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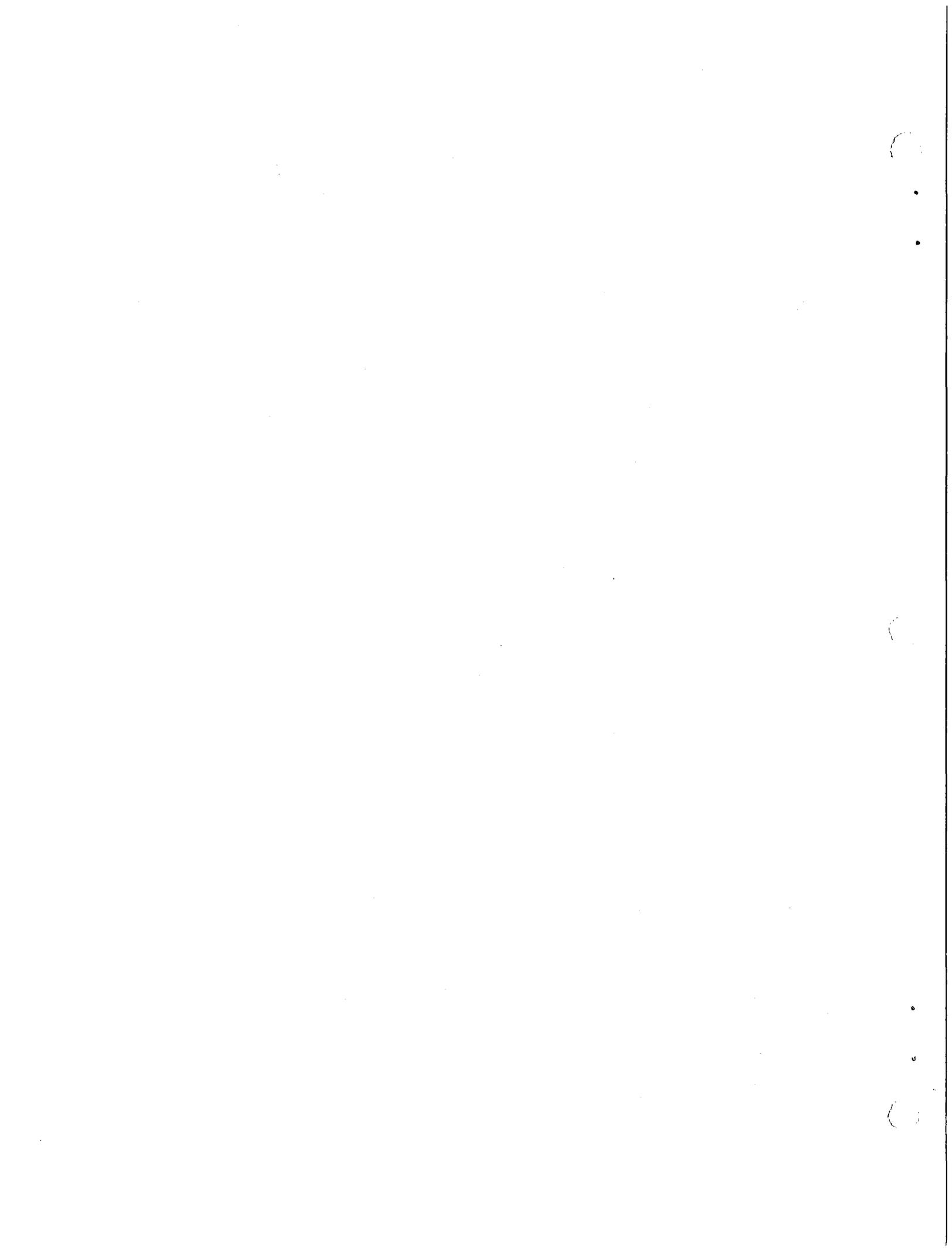
RECREATION TRAIL NEEDS
IN SOUTHEASTERN MINNESOTA

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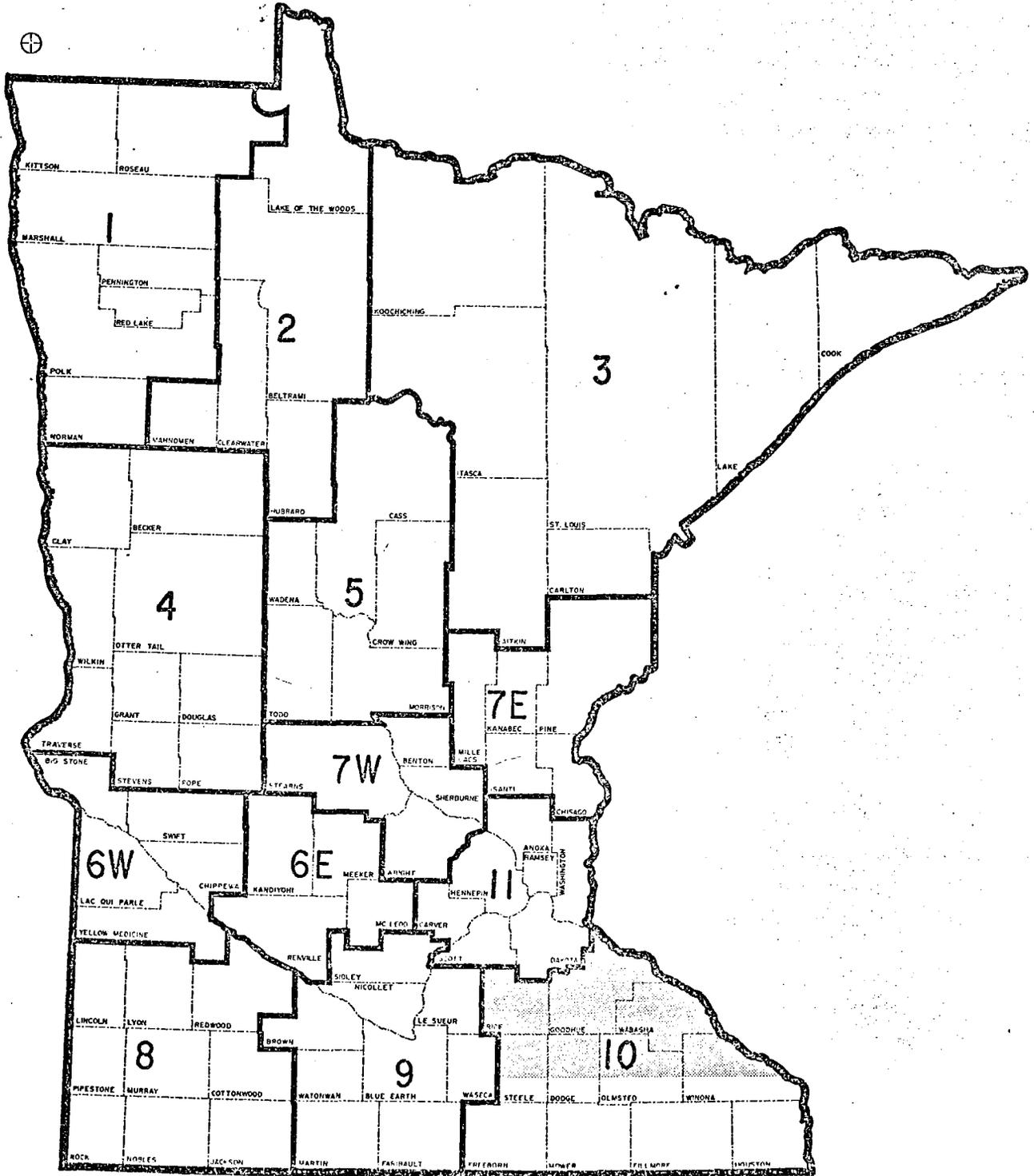
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ECONOMIC DEVELOPMENT REGIONS

