

# Community Restoration Activities in the City of Greater Sudbury

---

Sudbury 2003 Mining and the Environment Conference

Bill Lautenbach MCIP, RPP  
May 26, 2003

# Sudbury's Planning Experience

---

For the past 25 years the City of Greater Sudbury has been engaged in improving its land and water environments in order to redress environmental damage caused primarily by a mining legacy.

In the process of undertaking various restoration improvement initiatives, the lessons learned from these activities have been transferred and applied to numerous other initiatives within the community.

# Sudbury's Planning Experience

---

Creative solutions required to stretch limited financial resources compelled the City to create greater public awareness and support for key projects, to elicit a wide range of community partnerships, to engage volunteer participation and to develop advisory committees to champion a variety of programs and projects.

# Key Initiatives

---

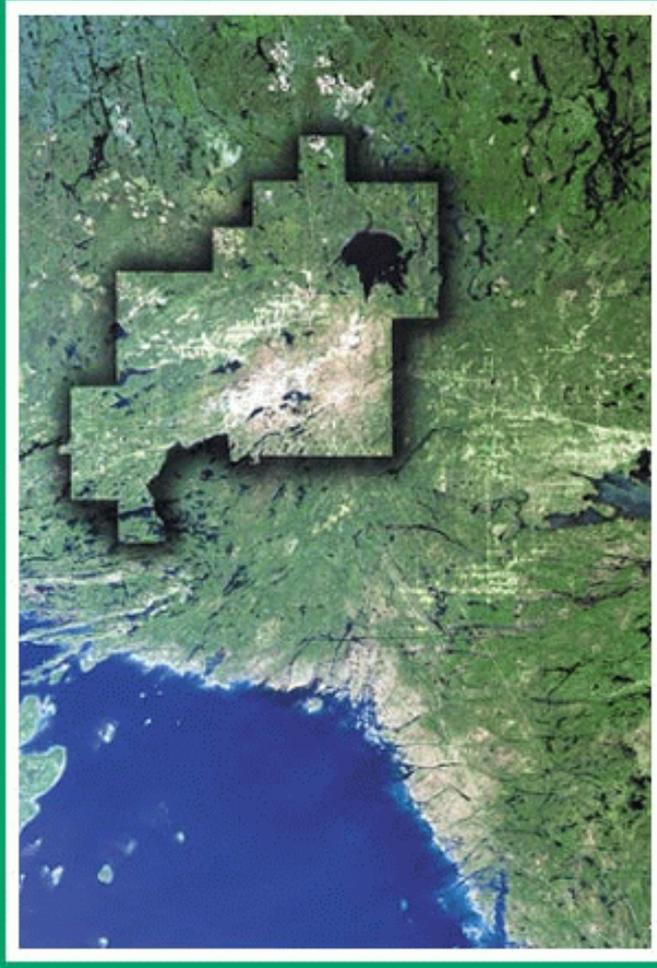
Case Studies Highlighted in this Presentation

- Restoration program & city naturalization
- Living with Lakes initiative
- Community Improvement Plans - Ramsey Lake and Junction Creek
- Sudbury Soils Review
- Earthcare Sudbury partnership

# Sudbury Context / Setting



# Sudbury Context / Setting



- Total area: 3,627 km<sup>2</sup>
- Largest municipality in Ontario based on total area
- 330 lakes ten or more ha in area
- 133 km trail system
- Diverse urban form
  - Dense urban core
  - Agricultural areas
  - Mining lands
  - Seasonal dwellings and recreational areas
- 2,377 km<sup>2</sup> of productive forest

# Sudbury Context / Setting



- Three post-secondary institutions:
  - Laurentian University
  - Cambrian College
  - Collège Boréal
- Centre of research
  - MIRARCO
  - SNO
  - NEORCC
  - NORCAT and others

- Population: 155,219
- Major employment sectors:
  - Mining
  - Mining supplies and services
  - Educational Services
  - Health Care
  - Retail and Wholesale Trade
  - Call Centres
- Population by Mother Tongue:
  - English 62.3%
  - French 28.2%
  - Non- Official languages 7.7%
  - Multiple languages: 1.8%
- 40% of the population are bilingual
- 4.6% of the population are Aboriginal

# Vibrant Northern Community

---

Driven by Economic Development Engines of:

- Mining and Mining Supplies and Services
- Medical Services
- Educational Services
- Tourism
- Government Services
- Retail Services

# Mining & Mining Supplies & Services

Inco and Falconbridge and numerous junior companies



# Mining Products, Supplies and Services



# Medical Service Centre



# Educational Centre

University and 2 Colleges



# Tourist Destination



# Government Service Centre

Federal, Provincial and Municipal Offices



# Service & Retail Centre for Northeastern Ontario



# Natural Ecosystem Environment



Canadian Shield

Great Lakes - St. Lawrence  
Forest Region



# Natural Environment

---



# Legacy of Environmental Damage

---



Logging

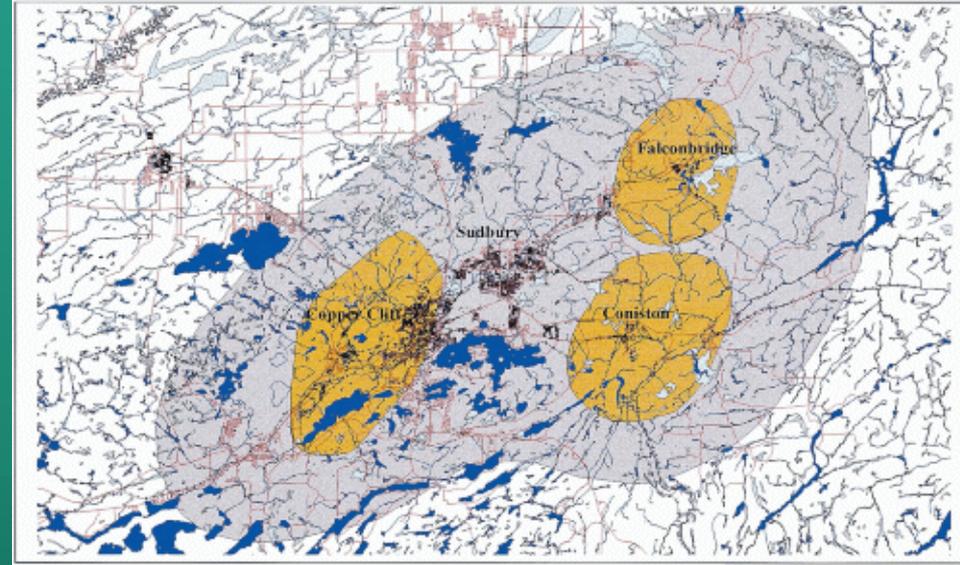
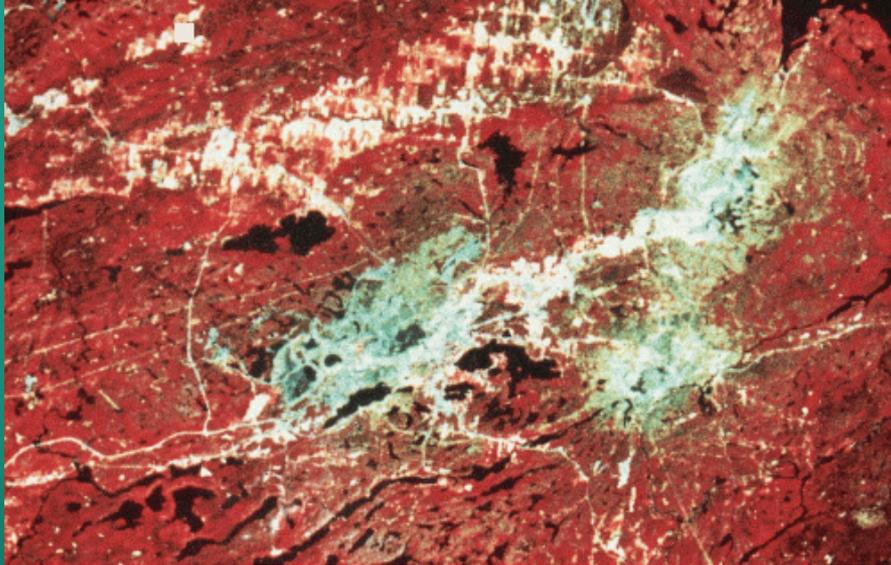


