

FINAL REPORT

AUG 16 2001

1999 Project Abstract

For the period Ending June 30, 2001

TITLE: Management and Restoration of Natural Plant Communities along State Trails
PROJECT MANAGER: Angela Anderson, Natural Communities Management Coordinator
ORGANIZATION: Department of Natural Resources, Trails and Waterways
ADDRESS: Box 52, 500 Lafayette Road, St. Paul, MN 55155-4052
WEB SITE ADDRESS: angela.anderson@dnr.state.mn.us
FUND: Minnesota Environment and natural Resources Trust Fund
LEGAL CITATION: ML 99 [Chap. 231], Sec. [16], Subd. 4(g)

APPROPRIATION AMOUNT: \$ 149,000

Overall Project Outcome and Results:

This project had a significant role in getting the Natural Communities Restoration and Management Program off the ground. Restoration, re-establishment and management of natural plant communities along State Trails enhances their ecological quality, and fosters environmental stewardship and education.

This grant enabled us to re-establish a total of 4 sites to native oak savanna, 2 sites with a total of 40 acres along the Glacial Lakes State Trail, a 4 acre site along the Harmony Preston Valley Trail, and a 3 acre site, at a former gravelpit along the Shooting Star State Trail. In addition, a 12 acre site containing a Big Woods remnant, the Wakefield Rest Area along the Luce Line State Trail, were cleared of exotic buckthorns and 2000 native understory shrubs and trees were planted to restore plant diversity. We also planted 1000 native shrubs and trees along the Glacial Lakes Trail to provide a windbreak and screening.

The grant further enabled Trails and Waterways to conduct a prescribed burn on 35 acres of pine savanna along the Willard Munger State Trail, and to control non-native buckthorn, siberian elm and other non-native plants on selected sites along State Trails statewide.

We designed and produced seven interpretive exhibits to be displayed at appropriate sites to inform trail users of oak savanna restoration. An exotic species identification guide was produced and will be distributed to natural resources managers who manage public lands. Media Rare produced 3 videos, 2 on the Luce Line State Trail project and one on the Glacial Lakes State Trail project. They also produced one radio spot explaining key objectives and results of the various projects. As we monitor these projects over the next few years we will be able to learn more for future restoration and management work.

AUG 16 2001

Date of Report: July 1, 2001

LCMR Final Work Program Report

I. PROJECT TITLE: Management and Restoration of Natural Plant Communities on State Trails

Project Manager: Angela Anderson
Affiliation: Department of Natural Resources
Mailing Address: Box 52, 500 Lafayette Road, St. Paul, MN 55155-4052
Telephone Number: (651) 296-6768 **E-Mail:** angela.anderson@dnr.state.mn.us
Fax: (651) 297-5475

Total Biennial Project Budget:

\$ LCMR: \$ 149,000
\$ LCMR Amount spent: \$ 113,093
\$ LCMR Balance: \$ 35,907

A. Legal Citation: ML 1999, [Chap.231], Sec.[16], Subd.4(g).
(g) Management and Restoration of Natural Plant Communities on State Trails
\$ 75,000 the first year and \$ 75,000 the second year are from the trust fund to the Commissioner of Natural Resources to manage and restore natural plant communities along state trails under Minnesota Statutes, section 85.015

B. Status of Match Requirement: none

II. and III. FINAL PROJECT SUMMARY

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IV. OUTLINE OF PROJECT RESULTS:

Three major results were identified as follows:

Result 1: Restoration of native plant communities on trail rights-of-way, and re-establishment on additional trail r/w acreage, with former agricultural use.

Result 2: Improvement of fair quality native plant communities through management strategies such as periodic prescribed burning or mowing, if burning is not an option, planting and exotic plant species removal.

Result 3: Development of interpretive exhibits to foster environmental education, and a field guide for exotic species identification.

Result 1: Restoration and Re-establishment

Budget: \$ 80,847

Harmony Preston Valley State Trail:

4 acres of hayfield/pasture are part of the trail right-of-way. The site was seeded to native grasses and forbs. The seeding contract was awarded to "Eco - Tech" of Cannon Falls, a firm that specializes in plant community restoration work.

The substantial surplus of \$ 6,075 was due to:

- Having insufficient experience with cost for installation of native vegetation;
- No need for additional site preparation
- Omitting the planting of oak trees at this time, since the field is surrounded by woodlands.

