

WELCOME!



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NATURAL HERITAGE STUDY

Ontario East Municipalities Conference
September 10, 2014

THE CHALLENGE

- Create a Natural Heritage SYSTEM?
- Plan for two significantly different eco-regions?
- Achieve meaningful public involvement?
- Maintain upper & lower-tier relationships?



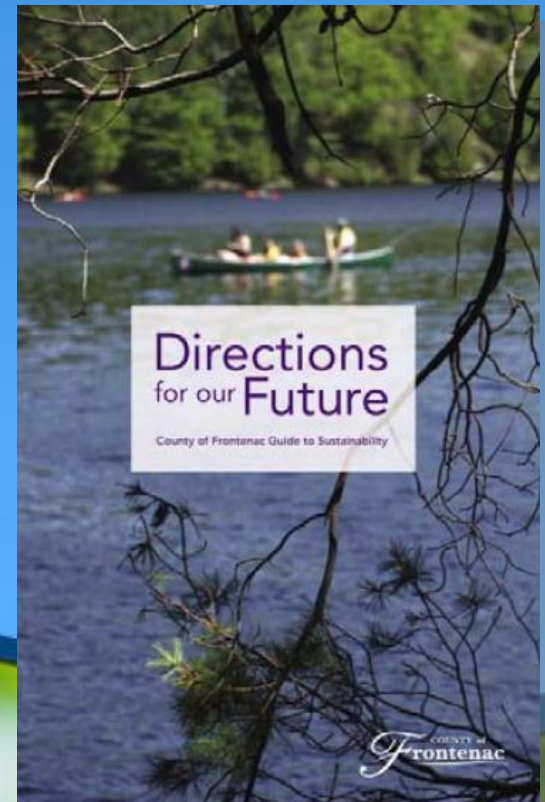
Outline

- **Study Background**
- **Natural Heritage System**
- **Public Engagement**
- **Mapping Process**
- **Policies**



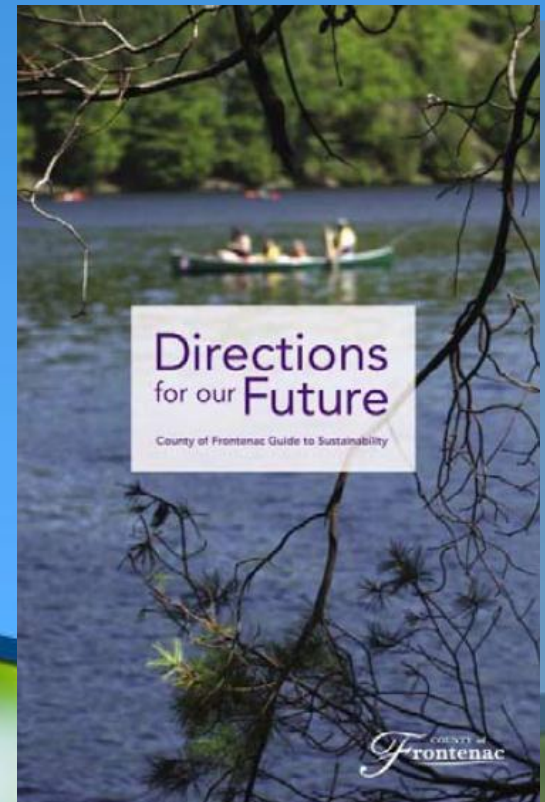
Study Background

- Extensive work on ICSP –
Directions for Our Future
- Vision:
“...healthy mosaic of
ecologically managed forests,
trails, farmland, wetlands and
watersheds.”



Study Background

- **13 Focus Areas**
 - Protection of natural environment
- Priority project:
Natural Heritage Study
- Linked to economic, cultural,
and social sustainability



Study Background

- **New Official Plan (OP) for Frontenac County**
 - Builds upon the ICSP
 - Provides policy and mapping for managing land use, growth, and conservation County-wide
- **One of the foundation blocks of the OP**
- **Project occurred during 2012**



Project Team

County of Frontenac

- Joe Gallivan
- Peter Young
- Anne-Marie Young

Steering Committee

- Townships (Islands, South, Central, North)
- MNR (Peterborough & Bancroft)
- Conservation Authorities (Quinte, Cataraqui, Rideau Valley, Mississippi Valley)
- Ministry of Municipal Affairs and Housing



Natural Heritage System



Natural Heritage System

“a system made up of natural heritage features and areas, and linkages intended to provide connectivity (at the regional or site level) and support natural processes which are necessary to maintain biological and geological diversity, natural functions, viable populations of indigenous species and ecosystems...”