Roasting



Smelting

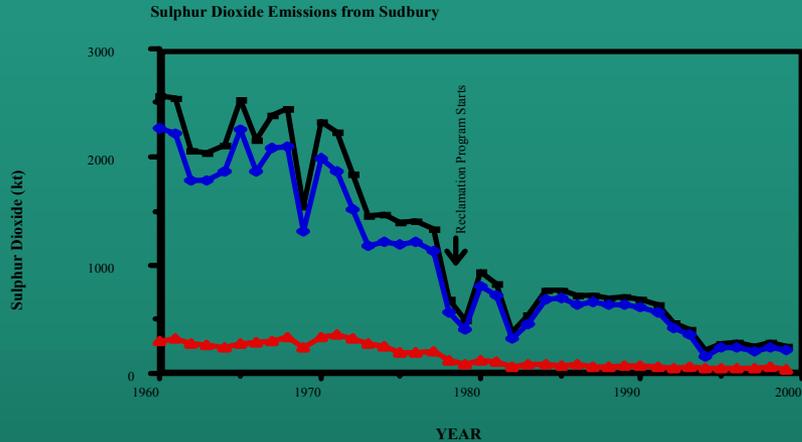
# Impact of this Legacy



- Barren area 17,000 ha
- Semi-barren 48,000 ha
- Total 65,000 ha

# Restoration Track Record

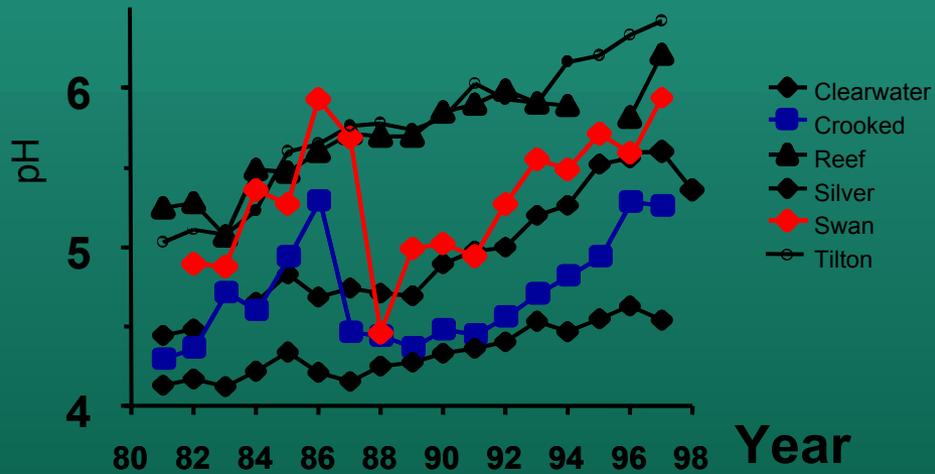
## Air Quality Improvement



# Restoration Track Record

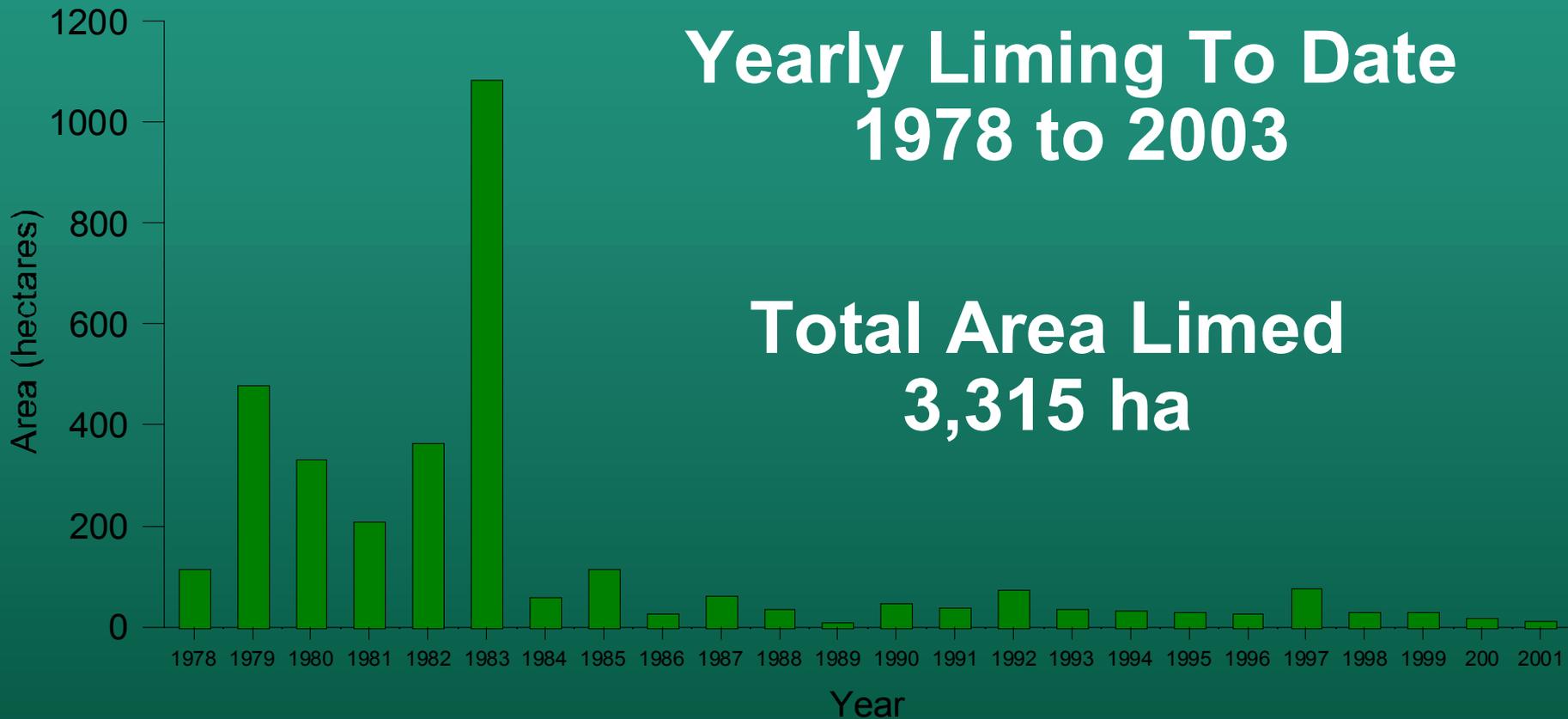
## Water Quality Improvement

### Chemical Recovery in Lakes



# Restoration Track Record

## Soil Restoration - Liming

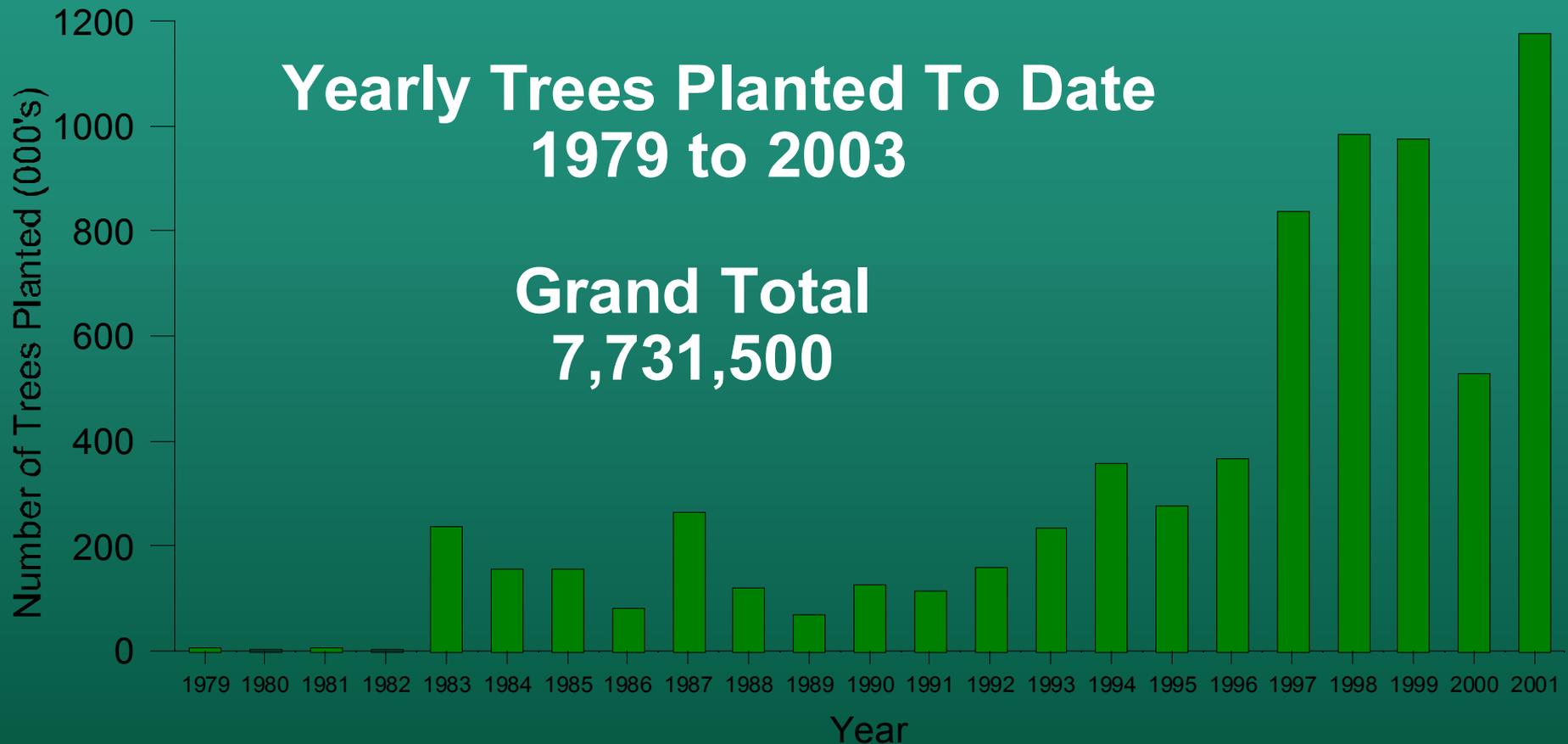


# Restoration Track Record

## Vegetation Restoration - Tree Planting

**Yearly Trees Planted To Date  
1979 to 2003**

**Grand Total  
7,731,500**



# Land Restoration Program City Naturalization

---



# Damaged Landscape

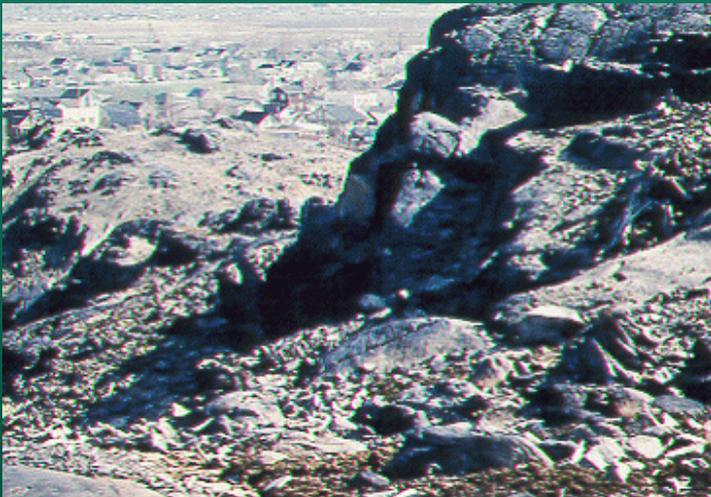
---



# Strategic Restoration



Highway corridors  
Public and private lands  
Neighbourhoods



# Liming Process



# Liming Process



# Liming Process



# Liming Process



- Agricultural limestone
- 10 tonnes per hectare
- Labour intensive



# Fertilizing Process



- Spread manually (Distribution)
- 6-24-24 mix
- 400 kg per hectare
- Provide nutrients to soil