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RECREATION TRAIL NEEDS
IN SOUTHEASTERN MINNESOTA

Prepared By:

Office of Planning and Research
Department of Natural Resources

October 9, 1979

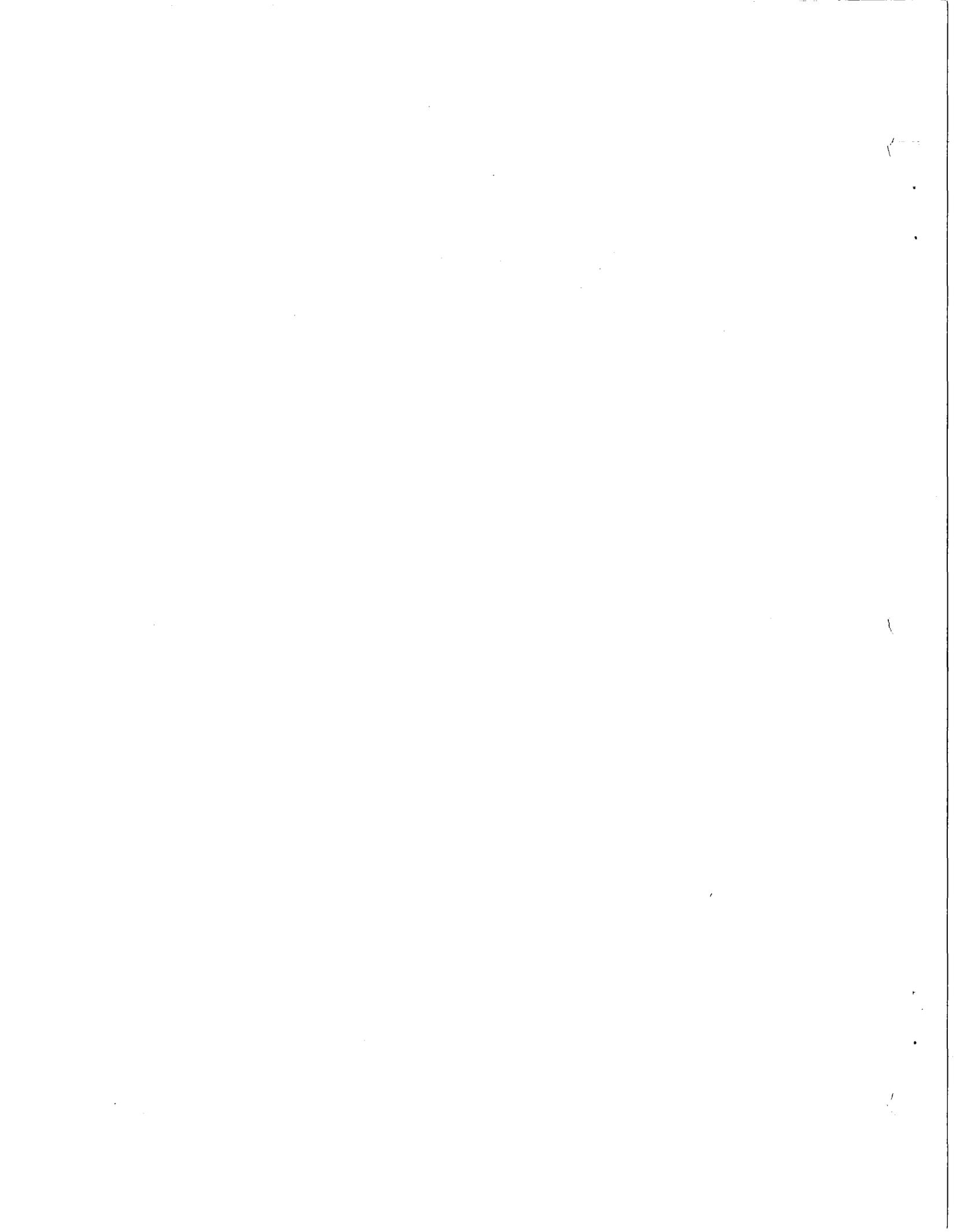


TABLE OF CONTENTS

Abstract

Introduction

Trail Participation

Public Desire for Expanded Trail Opportunities

Optimal Trail Location

Estimating the Expected Use of trail along the Root River from the use of

Wisconsin's Sparta-Elroy Trail

Conclusions

APPENDIX A: Methodology of Data Collection

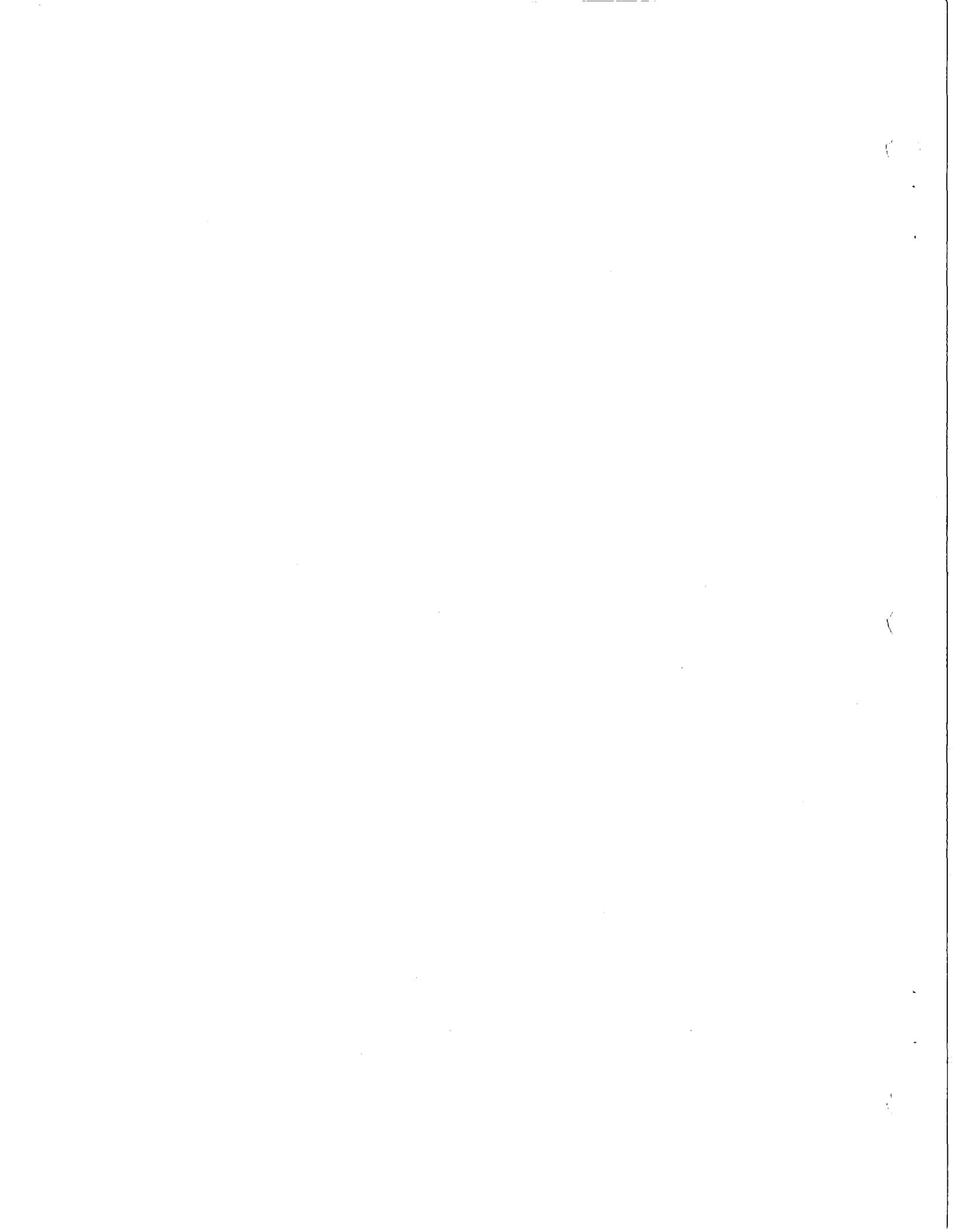
APPENDIX B: Use Demand and Public Input



LIST OF TABLES

TABLE

- TABLE 1: Statewide Ranking of Recreation Activities by Number of Participation Occasions - 1978
- TABLE 2: Economic Development Region 10 (Southeast Minnesota - see Figure A) Ranking of Recreation Activities by Participation Occasions - 1978
- TABLE 3: Economic Development Region 11 (Metro area) Ranking of Recreation Activity Participation Occasions - 1978
- TABLE 4: Percent of the State's Population Desiring More Recreation Facilities or Opportunities by Activity
- TABLE 5: Percentage of Economic Development Region 10's Population Desiring More Recreation Facilities or Opportunities by Activity
- TABLE 6: Percentage of Economic Development Region 11's Population Desiring More Recreation Facilities or Opportunities by Activity
- TABLE 7: Average Reasonable Travel Distances to Participate in Trail Activities by Activity for Statewide, Metro Region and Non Metro Regions
- TABLE 8: Minnesota Population Estimates Within Travel Zones for Three Potential Trail Areas in Southern Minnesota
- TABLE 9: Estimated Size of User Group Desiring More Trail Opportunity by Activity for Three Potential Trail Areas in Southeast Minnesota



ABSTRACT

This investigation addresses four questions to measure the need for trail recreation opportunities in southeast Minnesota:

- 1) How often do Minnesotans participate in trail activities?
- 2) What is the size of the public desiring additional trail opportunities?
