APPENDIX

TO

COMMUNITY SHADE TREE PROGRAMS IN MINNESOTA

A Study of Participation and Effectiveness

by

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APPENDIX A

MEASURES OF PROGRAM EFFECTIVENESS

There are two distinct strategies for measuring the sanitation and replanting effectiveness of local shade tree programs: rely on the descriptions of program activities (provided to the state at the end of each calendar year) or utilize the judgments of experts (the state shade tree program inspectors). Both have been utilized in this analysis; procedures used to develop these measures and their interrelation are described below.

I. Inspector's Judgments

The six inspectors associated with the state shade tree program were asked to complete a questionnaire that involved rating the 507 local programs (supervised and receiving financial support from the state program) on four characteristics: overall program effectiveness, sanitation effectiveness, replanting effectiveness, and commitment to urban forests. An example of the rating form is provided in Exhibit A-1; note that all programs were rated on one aspect (e.g. overall effectiveness) before receiving evaluations on the next. For each program, an inspector indicated whether he thought the program was excellent, excellent to typical, typical, typical to very poor, or very poor; a 5.4 interval scale. In addition, they could indicate an unwillingness to rate a program (for any) reason) and were asked to provide their confidence in their judgment -- high, medium, or low. For the analysis, an excellent rating was assigned a value of 1, very poor a value of 5, and intermediate responses the values of 2, 3, and 4.

REPLANTING PROGRAM EVALUATION

For each of the following communities or counties, please indicate your rating of ONLY the replanting program and your confidence in each rating. If you cannot rate a program for any reason, please check the column to the far left.

PROGRAMS FOR EVALUATION	Unable to rate this program for any reason	Very poor, almost totally ineffective	Not as good as typical, but better than very poor	Typical or average	Better than typical, not quite excellent	Excellent, could hardly be improved	CONFIDENCE IN THE JUDGEMENT		
							Low	Medium	High
Ada	——	——	——	——	——	——	——	——	——
Adams	——	——	——	——	——	——	——	——	——
Adrian	——	——	——	——	——	——	——	——	——
Aitkin	——	——	——	——	——	——	——	——	——
Albany	——	——	——	——	——	——	——	——	——

SANITATION PROGRAM EVALUATION

For each of the following communities or counties, please indicate your rating of ONLY the sanitation program and your confidence in your rating of each. If you cannot rate a city for any reason, please check the column to the far left.

PROGRAMS FOR EVALUATION	Unable to rate this program for any reason	Very poor, almost totally ineffective	Not as good as typical, but better than very poor	Typical or average	Better than typical, not quite excellent	Excellent, could hardly be improved	CONFIDENCE IN THE JUDGEMENT		
							Low	Medium	High
Ada	——	——	——	——	——	——	——	——	——
Adams	——	——	——	——	——	——	——	——	——
Adrian	——	——	——	——	——	——	——	——	——
Aitkin	——	——	——	——	——	——	——	——	——
Albany	——	——	——	——	——	——	——	——	——
Albert Lea	——	——	——	——	——	——	——	——	——
Alden	——	——	——	——	——	——	——	——	——
Alexandria	——	——	——	——	——	——	——	——	——
Amboy	——	——	——	——	——	——	——	——	——
Andover	——	——	——	——	——	——	——	——	——
Annandale	——	——	——	——	——	——	——	——	——
Anoka	——	——	——	——	——	——	——	——	——
Appleton	——	——	——	——	——	——	——	——	——
Apple Valley	——	——	——	——	——	——	——	——	——
Arco	——	——	——	——	——	——	——	——	——
Arden Hills	——	——	——	——	——	——	——	——	——
Arlington	——	——	——	——	——	——	——	——	——
Atwater	——								

A-2

In order to estimate the reliability of the ratings, a comparison was
made of the ratings of the same local programs by all combinations of two
inspectors. The results for judged effectiveness of sanitation and replant-
ing is presented in Exhibit A-2. In some cases two inspectors (A and D,
A and E) simultaneously rated only 1 or 2 programs and no correlation co-
efficients could be computed; in other cases as many as 193 programs were
rated by two inspectors (A and E). The average correlations between in-
spectors ranged from 0.49 to 0.58; high enough to indicate some agreement
on what constitutes a good program but low enough to suggest that not all
inspectors view programs in the same way. Though sufficient, reliability
might be improved if more effort had been devoted to development of the
ratings scales.

PROGRAM RATINGS ON SANITATION EFFECTIVENESS

	Pearson-Product Correlations						Spearman Rank Order Correlations					
	A	B	C	D	E	F	A	B	C	D	E	F
A	1.00	8	8	1	4	6	1.00	8	8	1	4	6
B	0.67	1.00	204	64	74	193	0.66	1.00	204	64	74	193
C	0.86	0.54	1.00	51	60	113	0.90	0.49	1.00	51	60	113
D	**	0.52	0.64	1.00	28	43	**	0.52	0.59	1.00	28	43
E	0.58	0.62	0.72	0.70	1.00	49	0.58	0.59	0.68	0.66	1.00	49
F	0.46	0.33	0.52	0.59	0.47	1.00	0.56	0.32	0.51	0.59	0.49	1.00

Average of 14 correlations 0.58   Average of 14 correlations 0.58

PROGRAM RATINGS ON REPLANTING EFFECTIVENESS

	Pearson-Product Correlations						Spearman Rank Order Correlations					
	A	B	C	D	E	F	A	B	C	D	E	F
A	1.00	5	5	1	2	4	1.00	5	5	1	2	4
B	0.80	1.00	81	36	62	77	0.69	1.00	81	36	62	77
C	0.33	0.49	1.00	15	28	33	0.15	0.52	1.00	15	28	33
D	**	0.52	0.58	1.00	15	15	**	0.61	0.51	1.00	15	15
E	**	0.41	0.37	0.53	1.00	24	**	0.39	0.27	0.60	1.00	24
F	0.68	0.24	0.35	0.82	0.61	1.00	0.77	0.22	0.31	0.72	0.62	1.00

Average of 13 correlations 0.52   Average of 13 correlations 0.49

NOTES: Lower left represent correlations; upper right the number of
programs evaluated by the two state program inspectors.
"**" indicates computation not possible due to small number of
programs rated by the two inspectors.
Letters identify the six state program inspectors.

Agreement Among Inspectors on the
Evaluations of Program Effectiveness

To develop measures of program effectiveness, each local program was assigned a value that was the average of all inspector ratings where provided by one, two, or more inspectors. From 14-67 of the local programs were not rated by any of the state program inspectors. The distribution of average evaluations of all programs is provided in Exhibit A-3.

II. Program Activities

The alternative measures of program success are related to the actual activities pursued in the program, minimizing the spread of the Dutch elm disease and replanting shade trees to replace those lost to the disease. The basis for this information was the reports filed by the various programs at the completion of each calender year, reports required before the financial support from the state can be provided. These reports were available for 1977, 1978, and 1979, corresponding to the three years the state program has been in operation; some local programs have been in operation considerably longer. The primary measure of sanitation success was the numbers of trees infected with the DED in a given year, indicated by either those marked (identified as diseased) or those removed (after being marked). To some extent these two measures are redundant, for the correlation between the numbers of trees marked and removed is extremely high (0.99 in 1979); 94 percent of the average number of marked trees were removed in 1979.

As the annual loss of elms as a percentage of pre-disease season inventory has been widely used as a measure of sanitation performance (Cannon and Worley, 1976), it was adopted for this project in two forms, percentage of 1979 inventory marked as infected and percentage of 1979 inventory removed as infected. The most current data, for 1979, were chosen as most likely to be related to the evaluations of inspectors. However, as a

EXHIBIT A-3

INSPECTOR'S EVALUATIONS
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	Overall Program		Sanitation Effectiveness		Replanting Effectiveness		Commitment to Urban Forests	
Average Program Ratings	#	%	#	%	#	%	#	%
1.0-1.49 Excellent	11	2	9	2	1	*	9	2
1.5-2.49	66	15	53	12	57	14	49	12
2.5-3.49 Typical	246	55	246	57	253	62	210	53
3.5-4.49	115	26	119	27	90	22	110	28
4.5-5.0 Very Poor	7	2	11	2	8	2	17	4
Total Programs Rated	445	100 %	448	100 %	409	100 %	395	99 %
Unrated Programs	17		14		53		67	
Total Programs	462		462		462		462	
Inspector's Confidence in Ratings								
1.00-1.49 High	359	36 %	367	37 %	284	43 %	328	42 %
1.50-2.49 Medium	524	53	522	53	336	51	388	50
2.50-3.0 Low	107	11	95	10	43	6	55	7
Total Individual Ratings	990	100 %	984	100 %	663	100 %	771	99 %
No confidence rating	1782		1788		2109		2001	
Total programs rated (462 programs x 6 inspectors)	2772		2772		2772		2772	

measure of typical performance, compensating for the possibility that 1979 could have been an unusual year, the average percentage of inventory removed over the three year period for which data was available (1977, 1978, and 1979) were also chosen. Thus three quantitative measures of sanitation success were computed and used in this study.

While the attempts to control the spread of Dutch elm disease must be continuous and systematic to be effective; replanting programs may be developed at a more leisurely pace. A community may forego replanting during a given year in order to plan the restocking of the urban forest or implement a large scale replanting; one that could be more economical to implement than individualized tree replacement. Hence, two measures of program activity were chosen to represent replacement success, total trees replanted as a percentage of trees removed over the same three years and total trees replanted as a percentage of the beginning inventory of public elms (in 1977).

The distribution of the communities on the five measures of program activity, three related to sanitation effectiveness and two related to replanting effectiveness, are presented in Exhibit A-4. Note that except for the average percentage of beginning inventory removed over the three past years, all of the distributions are quite skewed toward zero. On the other hand, there is a substantial range of values which will facilitate most analyses.

	Percentage of 1979 Beginning Elm Inventory Marked in 1979		Percentage of 1979 Beginning Elm Inventory Removed in 1979		Average Percentage of Beginning Elm Inventory Removed in 1977,78, & 79		Total Replants as percentage of beginning elm inventory in 1979		Total Replants as percentage of total elms removed in 1977, 78, & 79	
Number of communities	537		537		542		528		615	
Average (mean value)	5.6 %		5.3 %		7.2 %		76.3 %		359.4 %	
Median	2.5		2.4		4.5		12.9		60.9	
Range	0-71 %		0-66%		0-50 %		0-3,700 %		0-31,800 %	
DISTRIBUTION	#	%	#	%	#	%	#	%	#	%
0.0 %	157	29	152	28	10	2	154	29	244	40
0.0 - 0.9	49	9	55	10	81	15	12	2	--	-
1.0 - 1.9	39	7	40	7	81	15	11	2	1	*
2.0 - 2.9	46	9	42	8	46	8	8	2	1	*
3.0 - 3.9	32	6	37	7	35	6	8	2	-	-
4.0 - 4.9	31	6	32	6	41	8	6	1	-	-
5.0 - 6.9	36	7	36	7	61	11	19	4	1	*
7.0 - 9.9	48	9	49	9	69	13	21	4	2	*
10.0 - 14.9	48	9	46	9	45	8	35	7	5	1
15.0 - 19.9	21	4	20	4	28	5	27	5	6	1
20.0 - 29.9	19	3	20	4	30	5	32	6	14	2
30.0 - 39.9	3	*	3	*	9	2	25	5	15	2
40.0 - 59.9	7	1	4	1	6	1	43	8	17	3
60.0 - 79.9	1	*	1	*			38	7	22	4
80.0 - 99.9							18	3	28	5
100.0 - 199.9							31	6	85	14
200.0 - 399.9							19	4	71	12
400.0 - 599.9							11	2	32	5
600.0 - 799.9							4	1	12	2
800.0 - 999.9							2	*	12	2
1,000.0 - 1,999.9							-	-	20	3
2,000.0 - 2,999.9							2	*	13	2
3,000.0 - 4,999.9							2	*	10	2
5,000.0 - 9,999.9									2	*
10,000.0 - Max									2	*

Exhibit A – 4 Distribution of Measures of
Program Effectiveness

III. Comparison of Measures

A major issue for any research is determining the extent to which measures of the same thing (program performance) are in agreement. The correlation between the inspectors' evaluations and the measures based on program activities is presented at the bottom of Exhibit A-5. Note that while the inspectors' evaluations show some internal consistency (a correlation of 0.36 between sanitation and replanting); there is little or no correspondence between the inspectors' evaluations and measures of program impact, none is as high as 0.10. This is further demonstrated in Exhibit A-6, which indicates the low correlations among the measures chosen for the analyses in the main report (Chapters IV and V).

This great discrepancy between the inspectors ratings and the measures of program impact suggests that they reflect two distinctly different aspects of the community programs. It should be observed that the worst possible alternative -- strong negative correlations between the two types of measures -- has not occurred. If it had, attempting to select appropriate measures of performance would have been substantially more difficult. Both sets of measures have been given attention in the analyses of program impact.

	Average Value	Overall Evaluation	Sanitation Effectiveness	Replanting Effectiveness	Committment to Urban Forests
State Program Inspector Ratings					
Overall	2.90	1.00			
Sanitation Effectiveness	2.97	0.89	1.00		
Replanting Effectiveness	2.71	0.33	0.36	1.00	
Committment to Urban Forests	2.61	0.37	0.38	0.70	1.00
Absolute Values of:					
Population (1975 estimates)	6,675	0.20	0.22	0.09	0.11
Area of community (sq. mi.)	4.69	0.09	0.13	0.06	0.02
Trees marked in 1979	199	0.14	0.16	0.09	0.09
Trees removed in 1979	187	0.14	0.16	0.09	0.10
Trees planted in 1979	232	0.14	0.15	0.08	0.09
Elm Inventory, 1979	12,162	0.04	0.06	0.06	0.01
Rates of Removal of Elms:					
Marked/Removed in 1979	1.13	-0.09	-0.08	-0.08	0.00
Replanted/Removed in 1979	2.13	0.00	0.02	-0.01	-0.01
(R) Total Replants / Total Removed ('77-'79)	4.44	0.04	0.05	0.01	0.00
Related to Elm Inventory:					
(S) Marked/Inventory in 1979	0.066	0.07	-0.08	-0.04	0.01
(S) Removed/Inventory in 1979	0.063	0.05	-0.07	0.06	0.02
Transplanted/Inventory in 1979	0.117	0.04	-0.02	-0.03	-0.03
(S) Average removed/inventory for for 1977-1979	0.066	0.01	-0.06	-0.02	-0.02
(R) Total Replants 1977-79/Elm inventory for 1977	0.977	-0.01	-0.03	-0.05	-0.06

NOTES: Signs of all correlations have been adjusted so that a + indicates higher evaluations by inspectors.

"S" indicates selected as a measure of sanitation effectiveness.

"R" indicates selected as a measure of replanting effectiveness.

Eshibit A. - 5 Correlations between selected
Community/Program characteristics
and Inspectors Ratings of Progams

	SANITATION				REPLANTING		
	Inspector's Ratings of Sanitation Effectiveness	% of 1979 Beginning Invent. Marked During 1979	% of 1979 Beginning Invent. Removed During 1979	Average % of Beginning Inv. Removed Over years 1977-79	Inspector's Ratings of Replacement Effectiveness	Total Replants as a % of Beginning Elm Invent. in 1977	Total Replants as a % of Total Elm Removals 1977-79

SANITATION

Inspector's Ratings of Effectiveness	1.00	427	427	428	406	423	448
% of 1979 Beginning Inv. Marked during 1979	-0.05	1.00	537	537	389	522	537
% of 1979 Beginning Inv. Removed during 1979	-0.04	0.95	1.00	537	389	522	537
Ave. % of Beginning Inv. Removed, 1977-79	-0.06	0.57	0.61	1.00	390	528	543

REPLANTING

Inspector's Ratings of Effectiveness	0.60	0.00	-0.01	-0.02	1.00	385	409
Total Replants as a % of 1977 Begin. Elm. Inv.	0.00	0.13	0.13	0.18	0.00	1.00	528
Total Replants as a % of Total Elm. Removals 1977-79	0.00	-0.02	-0.03	-0.06	-0.07	0.22	1.00

NOTE: Correlations in lower left; number of cases in upper right.

Exhibit A-6   Interrecorrelations among Measures of Performance

REFERENCE

Cannon, William N., Jr. and David P. Worley.

1976   Dutch Elm Disease Control: Performance and Costs. U.S.D.A.
        Forest Research Paper NE-345, Northeastern Forest Experiment Sta-
        tion, Upper Darby, PA.