Provincial Policy Statement (2014), Section 6.0 Definitions



Natural Heritage System

- **Ecologically based delineation of natural features, natural function and corridors**
- **Looks at the management of nature as a holistic system rather than its component parts in isolation**
- **Recognizes the interactions and dependencies between and among its' component parts**
- **Promotes diversity, connectivity and ecological function of the system over the long-term**



Public Engagement...?



Public Engagement

- Citizens' relationship to the natural environment in Frontenac County
- Provides insight to local culture and natural environmental values



Public Engagement (technique)

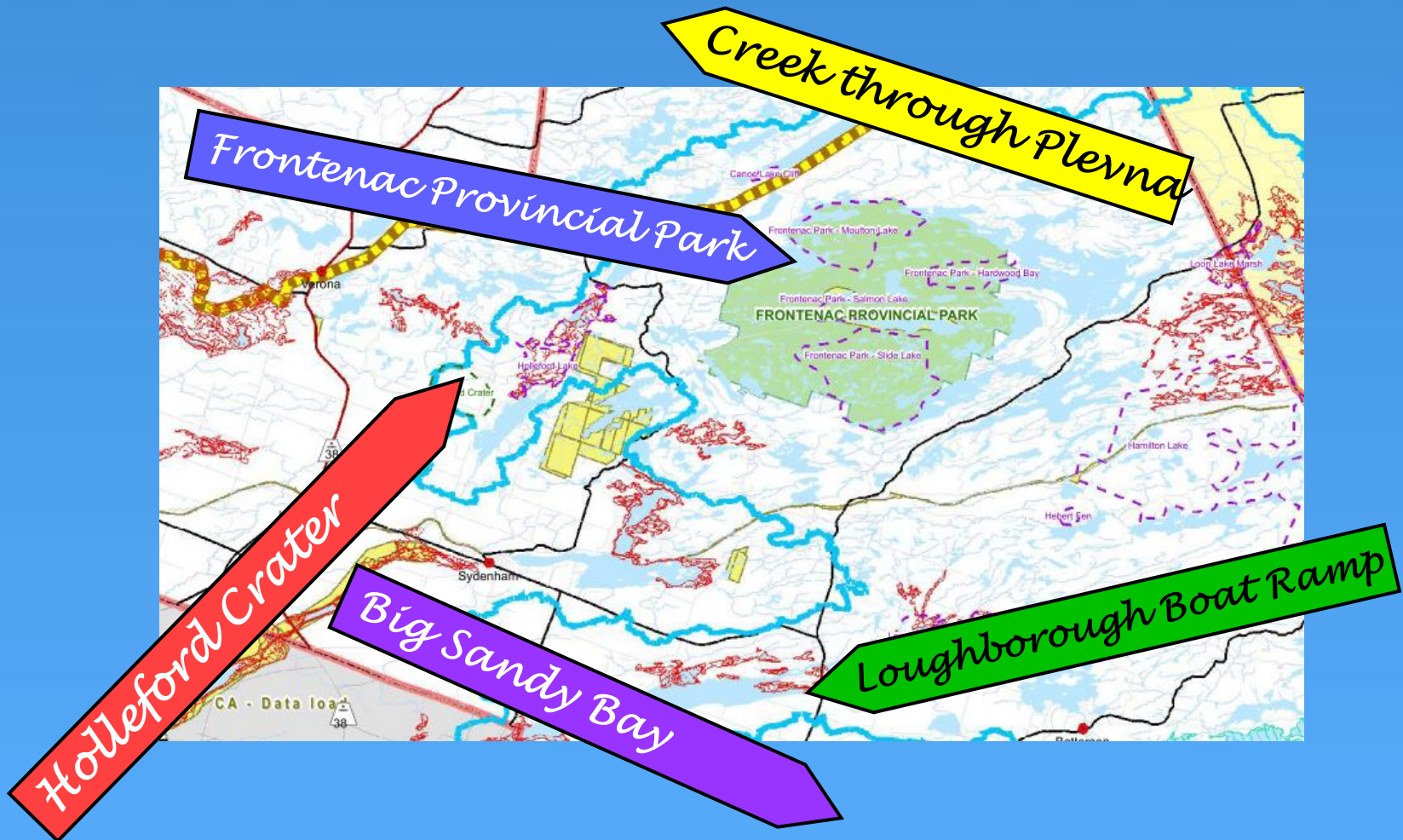
Important area for:

- **Heritage/culture/historic - Red**
- **Economic development – Blue**
- **Recreation – Green**
- **Natural beauty – Yellow**
- **Sustainability / ecologic function - Purple**