# Seeding Process



- Completed manually with cyclone seeders
- 45 kg per hectare
- Seed mixture - 5 grasses, 2 nitrogen fixing legumes



# Tree Planting



# Tree Planting Prescription



- Spring and Fall planting
- Mostly container seedlings
- Tree species:
  - Coniferous (94.6%)  
Jack Pine, Red Pine, White Pine, White Spruce, Black Spruce, Norway Spruce, Larch, Tamarack & Cedar
  - Hardwood (4.9%)  
Red Oak, Silver Maple, Sugar Maple, Black Locust, White Ash
  - Shrubs (0.5%)  
Various

# The Basic Regreening Recipe

Amount of lime added: 10 t / ha

Amount of fertilizer added: 400 kg / ha

Seed mixture: 40 kg / ha

Grasses (75%):

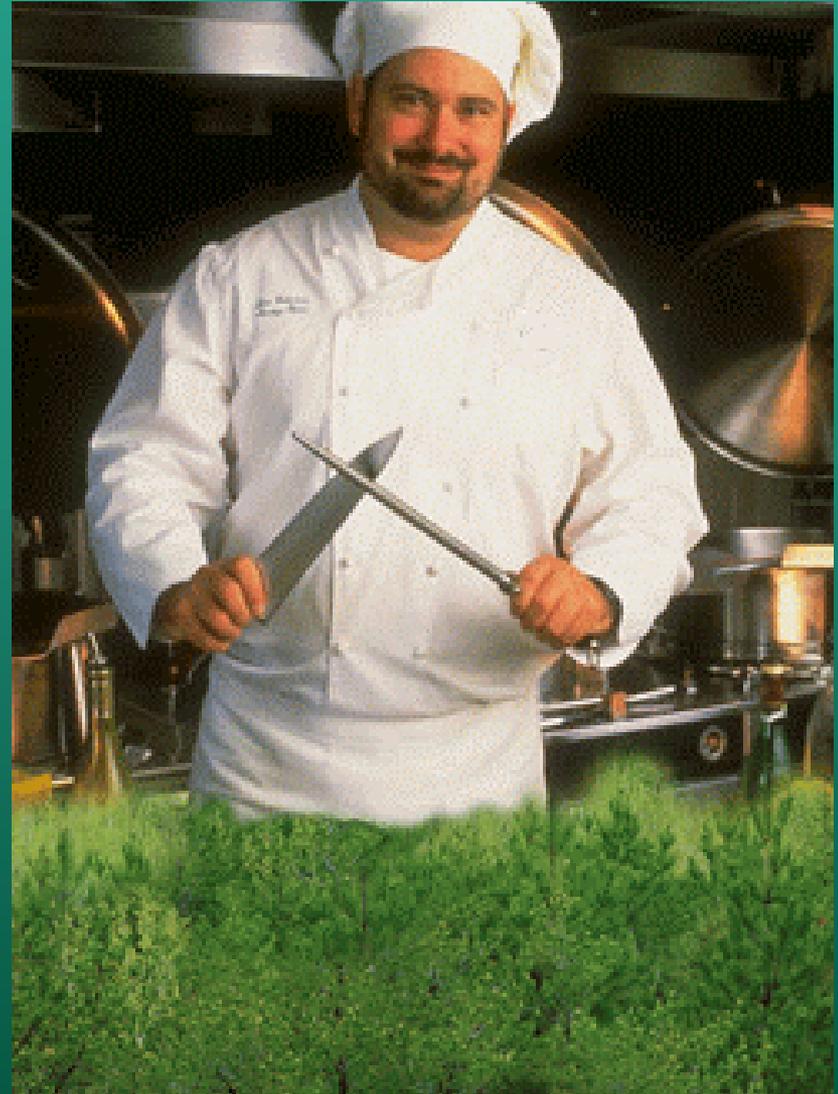
1. Red Top (*Agrostis gigantea*)
2. Red Fescue (*Festuca rubra*)
3. Timothy (*Phleum pratense*)
4. Canada Blue Grass (*Poa compressa*)
5. Kentucky Bluegrass (*Poa pratensis*)

Legumes (25%)

1. Bird's foot Trefoil (*Lotus corniculatus*)
2. Alsike Clover (*Trifolium hybridum*)

Trees Planted (major species):

1. Jack Pine (*Pinus banksiana*)
2. Red Pine (*Pinus resinosa*)
3. White Pine (*Pinus strobus*)
4. White Spruce (*Picea glauca*)
5. Black Spruce (*Picea mariana*)
6. White Cedar (*Thuja occidentalis*)



