habitat, to minimize erosion, to mitigate greenhouse gases (as a carbon sink), and as providing animal species with corridors for movement.

- *The County recognizes the importance and value of woodlands and supports the protection of significant woodlands. These woodlands have value in the County , both natural and human. Examples include improving the air quality, preventing soil erosion, helping to retain water and recharge ground water, produce economic value (firewood, maple syrup, lumber), provide recreational opportunities, and contribute to the overall beauty of the Frontenacs.*
- ***Appendix VI** identifies all woodlands within the County.*
- *Development and/or site alteration in or adjacent to significant woodlands located in the majority of South Frontenac and all of Frontenac Islands (i.e., within MNR Ecoregion 6E of the PPS) shall not be permitted unless it can be demonstrated that there will be no negative impacts on the significant woodland and its ecological function.*
- *When new significant woodlands are identified, consideration and protection of the areas shall be assessed prior to approving new land use planning applications.*

7. Significant Valleylands

- ***Preamble** – Valleylands, as defined by the PPS, 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. Valleylands are often defining landscape features essential to the character of an area, help buffer waterbodies from the effects of human settlement, provide linkages to the rest of the watershed, and provide important corridors allowing the dispersion of plants and movement of animals.*
- *The County recognizes the importance and value of valleylands and supports the protection of significant valleylands.*
- *Significant valleylands are not shown on **Appendix VI** and can be identified in consultation with the County and/ or the local Conservation Authority based on local factors and conditions.*
- *Development and site alteration shall not be permitted in significant valleylands and its adjacent lands unless it has been determined, via an Environmental Impact Study, that there will be no negative impacts on the natural features or their ecological functions.*
- *When new significant valleylands are identified, consideration and protection of the areas shall be assessed prior to approving new land use planning applications.*

8. Linkages and Biodiversity Areas

- ***Preamble** – The County of Frontenac's natural heritage system as mapped in Appendix VI includes natural linkages and biodiversity areas. Through linkages and biodiversity areas, we acknowledge that our system is not an isolated one. We are interconnected to the natural heritage beyond our boundaries and we value our local biosphere – the Frontenac Arch – as well as our global biosphere, Earth.*

8.1 Linkages

- ***Preamble** – The County of Frontenac is home to wildlife that traverses eastern Ontario and by identifying linkages, the County is able to support the valuable wildlife that contributes to the County's high quality natural environment. The County has undertaken a geographic information systems (GIS) analysis to determine regional scale linkages.*
- *Linkages mapped in this plan on **Appendix VI** are intended to promote regional connectivity in the natural heritage system and the County of Frontenac encourages municipalities to establish and maintain linkages by incorporating them into their Official Plans.*
- *Where appropriate, the Townships are encouraged to add local linkages which facilitate greater connections between natural features of the natural heritage system.*
- *Linkage mapping has been completed at a regional scale, and the boundaries are intended to be refined at the site level. When development is proposed within a linkage, this plan encourages that linkages be incorporated into the development, retained in its natural state and an Environmental Impact Study be completed to document management recommendations for the protection of the linkage.*
- *Linkages may be considered as priority areas for ecological stewardship projects, re-naturalization projects, or environmental land acquisition projects, or as potential lands for conservation easements granted to the municipality by the property owner.*
- *Existing development and activities within linkages may continue.*

8.2 Biodiversity Areas (Overlay)

- ***Preamble** - The County of Frontenac benefits from having a large undeveloped area that is rich in natural heritage and contains a wide range of species, habitats and ecosystems. Biodiversity Areas protect species, habitat and ecosystems that are representative of the County's natural heritage system. Protecting biodiversity is a way to promote stewardship and ensure that impacts to the environment through challenges such as climate change are mitigated. The County has undertaken a geographic information systems (GIS) analysis to determine specific areas for the protection of biodiversity.*
- *Biodiversity areas are identified on **Appendix VI**.*
- *Biodiversity areas may receive priority consideration for the creation of new conservation areas, conservation easements, or new ecological stewardship programs;*
- *Notwithstanding the policies of the underlying land use designation, lands within Biodiversity Areas may be:*
    - *Discouraged from lot severance or subdivision unless immediately abutting existing development;*
    - *Discouraged from the creation of new buildings unless on an existing previously undeveloped lot; and,*
    - *If developed, encouraged to develop by minimizing changes to topography and vegetation, and by using materials and a built form that integrates well with a natural area.*

9. Mineral Aggregate Operations

- *New mineral aggregate operations may be permitted in the natural heritage system where the policies of this plan allow and:*
    - *progressive and final rehabilitation shall be required to accommodate subsequent land uses, to promote land use compatibility, and to recognize the interim nature of extraction;*
    - *the assessment of the natural features and restoration plan taking into account the natural heritage system will be incorporated into the Natural Environment Report required under the Aggregate Resources Act.*

10. Environmental Impact Study

- ***Preamble** – An Environmental Impact Study is an important tool used during the development review process which helps delineate, characterize, analyze, and plan for the protection and conservation of the natural heritage system and its components.*
- *Council shall require an impact assessment for development and site alteration proposed in designated natural heritage features and adjacent lands. An Environmental Impact Study shall be prepared to support land use planning applications and prior to the approval of the proposed development or site alteration. The County, Townships and/or the Conservation Authorities will co-ordinate the requirements for the preparation of an Environmental Impact Study which shall be undertaken in accordance with the Natural Heritage Reference Manual and any other applicable guidelines.*
- *The County, in consultation with the Province, the local Townships and the Conservation Authorities may require the completion of a single comprehensive Environmental Impact Study where:*
    - *development or site alteration is proposed on multiple adjacent properties containing elements of the natural heritage system;*
    - *a comprehensive community planning process is being undertaken;*
    - *environmental studies are required to support the proposed expansion of the Township Urban Area or settlement boundary; or,*
    - *as deemed required by the County of Frontenac.*
- *An Environmental Impact Study is intended to provide for an assessment of the potential impact of a proposed development or site alteration on a particular natural heritage feature and shall be used to determine whether the proposed development, redevelopment or site alteration should or should not be permitted. The Environmental Impact Study will be undertaken by the proponent of the development and/or site alteration.*
- *The components of the Environmental Impact Study shall be tailored to the scale of development and may range from a simplified assessment (scoped assessment) to a full*

assessment. The County may consult with the conservation authority having jurisdiction and the Ministry of Natural Resources in determining information requirements and the type and content of an Environmental Impact Study. The following is intended to provide an initial guideline on the potential scope of an Environmental Impact Study:

- *a description (including a map) of the study area and landscape context (including natural features and areas, and ecological functions);*
- *a description of the development proposal;*
- *date of field visits;*
- *identification of the natural features*
- *species lists of flora and fauna recorded for the site;*
- *assessment of the potential impacts of the proposed development on natural features or areas and on their ecological functions for which they have been identified;*
- *identification of alternatives and avoidance measures implemented to reduce impacts;*
- *identification of mitigation, monitoring and contingency requirements;*
- *quantification of residual impacts (those that cannot be mitigated) if any;*
- *recommendations on how to implement mitigative measures; and,*
- *conclusion(s) on the environmental impact(s).*

- *The County of Frontenac may prepare a comprehensive guideline for the preparation of and Environmental Impact Study which further implements this plan's Environmental Impact Study policies.*
- *The Environmental Impact Study must be undertaken by a qualified professional to the satisfaction of the appropriate agency / approval authority.*

Collaboration/Partnership

The following set of conservation / stewardship / education tools that can be implemented by the County of Frontenac to help promote its culture of ecological stewardship among residents, businesses, and tourists alike. Many of these are proven tools that the County can use to get the message out to the public and continue along the path towards stewardship and sustainability.

Tree Planting: Community groups go to areas that require remediation to plant trees and learn about the importance of trees and habitat connectivity, all the while promoting the conservation of the forests. Some groups that currently do these activities are Scouts Canada and Girl Guides.

Species Monitoring: Monitor species in key environmental locations in the County to have a record of the status of creatures in the area, as well as determine presence of rare and important indicator species. Community groups (e.g., Kingston Field Naturalists) can participate which allows people to become familiar and educated with the local wildlife and importance of conserving habitat. Special types of outings could include but is not limited to: bioblitz (excursions where all organisms are identified in a given area in a short period of time), birding, spring pond breeding excursions (various frogs and salamanders breed simultaneously in the spring), looking for reptiles (e.g., snakes, turtles, skinks), winter tracking (various animal tracks are left in the snow), etc.

Create/Maintain Hiking Trails: The County can designate more areas for hiking trails to promote outdoor excursions for people to gain an appreciation for nature and environmental stewardship. Also, various community groups can help maintain hiking trails (e.g., Rideau Trail Association) to increase the sense of environmental stewardship and increase opportunities for people to hike the trails and appreciate nature. Some good hiking trail examples are in Frontenac Provincial Park, and the Cataraqui and Rideau Trails.

Protect Lands of High Biodiversity and Species at Risk: Areas identified from species monitoring or based on habitat as key locations for high biodiversity and Species at Risk can be allotted for protection. Programs such as the Habitat Stewardship Program for Species at Risk by Environment Canada can help fund such activities. Businesses may also want to be involved to show environmental stewardship. Low environmental impact activities such as bike and hiking trails would promote nature appreciation, as long as it does not impact Species at Risk.

Promote Planting Native Gardens: Residents and businesses can actively plant only native species in their gardens/landscape. This will increase the sense of environmental stewardship as well as reduce maintenance time and costs as the plants are more resistant to the climate conditions of the County.

Promote Residents/Businesses to Protect Natural Areas on Existing Property: Keeping natural areas such as ponds, marshes, forests on the property improves the likelihood of seeing wildlife and gives people the reward of personally being environmental stewards.

Wetland Cleanup: Have an organized marsh or riparian zone clean up in a local area that has been degraded by pollution/littering. This can be held simultaneously on days such as Clean Up the World Weekend or Earth Day. This would promote environmental stewardship as well as educate people about the importance of wetlands and watercourses.

Getting Involved in Community Initiatives: Have residents and long-term tourists get involved with various cleanups, restoration projects to increase environmental awareness, education, and stewardship.

Stream Surveys: Having school and community groups participate in a stream survey (perhaps practicing Ontario Stream Assessment Protocol) will determine stream health, increase education of organisms in streams and the importance of healthy streams and riparian zones, increase the sense of environmental stewardship, and be a useful skill to learn for those interested in biological related studies.

Habitat Enhancement: Similar to tree planting and marsh cleanup, any project in which the current habitat is enhanced (e.g., cleanup a local beach shoreline) will promote education of the environment, environmental stewardship, and conservation.
Remove/prevent invasive species: Have excursions to areas with known specific invasive species and actively remove them. Provide information on how to properly identify such species (there are many native species that can be confused with non-native species), why they are a harm to the ecosystem, and how to prevent the spread of invasive species. All of these activities will promote

environmental education and give a sense of environmental stewardship by removing invasive species.

Making Maple Syrup: Have excursions to tap sugar maples within the County to understand and appreciate both maple syrups and forests. It also promotes being outdoors in the winter time.

Working with Biological Experts: Get involved with experts such as from Queen's University and the Queen's University Biological Station who can give presentations and guided nature tours to give people a better appreciation of nature, biodiversity within the area, and ecosystem functions.

Outdoor Excursions for Schoolchildren: Various field trips for primary and secondary students to key environmental locations in the County to increase their knowledge and sense of environmental stewardship. Some field trips could include but are not limited to: streams, wetlands, forests, waste water treatment plants, farmer's market, nature scavenger hunts, rock climbing, etc.

Environmental Courses: Have entire school courses dedicated to learning about the importance of the environment, being immersed in the environment, and promoting safety (how to survive in the wilderness) and leadership (leading canoe trips and outdoor excursions) to increase environmental education.

Promote Environmentally Friendly Cottage Habits: Provide information (such as in the form of simple posters) to summer cottagers and tourists about proper septic tank practices, garbage disposal, the County's recycling programs, importance of water conservation (especially in drought years), and protecting trees. This information will educate tourists on how to be environmentally friendly in a foreign area and promote environmental stewardship.

Kid's Fishing Day and Family Fishing Week: These activities will promote being outdoors and learning about fish, as well as the importance of catch and release fishing in terms of fish conservation and sustainable fishing.

Nature Related Workshops: Provide workshops for people to learn/participate in outdoor related topics. Topics could be wide ranging, such as about organisms themselves (e.g., fungi and invertebrates), nature art and writing classes, and simply promoting wildlife within the backyard.
ECO Camp: Youth can go to a weeklong camp focused on being in nature and learning about nature (e.g., Eco-adventure Camp through Queen's University Biological Station).

Canoe/Camping Trips: Encourage youth and families, community groups to go on a canoe and/or camping trip. Immersion within nature will both educate and give a sense of environmental stewardship. Groups such as Scouts Canada and Girl Guides currently do this.

Geocaching: An increasingly popular activity, geocaching can be used near various hiking trails, provincial parks, and other natural areas to get people outdoors and learn how to navigate in the wilderness.

Promote Environmental Practices for Farming: Educate farmers on the importance of environmental practices – such as maintaining a riparian zone between fields and rivers and keeping livestock out of wetlands to aid in maintaining wetlands and streams, and prevent erosion within their property – so they ultimately are good environmental stewards.

Composting Programs: Residents, tourists (summer cottagers), and businesses can all get involved with composting programs to return valuable nutrients to the land.

Performance Measures

Progressive municipalities are moving from indicators to performance measures which are a much more powerful tool in helping them reach their goals – the question changes from a statistical "How much do we have today?" to a directional "How much more do we need for tomorrow?" The following is framework to compare indicators from the ICSP and potential performance measures to be achieved by year 2019 to help the County move closer to its sustainable future. An additional performance measure for woodlands is suggested since this study has been able to quantify the baseline of this natural asset in the County.