Total: \$ 5,525

Completed: November 1999

Shooting Star State Trail:

The abandoned Rowe sand pit, 10-12 acres with 4 acres of water surface is to be developed as trail rest area and fishing opportunity. Three acres of the site, located south-east of Lake Louise State Park, will be seeded to native grasses and forbs, and planted to native woody plants where needed.

This site was slated for seeding in spring of 2001 but has not been seeded because of repeated flood damage to the Shooting Star Trail which is an integral part of the site. Repair was delayed as the local government applied for federal money to fix the damage. High water in spring of 2001 prohibited us to get into the site for grading. Reed canary grass has rapidly spread into some of the low ground on the site and needs to be eliminated before we can seed. Successful elimination takes at least 2 application of herbicide during the cool season when reed canary is actively growing. Grading was done in house by our field staff thereby cutting cost significantly. MCC crew cleared the site of exotic and invasive woody vegetation and other material left by previous mining activities. The pond shoreline is stable at this time, but it would be desirable to improve the shoreline with native emergent and shore vegetation

The seeding contract was awarded to "Eco - Tech" of Cannon Falls, a firm that specializes in plant community restoration work. They were reimbursed for the purchase of seed and will finalize the seeding in fall of 2001 and spring of 2002.

Site preparation by MCC crew 120 hours	\$ 1,520
Partial payment to Eco -Tech for seeds purchased	\$ 5,000
Engineering services and printing	<u>\$ 680</u>
	Total: \$ 7,200
Remaining encumbrance	\$ 1,745

Anticipated Completion: Spring 2002

Luce Line State Trail:

After further investigation of the original proposed site and the Wakefield Rest Area site, located in Orono as well, we decided that priority should be given to the latter, because Trails and Waterways owns an additional 12 acres adjacent to the trail containing a remnant Big Woods community with healthy sugar maple regeneration and a fair diversity of native groundcover.

Removal of common buckthorn, and replanting with native plants on about one mile heavy infestation along the trail and pockets of heavy infestation within the 12 acres remnant Big Woods forest. This project will serve as a demonstration, as there are many heavily infested areas along the trail.

This labor intensive project extended over two seasons. First year cutting, stump-treatment with herbicide, and chipping of mature buckthorn; second year, additional cutting, stump-treatment and pulling of buckthorn seedlings.

In spring of 2001 we planted understory shrubs and trees native to the community, to create additional competition for remaining and newly sprouting buckthorn seedlings, and add to plant diversity .

Removal of mature buckthorn	
MCC crew of 3 for 22 days	\$ 8,600
Herbicide	\$ 523
Equipment rental and repair	\$ 1,150
2000 understory trees and shrubs	\$ 16,840
Planting, MCC crew of 4, 2 days	\$ 1,463
	Total: \$ 28,576

Completion: Spring 2001

Glacial Lakes State Trail Addition

10 acres of additional trail right-of-way at the historic Northtown site near Paynesville were seeded to native grasses and forbs. The seeding contract was awarded to "Minnesota Native Landscapes, LLC." of Foley, a firm that specializes in plant community restoration work. 10% of the total contract sum is held for second year management of the newly established seeding. A final site visit and final payment of \$ 1,200 was made July 18, 2001.

Native flowers and grasses are well represented now on this fall 1999 seeding. A portion of the site grew red clover in the past and was regularly mowed with DNR permission by a private individual. The red clover persists in the new seeding and will only slowly diminish over time. A vigorous mowing and burning regime for the next few years will help the prairie plants to eventually outcompete the clover.

Spraying with glyphosate to eliminate existing vegetation prior to seeding contract	\$ 330
Contract	\$ 11,950
	Total: \$ 12,280

Completion: Fall 1999

Re-established 12 acres of pasture and 20 acres of previously cultivated land to dry prairie/savanna along the trail, one mile east of the town of Roscoe. This acreage is part of a 60 acre former railroad gravel pit that DNR Trails and Waterways purchased as part of the r/w.

One herbicide treatment was applied in the summer prior to awarding the seeding contract to "Prairie Restoration Inc." The project was seeded fall of 2000 and will be maintained by the contractor for the 2001 and 2002 growing season.