APPENDIX B

CITIZEN INTERVIEWS

In order to determine the possible importance of the behaviors, per-
ceptions, and attitudes of typical community citizens regarding shade trees
and the local shade tree program, a survey was completed of residents of
selected communities (all with populations of at least 200); this appendix
describes the conduct of that survey. It reviews a number of activities
related to that goal, constraints on the sample of communities and indi-
viduals, a description of the selection of communities chosen as represen-
tative of two regions, selection of dwellings within each community, se-
lection of respondents within each dwelling, and conduct of the telephone
interview itself.

It was impossible to expect to develop descriptions of citizens in
over 500 communities with shade tree programs; time and budget constraints
would allow for no more than several thousand interviews. It was deter-
mined that fifty interviews in each of forty communities was the optimal
mix between scope and precision (details for each community). Eventually,
the interview quota was reduced to 25 for communities with populations less than
2,000 and only 36 communities met the criteria chosen for selection without
excessive redundancy. Further, a sample representative of two regions of
the state was desired (south central and northwest), requiring a system of
selecting respondents representative of urban residents within a region.
These procedures are all described below.

At the completion of the citizen survey, data on attempts to reach
individual respondents were available on 54 communities representing 96.5

percent of all completed interviews (omitting 15 communities in which 3.5 percent of the interviews were completed). In order to obtain 1,608 interviews it was necessary to call 4,048 phone numbers; of these, 1,722 (or 42.5 percent) were not eligible for an interview (16.5 percent were not working phones; 17.9 percent were not located in the appropriate community, or were farms or rural residences; 4.7 percent were not residences of any kind; 3.4 percent involved other problems). Of those 57.4 percent eligible for an interview, interviews were actually completed with 69.1 percent. While complete data is not available, it would appear that approximately half of those refusing to provide an interview were either not interested in being interviewed on any topic, suspicious and concerned, or resented the request for a specific person from the household (part of the interview procedure discussed below). The remainder were evenly divided among those that either had no elms or their property or no responsibility for any trees (frequently those living in apartments), were specifically not interested in trees, genuinely too busy for the interviews, or reflected a number of miscellaneous complications (hearing problems of the elderly, sick or ill, poor command of English, and so forth).

I. Selection of Focal Communities

The forty communities to be selected for citizen interviews, where the results were to be considered typical of their residents, were to be considered most useful for the research if several criteria were met:

1) Participation in the state shade tree program occurred for 1979 and 1980.

2) A range of success in sanitation and replanting program
   effectiveness was represented; this was based solely on the
   state inspectors judgments for community selection.

3) A range of sizes, as determined by the 1970 Census should
   be included.

4) As much as possible, all regions of the state should be
   represented: north, central, south, and metro.

All communities in the state were classified in terms of these four char-
acteristics. In those cases where more than one community met all the
desired criteria, a random number table was used to select the quota of
communities, usually for medium to small communities with moderately
successful programs. Because communities did not exist for all possible
categories (at least 15 distinct types), only 36 cities were eventually
chosen for the citizen surveys. They are presented in Exhibit B-1, two-
digit numbers following the name of the community indicate the number of
completed interviews.

	N	LARGE (Over 10,001)	MEDIUM (2,001 - 10,000)	SMALL (200-2,000)
HIGH EVALUATIONS	11			
Congruent		Duluth 47(N) 100,578	Eden Prarie 50(M) 6,938	Mountain Lake 31(S) 1,986
Excellent or Above		Bloomington 53(M) 91,970	St. Paul Park 48(M) 5,587	*Lakefield 31(S) 1,920
Average on Sanitat-		*St. Cloud 50(C) 41,969	Granite Falls 49(C) 3,255	Lamberton 27(S) 962
ion and Replanting		Moorhead 51(N) 29,687	Aurora 49(N) 2,531	
MODERATE EVALUATIONS	11			
Congruent		Golden Valley 43(M) 24,246	Morris 49(C) 5,366	Aitkin 25(N) 1,553
Average on Sanita-		Albert Lea 51(S) 19,419	Wells 49(S) 2,791	Avon 28(C) 725
tion and Replanting		Stillwater 50(M) 10,191	Spring Valley 50(S) 2,572	Lafayette 48(S) 498
			Lauderdale 56(M) 2,571	*Hanley Falls 23(C) 265
MODERATE EVALUATIONS	4			
Incongruent				
High Sanitation		Coon Rapids 53(M) 30,000	*International	
Lower on Replanting			Falls 43(N) 6,400	
Low Sanitation		*St. Paul 51(M) 309,000	Worthington 44(S) 9,900	
Higher on Replanting				
BELOW AVERAGE	4			
Congruent		*New Ulm 51(S) 13,051	Milaca 50(N) 1,940	North Branch 25(N) 1,106
Below Average on				Birchwood 28(M) 926
Sanitation and				
Replanting				
TERRIBLE	6			
Congruent				
Very Low on			Jackson 40(S) 3,550	*Buhl 24(N) 1,303
Sanitation and			*Dayton 45(M) 2,675	Brownton 23(C) 688
Replanting			Winnebago 40(S) 1,791	Hamburg 25(C) 405

REGION	N	LARGE	MEDIUM	SMALL
North	7	2	2	3
Central	8	1	3	4
Metro	10	5	4	1
South	11	2	5	4
Totals	36	10	14	12

NOTES: Population based on 1970 census figures.
* Indicates selection for a case study.
Demonstrations cities are Fergus Falls, Little Falls, Wadena, Granite Falls, Hutchinson, and Litchfield.
All cities have submitted progress reports for 1979 and are in the program in 1980.

EXHIBIT B-1: SELECTION OF CITIES FOR COMMUNITY
SURVEYS AND CASE STUDIES
(Paul D. Reynolds, 17 July 1980)

II. Regional Samples of Communities

Selection of respondents in two state regions to represent those citizens of urban communities (over 200 residents) that may qualify for or have a shade tree program is a multi-stage process, involving selection of communities, dwellings, and respondents. The procedure is designed so that the communities to be chosen for the sample are selected proportionate to their size. (Sudman, 1976, Chapter 7). The cluster size was chosen as five, found to be optimal for research on attitudes and perspectives (Sudman, 1976, p.81). As 50 interviews were allocated to each region, this resulted in 10 clusters per region. A procedure was developed such that if a given city was a "certainty sampled size" (that is more than 10 percent of all residents of communities over 200 lived in that city), it did not complicate the selection of other communities that had less than 10 percent of eligible urban residents (that is, the remainder continued to be selected proportionate to their size).

The specific procedure used in the selection of these regional communities is presented below:

1) The total urban population of the region was computed by summing the 1977 population for all individuals in cities over 200, excluding townships.

2) The total urban population figure was then divided by the number of five-interview clusters; ten were selected for each region. This yielded the "certainty sampled" city size; 10 percent of the total "urban" population.

3) Any city (or cities) larger than the certainty sampled size was selected and the population of these subtracted from the total "urban" population for the region. The number of clusters needed was then reduced by the number of certainty sampled cities.

4) A new certainty sample size figure was calculated using adjusted population and cluster figures.

5) Any cities larger than the new certain sample figure were selected and appropriate adjustment made to urban population figures and the number of desired clusters.

6) The aforementioned procedure was repeated until there were no cities larger than the final certainty sampled size remaining. This figure was then used as the sampling interval to obtain the remaining cities required. As the cities were listed alphabetically, this should not lead to any systematic bias.

Cities selected by the certainty sample interval were occasionally much larger than that interval and, consequently, were allotted more than one cluster of five interviews. This would result in fewer than 10 cities chosen for that particular region.

The following cities were selected to represent two regions by this process (those indicated with an asterisk (*) were also chosen as focal cities, discussed above, quota of interviews indicated in parentheses):

South Central Region: Dundas (5), Dunnell (5), Good Thunder (5), Hayward (5), Mankato (5), New Ulm* (5), Medford (5), Nerstrand (5), Nicollet (5), Winnebago* (5).

Northwest Region: Climax (5), Crookston (5), Gonvick (5), Greenbush (5), Lake Park (5), Moorhead* (15), St. Hillaire (5), Stephen (5).

Once these cities were selected as units of analysis for their programs, the sampling procedure moved into its second stage whereby the sampling units (residential phone numbers) were selected.

III. Sampling Within Communities

Once communities were selected for citizen interviews, the next stage of the procedure was to select phone numbers for interviewers to call (to be followed by a procedure for selecting a respondent from a household). This involved identifying those phone exchanges and/or phone numbers associated with a given community and selecting an appropriate number to be called on a random basis. Simply generating lists of random numbers (as for exchanges where the first three or four digits were known from state public utility commission data) was not feasible because of the large number of unused banks (last three digits) in small communities. National surveys have found that 80 percent of randomly dialed phone numbers are not connected to residential phones (Cooper, 1964). Consequently, other procedures for developing lists of suitable phone numbers were used.

The initial procedure involved sampling directories from the chosen communities to determine which were the working banks of phone numbers (originally developed by Sudman, 1973). The procedure is self-weighting

in that each bank of phones is given a weight appropriate to the percentage of phones in use in the survey of phone numbers. Once the working banks have been identified, the procedure involves the use of a random number table to generate the last three digits in the seven digit phone number.

This procedure was initially used to generate phone numbers for communities with substantial populations (several thousand or more). In some cases, the directory for communities included the phone numbers of adjacent small communities and resulted in the inclusion of unwanted phone numbers. This led to inquiries of the local phone companies and, contrary to the experiences of other investigators attempting such inquiries in metropolitan areas, the desired information on service areas associated with different phone banks was invariably provided.

However, this method still produced a large percentage of inappropriate phone numbers (no working instrument). Consequently, it was abandoned in favor of an equally effective and less time consuming procedure that involved systematic directory sampling and adding 10 to each phone number selected; ensuring that the instrument was selected at random, that unlisted numbers were not excluded, and the respondents identity would remain unknown.

The systematic directory sampling method used was as follows:

1)   All appropriate directors for the communities selected were obtained.

2)   All pages with phone numbers were totaled.

3)   All phone numbers on a sample of pages (5-20) were counted (more pages for larger directories) to estimate the number of listings per page.

4) This figure was used to estimate the total listings for the directory.

5) Total listings were divided by the number of listings necessary to obtain the interviews scheduled for that community (oversampling allowed for refusals, non-working phones, non-residence phones, etc.).

6) This figure constitutes the sampling interval for the community, used in one of several ways to select phone numbers;

    a) Directory Sampled: After a random start, the sampling interval was used to select specific numbers for small cities or those in the metro region where exchanges were not bounded by city limits.

    b) Modified Random Digit I: Working banks representing the first four digits were estimated by directory sampling and the last three digits were selected at random.

    c) Modified Random Digit II: Specific phone numbers were selected from the directory, after a random start and using the sampling interval, and 10 was added to each one, to ensure anonymity of respondent and inclusion of unlisted phone numbers.

The only major variation from discrete counts involved using rulers to estimate the number of listings per inch; substantially reducing the time required to obtain estimated counts of listings.

The different procedures were used in the different cities as follows:

Directory Sampled (due to small size or no discrete exchange)

Large Focal Communities: Bloomington, Coon Rapids, Golden Valley, St. Paul.

Medium Focal Communities: Dayton, Eden Prairie, Lauderdale, St. Paul Park.

Small Focal Communities: Avon, Birchwood, Buhl, Brownton, Hamburg, Hanley Falls, Lafayette, Lakefield, Lamberton, Mountain Lake, North Branch.

South Central Regional: Dundas, Dunnell, Good Thunder, Hayward, Medford, Nerstrand, Nicollet.

Northwest Regional: Climax, Greenbush, Gonvick, Lake Park, St. Hillaire, Stephen.

Modified Random Digit I & II

Large Focal Cities: Albert Lea, Duluth, Moorhead, New Ulm, St. Cloud, Stillwater.

Medium Focal Cities: Aitkin, Aurora, Granite Falls, Jackson, International Falls, Milaca, Winnebago, Morris, Spring Valley, Wells, Worthington.

South Central Region: Mankato.

Northwest Region: Crookston.

Because of the efficiency and suitability of the modified random digit procedure II, it was used for the resampling of all cities where this was necessary, whether the initial sample was selected by directory sampling or modified random digit procedure I. There is no evidence to suggest that any systematic bias affected the selection of the phone numbers provided to the interviewers; the inability to utilize forty percent of the chosen phone numbers would suggest that all procedures approximated a random selection.

The final result of this process was a list of phone numbers, provided for each community, entered on the attached form (Exhibit B-2). The interviewers then took these numbers and called them to select a respondent for the interview (discussed in the next section). As there was no way of knowing what response will occur when a random phone number is dialed, several alternatives must be ruled out before an adult member of a residence is chosen for an interview. Specifically, those phones not located in any residence (usually commercial establishments) and those in residences outside the community are excluded after the appropriate questions. Most small towns have one exchange that covers all the surrounding area, including farms and rural residences, so this is a major issue in restricting interviews to households within the community. For each phone number, interviewers attempted to reach a person three times on three different days and, as much as possible, different times of the day. If there was no answer after these three attempts it was not considered a "rejection," but placed in the other category. Instructions for the interviewers for the use of the phone list sheets is presented in Exhibit B-3.

AREA CODE [| |] COMMUNITY: _____ COUNTY: _____ SAMPLED BY: _____

EXCHANGE [| |] STATE REGION (if relevant): _____ DATE: _____

B-12

	ATTEMPTS TO CONTACT		Not a working phone	Busy Signal	No Answer	Not in City	Not a Residence	Other Problem	Refused	Respondent not in (Name, interview number in notes)	NOTES	INTERVIEWER
	Time	Date										
I [| | |]												
1)												
2)												
3)												
II [| | |]												
1)												
2)												
3)												
III [| | |]												
1)												
2)												
3)												
IV [| | |]												
1)												
2)												
3)												
V [| | |]												
1)												
2)												
3)												

Exhibit B-2: Example of Phone List Developed for Sampling of Phone Numbers

EXHIBIT B-3

INTERVIEWERS GUIDE

Phone Number Lists

Attempt only the number of interviews required for a community in one evening. Multiple attempts to complete a call which initially resulted in a busy signal may be made in one evening. However, the data and time should not be entered on the phone list more than once per data.

Not in city, not a residence and refusals are not to be considered as a call or attempted call. Therefore, continue on the same phone number list until the required number of interviews or attempts are achieved.

Respondent not in section should be marked and the time, data, and desired person's first name written in the notes section if that is the case or if the person has requested that they be interviewed at a later time or date. Both of these situations are considered as call backs since the number is valid (appropriate) for the survey but an interview could not be completed at that time. Call back questionnaires and the phone number list from which the number was found should be placed in the call back box. If the phone number list also contains "incomplete" (e.g. attempts which resulted in no answer or busy signal) the call back box takes priority over the incomplete box for placement of the phone number list. This is because with a "call back" we have a set time to make a return call whereas an "incomplete" number can be tried at any time. If a "call back" results in a successful interview and the phone list contains incomplete calls, either attempt to   complete those calls or return the phone number list to the incomplete box.

Exhibit B-3 (1 of 2)

The incomplete box contains those phone number lists and the corresponding questionnaires from which calls were attempted at an earlier date. When attempting to make a successful call (not necessarily a successful interview) be sure to use the questionnaire with the number which is located immediately under the last four digits of the number you are calling on the phone number list. If the call does result in another busy signal or no answer return the phone number list to the "incomplete box for tomorrow" with the corresponding questionnaires. After attempts have been made on three separate dates to complete a busy signal or no answer that phone number is considered invalid and no longer constitutes a "call" so a new phone number should be attempted from the same list.

Glossary

Call back: Contact has been made with someone at that number but completion of an interview was scheduled for a later date/time.

Complete: A phone number which has resulted in a complete interview.

Incomplete: A phone number which has not resulted in contact but is still a viable possibility for a completed interview (i.e. busy signal, no answer on first or second try only).

Invalid number: A phone number which has been called three times without any contact or which has resulted in a refusal, non-working phone, nonresidence, or not within the city limits.

Required number of interviews: Each phone number list has a number in the upper right hand corner indicating the number of completed interviews required for that community.

Exhibit B-3 (2 of 2)

IV.   Selection of Adult Respondent from Household

The procedure used to select an adult respondent was taken from one developed by Troldahl and Carter (1964) and presented in Dillman (1978). It involves a matrix with entries based on the number of residents over 18 and the number of those over 18 that are men to locate the appropriate cell.   Because no one choice matrix will provide a proportionate chance to all age and sex relationships in typical households, four versions were used, each identical with regards to the activities for the interviewer. The procedure is presented in the second page of the questionnaire (following).

Conduct of the Interview

Follows the format and content of the interview schedule, attached.

Most were completed in approximately 15 minutes.

