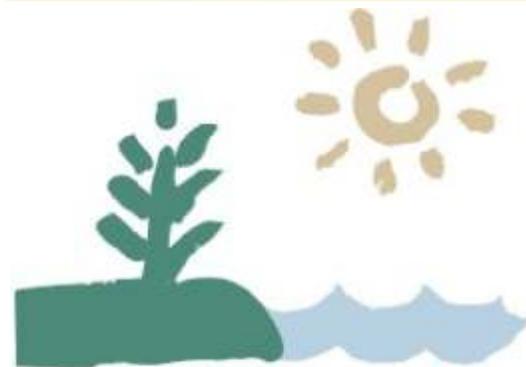


Annual Report

-2006-

VETAC



Land Reclamation
Réhabilitation des sols



Our 2006 Partners:



2006 Highlights

Summary:

The operations of the 2006 Land Reclamation Program were successful, creating 38 temporary positions, reclaiming over 15 hectares of barren land located to the west of the City's landfill site off Highway 17 E and planting almost two hundred thousand tree and shrub seedlings throughout Greater Sudbury. With the completion of the fall plant the total number of trees planted within the City boundaries exceeds 8.6 million.

Outside funding and material contributions enabled the continuation of the regular operation of the Program and allowed for the continuation of various projects and initiatives. Included in this category is monitoring of previous planting activities, increasing the diversity of species planted and projects initiated by VETAC's sub-committees including the 'Ugliest Schoolyard Contest'.

Accomplishments

Task:	2006:	To Date:
Area Limed	15.6 ha	3,383 ha
Area Fertilized	15.6 ha	3,190 ha
Area Seeded	15.6 ha	3,118 ha
Trees Planted	182,994	8,678,579
Shrubs Planted	7,857	43,427

Work Crew

Ontario Works Participants:	10
Service Canada - JCP Positions:	14
CGS Temporary Staff:	8
CGS Summer Students:	6
Volunteer Groups:	13

Speaking Engagements

Historica Regional Heritage Fair
 University of Guelph
 Laurentian University Restoration Ecology Students
 Falconbridge Delegation
 South African Delegation - Falconbridge
 ECONEWS Interviews and Filming
 Laurentian University Environmental History
 Students
 Ontario Professional Planners Institute
 Ontario Envirothon
 Master Gardeners

Media

Sudbury Star Articles:

Let's give thanks for greening (Feb. 21)
 Transformation, St. David students spend day
 greening their schoolyard (Oct. 3)

Northern Life Articles:

Green grass (Oct.4)

Canadian Trees Magazine Vol 2, No. 1 Spring 2006
 "Sudbury's Re-greening" (pgs. 12-13)

Channel 10 News

CIGM Radio various interviews

2006 Partners

City of Greater Sudbury (CGS)
 Service Canada - Job Creation Partnership
 CVRD Inco
 Tree Canada Foundation (TCF)
 Xstrata Nickel
 Ontario Works (OW)
 YMCA Summer Job Service (SJS)
 Nickel District Conservation Authority (NDCA)
 Sudbury earthdancers

Program Operation

Spring Tree Plant

The spring tree planting activities began May 1st and were completed by June 1st, with 124,140 tree seedlings and 897 shrubs planted. Site selection focused on accessible sites from the last 5 year plan that were still incomplete as well as sites aerially limed by INCO Ltd. (now CVRD Inco) and manually limed by the Program in 2005. Other sites were chosen for the shrub species that focused on urban greenery including beautification of the airport corridor. A mixture of red and jack pine seedlings were donated by CVRD Inco totaling 67,774 seedlings, some of which were planted in the fall. The Nickel District Conservation Authority (NDCA) also donated 10,288 seedlings for the spring plant.

Fall Tree Plant

The fall plant began on September 18th and was completed by October 24th with 58,854 tree seedlings and 6,960 shrubs planted. Seedlings planted in the fall included the remainder of the CVRD Inco donation as well as 40,000 tree and shrub species donated to the Program through the Tree Canada Foundation (TCF). The TCF donation provided a great opportunity to increase the diversity of planted species. Typically the Program plants five to seven tree species that are relatively inexpensive and widely available through forestry suppliers. The TCF donation allowed the Program to purchase 12 tree species and 15 shrub species not typically used in reforestation and, therefore, more expensive and less widely available. These additional species are native to the Sudbury area and will contribute to the development of self-sustaining forest ecosystems on formerly barren lands.

Much of the planting stock was in 1 and 2 gallon pots as well as large plug stock. With the larger root mass, planting was more difficult and took more time. With the extra time and effort involved in planting so many different species with different habitat needs, a two week extension was granted to workers in order to reach our goals.



Tree Planting Summary

This year, 182,994 tree seedlings and 7,857 shrubs were planted throughout Greater Sudbury, for a total of 190,851 plants (13 tree and 16 shrub species). The grand total to date is now 8,678,579 tree seedlings and 43,427 shrubs planted since 1979. Refer to Map 1 for planting locations and Figure 1 for number of trees planted yearly. To date, 95% of all trees planted have been coniferous species, less than 5% have been hardwoods and less than 1% have been shrubs (Figure 2). Almost 75% of coniferous species planted have been pines (jack, red and white), and red oak accounts for nearly 50% of all the hardwoods planted (Figures 3 and 4) to date. Tree species that are planted by the Program are believed to be the major components of the original forests in the Sudbury area, exclusive of Black Locust, which was formerly used as a nurse tree on more difficult sites.

