

# Urban Ecological Networks:

Lessons Learned in Developing  
and Implementing the  
City of Edmonton's  
*Natural Connections Conservation Plan*

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# Outline

- Our past practice
- Our new approach:
  - Natural Areas Systems Policy
  - Natural Connections Conservation Plan
- Conservation Tools
- Case Study
- Lessons learned and things we would do again
- An invitation



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- Poor collective understanding of the value of natural areas
    - Lack of buy-in by citizens and industry



Lack of a clear vision for conservation



- Fragmented policy/planning framework
- Lack of integration with other higher level plans
  - Lack of clear strategic direction



= **Loss** of natural areas &  
**fragmentation** of landscape

Our Past Practice

# Natural Area Systems Policy



“Since Edmonton was settled more than 100 years ago, the natural environment has supported us and shaped our collective identity. Edmontonians are proud of the city’s natural heritage. To safeguard our natural capital and the associated ecological services, the City of Edmonton is committed to conserving, protecting, and restoring our natural uplands, wetlands, water bodies, and riparian areas, as an **integrated and connected system of natural areas throughout the city**. Natural area systems provide essential habitat for plants and animals, support biodiversity, and maintain a high quality of life for current and future citizens by supplying critical ecological services, as well as opportunities for education, research, appreciative forms of recreation, and aesthetic and spiritual inspiration.

The City of Edmonton will **balance ecological and environmental considerations with economic and social considerations in its decision making** and demonstrate that it has done so.

The City of Edmonton recognizes that it can accomplish the work that is required to achieve conservation more efficiently and effectively by **supporting and developing partnerships to achieve effective conservation results**. Therefore, the City will lead by example – engaging the public in natural area issues, and encouraging businesses, residents, and the community to secure new natural area systems and steward what we have effectively.”

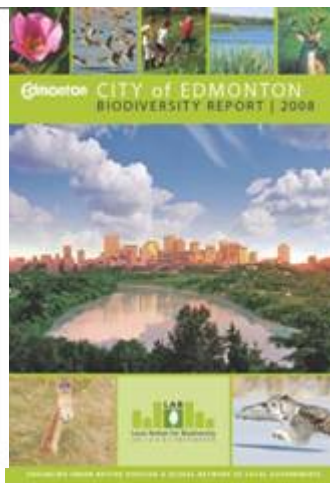
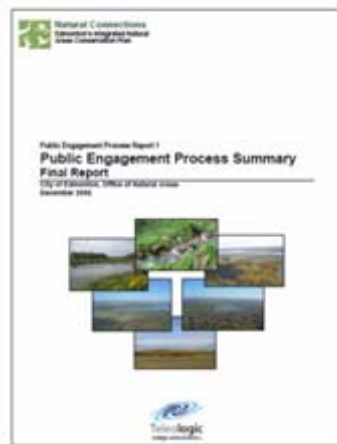


# Natural Connections Conservation Plan

## Conservation Plans and Inventories

1. State of Natural Areas Report
2. Biodiversity Report
3. Natural Connections Strategic Plan
  - Spatial strategy: Ecological Network Approach
4. Biodiversity Action Plan

Public Involvement



## Natural Connections Strategic Plan



Edmonton's Integrated Natural Areas Conservation Plan June 2007



## NATURAL CONNECTIONS

LOCAL BIODIVERSITY STRATEGY & ACTION PLAN

2008 - 2018



Strengthening and integrating our efforts to protect Edmonton's biodiversity...