Indicators from the ICSP	Performance Measures (Target Year 2019)
Hectares of natural areas protected	Comment: This study has suggested natural linkages with a total area of 15,536 hectares which is a more specific measure than hectares of area protected Performance Measure: Maintenance of the planned natural linkages total area of 15,536 hectares
Number of stewardship initiatives underway	Comment: The number of initiatives has not been determined, however the potential remains for new initiatives to emerge over time Performance Measure: Five (5) new stewardship initiatives
Number of species at risk	Comment: The number of species at risk is unknown, however the County can still aim for the protection of known populations or their habitat Performance Measure: Demonstrate protection of the habitat of one (1) species at risk in the County
Number of lake management plans	Comment: This study has quantified at-capacity lake trout lakes, rather than lake management plans Performance Measures: Reduction of highly sensitive lake trout lakes from 23 to 22; reduction of moderately sensitive lake trout lakes from 10 to 9

Indicators from the ICSP	Performance Measures (Target Year 2019)
Hectares of wetlands	Comment: This study has quantified wetlands in three categories - provincially significant (9,766 hectares) - other (35,335 hectares) (includes evaluated and non-evaluated wetlands - coastal (4,212 hectares[1] Performance Measure: 1% of other wetlands (353 hectares) have been evaluated, determined to be provincially significant, where appropriate based on MNR criteria, and protected
Hectares of parks/green space	Comment: This amount of parks/green space has not been determined, however new parks and green space can still be developed over time Performance Measure: 50 additional hectares of parks/green space
Opportunities to discover the outdoors	Comment: The number of opportunities to discover the outdoors has not been determined, however new opportunities can still emerge over time Performance Measure: Five (5) additional opportunities to discover the outdoors
The ICSP did not have an indicator on woodland cover	Comment: This study has quantified the County's extensive woodland cover: - in Ecoregion 5E (218,828 hectares) - in Ecoregion 6E (58,140 hectares) - total woodland cover (227,010 hectares) Performance Measure: Criteria to be used to establish significance of woodlands in Ecoregion 6E have been clearly identified and applied.

[1] Number overlaps with units above

Summary

The Natural Heritage Study summarized in this report presents natural heritage system mapping and policies addressing natural features in the County of Frontenac (County). County of Frontenac Council, though its' adoption of the Integrated Community Sustainability Plan (ICSP), identified the need for a Natural Heritage Study (NHS) as a key priority project to achieve a sustainable future. In early 2012, the County of Frontenac retained Dillon Consulting Limited (Dillon) to undertake this NHS.

The NHS was undertaken in three phases. Phase included a review of available background information, consultation with the public and confirmation of the study process. Phase II resulted in the compilation of the natural heritage system mapping and analysis. Phase III used the mapping and other information collected during the study to develop appropriate policies protecting the natural heritage system, recommendations for collaboration and partnership as well as performance measures. A draft version of mapping and policies were presented to the public, agencies and Natural Heritage Study Steering Committee for comments. The final information presented in this report takes into consideration these comments.

Appendix I:
Documentation/GIS Files Reviewed

County of Frontenac Natural Heritage Study - Data Collection Summary

Name	Shapefile	Type	Description	Date Received	Map	Rational
MNR Land Information Data						
Aquatic Feeding Area	aquafeed	polygon	An Aquatic Feeding Area is a polygon feature that identifies a species-specific area that contains aquatic vegetation on which the species feeds.	4/11/12	Natural Heritage Map	Area important for maintaining healthy moose populations.
CLUPA Primary Land Use Area	clupapri	polygon	Contains the principal land use direction and the geographic extent they represent for Crown Land.	4/11/12	None	Administrative boundary, used "enhanced management area"
Conservation Reserve, Regulated	conrvreg	polygon	An area of public lands regulated under the Provincial Parks and Conservation Reserves Act, 2006 which protects ecosystems that are representative of all of Ontario's natural regions.	2/2/12	Supplementary data for Linkage modeling	Area with existing legislative protection.
Conservation Area	consvare	polygon	Lands which are considered to be regionally significant, such as valleys, or environmentally sensitive areas, and are best managed by a public agency to retain their natural characteristics.	2/2/12	Supplementary data for Linkage modeling	Area with existing legislative protection
Federal Protected Area	fedparea	polygon	Areas protected by the Federal government for natural or cultural reasons.	2/2/12	Supplementary data for Linkage modeling	Area with existing legislative protection
Wildlife Feeding Area	feedawld	polygon	A Wildlife Feeding Area is a polygon feature that identifies an area where a wildlife species habitually feeds.	2/2/12	Natural Heritage Map	Area deemed important for sustaining wildlife populations.
OHN - Waterbody	ohnwbdy	polygon	Waterbodies are polygon features (natural and manmade) that describe various realizations of surface water at a medium scale of 1:10K in Southern Ontario, 1:20K in Northern Ontario and 1:50K in the Far North	2/2/12	Natural Heritage Map	General Basemap
Municipal Park	munpark	polygon	Municipal Parks across study area	2/2/12	None	No features located within study area.
Provincial Park, Regulated	provpreg	polygon	An area of public lands regulated under the Provincial Parks and Conservation Reserves Act, 2006 which protects ecosystems that are representative of all of Ontario's natural regions.	2/2/12	Supplementary data for Linkage modeling	Area with existing legislative protection
Significant Ecological Area	sigecol	polygon	A Significant Ecological Area is a polygon feature that identifies an area of interest to the Ministry that is ecologically significant, and warrants special consideration, excluding Areas of Natural and Scientific Interest (ANSI), parks, reserves or Environmentally Sensitive Areas (ESA)	2/2/12	None	Covers area with Old Growth Forests within the County - other attributes already captured in other datasets. Old growth layer deemed unreliable data.
Wetland Unit & Evaluated Wetland (Consolidated)	wetlandu	polygon	A Wetland Unit is an individual spatial polygon representing a discrete wetland type (Marsh, Fen, Swamp, Bog, Open Water or Unknown). An Evaluated Wetland is an aggregation or a collection of one or more Wetland Units.	2/2/12	Natural Heritage Map	PSW's are provincially protected. Other evaluated and non-evaluated are also important NH features.
Wilderness Area	wildarea	polygon	An area regulated under the Wilderness Area Act.	2/2/12	Supplementary data for Linkage modeling	Area with existing legislative protection but deemed unsuitable for planning purposes.
Wintering Area	winterng	polygon	A Wintering Area is a polygon feature that identifies an area in which a species habitually winters.	9/28/12	Natural Heritage Map	Deer and Moose wintering area's are important in maintaining viable populations.

County of Frontenac Natural Heritage Study - Data Collection Summary

Name	Shapefile	Type	Description	Date Received	Map	Rational
Wooded Area	woodarea	polygon	An area covered by trees.	2/2/12	Natural Heritage Map	Woodlands are an important natural heritage feature.
Forest Abiotic Damage Event	abiotdam	polygon	An area where a non-biological event, such as wind or ice storm, has damaged areas of forested land.	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Agreement Forest Area	agreefor	polygon	An Agreement Forest Area is a polygon feature that identifies an area of forested private land governed by a Forest Management Agreement.	4/11/12	Supplementary data for Linkage modeling	Administrative boundary for forest protection.
Bait Harvest Area	baitharv	polygon	The bait resource in much of the province is allocated to harvesters through the exclusive use block system (one harvester per bait harvest area) with block sizes generally much larger in the north than in the south.	4/11/12	None	Administrative boundary, Not relevant
Beaver Dam	beavrdam	point	A dam constructed by beavers in a stream bed at a narrow point where the current is fastest.	4/11/12	None	Beaver dams can change over time making it difficult to plan around.
Breeding Area	breedare	polygon	A Breeding Area is a polygon feature that identifies a site where a species habitually breeds.	4/11/12	None	Wildlife habitat which tends to be consistent year after year.
Breeding Zone	breedzon	polygon	A Breeding Zone is a polygon feature that identifies a geographic area from which flora selections are made and interbred.	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Built up Areas	BuiltupAreas_Merged	polygon	Areas with development (Built up) within study area	2/2/12	None	Settlement locations are captured in another dataset.
Conservation Authorities Administration Areas	caadmin	polygon	Conservation Authorities Administration Areas within the study area	2/2/12	None	Administrative Boundary, not the focus of current mapping
Calving Fawning Site	calvfawn	polygon	A Calving Fawning Site is a polygon feature that identifies an area to which a particular species habitually migrates to give birth.	4/11/12	None	No features located within study area.
Recreation Camp	camprec	polygon	Recreation Camps near study area.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Canadian Heritage River System	chrs	polygon	An area set aside for the recognition, conservation, and management of a river or section of river with outstanding natural heritage, cultural, and recreational values.	4/11/12	None	Feature captured under other data source.
Crown Land - MNR Acquisitions Public	clacq_p	polygon	For the purposes of this data class, securement = acquisition including all activities involving a title rights such as fee simple purchase, conservation easements, land donations, bequeaths and land exchanges.	4/11/12	None	Area with existing legislative protection.
Crown Land - MNR Non-Freehold Dispositions Public	cldisp_p	polygon	Dispositions refer to tenure on Crown land, usually for a set term and a specific purpose.	4/11/12	None	Area with existing legislative protection.
CLUPA Modifying Land Use Area	clupamod	polygon	Contains land use direction and the geographic extent they represent that supplements and/or modifies the principal land use direction for Crown Land.	4/11/12	None	Administrative boundary, Not relevant
Cottage: Residential Area	cotresar	polygon	Cottage Residential Area found within study area, Not Remote	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Cottage: Residential Site	cotressi	Point	Cottage: Residential Sites found within study area, Not Remotely Located	2/2/12	None	Deemed to be not relevant for natural heritage conservation.

County of Frontenac Natural Heritage Study - Data Collection Summary

Name	Shapefile	Type	Description	Date Received	Map	Rational
Crown Land - MNR Unpatented Land Public	crnlnd_p	Polygon	Lands that are under the mandate or management of the Ministry of Natural Resources.	4/11/12	None	Area with existing legislative protection.
Crown Game Preserves	crowngme	polygon	Crown Game Preserves were established to prohibit or at least regulate the hunting and trapping of wildlife in specific areas in order to restore local populations.	4/11/12	Supplementary data for Linkage modeling	No features located within study area.
Den Site	densite	polygon	A Den Site is a polygon feature that identifies a site where a species gives birth to and nurses its young (for example, red fox).	4/11/12	None	No features located within study area.
Federal Land	fedlndo	polygon	Federal Land (Canadian Forces Base, Airports, Harbours etc.)	2/2/12	Supplementary data for Linkage modeling	Area with existing legislative protection.
Fire Disturbance PT	firedspt	point	Represents the estimated starting point of a forest fire for which the perimeter was not mapped.	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Fire Disturbance Area	firedstb	polygon	A Fire Disturbance Area is an area greater than 40 hectares in size that has been disturbed by forest fire	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Forest Misc Damage Event	formisc	polygon	Includes forest damage events that cannot be singly attributed to a specific abiotic, insect or disease agent or event.	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Habitat Planning Range	hplanrng	polygon	A Habitat Planning Range is a polygon feature that identifies an area for which habitat criteria, climatological information, and species occurrence information combine to make it an exemplary habitat for a particular species.	4/11/12	None	Administrative boundary more than ecological boundary. Information captured in other more appropriate data sets
Indian Reserve	indianre	polygon	Indian Reserves near study area	2/2/12	None	No features located within study area.
Forest Insect Damage Event	insctdam	polygon	Area of insect damage of forested area	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Land Ownership	landown	polygon	Land designated as Crown Land, Private Land, or Federal Land (Indian Reserve and Other)	2/2/12	None	Administrative boundary, Not relevant
Landform Conservation Area	lndfcons		Land area dominated by steeply sloping or complex landform patterns. Identified by MNR as areas having more than 20 percent of the land surface comprised of: lands with slopes in excess of 10%; land with distinctive landform features such as ravines, kames and kettles; and/or Land with a high diversity of land slope classes	4/11/12	None	None within County
Land Use Plan Area, MNR	luplmnr	polygon	Includes where particular land use planning initiatives have effect that have been approved or are established for a significant geographic area.	2/2/12	None	Administrative boundary, Not relevant
Mineral Deposit Inventory	mindep		Database providing an overview of mineral deposits within the province of Ontario.	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Municipalities/Townships	Municipalities_Edited	polygon	Municipalities and Townships found within the study area	2/2/12	None	Administrative boundary, Not relevant
Bird Nesting	nesting	point	Bird Nesting Sites (Hawks, Raptors, Great Blue Heron ect) within the study area	2/2/12	Natural Heritage Map	Wildlife habitat which tends to be consistent year after year.
NGO Nature Reserve	ngonatrv	polygon	NGO Nature Reserves are lands held by nature trusts and other non-government agencies for the purpose of nature conservation.	2/2/12	Supplementary data for Linkage modeling	No features located within study area.

County of Frontenac Natural Heritage Study - Data Collection Summary

Name	Shapefile	Type	Description	Date Received	Map	Rational
Natural Heritage Values Area	nhervala	polygon	An area Recommended or Proposed for protection that may be subject to interim protection policies, including Provincial Parks (additions and new), Conservation Reserves (additions and new) and Forest Reserves.	2/2/12	Conservation Lands	Mapped as appropriate based on features with existing legislative protection.
Natural Heritage System Area	nhsarea	polygon	A system of natural core areas and key natural corridors or linkages, such as rivers and valleys, with significant ecological value.	2/2/12	None	No features located within County
Fish Nursery Area	nursafish	polygon	A Fish Nursery Area is a polygon feature that identifies an area where a fish species raises its newborn, if that area is different from the Spawning Area.	2/2/12	None	Protection of fish will be captured under general lakes and rivers.
Stewardship Zone	oszone	polygon	The Ontario Stewardship Program divides the province into four administrative regions or zones. Any given Stewardship Council will fall into one of these zones.	2/2/12	None	Administrative boundary, Not relevant
Ontario Trail Network Trail Segment	otnseg	polyline	A trail segment is a line feature which defines a linear corridor through the natural or urban environment.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Trailhead	otnthd	point	Recreational Trail Entrances within the study area.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Ontario Trail Network Watercourses	otnwcrs	polyline	Watercourses (Streams) across Ontario	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Recreation Access Point	recpnt	point	Access Points to Recreational Areas (Camping Sites) within the study area	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Resting Area	restarea	polygon	A Resting Area is a polygon feature that identifies an area where a certain species is known to habitually sleep or rest.	2/2/12	None	No features located within study area.
Source Protection Area Generalized	spagen	polygon	The area of land and water governed by a Source Protection Authority which defines the watershed area within which the terms of reference, assessment reports and source protection plans must be developed.	4/11/12	None	Deemed to be not relevant for natural heritage conservation as the mapping detail is too general.
Spawning Area	spawnare	polygon	A Spawning Area is a polygon feature that identifies an area where a species of fish habitually spawns.	4/11/12	None	Protection of fish will be captured under general lakes and rivers.
Fish Staging Area	stagafsh	polygon	A Fish Staging Area is a polygon feature that identifies an area where a fish species rests during migration.	2/2/12	None	Protection of fish will be captured under general lakes and rivers.
Tile Drainage Area	tiledrna	polygon	Captures the location of fields that have had tile drainage installed.	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Traditional Land Use Area	tlua	polygon	A Traditional Land Use Area is a polygon feature that identifies an area commonly used for both current and past human activities that are deemed worthy of special consideration.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Trail Segments	trailseg	polyline	A line feature which defines a linear corridor through the natural or urban environment, for one or more of the following recreational purposes; hiking, backpacking or snowmobiling)	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Wildlife Travel Corridor	travcwld	polygon	A Wildlife Travel Corridor is a polygon feature that identifies a route used by a wildlife species for migration.	2/2/12	None	No features located within study area.

