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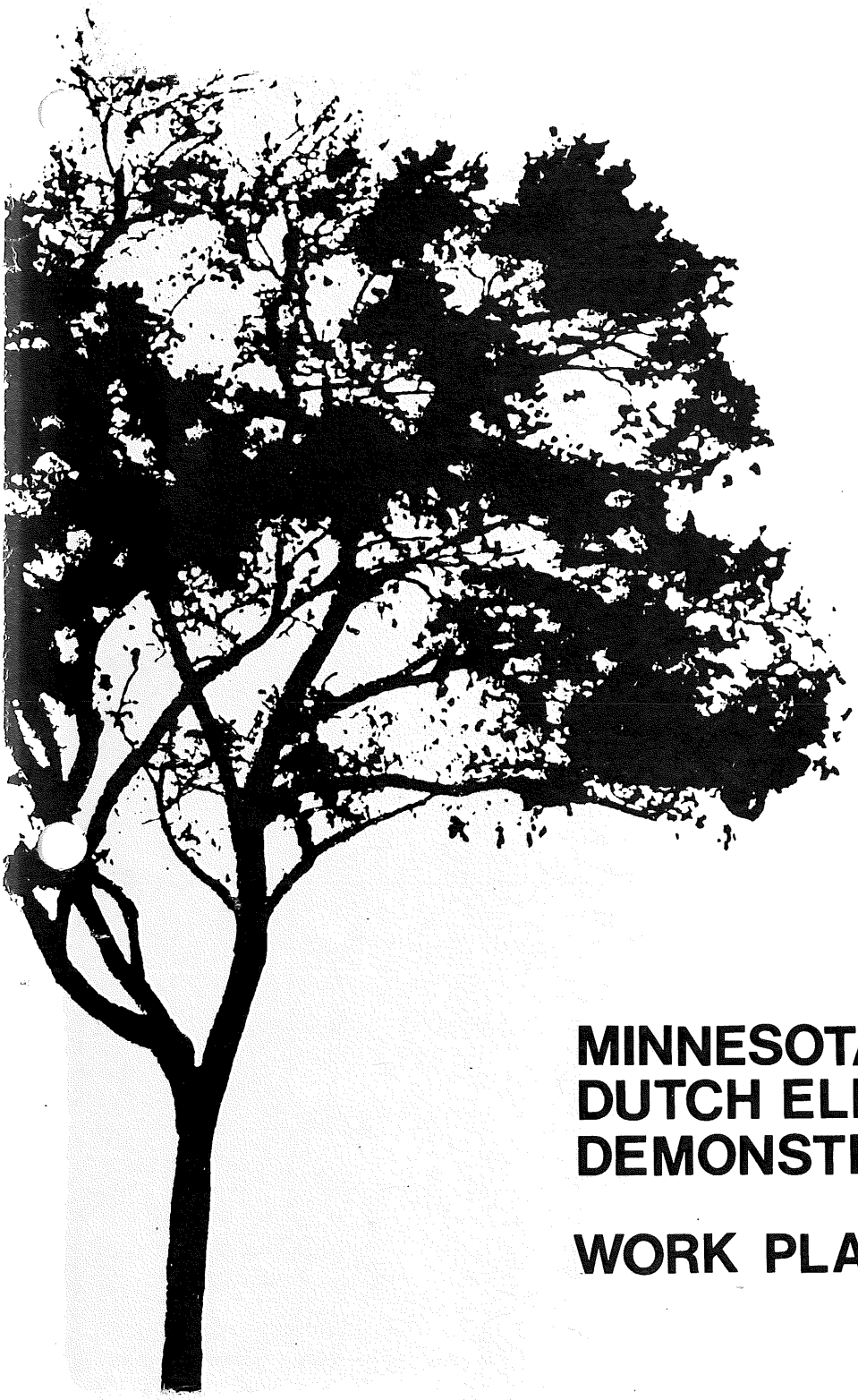

MINNESOTA'S FEDERAL DUTCH ELM DISEASE DEMONSTRATION PROJECT

WORK PLAN – 1979

Minnesota Department
of Natural Resources

Division of Forestry

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A STATEMENT OF THE DISEASE SITUATION IN MINNESOTA

When Dutch elm disease was confirmed in Minnesota as early as 1961, the majority of its cities refused to believe that the state's elm population was as susceptible to this disease as had been that of Iowa and Illinois. Interest in the possible effects of this disease was minimal until the elm populations in southern Minnesota cities were almost totally decimated. As Dutch elm disease began to encroach upon the twin city metropolitan area, municipal concern erupted. In 1977, the Minnesota Legislature passed the largest and most comprehensive grants-in-aid program to assist state and local governmental units in absorbing the costs encumbered when implementing shade tree disease management and reforestation activities. Of the $28.6 million biennial appropriation, $27 million was designated to be used specifically for grants to local governmental units to aid in slowing-down the spread of Dutch elm disease and oak wilt.

With this extensive grants-in-aid program, the Minnesota Legislature acknowledged that Dutch elm disease and oak wilt had reached epidemic proportions in many cities throughout the state. Today, Dutch elm disease has been confirmed in nearly all of Minnesota's eighty-seven counties. Since 1974, over 350,000 diseasedelm trees have been removed from just Minnesota's seven county metropolitan area. Since the spread of Dutch elm disease is becoming even more prevalent in Minnesota, the legislators are again discussing the passing of a $27.5 million grants-in-aid program to deal with the shade tree diseases in the 1979-1980 biennium.

To be able to manage as large a grants-in-aid program as this, rules and regulations had to be promulgated that detailed the manner in which shade tree disease management programs were to be developed. In order that the appropriated money be used most effectively, the regulations developed include making each participating municipality responsible for maintaining a certified tree inspector, carrying-out two to three intensive disease detection surveys throughout the growing season, removing all dead, dying, and/or diseased elm trees within twenty (20) days of detection, and disposing of all non-debarked elm material by burying, burning, chipping, or utilizing in some other manner.

Since Minnesota was the state which made the largest overall commitment to suppressing shade tree diseases, it became an important need to the Dutch elm disease management effort to establish demonstration sites where a combination of recommended disease management practices could be <u>properly</u> implemented and carried-out. The United States Forest Service provided funds to the Minnesota Department of Natural Resources for the establishment of six such municipal "best management" Dutch elm disease programs. This federally sponsored program of technical assistance and education, together with active state and municipal cooperation, could provide the coordination necessary for communities to develop effective Dutch elm disease management programs of their own. The value of municipal disease management programs can now be examined in terms of the expenses incurred when implementing a disease management program as well as in the terms of the aesthetic considerations which become necessary when having to remove and eventually replace a large portion of the tree population.