- 3) How many annual use occasions can be expected to occur on a trail along the Root River?
- 4) Based on where people live in Minnesota, what is the most accessible area in southeast Minnesota for trail opportunity development?

The investigation is based on data collected through the 1977-78 State Comprehensive Outdoor Recreation Plan (SCORP) surveys and a field survey of users on Wisconsin's Sparta-Elroy trail. Those data show that:

- 1) Trail activities are quite popular with Minnesotans. SCORP surveys estimate that Minnesotans bicycled more than 56 million times in 1978. Region 10 (southeastern Minnesota) residents contributed six million of those occasions. Twin Cities Metro Area residents (Region 11) contributed nearly 27 million. Statewide, snowmobiling was the next most popular trail activity (9.5 million occasions) Region 11 contributed three million of those and Region 10, one million. Hiking and cross-country skiing followed in popularity both statewide and in Region 11. In Region 10, horseback riding and hiking were the next most popular public opinion poll followed by cross-country skiing.
- 2) More respondents to the 1978 SCORP asked for increased bicycling opportunities than for an increase in any other recreational facility. Region 10 and Region 11 residents voiced a stronger desire with approximately 22 percent of the residents in each region wanting more bicycling opportunity. The desire for additional opportunities for other

trail-oriented activities was mixed. At the state level, between 7 percent and 11 percent wanted more cross-country skiing, snowmobiling and hiking. Increased hiking opportunities were more popular with Region 10 residents (12 percent) than increased snowmobiling (8.7 percent) or cross-country skiing (8.1 percent). In Region 11 increased cross-country skiing opportunities (11.9 percent) were more popular with residents than increased hiking (8.2 percent) or increased snowmobiling (6.3 percent).

Increased bicycling, snowmobiling, cross-country skiing and hiking opportunities all rank in the top 10 requested activities by statewide, Region 10 and Region 11 residents.