County of Frontenac Natural Heritage Study - Data Collection Summary

Name	Shapefile	Type	Description	Date Received	Map	Rational
Tree Improvement Area	treeimpr	polygon	A Tree Improvement Area is a polygon feature that identifies an area designated for the study and improvement of tree species	4/11/12	None	Deemed to be not relevant for natural heritage conservation.
Utility Site	utilsite	point	Point utility features for providing services for power, water, communications, or heating fuel (Hydro Station, Pumping Station).	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Wildlife Management Unit	wildadmu	polygon	A Wildlife Management Unit (WMU) is a polygon feature that identifies a geographic area, i.e. numbered divisions of the Province of Ontario, which serves as a permanent land base for wildlife research and management.	4/11/12	None	Administrative boundary, Not relevant
Wild Rice Stand	wildrice	polygon	A Wild Rice Stand is a polygon feature that identifies an area where wild rice grows.	4/11/12	None	Will be captured under the protection of wetlands.
Water Power Generating Station	wpgenstn	point	A waterpower generation station is a facility that is used for the generation of electricity from water.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Water Power Potential Site	wppotste	point	A site which has the potential to be used for hydroelectric power generation.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Primary Watershed	wtrshpri	polygon	A Primary Watershed is a polygon feature that identifies one of the three primary watershed divisions which comprise the entire Province of Ontario: Great Lakes, Hudson Bay, and Mississippi.	2/2/12	None	Deemed to be not relevant for natural heritage conservation.
Quaternary Watershed	wtrshqua	polygon	Quaternary watersheds are fourth level drainage areas.	2/2/12	Supplementary data for Linkage and Biodiversity modeling	Used to define study area for modeling.
Secondary Watershed	wtrshsec	polygon	A Secondary Watershed is a polygon feature that identifies one of the seventeen secondary watershed divisions. Most secondary divisions are either large river systems or groupings of small coastal streams.	2/2/12	None	Too large a scale to be relevant for this study.
Ecoregion Boundary	ecoregn	Polygon	Ecoregions delindeations for Ontario	4/25/12	Natural Heritage Map	Used to delineate the ecoregion boundary.
Tertiary Watershed	wtrshter	polygon	A Tertiary Watershed is a polygon feature that identifies one of the 144 subdivisions of the secondary watershed divisions. Tertiary divisions range in size from 700 square kilometres to 31,000 square kilometres.	2/2/12	Supplementary data for Linkage and Biodiversity modeling	Used to define study area for modeling.
FRI FIMv1 (Bancroft Minden Forest - 2003)		polygon	These layers provides the general current production status of all Forest Resources Inventory (FRI) units in the province of Ontario.	4/11/12	None	not relevant yet for general mapping yet.
FRI FIMv1 (Ottawa Valley Forest - 1998)		polygon		4/11/12	None	not relevant yet for general mapping yet.
FRI FIMv1 (Mazinaw Lanark Forest - 2006)		polygon		4/11/12	None	not relevant yet for general mapping yet.
FRI Planning Composite Inventory (Ottawa Valley Forest)		polygon	Forest Resource Inventory for Ottawa Valley forests	4/11/12	None	not relevant yet for general mapping yet.
FRI Planning Composite Inventory (Mazinaw Lanark Forest)		polygon	Forest Resource Inventory for Mazinaw / Lanark forests	4/11/12	None	not relevant yet for general mapping yet.
FRI Planning Composite Inventory (Bancroft Minden Forest)		polygon	Forest Resource Inventory for Bancroft / Minden forests	4/11/12	None	not relevant yet for general mapping yet.
Provincial Landcover 2000 - 27 Classes		polygon	The land cover classes consist of vegetation types (such as forest, wetlands, and agricultural crops or pasture) and categories of non-vegetated surface (such as waterbodies, bedrock outcrops, or settlements).	4/11/12	None	not relevant yet for general mapping yet.

County of Frontenac Natural Heritage Study - Data Collection Summary

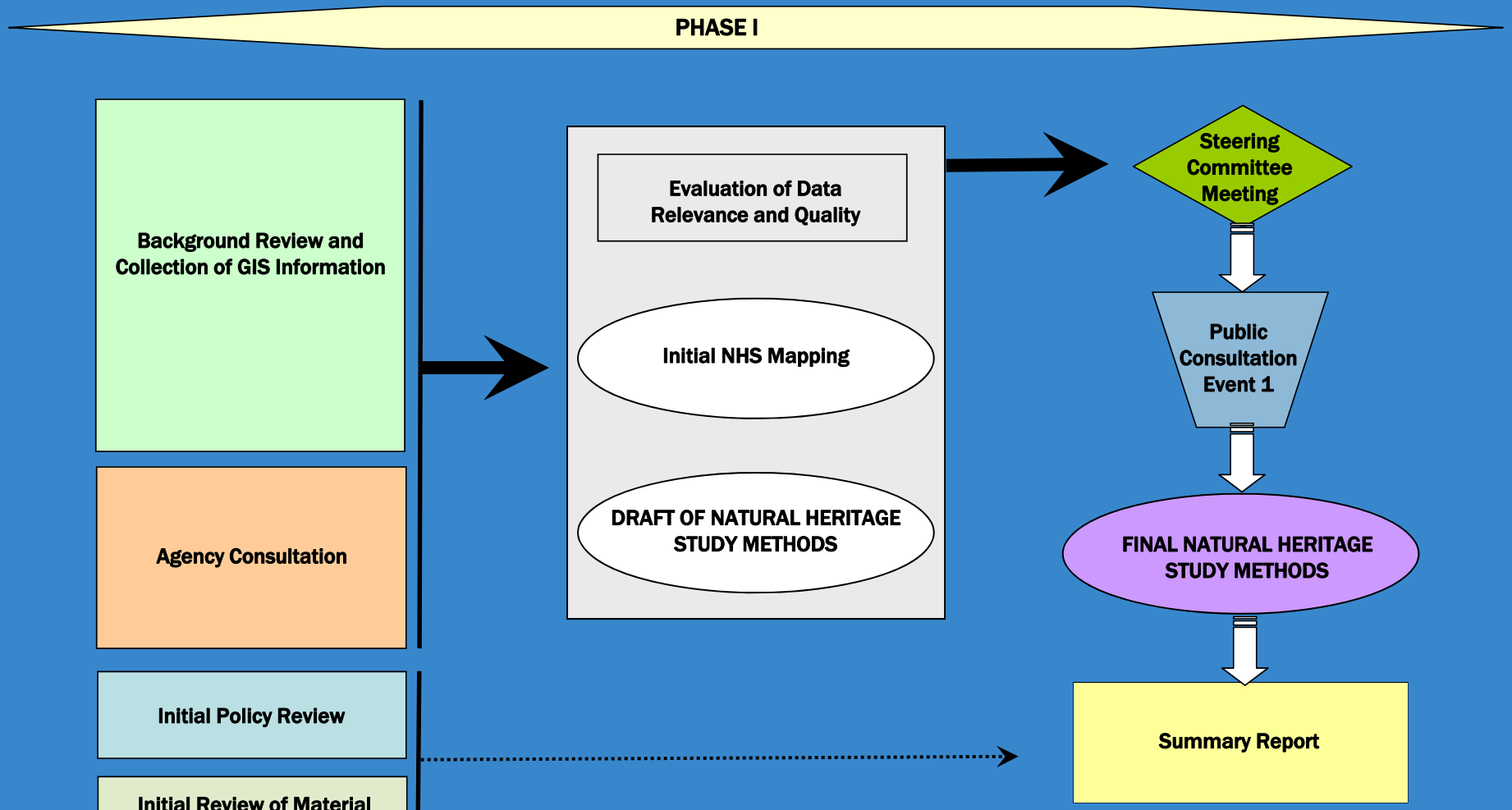
Name	Shapefile	Type	Description	Date Received	Map	Rational
Floodplain Hazard Land Mapping - Ontario		polygon	This dataset includes information from Canada's Flood Damage Reduction Program (FDRP). In addition to FDRP features, this dataset also includes some First Nations floodplain mapping. It does not include any Conservation Authority floodplain mapping.	4/11/12	None	Too fine a scale for County wide mapping
Ecological Land Classification (ELC) of Ontario		polygon	High-Level ecological land classification for Ontario	4/11/12	None	not relevant yet for general mapping yet.
Southern Ontario Land Use - Canada Land Inventory		polygon	Land cover map based on classified satellite imagery.	4/11/12	None	not relevant yet for general mapping yet.
Cataraqui Region Conservation Authority Data						
Property owned by Cataraqui Region CA	CRCA_Properties	polygon	Properties owned by the Conservation Authority.	4/13/12		Area with existing legislative protection
--Unknown	CKN_section_28_Screening_Area	polygon	-- No information provided	4/13/12	None	Does not appear to be relevant for NH Mapping.
Floodplains	floodplains	line	Floodplain boundaries for watercourses within the conservation authority administration area.	4/13/12	None	Too fine a scale for County wide mapping
Frontenac Islands Floodline at 76m	Frontenac_Islands_Floodline_76m	line	Floodline for the Frontenac Islands based on the 76m contour line.	4/13/12	None	Not relevant at this stage
--Unknown	SF_section_28_screening_area	polygon	-- No information provided	4/13/12	None	Does not appear to be relevant for NH Mapping.
St Laurence flood level	St_Lo_floodlevel	line	Flood level along the St Laurence River.	4/13/12	None	Not relevant at this stage
Quinte Conservation Authority Data						
Quinte Region boundary	QC_Boundary	polygon	Datasets developed in order to have a consolidated and resolved Source Water Protection Planning (SWPP) watershed boundary area, for use in Conservation Authority and Source Water Protection regional-scale mapping.	4/13/12	None	Area with existing legislative protection
Environmental Hazard Line (Generic Regulations Limit)	Env_Hazard_Line_Final	line	To show Generic Regulations Limit within Quinte Conservation jurisdiction.	4/13/12	None	Not relevant at this stage
Flood line for Quinte Conservation including Lane Creek in Wellington	Floodline_Edit	line	To show regulated flood line within Quinte Conservation jurisdiction.	4/13/12	None	Not relevant at this stage
Property owned by Quinte Conservation	QC_CA_Selection	polygon	A subset of Quinte Conservation owned properties that are promoted as Conservations Areas to the general public	4/13/12	None	Not relevant at this stage
Quinte Conservation trail network	QC_Trail_Network_All	line	A digital collection of the Quinte Conservation trail network as promoted to the general public. The trail network was collected via GPS data capture during the summer of 2010.	4/13/12	None	Not relevant at this stage.
Rideau Valley Conservation Authority Data						
Boundaries of RVCA properties	County_Frontenac_March2012_CA_Areas	polygon	Conservation Authority properties within the County of Frontenac.	4/13/12	Supplementary data for Linkage and Biodiversity modeling	Area with existing legislative protection
City of Kingston Base Data						
Buildings within the City of Kingston	CoK_Building	polygon	Buildings	4/13/12	None	Not relevant at this stage
Civic Addresses within the City of Kingston	CoK_Civic_Address	point	Civic addresses	4/13/12	None	Not relevant at this stage
MPAC property assessments for the City of Kingston	CoK_MPAC_Parcel_Assessment	polygon	Parcel fabric for Kingston	4/13/12	None	Not relevant at this stage
Road Network for the City of Kingston	Cok_Road_Element	line	Road network for Kingston	4/13/12	None	Not relevant at this stage
County of Frontenac						
At Capacity Lake Trout Lakes	Lake_Trout_Lakes.shp	polygon	At Capacity Lake Trout Lakes identified within the County	4/25/12	Natural Heritage Map	Defines the location of the At Capacity lakes
Queens Biology Station						

County of Frontenac Natural Heritage Study - Data Collection Summary

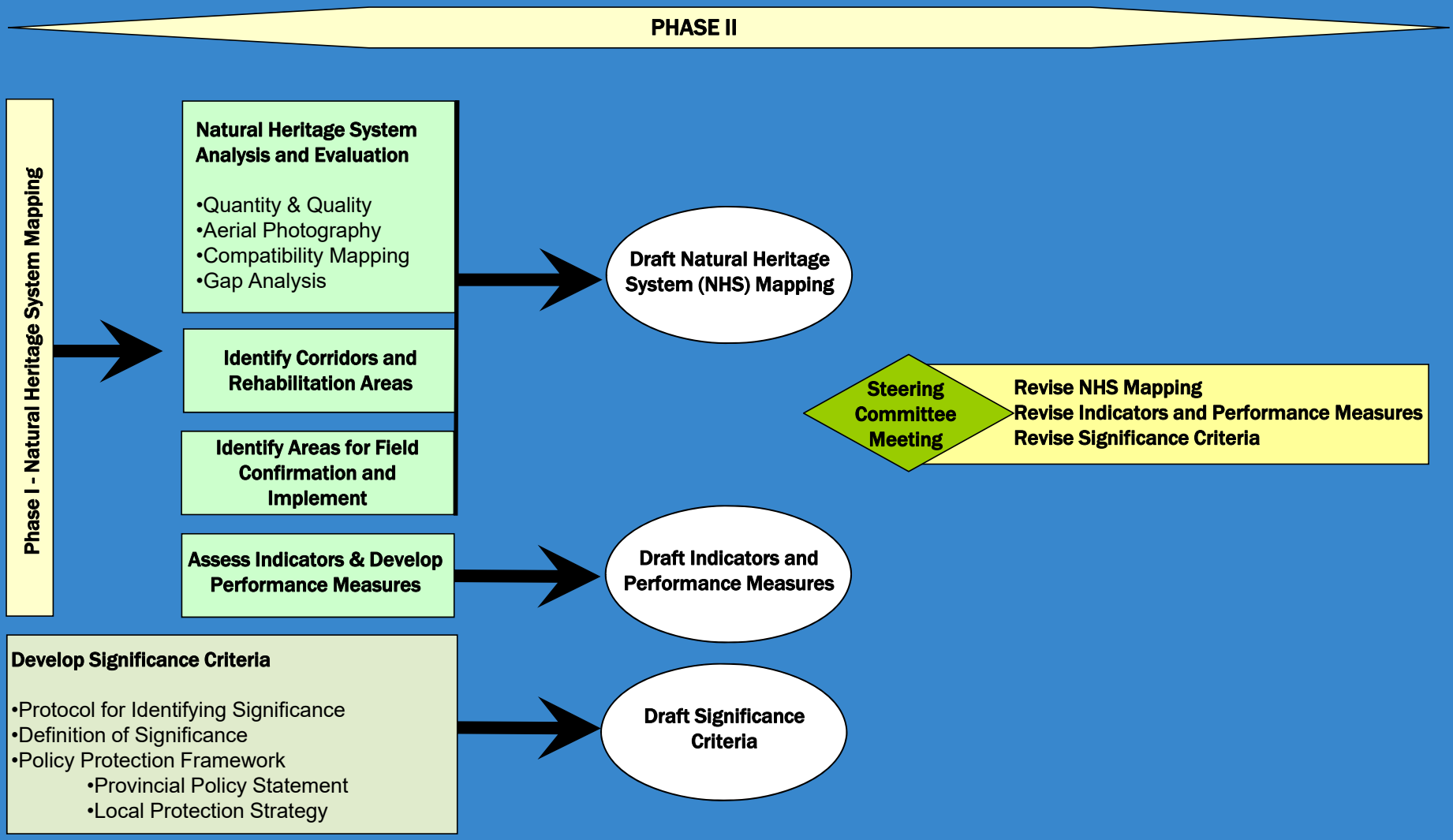
Name	Shapefile	Type	Description	Date Received	Map	Rational
Queens Biology Station Properties	Merged_Boundaries3	polygon	Properties owned by the Queens University Biology Station (QUBS).	4/25/12	None	ANSI's and PSW's were used as surogates for natural heritage within QUBS.
Ontario Ministry of Northern Development and Mines						
Quartenary Geology	bedrock_II.shp	polygon	Quartinary Geology mapping used for Canadian Shield Boundary	7/5/12	Supplementary data for Biodiversity modeling	Required to show the Canadian Shield boundary