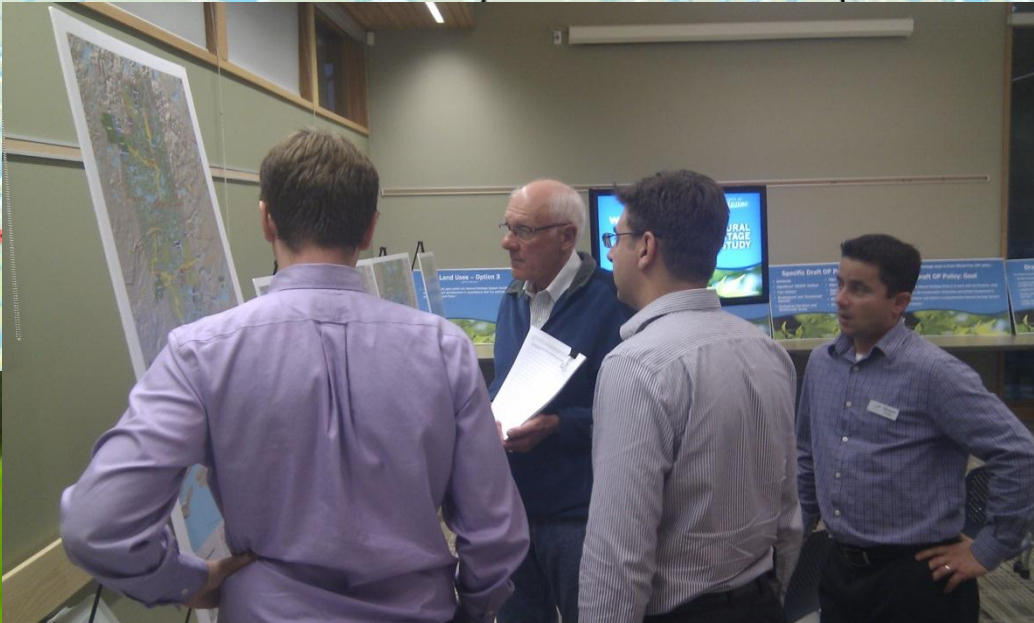
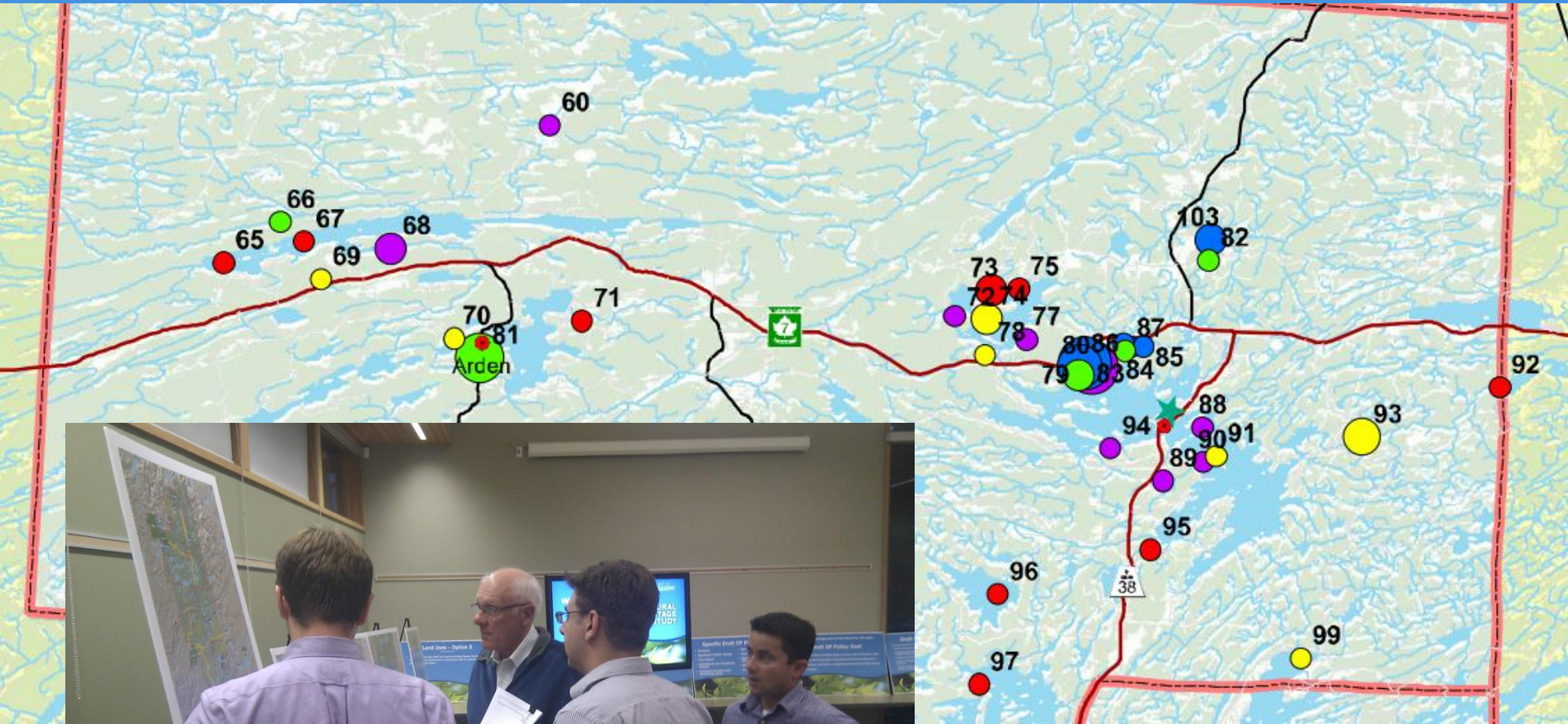