Figure 1. Number of Trees Planted 1979 to 2006

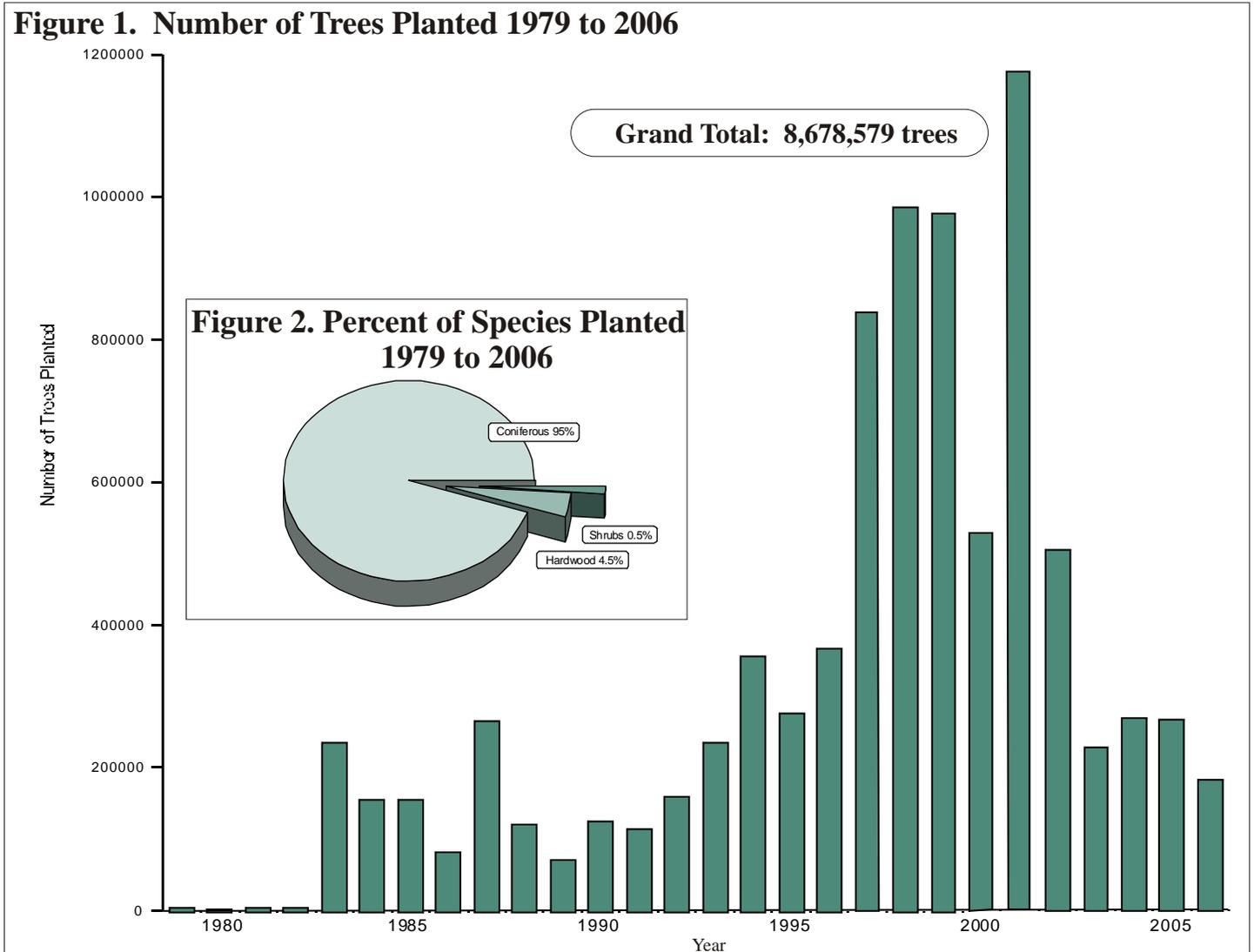


Figure 3. Percent Coniferous Species Planted 1979 to 2006

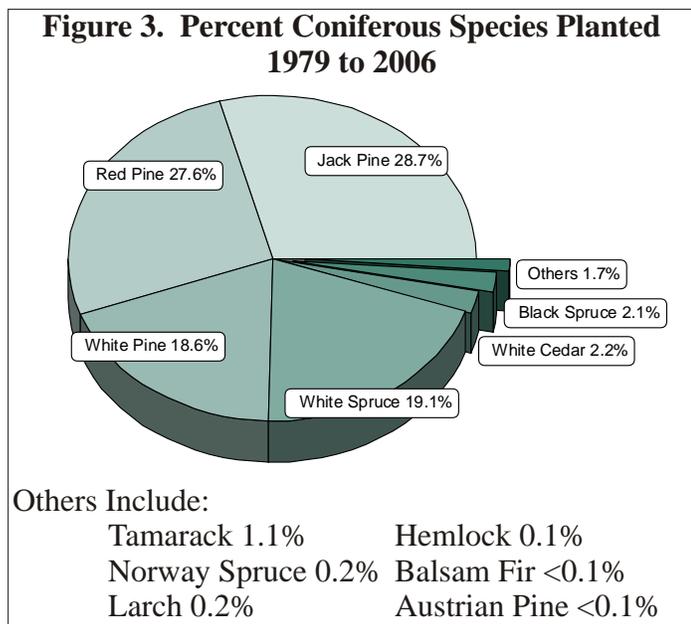
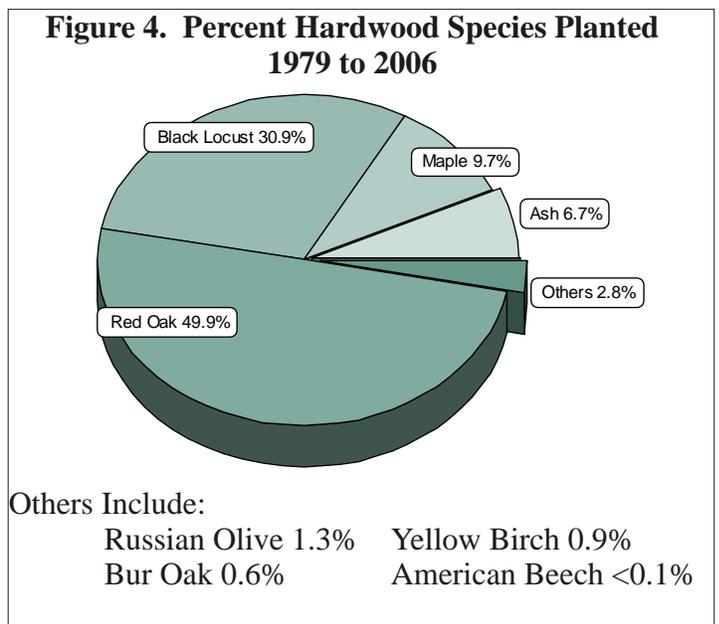
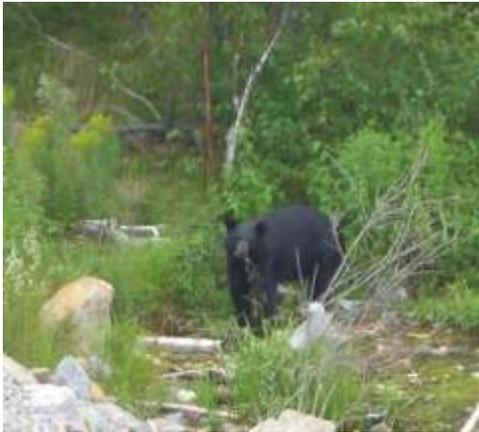