- 3) Based on a judgement of the similarities of the resources and markets served by the Wisconsin Sparta-Elroy trail and a potential trail along the Root River it is estimated that a Root River trail would be used 23,000 times in the fifth year of use.
- 4) In general, based only on the location of Minnesota residents and their estimates of reasonable distances to travel for average trail experiences, trail opportunities developed in the Root River area would attract fewer users than trail opportunities developed in the area bounded by the Twin Cities Metropolitan Area, Rochester and Winona. This generally holds true for all types of trail use except bicycling. Both linear trail alignments examined in this report appear to serve the same size bicycling public. Therefore, resource qualities should be the determining factor for bicycle trail locations.

RECREATION TRAIL NEEDS

IN SOUTHEASTERN MINNESOTA

Introduction

The following study examines the need for trail mileage in southeastern Minnesota. To discover the level of need for trail mileage, four questions must be answered.

1. How often do Minnesotans participate in trail activities?
2. How large is the group desiring more opportunity for trail activities?
3. How many annual use occasions can be expected to occur on a trail along the Root River?
4. Based on where people live in Minnesota, what is the most accessible area in southeast Minnesota for trail opportunity development?

This report addresses each of these questions in turn. The method used to collect the data presented in each section is explained in Appendix A. The reason this particular method was used is explained in Appendix B.

Trail Participation

As discussed in Appendix B, participation isn't the same as demand to participate. If demand data is to lead to increased recreation facilities, those data must show that unmet demand exists. The fact that many people participate in an activity, or that lots of people use a facility doesn't mean that unmet demand exists. In fact, if extra facilities are developed when no unmet demand exists, current participation will not increase. It will simply be split between new and old facilities. This can lead to inefficient use of both new and old facilities and a lack of public funds to meet more important public needs.

Nevertheless, participation figures can serve one purpose. They identify the relative importance of each recreation activity to Minnesotans. TABLES 1 through 3 show the rank order of recreation activities based on the size of participation. TABLE 1 displays this statewide while TABLES 2 and 3 show the ranking for Economic Development Regions 10 and 11 respectively. These two regions were selected because they have a potential for affecting Region 10 resources, and Region 10 resources have the ability to satisfy demand in both regions.

TABLE 1: Statewide Ranking of Recreation Activities by Number of Participation Occasions - 1978

Activity ^A	Rank	Number of Participation Occasions - 1978
<u>Bicycling</u> ^B	1	56,550,000
Swimming	2	25,000,000
Fishing	3	14,500,000
Baseball/Softball	4	13,500,000
Ice Skating	5	12,500,000
Powerboating/Waterskiing	6	11,500,000
<u>Snowmobiling</u>	7	11,500,000
Sledding	8	9,550,000
Driving For Pleasure	9	9,000,000
Picnicking	10	8,000,000
Tennis	11	6,000,000
Golf	12	5,000,000
Ice Fishing	12	5,000,000
<u>Hiking</u>	12	5,000,000
<u>Cross-Country Skiing</u>	15	4,500,000
Camping	15	4,500,000
Downhill Skiing	17	4,000,000
Birdwatching/Nature Study	18	2,500,000
Canoeing	18	2,500,000
<u>Horseback Riding</u>	18	2,500,000
Visiting Historic Sites	21	1,500,000
<u>Trail Biking</u>	22	1,000,000

^A Trail activities are underlined.

^B 49 million recreation bicycling occasions and 7 million transportation bicycling occasions.

TABLE 2: Economic Development Region 10 (Southeastern Minnesota) Ranking of Recreation Activities by
Number of Participation Occasions - 1978

Activity ^A	Rank	Number of Participation Occasions - 1978
<u>Bicycling</u> ^B	1	6,100,000
Swimming	2	2,300,000
Baseball/Softball	3	1,300,000
<u>Snowmobiling</u>	4	1,100,000
Fishing	4	1,100,000
Driving For Pleasure	6	1,000,000
Sledding	7	800,000
Picnicking	8	700,000
Golf	8	700,000
Tennis	8	700,000
Ice Skating	11	600,000
Camping	12	500,000
<u>Horseback Riding</u>	13	400,000
<u>Hiking</u>	14	300,000
Downhill Skiing	15	200,000
Ice Fishing	15	200,000
<u>Trail Biking</u>	15	200,000
Birdwatching/Nature Study	15	200,000
<u>Cross-Country Skiing</u>	15	200,000
Canoeing	20	100,000
Archery	20	100,000
Shooting	20	100,000
Visiting Historic Sites	20	100,000

A Trail activities are underlined.

B 5 million recreation bicycling and 1 million transportation bicycling occasions.

TABLE 3: Economic Development Region 11 (Twin Cities Metro Area) Ranking of Recreation Activities by Number of Participation Occasions - 1978

Activity ^A	Ranking	Number of Participation Occasions - 1978
<u>Bicycling</u> ^B	1	26,900,000
Swimming	2	13,200,000
Ice Skating	3	7,800,000
Baseball/Softball	4	7,100,000
Fishing	5	6,500,000
Powerboating/Waterskiing	6	6,400,000
Sledding	7	4,500,000
Picnicking	8	3,800,000
Driving For Pleasure	9	3,500,000
Tennis	10	3,400,000
<u>Snowmobiling</u>	11	3,000,000
<u>Cross-Country Skiing</u>	12	2,800,000
Downhill Skiing	13	2,600,000
Golf	13	2,600,000
<u>Hiking</u>	13	2,600,000
Camping	16	2,200,000
Ice Fishing	17	1,800,000
Canceing	18	1,600,000
Birdwatching/Nature Study	19	1,500,000
Visiting Historic Sites	20	800,000
<u>Horseback Riding</u>	20	800,000
Sailing	21	700,000

A Trail Activities are underlined.

B 23 million recreation bicycling and 4 million transportation bicycling occasions.

The most obvious conclusion is that bicycling occurs much more often than any other activity. In every case it ranks number one and has twice the number of occasions as the second-ranking activity. The vast majority of this bicycling is recreational rather than transportational.¹ The tables also show that snowmobiling is the second-most popular trail-oriented activity. About 30 percent of the state's snowmobiling occasions originate in the Metro Region (Region 11), while about 10 percent originate in Southeastern Minnesota (Region 10). Statewide, and in Region 10 other trail-oriented activities rank much lower in participation than bicycling or snowmobiling; however, in Region 11 cross-country skiing and hiking occur nearly as often as snowmobiling.