Public Engagement (technique)

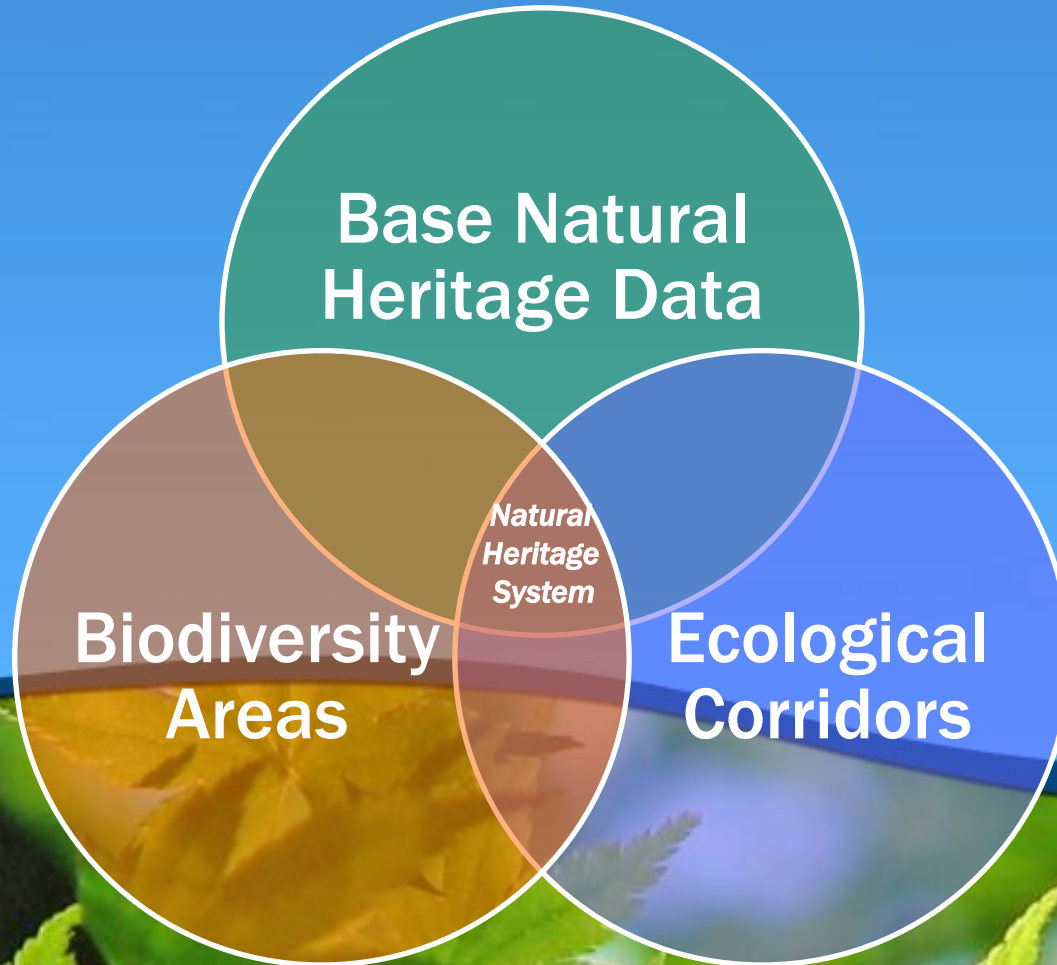
Citizens put their sticky arrows directly on the maps...



Public Engagement... success!