# After Photo Grassing



# After Photo - Tree Planting

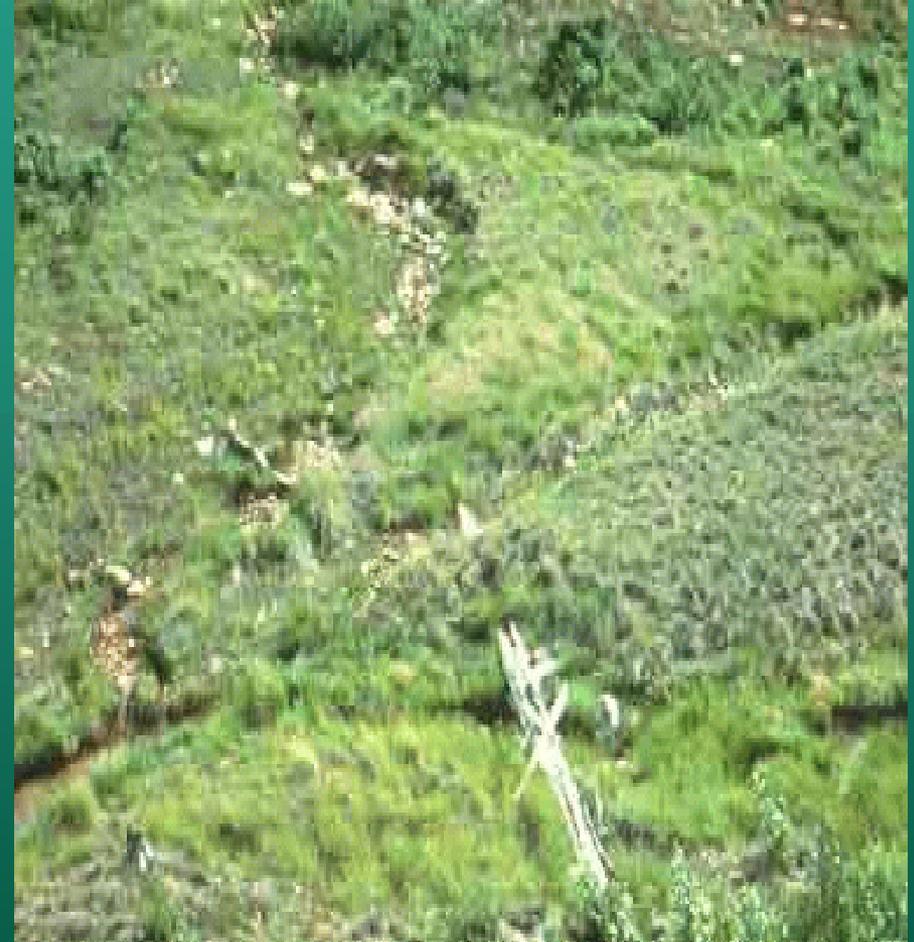


# After Photo - Tree Planting



# Before and After Photos Highways

---



# Before and After -Neighbourhoods



# Ecosystem Improvement



# Achievements to Date

---



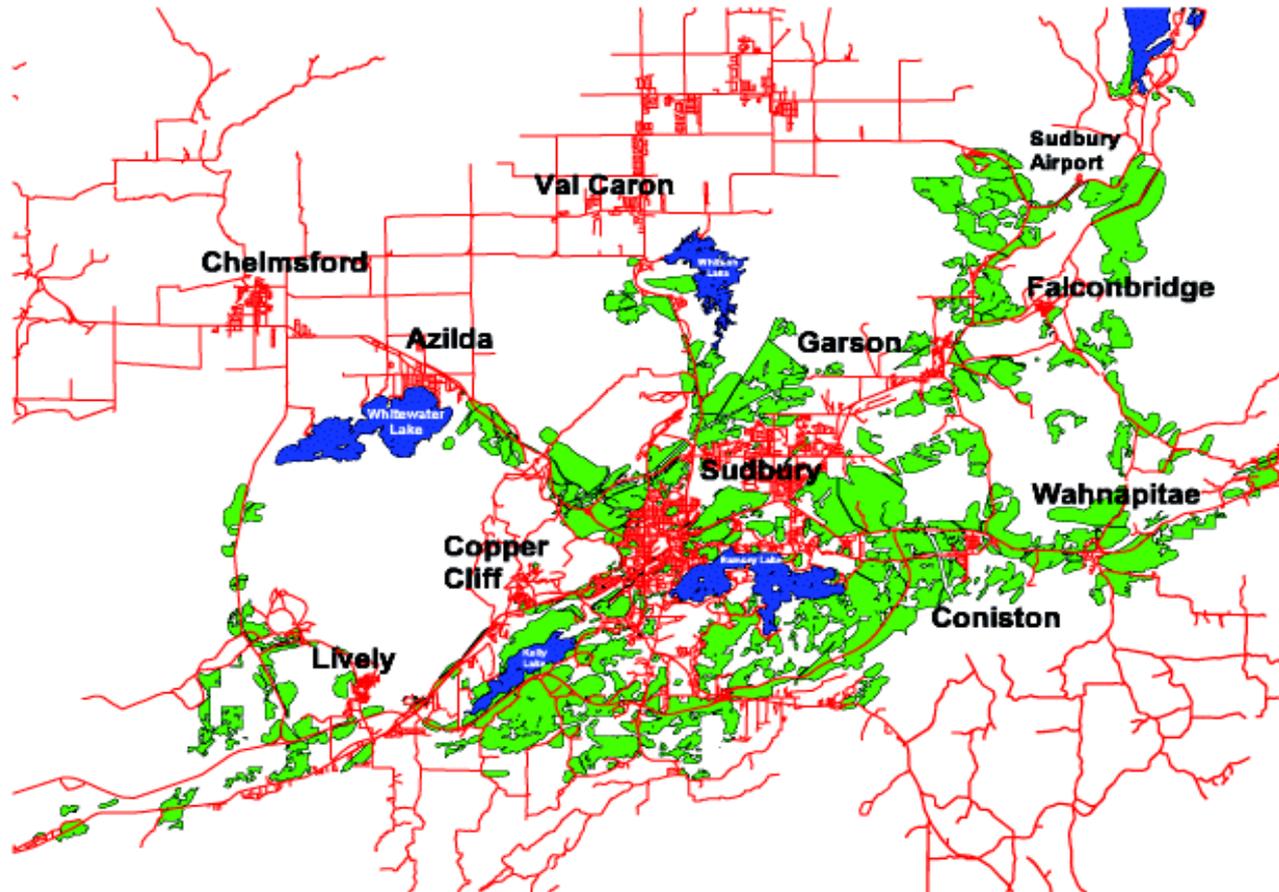
- Half of barren land has been reclaimed
- Current environmental conditions allow for natural regeneration to occur



- Over 80 % tree survival rate
- Original trees planted are now providing a seed source
- Soil erosion decreased
- Less sediment in streams
- Decrease in metals in water, less acidic runoff
- Decomposition and nutrient cycling occurs
- pH of soil is maintained once treated

# Map Showing What has Been Restored

**Tree Planting Sites (1979 to 2001) within the City of Greater Sudbury**



-  Tree Planting Site
-  Road
-  Lake



2 0 2 4 6 Kilometers



# Barrens Reserve

---



# Daisey Lake Provincial Forest Reserve

---



# Knowledge Partnerships

- VETAC (Vegetation Enhancement Technical Advisory Committee)
- A committee of Council
- Technical expertise
- Strategic planning
- Direction of program operation
- 26 members from industry, government, private sector, academia & organizations & groups



# Funding Partnerships

---

- Funding Partners
  - Government (Federal, Provincial, Municipal)
  - Private Companies
    - Eddie Bauer
    - TransCanada Energy Limited
    - Vermillion Forest Management
    - Company Ltd.
  - Mining Companies
    - INCO Limited
    - Falconbridge Limited



# Human Resources Partnerships

---

Almost all restoration programs and projects required a labour component. This labour force included:

- Summer students
- Unemployment Insurance recipients
- Welfare recipients
- Ontario Works participants
- Support expertise
- Volunteers

To a large degree the success of the program can be attributed to more than 4,170 individuals who have worked with us over the past 24 years.

# Volunteer Partnerships

- Other Partners
  - Schools (Elementary - University / College)
  - Clubs & Organizations
    - Boy Scouts
    - Horticultural Association
  - Interested Citizens



# City Key Catalyst

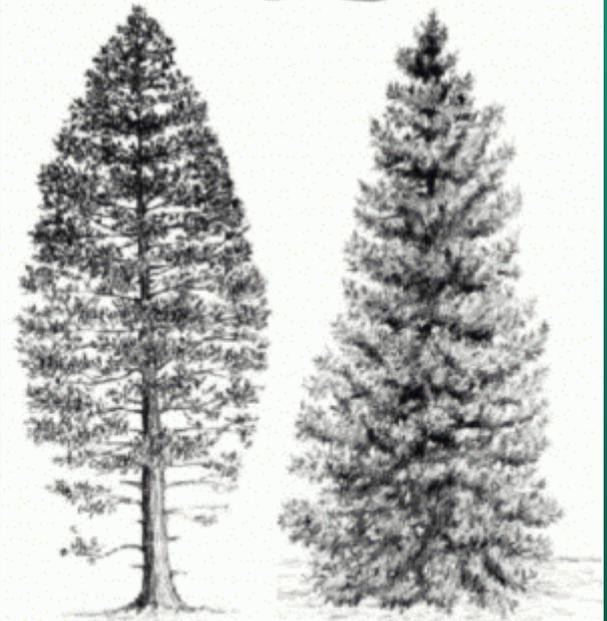
---

## City of Greater Sudbury

- Materials and equipment
- Administrative support
- Financial assistance (10% of annual program operation)
- Champion and support