PROJECT INTENT

The United States Forest Service provided funds to the Minnesota Department of Natural Resources for the establishment of six municipal "best management" Dutch elm disease programs. Ideally, this project will demonstrate how Dutch elm disease within an urban environment can be suppressed long enough to develop an economical and orderly transition from the predominant elm forest to mixed stands of shade trees. The intent of this project has been, and still is, to follow the guidelines of Dutch elm disease management. Primary emphasis is placed on disease survey techniques with sanitation (the timely removal of diseased trees) being second in priority. Other control techniques such as root graft barrier installation and systemic fungicide injections, follow inspection surveys and tree removal in priority, but are the control measures which might differentiate a disease management program from simply a removal program. The goal that is to be attained through the implementation of these control activities is providing the evidence that Dutch elm disease can be suppressed over enough years to document a workable management system for each of the participating demonstration cities.

Public acceptance of this Dutch elm disease demonstration project is also of major concern. It is visibly apparent that the entire federal project can succeed only if each demonstration city is an active participant. Education will be promoted to increase public awareness of the benefits of Dutch elm disease management. Incorporating more disease control techniques and utilization ideas into the overall management program will provide city residents with visual testimony as to the effectiveness of the program. City residents are concerned about the cost of removing elm trees, the disruption of their yards when a root graft barrier is

placed, and what is to them, the unfairness of having to dispose of stockpiled elm wood. It is to be hoped, then, that with this additional federal assistance--both financial and technical--the increase in elm losses due to Dutch elm disease can be stopped and eventually reduced to a level which can be handled economically by each city with its own finances.

To reiterate, the intent of Minnesota's federally funded Dutch elm disease project is to demonstrate the effectiveness of known disease management practices. This program's purpose in each participating city is not just to provide funding, not just to provide technical and educational services, and/or not just to bring Dutch elm disease to a manageable level. Rather, the purpose of this program is to combine all the previously mentioned goals. This resulting combination will, hopefully, encourage each city, on its own, to enthusiastically participate in Dutch elm disease management. Looking into the future, it is reasonable to assume that this federal project will no longer be available. The greatest success this program can attain in carrying-out its goals, then, is to leave each city actively maintaining its own Dutch elm disease management program at a high enough level so that elm losses are minimized over the years, without the assistance of the federal program.

PROJECT ORGANIZATION

Minnesota's federally funded Dutch elm disease project is a cooperative effort among the Department of Natural Resources, the Department of Agriculture, the Extension Service of the University of Minnesota, and, of course, the participating demonstration communities. The Department of Natural Resources has assumed the position of "leader" and so, is responsible for seeing to completion all the organizational requirements necessary to the establishment of each municipal disease management program. The Department of Natural Resources has also hired regional representatives to provide technical assistance as needed by each participating community. The federal Dutch elm disease demonstration project was, and still is, intended to supplement the management activities already prescribed by the Department of Agriculture's Shade Tree Program. Since the Shade Tree Program had promulgated rules and regulations pertaining to Dutch elm disease management, it was naturally assumed that the federal demonstration project would incorporate these rules and regulations into each municipal program. Therefore, the responsibility of the Department of Agriculture is to provide the regulatory assistance needed by each community to fulfill the requirements necessary for effective Dutch elm disease management. The Extension Service of the University of Minnesota will be providing the greater portion of technical and educational assistance needed in the participating municipalities. The demonstration cities have the main responsibility in assuring the success of this entire project. For the duration of the program, it is hoped that each city will take advantage of the financial, technical, and educational assistance the cooperating agencies can offer in order that they will be able to carry-on a "best management" Dutch elm disease

program of their own, without state and federal assistance. Then, and only then, will this federal project be completely successful in attaining its goals.

Two committees have been initiated to provide direction to each organizational activity of Minnesota's federal Dutch elm disease demonstration project, and to provide performance guidelines to all project personnel. The steering committee is made-up of those people who are administratively, as well as technically, capable of providing the directives and guidelines needed to organize and implement the many facets of this federal project. The members of the technical committee have the necessary expertise to take these directives and guidelines of the steering committee and incorporate them into the daily operation of each municipal disease management program.

The Steering Committee

1. Dr. Mark Ascerno
   Assistant Professor and Extension Specialist
   Department of Entomology, Fisheries and Wildlife
   University of Minnesota

2. James Brooks
   Acting Supervisor of Forest Management
   Division of Forestry
   Minnesota Department of Natural Resources

3. Dr. David French
   Department Head of Plant Pathology
   University of Minnesota

4. Meg Hanisch
   Dutch Elm Disease Program Coordinator
   Division of Forestry
   Minnesota Department of Natural Resources

5. James Hanson
   Field Representative
   Forest Insect and Disease Management
   United States Forest Service
   Northeastern Area, State and Private Forestry

6. Arthur Hastings
   Dutch Elm Disease Coordinator
   Forest Insect and Disease Management
   United States Forest Service
   Northeastern Area, State and Private Forestry

7. Jane Meyer
   Administrator, Shade Tree Program
   Minnesota Department of Agriculture

8. Dr. Ward Stienstra
   Associate Professor and Extension Specialist
   Department of Plant Pathology
   University of Minnesota

The Technical Committee

1. Linda Camp
   Department of Information and Agricultural Journalism
   University of Minnesota

2. Steven Cook
   Regional Coordinator, Dutch Elm Disease Demonstration Program
   Division of Forestry
   Minnesota Department of Natural Resources

3. Charles Evenson
   Regional Coordinator, Dutch Elm Disease Demonstration Program
   Division of Forestry
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4. Dr. Asimina Gkinis
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7. Dr William Phillipsen
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   University of Minnesota

8. Roger Rutt
Plant Health Specialist
Minnesota Department of Agriculture

CALENDAR OF EVENTS, JANUARY - DECEMBER, 1979

January	Participants
.Determine the program's lay-out for 1979	DNR,DA,CES,DC*
.Begin to work on finding a complete tree inventory process	DNR
.Begin to prepare for the United States Forest Service all forms and reports necessary to "free" the appropriated money	DNR
.Concentrate on developing good elm firewood publicity	DNR,DA,CES