Mapping Process

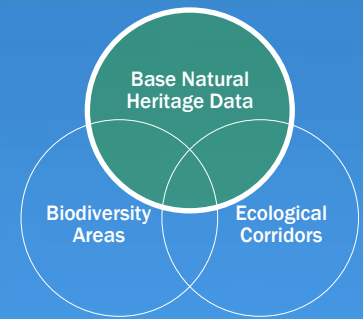


Components Analyzed for the County of Frontenac's Natural Heritage System

- Moose Aquatic Feeding Habitat
- Deer (Stratum 1) and Late Season Moose Wintering Yards
- Deer (Stratum 2) and Early Moose Wintering Yards
- At Capacity Lake Trout Lakes (Moderate Sensitivity)
- At Capacity Lake Trout Lakes (Highly Sensitive)
- Bird Nesting Sites
- Woodlands
- Earth Science Area of Natural and Scientific Interest (Provincial & Regional)
- Ecological Corridors
- Life Science Area of Natural and Scientific Interest (Provincial & Regional)
- Provincially Significant Wetlands
- Coastal Wetlands
- Other Wetlands
- Areas of Biodiversity



Mapping Process



Base Natural Heritage Mapping

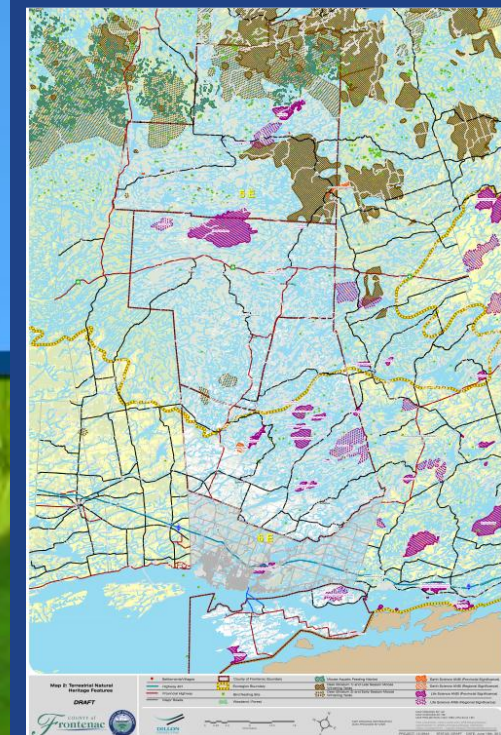
- Based on existing data to meet PPS requirements

Conservation Lands



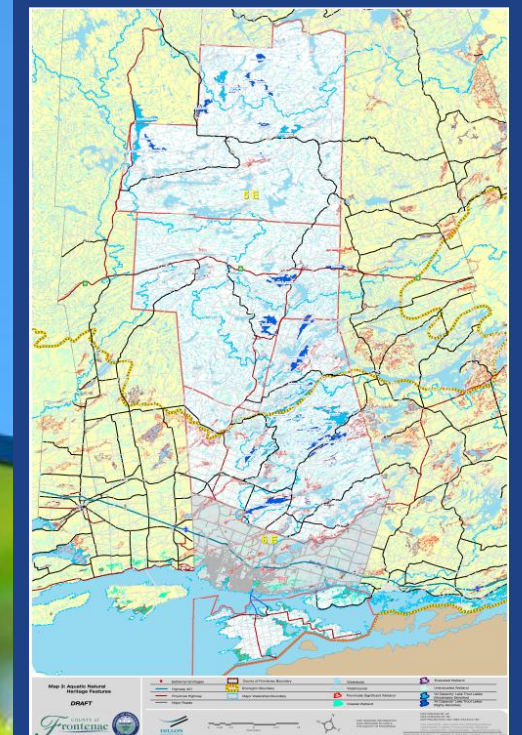
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Terrestrial Features

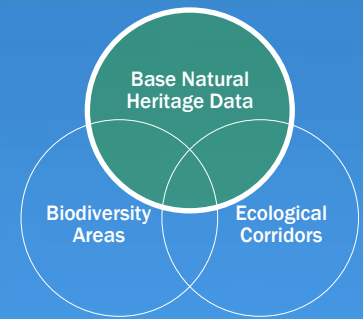


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Aquatic Features



Mapping Process

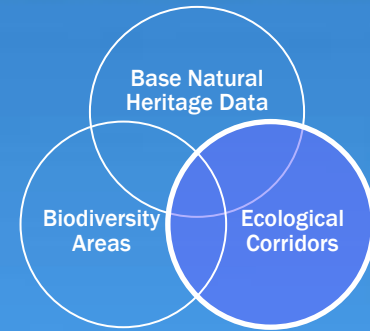


Natural Heritage Features

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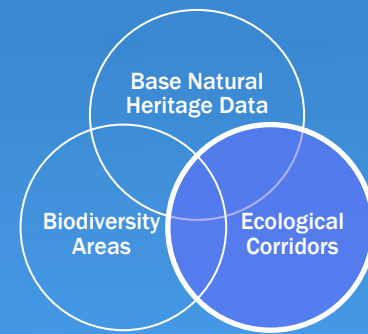
Ecological Corridors