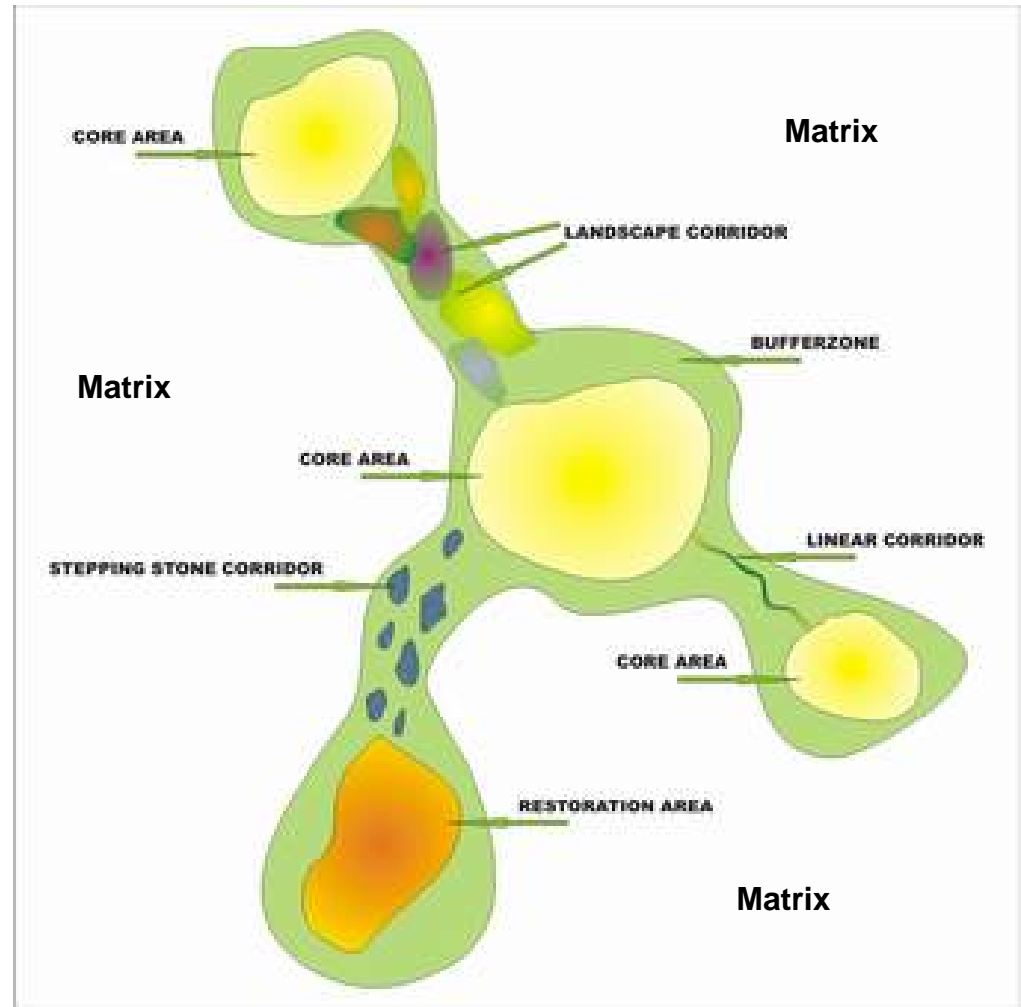
City of Edmonton  
Office of Natural Area



# Ecological Network Approach

## Elements of an Ecological Network:

- Regional Biodiversity Core Areas
- Biodiversity Core Areas
- Stepping Stones and linkages (natural & semi-natural)
- Matrix



Source: Croatian State Institute for National Ecological Network

# A Functioning Ecological Network

Components of a functioning ecological network...

- A **wide vegetation corridor** along major watercourses
- Several large natural areas known as **core areas**
- **Connectivity** for movement of species among the core habitat areas, either through wide, continuous corridors or a series of 'stepping stones'
- A **diverse mixture of natural areas** throughout the developed parts of the city that can serve as wildlife habitat or connect other, larger natural areas