February	Participants
.Help municipalities prepare tree removal contracts	DNR,DA
.Advertise for full-time seasonal tree inspectors	DNR,DC
.Present each participating municipality with the program lay-out for 1979	DNR
.Begin trimming elm trees (removal of all dead wood, etc.)	DNR,DC
.Attend meeting to discuss program with other state representatives participating in this federal project	DNR
.Continue to develop tree inventory process	DNR
.Complete and submit all necessary forms and reports to the United States Forest Service to "free" the appropriated money	DNR
.Develop a distinct municipal ordinance to deal with the problem of non-debarked elm firewood	DNR,DA
.Meet with local Extension staff to identify the groups and individuals who will be the most cooperative supporters of the program	DNR,CES
.Develop educational materials--especially, continue to concentrate on issuing good publicity concerning the effects of keeping non-debarked elm firewood	CES
.Organize meeting between representatives from the demonstration communities and the participating agencies	DNR,CES

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*DNR - Minnesota Department of Natural Resources
DA - Minnesota Department of Agriculture
CES - Cooperative Extension Service, University of Minnesota
DC - Demonstration Communities

March	Participants
.Develop and complete contracts with participating agencies and municipalities which appropriate the federal money	DNR
.Concentrate heavily on woodpile inspections (this must be completed by April 1)	DNR,DA,DC
.Begin to act upon the municipal ordinance dealing with the removal of non-debarked elm firewood	DA,DC
.Begin to develop utilization project and to select utilization equipment	DNR
.Begin to collect the data necessary for the tree inventory	DNR,DA,DC
.Continue to prepare municipal tree removal contracts	DNR,DA,DC
.Begin to hire all required, full-time seasonal tree inspectors and/or workers	DNR,DC
.Continue trimming dead wood from elm trees	DNR,DC
.Hold training workshops for tree inspectors	DA,CES
.Hold the meeting between the representatives from the demonstration communities and the participating agencies	DNR,DA,CES,DC
.Begin to develop the TREE WATCH series using current disease information from each participating community	CES
.Continue to develop the groups and/or individuals who will be the most cooperative supporters of the program	DNR,CES
.Continue to develop educational materials--perhaps, simplify some of the previously published Dutch elm disease literature	CES

April	Participants
.Begin monitoring beetle activity (Native elm bark beetles)	DNR,DA,CES
.Determine the boundaries of each municipality's control area	DNR,DA,CES
.Complete woodpile inspection--all non-debarked elm material must be disposed of by April 1--prosecute any violators	DNR,DA,DC
.Continue to work on the utilization project--begin purchasing necessary equipment	DNR
.Continue to collect data necessary for the tree inventory	DNR,DA,DC
.Continue to prepare municipal tree removal contracts	DNR,DA,DC
.Complete the hiring of all full-time seasonal tree inspectors and/or workers	DNR,DC
.Complete the trimming of dead wood from elm trees	DNR,DC
.Begin to initiate "advisory councils" (members are those individuals who are supportive of the program and will help to develop it within their community)	DNR,CES
.Prepare releases to media--television spots, radio, etc.--dealing with Dutch elm disease	CES
.Distribute TREE WATCH series to participating	

April (continued)	Participants
communities	CES
.Distribute previously prepared educational materials	CES
.Begin presentations to concerned groups and schools	DNR,DA,CES

May	Participants
.Begin intensive disease detections surveys	DNR,DA,DC
.Advertise for additional, temporary tree inspectors	DNR,DC
.Begin the injection of selected trees with systemic fungicides	DNR,DA,CES,DC
.Continue monitoring beetle populations (Native and smaller European elm bark beetles)	DNR,DA,CES
.Continue to work on the utilization project--continue to purchase necessary equipment	DNR
.Continue to collect data necessary for the tree inventory	DNR,DA,DC
.Finalize municipal tree removal contracts	DNR,DA,DC
.Finish "setting-up" advisory councils	DNR,CES
.Continue to prepare releases to the media	CES
.Continue to distribute TREE WATCH series to participating communities	CES
.Continue to distribute educational materials	CES
.Continue presentations to concerned groups and schools	DNR,DA,CES

June	Participants
.Begin tree removal work	DC
.Begin placing root graft barriers	DNR,DA,CES,DC
.Begin to initiate therapeutic pruning of selected diseased elm trees	DNR,DA,CES,DC
.Aerial photograph each demonstration community	DNR
.Initiate the sale of all marketable elm logs	DNR,DA,DC
.Continue intensive disease detection surveys	DNR,DA,DC
.Hire additional, temporary tree inspectors	DNR,DC
.Continue the injection of selected trees with systemic fungicides	DNR,DA,CES,DC
.Continue monitoring beetle populations	DNR,DA,CES
.Continue to work on the utilization project--continue purchasing necessary equipment	DNR
.Continue to collect data necessary for the tree inventory	DNR,DA,DC
.Initiate supplemental training workshops for all tree inspectors and/or seasonal workers	DNR,DA,CES
.Begin to "use" advisory councils	DNR,CES
.Continue to prepare releases to the media	CES
.Continue to distribute TREE WATCH series to participating communities	CES
.Continue to distribute educational materials	CES
.Continue presentations to concerned groups and schools	DNR,DA,CES

July	Participants
.Prepare preliminary review of the disease situation and the program's progress in each participating community--recommend any program modifications or additions	DNR,DA,CES,DC
.Intensify tree removal work	DC
.Continue placing root graft barriers	DNR,DA,CES,DC
.Continue to initiate therapeutic pruning of selected minimally diseased elm trees	DNR,DA,CES,DC
.Continue the sale of all marketable elm logs	DNR,DA,DC
.Continue intensive disease detection surveys	DNR,DA,DC
.Continue the injection of selected trees with systemic fungicides	DNR,DA,CES,DC
.Continue monitoring beetle populations	DNR,DA,CES
.Finalize work on the utilization project--complete the purchase of all necessary equipment	DNR
.Continue to collect data necessary for the tree inventory	DNR,DA,DC
.Keep-in-touch with advisory councils	DNR,CES
.Continue to prepare releases to the media	CES
.Continue to distribute TREE WATCH series to participating communities	CES
.Continue to distribute educational materials	CES
.Continue presentations to concerned groups and schools	DNR,DA,CES

August	Participants
.Incorporate all recommended modifications and/or additions into each municipality's program	DNR
.Implement the program's utilization project	DNR,DC
.Continue intensive tree removal work	DC
.Continue placing root graft barriers	DNR,DA,CES,DC
.Finish-up therapeutically pruning selected, minimally diseased elm trees	DNR,DA,CES
.Continue the sale of all marketable elm logs	DNR,DA,DC
.Continue intensive disease detection surveys	DNR,DA,DC
.Continue the injection of selected trees with systemic fungicides	DNR,DA,CES,DC
.Continue monitoring beetle populations	DNR,DA,CES
.Continue to collect data necessary for the tree inventory	DNR,DA,DC
.Prepare Dutch elm disease exhibits for County Fairs	DNR,DA,CES,DC
.Keep-in-touch with advisory councils	DNR,CES
.Continue to prepare releases to the media	CES
.Continue to distribute TREE WATCH series to participating communities	CES
.Continue to distribute educational materials	CES
.Continue presentations to concerned groups and schools	DNR,DA,CES