- A component of the natural heritage system which accommodates the natural movement patterns of plants and animals
- Movement is necessary for biodiversity conservation and long-term viability of the system
- Modeled based on general habitat suitability and 'least cost' method



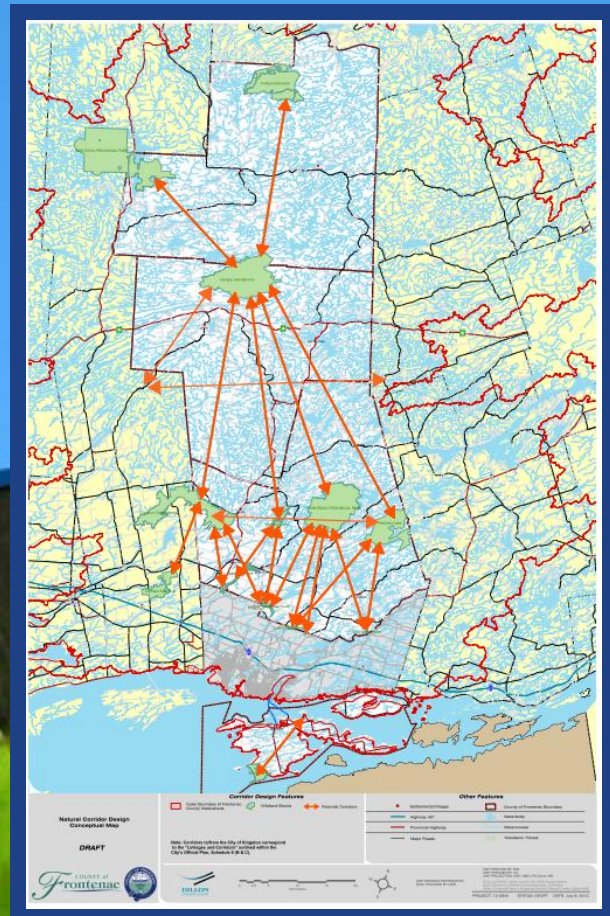
Mapping Process



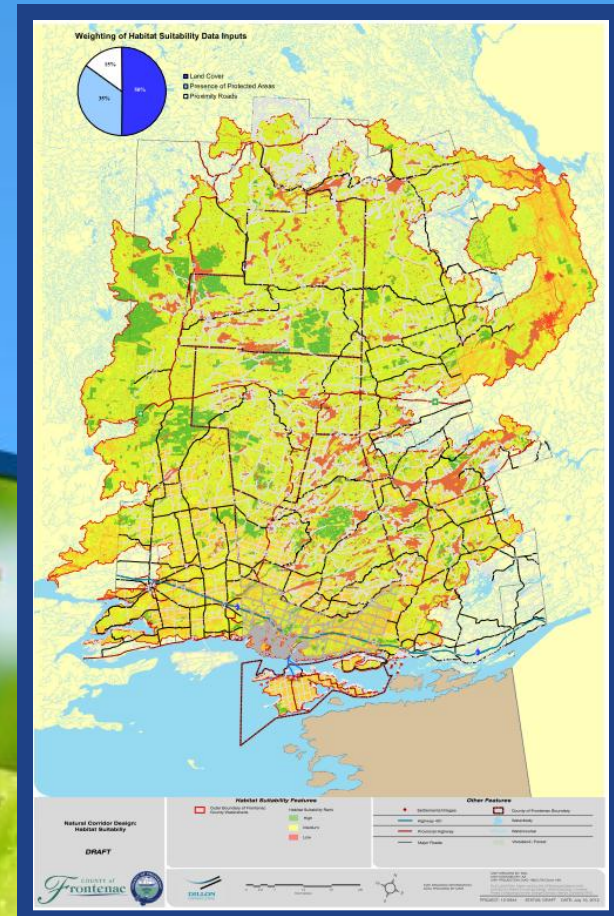
Ecological Corridors

- Corridors were modeled in GIS

Conceptual Plan



Habitat Suitability



A Venn diagram with three overlapping circles on a blue background. The top circle is labeled 'Base Natural Heritage Data'. The bottom-left circle is labeled 'Biodiversity Areas'. The bottom-right circle is labeled 'Ecological Corridors'. The intersections between the circles are shaded in a darker blue, representing the combined areas of the overlapping data sets.