A site visit on July 18th, 2001 revealed no persistent exotic species problem. Alfalfa will be present for several years as it was the last crop on a portion of this property, and alfalfa seed remain viable in the soil for many years.

Herbicide	\$ 400
Equipment rental	\$ 440
Printing for bids	\$ 375
Seeding and management contract	\$ 18,270
First mowing, June 2001	\$ 768
	Total: \$ 20,253
Remaining encumbrance	\$ 1,268
Completed: Fall 2001	

Planting of native trees and shrubs in intermittent groupings for windbreak and screening between New London and Hawick, Kandiyohi County.

1000 native tree and shrub seedlings	\$ 700
500 tree shelters	\$ 1,400
Site preparation, planting, watering and mulching by MCC crew of 3, 5 days	\$ 1,900
	Total: \$ 4,000

Completion: Spring 2000

Result 2: Improvement through management Budget: \$ 20,157

Willard Munger State Trail

Prescribed burn on prairie/pine savanna remnants between Willow River and Rutledge, ca 3 miles of right-of-way, about 35 acres. In the fall of 2000 selected larger jack and red pines were cut and chipped by MCC crew to assure a safe and efficient prescribed burn. This project was contracted out to 'Minnesota Native Landscapes, LLC of Foley, Minnesota. They conducted the burn on May 16th, 2001. Weather conditions were good and the burn was successful.

Cutting and chipping of larger trees by MCC crew of 3, 2 days	\$ 600
Equipment rental	\$ 200
Prescribed burn contract	\$ 4,000
6 standard prescribed burn/prairie restoration signs	<u>\$ 36</u>
Total	\$ 4,836

Completion: Spring 2001

Gateway Segment of the Willard Munger State Trail

Prescribed burn on 8 acres gravel prairie remnants within r/w, and 6 acres of private adjacent land.

This burn was never conducted. Attempts were made in spring and fall of 2000, and in spring of 2001. The window of opportunity is small and demands on the available burn crews are high. Trails and Waterways' relatively small sites receive least priority. DNR equipment and staff was not available and although some Trails and Waterways field personnel have the appropriate training, their experience is limited because of limited opportunities to practice.

I learned that for Trails and Waterways it may be best to contract prescribed burns with private businesses as we did with the burn on the Munger Trail.

Due to time constraints we only managed to augment a small visible site with one year old seedlings, the site was seeded in 1998. One other site that was seeded in 1998 as well was originally included but was so infested with birdsfoot trefoil and spotted knapweed that we decided to work on eliminating those plants first before planting more natives into this site. The planting was done by our own staff to provide a hands-on learning experience. The restoration of a 2 acre site will be done in spring of 2002.

750 plugs of grasses and forbs	\$ 442
2 cordless power drills for planting	\$ 678
Other planting supplies	<u>\$ 286</u>
Total:	\$ 1,406

Completion: Spring 2001

Exotic plant species control state wide

Native woodland and prairie plant communities were selected for exotic species control. This labor intensive work was done in the summer for forbs/grasses and fall and winter for woody plants. Work focused on r/w plant communities which still contain a good representation of native species and have a chance to recover once exotics are removed.

Heartland State Trail and Paul Bunyan State Trail

Buckthorn removal, several pockets along the trail

MCC crew of three, 4 days	\$ 1,100
Fleet (MCC)	\$ 300
Equipment rental	<u>\$ 200</u>
	\$ 1,600

Glacial Lakes Trail

Siberian elm removal between Hawick and New London

MCC crew of 3, 3 days	\$ 1,140
Herbicide	<u>\$ 618</u>
	\$ 1,758

Douglas State Trail

Buckthorn and boxelder removal from oak savanna.

MCC crew of 3, 8 days	\$ 3,040
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Sakatah Singing Hills State Trail

Removing exotic and invasive brush from Egger's Prairie

MCC crew of 3, 10 days	\$ 3,800
Herbicide	<u>\$ 190</u>
	\$ 3,990

Root River State Trail

Buckthorn removal over two miles of light infestation

MCC crew of 3, 8 days	\$ 3,040
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Grand Total: \$ 13,428

Completion: Spring 2001

Miscellaneous and travel expenses

Miscellaneous	\$ 237
Travel	<u>\$ 250</u>
Total	487

Result 3: Development of interpretive exhibits Budget: \$ 12,089

Seven interpretive exhibits were designed and built for 7 prairie/oak savanna re-establishment sites. Examples of "Watch me change" exhibits are attached. Design and content was prepared in house. Production of signs was awarded to 'Pannier', a sign company out of Pennsylvania that specializes in fiberglass imbedment technology.