September	Participants
.Continue to implement the program's utilization project	DNR,DC
.Continue tree removal	DC
.Continue placing root graft barriers	DNR,DA,CES,DC
.Continue the sale of marketable elm logs	DNR,DA,DC
.Start to "wind-down" disease detection surveys because of beginning fall coloration	DNR,DA,DC
.Complete the injection of selected trees with systemic fungicides	DNR,DA,CES,DC
.Continue monitoring beetle populations	DNR,DA,CES
.Continue to collect data necessary for the tree inventory	DNR,DA,DC
.Lay-off extra tree inspectors	DNR,DC
.Keep-in-touch with advisory councils	DNR,CES
.Continue to prepare releases to the media	CES
.Continue to distribute TREE WATCH series to participating communities	CES
.Continue to distribute educational materials	CES
.Continue presentations to concerned groups and schools	DNR,DA,CES

October	Participants
.Begin to trim elm trees (removal of dead wood, etc.)	DNR,DC
."Wind-down" the program's utilization project	DNR,DC
.Complete tree removal work	DC
.Complete the placement of all necessary root graft barriers	DNR,DA,CES,DC
.Complete the sale of all marketable elm logs	DNR,DA,DC
.Comple disease detection surveys as fall coloration has become predominant	DNR,DA,DC
.Complete monitoring the beetle populations	DNR,DA,CES
.Complete the collection of the necessary data for the tree inventory	DNR,DA,DC
.Begin to prepare the program budget for 1980	DNR,DA,CES,DC
.Analyze 1979's tree loss data--make tree loss and program cost projections for 1980	DNR,DA,CES
.Review 1979's program--the goals achieved, the problems incurred, the possibilities for 1980's program, etc.	DNR,DA,CES
.Advise the participating communities on the achievements of 1979's program and what to expect in 1980	DNR,DA,CES
.Develop a distinct municipal ordinance to deal with the problem of non-debarked elm firewood in those demonstration communities which still do not have such an ordinance	DNR,DA
.Begin to issue publicity concerning the effect of keeping non-debarked elm firewood	CES
.Finish the distribution of the TREE WATCH series to the participating communities	CES

November	Participants
.Inspect for tree removal work not completed	DNR,DA,DC
.Computerize the data collected for the tree inventory	DNR
.Prepare annual report	DNR
.Lay-off full-time seasonal tree inspectors	DNR,DC
.Continue trimming dead wood from elm trees	DNR,DC
.Finish with the program's utilization project	DNR,DC
.Continue to deal with the problem of non-debarked elm firewood	DNR,DA,CES,DC

December	Participants
.Begin working on the program's lay-out for 1980	DNR,DA,CES,DC
.Continue trimming dead wood from elm trees	DNR,DC

THE DEMONSTRATION COMMUNITIES

Because the start of the federal Dutch elm disease demonstration project was delayed well into the summer of 1978, little was achieved in curtailing elm tree losses in the participating cities of Fergus Falls, Granite Falls, Hutchinson, Litchfield, Little Falls, and Wadena. Program participants acknowledge that 1978 was an organizational year, so, overcoming obstacles and pinpointing major objectives were the accomplishments made by the demonstration project during this first year. With the addition of the federal dollars, complete and continuous Dutch elm disease surveys were implemented. The level of disease incidence was found to be much higher in each demonstration city than had been anticipated by the project personnel, and with the delay in the start of the program, not much could be completed in 1978 beyond establishing thorough disease inspection surveys and removing diseased trees as quickly as possible.

The year 1979 will hopefully witness the elimination of numerous organizational problems. Last year, 1978, was a first for most of the demonstration cities in contract negotiating, letting bids on tree removal, initiating a diseased tree recording system, hiring and training additional staff for tree inspection, and enforcing timely removal of diseased trees and stockpiled elm logs (primarily firewood). The majority of problems which occurred when dealing with many of these "firsts" have been solved and others, anticipating that they will again occur in 1979, will be dealt with more efficiently. Diseased tree detection and removal will continue to be the primary emphasis in 1979 but many improvements can be made to each city's disease management program. For instance, the installation of root graft barriers will become more of a standard practice. Until this method of disease management is extensively used,

the fungus is simply going to spread from one tree to another, resulting in the rest of the disease management efforts being of very little value. This year, high value elm trees will hopefully be provided with some protection against the fungus when injected with a systemic fungicide. This method of treatment could also have some beneficial effect as far as preventing the movement of the fungus into any adjacent healthy trees. Under strict supervision, the effects of therapeutic pruning will be tested. This is a management practice that has been ignored and often discredited, but if given a chance to prove its effectiveness, can become an important approach to disease management. Each city's disease control area will be redefined to include only those residential sections containing a heavy population of elm. Control or check cities will be selected in 1979 so that this project has reference points to which the successes achieved in the demonstration cities can be compared. In 1979, more responsibility in the implementation of the disease management program will be accepted by each city. These cities agreed to participate in this project and have already received a substantial amount of help in the form of financial support and technical assistance. An aerial survey and a computerized tree inventory system will also be incorporated into this federal demonstration project. The aerial survey will not only be able to quickly ascertain the tree population of each city, but will also help in detecting any dead or dying trees that are missed by ground inspections. A computerized tree inventory system is important to a good disease management program. By placing the information collected during the project into a computer system, all data can be quickly recovered for reviewal or distribution.

Four of the Minnesota demonstration cities -- Granite Falls, Hutchinson, Litchfield, and Little Falls -- have a population of elm trees with a Dutch elm disease incidence high enough to justify the implementation of utilization methods. With this federal demonstration project, equipment will be purchased - a debarker, log splitter, etc. - that will render elm material "pest-risk free", making it available for firewood. This project alone, could convince many people to support Dutch elm disease management since it utilizes a potentially valuable wood resource which would otherwise be disposed of by burning or burying. This project could also provide proof that utilization equipment can be successfully transported from one city to another, and could encourage cities, especially small cities, to join together in purchasing or renting equipment to be used in the utilization of diseased elm trees. In 1978, these four demonstration cities lost approximately 2,351 elm trees, most of which were disposed of by burning. Disease losses for each of these four cities are expected to increase in 1979. Being able to salvage some of this elm resource for firewood will be a large contribution to completing the full cycle of Dutch elm disease management, for not only will the diseased trees be properly disposed of, but, instead of burning all this wood, a marketable product will be recovered. It is also hoped that the sawlog and veneer quality elm can be sold so as to get the most value from the diseased trees.