Figure 4. Percent Hardwood Species Planted 1979 to 2006



Greening Activities

June 5th marked the beginning of the liming activities on a barren area located to the west of the City’s landfill site off Highway 17E (refer to Map 2 for location). Located in close proximity to the landfill site provided a new set of challenges in the operations. Bears frequented the area regularly so to provide added protection to the crew, a “Bear Awareness” seminar was scheduled with Oliver Barriault, formerly of the Ministry of Natural Resources. The session was opened to any other field staff at the City that may come in contact with bears while engaged in their regular duties. The seminar provided added insight into the behaviour of bears and provided staff with some useful tactics in dealing with problem bears. Numerous sightings were reported over the course of the season, fortunately all without incident.



As is to be expected, objectionable odours occurred adjacent to landfill site on certain days, especially in September when wind direction was more frequently from the northeast. Alternate activities were provided to workers on these days, including general maintenance at the Jane Goodall Reclamation Trail.

Despite the minor uncontrollable setbacks, the crew was able to spread lime on 15.6 hectares of barren land, bringing the total to date up to 3,383 hectares (refer to Figure 5 for yearly liming area). Once the liming phase was complete, the crew spread fertilizer and a grass/legume seed mixture on the land. The entire process wrapped up on September 15th. By the beginning of October, the seed mixture was already starting to grow on the newly reclaimed site as the crew discovered upon their return to plant some of the trees and shrubs.

The Greening Formula:

Crushed Agricultural Limestone:



10 tons per hectare

Fertilizer:



400kg per hectare

(NPK 6-24-24)

Grass/Legume Seed Mixture:



45kg per hectare

Seed Mixture Contains:

- 75% Grasses
 - 10% Red Top
 - 15% Creeping Red Fescue
 - 20% Timothy
 - 15% Kentucky Bluegrass
 - 15% Canada Bluegrass
- 25% Legumes
 - 15% Birdsfoot Trefoil
 - 10% Alsike Clover