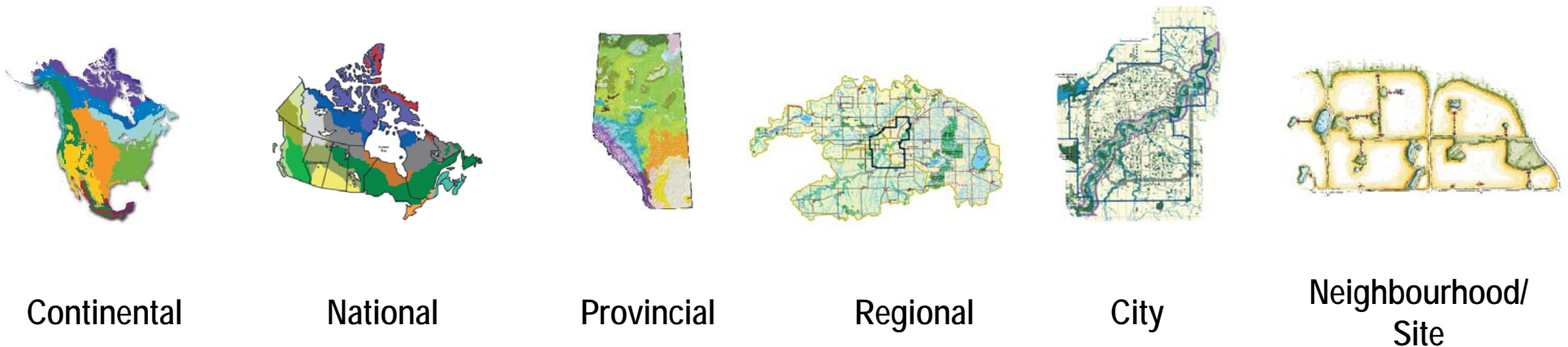
Source: Forman, 1995, Land Mosaics

## Edmonton's Ecological Network



# “Scalability” of the Ecological Network Approach

- Ecological Network Model works on any scale: Continental to Site
- Promotes systems thinking, intra-governmental collaboration



← NETWORK SCALE →



# Elements of the Ecological Network: Neighbourhood Scale

LANDSCAPE ELEMENT	FUNCTION	"FIXEDNESS"
Railway ROW	Linkage	Fixed
Powerline ROW	Linkage	Fixed
Pipeline ROW	Linkage	Fixed
Tree Stands	Stepping Stone/Linkage	Fixed
Wetlands	Stepping Stone/Linkage	Fixed
Constructed Wetlands	Stepping Stone/Linkage	Semi-Fixed
Park Greenway	Linkage	Moveable
School site	Linkage/Buffer	Moveable
Playing fields	Linkage/Buffer	Moveable
Neighbourhood	Matrix	Moveable

# An Evolution in Suburban Neighbourhood Patterns



Good



Better



Best (thus far...)

But.... we can do better yet!

# Bringing it all together at the neighbourhood scale...

- 1. ASSESS:** Obtain the required ecological information
  - Ecological Network Report
  - Natural Site Assessment
- 2. ALIGN/DESIGN** other land uses to maximize protection/restoration of the ecological network
  - Ecological Design Report
  - Wildlife Passage Guidelines
- 3. SECURE** natural areas using available tools
  - Municipal/Environmental Reserve
  - Purchase
  - Conservation Easements
- 4. MANAGE** the ecological network
  - Natural Area Management Plans

# Building a Better Conservation Toolbox

## 1. Assessment Tools

- Ecological Network Report
- Natural Site Assessment

## 2. Securement Tools

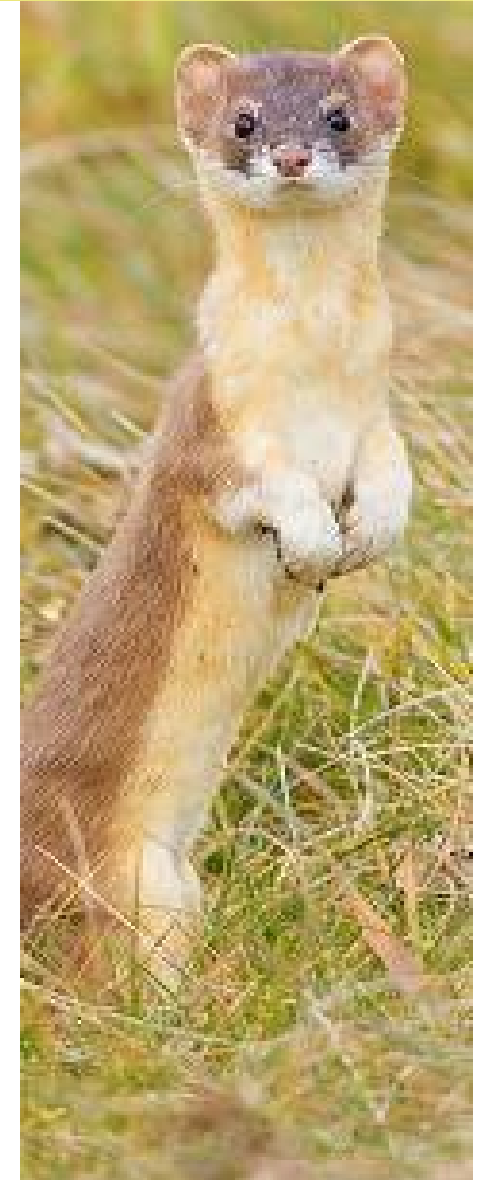
- Environmental Reserve
- Municipal Reserve & Urban Parks Management Plan
- Natural Areas Reserve Fund
  - Natural Areas Acquisition Strategy
  - Borrowing Initiative
- Edmonton & Area Land Trust
- Ecological Conservation Assistance Program
- Crown Water Bodies