# Tree Giveaways - Citizen Tree Planting



# Sudbury Community Foundation Tree Trust Fund Established

*A Gift  
That  
Grows*



# Milestone Celebrations



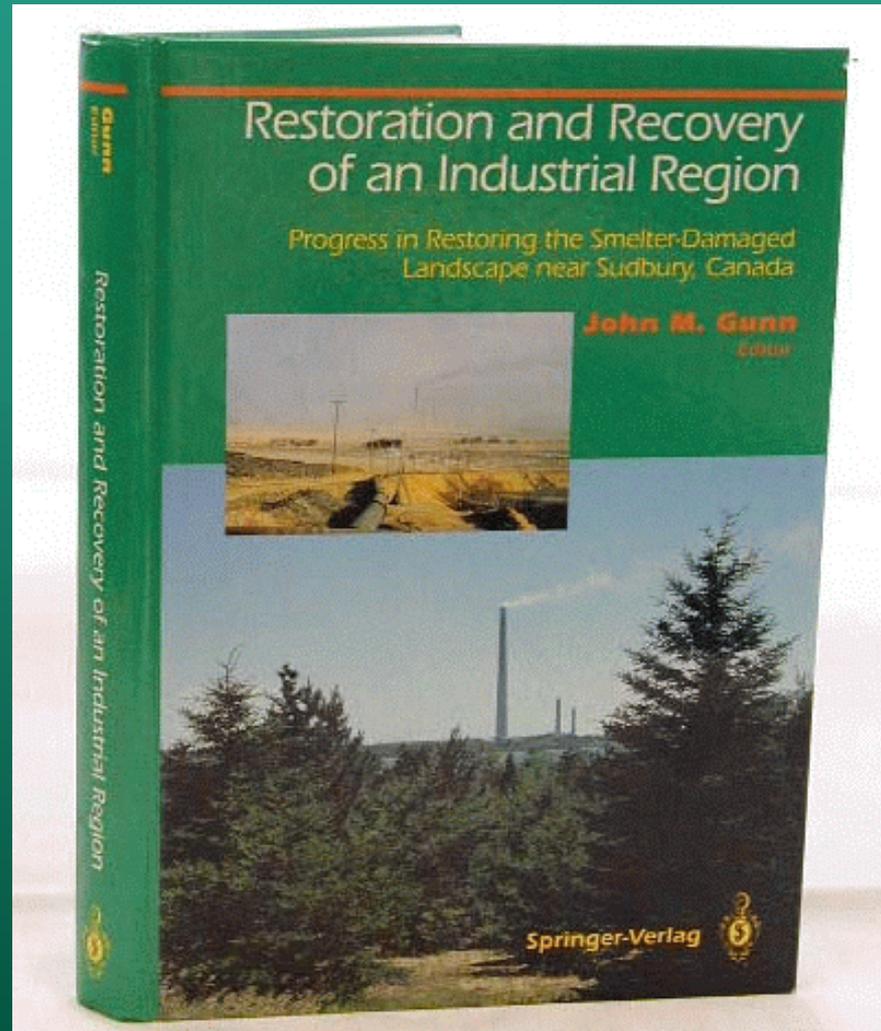
Trees planted: 7,800,000

# Awards of Recognition

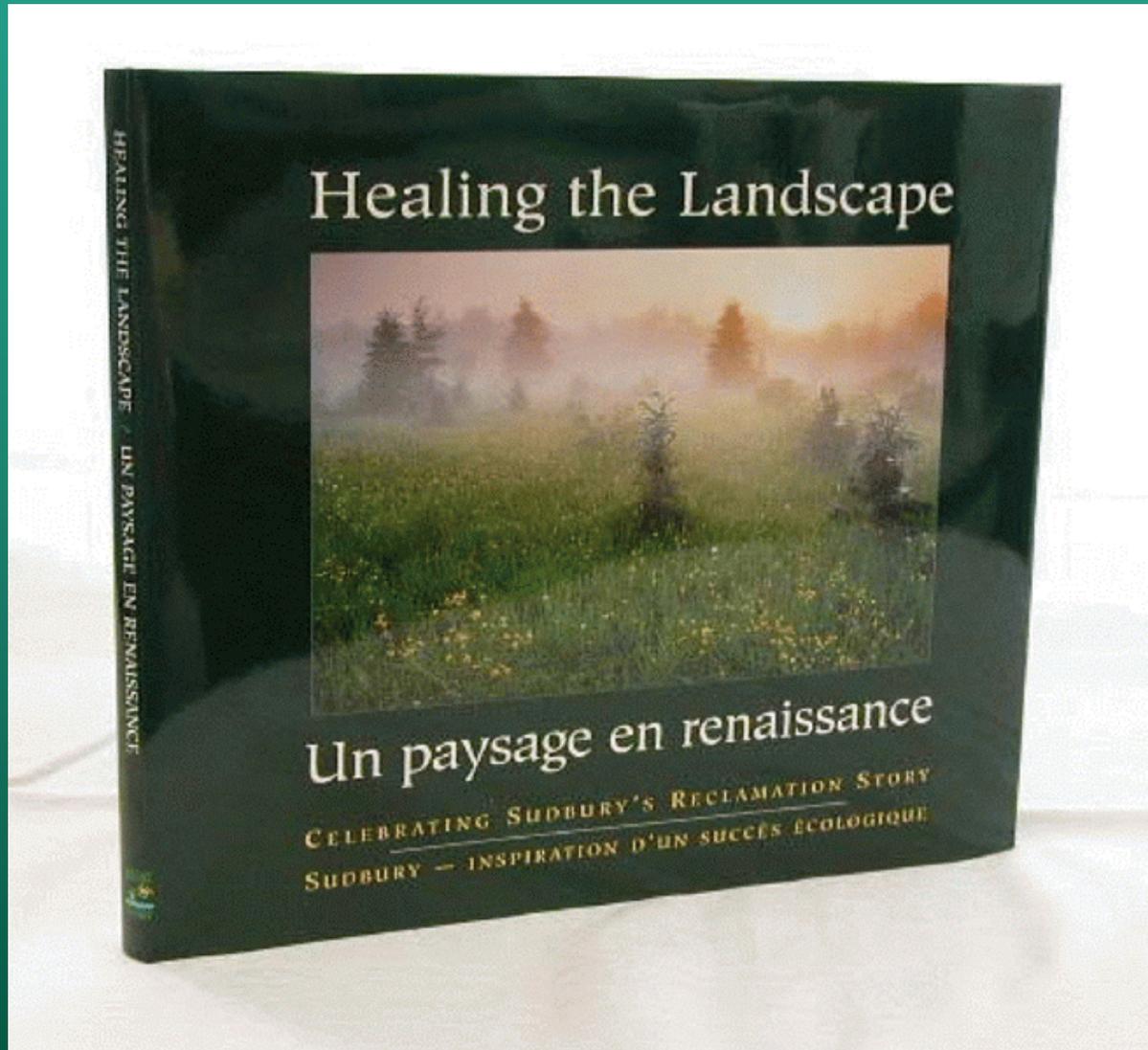
- 1986 Community Improvement Award - Ontario Horticultural Association
- 1990 Arboricultural Award Of Merit - International Society of Arboricultural
- 1990 Lieutenant Governor's Conservation Award
- 1990 Government of Canada Environmental Achievement Award
- 1992 United States Chevron Conservation Award
- 1992 United Nations Local Government Honours Award
- 1995 Model Project Award - Society For Ecological Restoration
- 1997 Community Achievement Award - Active Living
- 2001 Bremen Partnership Award - Finalist



# “Restoration and Recovery of an Industrial Damaged Region” Book



# “Healing the Landscape” Book

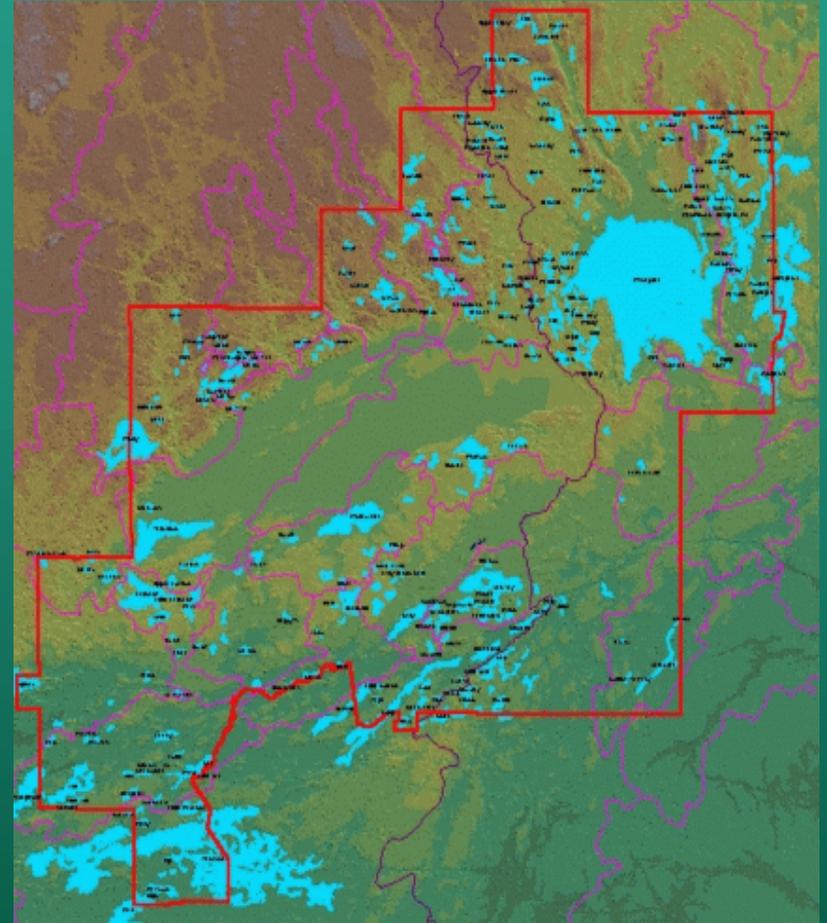


# Living with Lakes Initiative



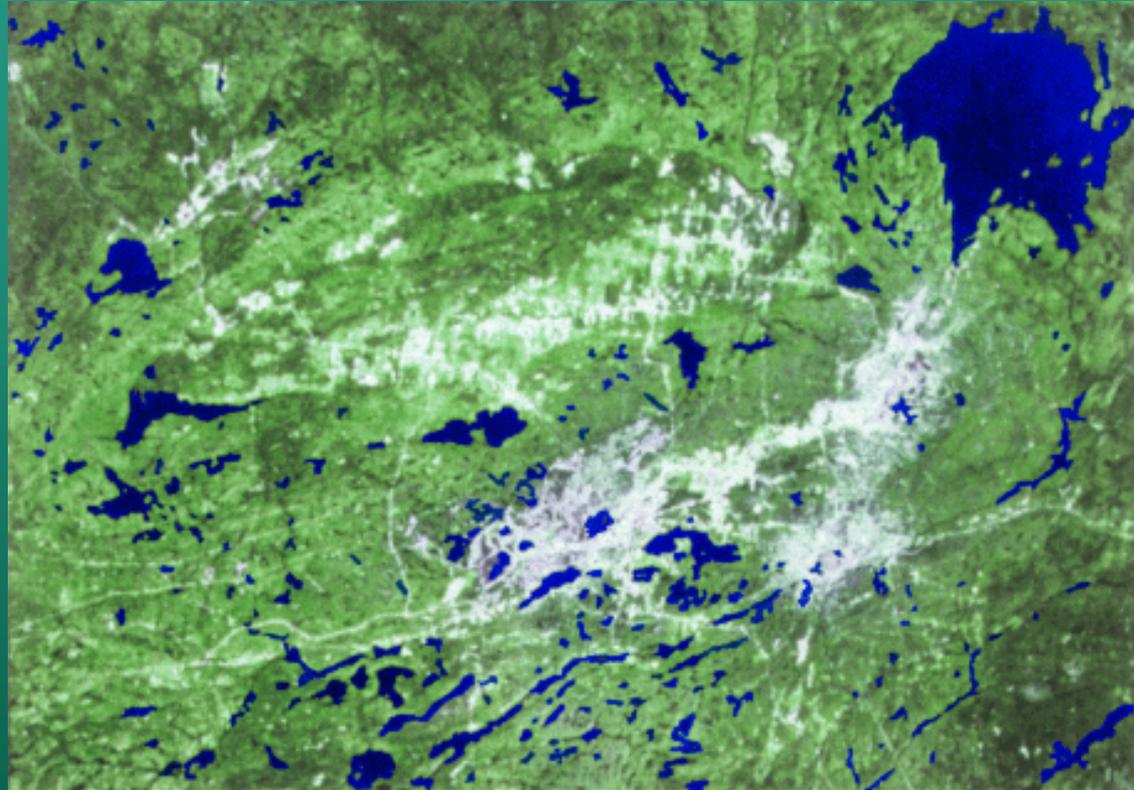
# City of Lakes

- 3, 637 km<sup>2</sup> new City boundary
  - 16.5% (601km<sup>2</sup>) surface water
  - 12.2% lakes/rivers/creeks
  - 4.3% wetlands
- 330 lakes > 10 hectares
- 47 lakes > 100 hectares
- Largest: Wanapitei Lake
  - <13, 257 ha
  - <a of total lake area