Map 2: 2006 Lime Site Location

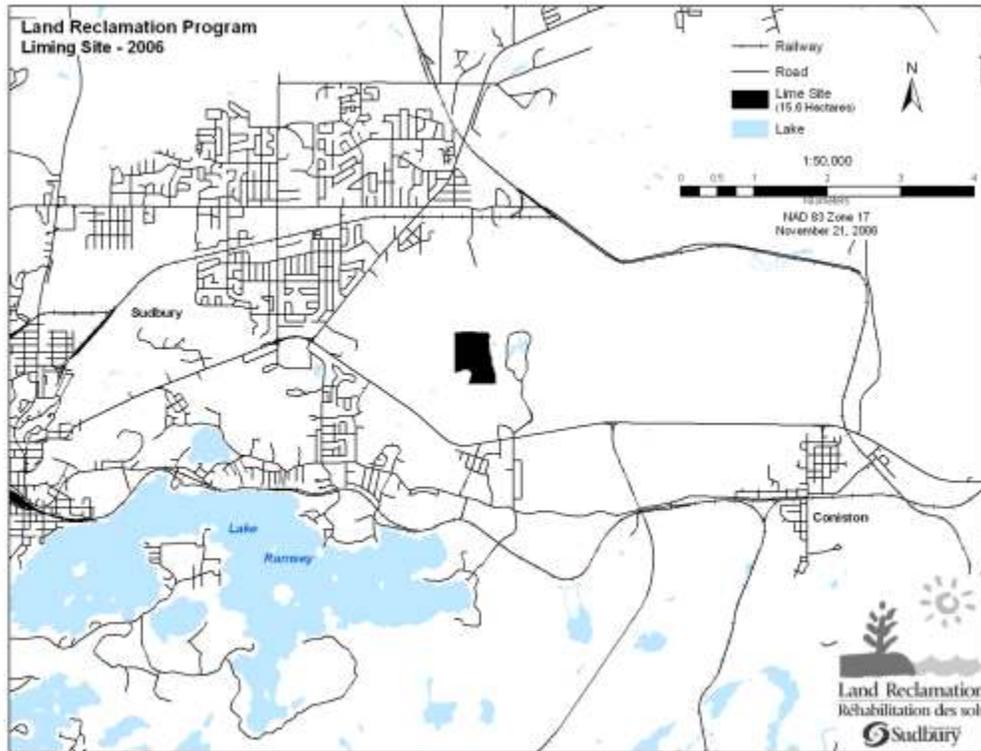
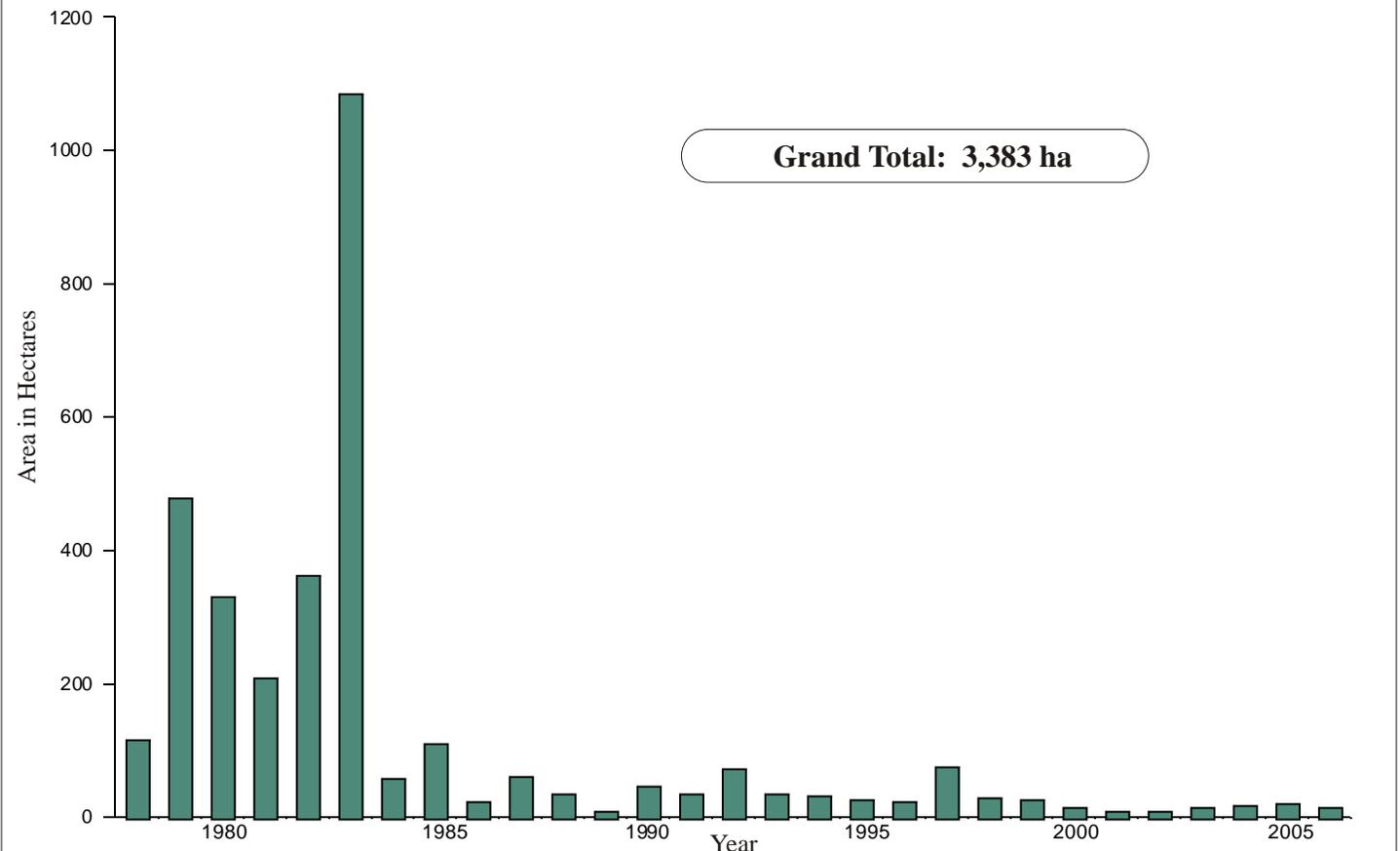


Figure 5: Liming Area 1978 to 2006



Projets

City Beautification

One of the main focus areas this spring was beautifying the airport corridor with shrubs. Several areas along the corridor were conducive to the Program's planting techniques and arrangements were made to obtain suitable species, including those that are salt tolerant and in some cases, low growing so as not to interfere with the airport's site line regulations. The main target areas were between the road and fence of the air field, the bare rock at Bailey Corners and a partially vegetated berm. A mixture of jack pine, white pine, serviceberry, staghorn sumac and bearberry were planted, totaling 855 plants.



Other areas targeted for beautification included intersections such as the Elm Street and Big Nickel Mine Road, urban corridors such as the Brady St. Extension and trails such as the Rotary Park trail between the Flour Mill and Adanac Ski Hill. Refer to Map 1 of planting locations for further details. Although the Land Reclamation Program can boast many successes, there still remains many urban areas in need of reclamation work. These areas can be difficult to vegetate given the urban heat sink effect and the use of road salt. A number of tree and shrub species acquired this year were drought resistant and salt tolerant, ideal candidates for urban environments.

Seed Collection

To eventually obtain self-sustaining forest ecosystem on formerly barren lands, numerous native species must be planted to ensure the health and stability of the ecosystem. Many native species are not widely available in sizes suitable for 'reforestation'. In order to obtain those native species lacking in our reclamation sites it was decided that staff and other individuals be trained to collect local seed for propagation. On September 12th and 13th the Program hosted a Certified Seed Collector Workshop offered through the Ontario Tree Seed Plant (OTSP), Ontario Ministry of Natural Resources and the Forest Gene Conservation Association. Brian Swaile of Forever Green delivered the workshop to Land Reclamation staff, VETAC members, CVRD Inco greenhouse staff, a representative from Science North and the Forestry class and teachers at College Boreal. In the end, all attendees became Certified Seed Collectors and can now collect seed and ship it to the OTSP in Angus for processing. With this new training, the crew will be able to collect native seed for propagation and planting in our reclamation sites in the future.



The field interns spent part of their work assignment searching for sources of native seed in the Sudbury area. They were able to locate sites for the collection of wild raisin, beaked hazel, bush honeysuckle, mountain ash, service berry and hemlock. It was too late in the season to pick any seed from these species, but the location of the sites will be added to the 1987 Seed Collection Report map for future use.