Appendix II:
Methodology for Carrying Out the NHS

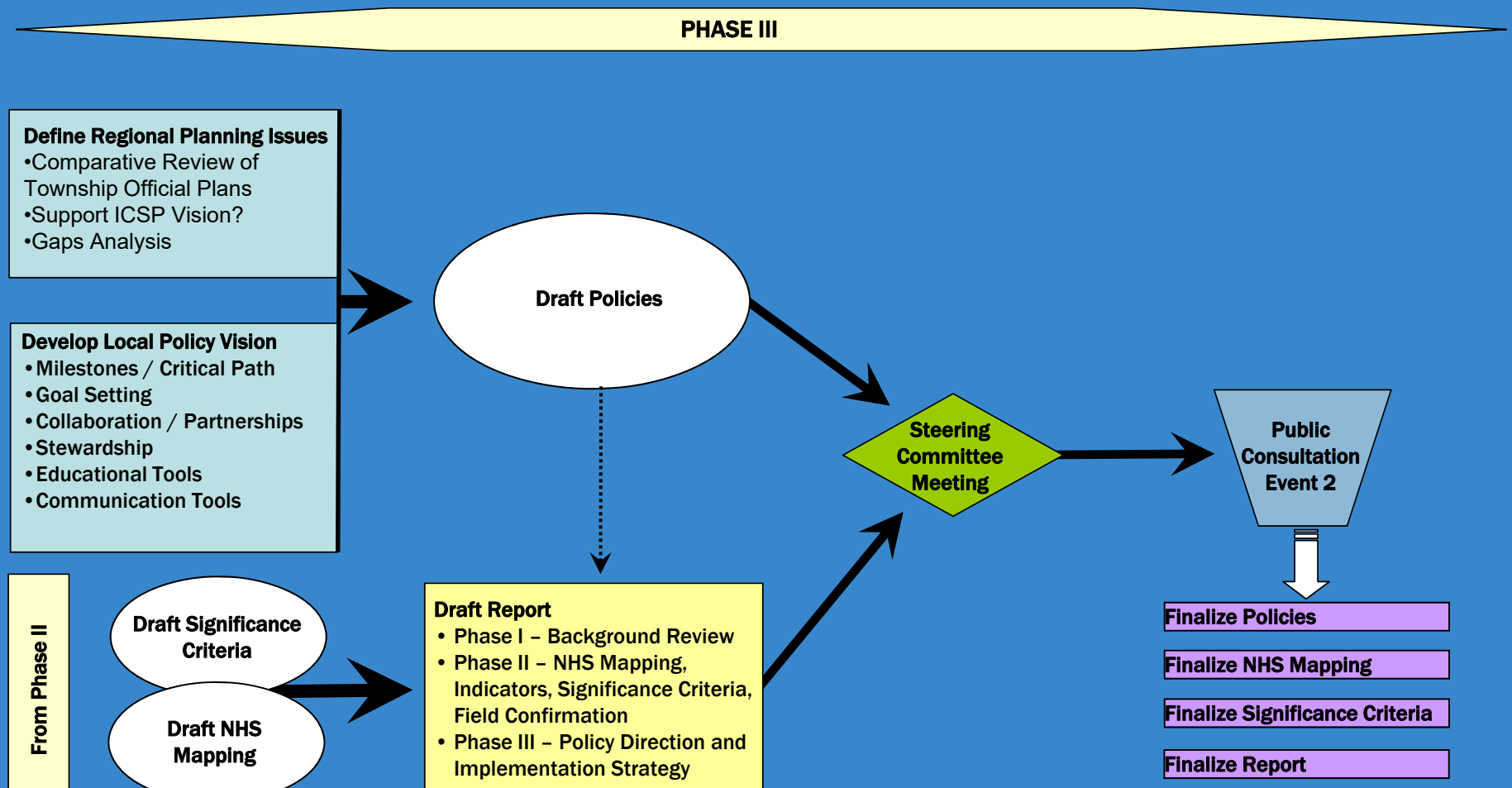
COUNTY OF FRONTENAC NATURAL HERITAGE STUDY METHODOLOGY



COUNTY OF FRONTENAC NATURAL HERITAGE STUDY METHODOLOGY



COUNTY OF FRONTENAC NATURAL HERITAGE STUDY METHODOLOGY



Appendix III:
Information Defining Significance of Natural Heritage Features

Natural Heritage Reference Manual Material Defining Protection Requirements Under the PPS, Adjacent Lands, Identification of Natural Features and Evaluation of Their Significance

Natural Feature	Protection Requirement Under the PPS	Adjacent Lands	Definitions	Identification	Relevant Documents, Acts, Regulations or Definitions
Habitat of Endangered and Threatened Species	The PPS direct in Policy 2.1.7 that development and site alteration shall not be permitted in habitat of endangered species and threatened species, except in accordance with provincial and federal requirements.	120 m (or as otherwise determined necessary through consultation with the planning authority or MNR)	An ***Endangered*** or ***Threatened*** species: means a species that is listed or categorized as an "*Endangered* Species" or "*Threatened* Species" on the Ontario Ministry of Natural Resources' official Species at Risk in Ontario (SARO) list, as updated and amended from time to time. **Significant**: habitat of *Endangered* species and *Threatened* species, means the habitat, as approved by the Ontario Ministry of Natural Resources, that is necessary for the maintenance, survival and/or 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.	Under the ESA, MNR is responsible for giving technical advice on species identified on the SARO List and their habitats. For the purposes of implementing policies of the PPS, MNR is responsible for approving the delineation of significant habitat for species identified as endangered and threatened. The MNR district office should be contacted as part of early consultation when planning authorities or development proponents have reason to believe that an endangered or threatened species may be present. Where MNR has not delineated or described the significant habitat, or otherwise defined habitat under the ESA, MNR district offices can provide information and guidance for identifying endangered and threatened species and their habitats found within a municipal planning area or within a proposed development area. Delineated habitat of endangered and threatened species is considered sensitive information. The exact locations of these species should not be identified in municipal planning documents or documents submitted to the municipality.	Endangered Species Act, 2007 Section 5.0 of NHRM (MNR 2010) Appendix B of the NHRM (MNR 2010) for sources of information for the identification and evaluation of significant habitat of endangered and threatened species.
Wetlands	To be consistent with the PPS, planning authorities are required to implement policies 2.1.4, 2.1.5(f), and 2.1.8 for the protection of wetlands. The PPS states the following: 2.1.4 Development and site alteration shall not be permitted in: a) significant wetlands in Ecoregions 5E, 6E and 7E; and b) significant coastal wetlands. 2.1.5 Development and site alteration shall not be permitted in: f) coastal wetlands in Ecoregions 5E, 6E and 7E that are not subject to policy 2.1.4(b) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. 2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.	120 m (or as otherwise determined necessary through consultation with the planning authority or MNR)	**Coastal wetland**: means a) Any wetland that is located on one of the Great Lakes or their connecting channels (Lake St. Clair, St. Mary's, St. Clair, Detroit, Niagara and St. Lawrence Rivers); or b) Any other wetland that is on a tributary to any of the above-specified water bodies 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 large water body to which the tributary is connected. **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 plants or water tolerant plants. The four major types of wetlands are swamps, marshes, bogs and fens. Periodically soaked or wet lands being used for agricultural purposes, which no longer exhibit wetland characteristics, are not considered to be wetlands for the purposes of this definition. **Significant**: means in regard to wetlands and coastal wetlands, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time.	A provincially significant wetland (PSW) occurs when a wetland is identified, mapped and scored using a scientific point-based ranking system known as the Ontario Wetland Evaluation System (OWES). A PSW, which needs to be identified or confirmed by MNR, is defined as any OWES evaluated wetland that scores: • A total of 600 or more points; or • 200 or more points in either the biological component or the special features component. MNR is responsible for the OWES, which provides a standardized method of assessing wetland functions and societal values and enables the Province to rank wetlands relative to one another. The OWES consists of two manuals: the Southern Ontario Wetland Evaluation System (used to evaluate all wetlands located in Ecoregions 6 and 7) and the Northern Ontario Wetland Evaluation System (used to evaluate all wetlands located in Ecoregions 2, 3, 4, and 5). Not all wetlands have been evaluated. For a wetland that is unevaluated but has characteristics or contains components that are typical of a significant wetland (e.g., significant species or functions), the planning authority should ensure that a wetland evaluation is undertaken unless MNR has already identified the wetland as a work project prior to processing any planning approvals. **Qualification/Experience Requirements**: Wetlands can be identified and evaluated by MNR staff or by other qualified professionals, provided that they use the approved OWES methodology and have received MNR training in the use of the Province's wetland evaluation system. In all cases, MNR is responsible for reviewing and approving the evaluations. MNR recognizes only ministry-sanctioned wetland	Southern Ontario Wetland Evaluation System Manual (MNR 2002) Northern Ontario Wetland Evaluation System (MNR 2002) Policy 2.2 of the PPS contains direction for planning authorities to protect and improve or restore the quality and quantity of water through various ways. Protection of wetlands can contribute to achieving goals related to water quality and quantity. *Conservation Authorities Act*, conservation authorities are empowered to restrict and regulate the use of wetlands. Development, as defined by the Conservation Authorities Act, taking place within or adjacent to a wetland in conversation authority regulated areas may require permission through a permit from the relevant conservation authority to confirm that the wetland is not changed or interfered with in any way.

Natural Heritage Reference Manual Material Defining Protection Requirements Under the PPS, Adjacent Lands, Identification of Natural Features and Evaluation of Their Significance

Natural Feature	Protection Requirement Under the PPS	Adjacent Lands	Definitions	Identification	Relevant Documents, Acts, Regulations or Definitions
	Negative Impacts is defined as 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.			evaluation courses. Wetland evaluations conducted by individuals trained by other organizations will not be considered.	
Woodlands	To be consistent with the PPS, planning authorities are required to implement policies 2.1.5(b), and 2.1.8 for the protection of woodlands. The PPS states the following: 2.1.5 Development and site alteration shall not be permitted in: b) significant woodlands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River); unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. 2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.	120 m (or as otherwise determined necessary through consultation with the planning authority or MNR)	**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. **Significant**: means 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.	Approaches to compiling and assessing woodland information will vary depending on the availability of information, the nature of the woodlands present in the planning area and the extent of development pressures on the woodland. Planning authorities are encouraged to undertake a comprehensive study to identify significant woodlands for their planning area. However, woodlands may be identified as potential or candidate significant woodlands for the purposes of the PPS until appropriate detailed studies can be undertaken at a later planning stage (e.g., development application) to confirm their status. **Table 7-2** and **section 7.3.1** of the NHRM (MNR 2010) provides direction for the criteria for evaluating the significance of woodlands. Suggested criteria for evaluating significance include: • Woodland Size; • Ecological Functions (woodland interior, proximity, linkages, water protection, diversity); • Uncommon Characteristics; and • Economic and Social Functional Values **Recommendation**: use woodland cover within watersheds of the County of Frontenac to inform which size criteria denotes significant woodlands. Allow site specific studies to apply the size criteria in conjunction with other criteria above to confirm significance.	Section 7.0 of NHRM (MNR 2010) *Forestry Act and Forest Conservation By-Laws* - The identification and protection of significant woodlands do not preclude good forestry practices. Ideally, planning authorities should promote good forestry practices.
Valleylands	To be consistent with the PPS, planning authorities are required to implement policies 2.1.5(c), and 2.1.8 for the protection of valleylands. The PPS states the following: 2.1.5 Development and site alteration shall not be permitted in: c) significant valleylands in Ecoregions 6E and 7E (excluding islands in Lake Huron and the St. Marys River); unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. 2.1.8 Development and site alteration shall not be permitted on adjacent lands to the	120 m (or as otherwise determined necessary through consultation with the planning authority)	**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. **Significant**: means in regard to other features and areas in policy 2.1, 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.	The identification and evaluation of valleylands as significant can be completed using the recommended MNR criteria (e.g. landform related functions and attributes, ecological features, restored ecological functions) (section 8.3 of the NHRM). However, it is the responsibility of planning authorities to implement their identification, evaluation and protection. To identify significant valleylands, an understanding of their hydrological and geomorphic structure is important. Generally, the physical boundaries of valleys should first be identified. Some valleylands are found within a distinct valley landform. Others, within headwater areas, may not have a defined watercourse channel where flow is overland and originates from springs, seepage areas and surface runoff. The physical boundaries are generally determined as follows: • For well-defined valleys, the physical boundary is generally defined by the stable top-of-bank or the predicted top-of-bank (also known as “top of slope” or “top of valley”). • For a less well-defined valley or stream corridor, the physical boundary may be defined in a number of ways, including the	*Conservation Authorities Act* – conservation authorities are empowered to regulate development and activities in or adjacent to river or stream valleys, watercourses and hazardous lands (e.g., unstable soils, unstable bedrock). Development, as defined by the Conservation Authorities Act, taking place within or adjacent to river or stream valleys, watercourses and hazardous lands in conservation authority regulated areas may require permission through a permit from the relevant conservation authority to confirm that the area is not altered in any

Natural Heritage Reference Manual Material Defining Protection Requirements Under the PPS, Adjacent Lands, Identification of Natural Features and Evaluation of Their Significance