# Waterbodies

---



# Watercourses



# Special Habitats/Features





# Partnership with Freshwater Ecology Lab

- Water sampling
- Basic science underpinnings
- Urban fishery



# Establishment of Lake Stewardship Committees

- Fairbank Lake Cottagers Association
- Friends of McFarlane Lake
- Ironside Lake Stewardship Group
- Lake Nepahwin Stewardship Group
- Lake Panache Camper's Association
- Little Lake Panache Stewardship Group
- Minnow Lake Restoration Group
- Ramsey Lake
- Silver Lake Committee 2000
- Valley East Ratepayer's Association (Frenchman, Hanmer, Joe, Dixon)



- Onwatin Lake
- St. Charles Lake
- Vermillion Lake
- Whitson Lake
- Whitewater Lake
- Windy Lake

# Lakes Advisory Panels

---

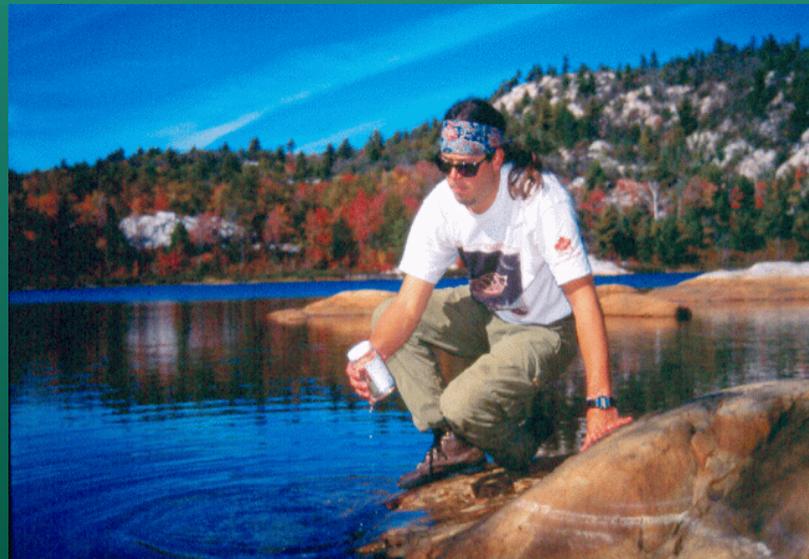
## Terms of Reference

- Provide technical advice
- Suggest key initiatives and champion projects
- Interpret water quality data
- Create useful public indicators
- Provide understandable science to public
- Advocate for the ecological health of lakes
- Recommend policies to the City based on lake health indicators

# Water Sampling Priority

---

- Spring Phosphorus testing of 46 lakes-May, 2001
- 1,000 lakes sampled by Ontario Geological Survey-July and August, 2001
- Summer testing of 16 priority Lakes -July to October, 2001



# Key Landuse Interactions - Issues

---

- Storm drainage
- Water quality protection
- Habitat conservation
- Public access
- Land/water interface



# Urban Fishery

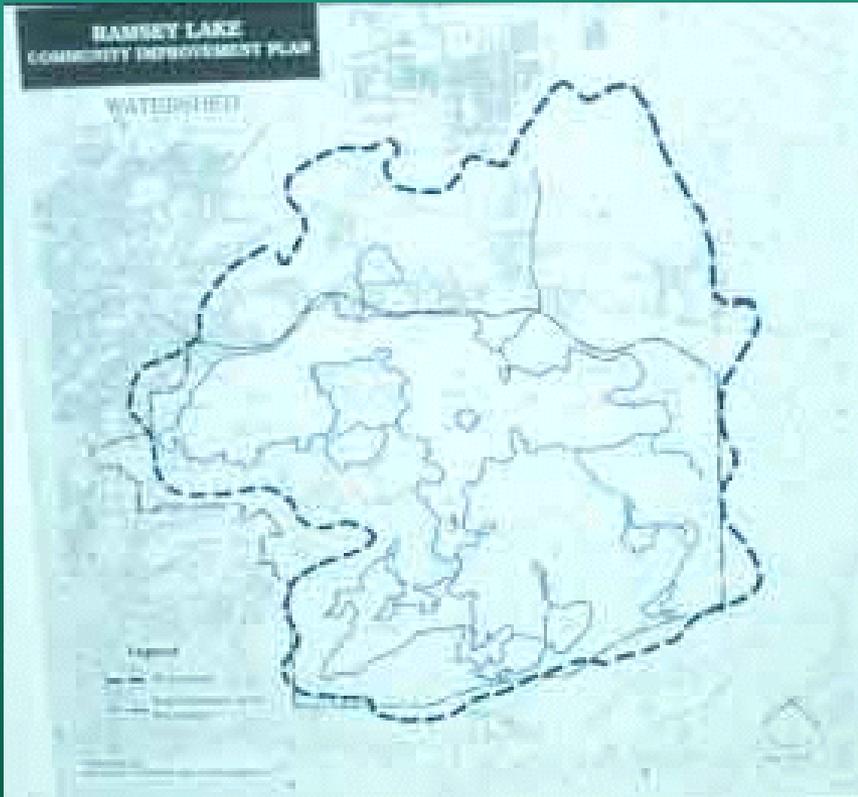
---

- Unique opportunity for urban sport fishery within neighbourhoods
- 12 readily accessible urban lakes
- Accessible to all citizens

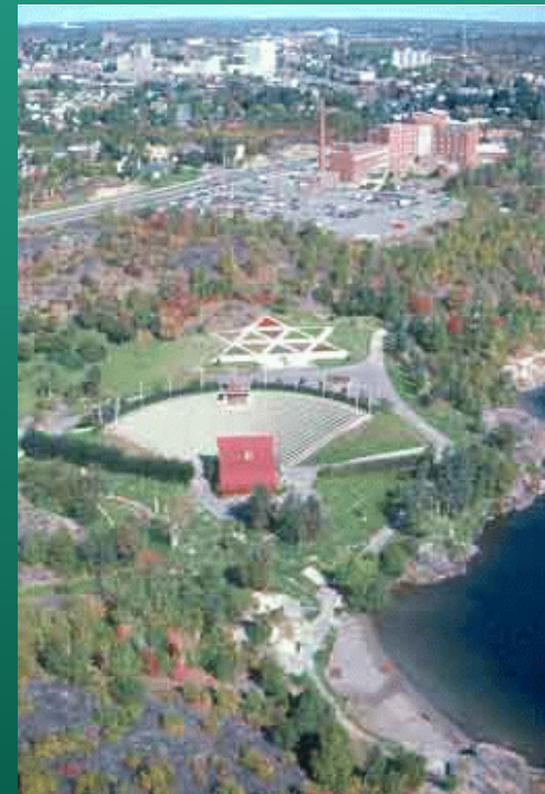


# Lake Improvement Focussed on the Watershed

Attention on Particular Nodes



Ramsey Lake Watershed



Bell Park Master Plan

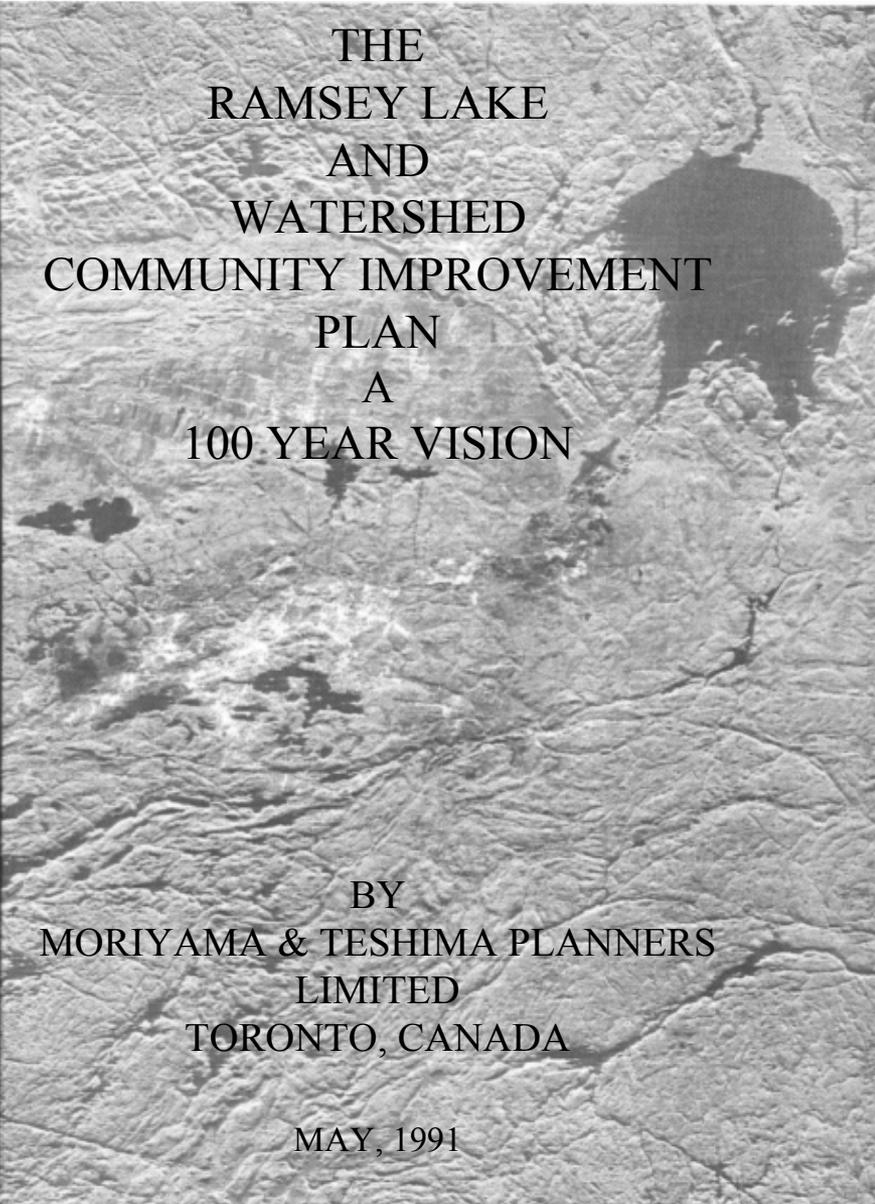
# Ramsey Lake Community Improvement Plan