On October 25th and 26th, the training was put to the test and the crew collected seed from sugar maple trees. It was late in the season and all the seeds had fallen to the ground, but the staff did their best to recover the seed and clean it prior to shipment. The seed was then sent to Angus for processing and storage. The seed will be ready to grow for our fall planting activities next year. In total 0.12 hectolitres (12 litres) were collected, which translates to over 6,000 seeds.

Many thanks to Mr. and Mrs. Despatie for granting permission to collect the seed on their property.



Monitoring Efforts

Two field interns were engaged in monitoring activities this year in an effort to answer some questions regarding tree health and survival in reclamation sites. Although there has been work in this area in the past, it is important to update results and establish new plots as new species are introduced into the reclamation formula. New projects initiated included: establishing plots to evaluate shrub health, long term survival, spring versus fall planting as well as identify future potential native seed collection sites, and develop a strategy for wetland assessment. Ongoing monitoring activities included: tree seedling survival and growth, general survey to develop a list of future planting sites and monitoring the biodiversity/forest floor transplant plots.

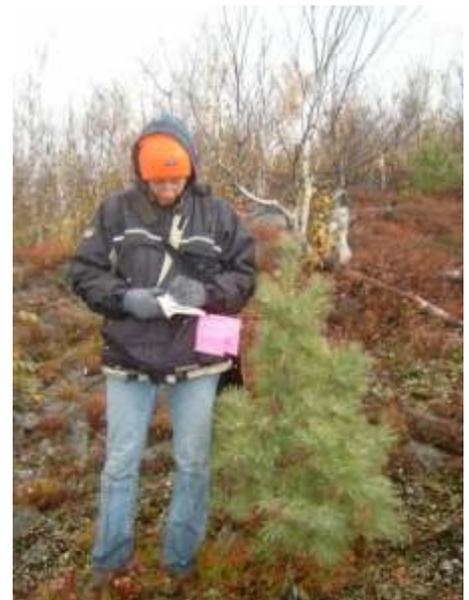
The preliminary results show some positive results but future monitoring will be necessary to draw any final conclusions in some areas. An outline of the preliminary results are summarized in the following paragraphs.

Spring vs. Fall Planting

In the first year following planting, there is no difference between spring and fall planting in terms of seedling health. Long-term monitoring will be required to determine the effects of planting season on tree growth and survival.

Tree Survey

Results from the tree survey reveal that over time, liming positively influences pine tree growth. As well, plot densities did not differ from the original planting patterns, suggesting good survival. Substrate type preference also appears to be species specific, which will help in the planning for future planting activities.



Biodiversity Plots

In 2004, small pieces of the forest ground layer were trans-located from a mining exploration site north of Capreol. These small forest mats were integrated into planted areas on formerly barren sites with the hope that the species in these plots will eventually spread.

The mean species richness is being maintained in the plots at the Frood Road Trail and is increasing in the plots at the Jane Goodall Reclamation Trail. Long-term monitoring will be required to track colonization of these understory herbaceous plants from the plots into the reclaimed lands. Species found within these plots include mayflower (wild lily of the valley), low-sweet blueberry, bunchberry, bluebead lily, and starflower.



Wetlands

A strategy of rapid wetland assessment was developed based on a modified version of the Ontario Wetland Evaluation System, and a total of 13 wetlands were surveyed and added to the City's growing database of local wetlands. Information gathered on these wetlands included wetland type, area, dominant vegetative species, as well as location of inflow and outflow.

Compost Plots

Seven years after application, compost still appears to have a buffering effect on the soils. Decomposition rates of the compost were highest in the first 2 years following application, with little change in depth from 2001 to 2006. There appeared to be significantly more vegetation on the plots receiving compost treatments, although no measurements of biomass or percent cover were taken.

Shrubs and Special Plantings

This year was the most 'bio-diverse' year in the Program's history, with 29 different species planted (13 tree species and 16 shrub species). In order to assess survival and suitability of the newly or rarely introduced species in our Program operations, 7 tree species and 8 shrub species were selected for long-term monitoring.

Mycorrhizal Plots

In 2001, plots were established to assess the effects of mycorrhizal (stress resistant fungus) inoculation on the establishment of jack pine seedlings on reclaimed sites. Results suggest there was no difference between treated and untreated trees, the differences encountered were site specific, suggesting site specific constraints (ie. soil conditions).



Ugliest Schoolyard Contest

The second annual Ugliest Schoolyard Contest was a great success once again thanks to the tireless efforts of Mr. Wayne Hugli, Co-chair of the Urban Landscape Sub-committee of VETAC and the generous support from all sponsors (complete list to the right). Of the 15 applications received two schools were chosen: the winner, St. David School on Jean Street, and the runner-up St. Raphael School on Dublin Street. The runner-up prize was a new addition to the contest this year thanks to the support of Saturn of Sudbury, which provided two Saturn Reading Corners.

Schoolyard regreening efforts began on September 15th as students and staff at St. David School began amending the soil in the existing cement planters with peat moss and manure. All six of these large planters were adopted by local nurseries who generously donated all the plants including junipers, grasses, potentillas, sedums and spireas.

Mr. Enzo Floreani, Co-chair of the Urban Landscape Sub-committee, and the Sudbury Master Gardeners constructed a new planter next to the sandbox and filled it with topsoil, peat moss and manure. It was later filled with a variety of plants and a large tree that will provide shade protection for the children playing in the sandbox. Numerous sponsors provided trees, shrubs, topsoil, mulch, sod and landscaping blocks for the project.

Horticulturist James St. John designed the landscaping plans at both schools. All manual labour at St. Raphael School was conducted by the very eager parent group and coordinated with the Saturn of Sudbury donation of trees, shrubs, soil and Manitoulin stones. Park benches for the Saturn Reading Corners are to be installed in the spring as the School Board has made arrangements for concrete slabs to mount them on.