Production of 7 exhibits (example attached) inclusive of frame and post system	\$ 4,156
Production of exotic species identification booklet with color photos, description of plants and control methods (example attached)	
1000 copies multicolor, laminated, spiral bound, 75 pages	\$ 7,452
Fee for use of photos	<u>\$ 481</u>
	Total \$12,089

Completion: Spring 2001

V. DISSEMINATION:

Project results may be featured on the DNR Web site as demonstration projects. Temporary exhibits during project development and permanent interpretive exhibits along trails together with press releases, articles in newsletters, will inform the trail user and the general public. Concept design and implementation plans will be discussed with stakeholders in other DNR divisions, in local government, and user groups.

VI. CONTEXT

A. Significance:

Natural plant communities management and restoration has had a low priority along State Trails. Only a few small experimental projects have been implemented over the past few years and they are monitored. These project sites are along the Blufflands Trail System and along the Gateway segment of the Willard Munger State Trail. But much more should be done to enhance the ecological value of these trail corridors and to enhance environmental education and trail user experience through demonstration and interpretation. The strategy is to protect and enhance natural communities through appropriate management, re-plant with native plant species in areas disturbed by construction, and control exotic and native invasive plants, and last but not least interpret these activities to the trail user and thereby foster environmental education.

B. Time:

The proposal extends over 2 years

C. Budget Context:

Several appropriations for trail acquisitions, development and rehabilitation have been recommended by the LCMR over the years. Similarly significant bonding authority has been given by the state legislature for acquisition, development and rehabilitation funds for Minnesota state trails.

Natural plant communities management and restoration has never had a budget within Trails and Waterways until 1999. A small budget of \$ 50,000 is now dedicated to a Natural Communities Management Program.

1994-1998

1. LCMR Budget History:	\$ 0
2. \$Non-LCMR Budget History:	
94 Bonding	\$ 6,128,000
95 Trust Fund Trail Rehab&Acqui.	\$ 250,000
96 Bonding	\$ 4,500,000
98 Capital Trail acq. & dev.	<u>\$ 10,250,000</u>
Total:	\$ 21,128,000

BUDGET:

Personnel	\$ 26,503 MCC,unclassified (non-employee status);
Equipment	\$ 2,990
Acquisition	\$ 0
Development	\$
Other:	
Seeds and plants:	\$ 17,982
Herbicides:	\$ 2,061
Other supplies:	\$ 1400
Contracts:	
Technical	\$ 680
Prescribed burning	\$ 4,000
Seeding and seeds	\$ 44,526
Exhibits/Printing:	\$ 12,464
Travel, Misc.:	\$ 487
TOTAL	<u>\$ 113,093</u>

Also See Attachment A

VII. COOPERATION:

Although these projects will be largely implemented by Trails and Waterways field staff, cooperation from other DNR divisions is important to accomplish the tasks. Divisions of Forestry will assist with prescribed burning permits etc. Divisions of Parks and Recreation and Wildlife will assist with equipment needs. All of the above, and staff from the DNR's Scientific and Natural Areas Program and the DOT's Office of Environmental Services, Turf and Erosion Control Unit will be consulted in the execution of management activities along trails. Participation of local volunteers will be sought to implement certain management activities.

VIII. LOCATION:

See attachment B

IX. REPORTING REQUIREMENTS:

Periodic workprogram progress reports will be submitted not later than:

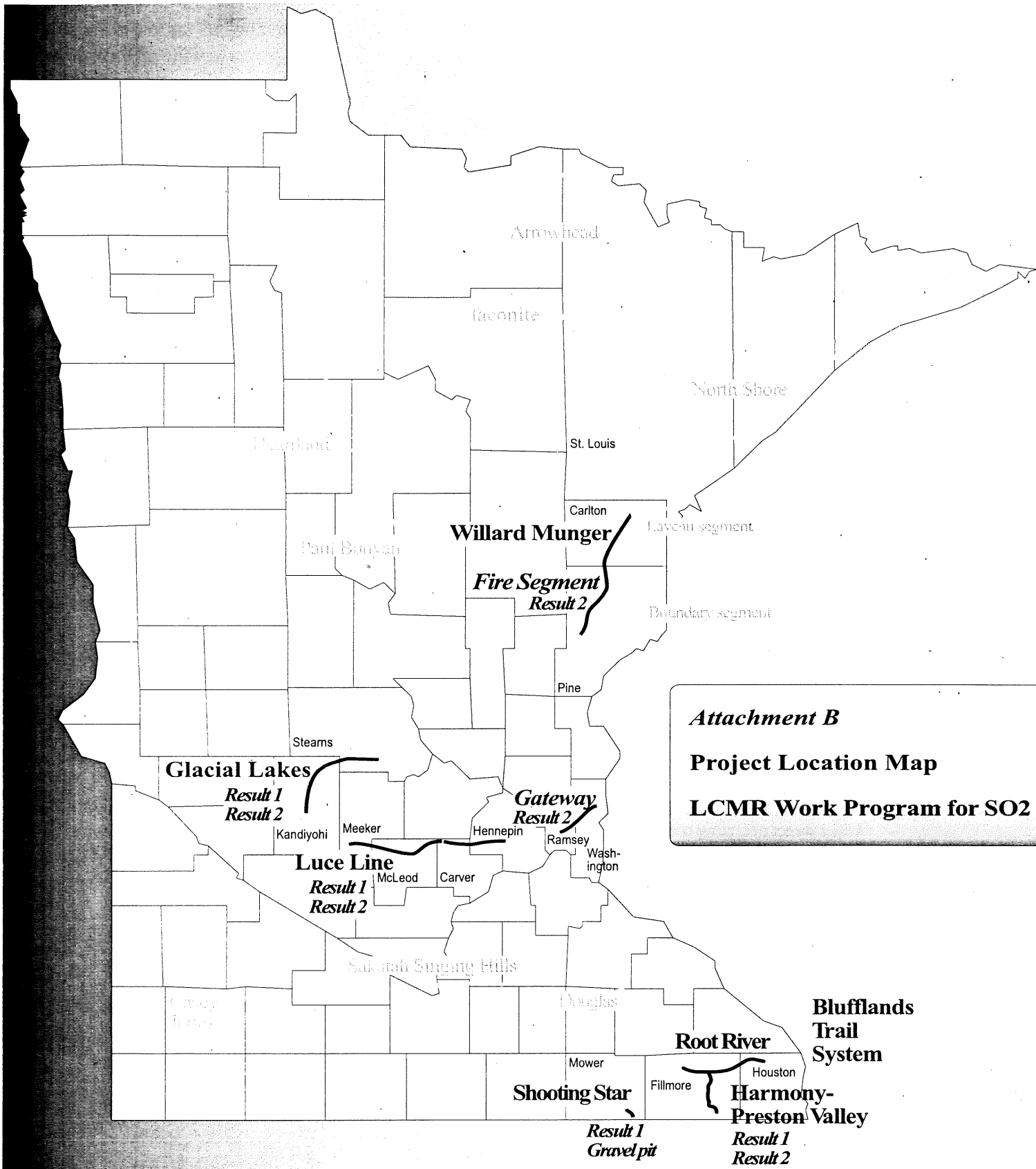
February 28, 2000

November 30, 2000

A final workprogram report and associated products will be submitted by June 30, 2001, or by the completion date as set in the appropriation.

Attachment A
Final report, July1, 2001

LCMR Project Biennial Budget	\$ 149,000			
	Result 1	Result 2	Result 3	ROW TOTAL
Wages, salaries & benefits unclassified (non-employee status)	\$ 13,483	\$ 13,020		\$ 26,503
Space rental, maintenance & utilities				
Printing & Exhibits	\$ 375		\$ 12,089	\$ 12,464
Communications, telephone, mail, etc.				
Contracts				
Professional/technical	\$ 680			\$ 680
Seeding/burning contracts	\$ 44,526	\$ 4,000		\$ 48,526
Local automobile mileage paid				
Other travel expenses in Minnesota		\$ 487		\$ 487
Travel outside Minnesota				
Office Supplies				
Supplies: Plants	\$ 17,540	\$ 442		\$ 17,982
Herbicides	\$ 1,253	\$ 808		\$ 2,061
Other supplies	\$ 1,400			\$ 1,400
Tools and equipment	\$ 1,590	\$ 1,400		\$ 2,990
Office equipment & computers				
Other Capital equipment				
Other direct operating costs				
Land acquisition				
Land rights acquisition				
Buildings or other land improvement				
Legal fees				
COLUMN TOTAL	\$ 80,847	\$ 20,157	\$ 12,089	\$ 113,093