## 3. Design Tools

- Ecological Design Report
- Wildlife Passage Engineering Design Guidelines
- Environmental Reserve Guidelines
- Area Structure Plan and Neighbourhood Structure Plan Terms of Reference
- New Suburban Neighbourhood Design Guidelines

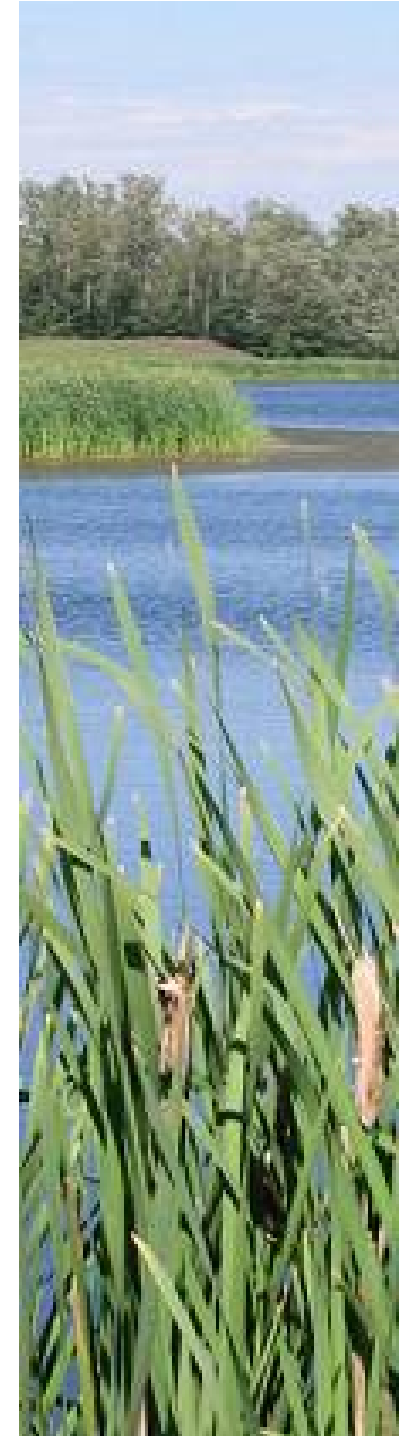
## 4. Management Tools

- Urban Forest Management Plan
- Natural Area Management Plans
- Master Naturalist Program