The Urban Landscape Sub-committee was impressed to see that many schools have undertaken re-greening efforts on their own. Many of these schools made use of the resources available for loan from the sub-committee as well as the list of website links providing information on other funding organizations that may assist in their projects.

This contest captured the attention of the local media including the Sudbury Star, Northern Life and Channel 10 News. A writer from Canadian Gardening Magazine also sparked an interest in the project and plans to write an article for the Spring issue.



We gratefully acknowledge the support of the following organizations and businesses in the schoolyard make over at St. David School on Jean Street:

Adam & Eve Garden & Patio Centre
Ashley's Landcape Supplies
Botanix Azilda Greenhouses
Browns Concrete
Canadian Tire
Evans Lumber & Builders Supplies
Freskiw Farms
Gisele's Greenhouses
Holla's Produce & Greenhouses
Hollandia Land & Environmental Solutions
CVRD Inco
James St. John - Horticulturist
Saturn of Sudbury
Southview Greenhouse Growers
Sudbury Horticultural Society
Sudbury Master Gardeners
WD Tree Removal
Whitewater Greenhouses & Yard Art Centre



Labour

Labour

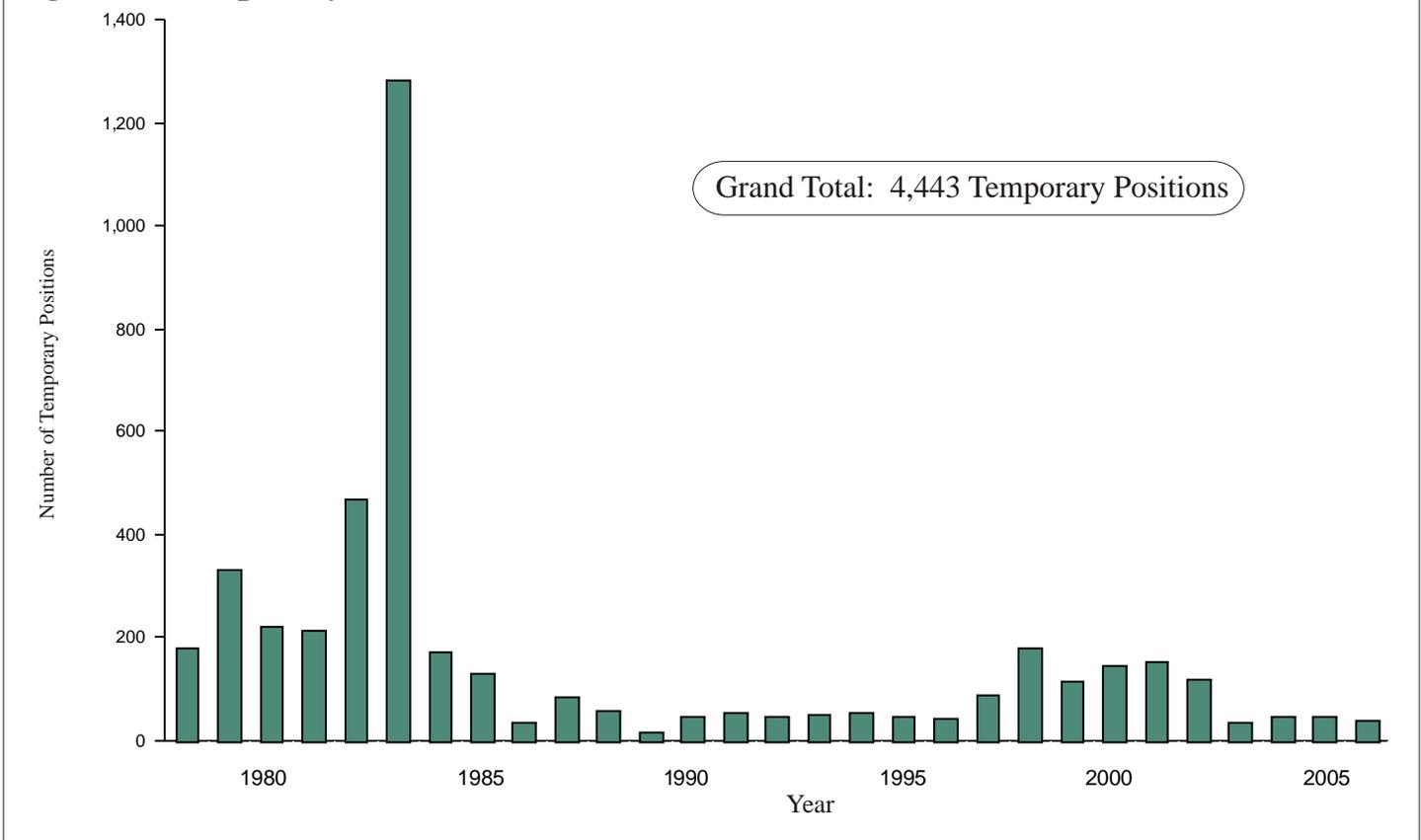
The Program owes much of its success to our many sponsors who donated labour to the Program. Program staff included two field interns, three foreperson positions and nine worker positions, six of which were filled by summer students. These student positions were partially funded by YMCA Summer Job Service for a period of 17 weeks. Ontario Works provided a total of 10 individuals to work two days per week from May 1st to October 26th. They were engaged in both the spring and fall planting activities as well as the greening activities during the summer months. Service Canada through a Job Creation Partnership (JCP) provided 14 individuals to work four days per week for a period of 17 weeks. These individuals began on June 19th and participated in the greening activities and the fall tree planting activities.

In total 38 temporary position were created (refer to Table 1). To date over 4,400 temporary positions have been created (refer to Figure 6).