Were 1978 participation the only factor to consider, these data would point toward building a trail for bicycling in southeast Minnesota. Winter use could be dedicated to either cross-country skiing or snowmobiling, depending on the primary market selected. Were the primary market Region 10, snowmobiling would be the top choice. If the primary market were Region 11, either snowmobiling or cross-country skiing could be the designated winter use.

Public Desire for Expanded Trail Opportunities

We have established that trail activities are popular with Minnesotans. However, this doesn't prove that unmet demand exists and more facilities are needed for these activities. To do that we must look at the public sentiment for trail development.

The best available method for measuring the size of the group desiring expanded trail opportunities, or unmet demand, is to look at the statewide and regional results of the Department of Natural Resources (SCORP) survey of public desire for recreation opportunity development (see Appendix A). TABLES 4, 5, and 6 present these results.

¹ Respondents to the SCORP surveys were instructed to report as "recreation bicycling" only those bicycling occasions that were primarily for recreation. All other occasions were considered transportational.

TABLE 4: Percentage of the State's Population Desiring More Recreation
Facilities or Opportunities By Activity

Activity ^A	Percent of the Population
1. <u>Bicycling</u>	18.9%
2. Camping	17.5
3. Fishing	15.0
4. Tennis	11.1
5. Swimming	10.9
6. Hunting	10.7
7. <u>Cross-Country Skiing</u>	10.5
8. <u>Snowmobiling</u>	8.7
9. <u>Hiking</u>	7.1
10. Picnicking	5.0
11. Boating	4.9
12. Golfing	4.7
13. Downhill Skiing	3.3
14. Canoeing	2.5
15. Ice Skating	2.3
16. <u>Horseback Riding</u>	2.1
17. <u>Trail Biking</u>	2.0

^A Trail activities are underlined.

TABLE 5: Percentage of the Economic Development Region 10's (Southeastern Minnesota) Population Desiring More Recreation Facilities or Opportunities by Activity

Activity ^A	Percent of the Population
1. <u>Bicycling</u>	22.0%
2. Camping	15.0
3. Fishing	12.2
4. Hiking	12.0
5. Hunting	9.9
6. <u>Snowmobiling</u>	8.7
7. <u>Cross-Country Skiing</u>	8.1
8. Downhill Skiing	7.5
8. Swimming	7.5
8. Boating	7.5
11. Tennis	6.9
12. Picnicking	5.8
13. Canoeing	3.5
13. <u>Horseback Riding</u>	3.5
15. Golfing	2.9
15. <u>Trail Biking</u>	2.9

^A Trail activities are underlined.

TABLE 6: Percentage of the Economic Development Region 11's (Twin Cities Metro Area) Population Desiring More Recreation Facilities or Opportunities by Activity

Activity ^A	Percent of the Population
1. <u>Bicycling</u>	21.9%
2. Camping	16.0
3. Tennis	14.5
4. <u>Cross-Country Skiing</u>	11.9
5. Fishing	11.4
6. Swimming	10.3
7. Hunting	8.5
8. <u>Hiking</u>	8.2
9. <u>Snowmobiling</u>	6.3
10. Golfing	6.2
11. Picnicking	5.3
12. Boating	5.3
13. Park Facilities	4.0
14. Ice Skating	2.7
15. Canoeing	2.4
16. <u>Trail Biking</u>	2.2
17. Downhill Skiing	1.9
18. <u>Horseback Riding</u>	1.5
18. <u>Back Packing</u>	1.5

^A Trail activities are underlined.

Again, bicycling leads all three lists. Cross-country skiing shows the next greatest amount of public support for expanded opportunities (unmet demand), at the state level and at the Twin Cities Metro Area level (Metro desires heavily affect state desires). In Region 10, desire for snowmobiling opportunity expansion slightly exceeds cross-country skiing.

Another pertinent fact stands out in these tables. In each case one third of the listed activities are trail-oriented. Calculating the percentage of all requests that were for trail opportunities shows that: statewide, 36 percent of the listed requests were for trail opportunities; in Region 10, 42 percent of the requests listed were for trail opportunities; and in Region 11, 54 percent of the requests listed were for trail opportunities. Based on these data, it is apparent that:

- 1) Expanded trail opportunities are desired by a significant portion of the population surveyed.
- 2) Some combination of bicycling, cross-country skiing, hiking and snowmobiling trail development would best satisfy these desires.

Based on these data, both participation and public sentiment (unmet demand) support expanding trail opportunities. This is true statewide, in Region 10 and in Region 11.

Estimating The Expected Use of a Trail along the Root River from the Use of Wisconsin's Sparta-Elroy Trail

In order to utilize existing trail use as a basis for estimating the use of a potential trail, the analyst must assume that the characteristics of the existing trail equal the characteristics of the potential trail. This comparison should cover the important qualities of use such as the trail's location relative to markets and its resource characteristics.

Sparta-Elroy's location in southwestern Wisconsin provides it with a market made up primarily of five major population areas; the Twin Cities Metro Area;

Rochester, Minnesota; the Greater Milwaukee Urban Area; the Greater Chicago Urban Area; and the northeastern quarter of Iowa. The Root River area is located the same distance from the Iowa population center and the Twin Cities Metro Area as the Sparta-Elroy Trail. It is closer to the Rochester area (58 miles closer), but farther from the Milwaukee and Chicago areas (70 miles farther). The Milwaukee and Chicago areas have a combined population of 7.5 to 8 million. Northeastern Iowa's population is in the range of 600,000 to 1 million. Rochester's population exceeds 60,000 and the Twin Cities Metro Area includes approximately 2 million.

About two-thirds of the Sparta-Elroy's market lies east of the trail in the Milwaukee-Chicago Area approximately 200 miles away. A sample of users of that trail taken on the last weekend of September 1979 shows half the use from that same area. Therefore, for the purposes of estimating use, the Sparta-Elroy's location closer to the major eastern market of Chicago/Milwaukee gives it an advantage over the Root River area. It is difficult to tell how strongly this advantage will affect the use of Sparta-Elroy as a basis for estimating Root River use; but it seems reasonable to assume that, because of this advantage the Root River use figures will fall short of Sparta-Elroy use by at least 20 percent.

From the resource viewpoint the important attractions of the Sparta-Elroy Trail appear to be the woods through which the trail passes, the hilly terrain and the tunnels.⁴ The Root River right-of-way has two of these three characteristics. It lacks only the railroad tunnels.* Again, as with location, it is difficult to judge the effect of one missing attraction. Nevertheless, for the sake of this use estimate a reduction of the Sparta-Elroy figures by an additional 10 percent is assumed to occur because of the lack of tunnels.