Fergus Falls

.Population -- 12,500

.Area -- 8.12 square miles

.Number of elm trees -- 16,500

.Elms lost in 1977 -- 40 trees

.1978 Projected elm loss -- initially, 90 trees - revised, 100 trees

.1978 Actual elm loss -- 117 trees

.1978 City contribution ---------- $18,340.00
Minnesota Shade Tree Program's contribution -- 14,410.00
$32,750.00 Total

.1978 Federal grant ---------- $18,870.75
Supplemental federal grant -- 8,500.00
$27,370.75 Total

.1979 Projected elm loss -- 215 trees

.1979 City contribution -- $26,050.00
(this does not include Shade Tree Program's contribution)

.1979 Federal grant -- $55,260.40

Granite Falls

.Population -- 3,225

.Area -- 2.75 square miles

.Number of elm trees -- 6,920

.Elms lost in 1977 -- 77 trees

.1978 Projected elm loss -- initially, 300 trees - revised, 500-600 trees

.1978 Actual elm loss -- trees removed through October -- 427
trees remaining to be removed 105
532 trees in total

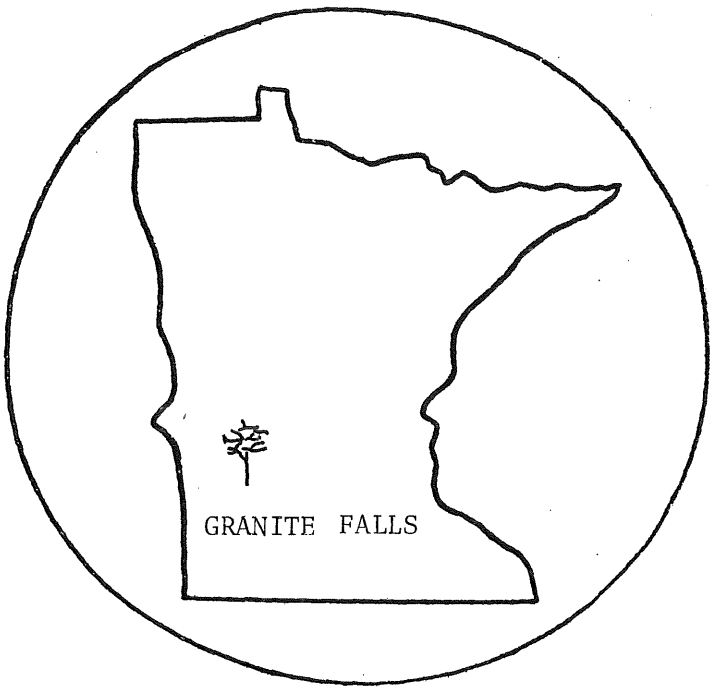
.1978 City Contribution ---------- $15,573.60
Minnesota Shade Tree Program's contribution -- 12,236.40
$27,810.00 Total

.1978 Federal grant ---------- $30,680.00
Supplemental federal grant -- 12,500.00
$43,180.00 Total

.1979 Projected elm loss -- 525 trees

.1979 City contribution -- $30,000.00
(this does not include Shade Tree Program's contribution)

.1979 Federal grant -- $74,747.00



Hutchinson

.Population -- 9,546

.Area -- 6.00 square miles

.Number of elm trees -- 16,000

.Elms lost in 1977 -- 141 trees

.1978 Projected elm loss -- initially, 600 trees - revised, 850-900 trees

.1978 Actual elm loss -- 875 trees

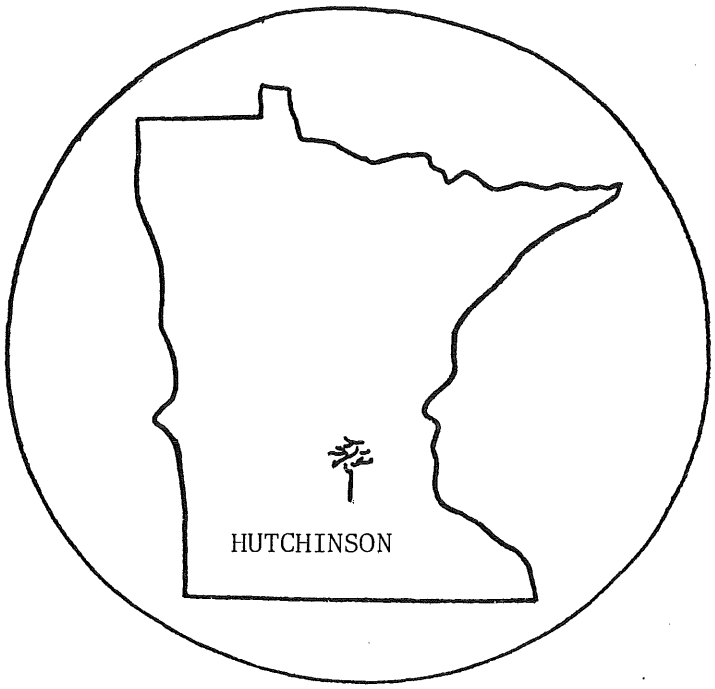
.1978 City contribution ---------- $41,126.96
Minnesota Shade Tree Program's contribution -- 32,314.04
$73,441.00 Total

.1978 Federal Grant ---------- $11,388.00
Supplemental federal grant -- 10,000.00
$21,388.00 Total

.1979 Projected elm loss -- 1,750 trees

.1979 City contribution -- $98,000.00
(this does not include Shade Tree Program's contribution)