---

- 100 Year Vision
- 20 and 5 Year Plan
- Ramsey Lake Advisory Committee



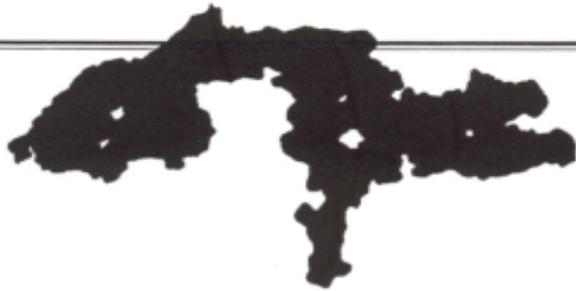
# Moriyama 100 Year Vision



THE  
RAMSEY LAKE  
AND  
WATERSHED  
COMMUNITY IMPROVEMENT  
PLAN  
A  
100 YEAR VISION

BY  
MORIYAMA & TESHIMA PLANNERS  
LIMITED  
TORONTO, CANADA

MAY, 1991



**Community**

**Improvement**

**Plan**

# **Ramsey Lake**

December 1994

*Jointly Prepared by the*  
Regional Planning and Development Department  
and the Ramsey Lake Technical Committee  
for the  
Ramsey Lake Steering Committee  
City of Sudbury

# Ramsey Lake Steering Committee

---



# Bell Park Walkway



# Ramsey Lake Boardwalk



# Science North



# Conservation Areas



# Waterfront Award

## Excellence on the Waterfront



### WATERFRONT CENTER ANNUAL AWARD

*The Regional Municipality of Sudbury  
Ramsey Lake and Watershed Community Improvement Plan  
Sudbury, Ontario*

*for a quality waterfront project selected in a  
juried competition*

A handwritten signature in dark ink, appearing to read "R. Allen Eskew".

R. Allen Eskew  
Chairman, Waterfront Center Jury

October 16, 1992

# Junction Creek Community Improvement Plan

---

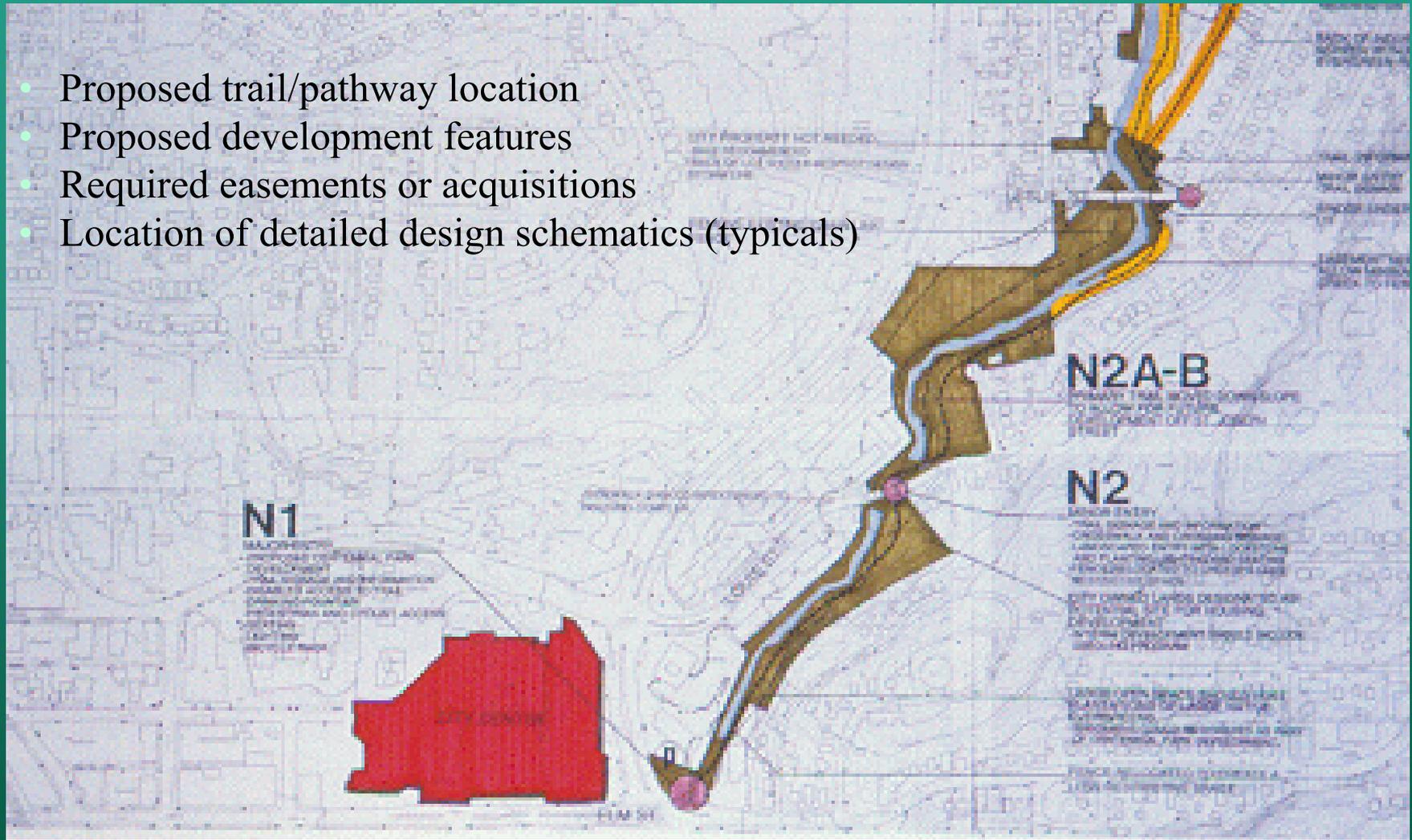
- 18 kilometre watercourse through City
- City had acquired many key properties for flood control
- City had turned its back on the Creek
- Community improvement plan developed in 1991 was the catalyst for naturalizing the waterway and focussing community support for the project

# Views of the Creek



# Series of Plan Maps

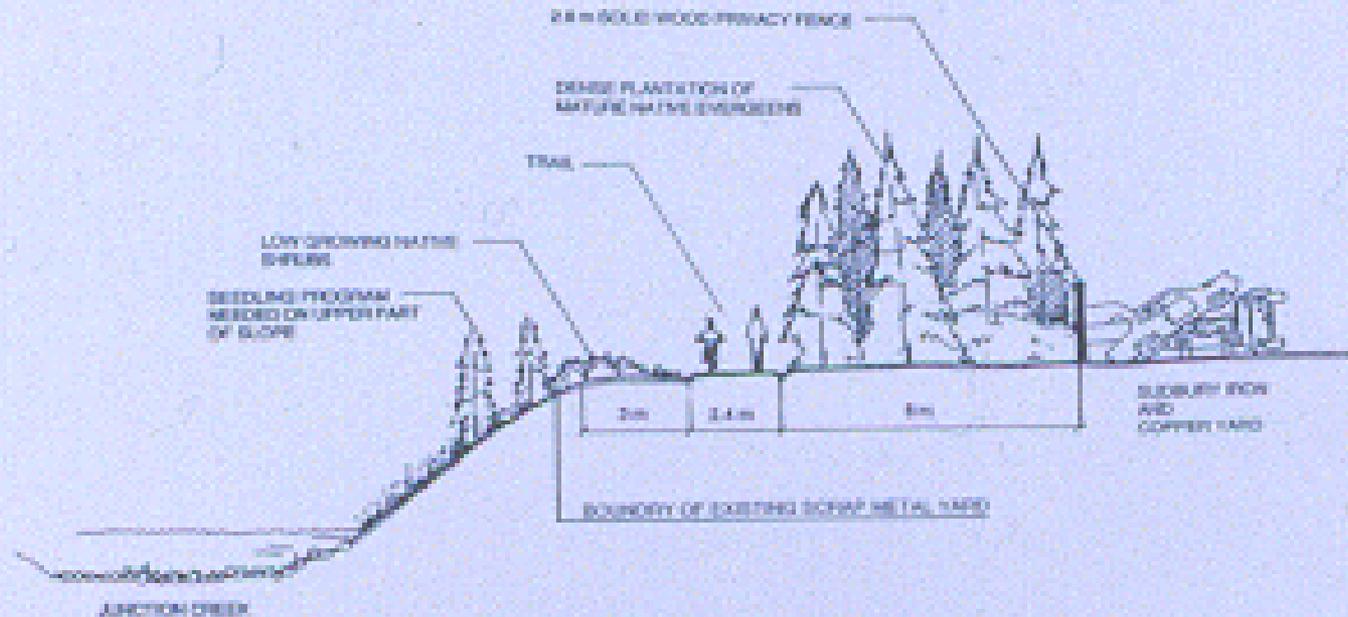
- Proposed trail/pathway location
- Proposed development features
- Required easements or acquisitions
- Location of detailed design schematics (typicals)