Annual use of the Sparta-Elroy Trail is estimated to be 45,000 occasions for 1979. Reducing this estimate by 30 percent to account for the locational and resource advantages of Sparta-Elroy over the Root River yields an annual use estimate of 31,500 occasions. The 45,000 occasion estimate for the Sparta-Elroy - 1979 is for that trails eighth year of operation. Trail use there has grown steadily over those years. Based on the Sparta-Elroy pattern, year five use of a trail along the Root River is estimated at 23,000 occasions.

⁴ These three elements were identified during a field survey of Sparta-Elroy Trail users conducted on the last weekend of September 1979. Usually survey sample dates need to be distributed randomly during the use season; however, in the case of product quality surveys, time of survey is less important. Because weekend users might come from more distant points of origin, and thus have different perspectives on resource amenity, a correlation between travel distance to trail head and resource characteristic ranking was performed. None of the correlations showed a significant relationship between distance and resource amenity values observed. If any bias were created by the single sample date, it would be an overstatement of the importance of woods - this because of the fall color showing during the sample date. Scores of characteristics were: woods (65); hills (52); tunnels (52); farms along trail (33); lack of cars or car noise (23); trail surface (18); trail grade (17); trail facilities (11); trestles (10); streams (5); and towns (4). Respondents were asked to rank what they considered the three most important resource characteristics of the trail. The most important characteristic was assigned a value of 3, the second, 2, and the third, 1. The value of each characteristic were totaled to arrive at the scores. The sample size was 37.

Two additional conditions should be kept in mind if one is to use these "shadowed" figures for decision making. The Sparta-Elroy Trail and the Root River are within 30 miles of each other. No one knows whether this close proximity will cause the two facilities to complement each other or compete with each other. Also, the history of the Sparta-Elroy Trail is unique. It was the first and the best in the Upper Midwest. As a result, it received and still receives massive publicity through the media. Word-of-mouth advertising, growing from the initial wide publicity base and subsequent use, has been important. It is entirely possible that, if a trail along the Root River received the same kind of promotion, the estimates based on the Sparta-Elroy Trail would accurately measure Root River trail use levels.

Optimal Trail Location

The previous sections find large groups of Minnesotans interested in trail development and predicts that in the fifth year of operation, approximately 23,000 users would use a trail along the Root River. If we assumed that these trail enthusiasts were willing to travel anywhere in the state to use trails, trail locations could be selected solely on the basis of resource quality. Such an assumption ignores prudent energy conservation policy and personal costs incurred by participants. Travel costs in time and dollars are so important that they are a major component of Marion Clawson's demand analysis approach (see Appendix B). In addition, at the state and national level actions conserving energy consumption have high priority. Therefore, willingness to travel to participate should be a major factor in locating trails.

- * A trail along the Root River would have the river itself as a major resource characteristic, a characteristic which Sparta-Elroy lacks. For the purposes of this comparison, however, this characteristic is not addressed.

As indicated in Appendix A, respondents to the recreation opportunities need questionnaire provided the Department of Natural Resources with an estimate of the distance they thought reasonable to travel to engage in the opportunities selected. TABLE 7 presents the average distances for respondents requesting expanded trail opportunities.

TABLE 7: Average Reasonable Travel Distances to Average Quality Facilities to Participate in Trail Activities by Activity for Statewide, Metro Region, and Non Metro Region - 1978

Activity	Home Locations		
	Statewide	Metro Region (Twin Cities)	Non Metro State Region
Bicycling	14 mi.	15 mi.	14 mi.
Cross-Country			
Skiing	29 mi.	26 mi.	32 mi.
Snowmobiling	53 mi.	62 mi.	43 mi.
Hiking	44 mi.	57 mi.	31 mi.
Trail Biking	24 mi.	23 mi.	25 mi.
Horseback Riding	22 mi.	22 mi.	22 mi.
Backpacking	107 mi.	129 mi.	85 mi.

By choosing representative sites in Southeast Minnesota, we can begin to define optimal trail areas in the region. In addition, by looking at potential linear (non-loop) trails and large State Forest parcels we can investigate the accessibility advantages or disadvantages of each type of location. Three representative sites were chosen: The abandoned Milwaukee Road railroad grade along the Root River from LaCrescent to Lanesboro,* the State Forest land owned by Department of Natural Resources along the Root River near Whalan; and a hypothetical trail from Pine Island to Red Wing. The

trail along the Root River represents a linear trail south of Rochester, while the hypothetical trail from Red Wing to Pine Island represents the same type of linear design trail between Rochester and the Twin Cities Metro area. The State Forest land near Whalan represents a reasonably large tract of forest land, in the area of the trail along the Root River, that could accommodate loop trail systems.

TABLE 8 presents the Minnesota population estimated to be within five travel distances from each potential trail location. The table shows populations for travel distances of 15 miles, 20 miles, 25 miles, 30 miles, and 45 miles.

TABLE 8: Minnesota Population Estimates Within Travel Zones for Three Potential Trail Areas in Southeast Minnesota

Travel Zone In Miles	Potential Area		
	Root River (LaCrescent to Lanesboro)	State Forest Land Near Whalan	Hypothetical Trail Red Wing to Pine Island
15	133,000	29,000	154,000
20	187,000	46,000	223,000
25	225,000	95,000	344,000
30	245,000	180,000	800,000
45	284,000	208,000	1,885,000

The previous section shows that only a portion of the population within each travel zone desires trail development for a specific trail activity (TABLES 4, 5 and 6). We can measure the size of the public desiring a trail in each potential area by applying the percentage desiring each activity to the correct travel zone population (TABLE 8) as determined by the average reasonable travel distance for each activity and type of population (TABLE 7). TABLE 9 presents those figures for each trail and each activity.

* The proposed "Root River Trail" authorized by the state legislature would follow the river valley from Chatfield to Highway 26 south of LaCrescent.

Because this approach uses average reasonable travel distance it fails to recognize the fact that some combinations of resources are more attractive than others. For example, the Sparta-Elroy Trail, with its unique combination of woods, hills and tunnels, appears to draw a substantial portion of its users from the Chicago/Milwaukee area. To date, no one has developed a satisfactory method that incorporates the ability of each possible resource combination to attract participants from beyond the average reasonable travel distance. Lacking this method, decision makers must use their best judgement of resource quality to determine when to deviate from the direction shown by the decision-making data based only on average reasonable travel distance (TABLE 9).