TIME STARTED: _____ TIME COMPLETED: _____

	Card 1	Col 1

INTERVIEW NUMBER: |_____| Col 2-5

CITY OF INTERVIEW: _____ CODE NO: |__|__|__| Col 6-8

COUNTY OF INTERVIEW: _____CODE NO: |__|__| Col 9-10

STATE REGION: _____CODE NO. |__.__| Col 11-12

INTRODUCTION TO THE SELECTION PROCEDURE:

I am calling from a project at the University of Minnesota that is studying programs to control diseases killing the shade trees in many Minnesota communities, especially the Dutch elm disease. We would like to interview an adult from your residence about trees and programs designed to preserve them. This phone number was drawn at random from those in the community.

It is important that we interview a man in some households and a woman in others so that the results will truly represent all the people of your area. To find out who I need to talk to in your household, I need to ask several short questions.

S-1   How many people live in your household?   Col 13-14

S-2   How many of these are 18 years or older, including yourself?   Col 15-16

(CIRCLE ANSWER IN ROW)

S-3   How many are men? _____

(CIRCLE ANSWER IN COLUMN)

	1	2	3	4+
0	WOMAN	YOUNGEST WOMAN	OLDEST WOMAN	OLDEST WOMAN
1	MAN	WOMAN	MAN	YOUNGEST WOMAN
2		YOUNGEST MAN	OLDEST MAN	OLDEST MAN
3			OLDEST MAN	YOUNGEST MAN
4+				YOUNGEST MAN

INDICATE PERSON SELECTED
FOR INTERVIEW BELOW:

WOMAN   1
MAN   2
YOUNGEST WOMAN   3
YOUNGEST MAN   4   Col 17
OLDEST WOMAN   5
OLDEST MAN   6
DOES NOT APPLY   8
REFUSAL   9

(INTERVIEWER: CIRCLE CATEFORY AT INTERSECTION AND USE IN THIS SENTENCE.)

According to the method we are using, I should interview the _____
over 18 in your household.   (FROM MATRIX)

(IF PERSON ON PHONE IS RIGHT INDIVIDUAL)   (IF PERSON ON PHONE IS WRONG INDIVIDUAL)

Would that be you?

            YES.....1
            NO......2————→ May I speak to that person?
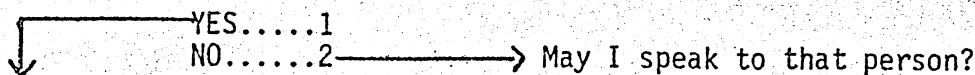
START INTERVIEW HERE   YES....1——→ START INTERVIEW NEXT PAGE
                                                   NO.....2

                                                   When may I call back to reach
                                                   (him/her)_____?

The following questions will take no more
than 15 minutes, I might add that all infor-
mation will be confidential, you will remain
anonymous, and I would be happy to answer   So that I will know who to ask for
any questions you might have about the study   when I call back, could I have their
at anytime--now or later--during the   first name, the last name is not
interview.   necessary?

Do you have any questions at this time?   FIRST NAME: _____
May we begin?

IF THERE IS A NEW PERSON ON THE PHONE, REPEAT THE FOLLOWING

↓

This is _____ at the University of Minnesota.
        (INTERVIEWER'S FULL NAME)

I am with a project that is studying programs to control diseases killing the shade trees in many Minnesota communities, especially the Dutch elm disease. We would like to interview you on trees and programs designed to preserve them. This phone number was selected at random and you were selected at random from among the adults in your household.

Do you have any questions at this time?

May we begin?

IF THEY REFUSE TO BEGIN THE INTERVIEW, PLEASE ASK FOR THE REASONS AND RECORD THEM BELOW.

1) I will list some features of neighborhoods for you. Please tell me whether you consider those to be excellent, satisfactory, needing some work or needing lots of work in your neighborhood.

		EX-CEL-LENT	SATIS-FAC-TORY	NEED SOME WORK	LOTS OF WORK	DOES NOT APPLY	DO NOT KNOW	REFUSE	
(a)	Condition of streets, curbs, sidewalks, etc.	1	2	3	4	7	8	9	Col 18
(b)	Street lighting	1	2	3	4	7	8	9	Col 19
(c)	Trash garbage, collection	1	2	3	4	7	8	9	Col 20
(d)	Exterior condition of homes, buildings	1	2	3	4	7	8	9	Col 21
(e)	Shade trees	1	2	3	4	7	8	9	Col 22
(f)	Conditions of yards, shrubs, and plants around the homes and buildings	1	2	3	4	7	8	9	Col 23
(g)	Conditions of parks and other areas maintained by the local government	1	2	3	4	7	8	9	Col 24

2a) Shade trees offer several advantages. Do you consider them as "extremely important," "very important," "somewhat important," or "unimportant" for....

	EX-TREMLY	VERY	SOME-WHAT	UN	DOES NOT APPLY	DOES NOT KNOW	REFUSE	
....the appearance or the neighborhood and homes	1	2	3	4	7	8	9	Col 25
....property values of homes and buildings	1	2	3	4	7	8	9	Col 26
....summer shade and winter windbreaks	1	2	3	4	7	8	9	Col 27

2b)

	EX-TREMLY	VERY	SOME-WHAT	UN	DOES NOT APPLY	DOES NOT KNOW	REFUSE	
All things considered, do you feel shade trees are "extremely important," "very important," "somewhat important," or "unimportant"	1	2	3	4	7	8	9	Col 28

3) Approximately how many elm trees are on your property, that is around your residence?

TWO DIGIT NUMBER	[|] Col 29-30
TOO MANY TO COUNT (1+ acres)	75
DOES NOT APPLY	77
DOES NOT KNOW	88
REFUSE	99

4) Approximately how many elms are next to your property, on public or city land, such as a boulevard?

TWO DIGIT NUMBER	[|] Col 31-32
DOES NOT APPLY	77
DOES NOT KNOW	88
REFUSE	99

5) What percentage of the trees in your neighborhood are elms, all (100%), most (75%), some (50%), a few (5-25%), or none.

ALL	1
MOST	2
SOME	3
FEW	4
NONE	5
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSAL	9

Col 33

6) Do you consider the Dutch elm disease a major threat, important threat, moderate threat, or not threat to the shade trees in your neighborhood?

MAJOR	1
IMPORTANT	2
MODERATE	3
GO TO Q.9 ← NO	4
NO THREAT BECAUSE ALL ELMS ARE GONE	5
DOES NOT APPLY	7
GO TO Q.9 ← DOES NOT KNOW	8
REFUSAL	9

Col 34

7) When did Dutch elm disease first become a problem in your neighborhood?

ESIMTATED YEAR, TWO DIGITS |___|___|

DOES NOT APPLY 07

DOES NOT KNOW 08   Col 35-36

REFUSAL 09

8) How many trees have you every reported, suspecting they may be infected?

ESTIMATE, TWO DIGIT NUMBER |___|___|

DOES NOT APPLY 77

DOES NOT KNOW 88   Col 37-38

REFUSAL 99

9) How many times have you or someone in your household chemically treated elm trees to prevent them from becoming infected? Please include multiple treatments of the same tree in your estimate. (IF SAME TREE TREATED TWICE, COUNT THAT AS TWO.)

ESTIMATE, TWO DIGIT NUMBER |___|___|

DOES NOT APPLY 77

DOES NOT KNOW 88   Col 39-40

REFUSAL 99

10) How many infected elm trees have been removed from your property not counting those for which the local government is responsible, such as those on boulevards?

ESTIMATE, TWO DIGIT NUMBER |___|___|

DOES NOT APPLY 77

DOES NOT KNOW 88   Col 41-42

REFUSAL 99

11) How many new shade trees have you, or someone in your household, planted to replace those lost, or expected to be lost, to disease?

ESTIMATE, TWO DIGIT NUMBER |___|___|

DOES NOT APPLY 77

DOES NOT KNOW 88   Col 43-44

REFUSAL 99

12) How many infected shade trees has local government had removed from public property next to yours?

ESTIMATE, TWO DIGIT NUMBER	⌐	⌐
DOES NOT APPLY	77
DOES NOT KNOW	88
REFUSAL	99

Col 45-46

13) In the last few years, how many new shade trees have been planted by local government on public property next to yours?

ESTIMATE, TWO DIGIT NUMBER	
DOES NOT APPLY	77
DOES NOT KNOW	88
REFUSAL	99

Col 47-48

14) How often have you helped care for the government planted trees by watering them: frequently, sometimes, or not at all?

FREQUENTLY	1
SOMETIMES	2
NOT AT ALL	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSAL	9

15) How often did you use firewood last winter, several times a week, once a week, once a month, or never?

SEVERAL TIMES A WEEK	1
ONCE A WEEK	2
ONCE A MONTH	3
NEVER	4
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSAL	9

Col 50

GO TO Q.18 ←

16) Approximately what proportion of the firewood was elm, all, three-quarters, half, one-quarter, or none?

ALL	1	
THREE-QUARTERS	2	
HALF	3	
ONE-QUARTER	4	Col 51
NONE	5	
DOES NOT APPLY	7	
DOES NOT KNOW	8	
REFUSAL	9	

GO TO Q.18 ←———
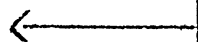
17) What proportion of the elm logs did you debark before storage, all, three-quarters, half, one-quarter, or none?

ALL	1	
THREE-QUARTERS	2	
HALF	3	
ONE-QUARTER	4	Col 52
NONE	5	
DOES NOT APPLY	6	
DOES NOT KNOW	7	
REFUSAL	8	

18) In many communities the homeowners have formed neighborhood organizations to help with the shade tree problem. As I list some activities, please tell me how often you or someone in your household worked with others on them: a great deal, once or twice, or never.

	GREAT DEAL	ONCE OR TWICE	NEVER	DOESN'T APPLY	DOESN'T KNOW	REFUSAL	
(1) Chemically treating trees	1	2	3	7	8	9	Col 53
(2) Identifying and reporting infected trees	1	2	3	7	8	9	Col 54
(3) Removing infected trees	1	2	3	7	8	9	Col 55
(4) Replanting or replacing infected trees	1	2	3	7	8	9	Col 56

19) Some people have attempted to encourage their local government to keep the shade trees. Have you personally taken any action of this sort, often, once or twice, or never as

	OFTEN	ONCE OR TWICE	NEVER	DOESN'T APPLY	DOESN'T KNOW	REFUSAL	
(a) an individual, such as sending letters, phoning, or paying visits	1	2	3	7	8	9	Col 57
(b) as part of a collective or group	1	2	3	7	8	9	Col 58

20) Many communities have programs designed to conserve and maintain shade trees, focusing upon the control of Dutch elm disease. For each item, please answer as yes, probably yes, probably no, or no.

	YES	PROB YES	PROB NO	NO	DOESN'T APPLY	DON'T KNOW	REFUSE	
(a) Does a special phone number exist for reporting elms suspected of being infected?	1	2	3	4	7	8	9	Col 59
(b) Is financial assistance available to help private citizens remove infected elm trees?	1	2	3	4	7	8	9	Col 60
(c) Is there a penalty for private citizens who fail to remove infected elm trees promptly after notification?	1	2	3	4	7	8	9	Col 61
(d) Is there any financial assitance for private citizens to replace infected elms with new shade trees?	1	2	3	4	7	8	9	Col 62

22) What percentage of effort do you think a shade tree program for your community should place on treatment to prevent disease, removal of diseased trees, or replacement? Please give the percentage for each. The total should equal 100%.

		DOESN'T APPLY	DON'T KNOW	REFUSE	
(a) Chemical treatment to prevent disease	�	777	888	999	Col 63-64
(b) Removal of infected trees	�	777	888	999	Col 65-66
(c) Replacement of lost trees with new trees	�	777	888	999	Col 67-68

TOTAL SHOULD EQUAL 100%

22) If an adequate shade tree program required a special tax on all property in your community, how much additional property tax would you be willing to pay each year--none, an additional $10, $25, $50, $100, $200 or more?

NOTHING	1
$10/YEAR	2
$25/YEAR	3
$50/YEAR	4
$100/YEAR	5
$200 OR MORE/YEAR	6
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSAL	9

Col 69

23) If there is a shade tree program in your community, do you consider its efficiency and effectiveness to be excellent, above average, average, below average, or terrible?

EXCELLENT	1
ABOVE AVERAGE	2
AVERAGE	3
BELOW AVERAGE	4
TERRIBLE	5
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSE	9

Col 70

24) In general, how efficient and effective do you consider your local government to be: excellent, above average, average, below average, or terrible?

EXCELLENT	1
ABOVE AVERAGE	2
AVERAGE	3
BELOW AVERAGE	4
TERRIBLE	5
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSAL	9

Col 71

25) Local governments like the city or county can deal with a number of community problems. I will list some of these problems and then would you tell me what you think your local government should provide: a great deal, much, some, or no attention to the following......

CIRCLE THE RESPONDENT'S ANSWER

		GREAT DEAL	MUCH	SOME	NONE	DOESN'T APPLY	DON'T KNOW	REFUSE	
(a)	Housing quality	1	2	3	4	7	8	9	Col 72
(b)	Recreational facilities	1	2	3	4	7	8	9	Col 73
(c)	Job opportunities	1	2	3	4	7	8	9	Col 74
(d)	Health care	1	2	3	4	7	8	9	Col 75
(e)	Education	1	2	3	4	7	8	9	Col 76
(f)	Fire prevention	1	2	3	4	7	8	9	Col 77
(g)	Crime	1	2	3	4	7	8	9	Col 78
(h)	Sanitation and garbage collection	1	2	3	4	7	8	9	Col 79
(i)	Racial problems	1	2	3	4	7	8	9	Col 80

		GREAT DEAL	MUCH	SOME	NONE	DOESN'T APPLY	DON'T KNOW	REFUSE	
(j)	Neighborhood appearance	1	2	3	4	7	8	9	Col 6

26) In general, do you think the local governments should concentrate on solving the problems of the present generations of people, future generations of people, or give equal emphasis to the present and future generations?

PRESENT GENERATION	1
EQUAL EMPHASIS	2
FUTURE GENERATIONS	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSAL	9

Col 7

27) There is a lot of talk about liberals and conservatives; how do you consider yourself in terms of this characteristic -- liberal, slightly liberal, moderate, slightly conservative, or conservative?

LIBERAL	1	
SLIGHTLY LIBERAL	2	
MODERATE	3	Col 8
SLIGHTLY CONSERVATIVE	4	
CONSERVATIVE	5	
DOES NOT APPLY	7	
DOES NOT KNOW	8	
REFUSAL	9	

28) Before ending the interview, I would like to ask you a few questions about yourself. For example, do you own or rent your dwelling?

OWN	1	
RENT	2	
DOES NOT APPLY	7	
DOES NOT KNOW	8	Col 9
REFUSAL	9	

29) Which of the following best describes your home or dwelling?

(a) single family dwelling on a city lot (detached; no shared walls) 1

(b) single family dwelling on one or more acres (detached; no shared walls) 2

(c) apartment or condominium 3   Col 10

(d) single family dwelling, such as a rowhouse or a townhouse (attached; one or more shared walls) 4

(e) mobile home or trailer 5

(f) other (specify) _____ 6

DOES NOT APPLY 7

DOES NOT KNOW 8

REFUSAL 9

30) Could you tell me......

		LESS THAN 1 YR	1-5 YRS	6-10 YRS	10-20 YRS	21-40 YRS	40+ YRS	DOESN'T APPLY	DON'T KNOW	REFUSE	
(a)	how long you have lived in your present dwelling	1	2	3	4	5	6	7	8	9	Col 11
(b)	how long you have lived in your present community	1	2	3	4	5	6	7	8	9	Col 12
(c)	how long you have lived within Minnesota	1	2	3	4	5	6	7	8	9	Col 13

31) Would you please tell me your age?

TWO DIGIT NUMBER |___|___|

DOES NOT APPLY 07

DOES NOT KNOW 08

REFUSAL 09

Col 14-15

32) Would you tell me about how many hours in a typical week you engage in work-for-pay?

TWO DIGIT NUMBER |___|___|

RETIRED 95

DISABLED 96

DOES NOT APPLY 97

DOES NOT KNOW 98

REFUSAL 99

Col 16-17

33) Would you tell me about how many hours per week you engage in housework or care of the house and yard?

TWO DIGIT NUMBER |___|___|

DISABLED 96

DOES NOT APPLY 97

DOES NOT KNOW 98

REFUSAL 99

Col 18-19

34) Would you tell me the last grade you completed in school?

SIXTH GRADE OR LESS	01	
SEVENTH-EIGHTH GRADE	02	
NINTH-ELEVENTH GRADE	03	
COMPLETED HIGH SCHOOL/ EARNED A DIPLOMA	04	Col 20-21
POST HIGH SCHOOL, COLLEGE OR TECHNICAL	05	
COLLEGE DEGREE OR DEGREES	06	
MA OR OTHER POST-GRADUATE WORK	07	
PROFESSIONAL DEGREE; PHD, LLB, MD, ETC.	08	
DOES NOT APPLY	77	
DOES NOT KNOW	88	
REFUSAL	99	

35) What was the approximate annual income, before taxes, for all members of the household during 1979? Was it.....