Natural Feature	Protection Requirement Under the PPS	Adjacent Lands	Definitions	Identification	Relevant Documents, Acts, Regulations or Definitions
	natural heritage features and areas identified in policies 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.			consideration of riparian vegetation, the flooding hazard limit, the meander belt or the highest general level of seasonal inundation. Additional information sources for the identification and evaluation of significant valleylands are provided in Appendix B of the NHRM (MNR 2010).	way.
Significant Wildlife Habitat (SWH)	To be consistent with the PPS, planning authorities are required to implement policies 2.1.5(d), and 2.1.8 for the protection of wildlife habitat. The PPS states the following: 2.1.5 Development and site alteration shall not be permitted in: d) significant wildlife habitat; unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. 2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.	120 m (or as otherwise determined necessary through consultation with the planning authority)	**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 which are important to migratory or non-migratory species. **Significant:** means in regard to other features and areas in policy 2.1, 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;	Significant wildlife habitat frequently occurs in other natural heritage features and areas covered by policies under 2.1 of the PPS (e.g., significant wetlands). To ensure efficient planning processes, the identification and evaluation of significant wildlife habitat often are best undertaken after other natural heritage features have been identified. Where other natural heritage features and areas have been identified, a proponent may not have to identify significant wildlife habitat in these features, provided that: • the feature(s) are already protected under official plan policies and designations; • the ecological function of the adjacent lands of the feature(s) is evaluated and appropriate protection measures are in place so that there will be no negative impacts on the feature or its ecological function; and • if needed, the proponent still considers the significant wildlife habitat functions of these features as part of any site assessment. While in some cases the protection of other natural heritage features and areas may address significant wildlife habitat, planning authorities are still encouraged to identify it on a comprehensive basis (e.g., during development/review of official plans, including establishing settlement area designations). It may still be necessary to carry out site assessments before any site-specific planning approvals are granted in order to identify other significant wildlife habitat. For a more comprehensive understanding of SWH identification, refer to section 9.3 of the NHRM (MNR 2010) as well as the Significant Wildlife Habitat Technical Guide (SWHTG) (MNR 2000) for a complete list of SWH and their identification. Ecoregion Criterion Schedules, which is an addendum to the SWHTG can also be used to distinguish Ecoregion differences in criteria defining significance.	Significant Wildlife Habitat Technical Guide (MNR 2000) Natural Heritage Reference Manual (MNR 2010) Significant Wildlife Habitat Decision Support System EcoRegion Criterion Schedules
Significant Areas of Natural and Scientific Interest (ANSI)	To be consistent with the PPS, planning authorities are required to implement policies 2.1.5(e), and 2.1.8 for the protection of ANSIs The PPS states the following: 2.1.5 Development and site alteration shall not be permitted in: e) significant areas of natural and scientific interest;	120 m from Life Science ANSIs 50 m from Earth Science ANSIs or as otherwise determined necessary through consultation with the planning authority	**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.	The MNR identifies and ranks ANSIs as being provincially, regionally or locally significant. For the purposes of policies 2.1.5(e) and 2.1.8 of the PPS, significant ANSIs include only ANSIs identified as provincially significant. Although ANSIs identified as regionally or locally significant are not included in the PPS definition, information about such ANSIs can still support the development of natural heritage systems under the PPS. Planning authorities can also choose to protect regional or local ANSI similar to provincially significant ones.	---

Natural Heritage Reference Manual Material Defining Protection Requirements Under the PPS, Adjacent Lands, Identification of Natural Features and Evaluation of Their Significance

Natural Feature	Protection Requirement Under the PPS	Adjacent Lands	Definitions	Identification	Relevant Documents, Acts, Regulations or Definitions
	unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. 2.1.8 Development and site alteration shall not be permitted on adjacent lands to the natural heritage features and areas identified in policies 2.1.4 and 2.1.5 unless the ecological function of the adjacent lands has been evaluated and it has been demonstrated that there will be no negative impacts on the natural features or on their ecological functions.				
Fish Habitat	To be consistent with the PPS, planning authorities are required to implement policies 2.1.6 for the protection of fish habitat The PPS states the following: Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements.	300 m for inland lake trout lakes on the Canadian Shield at capacity; and 120 m (or as otherwise determined necessary through consultation with the planning authority or other relevant agencies on their behalf)	**Fish habitat:** as defined in the Fisheries Act, c. F-14, means 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. **Fish:** means fish, which as defined in S.2 of the Fisheries Act, c. F-14, as amended, includes fish, shellfish, crustaceans and marine animals, at all stages of their life cycles. **Provincial and federal requirements:** means in regard to policy 2.1.6, legislation and policies administered by the federal or provincial governments for the purpose of the protection of fish and fish habitat, and related, scientifically established standards such as water quality criteria for protecting lake trout populations**.**	Planning authorities involved in identifying fish habitat for the purposes of the PPS need to incorporate DFO direction, in addition to the Fisheries Act definition for "fish habitat": • "Healthy and productive fish habitats require a sufficient amount of clean water; an adequate supply of food; adequate structure and cover to avoid predation; spawning areas, rearing grounds and nursery areas for larval and juvenile fish; and clear migration routes so that adult fish can reach spawning areas and move between other habitats; and • Wise management of fish and fish habitat also involves maintaining natural ecological functions and processes" (Fisheries and Oceans Canada, 2006). To incorporate DFO direction, habitat information is needed at both broad and detailed scales in order to consider fish habitat issues. For PPS purposes, both broad scale and detailed habitat information is needed to ensure a specific development application does not negatively affect fish habitat. This information can be captured on broad scale maps that identify waterbodies and aquatic communities across the landscape and detailed maps that identify habitats such as spawning and nursery areas. Where no detailed fish habitat information has been completed, all water features, including permanent or intermittent streams, headwaters, seasonally flooded areas, municipal or agricultural surface drains, lakes, ponds (except human-made off-stream ponds) should initially be considered fish habitat. **The** MNR has identified Lake Trout Lakes and their drainage basins as a special fisheries resource to be considered when making land use planning decisions. MNR maintains a formal list of lakes designated for lake trout management: Inland Ontario Lakes Designated for Lake Trout Management.	Fisheries Act; Endangered Species Act, 2007; and Species at Risk Act

Additional Definitions

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;
b) works subject to the Drainage Act; or
c) for the purposes of policy 2.1.4(a), underground or surface mining of minerals or advanced exploration on mining lands in significant areas of mineral potential in Ecoregion 5E, where advanced exploration has the same meaning as under the Mining Act. Instead, those matters shall be subject to policy 2.1.5(a).

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. For the purposes of policy 2.1.4(a), site alteration does not include underground or surface mining of minerals or advanced exploration on mining lands in significant areas of mineral potential in Ecoregion 5E, where advanced exploration has the same meaning as in the Mining Act. Instead, those matters shall be subject to policy 2.1.5(a).

Negative impacts: means

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.

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.

Appendix IV:
Comparative Assessment of Official Plans

County of Frontenac Natural Heritage Study - Policy Review

Policy Structure	Central Frontenac 2008 Adopted Official Plan	Frontenac Islands Official Plan Adopted by Council late 2011 Under review by MAH	North Frontenac Official Plan Adopted by Council early 2012 Under review by MAH	South Frontenac Draft Official Plan	Level of Consistency
Vision/ Principles/ Goals/ Objectives	**2.8 Natural Heritage Features and Areas** Part of the heritage of the area is a deep respect for the environment and the amenities of natural habitat areas. The Plan sets out policies to ensure that there are no adverse impacts to the conservation of the environment and the ecological functions associated with fish and wildlife habitats and wetlands.	**1.4 Vision Statement** The vision for Frontenac Islands is to create a strong community identity that reflects the unique island character of the area, which respects the principles of orderly, well managed growth and development, which is adequately serviced, which maintains (and preferably enhances) the quality of the natural environment and which provides for sustainable development. Sustainable development is described as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. The Township's vision embraces the concept of sustainable development through land use decisions that integrate human needs with the natural and built environment. Land use decisions also include sustainable design measures for transportation, infrastructure, waste management, energy systems and the harvesting and use of natural resources. The vision intends to be adaptive to innovative design and human activities that support sustainability. **2.1 Goals and Objectives** 9. Certain Natural Heritage Features and Areas within the Municipality warrant protection through measures which are consistent with the Provincial Policy Statement. **2.27 Natural and Cultural Heritage Features** <u>Goal</u> To protect significant natural and cultural heritage features and areas from incompatible development. <u>Objectives</u> 1. To support the evaluation of natural and cultural heritage features to determine their significance and require an archeological evaluation of resources. 2. To document those features and areas which are significant. 3. To provide for the review of all land use changes or site alteration which could negatively impact significant natural heritage features or on their ecological functions. Best management practices, mitigative techniques, and avoidance will be encouraged as means of eliminating negative impacts and avoiding incompatible development. 4. To maintain, protect and enhance the connections between natural heritage features, including shoreline riparian zones.	**2.2 Vision** Sustainable development is described as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development is a process of managing change in which exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are all in harmony and enhance both current and future potential to ensure a balance between humans and the biophysical environment (i.e., fauna, flora, the air, water and soil). The Township's vision embraces the concept of sustainable development through land use decisions that integrate human needs with the natural and built environment.	**4.1 NATURAL HERITAGE GOAL** The natural beauty of South Frontenac Township's lakes, forests and rural landscape is its predominant asset. It is the Natural Heritage Goal of this Official Plan to preserve and enhance South Frontenac Township's environmental quality for the enjoyment of future generations, while realizing its economic potential. To accomplish this, development decisions will be made from a long term cumulative impact point of view which protects the natural heritage systems within the Township. <u>(a) Objectives</u> (i) to promote sustainable development that meets the needs of the present without compromising the ability of future generations to meet their own needs. (ii) to approach planning decisions on an ecosystem basis, an approach that recognizes the interconnection of all living organisms, including humans, to their environment and to each other. (iii) to consider the cumulative impacts of planning decisions, recognizing that development proposals cannot be addressed only on an individual basis in isolation from past and future decisions. (iv) to ensure that no net loss of environmental quality occurs. (v) to maintain or improve surface and subsurface water quality. (vi) to encourage the re-establishment of natural vegetation along shorelines and the upgrading of existing development around waterbodies, especially older sewage disposal systems which may be adversely affecting water quality.	**All plans discuss the importance of sustainable development and having no adverse impacts on the natural environment. Frontenac Islands and South Frontenac provide additional details by listing out specific goals with regards to natural heritage features.**

County of Frontenac Natural Heritage Study - Policy Review

Policy Structure	Central Frontenac 2008 Adopted Official Plan	Frontenac Islands Official Plan Adopted by Council late 2011 Under review by MAH	North Frontenac Official Plan Adopted by Council early 2012 Under review by MAH	South Frontenac Draft Official Plan	Level of Consistency
Definition	• Definitions are excerpted from the Provincial Policy Statement **(Section 7.5.1)** • "For the purposes of this Plan, the … definitions, as excerpted from the Provincial Policy Statement shall be utilized in the application of the Natural Heritage Features and Areas policies"	• The definitions in the PPS applies (Definitions p.100) • "For the purposes of the Township of Frontenac Islands Official Plan, where terms are used in the Plan that are defined and intended to be those set out in the Provincial Policy Statement, the definition in the Provincial Policy Statement shall apply."	**4.12 Natural Heritage Features and Areas** • Natural heritage features and areas are those areas, which are important for their environmental and social values as a legacy of the natural landscapes of the area. Collectively, the individual natural heritage features and areas within a given Planning Area form a natural heritage system. It is intended that the particular features identified in North Frontenac will be conserved for their natural heritage value. Natural Heritage Features are shown on the Land Use Plan Schedules. • **4.12.1** "For the purposes of this Plan, the definitions from the Provincial Policy Statement listed in Appendix 1 shall be utilized in the application of the Natural Heritage Features and Areas policies"	• Section 3.0 states definitions (excerpts from the PPS)	• **All OPs are consistent in using the definitions from the PPS**
Delineation	• Outline all of the Environmental Protection Areas (provincial, local and regional) • Natural heritage features are identified on the map and listed in the policy • Natural Heritage Features and Areas are shown on Schedule 'A1 - A4', Land Use Plan and are to be considered as part of the ***Environmental Protection Area***. Sub categories found under ***Environmental Protection Area***: • Provincially Significant Wetlands • Locally Significant Wetland • Provincially Significant A.N.S.I. • Regionally Significant A.N.S.I. • Locally Significant A.N.S.I. • Flood Plain • Wetland 120m adjacent lands • Natural Heritage Feature	• The Background Study has assembled the available information on both Natural and Cultural Heritage Features. This information has been reproduced as Schedule "B" to this Plan. It is acknowledged that this information will change as new research is conducted. Therefore, it is expected that Schedule "B" will be updated regularly by Council resolution. **(page 31)** **Schedule "A":** • Provincially Significant Wetlands • Sensitive Shoreline **Schedule "B":** • ANSI – Provincial • ANSI – Regional • Locally Significant Wetlands	• Natural Heritage Features and Areas which have been identified in the Municipality are illustrated on the Land Use Plan Schedules with an appropriate symbol to identify particular features. • Although occurrences of species at risk and habitat are not shown on the Land Use Plan Schedules, due to data sensitivity, species at risk and habitat will be considered when screening planning applications and prior to application approval. There is potential that suitable/significant habitat persists in the Municipality and the list is subject to change as new information is gathered. The following is identified on the map: • Provincially Significant Wetland • Locally Significant Wetlands • Deer Winter Concentration Area • Moose Winter Concentration Area • Fish Habitat • Highly Sensitive Lake Trout Lakes • Moderately Sensitive Lake Trout Lakes and other cold water lakes • Areas of Natural and Scientific Interest (ANSI) • Cold Water Streams • Resource Management Lands • Enhanced Management Areas • Provincial Parks • Conservation Reserves • Lake Development Area	• **5.2.2** The boundaries of the Environmental Protection designation have been established by air photo interpretation, site inspections, input from the Conservation Authorities and the Ministry of Natural Resources, evaluated wetland mapping and by reference to the engineered flood plain mapping for portions of the Napanee Region and Cataraqui Region watersheds (the Rideau Valley Conservation Authority has no engineered floodline mapping in the Township). When additional information on the natural heritage or natural hazard features, wetland mapping or floodline mapping becomes available, this Official Plan and the Zoning By-law shall be amended accordingly. The boundaries of the Environmental Protection designation will serve as the basis for the implementing Zoning By-law. Land use map identifies the following: • Environmental protection • Provincially significant wetlands • Environmentally sensitive areas • Sensitive lake trout lakes	**All of the OPs identify Significant Wetlands and Areas of Natural and Scientific Interest (ANSI). South Frontenac includes these areas within its Environmental Protection Area designation.** **All of the OPs make sure to identify the designated areas on their land use maps.** **North Frontenac and South Frontenac recognize sensitive lake trout lakes.** **North Frontenac recognizes habitat areas (deer, moose and fish).** **Flood plains are addressed in Central Frontenac and partly in South Frontenac where the data exists.**