Table 1. Labour Summary

Program	Positions	Weeks	City Cost	Activity
CGS Temporary Employees	8	27.5	100%	Foreperson (2)
		26		Crew Foreperson (1)
		26		Worker (3)
		30		Field Intern (2)
YMCA - SJS Summer Students	6	17	82%	Tree planting, liming
Ontario Works	10	26	Nil	Tree planting, liming
Service Canada - JCP	14	17	Nil	Liming, tree planting
TOTAL	38			



Figure 6. Temporary Positions 1978 to 2006

Volunteers

Volunteers also participated in land reclamation activities by planting trees. This year thirteen volunteer groups involving 600 individuals planted over 8,000 tree seedlings throughout Greater Sudbury. The following is a list of the groups that participated in tree planting activities this year:

Sudbury Game and Fish	Ministry of the Environment
Capreol Ski Club	FedNor
Silver Lake Stewardship Group	St. Paul the Apostle School, Coniston
McFarlane Lake Restoration Committee	Friends of NDCA
Envirothon Students	Bishop Alexander Carter School, Hanmer
St. Paul School, Lively	Better Beginnings Better Futures
University of Guelph student group	

The volunteer program provides educational opportunity on environmental issues, information on the City's Land Reclamation Program, tree planting experience as well as a sense of community pride and ownership of the natural environment. Many thanks go out to this year's volunteers. Their efforts affirm the importance of trees in our local environment.

To date, 8,110 volunteers have planted 282,025 seedlings throughout Greater Sudbury as part of the Land Reclamation Program.

Funding

Funding Summary

The Land Reclamation Program relies on donations to operate the yearly Program. Many successful partnerships have been developed over time and new opportunities are always being investigated. Table 2 below outlines funding sources by type of donation received in 2006. Figure 7 on the following page graphically depicts contributions by source.

Table 2. Funding Contributions 2006

Program Contributors	Weeks	Number	Source	Amount
LABOUR				
Ontario Works Program	26	10	Provincial	\$25,081
YMCA - SJS	17	6	Provincial	\$6,572
Service Canada - JCP	17	14	Federal	\$57,222
CASH				
Ontario Works			Provincial	\$10,000
CVRD Inco			Mining Co.	\$25,000
Xstrata Nickel			Mining Co.	\$40,000
Sudbury earthdancers			Private	\$1,500
MATERIALS (trees)				
Tree Canada Foundation		40,000	Private	\$43,124
CVRD Inco		67,774	Mining Co.	\$20,332
NDCA		10,288	Private	\$3,086
SUB TOTAL				\$231,917
City of Greater Sudbury				\$158,470
GRAND TOTAL				\$390,387

Since 1978, the City's contribution to the Program has averaged 12.8% of the total costs with 87.2% coming from outside sources (refer to Figure 8). To date, the Program costs exceed \$23 million (refer to Figure 9 for yearly Program cost summary).

Figure 7. Funding Contributions 2006

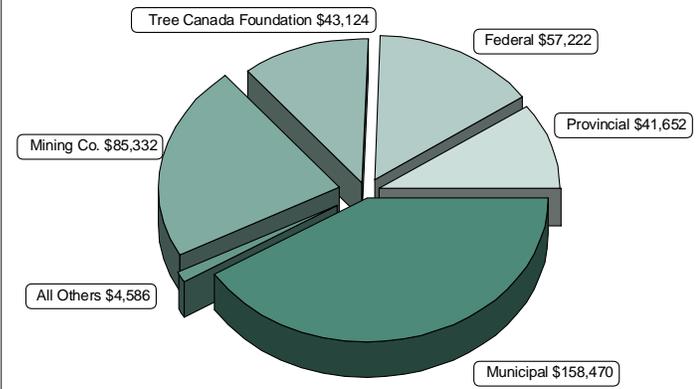


Figure 8. Percent Funding Contributions by Source 1978 to 2006

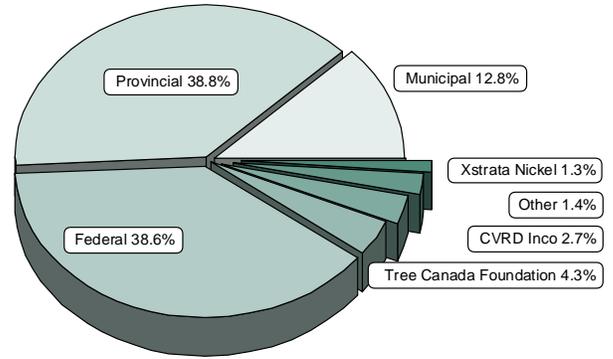
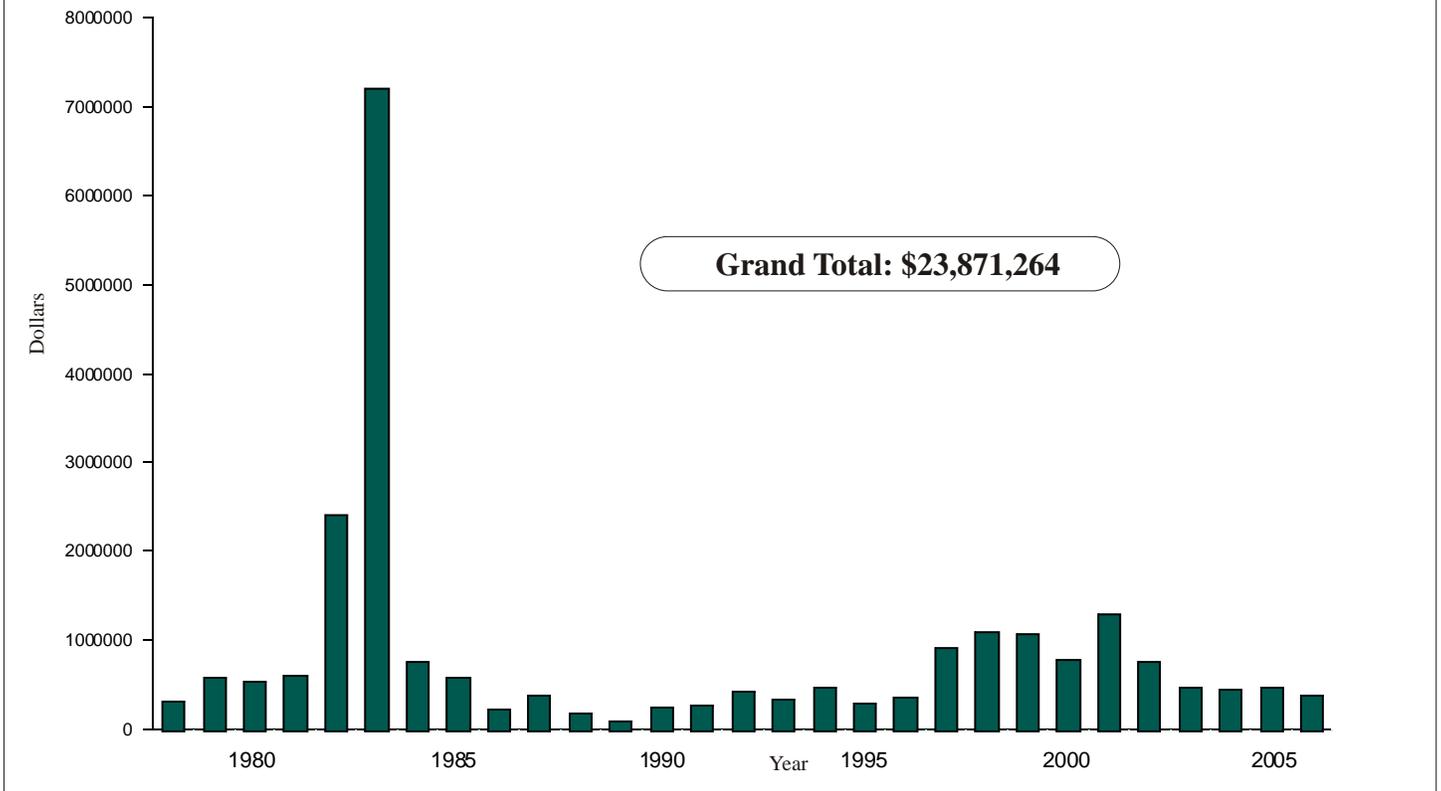