(REPEAT UNTIL "YES" THEN CIRCLE ANSWER)

less than $5,000	01	
less than $7,500	02	
less than $10,000	03	
less than $12,500	04	
less than $15,000	05	Col 22-23
less than $20,000	06	
less than $30,000	07	
less than $40,000	08	
less than $50,000	09	
more than $50,000	10	
DOES NOT APPLY	77	
DOES NOT KNOW	88	
REFUSAL	99	

36) This completes the interview, thank you very much for your time and patience. Do you have any other comments or questions regarding the interview or the study?

37) Goodbye.

38) INTERVIEWER NAME: _____ CODE NO. |___|___|___| Col 24-25

39) DATE COMPLETED: _____ MONTH |___|___|___| DAY |___|___|___| Col 26-29

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APPENDIX C

PROGRAM "MANAGER" INTERVIEWS

In order to develop a more complete description of the local shade

tree programs, the context in which they operate, and relationships to the

state program, interviews with program managers were considered an impor-

tant source of information. Further, as one of the major issues for ex-

ploration was the failure of communities to participate in the state pro-

gram, "managers" of programs that had dropped out of the state program or

had never become involved in the state program were also interviewed: the

last two types are considered non-participating cities. In each case there

were two different issues related to the selection, choice of community and

choice of individual to respond as program "manager."

I. Cities Participating in the State Program

As there were over 500 active local programs in 1980 it was clear that

it would not be possible to interview the managers of all the programs;

time and budget constraints seemed to allow for approximately one half to

be included in the sample. It was considered desirable for the communities

chosen to have the following characteristics:

1)   Actively involved in the state program in 1980.

2)   Involved in 1979 and having filed a year-end report.

3)   Evenly divided with regards to size of the community (small, medium,
     large).

4)   Distributed among the four major regions of the state (north, central,
     south, and metro area).

All cities that met these criteria were identified, as these include the 36

communities chosen for the citizen surveys they were also placed in the

manager survey sample. Remaining cities were chosen to be distributed among the twelve categories (3 sizes and 4 state regions) to represent the distribution of active programs in those categories (the percentage of sample in each category to equal the percentage of active programs in each category of community). In those cases where active programs exceeded the sample quota, communities were selected at random for inclusion within the sample.

All contacts with the city officials were initiated after a letter of introduction, describing the study, was sent to the program manager provided by the State Shade Tree program office. These letters were sent in groups of 60-70 over a four week period, one group each week. A copy of the letter is provided in Exhibit C-1.

For cities participating in the state program, interviewers first attempted to contact program managers. Telephone numbers were usually obtained either from directory assistance or from the 1980 Directory of Minnesota Municipal Officials. In smaller communities, interviewers initially called city clerks (because almost all cities listed telephone numbers for clerks), and in larger cities, interviewers initially called an appropriate agency of the city government (such as the Parks and Recreation Department) to obtain additional information about contacting program managers.

After contacting a program manager the interviewer either completed the interview or set up an appointment to do so. As the survey progressed, however, several changes became necessary: First, interviewers quickly discovered that program managers were not always well-qualified to answer the survey questions. In some larger cities, for example, the program manager had little knowledge of the actual operation of the program or the
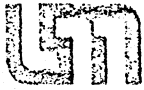
UNIVERSITY OF MINNESOTA
TWIN CITIES

Center for Urban and Regional Affairs
311 Walter Library
117 Pleasant Street S.E.
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(612) 373-7833

31 July 1980

The Center for Urban and Regional Affairs at the University of Minnesota, under contract to the Department of Agriculture, is conducting a study of shade tree programs. The objective is to examine the differences among the various shade tree programs in operation throughout the state.

Telephone interviews with the individuals who have operating responsibilities for shade tree programs are being conducted. These interviews will supplement what is already available in applications and reports. All information will be confidential and all participants will remain anonymous.

You may expect a phone call for an interview sometime during the next week. If you do not have the operating responsibility for the shade tree program in your area, please direct the interviewer to the correct person. A more convenient time for the interview can easily be arranged if you are busy when we first call. Should you have any questions about the project, please get in touch with any of the co-investigators listed below.

Thank you for your help.

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   Regional Affairs
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   Sociology
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Exhibit C-1   Letter of Introduction
              Sent to Program Managers

extent of the diseases in the community since the role was strictly admin-istrative; in some smaller cities the program manager was the city clerk, familiar with the necessary paperwork, but not with program activities as the primary responsibility for program operations were delegated to a tree inspector. In both of these cases, public officials other than the program managers usually were better able to respond to the survey questions because they were familiar with both the administrative and the operational aspects of the program.

Consequently, although interviewers continued to make initial contact with program managers, they found it necessary to determine the appropriate public official on a case by case basis. A short screening with self-selection sufficed: after contacting program managers, interviewers explained the purpose of the survey, provided an indication of the types of questions asked, and then asked whether the program manager felt his or her role made them qualified to respond to the survey, or whether another official would be more appropriate. Program managers frequently referred interviewers to tree inspectors on the basis of this initial screening.

Another change in contact procedures resulted from a necessary division of labor as more interviewers were used. In order to coordinate the effort, one person made the initial contacts and set up appointments, while others completed the actual interviews. This not only allowed one person to become familiar with special circumstances and situations where contact was difficult, it also facilitated a smooth scheduling of interviews. With a centralized interview schedule it was possible to disperse the numbers scheduled and also adjust the numbers of interviewers needed to the daily schedule.

Although most interviews were scheduled during regular office hours, small town public officials who worked in non-government jobs occasionally requested evening interviews; these were completed by the evening citizen interviewers. A more difficult scheduling problem arose when interviewers discovered that the selected public official served several communities (as either program manager or tree inspector) and was unwilling to be interviewed for each community. In these instances, interviewers attempted to select alternate officials but were usually unsuccessful; those communities seemed to be those where one individual operated the entire program and no one else had a great deal of knowledge about it. Therefore, officials from these cities were not interviewed.

Letters of introduction were sent to the officials listed in Exhibit C-2 representing local programs participating in the state shade tree program. As a total of 251 individuals were initially contacted and 239 eventually interviewed, the completion rate was 95 percent. There were very few direct refusals to provide the requested information.

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Mr. Don Boese
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City of Cloquet
Cloquet, MN 55720

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City of Cold Spring
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Ms. Reyna Sharpe
City of Cosmos
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City of Cottage Grove
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City of Deephaven
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City of Dovray
Dovray, MN 56125

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City of Dundas
Dundas, MN 55019

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City of Elmore
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Mr. William Brouwer
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City of De Graff
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II. Cities Not Participating in the State Program in 1980

For non-participating cities, a different selection procedure was used. The basic referenced list was a map where the participation status and population of each city in the state was indicated. From this map, a list of non-participating cities was prepared. Cities were selected to be interviewed by random sampling from that list.

The map was prepared using participation lists from the Shade Tree Program, Minnesota Department of Agriculture,* and the 1970 Census of Population. The Shade Tree lists enabled cities to be typed 1) always in program (in 1977-78 and 1980), 2) recent participants (in 1980, not 1977-78), and 3) dropped (in 1977-78, out 1980). All other cities listed in the Census were labeled 4) never in. The Census data permitted mapping each type by population size class.

Of primary concern here were city types 3 and 4: dropped and never in. For each of these types a separate list was prepared by scanning the map from north to south. These lists were further organized by city size class.

The sampling from these lists was stratified in two ways. First, higher sampling rates were used in the south.** More northerly cities had the excuse of no elms or no disease for not participating, while more complex answers would be necessary in the south. Second, higher sampling rates were used for the largest cities. Smaller cities had very low participation rates: largely due to lack of organization or resources. Larger cities would have more complex reasons. With about 30 cities to be selected in each city type 10 were to be large (900 or more people), 10 medium (400-899), and 10 small (under 400). The details of each sampling procedure are given below.

1. Dropped. Seventy-six cities were classified as having dropped from the program. Because of the nature of this class, the sample was naturally biased towards southern cities and no extra stratification was required.

    a. 9 large cities -- survey each yielding 9.

    b. 18 medium cities -- from a random start, select every other city yielding 9.

---

*The current participants were listed in a brief handout entitled "1980 Participating Municipalities by County." Minor adjustments were made to this list subsequently. Earlier participation is noted in Report to the Legislature, 1977-78.

**Roughly defined as south of the northern edge of Stearns county.

c. 49 small cities -- from a random start select every
   fifth city yielding 10.

The sample would then include 28 cities. Of these, one small
and one medium-size city were subsequently returned to the
program eliminating them from further study. In one addition-
al small city, as might be expected, no contact could be made.
The final sample then contained 25 cities. See Exhibit C-3.

2. Never in. Nearly four times as many cities (288) have never
   participated in the state Shade Tree Program. The preponderance
   of these were northern cities. The sampling procedure follows:

   a. 22 large cities

      1) 2 from south -- survey each yielding 2.

      2) 20 from north -- from a random start select every
         third city yielding 7.

   b. 59 medium cities

      1) 19 from south -- from a random start select every
         third city yielding 6.

      2) 40 from north -- from a random start select every
         eighth city yielding 5.

   c. 207 small cities

      1) 57 from south -- from a random start select every
         tenth city yielding 6.

      2) 150 from north -- from a random start select every
         fiftieth city yielding 3.

The sample would then include 29 cities. One medium city insisted
it had participated earlier and was not interviewed reducing the
sample to 28. See Exhibit C-3.

EXHIBIT C-3

NON-PARTICIPATING CITIES

Dropped (participation during 1977-78, not 1980)

Albertville	Harmony	Sargeant
Bricelyn	Kenyon	Sartell
Clinton	Nashwauk	Slayton
Cook	Pine City	Trimont
Delhi	Proctor	Two Harbors
Ellendale	Round Lake	Waldorf
Emmons	Rushmore	Walters
Ghent	St. Charles	Willow River

Never Participated

Argyle	Graceville	Minnesota Lake
Ashby	Granada	Norcross
Barnesville	Grand Marais	Regal
Baudette	Hoyt Lakes	Sherburn
Claremont	Isle	Sturgeon Lake
Dassel	Kimball Prairie	Trosky
Deer River	Long Prairie	Utica
Farwell	Meire Grove	Walker
Gary	Menahga	Warren
Goodhue		

The basic criteria for selection of public officials for interviews in nonparticipating cities varied somewhat depending on whether or not the city had ever participated in the state program. In cities that formerly participated, program managers were contacted to determine whether they actually had a good "working knowledge" of the program (that is, a familiarity with its creation and operation, and the nature and extent of the disease in the community) or whether their position as program manager was primarily an administrative title. After explaining that the questionnaire covered a wide range of subjects that were not primarily technical in nature, or even after giving a sample of the types of questions asked, the interviewer asked for the person who could best provide this information. Frequently, particularly in larger cities, the program managers referred interviewers to tree inspectors or employees of the park and recreation departments.

In cities that never participated in the state program, interviewers sought the public official with the greatest knowledge of the community's shade trees, the diseases affecting them, or the community's decision not to participate in the state program. Most often, this was either the clerk or the mayor.

In all nonparticipating cities, however, the initial explanation of the general nature of the survey alleviated some of the feelings of inadequacy public officials had about their ability to comment on the technical aspects of the program or the diseases. The hesitancy to respond to questions on matters they were not familiar with, or questions which did not directly apply to their particular situation, presented far greater problems

than either the unavailability or uncooperativeness of the selected public officials.

Since we initially contacted the selected officials to set up appointments for interviews (at their convenience and up to one week in advance) most were available at some time; in fact, only one individual was unavailable and no satisfactory alternate could be found because he was the clerk/tree inspector/program manager.

Cooperation presented a somewhat greater problem, especially in smaller cities that formerly participated (the "drop-outs"). Public officials contacted at their place of work (nongovernmental) were almost all willing to be surveyed, for example, but they were hesitant to devote 30 minutes to the interview. If selected officials were unable or unwilling to cooperate, they were asked to refer interviewers to another appropriate official.

III. Conduct of the "Manager" Interviews

Once the appropriate individuals were identified within the community government, the interview was conducted in such a way to follow the schedule, attached. But the actual procedure was modified, depending upon the status of the community's shade tree program.

Communities currently in the state program. The interview schedule was designed for these communities and was followed as presented.

Communities that had dropped out of the state program. All references to the program were changed to the past tense in the discussion. Questions 6b, 18, 19, 25-27, 29, 30, 32, 33, 42, 44, and 50 were omitted from the interview as inappropriate. Depending upon whether the city

official responding was the city clerk or had served as tree inspector, additional questions may have been omitted as inappropriate.

Communities that had never been involved in the state shade tree program. The occurence of elm or red oak trees was the first topic covered; if these were not present in the community, the interview was terminated. The first question was reworded, but the same issues were explored; why no program? The second question was modified to include only those types of pressures relevant for the specific community. Questions 3b, 4, 6b, 7a, 7b, 10-11, 15, 16, 18, 19, 22-27, 29-35, 38, 41, 42, 44, 48-51 were omitted from the interview. Many of the responses were somewhat ambiguous; officials were obviously trying to be cooperative but had few judgments indicating strong confidence in either their knowledge or opinions. Many considered that most questions did not apply to their situation.

SHADE TREE PROGRAM

Telephone Interview

TIME STARTED: _____   TIME COMPLETED: _____

	CARD __1__	COL 1

INTERVIEW NUMBER: |_____| COL 2-5

CITY OF INTERVIEW (NAME):_____ CODE NO. |__|__|__| COL 6-8

COUNTY OF INTERVIEW (NAME):_____ CODE NO. |__|__| COL 9-10

STATE REGION (NAME): _____ CODE NO. |__|__| COL 11-12

1. Is there now or has there ever been a special program for shade trees in your community? (NOT JUST A GENERAL TREE PROGRAM)

┌─NO

 YES ─

 DID HAVE; NONE NOW ─────┐

a) What year did it start? 19____   COL 13-14

b) What year did it close down?   19____   COL 15-16

c) Why was the program dropped? Please list the reasons.

1) _____ |__|__| COL 17-18

2) _____ |__|__| COL 19-20

3) _____ |__|__| COL 21-22

4) _____ |__|__| COL 23-24

5) _____ |__|__| COL 25-26

NOW HAVE A PROGRAM ─────┐

a) What year was it started?   19____   COL 27-28

b) Why was the program started? Please list the reasons.

1) _____ |__|__| COL 29-30

2) _____ |__|__| COL 31-32

3) _____ |__|__| COL 33-34

4) _____ |__|__| COL 35-36

5) _____ |__|__| COL 37-38

2. There are a number of ways that local government could be influenced to start a shade tree program. Please tell me which of the following you think important, somewhat important, or not important for starting a shade tree program in your community:

	IMPORT-ANT	SOMEWHAT IMPORT-ANT	NOT IMPORT-ANT	DOES NOT APPLY	DOES NOT KNOW	REFUSED	
a) Several concerned, energetic individuals	1	2	3	7	8	9	COL 39
b) One or more organized groups of citizens	1	2	3	7	8	9	COL 40
c) Attention given to the shade trees in the local mass media—newspapers, TV, radio, etc.	1	2	3	7	8	9	COL 41
d) Neighborhood organizations, developed to control disease or re-plant trees	1	2	3	7	8	9	COL 42
e) Pressure from adjucant communities or adjucant local governments	1	2	3	7	8	9	COL 43
f) Pressure from other local governments, such as regional or county units	1	2	3	7	8	9	COL 44
g) Incentives from state or national government agencies	1	2	3	7	8	9	COL 45
h) Other (1) Specify: _____	1	2	3	7	8	9	COL 46
i) Other (2) Specify: _____	1	2	3	7	8	9	COL 47
j) Other (3) Specify: _____	1	2	3	7	8	9	COL 48

3. If your community had a program for the control of shade tree diseases, was it formally affiliated with the state's shade tree program that started in 1977?

NO ─────────────────────────────►

a) Why did your community not join the state program? Please list the reasons.

1) _____ |_|_|_| COL 49-50

2) _____ |_|_|_| COL 51-5_

3) _____ |_|_|_| COL 53-54

4) _____ |_|_|_| COL 55-56

5) _____ |_|_|_| COL 57-58

YES ─────────────────────────────►

b) Why did you join the state program? Please list the reasons.

1) _____ |_|_|_| COL 59-60

2) _____ |_|_|_| COL 61-62

3) _____ |_|_|_| COL 63-64

4) _____ |_|_|_| COL 65-66

5) _____ |_|_|_| COL 67-68

4. Has your program dropped out of the state program?

NO ─────────────► (Go to Question 5)

YES ─────────────────────────────►

a) When did you drop out of the state program?   19____   COL 69-70

b) Why did you drop out of the state program? Please list the reasons.