.1979 Federal grant -- $174,159.00



Litchfield

.Population -- 5,262

.Area -- 7.50 square miles

.Number of elm trees -- 7,798

.Elms lost in 1977 -- 91 trees

.1978 Projected elm loss -- 250 trees

.1978 Actual elm loss -- 267 trees

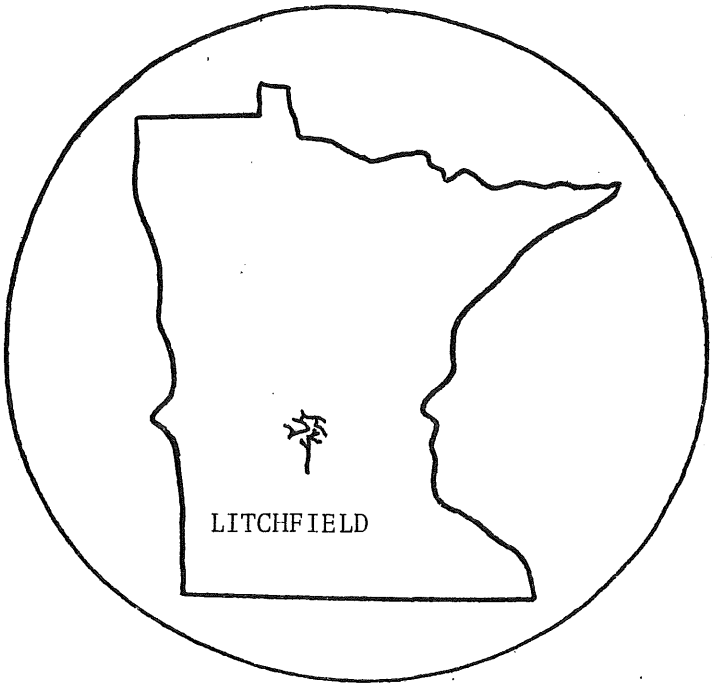
.1978 City contribution ---------- $ 6,944.00
Minnesota Shade Tree Program's contribution -- 5,456.00
$12,400.00 Total

.1978 Federal grant -- $28,756.60

.1979 Projected elm loss -- 385 trees

.1979 City contribution -- $25,500.00
(this does not include Shade Tree Program's contribution)

.1979 Federal grant -- $66,788.00



Little Falls

.Population -- 7,467

.Area -- 4.28 square miles

.Number of elm trees -- 7,174

.Elms lost in 1977 -- 350 trees

.1978 Projected elm loss -- initially, 500 trees - revised, 640-690 trees

.1978 Actual elm loss -- trees removed through October -- 651
trees remaining to be removed -- 26
677 trees in total

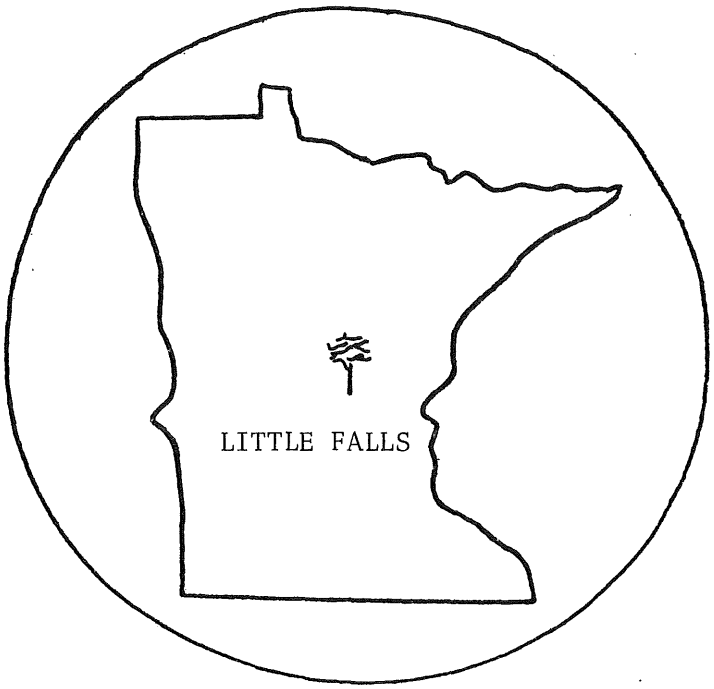
1978 City contribution ---------- $ 1,176.00
Minnesota Shade Tree Program's contribution -- 924.00
$ 2,100.00 Total

.1978 Federal grant ---------- $60,817.00
Supplemental federal grant -- 2,500.00
$63,317.00 Total

.1979 Projected elm loss -- 715 trees

.1979 City contribution -- $25,000.00
(this does not include Shade Tree Program's contribution)

.1979 Federal grant -- $91,498.85



Wadena

.Population -- 4,640

.Area -- 4.00 square miles

.Number of elm trees -- 4,800

.Elms lost in 1977 -- 4 trees

.1978 Projected elm loss -- 100 trees

.1978 Actual elm loss -- 81 trees

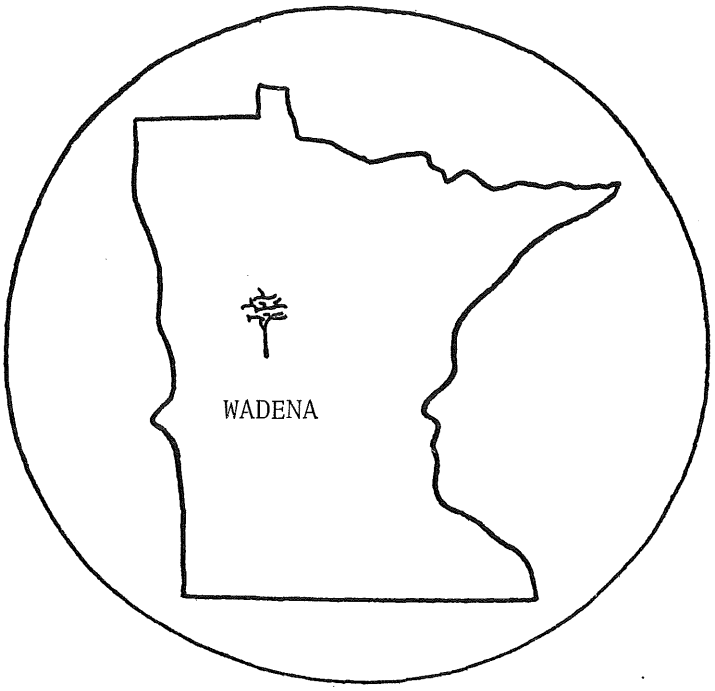
.1978 City contribution ---------- $11,200.00
Minnesota Shade Tree Program's contribution -- 8,800.00
$20,000.00 Total