Figure 9. Yearly Program Costs 1978 to 2006



Events

Earth Day

On April 22nd, an Earth Day event occurred at Market Square. The Land Reclamation Program was on display, along with the "Ugliest Schoolyard Contest" information. Various VETAC members and staff manned the booth for the day and many positive comments were received from the public.

Tree Giveaway

The annual 'Towards a Greener Sudbury' show was held at the New Sudbury Shopping Centre on Saturday, May 27th. Over 5,000 tree seedlings were distributed to the public, including white cedar, white spruce, red oak, red pine and white pine. Public donations to the Program exceeded \$400.00. To date this Program has offered over 400,000 seedlings to homeowners in an effort to reclaim urban spaces.

Xstrata Nickel generously provided free pH testing for anyone bringing soil samples. Of the 13 garden and yard soil samples analyzed, the lowest pH value measured was 5.9 and the highest was 7.8 with an overall average of 6.74 (neutral is pH 7). Most landscape plants prefer pH values ranging from 5.5 to 6.5, at which level nutrients are generally readily available, and soil bacteria is active.

Ontario Envirothon

The Ontario Envirothon is like an "Environmental Olympics" engaging youth from grades 9 to 12 in an interactive environmental education program. The program is delivered through field trips, resource materials and competitions at the regional, provincial, and international level. Hosted by Science North, the Provincial Envirothon Competition took place May 10th to 13th. Since all material is tailored to fit the Ontario curriculum and Ontario specific activities and scientific information, Dr. Peter Beckett, Chair of VETAC, presented students in attendance with a presentation under the heading of "Legacy Projects" outlining the Land Reclamation Program history and accomplishments. Following the presentation, students participated in a tree planting exercise around Fielding Park in Lively.

Communications

On August 17th, the field staff were visited by Ms Nancy Pearlman and the ECONews camera crew from Los Angeles, California, for the filming of the Program activities. ECONews is a three time EMMY-nominated television series covering all environmental issues, produced by Educational Communications, a nonprofit volunteer organization. Each half-hour show is hosted by internationally-honored environmentalist Nancy Pearlman, who is also a blue-ribbon judge for the ChevronTexaco Conservation Awards, an award granted to the Land Reclamation Program in 1992. As part of the judging panel at that time, Ms Pearlman returned to Sudbury this past summer for an update on the Program activities and accomplishments.

The episode on the Land Reclamation Program is to air beginning in February 2007, then it will routinely air over the next four years. Ms Pearlman has assured that a copy will be made available to VETAC.

VETAC

...for the preservation, protection, restoration and improvement of watersheds, forests, and ecosystems within the City of Greater Sudbury

Members List 2006:

Chair	Dr. Peter Beckett	Laurentian University
Vice-Chair	Bill Lautenbach	City of Greater Sudbury, Planning Services
Members	Cheryl Faggioni	Sudbury and District Health Unit
	Tony Fasciano	Private
	Enzo Floreani	Master Gardeners
	Wayne Hugli	Horticultural Society
	Jim Initski	Private
	Mark Kuhlberg	Laurentian University
	Shirley Makela	Private
	Tina McCaffrey	City of Greater Sudbury, Land Reclamation
	Dr. Stephen Monet	City of Greater Sudbury, Env. Planning Initiatives
	John Negusanti	Ministry of the Environment
	Mike Peters	CVRD Inco
	Tom Peters	Private
	Paul Sajatovic	NDCA
	Graeme Spiers	MIRARCO
	Dr. Mark St. John	Private
	Marty Todd	Xstrata Nickel
	Ben van Drunen	Hollandia Land & Environmental Solutions

For further information on VETAC, please visit
www.greatersudbury.ca/VETAC

For Further Information Please Contact:

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