Attachment B
Project Location Map
LCMR Work Program for SO₂

Watch me change

From a weedy field to a community of native grasses and flowers

Once this site supported an oak openings plant community consisting of native grasses, flowers, several species of oaks, clumps of aspen, hazelbrush, and dogwoods. Occasional fire, ignited by lightning or by American Indians, renewed this community.

Then, around the middle of the 19th century, European settlers arrived in this area, cleared the land, and plowed up the fertile topsoil that had built up over thousands of years by the annual cycle of growth and decomposition of plants. The site before you, however, was too sandy to grow crops and the original plant community was probably not eliminated until the 1940s when the Rowe family mined sand from the site, also creating the groundwater fed pond. In the mid 1980s the pit was mined out and the site was used as a storage area. The Rowe family sold the pit to *Prairie Visions*, a local non-profit organization that has been instrumental in the development of the Shooting Star Trail. Trails and Waterways purchased the pit in 2000 to develop it as a trail wayside with fishing opportunities.

With the help of DNR Trails and Waterways managers, the oak openings community is coming back to life. Seeds of native plants from this region were sown here, imitating the composition of plants that once grew in abundance.

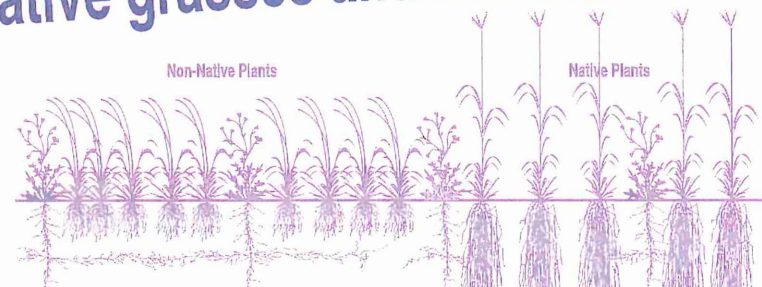


Illustration provided in cooperation with the Minnesota Department of Transportation publication *Native Grasses: Why all the fuss???*

The first few years will be tough for slower growing native seedlings as their energy first goes to build deep, strong roots so plants can withstand drought and other adverse conditions in the future. Invasive non-native plants will compete with them for light and food. Timely mowing and prescribed burning, conducted by Trails and Waterways managers, will slowly eliminate non-native plants and help the native plant community mature, requiring minimal management in the future.



Photo: Angela Anderson

With your understanding, patience, and appreciation this place will once again become a community of native plants and wild creatures for you to enjoy.

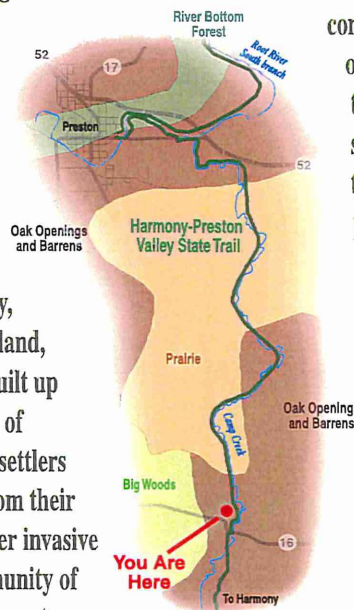
Watch me change

From a weedy field to a community of native grasses and flowers

Once this land supported a rich oak openings plant community consisting of native grasses, flowers, several species of oaks, clumps of aspen, hazelbrush, and dogwoods. Occasional fire, ignited by lightning or by American Indians, renewed this community.

Then, around the middle of the 19th century, European settlers arrived here, cleared the land, and plowed up the fertile topsoil that had built up over thousands of years by the annual cycle of growth and decomposition of plants. These settlers planted annual crops with seeds brought from their home country, unintentionally bringing other invasive non-native seeds as well. The original community of plants and animals disappeared except in areas too steep and rocky to farm. Stands of corn or wheat in summer alternated with plowed, barren fields in winter.