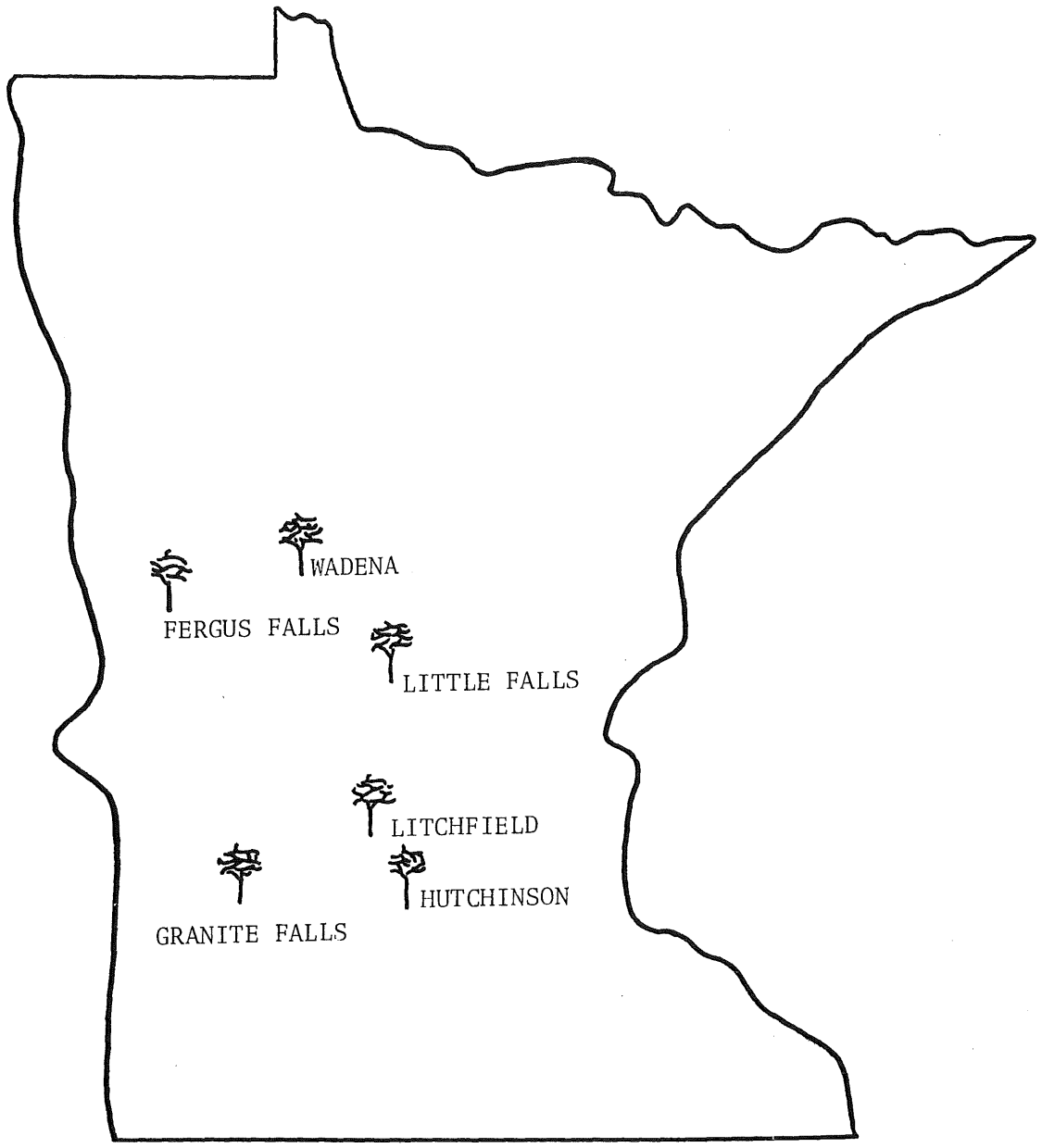
.1978 Federal grant -- $11,592.00

.1979 Projected elm loss -- 140 trees

.1979 City contribution -- $12,000.00
(this does not include Shade Tree Program's contribution)

.1979 Federal grant -- $27,466.75





MINNESOTA'S DUTCH ELM DISEASE

DEMONSTRATION COMMUNITIES - 1979

FEDERAL DUTCH ELM DISEASE DEMONSTRATION PROJECT

TOTAL BUDGET - 1979

Department of Natural Resources	$132,900.00
--Professional and technical services = $41,000.00 --Rents and leases = $6,900.00 --Communications = $5,000.00 --Travel expenses = $7,000.00 --Local purchases = $2,000.00 --Salaries (including fringe benefits) = $59,000.00 --Contingency fund = $12,000.00	
Department of Agriculture	$ 18,000.00
--Salary (including fringe benefits) = $15,000.00 --Travel expenses = $3,000.00	
Community Demonstration Program	$489,920.00
see itemized municipal budgets	
Utilization Program	$126,837.00
see itemized utilization budget	
Total 1979 Federal Contribution	$767,657.00

FERGUS FALLS - 1979 BUDGET

Personal Services	$ 13,108.40
--one full-time forester = $8,000 (one-half of requested salary - city must contribute remaining one-half)	
--one seasonal, full-time tree inspector $5.18/hour, 40 hours/week for twelve weeks = $2,486.40	
--fringe benefits for above positions = $2,622.00	
Equipment Rental	$ 3,315.00
--one, half-ton pick-up for city forester $135/month for six months = $810.00 (city is responsible for funding the vehicle for the other six months)	
--one, half-ton pick-up for seasonal tree inspector $135/month for three months = $405.00	
--one aerial bucket truck for tree sampling 60 hours at $35/hour = $2,100.00	
Disease Management Practices	$ 38,387.00
--to assist in the removal of an estimated 215 trees and stumps, $24,762.00	
--trimming of dead wood from elm trees = $8,000.00	
--installation of root graft barriers 75 barriers at $35.00 each = $2,625.00	
--use of systemic fungicides 50 trees at $60.00 each = $3,000.00	
Miscellaneous Small Equipment and Supplies	$ 300.00
Office Expenses	$ 150.00
Total Federal Contribution	$ 55,260.40

GRANITE FALLS - 1979 BUDGET

Personal Services	$ 3,648.00
--one seasonal, full-time tree inspector, assistant $4.75/hour, 40 hours/week for sixteen weeks = $3,040.00	
--fringe benefits for above position = $608.00	
Mileage	$ 340.00
--travel allowance for full-time tree inspector, assistant, for sixteen weeks	
Disease Management Practices	$ 70,409.00
--to assist in the removal of an estimated 525 trees and stumps, $65,109.00	
--trimming of dead wood from elm trees = $2,500.00	
--installation of root graft barriers = $500.00	
--use of systemic fungicides 30 trees at $60.00 each = $1,800.00	
--removal of firewood piles = $500.00	
Miscellaneous Small Equipment and Supplies	$ 250.00
Office Expenses	$ 100.00
Total Federal Contribution	$ 74,747.00

HUTCHINSON - 1979 BUDGET

Personal Services	$ 14,175.00
--three seasonal, full-time tree inspectors $4.50/hour, 40 hours/week for twenty-one weeks x 3 = $11,340.00	
--fringe benefits for above positions = $2,835.00	
Mileage	$ 1,400.00
--travel allowance for the three full-time tree inspectors for twenty-one weeks	
Disease Management Practices	$157,834.00
--to assist in the removal of an estimated 1,750 trees and stumps, $147,534.00	
--trimming of dead wood from elm trees = $3,000.00	
--use of systemic fungicides 50 trees at $60.00 each = $3,000.00	
--installation of root graft barriers = $4,300.00	
Miscellaneous Small Equipment and Supplies	$ 500.00
Office Expenses	$ 250.00
Total Federal Contribution	$174,159.00