TABLE 9: Estimated Size of User Group Desiring More Trail Opportunity By Activity For Three Potential Trail Areas in Southeast Minnesota

Activity	Potential Area		
	Root River (LaCrescent to Lanesboro)	State Forest Land Near Whalan	Hypothetical Trail Red Wing to Pine Island ^A
Bicycling	29,300	6,400	33,000
Cross-Country			
Skiing	19,800	14,600	30,200
Snowmobiling	24,100	18,100	63,900
Hiking	29,400	21,600	165,000
Trail Biking	6,500	2,800	9,000
Horseback Riding	6,500	1,600	6,500

^A The hypothetical trail Service Zones reached outside Region 10 for all travel zones. The 15 mile zone reaches Dakota and Washington counties; 30 miles adds Ramsey and Scott counties; 45 miles adds Anoka, Hennepin, Le Sueur and Waseca counties.

Some important conclusions can be based on TABLE 9. Disregarding resource quality, TABLE 9 leads to the conclusion that a trail like the hypothetical trail between Pine Island and Red Wing would, overall, satisfy more public desire. The data provides the most support for this conclusion for trails providing cross-country skiing, snowmobiling, hiking and trail biking. The least support is for trails providing bicycling and horseback riding. In the case of bicycling, the equality between potential trail locations occurs because, for average resources, people won't travel far to bicycle and the population densities within 15 miles of the trail sites tested are very similar. The equality between locations for horseback trails results because the stronger desire for these types of opportunities in Region 10 than in the Twin Cities Metro Region makes up for the denser population near the hypothetical trail.

TABLE 9 can be misleading. Overall, the hypothetical trail alignment seems to serve the largest public. However, if bicycling is the primary activity provided on the trail it appears that the Root River will serve as many people as the hypothetical trail and serve many more than development of the State Forest land near Whalan. The hypothetical trail seems to be better situated to serve snowmobiling. However, this fact is not important if the use patterns of the Sparta-Elroy Trail are a good indicator of the type of trail use along the Root River. Snowmobiling is estimated to be only one-tenth of the use of the Sparta-Elroy Trail. To make a major decision based on such a small public seems to be unwise.

Conclusions

Based on the data reviewed there is demand for trail facilities in Minnesota. This demand isn't being met by current facilities, as evidenced by the large portion of the public desiring more trail opportunities. Bicycling opportunities are, by far, the most desired new developments. If a trail were developed along the Root River to serve bicyclists it is estimated that it would attract about 23,000 users during its fifth year of operation. Other areas of Region 10 seem to be better able to serve trail users other than bicyclists, from an accessibility point of view. However, the Root River area appears to serve as many bicyclists as trails developed in other parts of Region 10. Therefore, the decision of whether or not to develop a bicycle trail along the Root River should hinge primarily on whether or not the Root River is an attractive, scenic resource.

APPENDIX A

METHODOLOGY OF DATA COLLECTION

In 1977, prior to compiling the data for the 1979 State Comprehensive Outdoor Recreation Plan (SCORP), the Minnesota Department of Natural Resources (DNR) and its Outdoor Recreation Planning and Technical Advisory Committee (ORPTAC) reviewed the pros and cons of each method of measuring different levels of demand (Appendix B). They concluded that federal and state legislators best decide the question of how much money should go to supplying recreation opportunities. At that level the need for recreation can best be weighed against the need for other public goods, such as highways, education and defense. They felt DNR's job was to divide the recreation dollars available among the types of recreation provided by the public sector. To accomplish this required information describing the kinds of recreation people participate in today, and the kinds they would like to have more opportunity to participate in. The advisory committee (ORPTAC) did not think it could supply this information for the citizens of Minnesota. Review of the remaining approaches, public meetings and surveys, found surveys to be the best approach to gathering the needed data. The Minnesota Legislature, through the Legislative Commission on Minnesota Resources (LCMR), funded the necessary surveys.

Three distinct survey types were administered. The first type sought data on today's outdoor recreation participation. This data was gathered from randomly selected households. Each Economic Development Region was treated as a separate constituency to ensure adequate representation of all views. The LCMR funds allowed DNR to telephone 1,300 households per region. Half of these were contacted during the winter recreation period (November 30 to March 15). The remaining 650 households provided interviews during the summer recreation period (May 15 to Labor Day).

Another survey sought to measure the desires of Minnesotans for additional recreation opportunities or facilities. This survey was conducted by mail and targeted individual Minnesotans, 16 years old or older, as respondents. Each respondent listed the two recreation activities they would most like more opportunities or facilities for. The cover letter instructed those who felt that supply was adequate to write NONE on the questionnaire and return it. In addition to listing their two top activities, respondents ranked the intensity of their desire for the activity on a 1 to 5 scale (5 being very strong), and their opinion of a reasonable distance they would travel to participate in each activity.

Finally, ORPTAC and DNR saw the need for very detailed decision-making data for specific activities. Among these were cross-country skiing and snowmobiling. Participants in these activities were located through the telephone survey of households and sent questionnaires covering trail design, number and average distance of outings, other activities participated in while skiing or snowmobiling, and the type of group they usually participated in.

The data from the first two of these three types of surveys provide the data for this need profile for southeastern Minnesota trails.

APPENDIX B

USE DEMAND AND PUBLIC INPUT

Confusion often arises over the difference between demand for market goods and the consumption of public goods. The difference is that users of market goods directly pay for the use, while users of public goods do not directly pay for their use. Public goods do have a cost of provision; however, that cost is shared by the public at large. True demand can be found only if there is a direct price paid for the good. As public goods have no direct price, true demand can't be equated with level of participation.

Recreation opportunities are usually public goods. They carry no price tag or are sold at a price far below their cost. In these cases the amount of participation in an activity is often, wrongly, called the demand for opportunity to participate in that activity.

The traditional method of ascertaining surplus or unmet demand for recreational facilities equates the current supply of opportunity with the current participation level. To do this, the demand analyst must assume two things: that participation equals demand, an error, and a conversion factor that allows comparison between the supply and the participation. This conversion factor is known as a standard. As an example, the analyst could assume the standard of one mile of trail for each trail participant. Then, if there are one million trail participants there should be one million miles of trail. If there are fewer than one million miles then participation (demand) exceeds supply. Surplus demand exists and supply should be increased.

The obvious difficulty in this technique lies in selecting a conversion factor that reflects the quality of opportunity wanted by recreators. Sometimes, analysts use an historic approach. Here the analyst deems a specific point in time an ideal situation. The historic amount of supply, divided by the historic number of participants yields the conversion factor. This approach falls short because the analyst must subjectively judge the "ideality" of the supply at any particular time. Its accuracy becomes even more questionable under the realization that historic location of supply directs the location and type of participation.