- Modeled results represent the best 0.1% solution



Areas of Biodiversity

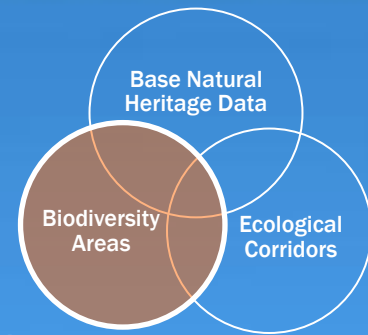
- Areas of Biodiversity were developed to ensure full 'ecological representation' within the natural heritage system.
- These areas capture as much of the different habitats and ecological communities within the Natural Heritage System as possible.
- Using digital mapping of local conditions (geology, soil, and land cover) the areas of Biodiversity were created using the MARXAN model.



MARXAN... remember WALL-E?



Mapping Process



Areas of Biodiversity

- MARXAN GIS model was used to identify areas of high biodiversity that were not already considered

Scenario #1



MARXAN

*is a decision
making tool*



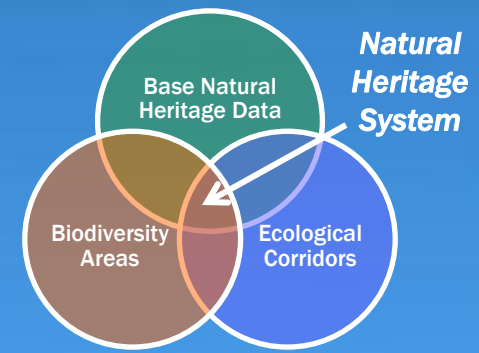
Scenario #2



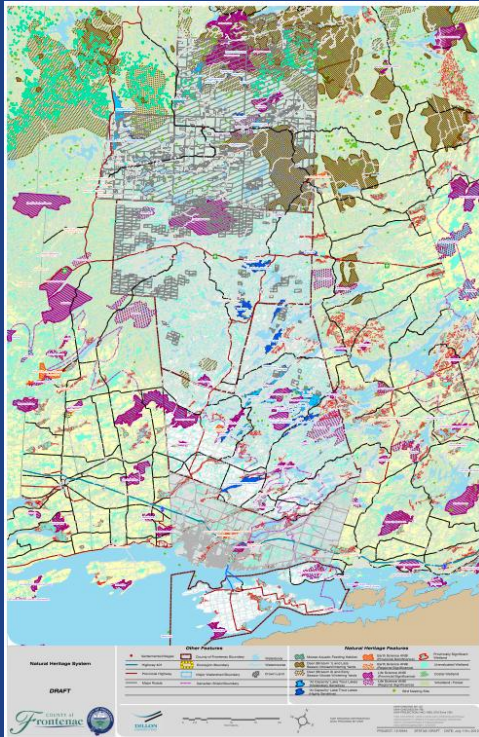
Mapping Process

Draft Natural Heritage Map

- A complete natural heritage system

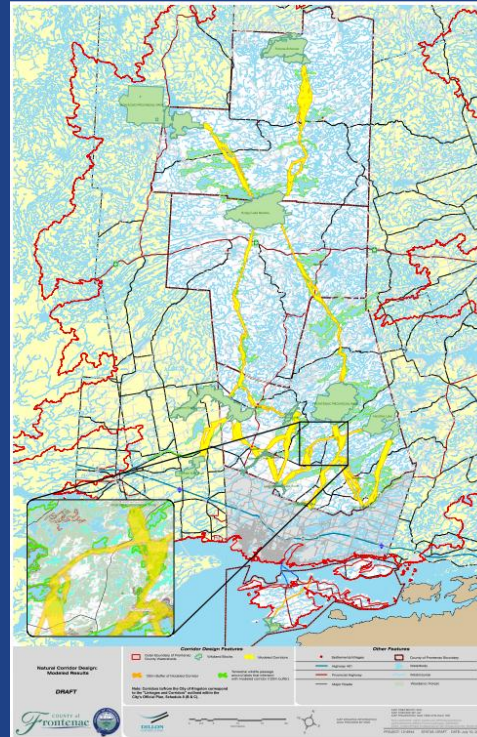


Base Natural Heritage



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Ecological Corridors



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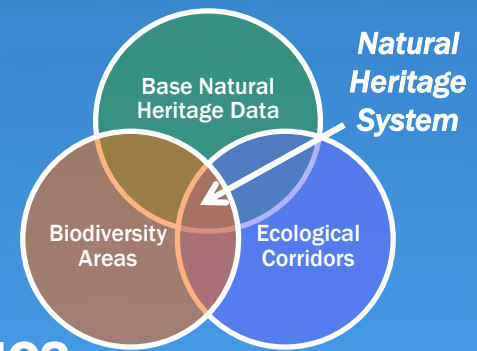
Areas of Biodiversity