1) _____ |_|_|_| COL 71-72

2) _____ |_|_|_| COL 73-74

3) _____ |_|_|_| COL 75-76

4) _____ |_|_|_| COL 77-78

5) _____ |_|_|_| COL 79-80

5. Could you give me some of your judgements about the current opera-
tion of the state program? For example, do you consider the timing
of its initiation—it was started in 1977—as too late to help your
community, just in time for the problems in your community, or in
plenty of time to allow an effective strategy for shade trees to be
created and maintained?

TOO LATE	1
JUST IN TIME	2
PLENTY OF TIME	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 6

6. Do you consider the financial assistance available as more than
adequate, about right or inadequate for your community?

MORE THAN ADEQUATE	1
ABOUT RIGHT	2
INADEQUATE	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 7
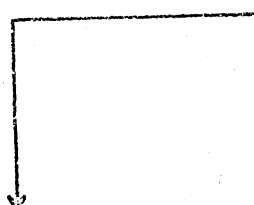
a) If inadequate, what should the additional funds provide?

1) _____ |__|__| COL 8-9

2) _____ |__|__| COL 10-11

3) _____ |__|__| COL 12-13

b) After December 31, 1980, it will no longer be possible to
enact a special levy in excess of the maximum mill rate for
shade tree programs. Will this change have a substantial,
modest, or no effect upon the program in your community?

SUBSTANTIAL	1
MODEST	2
NO EFFECT	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 14

7. In terms of the administration of the state shade tree program, could you tell me if you agree, slightly agree, slightly disagree, or disagree with the following statements?

	A	SA	SD	D	DOES NOT APPLY	DO NOT KNOW	REFUSED	
a) The technical review of the community programs has helped to improve them	1	2	3	4	7	8	9	COL 15
b) The application and reporting forms are clear and straightforward	1	2	3	4	7	8	9	COL 16
c) The application and reporting forms are not excessive in number	1	2	3	4	7	8	9	COL 17
d) It does not take too long to receive payments after the reports are filed	1	2	3	4	7	8	9	COL 18

8. The State Shade Tree Law mandates the structure of the Shade Tree Program that assists individual communities. Are there changes you would like to see in the state law? Could you list them?

1) _____ |__|__| COL 19-20

2) _____ |__|__| COL 21-22

3) _____ |__|__| COL 23-24

4) _____ |__|__| COL 25-26

5) _____ |__|__| COL 27-28

9. Has there been any attempt on the part of business or foundations or private citizens to help with the control of shade tree diseases or replacement of trees? What form of assistance has been provided?

1) _____ |__|__| COL 29-30

2) _____ |__|__| COL 31-32

3) _____ |__|__| COL 33-34

4) _____ |__|__| COL 35-36

5) _____ |__|__| COL 37-38

The following questions are related to the operation of your community's shade tree program.

10. In what year was the Dutch elm disease first identified in your community?

TWO DIGIT NUMBER 19 ☐☐

DOES NOT APPLY 07

DOES NOT KNOW 08 COL 39-40

REFUSED 09

11. In most cases it is some time after the first tree is infected before Dutch elm disease begins to spread rapidly and become a major problem. In what year did the disease first "takeoff" in your community?

TWO DIGIT NUMBER 19 ☐☐

DOES NOT APPLY 07

DOES NOT KNOW 08 COL 41-42

REFUSED 09

12. What do you consider to be the original source of infection of Dutch elm disease in your community?

1) _____ ☐☐ COL 43-44

2) _____ ☐☐ COL 45-46

3) _____ ☐☐ COL 47-48

DOES NOT APPLY 7

DOES NOT KNOW 8 COL 49

REFUSED 9

13. The proximity of wild elms may have a considerable impact upon the spread of the Dutch elm disease in a community. Approximately what percentage of the community border (or the border of the shade tree disease control area) is next to wild elm?

PERCENTAGE (three digits) ☐☐☐

(Go to Question 17) ← NONE 000

DOES NOT APPLY 777 COL 50-52

DOES NOT KNOW 888

REFUSED 999

COMMENT:

_____

_____

_____

14. What is the approximate   length of this border?   In miles?

THREE DIGITS |__|__|__|

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 53-55

REFUSED   999

15. Could you estimate the condition of these wild elms with respect to Dutch elm disease for the summer of 1980 in terms of the following categories. The total should equal 100 percent. Before you answer, please let me describe the four categories.

		DOES NOT APPLY	DO NOT KNOW	REFUSED	
a) Health, no sign of infection	|__|__|__|	777	888	999	COL 56-58
b) Symptoms of infection or dead less than one year	|__|__|__|	777	888	999	COL 59-61
c) Dead for more than one year	|__|__|__|	777	888	999	COL 62-64
d) Other: (Please specify) _____	|__|__|__|	777	888	999	COL 65-67

TOTAL SHOULD EQUAL 100%

16. At this time, during the summer of 1980, are wild elms a major, minor, or insignificant source of infection for the domestic elms?

MAJOR   1

MINOR   2

INSIGNIFICANT   3   COL 68

DOES NOT APPLY   7

DOES NOT KNOW   8

REFUSED   9

17. Could you describe those features   a good shade tree program must have to minimize the spread of the Dutch elm disease?

1) _____ |__|__| COL 69-70

2) _____ |__|__| COL 71-72

3) _____ |__|__| COL 73-74

4) _____ |__|__| COL 75-76

5) _____ |__|__| COL 77-78

6) _____ |__|__| COL 79-80

17. (continued)

7) _____ |__|__| COL 6-7

8) _____ |__|__| COL 8-9

18. Which of these are strong points in the program developed
    in your community?

1) _____ |__|__| COL 10-11

2) _____ |__|__| COL 12-13

3) _____ |__|__| COL 14-15

4) _____ |__|__| COL 16-17

5) _____ |__|__| COL 18-19

19. Are there ways in which your program could be made better?

1) _____ |__|__| COL 20-21

2) _____ |__|__| COL 22-23

3) _____ |__|__| COL 24-25

4) _____ |__|__| COL 26-27

5) _____ |__|__| COL 28-29

20. For each of the following, could you tell me if they are
    enthusiastic, supportive, or indifferent to the disease
    control aspect of the shade tree program?

	ENTHUS-IASTIC	SUP-POR-TIVE	INDIF-FERENT	DOES NOT APPLY	DOES NOT KNOW	RE-FUSED	
a) Residents in the community	1	2	3	7	8	9	COL 30
b) Mayor	1	2	3	7	8	9	COL 31
c) City council	1	2	3	7	8	9	COL 32
d) City employees	1	2	3	7	8	9	COL 33

21. Are each of the following enthusiastic, supportive, or indif-
    ferent to the replanting portion of the shade tree program?

	ENTHUS-IASTIC	SUP-POR-TIVE	INDIF-FERENT	DOES NOT APPLY	DOES NOT KNOW	RE-FUSED	
a) Residents in the community	1	2	3	7	8	9	COL 34
b) Mayor	1	2	3	7	8	9	COL 35
c) City council	1	2	3	7	8	9	COL 36
d) City employees	1	2	3	7	8	9	COL 37

22. In operating shade tree programs, there is always the possibility
    that there may not be a good match between the resources available
    and those needed to do a good job. For your situation, would you
    consider each of the following types of resources to be more than
    adequate, adequate, or inadequate (short) for the job?

	MORE THAN ADE-QUATE	ADE-QUATE	INADE-QUATE	DOES NOT APPLY	DOES NOT KNOW	RE-FUSED	
a) Trained foresters or inspectors	1	2	3	7	8	9	COL 38
b) Government crews to treat trees	1	2	3	7	8	9	COL 39
c) Government crews to re-move infected trees	1	2	3	7	8	9	COL 40
d) Private contractors to treat trees	1	2	3	7	8	9	COL 41
e) Private contractors to remove infected trees	1	2	3	7	8	9	COL 42
f) Government crews to plant new shade trees	1	2	3	7	8	9	COL 43
g) Private contractors to plant new shade trees	1	2	3	7	8	9	COL 44
h) Equipment required for removal or replanting	1	2	3	7	8	9	COL 45
i) Money for supplies or new trees	1	2	3	7	8	9	COL 46
j) Disposal sites for the diseased trees	1	2	3	7	8	9	COL 47
k) Opportunities for the utilization of diseased trees (e.g. lumber, wood chips, etc.)	1	2	3	7	8	9	COL 48

23. If you were to divide the emphasis in your shade tree program into five categories--informing the citizens of the program, chemical treatment of trees, inspection and removal of trees, inspection of firewood, and replanting--what percentage is assigned to each. The total should equal 100 percent.

		DOES NOT APPLY	DOES NOT KNOW	REFUSED	
a) Informing the citizens of the program	└─┴─┴─┘	777	888	999	COL 49-51
b) Chemical treatment (other preventative measures)	└─┴─┴─┘	777	888	999	COL 52-54
c) Inspection and removal of diseased trees	└─┴─┴─┘	777	888	999	COL 55-57
d) Inspection of firewood	└─┴─┴─┘	777	888	999	COL 58-60
e) Replanting new trees	└─┴─┴─┘	777	888	999	COL 61-63

TOTAL SHOULD EQUAL 100%

24. Particular species of trees may be spread evenly throughout the community or concentrated in clusters or groves or along boulevards. What percentage of the elms would you consider to be distributed evenly throughout the city or concentrated in groups?

a) Percentage evenly distributed (three digits) └─┴─┴─┘ COL 64-66

b) Percentage in elm clusters └─┴─┴─┘ COL 67-69

c) Other (specify) _____

_____ └─┴─┴─┘ COL 70-72

TOTAL SHOULD EQUAL 100%

25. The ability to inspect and remove diseased elms may vary considerably with the terrain or location. In terms of tree removal, what percentage of the elms in your community are impossible, very difficult, moderately difficult, or routine to remove?

IMPOSSIBLE (three digits) └─┴─┴─┘ COL 73-75

VERY DIFFICULT └─┴─┴─┘ COL 76-78

- CARD 4

MODERATELY DIFFICULT └─┴─┴─┘ COL 6-8

ROUTINE └─┴─┴─┘ COL 9-11

Total should equal 100 percent.

26. About what percentage of all the elm (healthy and infected) in your community (or shade tree disease control area) were the tree inspectors able to observe before June 15th of this summer (1980)?

| | | |

THREE DIGIT NUMBER

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 12-14

REFUSED   999

27. About how many trees were they able to observe between June 15th and July 15th of this summer (1980)?

THREE DIGIT NUMBER | | | |

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 15-17

REFUSED   999

28. Have private citizens been very active, active, or inactive in reporting shade trees suspected of disease?

VERY ACTIVE   1

ACTIVE   2

INACTIVE   3   COL 18

DOES NOT APPLY   7

DOES NOT KNOW   8

REFUSED   9

29. What percentage of infected trees are reported by citizens before the inspectors notice them?

THREE DIGIT NUMBER | | | |

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 19-21

REFUSED   999

30. Of all the infected trees that have been marked for this year, about what percentage were initially marked as low risk (10 percent of the crown wilted) and what percentage were initially marked as high risk (30 percent of the crown wilted)?

	DOES NOT APPLY	DOES NOT KNOW	REFUSED	
a) Low risk (three digits)				777	888	999	COL 22-24
b) High risk				777	888	999	COL 25-27

31. Is the coordination between the marking and removal of infected trees excellent, acceptable, or inadequate?

EXCELLENT	1
ACCEPTABLE	2
INADEQUATE	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 28

32. What is the average number of days between the marking of a low risk tree (with 10 percent of the crown wilted) and its removal?

THREE DIGIT NUMBER	⌊_⌊_⌊_⌋
DOES NOT APPLY	777
DOES NOT KNOW	888
REFUSED	999

COL 29-31

33. What is the average number of days between the marking of a high risk tree (30 percent of the crown wilted) and its removal?

THREE DIGIT NUMBER	⌊_⌊_⌊_⌋
DOES NOT APPLY	777
DOES NOT KNOW	888
REFUSED	999

COL 32-34

34. For what percentage of trees that are marked do citizens make an active attempt to prevent or delay their removal?

THREE DIGIT NUMBER	⌊_⌊_⌊_⌋
DOES NOT APPLY	777
DOES NOT KNOW	888
REFUSED	999

COL 35-37

35. For what percentage of privately owned trees that are marked for removal are the citizen-owners slow in having them removed, slow enough that they must be reminded several times, threatened, or the trees must be removed by government crews?

THREE DIGIT NUMBER	⌊_⌊_⌊_⌋
DOES NOT APPLY	777
DOES NOT KNOW	888
REFUSED	999

COL 38-40

36. What percentage of the firewood utilized in your community
is elm?

| | | |
THREE DIGIT NUMBER

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 41-43

REFUSED   999

37. What percentage of the elm used is debarked?

| | | |
THREE DIGIT NUMBER

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 44-46

REFUSED   999

38. What percentage of the firewood in the community have
the tree inspectors been able to observe?

| | | |
THREE DIGIT NUMBER

DOES NOT APPLY   777

DOES NOT KNOW   888   COL 47-49

REFUSED   999

39. Do you consider elm firewood a substantial, major, minor
or trivial source of new infections of Dutch elm disease?

SUBSTANTIAL   1

MAJOR   2

MINOR   3

TRIVIAL   4   COL 50

DOES NOT APPLY   7

DOES NOT KNOW   8

REFUSED   9

40. Do the citizens in your community resent the inspections
for elm firewood a great deal, some, or not at all?

A GREAT DEAL   1

SOME   2

NOT AT ALL   3

DOES NOT APPLY   7   COL 51

DOES NOT KNOW   8

REFUSED   9

41. Approximately what percentage of those infected trees to be removed from public lands in 1980 will be replaced within one year?

FIVE DIGIT NUMBER	⌊_⌊_⌊_⌊_⌊_⌋
DOES NOT APPLY	77777
DOES NOT KNOW	88888
REFUSED	99999

COL 52-56

42. When trees are replanted by the local government near private property, such as along boulevards, do the local residents generally provide a great deal, some, occasional, or no cooperation by watering and caring for the trees?

A GREAT DEAL	1
SOME	2
OCCASIONAL	3
NO	4
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 57

43. Approximately what percentage of trees removed from private property are replaced by the citizens with new trees?

FOUR DIGIT NUMBER	⌊_⌊_⌊_⌊_⌋
DOES NOT APPLY	7777
DOES NOT KNOW	8888
REFUSED	9999

COL 58-61

44. Would you say there is a great deal, some, or no coordination between the local government and private citizens in selecting species for planting to replace the lost trees? Or do you consider such coordination unnecessary?

GREAT DEAL OF COORDINATION	1
SOME COORDINATION	2
NO COORDINATION	3
COORDINATION UNNECESSARY	4
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 62

45. How often do individual citizens or neighborhood groups call you and ask that their trees be replanted: frequently, occasionally or never?

FREQUENTLY	1
OCCASIONALLY	2
NEVER	3
DOES NOT APPLY	7
DOES NOT KNOW	8
REFUSED	9

COL 63

46. What do you think about the kinds of things local government is doing in general? I will list some of these and then, will you please tell me whether you think elected officials and administrators should give a great deal, much, some, or no attention to each of the following:

	GREAT DEAL	MUCH	SOME	NONE	DOES NOT APPLY	DOES NOT KNOW	REFUSED	
a) Housing quality	1	2	3	4	7	8	9	COL 64
b) Recreational facilities	1	2	3	4	7	8	9	COL 65
c) Job opportunities	1	2	3	4	7	8	9	COL 66
d) Health care	1	2	3	4	7	8	9	COL 67
e) Education	1	2	3	4	7	8	9	COL 68
f) Fire prevention	1	2	3	4	7	8	9	COL 69
g) Crime	1	2	3	4	7	8	9	COL 70
h) Sanitation and garbage collection	1	2	3	4	7	8	9	COL 71
i) Racial problems	1	2	3	4	7	8	9	COL 72
j) Neighborhood appearance	1	2	3	4	7	8	9	COL 73
k) Shade trees	1	2	3	4	7	8	9	COL 74

47. Do elected officials and administrators in the local government feel they should concentrate on solving the problems of the present generation of people, the future generations of people, or give equal emphasis to both?

	PRESENT	FUTURE	EQUAL	DOES NOT APPLY	DOES NOT KNOW	REFUSED	
elected officials	1	2	3	7	8	9	COL 75
administrators	1	2	3	7	8	9	COL 76

48. In the next few questions I want to ask you something about yourself and your current job. How many years have you worked for this local government unit?