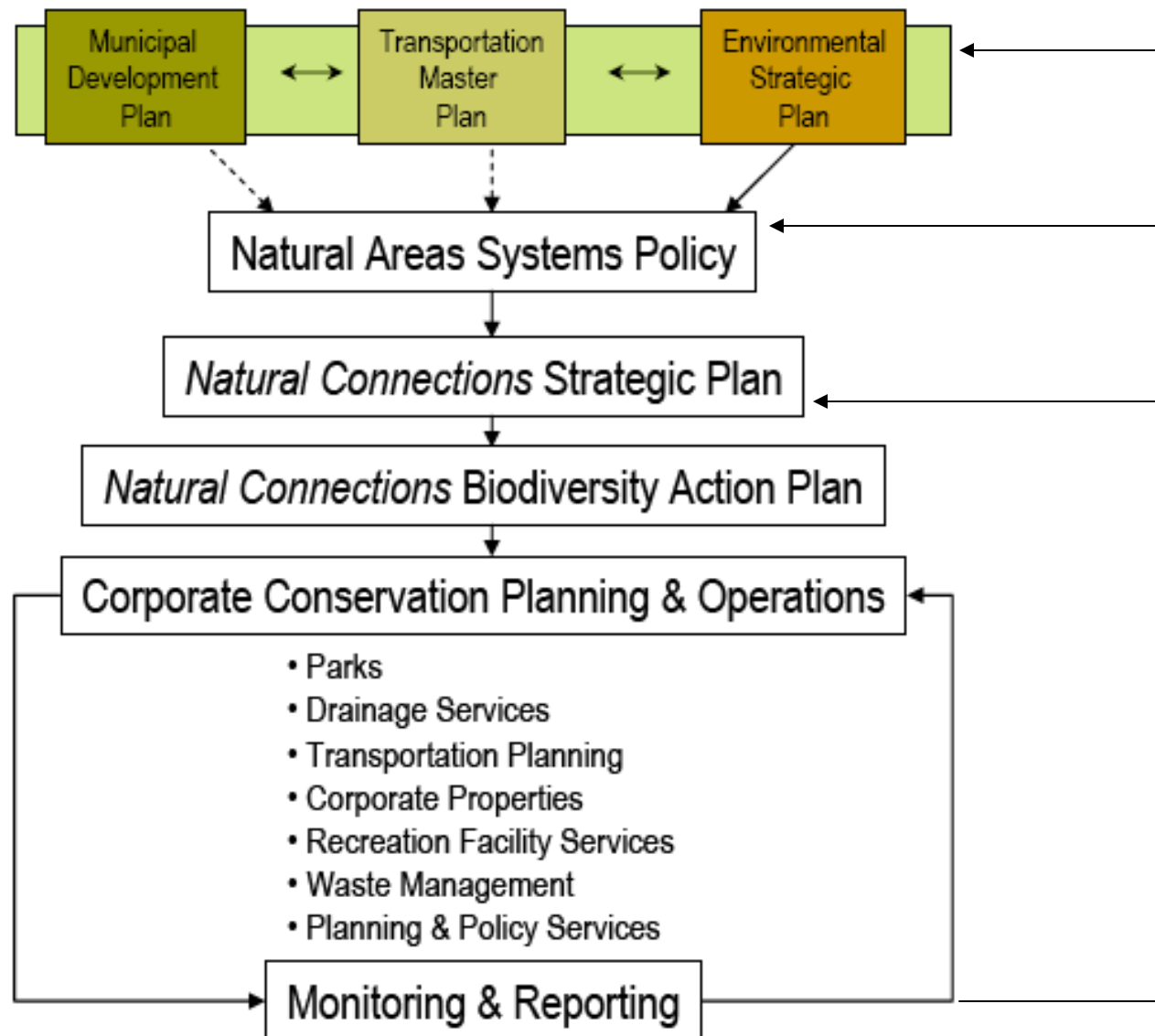
# Challenges We're Addressing...

Challenge	Approach
Limited tools for natural areas securement • Limited authority • Limited funds	• Seeking legislative changes • Borrowing Strategy • Implementing Edmonton & Area Land Trust with our partners
Integration of Ecological Network model into City decision making	• New Wildlife Passage Engineering Design Guidelines • Constructed wetlands & bioswales
Limited staff capacity to manage NAs / Limited public awareness of value of NAs	• New Master Naturalist Program to encourage public stewardship
Loss of tree stands – no jurisdiction to protect trees on private lands	• Revising the Corporate Tree Bylaw • New Urban Forest Management Plan
Negative impacts of development on urban wetlands (loss/degradation)	• Wider application of Environmental Reserve • Improved constructed wetland design • Designing drainage networks to protect existing hydrological regimes • Provincial Wetland Policy Project Team