LITCHFIELD - 1979 BUDGET

Personal Services	$ 4,000.00
--one seasonal, full-time tree inspector $5.00/hour, 40 hours/week for sixteen weeks = $3,200.00	
--fringe benefits for above position = $800.00	
Equipment Rental	$ 800.00
--one half-ton pick-up for seasonal tree inspector $200.00/month for four months = $800.00	
Disease Management Practices	$ 61,088.00
--to assist in the removal of an estimated 385 trees and stumps, $56,738.00	
--trimming of dead wood from elm trees = $2,250.00	
--installation of root graft barriers = $300.00	
--use of systemic fungicides 30 trees at $60.00 each = $1,800.00	
Miscellaneous Small Equipment and Supplies	$ 650.00
Office Expenses	$ 250.00
Total Federal Contribution	$ 66,788.00

LITTLE FALLS - 1979 BUDGET

Personal Services	$ 3,375.00
--one seasonal, full-time tree inspector $4.50/hour, 40 hours/week for fifteen weeks = $2,700.00	
--fringe benefits for above position =$675.00	
Equipment Rental	$ 735.00
--one aerial bucket truck for tree sampling 15 hours at $40/hour = $600.00	
--mileage for tree inspector's vehicle $.15/mile - 60 miles/week for fifteen weeks = $135.00	
Disease Management Practices	$ 87,038.85
--to assist in the removal of an estimated 715 trees and stumps, $69,913.85	
--trimming of dead wood from elm trees = $8,000.00	
--installation of root graft barriers 175 barriers at $35.00 each = $6,125.00	
--use of systemic fungicides 50 trees at $60.00 each = $3,000.00	
Miscellaneous Small Equipment and Supplies	$ 300.00
Office Expenses	$ 50.00
Total Federal Contribution	$ 91,498.85

WADENA - 1979 BUDGET

Personal Services	$ 5,966.75
--one full-time tree inspector $5.00/hour, 40 hours/week for twenty weeks = $4,000.00	
--one temporary, full-time tree inspector $5.82/hour, 40 hours/week for four weeks = $931.20 (this person will be "borrowed" from Wadena's city crew for the month)	
--fringe benefits for above positions = $1,035.55	
Equipment Rental	$ 2,700.00
--one half-ton pick-up for tree inspector $50/week for twenty-four weeks = $1,200.00	
--one aerial bucket truck for tree sampling 60 hours at $25/hour = $1,500.00	
Disease Management Practices	$ 18,400.00
--to assist in the removal of an estimated 140 trees and stumps, $8,000.00	
--trimming of dead wood from elm trees = $7,400.00	
--installation of root graft barriers 30 barriers at $40.00 each = $1,200.00	
--use of systemic fungicides 30 trees at $60.00 each = $1,800.00	
Miscellaneous Small Equipment and Supplies	$ 300.00
Office Expenses	$ 100.00
Total Federal Contribution	$ 27,466.75

UTILIZATION PROJECT - 1979 BUDGET

Personal Services	$ 20,000.00
--two heavy equipment operators (six-month appointment) salaries, fringe benefits, and travel expenses	
Equipment Rental	$ 16,200.00
--front-end loader, lease with option to buy = $12,000	
--truck to haul equipment from one site to another, short-term contracts with an independent trucking firm = $3,000.00	
--one pick-up for the transporation of equipment operators to include storage box for small equipment, $200/month for six months = $1,200.00	
Equipment Purchases	$ 72,200.00
--portable debarker = $64,000.00	
--log splitter = $5,000.00	
--miscellaneous equipment - to include chain saws, shovels, extra chains, oil, grease = $3,200.00	
Miscellaneous Expenditures	$ 8,000.00
--to include fuel and machinery repair costs	
Emergency Contingency Fund	$ 10,437.00
Total Federal Contribution	$126,837.00

ANTICIPATED ACCOMPLISHMENTS - 1979

Participants in Minnesota's federal Dutch elm disease demonstration program have acknowledged that 1978 was an organizational year but hope that 1979 will see a disease management program replacing the present tree removal program in each of the six participating cities. The accomplishments to be made in 1979 include several objectives already implemented in 1978 as well as several objectives that are to be introduced in 1979. All cities will once again carry-on continuous disease detection surveys within their designated control area through the end of the growing season. All diseased and/or dead elm trees will be removed within twenty (20) days after they are marked. All non-debarked elm material will be disposed of by burning, burying, or utilizing in some other manner. Hopefully, the utilization project which is intended for Granite Falls, Hutchinson, Litchfield, and Little Falls will be able to render any unmarketable elm material "pest-risk free" so that it can be used as firewood. If possible, all marketable logs will be sold, utilizing this wood resource in yet another way. The additions to 1979's program will be the use of systemic fungicides, the minimal use of therapeutic pruning, the removal of dead wood from designated elm trees, and the introduction of a computerized tree inventory system. This year, in each demonstration community, elm trees considered of high value (historically or aesthetically), located on public property, will be injected with a systemic fungicide. By using this management practice, it is expected that these "treated" trees will be given additional protection against the disease fungus. Under strict supervision, it is anticipated that therapeutically trimming minimally diseased elm trees will possibly become an important approach to disease management. Also to be accomplished in 1979 is the introduction

of a trimming program in the demonstration communities. In each participating city, a percentage of its elm population is in need of trimming. The trees designated as needing attention are ones which contain dead or weakened limbs. It is expected that this approach to disease management will increase the overall health of each elm tree, thus providing the tree population with added protection against the disease fungus as well as eliminating possible beetle breeding sites. A most important achievement for 1979 will be the establishment of a computerized tree inventory system. By the end of 1979, it is hoped that a documentation system will be established so that information obtained from these municipal disease management programs can be easily retrieved and/or new information can be easily added.

In summary, the year 1979 will be of primary importance to the degree of success attained by the Dutch elm disease demonstration project in carrying-out its objectives. Although organizational activities should proceed more smoothly as compared to 1978, implementing all the disease management techniques determined to be essential for suppressing Dutch elm disease in each city will be a formidable task. It is anticipated that this year's large federal appropriation will enable the increase in elm losses due to Dutch elm disease to be stopped and eventually reduced to a level at which each demonstration city can economically handle its <u>own</u> disease management program using <u>only</u> its <u>own</u> finances.