TWO DIGIT NUMBER	|__|__|	
DOES NOT APPLY	77	
DOES NOT KNOW	88	COL 77-78
REFUSED	99	

- CARD 5

49. How many years have you worked in forestry or a shade tree program?

TWO DIGIT NUMBER	|__|__|	
DOES NOT APPLY	77	
DOES NOT KNOW	88	COL 6-7
REFUSED	99	

50. If you were to allocate your working time to three categories, what percentage would be associated with each of the following:

		DOES NOT APPLY	DOES NOT KNOW	REFUSED	
a) Administration related to the shade tree program, including contacts with residents	|__|__|__|	777	888	999	COL 8-10
b) Direct attention to trees, such as inspection, treatment, or removal	|__|__|__|	777	888	999	COL 11-13
c) Other work duties not related to trees at all	|__|__|__|	777	888	999	COL 14-16

The total for all three categories should equal 100 percent.

51. Could you describe the most important types of training you have had in forestry or care of shade trees?

1) _____	|__|__|	COL 17-18
2) _____	|__|__|	COL 19-20
3) _____	|__|__|	COL 21-22
4) _____	|__|__|	COL 23-24
5) _____	|__|__|	COL 25-26

52. This completes the interview, thank you very much for your time and patience. Do you have any other comments or questions regarding the interview or the study?

53. Goodbye.

54. INTERVIEWER NAME: _____ CODE NO. |__|__| COL 27-28

55. DATE COMPLETED: _____ MONTH |__|__| COL 29-30

DAY |__|__| COL 31-32

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COMMENTS -- Question #

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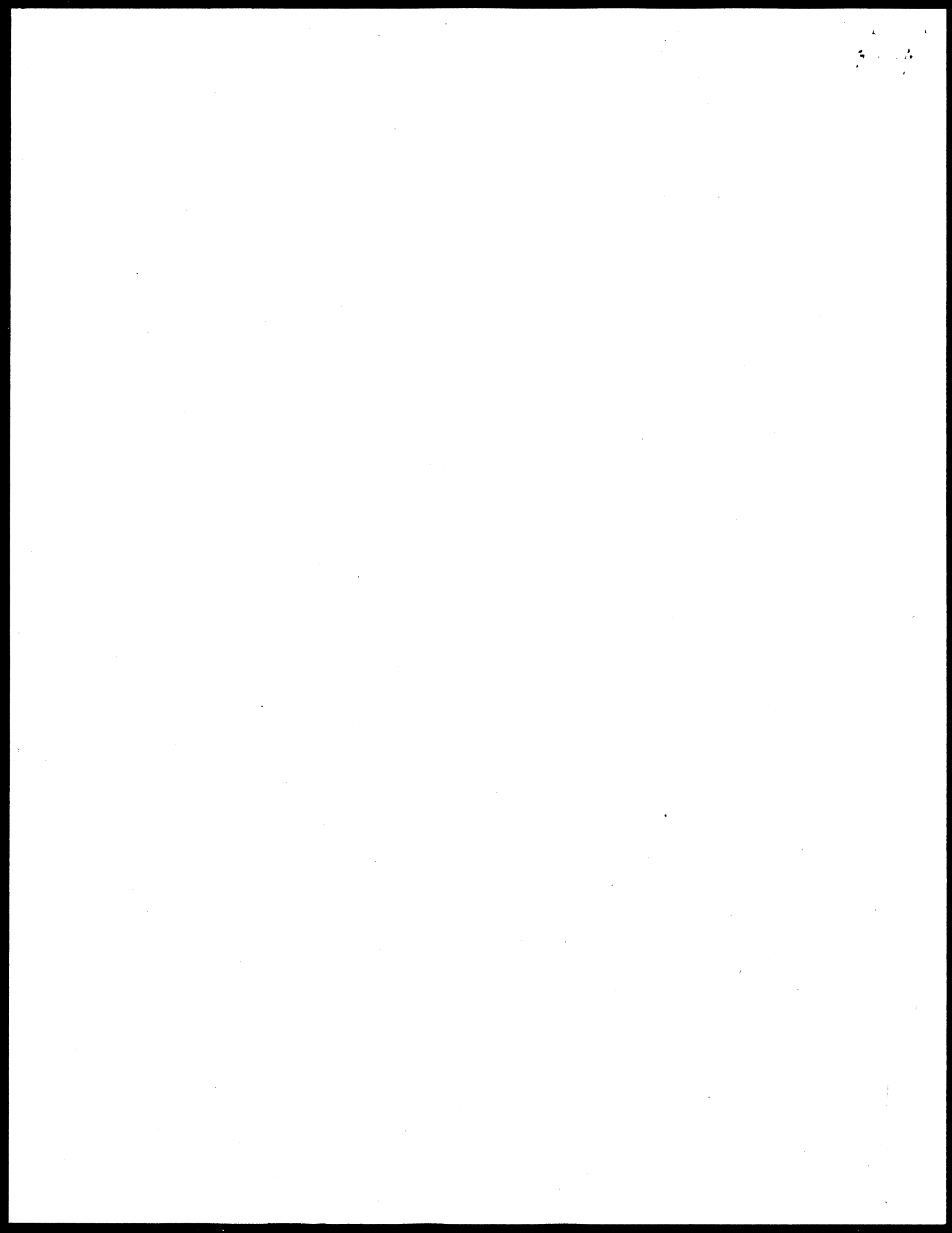
APPENDIX D

CASE STUDIES OF COMMUNITY PROGRAMS

The eight case study communities are denoted by an asterisk in Exhibit B-1, the table of focus cities in Appendix B. The selection criteria were the same as those for the focus cities, reflecting a desire to maximize variation on success ratings (by state inspectors), community size, and region of the state. Thus, communities were chosen with regards to success as follows:

High ratings, congruent:	Lakefield, St. Cloud
Moderate ratings, congruent:	Hanley Falls
Moderate ratings, incongruent:	International Falls, St. Paul
Below average ratings, congruent:	New Ulm
Terrible ratings, congruent:	Buhl, Dayton

Further size was varied as follows (based on 1970 census):

Large (over 10,000):	New Ulm, St. Cloud, St. Paul
Medium (2,001 - 10,000):	Dayton, International Falls
Small (200 - 2,000):	Buhl, Hanley Falls, Lakefield

Finally, region was varied as follows:

Metro:	Dayton, St. Paul
North:	Buhl, International Falls
Central:	Hanley Falls, St. Cloud
South:	Lakefield, New Ulm

Note that there are no two cities from any one cell of Exhibit B-1. In this way, the maximum amount of information may be obtained from the eight case study cities as representative of the 36 focus communities, the 36

focus cities represent, in turn, the hundreds of cities with local shade tree programs.

In each community the observer was instructed to interview the program manager, the mayor or city manager, a newspaper reporter (if any) covering the topic, the tree inspector, the tree remover, city council members (if identified by the mayor as interested in the program, neighborhood groups (if identified by other respondents as interested in shade trees), nursery-men (if available), and anyone else identified as active on the issue by the other respondents. Appointments with city officials were made in advance by phone; additional appointments were made during the visit. Some follow-up interviews were also completed by phone. The basic format of the interview was to administer the program manager survey (see Appendix C) with some open-ended questions added and with some changes depending upon whether the person was a technical expert (tree inspector, nurseryman, tree remover, program manager) or a generalist (mayor manager, council member, newspaper reporter, neighborhood group leader). If the individual was a technical expert, the questions dealing with the disease were stress-ed, whereas if the individual was a generalist, the questions dealing with the history of the program and citizen participation were stressed.

The format allowed for comparability across classes of respondents and cities since the same basic questions are asked of individuals occupy-ing the same roles in different cities. The open-ended questions allow for unique items to emerge which explain how each city differs in its problems or how different individuals can explain the same event. The format pro-vides a vehicle for comparing how individuals in different roles perceive the program and its success. It is possible to determine the extent to

which the program manager's perception of a program and its importance

is shared by tree experts in the same city and generalists who have other

concerns besides the community forest.

Following are summary descriptions that were developed for each of

the eight communities, arranged alphabetically. The descriptions were

based on a review of the interviews and other material available on the

programs and their stature in the community.

BUHL

Buhl is a small town (1303 people located in northern Minnesota on the Iron Range. Its programs were rated as terrible. Reasons for its lack of success are important because the disease is spreading throughout the northern part of Minnesota.

In Buhl the disease took off in 1978, after the state program had started. Thus, Buhl could benefit from the lateness of the attack. It has no wild elm problem and nearly all the elms are routine to remove. It should also be pointed out that elms make up a smaller percentage of the total tree population than in many other cities. There are fewer elms on private property than statewide and so far only 4 or 5 of them have been infected. Yet, the disease is advanced on public land: this year about 20 trees will be removed, but that is 20% of the elm population lost in one year. Clearly, Buhl is lagging behind in fighting the disease.

There were more complaints about citizen disinterest and about city employees' lack of support than in the other cities we visited. Enthusiasm seems to be concentrated in the program manager (who is also the tree inspector and street superintendent) who seemed beleaguered by the problems he encounters. Reputedly, city employees who remove trees hate it and fight it; in no other city was the danger of the tree removal job stressed so much. The citizen survey disclosed that residents participated less than average except in watering the trees the city had put out. Of course, when the disease has not yet hit individual property owners, it is hard to get the citizenry excited about the problem. Buhl citizens did rate their city's program a little lower than did the average Minnesotan so its shortcomings are obvious to residents. Buhl residents, at least those in the survey, were younger, more educated, and had higher incomes than the average

Minnesotan, so one would expect more support from them for this program.

The main reason cited for the program's failure is lack of money and manpower. The trees are removed by the street department which has many other responsibilities during the summer months. Thus, the city does not have enough employees, we are told, to get the trees cut down in time. They also say that they do not have enough money to hire private contractors to do the job for them. Again, given the socioeconomic composition of the citizens we surveyed, it is hard to understand why the city can't afford a better program. One positive aspect of the program's operation is the cooperation with other Iron Range cities in purchasing equipment.

The sanitation program operates as follows: the city removes trees on public land and on boulevards; it provides no reimbursement to private citizens for removing their own trees but of course that hasn't been a problem thus far. About 20 trees were lost in 1980 but that is a high rate of loss (20%).

The replanting program involves the city's replanting on public land and on boulevards. The city will replant 30-40 trees this year but apparently they are behind from past years when many trees of other types had to be removed. The setup of the program is no different from that of the more successful programs but the level of effort is apparently less. If citizens and elected officials do not become more interested as the disease hits harder, Buhl is in for near total elm tree losses. Yet, that may not be as devastating as in St. Paul because Buhl has a more diverse population of trees.

DAYTON

Dayton is a medium size community (2675 people) located on the fringe
of the metro area. It contains farm and residential areas within the city
limits. Its sanitation and replanting programs were both rated as terrible
by state inspectors. Are there lessons to be learned from its experience?

Dayton is required by the Metro Council to be in the state program
but otherwise Dayton probably wouldn't be participating. The state pro-
gram allows reimbursal for tree removal from state funds only to residents
who own less than 5 acres of land. Since many Dayton residents don't fit
these requirements, Dayton doesn't reimburse anyone with state funds. The
program doesn't fit Dayton, they feel, so they participate somewhat grudg-
ingly.

Dayton's disease problem is probably more difficult than that faced
by the more successful cities we looked at. In the citizen survey, more
citizens reported having elms on their property and on adjacent public
land than did the average Minnesotan. Similarly, more citizens reported
having had trees removed and replanted than the average Minnesotan. Offi-
cials believe the number of wild elms bordering the city to be a significant
source of disease. These wild elms are located along two rivers which
border the city and on farmland in a neighboring township which does not
participate in the program. The number of farms in the city, with large
numbers of elms, is also a major problem for Dayton. In some cases the
owners of these farms are elderly persons who simply can not afford to have
large numbers (in some cases 50 to 100) of diseased elms removed from their
property and are unable to do the removal themselves. In such cases, the
city does not feel that they can force the property owners to remove the

trees. The manager reports that only 50% of elms can be routinely removed, a very low percentage.

A contributing factor is that the tree program is not salient to individuals and groups in Dayton. On the one hand, citizens rated trees as important (more so than did the average Minnesotan) and rated Dutch Elm Disease as an important threat. Yet, individuals hadn't done much about this perceived threat: none had watered new trees and none had joined in a group to contact the government (whereas in other cities there was at least some one who did these things). Compared to other Minnesotans, the citizenry of Dayton gave their shade tree program a low rating (congruent with the state's rating of it) and gave their government in general a low rating.

This low salience and discouragement is especially manifested in city officials. Even among people who were supposedly involved in the program, there was little knowledge and awareness. The city government is very small, mostly part-time people, who feel that the state program doesn't fit their needs and who feel that they are battling against great odds. Contrary to the successful programs, they feel that their city wouldn't continue its program if state funding ceased. A significant problem for them is the lack of resources, which is remarkable since Dayton citizens reported the highest income average in our case studies. Perhaps their most severe resource problem is in manpower. There are just too few city employees to enable Dayton to remove trees quickly.

The program is a very small operation. City crews remove diseased trees on public property and boulevards, if possible; if not, they hire a private contractor. The same contractor removes trees on private

property (unless the owner does it himself/herself) but there is no reimbursement.   About 100 trees were removed in 1980.

The city will replant slightly more than it takes down in 1980.   For public areas, the city buys the trees but does not plant them; instead, it relies on volunteers to do the planting.   About 75% of the residential property owners do replace trees on their own.

The unsuccessful program in Dayton has twin causes: it has a significant disease problem due to the mix of farm and residential land which is not adequately covered by state regulations; no one wants to be in the state program; therefore, little money is spent and not much is done.

HANLEY FALLS

Hanley Falls was rated as having an average program both in terms of sanitation and replanting. It is a small city (265 people) in south central Minnesota. What seems to account for its success rating?

Hanley Falls is typical of many cities in its region--the disease has already taken 80% of its elms so there is not much left to manage. The disease takeoff point was probably in 1976; at that time, 75% of the city's trees were elms. Now only about 25% are elm. Nearly all the elms are located in places where they are routinely removable. As expected, its citizens report a below average number of trees on their own property and on adjacent public land. They believe the threat from the disease is more important than does the average Minnesotan. Thus, Hanley Falls does not have a huge removal job facing it.

Hanley Falls is remarkable for its citizenry. They report participation (removing trees, replanting trees, watering trees, etc.) above the Minnesota average. They have more knowledge about their city's program than does the average Minnesotan. However, Hanley Falls residents are below average in education and income and above average in age. We have seen in other communities that older and poorer citizens are less interested in the shade tree program because its pay-off lies in the future. Similarly, city officials are remarkable. The mayor takes an active interest in the program and several groups have helped to replant trees. The tree inspector in this small town drives by every tree almost every day, watches for signs of disease, and marks trees immediately. Other city officials think that he is very competent.

The sanitation program operates as follows: the city removes a few trees (20%) but normally hires a contractor to take out diseased trees from

public land, boulevards, and private property. If the tree is on private property, the city assesses the homeowner for the cost of removal above that provided by the state subsidy. The city does not provide any subsidy of its own but does pay for disposal. The city replants trees on public land and on boulevards. It has replanted about 40 trees this year, about the same as the number of trees to be taken down in 1980. Hanley Falls residents are unique in that they gave a higher priority to replanting (versus chemical treatment and removal) than did any other city in the case studies. Again, this is unusual, given the average age of its residents.

One way to look at Hanley Falls is that its programs are average. However, it is probably doing better than it should be doing (based on its demographic characteristics and its size.) It will probably never attain high success because most of its trees are gone and it lacks money to provide the highest level of financial incentive to its citizens.

INTERNATIONAL FALLS

International Falls is a medium-size city of 6400 people located in
northern Minnesota. The incidence of disease is fairly new to the northern
portion of our state. The city's sanitation program was rated as highly
successful but its replanting program was rated much lower. What lessons
can we learn from its sanitation experience and how can its replanting pro-
gram be improved?

The disease problem faced by International Falls is less than that in
the southern regions of the state. The disease reached International Falls
relatively late, after the state program had already started (probably the
take-off point was 1978). Thus, this city could benefit from the experience
of other cities in fighting the disease, from the state money, and could
keep up with the progress of the disease. Secondly, most of the diseased
trees so far have been on public land and are routine to remove. International
Falls residents reported markedly fewer elm trees on their own property
than did the average Minnesota residents. Also, the density on public land
is reported to be less than average.

There are two elements which cause the disease control program some
difficulties. First, officials mentioned the long border shared with South
International Falls which has a lot of untreated elms. Officials think
their program would work better if South International Falls would participate
in the program also. Second, the summer is very short in International
Falls. Disease can't be observed until sometime after June 15 because trees
aren't leafed out. At that time, city personnel are busy with other outdoor
work and don't have much time to devote to trees. Still, given the program's
high rating, officials seem to be overcoming these two difficulties. If
the disease had hit earlier or harder, their success might have been less.