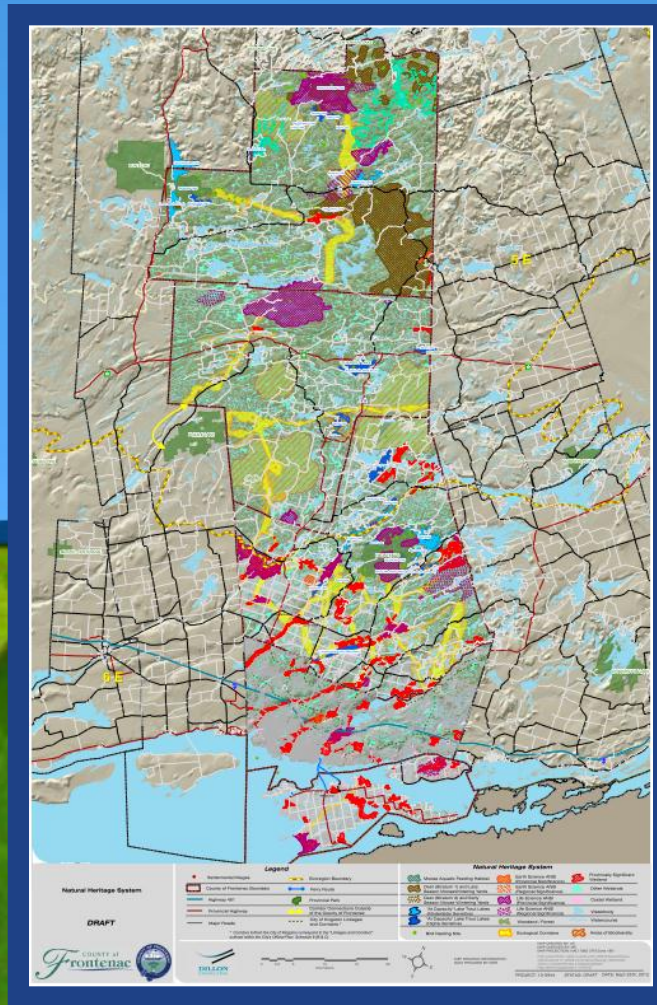
Mapping Process

Draft Natural Heritage Map

- Provincial minimums + Frontenac's ICSP values



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From a natural heritage study to Draft Official Plan (OP) policy...



Policy Comparative 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 Under review by MAH
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	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 the use of resources, the direction of investment, the orientation of technological development, and institutional change are all in harmony with both current and future potential to enhance the quality of life between humans and the biophysical environment (i.e., fauna, flora, the air, water and land). North Frontenac Township's vision embraces the concept of sustainable development through land use decisions that integrate human needs with the natural environment.

LEVEL OF CONSISTENCY

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.

Policy Goal

FINAL REPORT, DECEMBER 2012

- *“The goal of the Natural Heritage System is to work with the Province, Area Municipalities, the Conservation Authorities and private landowners to maintain, enhance and restore a comprehensive Natural Heritage System within the County.”*



Objectives

FINAL REPORT, DECEMBER 2012

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;***



Objectives

FINAL REPORT, DECEMBER 2012

- *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 corridors and biodiversity areas; and,*



Objectives

FINAL REPORT, DECEMBER 2012

- *Encourage local Townships to refine the natural heritage system to include important local features and linkages, where appropriate.*



Land Uses

FINAL REPORT, DECEMBER 2012

- **“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 with the natural heritage system and which are compliant with the PPS.”**



Specific Policies on...

- *Wetlands*
- *Significant Wildlife Habitat*
- *Fish Habitat*
- *Endangered and Threatened Species*
- *Corridors and Biodiversity Areas*
- *Significant Woodlands*
- *Significant Valleylands*
- *Significant Areas of Natural and Scientific Interest (ANSI)*
- *Mineral Aggregate Operations*
- *Environmental Impact Studies*



NHS Performance Measures

- Stronger than 'indicators'
- Look forward to 2019
- Makes linkage back to ICSP
- Maintain 15,536 ha of natural linkages
- 5 new stewardship initiatives
- Demonstrate protection of 1 species-at-risk
- 50 additional ha of parks / green space
- 5 additional opportunities to discover the outdoors



Frontenac's Success:

- Built upon it's strong ICSP foundation
- Sustained collaborative relationship through the process
- Introduced significant mapping innovation
- “Best practice” approach and workable policy for the County's first ever Official Plan



THANK YOU!



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