County of Frontenac Natural Heritage Study - Policy Review

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Designation	**7.5.2.1** Natural Heritage Features and Areas included within the Environmental Protection designation in Central Frontenac include: A. The Hungry Lake Barrens, a Provincially Significant ANSI. (This area has also been identified as a candidate Conservation Reserve. The intention of the Province is to conserve this area for its unique life science attributes.) B. Piccadilly Swamp, a Provincially Significant ANSI. C. Harlowe Bog, considered to be a regionally significant ANSI. D. Black Len Fen, considered to be a regionally significant ANSI. E. Kennebec Wetland Complex (Kennebec Lake), a provincially significant wetland. F. Big Clear Lake Wetland Complex) Big Clear Lake, a locally significant wetland. G. Hinchinbrooke Wetland (east of Elbow Lake and south of Duncan Lake), a locally significant wetland. H. Oso Wetland (north of Chambers Lake), a locally significant wetland. I. Sharbot Lake - west basin, a highly sensitive lake trout lake. J. Silver Lake - a highly sensitive lake trout lake. K. Eagle Lake - a moderately sensitive lake trout lake. L. Crow Lake - a moderately sensitive lake trout lake. M. Bolton Creek Wetland, a provincially significant wetland. Such lands are designated as Environmental Protection Area on the Land Use Schedules with an appropriate symbol to identify particular features i.e. PSW -Provincially Significant Wetland, PSA - Provincially Significant ANSI etc. The above list of Natural Heritage Features and Areas is not intended to be	**5.4** Over time, Council may undertake the preparation of a comprehensive study of natural heritage features and areas utilizing information derived from the Wolfe Island Wind Project, the Integrated Community Sustainability Plan, the Ministry of Natural Resources and other sources. The study may undertake to identify natural heritage features which contribute and support the bio-diversity, ecological functions and linkages which make up the natural heritage system on the Islands. Features of importance include wetlands, woodlands, valleylands, fish habitat, wildlife habitat, threatened, vulnerable and species of concern and areas of natural and scientific interest. The study may serve to identify features which are provincially, regionally or locally significant and to develop strategies to protect and enhance habitat and biological diversity of the natural heritage system. They also have detailed policies for: 5.4.1 Provincially Significant Wetland 5.4.1.6 Special Policy - Big Sandy Bay 5.4.2 The habitat of threatened and endangered species and species at risk has not been identified in the Plan. 5.4.3 Areas of Natural and Scientific Interest (ANSI) 5.4.4 Significant woodlands have not yet been identified. 5.4.5 Significant valleylands have not yet been identified. 5.4.6 Significant wildlife habitat has not been identified 5.4.7 Fish Habitat 5.4.8 Natural Connections/Corridors	**4.12.2** Policies on the following: A. Natural Heritage Features and Areas B. Wetlands and Wildlife Habitat C. Fish Habitat (also includes a list of at capacity and not at capacity lake trout lakes) D. Endangered and Threatened Species E. Areas of Natural and Scientific Interest All of these policies follow provincial guidelines, mention the need for an impact assessment and also specify the definition of adjacent lands for each topic. **Lake Development Area** This land use designation is designed to govern development that occurs in and around these water bodies and islands in order to protect the water quality, shoreline amenities and natural habitat areas. The plan requires that the following components be evaluated for sustainable development around the lakes: • Determining the "yield" or number of lots/units for the entire parcel or property based on meeting the Township's zoning standards for minimum lot area and minimum lot frontage. The Township strongly discourages any development that will result in lot creation at a lot yield or density that is less than prescribed by the development standards; • A conservation inventory will be required in advance of the design of the parcel or property to determine the natural features that are to be conserved for their ecological functions or physical constraints. • Providing for water access through such options as providing common access point(s), conserving the shoreline in the public domain, providing a suitable off-site access point; • Considering the most appropriate conservation design option appropriate for the property. Options may include single tier or a cluster design (see diagrams). Cluster design will be strongly encouraged for there is opportunity for back-lot or back-shore development; • Protection and conservation of the natural environment (e.g., fisheries, wildlife habitats, threatened and endangered species, sensitive areas and water quality for recreation);	**5.2 ENVIRONMENTAL PROTECTION** • The Environmental Protection designation applies to lands which play an important role in the preservation of the Township's natural heritage systems including wetlands, watercourses and lakes and significant portions of the habitat of threatened or endangered species. This designation includes natural hazard lands which may pose a threat to life and property because of inherent physiographic characteristics such as floodplains, erosion hazards, poor drainage, organic soil, steep slopes or other similar physical limitations. • An Environmentally Sensitive Areas overlay identifies lands which should be developed in an environmentally sensitive manner and/or protected and preserved in the long term. Such lands are described as Environmentally Sensitive Areas and include lands identified to have significant biological, geological, zoological or other unique natural features such as sensitive groundwater recharge and discharge areas, natural connections between natural heritage features, fish habitat, significant wildlife habitat, significant woodlands, significant valleylands and areas of natural and scientific interest. The Environmentally Sensitive Areas also include all lands adjacent to all Township lakes because of the potential impact development may have on water quality and fish habitat. They also have detailed policies for: 5.2.3Flood Plains 5.2.4 Erosion Hazards 5.2.5 Significant Wetlands 5.2.7 Environmentally Sensitive Areas 5.2.8 Lake Trout Lakes (adjacent to lakes and rivers, highly sensitive lake trout lakes, moderately sensitive lake trout lakes) 5.2.9 Endangered and Threatened Species	**All of the OPs have similar categories for which they have specific policies (i.e. wetlands, fish habitat etc.)** **Central Frontenac's OP is the only one that has a detailed list of specific locations that have been identified as Natural Heritage Features/Areas. Frontenac Islands has a special policy for Big Sandy Bay.** **North Frontenac has detailed policies regarding development in and around water bodies and islands through its Lake Development Area designation.** **South Frontenac has policies addressing Lake Trout lakes. North Frontenac also has a detailed list of at-capacity Lake Trout lakes and Lake Trout lakes not at capacity. Central Frontenac also has a detailed list of at-capacity Lake Trout lakes.**

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Policy Structure	Central Frontenac 2008 Adopted Official Plan	Frontenac Islands Official Plan Adopted by Council late 2011 Under review by MAH	North Frontenac Official Plan Adopted by Council early 2012 Under review by MAH	South Frontenac Draft Official Plan	Level of Consistency
	comprehensive. They also have detailed policies for: 7.5.2.2 Wetlands and Wildlife Habitat 7.5.2.3 Fish Habitat 7.5.2.4 Areas of Natural and Scientific Interest 7.5.2.5 Endangered and Threatened Species 7.5.2.6 Woodlands and Agricultural Lands		• Regulation of resource production areas (e.g., minerals and mineral aggregate resource areas, Crown lands and other lands managed under agreements); • The protection of Environmental Protection Area Hazard Lands • The quantity and quality of water supply. There shall be no reduction in the trophic status of any water body as a result of the development proposed; Lake development capacity shall be determined through a technical study utilizing a provincially acceptable lake development capacity model; • The adequacy of sewage disposal (see Section 3.18 – Water Supply and Sewage Disposal); and • The adequacy of waste disposal storage facilities and measures for permanent disposal.		
Impact Assessment /Environ-mental Impact Study	**When is it required?** **7.5.2.7** "Council will require an impact assessment for development and site alteration proposed in designated Natural Heritage Features and Areas and adjacent lands. An Impact Assessment (IA) will be prepared to support planning applications such as Official Plan amendments, zoning by-law amendments, plans of subdivision, consent etc., prior to the approval of the proposed development or site alteration. Where the impact of the development and/or site alteration cannot be mitigated, it will not be permitted. **Components of the Assessment** The components of the IA shall be tailored to the scale of development and may range from a simplified assessment (scoped assessment) to a full site assessment. For example, a single detached dwelling may only require a scoped assessment while a subdivision, multiple unit residential complex, major commercial or industrial development, golf course etc. will require a	**When is it required?** **3.8** Council will require an environmental impact study for development and site alteration proposed in designated adjacent lands. Development and site alteration shall not be permitted in significant habitat of endangered and threatened species and in significant wetlands (i.e. Provincially Significant Wetlands). Development and site alteration shall not be permitted in significant woodlands, in significant valleylands, in significant wildlife habitat and in significant areas of natural and scientific interest unless it has been demonstrated through and EIS that there will be no negative impacts on the natural features or their ecological functions. Development and site alteration shall not be permitted in fish habitat except in accordance with provincial and federal requirements. Council will require an EIS for development and site alterations proposed on lands adjacent to a designated Provincially Significant Wetland significant habitat of endangered species and threatened species and in or on adjacent lands to fish habitat, significant woodlands, significant valleylands, significant wildlife habitat and significant areas of natural and scientific interest. The EIS will address how anticipated impacts will be mitigated through the planning and/or development approvals	**When is it required?** **4.12.2 F**. Council will require an impact assessment for development and site alteration proposed in designated Natural Heritage Features and adjacent lands. An Environmental Impact Assessment (EIA) will be prepared to support planning applications such as Official Plan amendments, zoning by-law amendments, plans of subdivision, consent etc., and prior to the approval of the proposed development or site alteration. Where the impact of the development and/or site alteration cannot be mitigated, it will not be permitted (e.g. „no development option"). An Environmental Impact Assessment (EIA) is intended to provide for an assessment of the potential impact of a proposed development or site alteration on a particular natural heritage feature and shall be used to determine whether the proposed development, redevelopment or site alteration should or should not be permitted. The EIA will be undertaken by the proponent of development and/or site alteration. **Components of the Assessment** The components of the EIA shall be tailored to the scale of development and may range from a simplified assessment (scoped assessment) to a full site assessment. (For example, a single detached dwelling	**When is it required?** **5.2.10** Lake Impact Assessments are required when developing adjacent to any waterbody. **5.2.11** In considering any development or site alteration, including any planning amendments or variances within or adjacent to any Environmentally Sensitive Area, Provincially Significant Wetland, Significant Portions of the Habitat of an Endangered or Threatened Species, or within 300 metres (984.3 feet) of a Sensitive Lake Trout Lake **Components of the Assessment** Should the municipality determine from the results of the preliminary assessment that a more detailed Environmental Impact Assessment is required, it shall be prepared by a qualified individual and shall consist of: (a) a description of the proposed development, its purpose including site planning details, a general locational map, proposed buildings, existing land uses and details showing the existing vegetation, site topography, drainage, soils and fish and wildlife habitat areas. (b) a description of the negative impacts that will be caused or which might reasonably be expected to be	**All of the policy documents require an Impact Assessment to support planning applications.** **All describe similar requirements for the components of the assessment.** **Frontenac Islands includes the PPS prohibitions for development and site alteration.** **Central Frontenac, Frontenac Islands and North Frontenac all have the same implementation measures.**

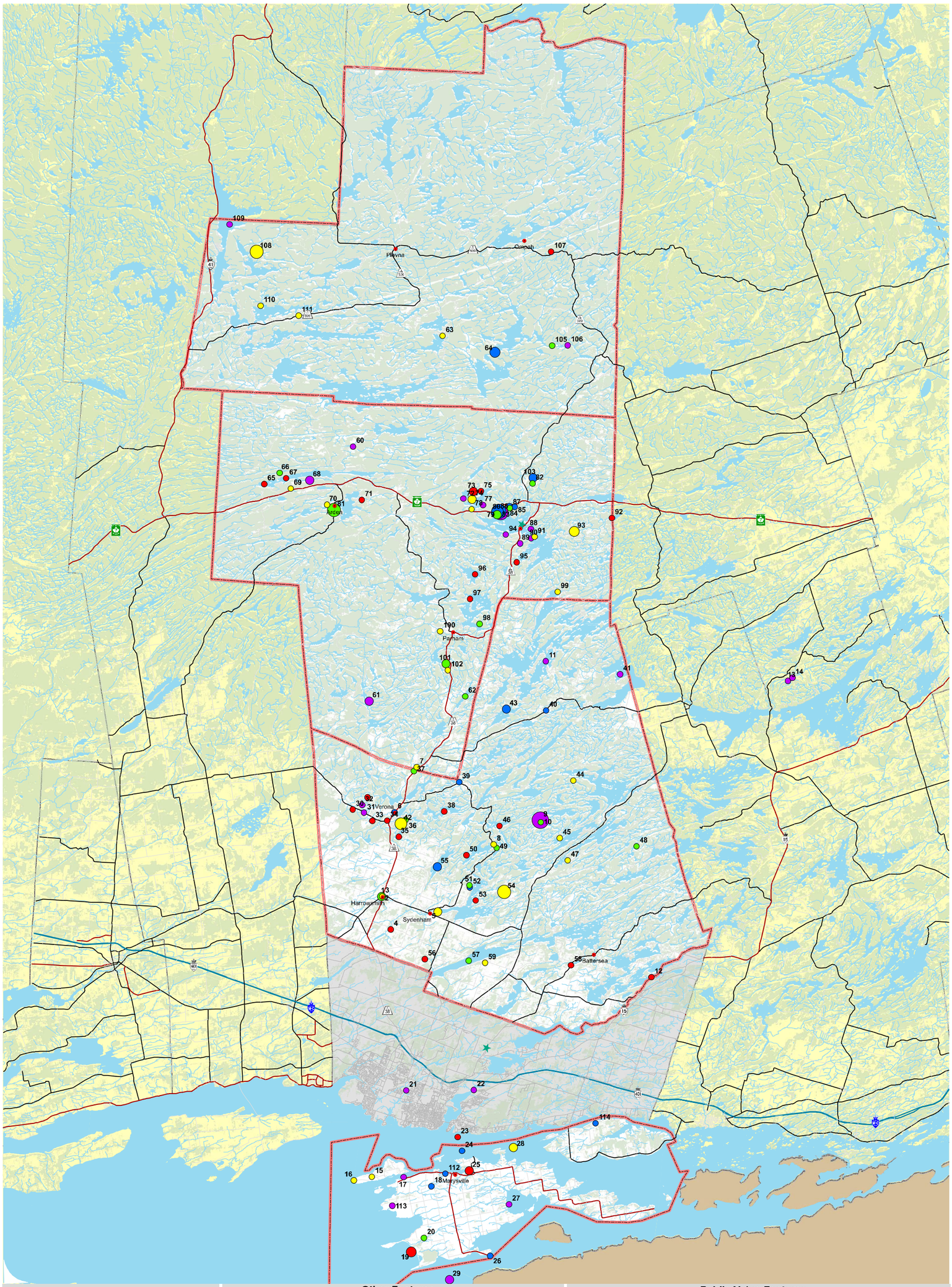
County of Frontenac Natural Heritage Study - Policy Review