International Falls is particularly strong in the concern and attitude of its city officials. A few officials had urged a shade tree program for years and were important in the city's joining the state program. The city council president had attended seminars on the disease before the city joined the program. In addition, a county agricultural agent who lives in International Falls and is knowledgeable about trees has been active in advising the city about its program. The tree inspector is a retired forester of whom everyone thinks very highly. The City Council has been very support-ive of the program; several members are self-proclaimed "tree lovers." In fact, the council recently agreed to fund chemical treatments before they knew that they could be reimbursed for half of the cost. Hence, this city was not one which joined just to get the state money.

Similarly, citizens display more than the average amount of concern, even though the disease has not yet hit their city hard. They rated the importance of trees higher than did the average Minnesotan. They rated the threat of the disease to their city as high as did the average Minnesotan, even though the disease is not as advanced here as elsewhere. Residents of International Falls were below average in the number of actions taken on behalf of trees: this is understandable because they do not have as much opportunity as other Minnesotans. Most importantly, they were willing to pay more in additional taxes for a shade tree program than was the average Minnesotan. This is unusual given their modest exposure to the disease and their modest elm stands.

In terms of the actual operation of the disease control program. Inter-national Falls does not fund much removal, whereas, we found funding to be crucial to the success of other programs. City crews do remove diseased

trees on public property, but boulevards and private property are the responsibility of the homeowner--there is no reimbursement by the city, even from state funds. The program manager and tree inspector said that the city council had not set up a reimbursement program because they were very reluctant to involve the city with private property in any way because of liability fears. They also said that they didn't think the city council understood that they could set up a reimbursal program that would not require city crews to do work on private property. So far, most of the diseased elms have been on public property (about 20 in 1980) so very few residents have had to pay for tree removal. The tree inspector and program manager think that when the number of diseased trees on private property increases the city council might change its position on reimbursal. To some extent, the city has been lucky so far; if the disease worsens, they may have to increase their expenditures in order to continue their success in controlling the disease.

Although the replanting program was rated as low, the picture seems somewhat different from the perspective of International Falls. The city had already started a program of planting trees on public lands before they joined the state program. City crews replant trees on public lands and boulevards and say they will replant more than they lost in 1980. About 50% of private losses are replaced. Residents do report more than the average number of trees replanted on their own property but only an average number replanted by government. Residents also report a higher than average frequency of watering boulevard trees.

One area which could stand improvement is in citizen awareness of the shade tree program. A higher than average number of citizens responded

"don't know" to the questions about the program. Perhaps a public relations
campaign would increase citizen participation in both aspects of the program.
This seems promising, given the favorable attitude of residents toward their
trees.

LAKEFIELD

Lakefield is a small city (2000 people) in southern Minnesota whose sanitation and reforestation programs were rated in the highest success category by inspectors. What makes Lakefield different from the many other small cities who are having trouble with their programs?

Lakefield is unfortunately a town for whom the state program came too late. The disease took off in 1974, three years before the program started; by 1980, 70% of the original elm population was lost. Thus, a relatively small population of trees remains whose incidence of disease the city is now able to control. Furthermore, infection from wild elms is not an important problem because most of these elms are dead too. Of the remaining elms in the city, 75% are in locations which allow for routine removal.

One important factor in Lakefield's current success is the attitude of its citizens. Lakefield citizens, more than the average Minnesotan, think trees are extremely important, have reported infected trees, and replaced trees. Compared to the rest of Minnesota, more of them have worked in groups to remove infected trees and to replant trees. They were much more likely to support paying an additional tax to keep the program going. Whereas most citizens rated their shade tree program about the same as their local government in general, the people of Lakefield rate their tree program higher than they rated their local government. Program officials agree that citizens are cooperative and good about reporting incidence of disease.

The operation of the program is characterized by speed in inspection and removal--all trees are inspected by June 15--and removed within 10 to 20 days, according to city officials. This speed is possible because

it is a small town with relatively few remaining elms. The city hires a private contractor to remove diseased elms on public land (including boulevards) and private property, though the property owner pays for the removal with 45% matching by the city. This subsidy is important to the success of the program because senior citizens make up a large and growing segment of the population of Lakefield. In the opinion of city officials, senior citizens could not afford to pay for tree removal without the subsidies. The city pays for disposal of both public and private elms. Trees are also marked again in the fall. 25 trees were removed in 1980.

The city pays for replanting trees on boulevards and in parks. It hires a nursery to do the planting so that the new trees are planted properly. According to the nurseryman who does the planting, the citizens do a good job of caring for and watering the trees and most of the new trees stay healthy. In 1980, it planted 30 trees, more than were cut down. About 75% of homeowners replanted trees, according to the mayor. In our sample of citizens, only 34% reported having planted a tree, but this is higher than the state average.

City officials in Lakefield think that keeping the citizens of Lakefield well informed about Dutch Elm Disease and care of trees is important to the success of the program. The city has cooperated with the local newspaper to make such information available. A city council member said that the mayor is very knowledgeable about trees and willing to advise citizens about how to care for their trees or to get someone in the street department to answer their questions.

Lakefield's program is organized quite a bit differently from the other successful program in a large city--St. Cloud. In Lakefield, city employees do not preform much of the actual work but instead contract it out, since the work is on a smaller scale than in St. Cloud's. This arrangement between the public sector and the private sector works quite well. The other difference from St. Cloud's experience is that Lakefield's citizenry is more supportive than St. Cloud's citizenry. Thus, citizen support and involvement may be more crucial in a smaller setting. The two successful cities are similar in that the disease is not as severe as elsewhere (though for different reasons).

NEW ULM

New Ulm is a city of 13,051 residents, placing it in the lower range of our large cities. It is located in southern Minnesota and its sanitation and replanting programs were both rated as below average. What can we learn from its experience?

The disease problem faced by New Ulm is moderate: the disease most likely took off in 1977; thus, the state program came just in time. Officials say that wild elms nearby are a major problem and that only about half of the diseased trees can be routinely removed. Elms in ravines on private property are among the elms that are very difficult to remove. They were included in the disease control program because they are located primarily on the property of higher income citizens and the city council thought that it would be unfair to require low income residents to remove their diseased elms and exempt some wealthier land owners from having to remove all of their diseased trees. Thus, New Ulm faces a nontrivial disease problem, but it is not insurmountable by any means, nor as great as that faced by other cities.

The next area to examine is community attitude toward the disease and the program. There is some suggestion by officials that New Ulm entered the program only because of the financial incentive offered by the state. Some have said that the city council is not too involved in the program because the members are beset by other pressing problems. Others said that publicity hasn't been effective in reaching the citizens and making them aware of the program. The responses to the citizen survey belie this report: compared to the rest of the state, New Ulm residents perceive a greater threat from the disease, report a higher rate of chemically treating their trees, of removing their own trees, of replanting their own trees, and rate

their city's program highly. On other dimensions, New Ulm residents are right at the state average: in care of the city's new trees and in know-ledge about the program. On the whole, it seems that while citizen support is not among the highest in the state, it is more than adequate for a good program. New Ulm residents are not apathetic about their trees.

The remaining area is the program itself. This is the area which could stand improvement. In terms of sanitation, city crews remove diseased trees on public land, but admittedly not always soon enough because the park department has many other responsibilities during the summer when removal is done. Boulevards are treated much the same as in private property: private contractors remove the trees at citizen's expense, with the city reimbursing 50% with a maximum of $75 per tree and a limit of 3 trees per owner. The maximum and limit do not apply to the boulevard. At times, there are not enough contractors to get the private trees removed quickly enough after they have been marked. Treating the boulevard as a public responsibility might significantly improve the disease control aspect of the program, but according to the city manager, the city council is reluctant to do this both because of the increased financial commitment it would involve and because treating the boulevards as private property has been a long standing tradition in New Ulm. About 1000 trees were removed this year.

Replanting responsibilities are handled in the same manner: city crews replant on public land; on the boulevards, the city pays half the cost of planting up to a $30 maximum. When this program was established, the philosophy behind it was to maintain a sense of responsibility for the boulevard trees on the part of the home owners. It was thought that if they had to pay part of the cost of planting, they would be more likely to

water and care for the tree, but this partial subsidy has resulted in only about 30% of the boulevard trees being replaced each year. Also, the city places limits on the type and size of tree it will pay for. All of the city officials interviewed expressed disappointment over the fact that the replanting subsidies have not been more successful in encouraging boulevard planting. Several said that there was a communication problem between the government and the citizens; that many citizens did not even know about the subsidies. The city does place ads in the local newspaper describing the subsidy program, but apparently this has not been sufficient. According to officials, an additional significant problem is that in areas where the most elms have been lost, the residents are largely elderly or low income and do not replant trees. The elderly say they won't be around to enjoy the trees; other low-income residents can't afford the cost or don't think it is important. Both officials and citizens care about the program but the city will have to make it a higher financial priority before the program will be successful.

ST. CLOUD

St. Cloud's sanitation and replanting programs were both rated in the highest category by state inspectors. It is a city of 42,000, located in central Minnesota. What can other cities learn from its experience?

First, St. Cloud appears to be blessed with a less severe problem than many other cities. It has very few (1%) wild elms bordering the city. Within the city, although the elm population is slightly higher than the state average, the elm trees are less likely to be found on private property and more likely to be found on public property, compared to the state patterns. The physical location of elms is such that they are easy to remove.

A second possible factor is citizen attitude: residents of St. Cloud, more than the average citizen, consider the disease to be a major or important threat to their neighborhood, even though actually the disease is not a big threat. Yet, the residents are not more likely than the average Minnesotan to have taken action to help trees or to lobby government, or to have information about the program. Similarly, the present mayor is not particularly enthusiastic or knowledgeable about the program, though supportive. Thus, St. Cloud's program is succeeding despite citizens and their elected leader.

The most important factors seem to be the enthusiasm of city employees in the tree program and the fact that resources are adequate to keep ahead of the disease. Tree inspections are done early in the year and frequently. City crews remove trees on both public property and boulevards; on private land, the owner hires a contractor and is reimbursed 45% of the cost of removal, up to $50 per tree.

The tree inspector said that when the program first began, citizens protested when they were informed that they had to remove one of their

trees, and delayed doing so, but now everyone seems to recognize the importance of removing trees quickly. There is sufficient manpower to remove trees quickly, even though they are dealing with 750 trees in 1980. They are now losing only 2% of their elms a year.

Similarly, replanting funds are more than adequate: the city will replant 1680 trees in 1980, more than twice the number taken out. Sufficient funds to replant more trees than they remove have been available for several years. There is no public subsidy for replanting on boulevards, but even so, about half of these diseased private trees are replaced every year. In regard to boulevard trees, the city has the "steward" concept: citizens file a permit to replant on boulevards; the city sets the size of the tree and range of species which can be planted: the citizen plants the tree and has the responsibility of being its steward for 5 years, after which the city accepts responsibility for its maintenance. The tree inspector said that this program has some advantages in that it encourages citizens to take care of boulevard trees, but he also said that the replanting program would be more successful if the city assumed responsibility for replanting on boulevards. Occasionally, the city council will order that a whole block be replanted. This usually occurs only when a new housing development is built. Some local groups have helped in replanting such as the Trades and Labor Union, the Kiwanis Club, the Girl Scouts, and the Boys Club.

The city park department seem to run the program very quietly and efficiently without much involvement of city elected officials. In the past, the mayor and the city council were deeply involved in more controversial issues and did not give the shade tree program much attention, but

they did fund it adequately. St. Cloud is a good example of what adequate

manpower and resources in a large city can do, even without a great deal

of citizen support.

ST. PAUL

St. Paul is the state's second largest city (309,000). Its sanitation
program was rated low but the replanting program got a high rating. What
can other large cities learn from its experience?

St. Paul has lost more elms than any city in the state: 105,000 of
an original population of 131,000. In 1975 St. Paul lost 2,000 trees, 19,000
the next year, and in 1977, the year the state program started, it lost
47,000 elms. Since then, losses have fallen to 15,000 in 1978, and then to
6,500, and 4,000 this year. Although the state program began in part because
of the visibility of St. Paul's problem in the capital city, the program
was too late for St. Paul. Just at the time the program was getting off the
ground, losses jumped from 19,000 to 47,000, making it difficult to get marked
trees down in time. Everyone connected with the program admits that it was
not run as well as it could have been in the early years, but funds were in-
adequate to cope with a problem of this size and the logistics of trying to
remove and dispose of that many trees in one year created problems that just
could not have been forseen.

St. Paul's elm concentration was unusually high, 85% of the trees in the
city were elms originally. Wild elms along the Mississippi River still pose
a problem as does the nonroutine nature of removal since so many trees are in
yards. The low risk trees frequently do not come down for some time, often
well into the winter. The program manager said that tree removal firms are
unwilling to add the extra men and equipment that would be necessary to remove
all the trees quickly and they will only work on a year long basis.

St. Paul began replanting trees in 1972 and in the last three years
it has replaced more trees than it has lost. Still, it is behind because
of the huge losses in 1977. There is reluctance to allocate more money to

replanting because the removal expenses have drained the public works budget in the past few years. Little street repair has been done, for instance.

St. Paul has made a substantial commitment of its own to the program: 30 million dollars over the past three years. The mayor has been especially enthusiastic about the shade tree program and the city's financial involvement in it. Initially, neighborhood groups were involved in chemical treatment and replanting but city officials are disappointed in the current level of interest of citizens and neighborhood groups now that the crisis has receded somewhat. Both the program manager and the city's foresters have gone to neighborhood meetings in recent months to try to stimulate interest in the program, particularly replanting, but feel that they have not been successful.

Yet, the citizen survey reveals a citizenry which is more interested than the average Minnesotan. St. Paul residents rate the threat from disease higher than the average Minnesotan. Their self-reported participation is about average as is their organizational involvement directed toward trees. On other participatory dimensions they are above average: watering trees planted by the city, individual efforts to influence government on trees, and knowledge about their city's programs. Thus, the decline in interest perceived by the city officials is only in relation to St. Paul's past performance, not in relation to the rest of the state. St. Paul residents are average in income and education but younger than other Minnesotans. Hence, St. Paul would seem to have the ingredients for a successful program: an interested citizenry and elected officials.

The operation of the program proceeds as follows: diseased trees on public land and boulevards are removed by city crews. The private property

owner in St. Paul has a unique advantage; the city hires private contractors to remove the private trees and pays for the full cost of removal. The mayor recommended to the city council that this system of free residential tree removal be established and was successful in convincing the council to adopt the plan. The mayor said that the program was set up in this manner for two reasons: to avoid creating financial hardship for low income residents, and because the council agreed with his opinion that the trees in the city should be regarded as a community resource of benefit to everyone, not just the property owner. We can presume that without this substantial public commitment St. Paul's losses would have been nearly 100%. The officials connected with the program think so. They also think that they are able to run a more efficient program by contracting all the removal at one time rather than having each property owner arrange on his own for removal. According to newspaper accounts, St. Paul paid a higher unit cost for both removal and replanting than did Minneapolis, in part because St. Paul paid union scale wages and other cities did not.

The replanting program is fairly typical: the city pays for planting on public land and boulevards, with private nurseries doing all the planting (which runs up the cost but may increase the longevity of the tree). Property owners are encouraged to plant on the boulevards also, but must obtain a permit to do so and are restricted as to what types of trees can be planted. The city will plant 6000 trees this year. Essentially, replanting is the only area in which St. Paul has a chance to succees, having lost so many trees in earlier years.

APPENDIX E

STATE SHADE TREE PROGRAM FORMS

Two major sources of data were the forms completed by local programs for submission to the state shade tree program. The annual report forms were the source of substantial data on program activity; similar forms were the basis for data from the previous years (1977, 1978). Information provided on the applications for 1980 program acceptance were used as a source of information regarding plans for program operation. Both forms are provided in this section.

SHADE TREE PROGRAM REPORT

For the period January 1 to December 31, 1979*

*Since this report must be submitted on or before December 1, please include <u>estimates</u> for the rest of the year to complete a 12-month period.

I. PROGRAM INFORMATION

Municipality	County
Mayor or Program Manager	Tree Inspector
Address	Address
Program Manager Tel. No.	Is Tree Inspector Certified? ☐ Yes ☐ No	Tree Inspector's Tel. No.