With the help of DNR Trails and Waterways managers, the oak openings community is



Map of pre-European settlement native plant communities.

coming back to life. Seeds of native plants from this region were sown here, imitating the composition of plants that once grew in abundance.

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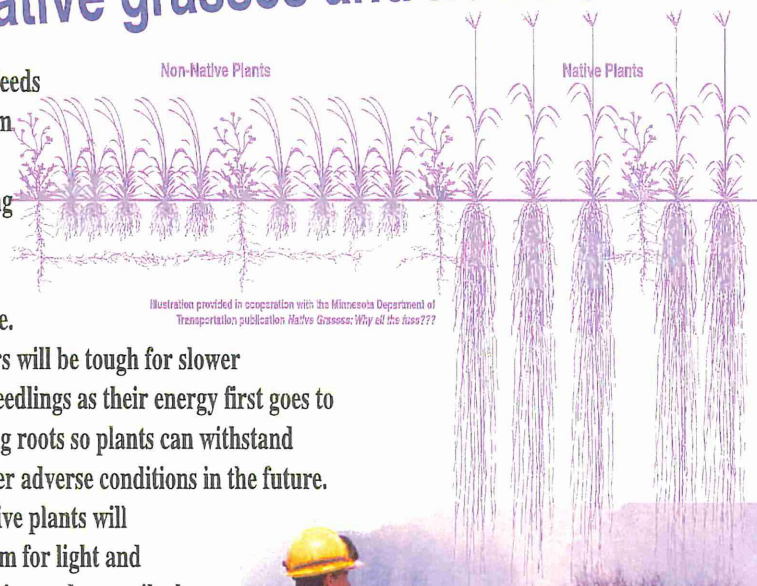


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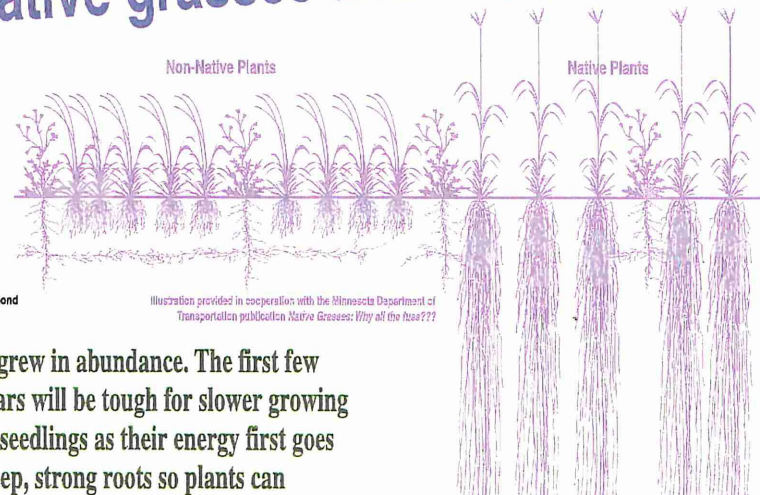
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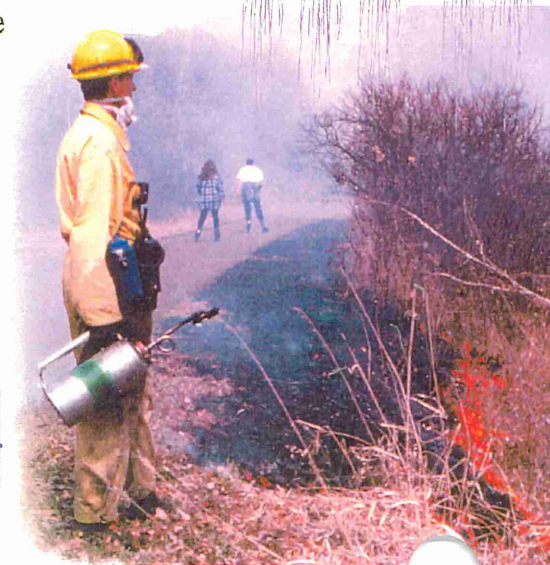
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With the help of DNR Trails and Waterways managers, a prairie community is coming back to life. Seeds of native plants from this region were sown here, imitating the composition of plants that once



grew in abundance. The first few years will be tough for slower growing native seedlings as their energy first goes to build deep, strong roots so plants can withstand drought and other adverse conditions in the future. Invasive and non-native plants will compete with them for light and food. Timely mowing and prescribed burning, conducted by Trails and Waterways managers, will slowly eliminate non-native plants and help the native plant community mature, requiring minimal management in the future.