Policy Structure	Central Frontenac 2008 Adopted Official Plan	Frontenac Islands Official Plan Adopted by Council late 2011 Under review by MAH	North Frontenac Official Plan Adopted by Council early 2012 Under review by MAH	South Frontenac Draft Official Plan	Level of Consistency
	full site assessment. Council may consult with the Conservation Authority having jurisdiction in determining information requirements and the type and content of an IA. The following is intended to provide a guideline on the potential scope of an IA: • a description of the study area and landscape context; • description of the development proposal; • identification of those features and functions likely to be affected by the development proposal; • assessment of the potential impacts of the proposed development on key features and functions; • identification of mitigation requirements and monitoring requirements; • quantification of residual impacts (those that cannot be mitigated) if any; and • review and decision Council may undertake a peer review or may consult with a public authority to assist with the technical review and findings of an IA." **7.5.2.8 Implementation Measures** Council may use zoning, site plan control and the provisions of the Municipal Act (site alteration controls) as measures to implement recommendations or results of an Impact Assessment or to govern the spatial relationship of buildings and structures to natural heritage features.	process. The components of an EIS will be tailored to the scale of the proposed development and the scale of the anticipated impacts. An EIS must be prepared by a qualified individual. An EIS shall be conducted prior to the approval of a development (e.g. an EIS shall not be carried out as a condition of approval). **Components of the Assessment** The following is intended to provide a guideline for the information to be included in the preparation of an EIS: • a description (including a map) of the study area and landscape context (including natural features and areas, and ecological functions); • a description of the development proposal; • date of field visits must be noted; • identification of the features (including their significance) and functions likely to be effected by the development proposal; • species lists of flora and fauna recorded for the site; • assessment of the potential impacts of the proposed development on natural features or areas and on their ecological functions for which they have been identified; • identification of mitigation requirements and monitoring requirements; • quantification of residual impacts (those that cannot be mitigated) if any; • recommendations on how to implement mitigative measures; • review and decision. **Implementation Measures** The Township may use various planning and other approvals (e.g. site plan control, site specific zoning, site alteration by-laws, etc.) to ensure that the development or site alteration occurs in accordance with the recommendations of the Environmental Impact Study (EIS).	may only require a scoped assessment while a subdivision, multiple unit residential complex, major commercial or industrial development, golf course etc. will require a full site assessment). Council may consult with the conservation authority having jurisdiction and the Ministry of Natural Resources in determining information requirements and the type and content of an EIA. The following is intended to provide a guideline on the potential scope of an EIA: i. A description of the study area and landscape context; ii. Description of the development proposal; iii. Identification of those features and functions likely to be affected by the development proposal; iv. Assessment of the potential impacts of the proposed development on key features and functions; v. Identification of mitigation requirements and monitoring requirements, quantification of residual impacts (those that cannot be mitigated) if any; and vi. Review and decision. **G. Implementation Measures** Council may use zoning, site plan control and the provisions of the Municipal Act (site alteration controls) as measures to implement recommendations or results of an Environmental Impact Assessment or to govern the spatial relationship of buildings and structures to natural heritage features and areas.	caused to the environment and the ecological functions and features associated with the feature; (c) description of the negative impacts the proposed development will have on fish habitat including water quality requirements or effect on other features and functions; (d) a statement indicating whether negative impacts will result from the proposal and a description of the actions necessary or which might be expected to be necessary to prevent change or to mitigate or remedy the negative impacts which might be expected to occur upon the environment and/or ecological functions and features as a result of the proposed development; (e) a description of how the mitigative measures will be implemented and/or enforced; (f) any measures, where deemed appropriate, to monitor the mitigation measures and to assess the long term impacts associated with the proposal.	

County of Frontenac Natural Heritage Study - Policy Review

Policy Structure	Central Frontenac 2008 Adopted Official Plan	Frontenac Islands Official Plan Adopted by Council late 2011 Under review by MAH	North Frontenac Official Plan Adopted by Council early 2012 Under review by MAH	South Frontenac Draft Official Plan	Level of Consistency
Other		**Criteria for Assessing Land Division Applications (p.79)** 18. Significant Natural Features and Cultural Heritage Features Consents for new uses should not be approved in or in proximity to Significant Natural Features or Cultural Heritage Features as shown on Schedule "B" unless it can be demonstrated to Council's satisfaction that there will little or no impact or that the impact can be mitigated.			**Frontenac Islands is the only one that has a specific policy for assessing land division applications with regards to natural heritage features.**

Appendix V: Feedback Received During the First Public Consultation Event



Feedback - Phase I of the Natural Heritage Study

FINAL

COUNTY of Frontenac

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Other Features

- Highway 401
- Provincial Highway
- Major Roads
- Settlements / Villages
- Public Consultation Locations
- County of Frontenac Boundary
- Waterbody
- Watercourse
- Woodland / Forest

Public Value Features

	Frequency
Economic Development	
Heritage/Culture/Historic	
Natural Beauty	1
Recreation	5
Sustainability/Ecological Function	10

*Numbers next to features are for identification purposes only

0 2.5 5 10 15 20 Kilometers

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: SML
MAP CHECKED BY: AZ
MAP PROJECTION: NAD 1983 UTM Zone 18N

FILE LOCATION: \\dillon.ca\DILLON_DFS\Ottawa\Ottawa CAD\CAD\2011\12944-FrontenacDesign_GIS\MXDs\Dillon_Created\Phase 2 Mapping\POH_Pts.MXD

PROJECT: 12-5944 STATUS: FINAL DATE: July 16th, 2012

Public Consultation of Natural Heritage Features for County of Frontenac

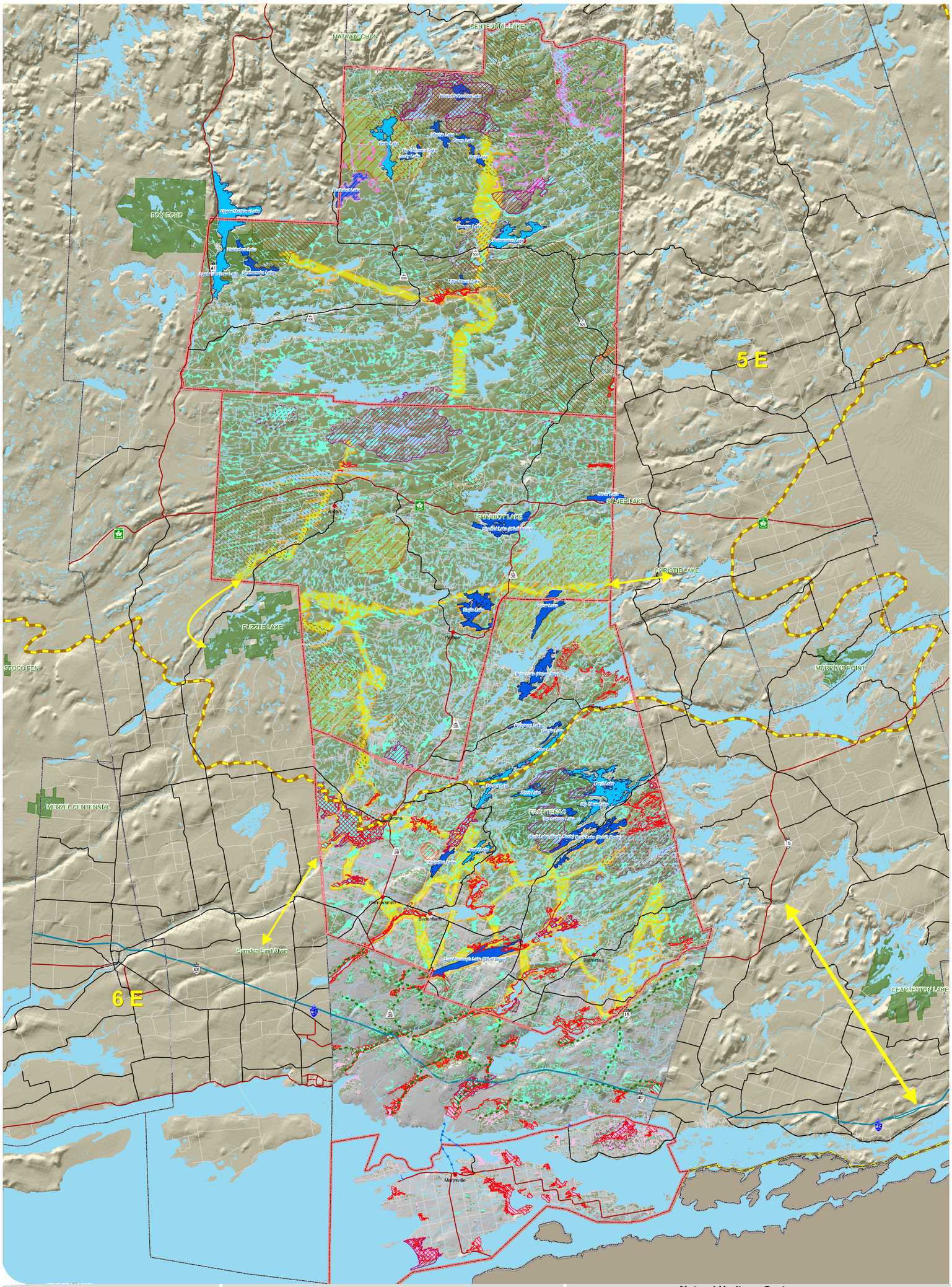
Region	Category	Identification	Description*	Frequency	Category Total
North Frontenac	Economic Development	64	Crotch Lake	3	3
	Heritage/Cultural/Historic	107	Ragged Chutes	1	1
	Natural Beauty	63	Highlands	1	8
		108	Bon Echo Park	5	
		110	Mississagagon Owl	1	
		111	Views on 506	1	
	Recreation	105	Mississippi River	1	1
	Sustainability/Ecological Function	106	River Access	1	2
		109	Marin Owl (?)	1	
Central	Economic Development	76	Sharbot Lake Provincial Park	6	15
		83	Sharbot Lake Country Inn	1	
		84	Lawn Service	1	
		85	MacDonald Tree Nursery	1	
		86	Beach	4	
		103	K & P Trail	2	
	Heritage/Cultural/Historic	65	Watershed Kennebec Lake	1	10
		67	Kennebec Lake	1	
		71	Trail Central Frontenac	1	
		73	White Lake	2	
		75	Fish Hatchery	1	
		92	Clear Lake	1	
		95	Mine on Farm	1	
		96	Leggat Lake	1	
		97	Mica Mines	1	
	Natural Beauty	7	Oak Flats Road	1	13
		69	Hills and Mountains	1	
		70	Lookout - Arden Park	1	
		74	Water/Lakes	2	
		78	Forests	1	
		91	Loons on the Lake	1	
		93	Fall River	3	
		99	Crow Lake	1	
		100	The Shield	1	
		102	Eagle Lake Creek	1	
	Recreation	62	St. Andrew Lake	1	14
		66	Crown Land	1	
		79	Sharbot Lake Boat Ramp	2	
		81	Trans-Canada Trail	5	
		82	ATV Trails	1	
		87	Railway Trail	1	
		98	Camp Oconto	1	
		101	Eagle Lake	2	
	Sustainability/Ecological Function	60	Rock Barrens	1	17
		61	Depot Lakes	2	
		68	Salmon River	2	
		72	Five Lined Skink	1	
		77	Flying Squirrels	1	
		80	Sharbot Lake	6	
		88	Zebra Mussels	1	
		89	Marsh Bay	1	
		90	Algae	1	
		94	Dump	1	
South	Economic Development	1	Harrowsmith	1	9
		6	Verona	1	
		39	Dessert Lake	1	
		40	Tourism	1	
		43	Fishing	2	
		52	Frontenac Outings	1	
		55	Gould Lake	2	
	Heritage/Cultural/Historic	4	Rail to Trail	1	13
		12	Rideau Corridor	1	
		30	The Belcroocnia	1	
		33	The Cameron Swamp	1	
		34	Old Dam/Sluices	1	
		35	Holleford Crater	1	
		38	Feldspar Mine	1	
		46	Devil Lake Road	1	
		50	Mica Mines Gould	1	
		53	Lacey Mine	1	
		56	3803 Syd. Road	1	
		58	Battersea Road	1	
		104	Bell Rock Mill	1	
	Natural Beauty	3	Millhaven Creek Wetland	1	17
		5	Sydenham Point	2	
		8	Bedford Road	1	
		42	Lakes	4	
		44	Forest	1	
		45	Side Lake Loop	1	
		47	The Arch	1	
		54	Cataraqui Trail	5	
		59	Valleys	1	
	Recreation	2	K & P Trail	2	9
		10	Trail Systems	1	
		36	14 Island/Lake	1	
		37	Golfing	1	
		48	QUBS Birding	1	
		49	Quillam (?)	1	
		51	Canoe at Frontenac Park	1	

Public Consultation of Natural Heritage Features for County of Frontenac

Region	Category	Identification	Description*	Frequency	Category Total
		57	Lake Trout Lakes	1	
	Sustainability/Ecological Function	9	Frontenac Provincial Park	8	12
		11	Bob's Lake	1	
		31	Cameron Bog	1	
		32	Hardwood Creek	1	
		41	Rideau River/Canal	1	
Islands	Economic Development	18	Wolfe Island	1	5
		24	Ferry to Wolfe Island	1	
		26	Ferry to US	1	
		112	Wolfe Island	1	
		114	Kingston	1	
	Heritage/Cultural/Historic	19	Big Sandy Bay	3	5
		25	Wolfe Island Canal	2	
	Natural Beauty	15	Simcoe Island	1	4
		16	Simcoe Lighthouse	1	
		28	St. Lawrence River	2	
	Recreation	20	Bike route	1	1
	Sustainability/Ecological Function	17	Island Shorelines	1	5
		27	Great Lakes Coastal Wetlands	1	
		29	Migration routes	2	
		113	Windmills	1	
City of Kingston	Heritage/Cultural/Historic	23	Cedar Island	1	1
	Sustainability/Ecological Function	21	Little Cat Creek	1	2
		22	Greater Cataraqui River	1	
Other – Lanark County	Sustainability/Ecological Function	13	Frontenac Arch Biosphere	1	2
		14	Eco-tourism	1	

*Descriptions denoted by (?) was not interpreted in the summary.