II. TOTAL MUNICIPALITY/COUNTY EXPENDITURES AND MANPOWER USED IN IMPLEMENTATION OF THE LOCAL SHADE TREE PROGRAM

A. SANITATION		B. REFORESTATION	
1. Personnel	$_____	1. Personnel	$_____
2. Equipment Rental	$_____	2. Equipment Rental	$_____
3. Outside Contracts	$_____	3. Outside Contracts	$_____
4. In-Kind Contributions	$_____	4. Cost of Tree if Planting Was Done By City/County Crew	$_____
5. Miscellaneous	$_____	5. Miscellaneous	$_____
TOTAL (SANITATION)	$_____	TOTAL (REFORESTATION)	$_____

C. Number Of Staff Persons Involved And Total Man-Hours Spent In Sanitation And Reforestation Activities (Including Administration Personnel)

Number of Staff Persons			Total Man-Hours	
1. Full-Time	2. Part-Time	3. Seasonal	1. Sanitation	2. Reforestation

III. CITY/COUNTY ASSISTANCE TO PRIVATE PROPERTY OWNERS

A. Does The City Provide City Funds (does not include state aid) To Private Homeowners For Tree Removal On Private Property?	☐ Yes ☐ No
B. Is Special Assessment Used (city pays initial cost, is reimbursed from the state and assesses remainder to homeowners)?	☐ Yes ☐ No
C. Did The City Exceed Levy Limitations?	☐ Yes ☐ No
D. Describe The City's/County's Subsidy Program (including all municipal services which may be provided by the city/county, such as removal and/or disposal, in lieu of and/or in addition to direct funding):	

IV. PROGRAM ACTIVITIES AND ACCOMPLISHMENTS

A. Tree Inventory In The Control Area (Both Healthy And Diseased)

	ELM	OAK		ELM	OAK
1. Public			2. Private		

B. Number Of Trees Marked For Removal (Diseased) And Actual Number Removed

Trees Marked For Removal			Number Of Trees Actually Removed*		
	ELM	OAK		ELM	OAK
1. Public			1. Public		
2. Private			2. Private		

C. Number Of Trees Removed By*:

	Public	Private
1. City/County Crew		
2. Private Contractor (contracted by city/county)		
3. Private Contractor (contracted by private property owner)		
4. Private Property Owners		

D. Average Cost Of Removal And Disposal Per Tree $_____

E. Indicate How Frequently The Following Control Methods Were Used By The City/County And By Private Property Owners.

1. Vapam Treatment _____	2. Mechanical Trenching _____	3. Arbotect _____	4. Lignasan _____

### F. Indicate How The Diseased Wood Was Disposed Of Or Utilized. Check Method(s) Used.

1. ☐ Burned	2. ☐ Buried	3. ☐ Used For Firewood
4. ☐ Chipped	5. ☐ Sawed Into Lumber	6. ☐ Other (Specify)_____

Give The Approximate Percentage Of Diseased Trees Disposed Of By Burning Or Burying ____%; Percentage Utilized (chipped, firewood, etc.) _____ %.

G. Average Cost Of Replanting Per Tree $_____

*Since this report must be submitted on or before December 1, please include _estimates_ for the rest of the year to complete a 12-month period.
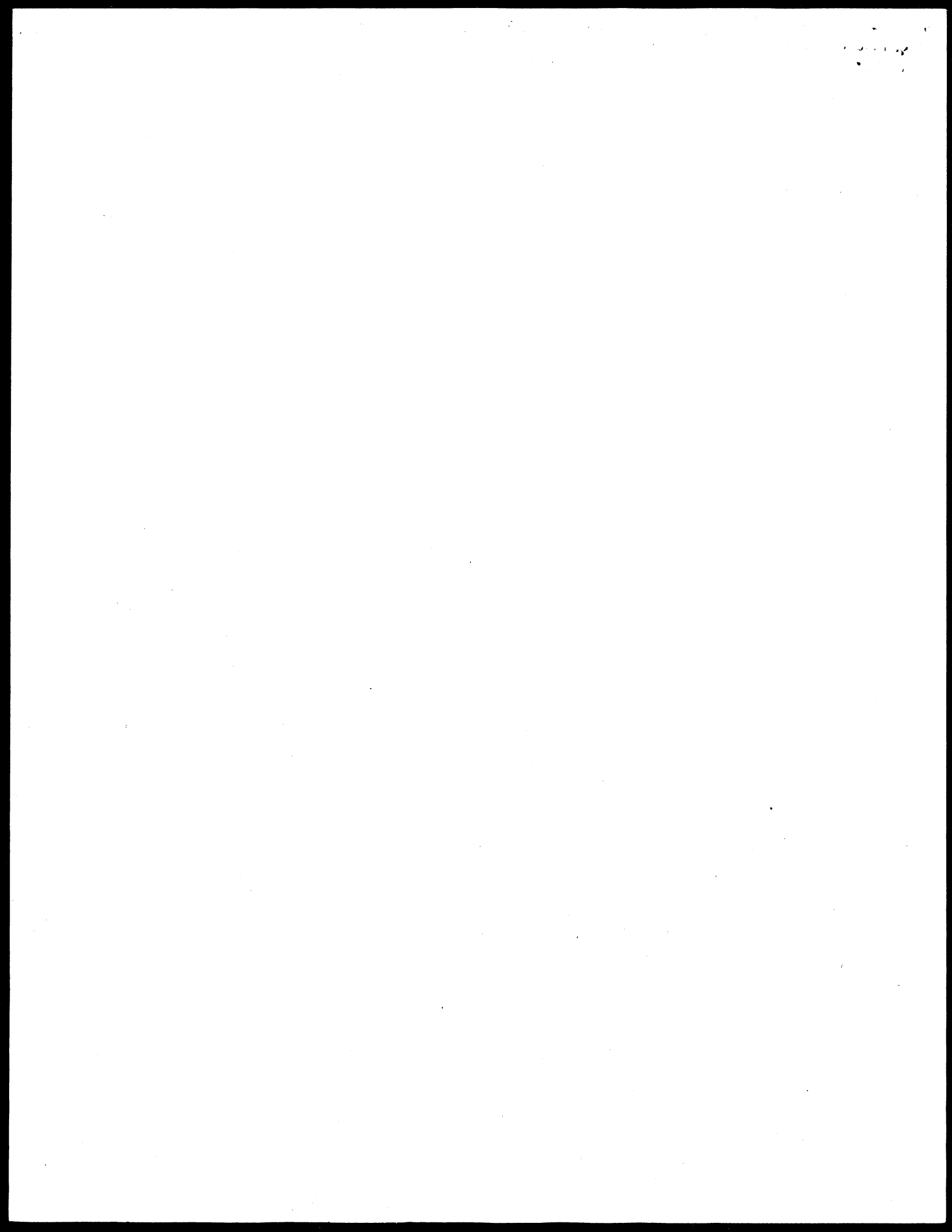
I. Please indicate what you think of the Shade Tree Program in general and how it affected your area in particular. Also include problems you encountered and any suggestions you might have which you think will help improve the present program and make it more effective and responsive.

_____

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Please return this report to:

Minnesota Department of Agriculture
Shade Tree Program
90 W. Plato Blvd.
St. Paul, MN 55107

Attention: Amador Frances

Report submitted by:

Signature: _____

Name (print): _____

Title: _____

Date: _____

Complete back side

4. Indicate the number and species of trees planted. Do not include seedlings planted in nurseries to be transplanted at later dates.

1. Boulevards   2. Parks and recreation areas

Species   Number   Species   Number
_____   _____   _____   _____
_____   _____   _____   _____
_____   _____   _____   _____
_____   _____   _____   _____
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MINNESOTA DEPARTMENT OF AGRICULTURE
Shade Tree Program
90 West Plato Blvd.
St. Paul, MN 55107
(612) 296-8580

SHADE TREE PROGRAM APPLICATION — 1980

I. Name of City/County Applying and the Population (1970 Census).

Applicant _____ County _____ Population _____

II. Name, Title, Address and Business Phone for:

PROGRAM MANAGER — Person to whom inquiries about the program should be directed.

Name _____ Title _____

Address _____ ZIP _____ Business Phone _____ — _____ — _____

FISCAL AGENT — Person to whom grant disbursements should be mailed.

Name _____ Title _____

Address _____ ZIP _____ Business Phone _____ — _____ — _____

III. Tree Inventory — Estimate the number of trees on Public and Private lands.

	ELM	OAK	OTHER (specify type)
Public	_____	_____	_____
Private	_____	_____	_____
TOTALS	_____	_____	_____

IV. A complete description of your sanitation and replanting program must be provided on the form attached. Both sides of that form must be completed and mailed with your application. All applicants must submit a control program to be eligible for state reimbursement.

V. Give the Total Amounts Budgeted for the items indicated, regardless of the source of funding. Budget only for "EQUIPMENT USE" (SEE STATE ALLOWANCES FOR EQUIPMENT), not EQUIPMENT PURCHASE.

PROGRAM BUDGET FOR THE PERIOD JANUARY 1 THROUGH DECEMBER 31, 1980:

	SANITATION	REFORESTA-TION	90% (See Instructions in Letter)
Personnel	_____	_____	_____
Equipment	_____	_____	_____
Outside Contracts	_____	_____	_____
In-Kind Contributions (cities with less than 1,000 population)	_____	_____	_____
Miscellaneous	_____	_____	_____
Total	_____	_____	_____ TOTAL _____

VI. Affix a true and correct copy of the authorizing resolution of your governing body relating to your sanitation and reforestation program and budget.

***** These applications should be sent to: Minnesota Department of Agriculture, Shade Tree Program, 90 West Plato ***** Blvd., St. Paul, Minnesota 55107. THEY MUST BE POSTMARKED NO LATER THAN NOV. 15, 1979.

(Continued on reverse side)

— 1 —

AG-00664-03

Contract Number _____

AGREEMENT
By and Between the
MINNESOTA DEPARTMENT OF AGRICULTURE (Hereinafter "department")
and
_____ (Hereinafter "grantee")

WHEREAS, Minn. Stat. § 18.023 provides funds on certain conditions for grants to local units of government for shade tree sanitation programs on public and private lands and for reforestation on public lands, and

WHEREAS, grantee is properly authorized to apply for such grants to finance its share of its costs and represents that the budget for its sanitation and reforestation program for calendar year 1980 is $_____ ,

NOW THEREFORE, department and grantee in consideration of the respective promises contained herein agree as follows:

1. Subject to legislative appropriations and aggregate demand department shall pay grantee up to 50 (%) of the cost of grantee's sanitation and reforestation program.

2. Grants to certain cities, counties and towns may include 90% of the cost of the first 50 trees planted under the grantee's reforestation program, if the grantee qualifies for such payment under Minn. Stat. § 18.023 (Supp. 1979).

3. Grantee shall submit quarterly requests for payment to department setting forth all information required by department.

4. Grantee shall fully comply with Minn. Stat. § 18.023 (Supp. 1979) and all rules promulgated pursuant thereto and shall maintain business records in conformance with generally accepted accounting and auditing principles to fully evidence its costs and expenses and allow department full access thereto. Any cost incurred for an activity not in compliance with such said statute and rules shall be ineligible for reimbursement. Grantee agrees to promptly return all funds which have been paid to grantee by department for any costs incurred in violation of the terms of this agreement of the said statute and rules.

5. Grantee represents that none of its officers or employees has any financial interest in this contract or proceeds payable thereunder.

6. This agreement shall cover the period January 1, 1980 to December 31, 1980.

7. The department may make supplemental grants or setoffs in the event of changes in grantee's budget and actual expenditures.

IN WITNESS of this agreement, department and grantee have caused it to be executed this _____ day

of _____ , 1980.

STATE USE ONLY:

By:_____
for: Commissioner of Agriculture

Approved as to form and execution
this _____ day of _____ , 19 ____

WARREN SPANNAUS
Attorney General

By:_____
Special Assistant
Attorney General

Approved: _____
Department of Administration

APPLICANT'S SIGNATURES:

By: _____

Title: _____
Mayor, City Administrator or Chairman of County Board

By:_____

Title: _____
City Clerk, Councilperson or County Auditor

Approved: _____
Department of Finance

Trn. No.	Account I.D.	Organization	F.Y.	Requisition No.	Vendor Number	Type	Terms	Source	S. Act.	Task	S. Task
	238618	04151	0			V					

Cost, Job or Client Code	Amount	Suffix	Object		
SHADE TREE		01	71		SEND

TYPE OF TRANSACTION ☐ ☐
A40 A41
☐ ☐ ☐
A44 A45 A46

_____   _____   Entered by _____
Date   Number

_____   _____   Entered by _____
Date   Number

– 2 –

E–7

APPENDIX F

SUPPLEMENTAL DATA FROM OFFICIAL SOURCES

In addition to data generated specifically for this project, a good bit of relevant data was extracted from other sources. All this data was extracted from state and federal files. Where possible, computerized files were referenced to facilitate a merger of this new information with the primary data. Each supplemental data element is listed below along with the rationale for its use. In addition, the source of each item is documented. State government data concerning the Shade Tree Programs and their effectiveness have been documented in Appendices 1 and 3.

I. Size of City

A. Population. Smaller cities often do not have a sufficient governmental structure to operate a program such as one for shade trees. Furthermore, they tend to be more homogenous with less likelihood that a person will step forward to lead an effort to save their trees. People will be more self-sufficient and less reliant on government. Finally, there will probably be fewer trees to save.

1. 1970 population -- Census of Population (MEDlist computer tape).

2. 1975 population -- Census Bureau estimates generated for revenue sharing purposes. Extracted from computer tapes by the Minnesota Analysis and Planning System (MAPS).

3. 1978 population -- same source.

B. Land Area. The larger a city, the more area it probably needs to police. Area measurements are not regularly available and were pulled together from a number of sources. Census measurements from 1960 (GE-20, No. 25) were used as a base. For the state as a whole these had been roughly updated to 1970 using county highway maps. All substantial changes to 1980 in the metropolitan area were incorporated using data from the Metropolitan Council (Resource and Development Report No. 3).

II. Growth of City

Newer cities or portions of cities are less likely to be planted with elms. On the other hand, growing cities may have more energy to tackle a municipal problem.

A. **1970 Age Distribution of Housing Units.** Number of units built before 1940 and in each decade following was extracted from the 4th Count Census Housing Tape by MAPS. This data was easily available for cities of 2500 or more and extracted for those cities only. See comment below.

B. **Population Growth.** The difference between the 1978 estimate and 1970 count was available for all places. The percentage change was used as a surrogate for age of housing in smaller communities.

C. **Median Age of Population.** Extracted from 1st Count Census Tape by MAPS.

III. Percent Homeowners

Theoretically, homeowners have a vested interest in their neighborhood and are more likely to support a shade tree program. Tenure of occupied housing units was extracted from the 1970 1st Count Census Tapes by MAPS.

IV. Potential Magnitude of Problem

A number of measures were put together attempting to measure the potential magnitude of the shade tree problem facing each city.

A. **Elm and Oak Inventories.** See Appendix E.

B. **Land in Parks.** Municipal park land is the responsibility of the city. The more acres of parks, the greater the need of a city to have an effective shade tree program. Current data on acreages of municipal parks was printed by the Department of Natural Resources (DNR) from their SCORP file.

C. **Incubation Areas.** The undeveloped land in and adjacent to each city provides a breeding ground for elm beetles where no sanitation program is removing diseased trees. Cities surrounded by such forests may abandon hope.

   1. Manager survey -- managers were asked to estimate the percentage of their municipal borders in wild elms as well as the health of these trees.

   2. External sources -- unfortunately no source of this desirable information exists. DNR tree inventories are appropriate to the county level of geographic specificity only. Finer geographic coverage is

available from the North Central Forest Experiment
Station but only for an elm-ash-cottonwood
association. This latter measure was deemed more
appropriate for this work. A data file was extracted
from the Minnesota Land Management Information
System (MLMIS) by the State Planning Agency staff.

    a) Acres and Percent Elm-Ash-Cottonwood Within City
       Limits.

    b) Same for Land Adjacent City.

        1) On Municipal Border

        2) Within ½ Mile

        3) Within 1 Mile

V. Ability of City to Cope With Problem

Many measures were deemed important indicators of the cities'
ability to run an effective program.

    A. Form of Government. Some forms may be more effective than
       others. Form coded form Minnesota's Bluebook.

    B. Size of City Government. Larger governments may be in a
       better position to tackle a special problem.

       1. Budget

          a) Total Revenue Extracted from 1977 State Auditor
            File by MAPS.

          b) Total Expenditure. Same Source.

          c) Forestry Budget. 1979 Shade Tree Program Reports.

       2. Staff

          a) Number of (FTE) Shade Tree Employees. 1979
            Shade Tree Program Reports.

    C. Ability to Pay. Poorer, more highly taxed people will
       probably be less willing to support a program aimed at
       amenities.

       1. 1974 Per Capita Income

          Extracted from 1975 Revenue Sharing tape by MAPS.

2. Local Taxes

    Extracted from 1977 State Auditor File by MAPS.

    a) Tax Levy

    b) Special Assessments. Used by Many Cities to
        Supplement Ongoing Programs.

3. Total Indebtedness

    Extracted from 1977 State Auditor Indebtedness File
    by MAPS.

4. Special Forestry Levy

    1979 Shade Tree Program Reports.