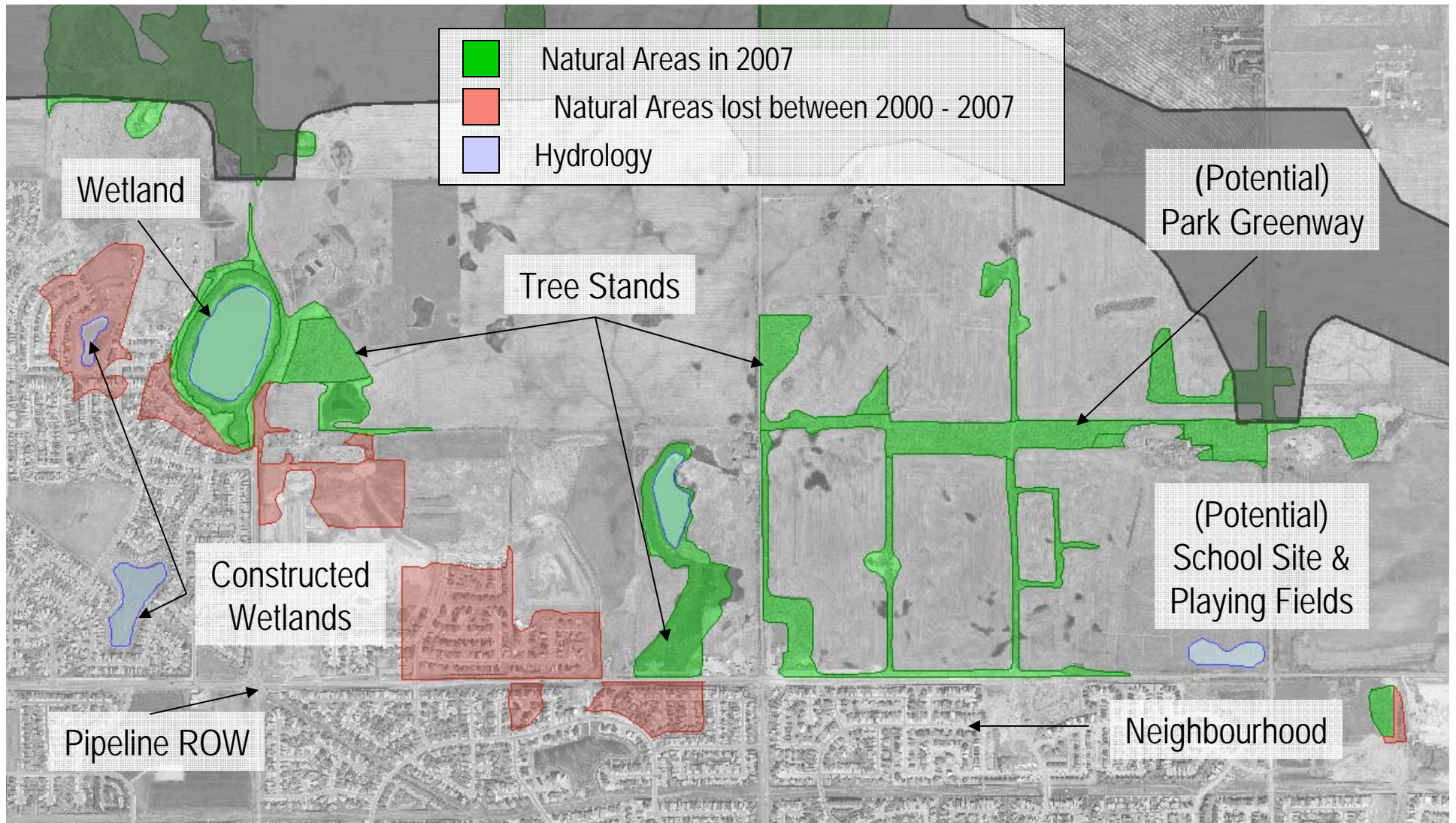
# Moving Forward: Plan Integration

Transforming  
Edmonton



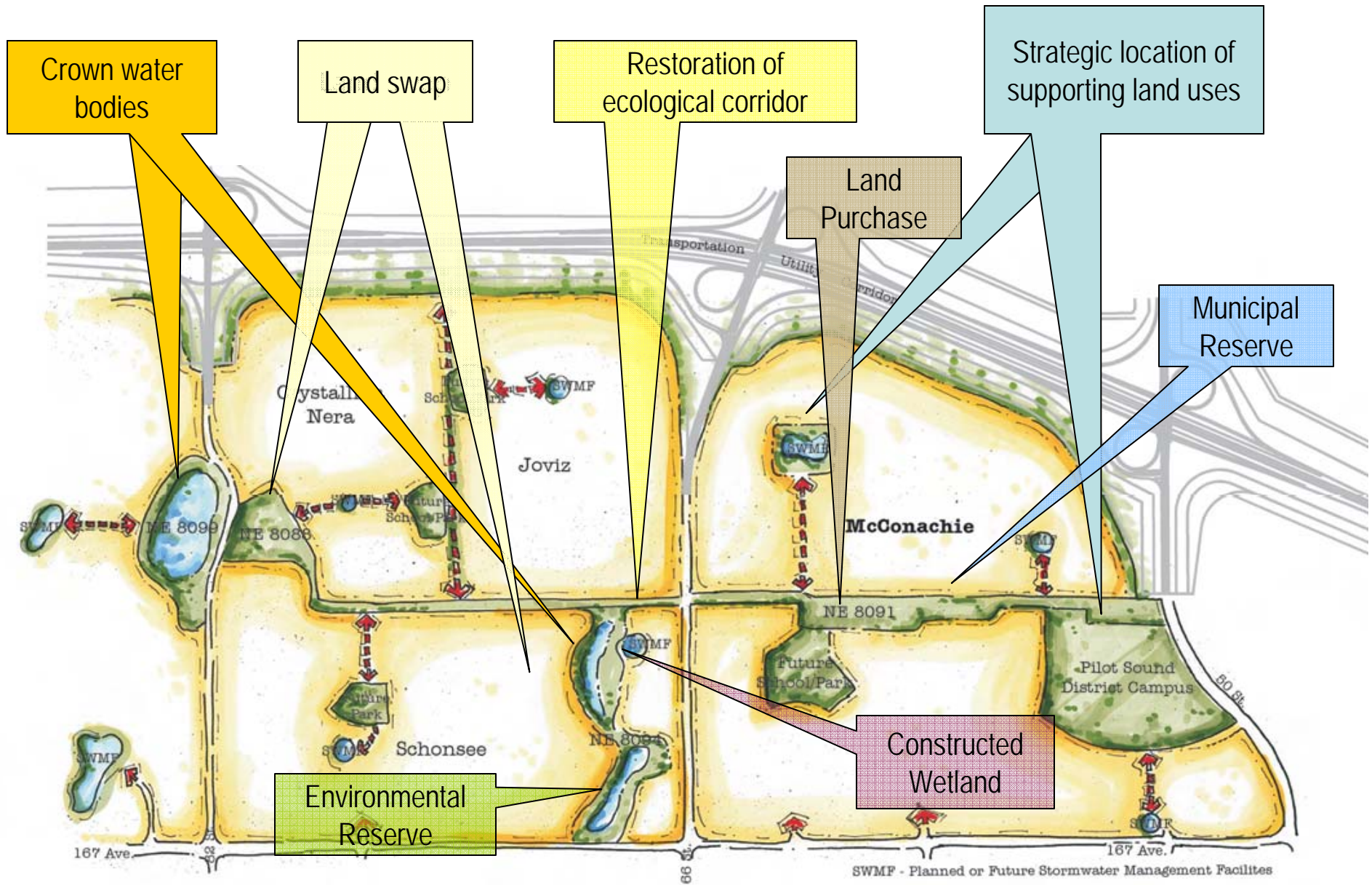



Case Study: Putting it into practice...  
Edmonton North



# North Edmonton – Pre-Development Landscape

# Assembling an Ecological Network



An aerial photograph of a golf course. A large, winding river flows through the landscape, with a smaller pond situated on the left side of the course. The terrain is a mix of green grass, sand traps, and dense trees. The sky is clear and blue.

# Lesson Learned and Things That We Would Do Again

# Public Involvement is Necessary for Community and Industry Support

- Use a short time frame to develop a plan
- Create a community advisory committee of citizens and industry to counsel you on the appropriate level of public involvement and your approach
- Hire an independent consultant to provide a baseline report of the state of natural areas in your community
- Hire an expert in public involvement and communications
- Use a variety of methods to gauge support
  - Open houses, workshops, internet surveys, focus groups
- Post all of your outputs on a website in a timely fashion

# Conservation Planning Principles Need to be Integrated into other City Policies & Plans

- A good conservation plan and policy is not enough
- Complete plans and policy in advance of other higher level plans
- Don't wait to be invited to contribute to other plans
- See that these principles are integrated into these plans and policy to facilitate implementation
- Ensure a commitment to ecological principles at the policy level
- See that these principles are integrated into plans and policy to facilitate implementation

# Ecological Design at the Neighbourhood Scale is Essential to Develop a Functioning Ecological Network

- Think systems at multiple scales
- Your ecological network is defined and secured neighbourhood by neighbourhood
- Align land uses / landscape elements to increase functional connectivity
- Involve your operational units when considering new approaches

# You Will Need to Create New Tools to Implement an Urban Conservation Plan

- The MGA does not enable municipalities to protect ecological integrity in the planning process – money is key
- Get urban conservation onto the agenda of your associations
- Find a way to be invited to the Provincial table to reform policy – the urban perspective may be missing.
- Foster the creation of a land trust organization
- Consider a borrowing initiative

# An Invitation to Join Us...

- Local Action For Biodiversity Initiative
- ICLEI World Congress & Urban Nature Forum  
(Edmonton, June 2009)

[www.edmonton.ca/naturalareas](http://www.edmonton.ca/naturalareas)



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