Appendix VI:
Natural Heritage System Map



Natural Heritage System

FINAL

COUNTY of Frontenac

Legend

- Settlements/Villages
- County of Frontenac Boundary
- Highway 401
- Provincial Highway
- Major Roads
- Ecoregion Boundary
- Ferry Route
- Provincial Park
- Ecological Linkages Outside of the County of Frontenac
- City of Kingston Linkages and Corridors *

* *Corridors to/from the City of Kingston correspond to the "Linkages and Corridors" outlined within the City's Official Plan, Schedule B (B & C).*

Natural Heritage System

- Moose Aquatic Feeding Habitat
- Deer Yards (Stratum 1)
- Deer (Stratum 2) and Early Season Moose Wintering Yards
- "At Capacity" Lake Trout Lakes (Moderately Sensitive)
- "At Capacity" Lake Trout Lakes (Highly Sensitive)
- Linkages
- Earth Science ANSI (Provincial Significance)
- Earth Science ANSI (Regional Significance)
- Life Science ANSI (Provincial Significance)
- Life Science ANSI (Regional Significance)
- Woodland / Forest
- Areas of Biodiversity
- Provincially Significant Wetland
- Provincially Significant Costal Wetland
- Other Wetlands
- Coastal Wetland
- Waterbody
- Watercourse

DILLON CONSULTING

0 2.5 5 10 15 20
Kilometers

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: AZ
MAP CHECKED BY: ME
MAP PROJECTION: NAD 1983 UTM Zone 18N

FILE LOCATION: \\dillon.ca\DILLON_DFS\Ottawa\Ottawa CAD\CAD\2011\125944-Frontenac\Design_GIS\MXDs \Dillon_Created\Final NH Mapping\RHAL-NaturalHeritageSystems_wTopo.MXD

PROJECT: 12-5944 STATUS: FINAL DATE: Nov 26th, 2012

Appendix VII:
Natural Heritage System Quantity and Quality, Performance Measures, Gaps and Recommendations

Natural Heritage System Analysis and Evaluation – Quantity, Quality, Performance Measures, Gaps and Recommendations

Natural Feature	Indicator		Target	Performance Measure (to be completed)	Recommendation / Gap
	Quantity	Quality			
Endangered and Threatened Species Habitat					
Endangered and Threatened Species Habitat	Unknown	Unknown	**Provincial** To be consistent with policy 2.1.7 of the PPS, planning authorities must prevent development within habitat of endangered species and threatened species, except in accordance with provincial and federal requirements. In addition, policy 2.1.2 requires municipalities to maintain the long-term ecological function and biodiversity of natural heritage systems.	• Monitor prioritized species and habitats in cooperation with partners to track success and challenges specific to watersheds or the County and modify approach as appropriate • Implement a stewardship initiative directed towards protecting SAR on private lands for priority species • Implement public education on SAR and how citizens can help protect and secure the species and their habitat.	**Gap**: - Currently very little information on the number, location and general health of SAR in the County of Frontenac is available in a form useful to the natural heritage study mapping specific targets. **Recommendation**: - We recommend that the County work in collaboration with the Ontario Ministry of Natural Resources (MNR), Conservation Authorities and other stakeholders to better understand SAR within the County and develop a long-term strategy which prioritizes their protection (species and habitat). Specific information to be acquired includes: • A consolidated and current list of Species at Risk (SAR) in the County (or watershed overlapping the County) • Identify known populations, and possible habitat • Conduct research to confirm/expand information, where appropriate • Prioritize SAR protection based on information available and reasonably achievable results over the short, medium and long-term. It is recommended that the County and its partners compile an Environmental Impact Study (EIS) Guideline document that identifies triggers for when an EIS may be required and the process to be followed to scope and undertake an EIS.
Wetlands*[Σ]					

Provincially Significant Wetland (PSW)	9,766 ha (22%)	Provided in individual PSW evaluation reports	**Provincial**
			To be consistent with policies 2.1.4, 2.1.5(f) and 2.18 of the PPS, planning authorities shall protect wetlands.
			
			Other
			-10% in each major watershed;
			-6% in each sub-watershed
			-Maintain wetland/forest habitat matrix of 10,000 – 100,000 ha in size to maintain fully functioning ecosystem
				• Using existing information document improvements, declines and challenges in improving wetland quality, quantity and diversity.
				• Implement a stewardship or educational program targeting key private landowners, recreation groups, industry, etc. which can help reduce identified threats to wetland quality.
				• Meet or exceed Other Target objectives, where determined reasonable. Where targets are exceeded, these will be maintained for the long-term as determined appropriate using provincial and municipal policies.
					Gap: - Information on the risks to wetlands in the County or their general quality is not available.
					
					Recommendation: - The geography of the County creates a natural high density of wetlands. Therefore the focus should be on determining the existing quality and possible development threats to County wetlands. What defines quality and a threat will need to be determined. Some targeted assessment of wetland quality may be required in order to measure the success or challenges to managing these features over the long term. Recommended actions include:
					• Define quality thresholds and threats
					• Prioritize wetlands based on their ability to benefit from stewardship, public education or other management tool
					• Where possible prioritized wetlands should be representative of the County
					• Work with the MNR to evaluate/re-evaluate wetlands
					• Work with Conservation Authority partners to utilize existing data and possibly expand on the attributes measured in the state of the watershed reports to document
					  ○ Water quality
					  ○ Flood attenuation
					  ○ Drought/low water levels
					  ○ Diversity of wetland types
					  ○ Species diversity
					  ○ Ecological value provided

Other Wetlands	35, 335 ha (78%)	Provided in individual evaluation reports			
Coastal Wetland	4,212 ha (9%)	Wetlands overlap units above			
Woodland*[Σ]					
Woodland*[Σ]	Ecoregion 6E – 58,140 ha Ecoregion 5E – 218,828 ha Total –	Generally, we know that the County, north of Ecoregion 6, has a diversity of forest types, contains large patches and is fairly	**Provincial** To be consistent with policies 2.1.5(b) and 2.1.8 of the PPS, planning authorities shall protect significant woodlands within Ecoregion 6E and 7E. **Other**	• Establish a common perspective on what defines a significant woodland and the scale at which it is applied with in portion of the County that overlap Ecoregion 6E. • A strategy for proactively managing the long-term success and	**Gap**: - Information on the risks to woodlands in the County or their general quality is not well understood. Although the Natural Heritage Reference Manual (NHRM) (MNR 2010) provides criteria for the identification of significant woodlands, no specific study has been conducted at either the County or Township level to identify significant woodlands, which occur in Ecoregion 6E. **Recommendation**: - It is recommended that the County works with their partners to apply the NHRM criteria to woodlands within Ecoregion 6E. This approach will provide the County with the information to

Natural Heritage System Analysis and Evaluation – Quantity, Quality, Performance Measures, Gaps and Recommendations

Natural Feature	Indicator		Target	Performance Measure (to be	Recommendation / Gap
	277,010 ha	contiguous. Within Ecoregion 6, the forest cover is fragmented with a smaller patch size and limited connectivity.	• Protect woodlands north of Ecoregion 6E from incompatible development and site alteration that may have a negative impact on ecological function • 30% of watershed to contain forest cover; • Minimum of one forest patch greater than 200ha in size and at least 500m wide; • Minimum of 10% interior forest (>100m from edge); • Minimum of 5% deep interior forest (>200m from edge) • Maintain wetland/forest habitat matrix of 10,000 – 100,000 ha in size to maintain fully functioning ecosystem	challenges of maintaining woodlands within Ecoregion 6E is established • Implement a stewardship or educational program targeting key private landowners, recreation groups, industry, etc. which can help reduce identified threats to woodland quality. • Meet or exceed Other Target objectives, where determined reasonable. Where targets are exceeded, these will be maintained for the long-term as determined appropriate using provincial and municipal policies.	proactively manage the protection of important woodlands for the long-term versus on a case by case basis. North of Ecoregion 6E, areas of forest that represent the largest, least disturbed and most contiguous areas of forest as well as less common forest types or that are of higher diversity should also be documented, where possible, over time.
Valleylands*Σ					
Valleylands*Σ	Unknown	Unknown	**Provincial** To be consistent with policies 2.1.5(c) and 2.1.8 of the PPS, planning authorities must sustain the connectivity values of valleylands within Ecoregion 6E and 7E. **Other** Backbone of watersheds and especially important south and east of the Canadian Shield. Protection should be targeted at preserving important functions including: • Surface water • Groundwater • Landform (prominence and distinctiveness) • Degree of naturalness • Species diversity and uniqueness • Habitat Value and linkage function (or restored potential)	• Conduct an evaluation of valleylands within Ecoregion 6E to determine significance. • Where appropriate, stewardship initiatives to restore degraded valley features should be explored and implemented.	**Gap**: - Currently valleyland quantity and quality is unknown and consequently their attributes have not been evaluated within Ecoregion 6E. **Recommendation**: - It is recommended that the County, in collaboration with its partners, undertake an assessment of valleylands that are present within Ecoregion 6E. An evaluation of valleyland attributes (Table 8-1 in the NHRM, MNR 2010) should be undertaken to prioritize valleylands that are important to maintaining the local or regional natural heritage system.
Science Areas of Natural and Scientific Interest					
Life Science Areas of Natural and Scientific Interest (ANSI) *Σ	34 Features in the County	The quality of an ANSIs is undertaken by the MNR and is part of individual ANSI reports.	**Provincial** To be consistent with policies 2.1.5(e) and 2.1.8 of the PPS, planning authorities shall protect those representative segments of Ontario's biodiversity, natural landscapes and geological features that have been identified as Provincially Significant ANSIs. **Other** Regionally significant ANSIs be managed in a similar manner as Provincially Significant ANSIs	• Both provincial and regional ANSIs are managed for the long-term in cooperation with the MNR using provincial and municipal policies.	**Gap**: - No gap, beyond those identified at the bottom of the table, were identified for this natural feature group **Recommendation**: - No recommendation, beyond those identified at the bottom of the table, were identified for this natural feature group.
Provincially Significant	24				
Regionally Significant	10				
Earth Science Areas of Natural and Scientific Interest*Σ	11 Features in the County (including 4 candidate sites)				
Provincially Significant	8				
Regionally Significant	3				

Natural Heritage System Analysis and Evaluation – Quantity, Quality, Performance Measures, Gaps and Recommendations

Natural Feature	Indicator		Target	Performance Measure (to be	Recommendation / Gap
Fish Habitat*$^{\Sigma}$					
Fish Habitat*$^{\Sigma}$	Unknown	Unknown	**Provincial** To be consistent with policies 2.1.6 and 2.1.8 of the PPS, planning authorities shall protect fish habitat **Other** (Riparian) • 75% of stream length naturally vegetated • Ideally a minimum 30m wide natural buffer • Additional buffer as required for specific wildlife of management concern	• Quality of key fish habitat (areas under development or other land use pressure) and its' riparian area is tracked on a consistent basis. This should include the tracking of Other Targets in key fish habitat areas. • Where the quality of fish habitat or its' riparian area warrants, stewardship and/or public education is developed and implemented.	**Gap**: - It would appear that the general quality of fish habitat in areas with the most development pressure is not readily available to the County. **Recommendation**: - The County work with the Conservation Authority(ies) to identify general quality of fish habitat in areas identified with higher development pressure or where the feature is one of the last remaining natural features in the landscape (e.g. Islands).
Wildlife Habitat*$^{\Sigma}$					
Moose Aquatic Feeding Area	242 Features in the County Total Area – 1,798 ha (0.5%)	Very High Moderate Low	**Provincial** To be consistent with policies 2.1.5(d) and 2.1.8 of the PPS, planning authorities shall protect significant wildlife habitat.	• Over the long-term, areas of specific wildlife habitat that require protection outside of existing protected areas are identified in combination with other initiatives.	**Gap**: - Specific information on wildlife habitat in the County is sparse. **Recommendation**: - It is recommended that the County work in collaboration with the MNR, Conservation Authorities and other stakeholders to better understand wildlife habitat which occurs outside of existing protected areas (e.g. ANSI, provincial parks, PSW, etc.).
Deer Yards	7 Features in the County Total Area - 21,812 ha (5%)	Deer Stratum 1			
Deer Wintering Area	8 Features in the County Total Area – 28,556 ha (7%)	Deer Stratum 2			
Early Season Moose Wintering Area	7 Features in the County Total Area - 7,199 ha (2%)	Moose Early Wintering Area			
At Capacity Lake Trout Lakes (Moderately Sensitive)	10 Features in the County Total Area -4,190 ha (1.1%)	Moderately Sensitive			
At Capacity Lake Trout Lakes (Highly Sensitive)	23 Features in the County Total Area -6,002 ha (1.6%)	Highly Sensitive			
Bird Nesting Sites	Nesting sites - 124 Nesting Colonies - 88	Unknown			

Natural Heritage System Analysis and Evaluation – Quantity, Quality, Performance Measures, Gaps and Recommendations

Natural Feature	Indicator		Target	Performance Measure (to be	Recommendation / Gap
Natural Linkages and Areas of Biodiversity*∑					
Natural Linkages and Areas of Biodiversity*∑	Natural Linkages (NL): 18 Natural Linages Total Area – 31,922 ha Percent Area Relative to the County - 8% Areas of Biodiversity (AB): # Areas of Biodiversity Total Area – 26,611 ha Percent Area Relative to the County – 6.6%	The quality of the NL is considered high as they follow area with least disturbances (e.g. crossing of roads, inappropriate habitat types, etc.) and is considered the best 0.1% solution. AB are considered high as they are representative of the diversity of soils, geology and vegetation in the County	**Provincial** To be consistent with policies of 2.1.1 and 2.1.2 of the PPS, planning authorities shall protect the diversity and connectivity of natural features in an area, and recognize linkages between and among natural heritage features and areas, surface water features and ground water features.	• Functional NL and AB are recognized and protected during land use decision making. • Where appropriate, additional functional NL and AB have been identified.	**Gap**: - Currently no NL or AB plan has been developed by the County to protect connectivity to natural features or maintain the Counties biodiversity. **Recommendation**: - It is recommended that the NL and AB identified as part of this study be used as the initial information to inform protection in the County. It is also recommended that the County consider refining these areas through other studies, supported by their partners, over the long-term.

***Gap**: - Attributes and stressors of natural feature in the County of Frontenac are not readily available to determine a typical suite of setback distances for their protection.
***Recommendation**: - Using existing literature and resources, we recommend that the County identify important attributes (wildlife species and habitat) and stressors (agriculture, recreation, residential development, etc.) which typically need to be managed. These would form a benchmark to guide future planning decisions with respect to compatible adjacent land use and implementing effective protection (e.g. buffers, mitigation, etc.).
∑ - It is recommended that the County and its partners compile an EIS Guideline document that identifies triggers for when an EIS may be required and the process to be followed to scope and undertake the EIS.