A second technique is known as "shadowing demand". Analysts shadow demand when they look to the private market for a priced good (market good) with traits similar to the public good in question. The attributes of the demand for the market good become, through assumption, the attributes of the demand for the public good. Its cost of provision is calculated and the level supplied becomes the level that would be produced if private manufacturers produced the good and sold it at no profit. This technique has the advantage of being realistic. Its disadvantage arises when the analyst cannot find a market good with similar attributes -- such as resource mix, quality, site design and location from populations. Sometimes comparable goods do exist. For example, KOA's provide camping at developed campsites. Unfortunately, in the case of trails, no private market shadow good exists.

Another approach, developed by Marion Clawson at Resources For the Future, a Washington-based public research organization, calculates a "cost" for the public good by adding together the costs incurred by the participant in reaching the place of recreation and returning home. Each mile driven receives a unit value. Expenditures for lodging, liquor, food, equipment, and other market goods are included. The final sum becomes the cost of the public good for each consumer. Each consumption of the good incurs a different cost, due to varying travel distances, drinking and eating habits, lodging preferences and so on. Based on the frequency of participation at these varying costs a demand can be calculated.

This system's inadequacy derives from the assumption that outlays enabling the individual to consume the good provide no other benefits to the consumer. For example, it assumes that no pleasure is found in driving to the site. It assumes that the participant gets no extra benefit from the chosen type of lodging. In short, it assumes that all outlays are solely for the purpose of being able to participate in the recreation at the site under analysis. Obviously, this is not the case.

Another approach hinges on monitoring specific recreation sites. The use of each site or a sample of sites is recorded. As those sites approach being used 100 percent of the time, demand is said to be approaching supply. A maximum acceptable occupation or use level is assumed. When use passes that level, providers increase supply. This approach has three major drawbacks.

It requires the analyst to assume a maximum acceptable level of occupancy. It disregards the fact that supply guides the type and location of participation, and it is insensitive to new types of recreation.

The fifth approach to measuring demand relies on public input. Public input is gathered through a variety of methods. Each method constructs a forum that addresses different publics, and decisions of differing importance. In general, it can be said the more important the impact of the decision, the more vital it is to have a decision making forum representative of the affected public. These forums include initiative-referendum. Here the entire citizenry comprises the decision making body. Only the most important decision should be referred to this forum. (Hence the need for initiative petitions, a mechanism designed to select only the most important issues for referendum.)

Representative bodies handle decisions of less import than direct ballot approaches such as initiative-referendum; but they still retain much of the ballot box's wide base of support. Representatives' legislative districts have a maximum size designed to ensure effective communication between elected officials and their constituencies. A committee process selects only the most important issues for full consideration by the entire legislature. Legislation, drafted in a manner that ensures a correct outcome leaves discretion to the implementing entity. In brief, the system's design intends to filter out less important decisions, leaving them to less representative forums and bring forth to the legislature, top priority decisions.

Once the legislature describes the range of discretion the implementors of the legislation have, implementors have decisions to make. Even at this level public input is used to simulate the market and give decision makers signals that indicate demand. Public meetings form the traditional method of gauging the market. Known as town meetings, they were employed early in the history of the nation. When governmental units administer programs for small geographic areas with equally small populations, public meetings provide an adequate method for learning about public demand. As the population becomes larger, public meetings become less effective. More divergent views exist,

making it more difficult to store the number of different views and the size of their relative followings. Furthermore, the larger publics become unwieldy. Its easy to find a place for 50 to meet. It's much more difficult to find a place for 500 to gather.

A place to meet notwithstanding, the time required to listen to 500 people makes public meetings ineffective for large constituencies. The time demands affect the public as well as the decision makers. The more time an individual member of the public must commit to have input, the less likely that each person will attempt to testify.

That personal time commitment is called "transaction cost". As transaction costs increase, public participation decreases. If transaction costs are high, only those with the most to lose or gain by a decision will participate. The danger of this is that the total benefit of a decision in favor of those few willing to contribute input often falls far short of the total benefit available to the whole public. If those with high transaction costs do not accurately represent the general public, then the resulting decision will poorly meet the needs of the entire constituency.

Likewise, the requirement of having to travel to a meeting is a transaction cost. As the area served by the decision making body increases so do the transaction costs associated with travel to input. To the extent that decision makers hold public meetings closer to publics with one viewpoint than publics with another perspective, the impacts of decisions favor the former group.

Translating the theoretical effects of transaction costs associated with time and travel distance into real world examples makes the effects easier to see. Public meetings to gauge the demands of the public relative to agriculture-oriented decisions should not be held during planting or harvest periods. During spring and fall, time holds high value to the farmers. As a result, they tend to not go to meetings and are underrepresented. On the other hand, nonagrarian interests' time value is not unusually high during spring and fall. Therefore, they are overrepresented at the meetings.

As to travel costs, decisions about programs designed to meet both urban and rural needs should not be based on public meetings held only in rural areas. If they were, cost of input to rural constituencies would be less than the cost to urban ones. Therefore, the rural viewpoint would be over-represented, relative to the urban. Any decision based on input would favor the rural population, at the expense of the urban.

The key to representative public input is equal transaction costs for all interests. There are two reasonable ways to achieve this. The first, and most questionable is advisory groups. Under this approach, the decision maker appoints a group to advise and reimburses their costs. To be effective the group should hold advocates of each viewpoint. Furthermore, the number of advocates of each side should reflect the number of members of each interest group. Therefore, in order to appoint a balanced advisory group the decision maker must know the relative representation of each viewpoint in the constituency. Were this the case, public input would not be necessary in most instances. The decision maker already knows how many people hold each viewpoint.

The second way of equalizing transaction costs is through surveys. By paying the bill for communicating with the public, the decision maker bears most of the cost. With a telephone survey, a mailed survey, or a personal interview the only cost incurred by participating members of the public is their time cost of completing the interview. For equivalent levels of information this time cost is substantially lower than the time cost incurred at public meetings or advisory group meetings, where participants must yield time to one another so that all have a chance to express their views.

An additional advantage of surveys lies in their ability to ensure representation from the entire spectrum of interests. Surveys rely on selecting respondents at random from the constituency. When the number selected is large enough, each viewpoint is represented. Furthermore, the number of persons representing each viewpoint will comprise the same percentage of the sample as of the constituency.