# Concept and Reality



# Series of Detailed Plans

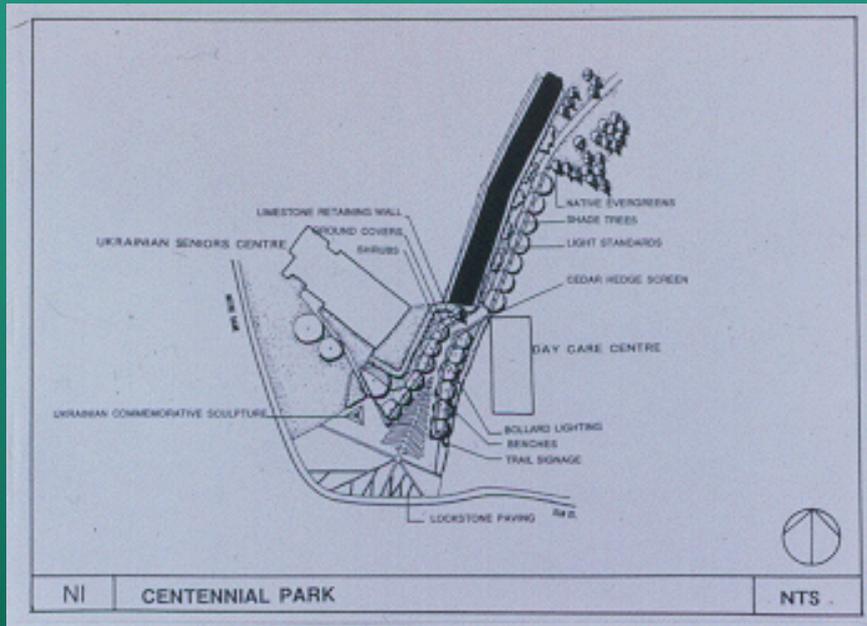


- Typical design cross sections which would be common to several locations along the creek
- Design details particular to specific locations

S6

SECTION SHOWING EASEMENT NEEDED AT SCRAP METAL YARD

# Completed Detail



# Naturalized Portion



# Implementation Partnerships

---

- City of Sudbury
- Regional Municipality of Sudbury
- Nickel District Conservation Authority
- Ministry of Municipal Affairs - Pride
- Other Provincial Ministries (MNR, MOE, NDM)
- Service Groups / Non-Profit Organizations  
E.G. Ukranian Seniors, Sudbury Fish and Guns  
Protective Association, Sudbury  
Horticultural Society, Casa Bella, Area  
School Groups
- Private Sector

# Junction Creek Stewardship Committee

## Formed 1999

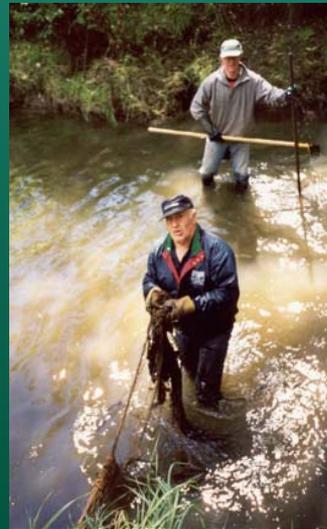
---

- Public adoption of creek and waterway park
- Broad community membership participation
- Community projects initiated
  - Creek cleanups
  - Brook trout releases
  - Trail development
  - Park project sponsorship

# Junction Creek/Trans Canada Trail



# Creek Cleanups



# Brook Trout Releases



# Results to Date

---

- 60% of Plan - 10 km of waterway park and trail developed and open
- Project successfully transferred to the community and concept entrenched with public
- Part of Trans-Canada Trail
- Nodes created in each Ward
- Public support grows



# Sudbury Soils Study

---

## Six Partners Involved

- Inco Limited
- Falconbridge Limited
- Ministry of the Environment
- Sudbury & District Health Unit
- City of Greater Sudbury
- First Nations and Inuit Health Branch of Health Canada

# Review of Air Emission impacts on the City from Soil Survey Data

---

SARA Group Consortium Hired

- ESG International Inc.
- Cantox Environmental Inc.
- RWDI
- Goss Gilroy Inc.
- Dr. Lesbia Smith
- SGS Lakefield Research

# Undertaking Two Major Risk Assessments

---

- Human Health Risk Assessment
- Ecological Risk Assessment

# Purpose of the Studies

---

The purpose of these assessments is to determine whether there are elevated substances of concern ie. Ni, Cu, Co, As or other substances in the Sudbury environment and if there is what is the impact of these substances on human health and the environment

This study is expected to be completed at the end of 2004

For more information visit the study website at:  
[www.sudburysoilsstudy.com](http://www.sudburysoilsstudy.com)

# Linking Initiatives

---

- Building on knowledge partnerships
- Inter-relationships of the initiatives
- Synergies which result can be put to use in other projects to make new advances
- Each project mobilizes and empowers community stakeholders for further action

# Healthy People/Healthy Places Conferences

*Come Join us in Sudbury, the city of lakes, for the...*



## Healthy People, Healthy Places Conference - Sudbury 2001



**SUDBURY  
ROUNDTABLE**  
ON HEALTH, ECONOMY  
AND ENVIRONMENT

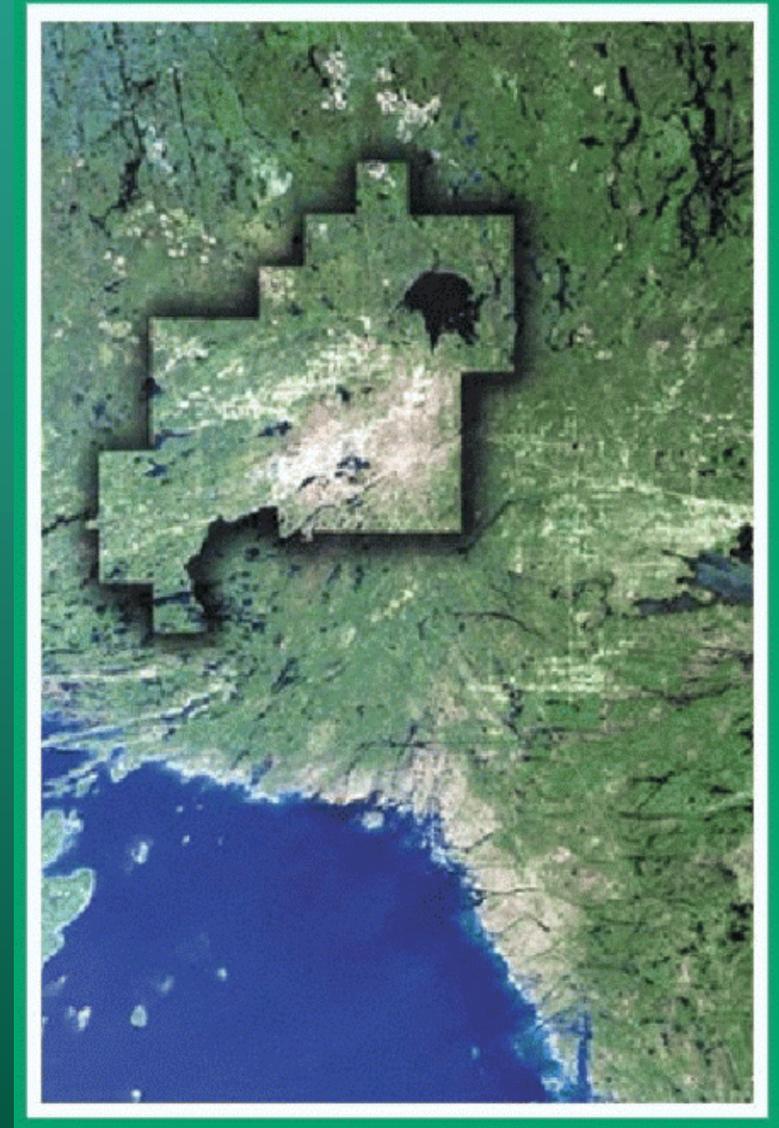


Ontario Healthy  
Communities Coalition

# Earthcare Partnership



- An initiative to create a greener environment
- 37 community partners
- Enhance the environmental health of Sudbury
- Take actions toward sustainability
- Reduce greenhouse gases
- Share knowledge and experience of environmental stewardship with other communities



# Climate Change - Kyoto Protocol

Need for further Naturalization



Reducing greenhouse gases



Renewable energy



# Lessons Learned/Transferable Concepts

---

- Set big environmental goals and develop plans which capture the public's imagination
- Develop plans which can be phased or compartmentalized to provide an immediate focus and demonstrate to the public annual progress
- Utilize community labour available under government funded programs where compatibility exists

# Lessons Learned/Transferrable Concepts

---

- Meaningful partnerships are critical
- Partnerships provide relationship synergies for other initiatives not foreseen at time of initial engagement
- Celebrate success

# Conclusion

---

When the Municipality began this journey, we only were wanting to regreen the landscape through planting trees. We did not begin with awards, a waterway park or books in mind. But this is where the journey has taken us. And I am sure that as we continue down these respective pathways that there will be many more successes that we have not yet conceived of.