With your understanding, patience, and appreciation this place will once again become a community of native plants and wild creatures for you to enjoy.



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With the help of DNR Trails and Waterways managers this native plant community is coming back to life. Seeds of native plants from this region were sown here, imitating the composition of plants that once

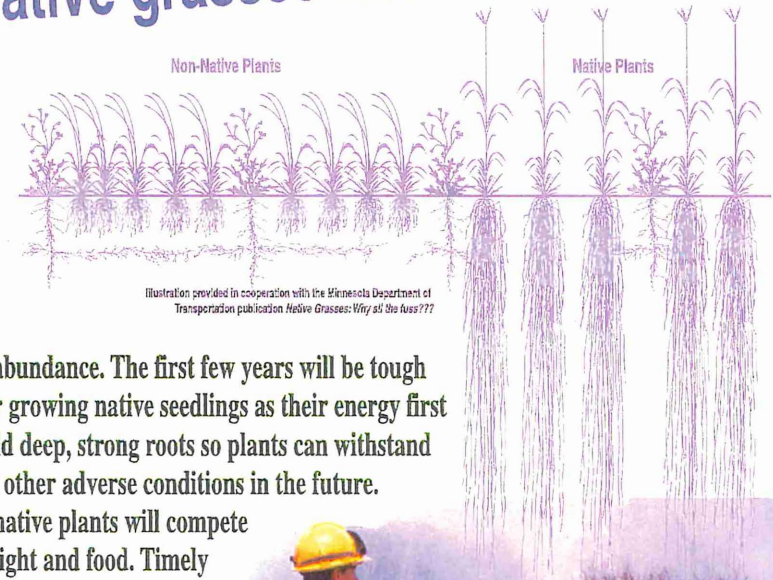
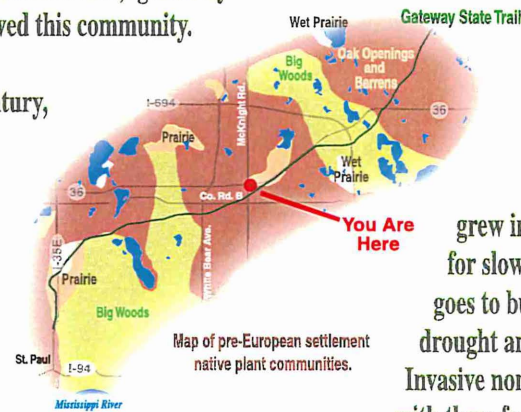
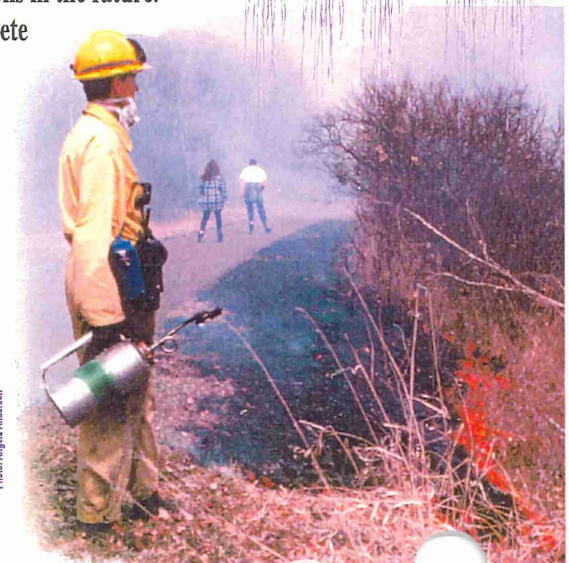


Illustration provided in cooperation with the Minnesota Department of Transportation publication *Native Grasses: Why do they lose???*

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Invasive non-native plants will compete with them for light and food. Timely mowing and prescribed burning, conducted by Trails and Waterways managers, will slowly eliminate non-native plants and help the native plant community mature, requiring minimal management in the future.



With your understanding, patience, and appreciation this place will once again become a community of native plants for you to enjoy.